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CULTURA COMPLEX

MISSOULA MT.

lee deeds

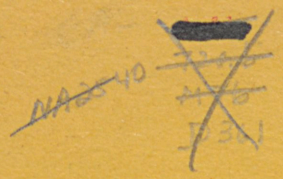
CULTURAL COMPLEX
Missoula, Montana

June 6, 1973

By Lee Deeds
Montana State University

Research material for Architectural Thesis in Partial Fulfillment of the Requirements for the degree of Bachelor of Achitecture.

P378
D3586



INTRODUCTION

This thesis is part of an undergraduate program in the fifth year of studies of the School of Architecture of Montana State University.

It is not intended that experiment al research, of the type involving experiments and testing to develope new building materials or new structural systems or building forms, be undertaken; but, rather that the research consist largely of a search for known information concerning a cultural complex for Missoula, Montana.

The material gathered in the research shall be used for the complex for Missoula. The preliminary design of the complex will be completed the following quarter (spring quarter) and will include drawings of site work, floor plans, sections, elevations, model, and other information that will explain the design concept.

Activities Within Center

1. Administration
2. Commerical
3. Service
4. Circulation
5. Library
6. Museum
7. Theater
* 8. Outdoor Activities

NOTES: CONSIDERATION OF SPACES

ADIMINISTRATION AREAS

- AREA SHOULD RELATE TO OTHER AREAS
- RECEPTION OR INFORMATION SHOULD BE EASILY RECOMGIZIABLE TO PUBLIC
- SHOULD BE NEAR MAIN ENTRY
- MUST HAVE COMFORTABLE WORKING AREAS
- POSSIBLE TO HAVE GOOD OUTSIDE VIEW INTO OFFICES AND SEC. POOL
- LOBBY AREA MUST PRESENT GOOD INTERIOR VIEW
- SOME AREAS CAN BE SEPERATED - MULTI-LEVEL
- POSSIBLE TO HAVE RECEPTION NEAR MAIN ENTRY WITH OFFICES AND ADMIN. ON SEPERATE FLOOR
- ENTRANCES SHOULD BE IN VIEW OF INFO. DESK
- SEPERATE AUDITORIUM & CONFERENCE RMS

Central Lobby Space

- Area Must Be Comfortable Space
- Person in Space must be given different choices of smaller spaces to relate to
- Inside space must flow and relate to outside spaces
- Outside space " " " " " inside "
- Lobby space must flow into other interior spaces such as restruant, theater, museum, and library
- Try to bring outside light - skylight
- Some Areas must accommodate large groups
- Provide Access to Outdoor Areas
- " Quite Areas

Entrances

- Main Entrance Should Have Protected Drop off Area
- " " " Be Well Defined
- All level changes should be ramped - elimate use of stairs - (elevators)
- Should Have Entrances off Front St. and green spaces

LIBRARY

- CIRCULATION DESK NEAR ENTRANCE
- CIRCULATION, REFERENCE, ADULT LOUNAGE, AUDIO-VISUAL - ONE LEVEL (OPEN)
- CHILDREN LIBRARY - SEPERATE ENTRY
- CHILDREN, EXTENSION, WORKROOM - ONE LEVEL (GROUND OR BASEMENT LEVEL)
- STUDY & STACK AREA - ONE LEVEL △
- PROVIDE OUTDOOR READING DECKS
- EACH MAJOR AREA MUST HAVE SEPERATE QUITE AREAS

THEATER

- CIRCULATION AREA MUST BE LARGE
- THRUST STAGE - PERFORMERS MUST BEABE TO ENTER FROM ANY DIRECTION - AUDIENCE -
- DRESSING RMS UNDER AUDIENCE
- STAGE MUST CHANGE
-

MUSEUM

- DOES NOT REQUIRE NATURAL LIGHT. BUT SHOULD BE INTRODUCED
- PERSON SHOULD BE ABE TO RELATE TO OUTSIDE
- AVOID MUSEM FATIGUE - CHANGE IN LEVELS - INTRODUCE LIGHT - PROVIDE REST LOUNAGES
- MUST HAVE TIGHT ENTRANCE CONTROL
- INDOOR & OUTDOOR SCULPTURE GARDEN
- SPACES MUST BE FLEXABLE
- RENTAL GALLERY AT ENTRANCE
- KEEP DIFFERENT ACTIVITY AREAS SEPERATE

LOCAL CONDITIONS

2

GEOGRAPHICAL CONDITIONS

Missoula, Montana is located at 46 °55' north latitude and 114°05 west longitude with a groung elevation of 3190 feet above sea level. Missoula is situated in the heart of the Monatan Rocky Mountains in the extreme north portion of the Bitterroot valley and about 5 miles east of the junction of the Bitterroot and Clark Fork Rivers. The Clark Fork Valley begins at Missoula and extends about 20 miles west-northwestard. The Bitterroot Valley extends about 70 miles due south from Missoula.

Missoula is at the crossroads of U.S. Interstate 90, U.S. Highways 12 and 93 and is approximately 122 miles northwest of Butte, Montana, 16 5 miles southwest of Great-falls, Montana, 116 miles west of Helena, Montana, the capital, and 40 miles east of the Idaho border. See map on ~~page~~ DIAGRAM (1)

CLIMATIC CONDITIONS

The Continental Divide is 60 to 80 miles east of Missoula, and the Bitterroot Range is only about 20 miles away to the southwest. These two mountais ranges have a marked effect on the climate of Missoula.

The prevailing flow of air aloft over western Montana is from the west and southwest during spring and summer months, and from the west and northwest during the winter months. Since this air must pass over the Bitterroot Range it loses much of its moisture on the western slopes of

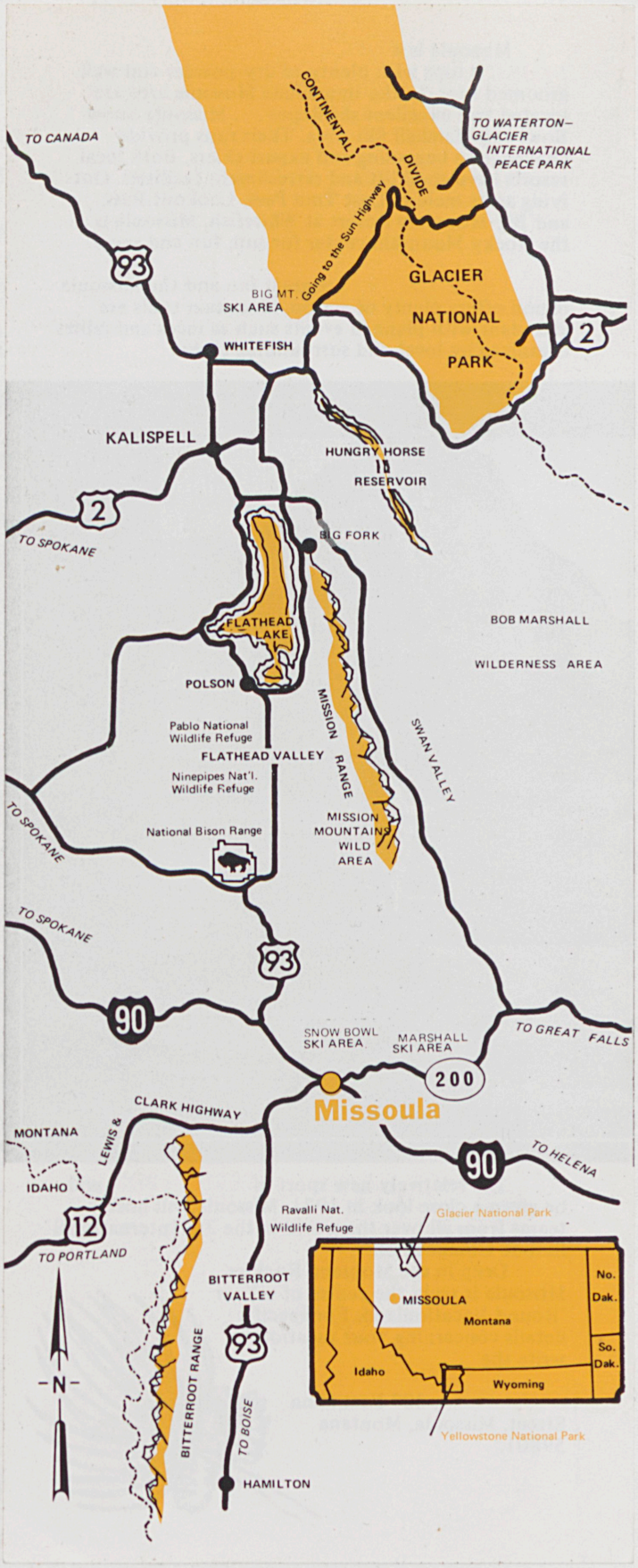

TO CANADA
CONTINENTAL DIVIDE
Going to the Sun Highway
TO WATERTON–GLACIER INTERNATIONAL PEACE PARK
93
BIG MT. SKI AREA
GLACIER NATIONAL PARK
2
WHITEFISH
KALISPELL
HUNGRY HORSE RESERVOIR
2
TO SPOKANE
BIG FORK
FLATHEAD LAKE
BOB MARSHALL WILDERNESS AREA
POLSON
MISSION RANGE
SWAN VALLEY
Pablo National Wildlife Refuge
FLATHEAD VALLEY
Ninepipes Nat'l. Wildlife Refuge
TO SPOKANE
National Bison Range
MISSION MOUNTAINS WILD AREA
TO SPOKANE
93
90
SNOW BOWL SKI AREA
MARSHALL SKI AREA
TO GREAT FALLS
200
Missoula
CLARK HIGHWAY
MONTANA
LEWIS &
IDAHO
90
TO HELENA
12
TO PORTLAND
Ravalli Nat. Wildlife Refuge
Glacier National Park
BITTERROOT VALLEY
93
N
BITTERROOT RANGE
TO BOISE
HAMILTON
MISSOULA
Montana
No. Dak.
So. Dak.
Idaho
Wyoming
Yellowstone National Park

DIAGRAM (1)

these mountains. As a result, Missoula recives only between 12 to 15 inches of preciptation annually on the average. This small amount of prepcipitation makes for a semi-arid climate. There is sufficient irrigation water, however, from the nearby mountains. The heavest precipitation is recieved during May and June, with an average rainfall of about 2 inches in each of these months. For a break down on monthly average see graph on page (

Generally the spring months are cool and a little damp with almost daily shower activity during May and June. The last spring freeze occurs about the middle of May normally, and there are about 137 growing days each year between the last freeze and the frist fall freeze. The summer months are dry with moderate temperature and cool nights. Seldom does the temperature during July and August average near 90°. Oppressively warm nightime temperature are unknown.

In the winter, the Continental Divide shield the Missoula area from much of the severly cold air which moves down the continent from arctic regions. Because of this shielding effect manly of the cold waves which sweep down over eastern Montana, miss the Missoula area entirely. Under certain conditions, however the cold arctic air does break over the Continealtal Divide, and moves with force into the Bitterroot and Clark Fork Valleys. When this happens, Missoula experiences severe blizzards conditions. The cold air is 'funnelled' to the city through 'Hellgate' which is the mouth of the Clark Fork canyon at Missoula.

AVERAGE TEMPERATURE

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1932	21.6	24.4	31.6	45.5	53.2	61.8	66.8	66.3	56.4	44.3	37.8	18.0	44.0
1933	25.6	19.4	36.4	43.2	49.2	64.2	69.7	66.2	53.9	48.0	38.0	33.4	45.6
1934	34.0	34.5	42.1	52.4	58.6	60.8	67.8	67.8	52.5	47.4	39.8	28.6	48.9
#1935	23.3	30.6	34.1	40.1	51.0	59.0	67.8	64.9	60.4	44.6	32.0	28.4	44.7
1936	26.8	12.2	35.4	48.6	60.8	64.2	74.4	70.4	57.0	49.2	30.6	31.4	46.8
1937	4.6	26.5	37.4	44.4	56.4	61.0	72.6	66.5	62.6	51.8	38.4	30.5	46.1
1938	25.5	27.0	37.0	47.5	53.6	63.8	71.0	67.5	66.2	48.7	32.0	31.4	47.6
1939	33.8	24.6	39.9	49.0	57.7	57.8	71.0	70.2	59.6	48.2	36.6	33.4	48.5
1940	21.0	33.1	42.6	47.6	58.3	65.7	71.8	71.0	63.1	50.6	30.0	30.4	48.8
1941	27.6	34.9	43.3	48.8	55.9	62.8	72.2	67.6	52.4	45.0	36.6	29.4	48.0
1942	17.0	24.6	37.6	49.2	51.6	57.2	70.2	69.0	60.2	49.0	34.0	29.6	45.8
1943	17.6	29.0	30.0	49.2	50.0	56.2	67.6	66.6	61.0	49.6	35.8	22.0	44.6
#1944	24.7	29.9	32.4	47.2	55.2	60.0	68.0	65.4	59.3	51.0	35.2	19.6	45.7
1945	27.4	31.6	34.8	40.6	53.2	56.5	69.0	68.1	54.8	48.8	33.9	24.1	45.2
1946	26.2	31.0	40.7	46.3	53.2	59.1	68.9	66.6	54.8	40.8	30.8	26.8	45.4
1947	21.6	31.1	38.6	45.6	56.6	56.3	69.8	65.0	55.8	47.8	30.2	25.5	45.3
1948	22.2	26.8	31.6	43.1	53.0	62.0	63.5	64.2	54.9	43.6	32.2	13.7	42.6
1949	4.5	21.4	31.7	47.0	56.2	59.4	65.6	67.6	57.6	40.8	38.0	24.6	42.9
#1950	10.7	26.1	33.8	41.9	48.7	57.4	65.4	65.1	55.9	46.5	29.7	28.7	42.5
1951	18.9	29.9	29.8	43.7	51.6	55.9	67.1	64.2	54.5	43.4	30.7	19.4	42.4
1952	17.3	26.5	32.0	48.1	53.4	58.3	64.7	66.0	59.4	48.3	30.0	26.0	44.2
1953	35.8	31.8	37.7	42.0	48.2	56.3	67.8	65.5	59.1	47.2	37.3	32.1	46.7
1954	23.4	31.7	32.2	42.7	53.4	55.7	67.2	62.1	54.8	43.0	38.5	25.4	44.2
1955	22.3	22.4	25.4	39.8	47.7	59.4	65.1	66.6	55.2	45.9	24.3	20.6	41.3
1956	22.8	20.4	31.9	46.0	55.7	59.1	67.8	63.1	57.4	44.6	30.7	30.0	44.1
1957	10.5	26.2	35.6	44.8	56.8	60.3	67.3	65.1	59.2	42.2	32.7	32.0	44.4
1958	28.8	33.3	36.2	43.7	60.5	61.4	65.8	68.9	55.6	45.2	32.6	29.3	46.8
1959	26.1	23.4	36.5	44.3	48.5	61.6	67.2	62.4	54.0	44.8	26.4	26.6	43.5
#1960	16.7	25.7	32.9	43.6	49.7	60.1	72.2	62.4	56.4	43.6	32.9	18.3	42.9
1961	21.6	34.2	37.0	42.2	51.1	64.7	69.3	70.3	49.9	41.1	27.1	21.5	44.2
1962	15.2	24.9	30.9	45.4	50.1	57.3	64.1	62.9	54.8	43.0	33.9	30.3	42.7
1963	8.7	31.2	38.7	44.0	53.6	59.1	64.1	66.6	59.4	47.5	34.8	18.0	43.8
1964	21.9	22.6	28.5	42.1	48.9	57.0	66.2	60.8	51.1	42.1	30.4	19.4	40.9
1965	24.6	24.6	25.6	44.7	48.9	57.2	65.0	64.1	47.8	47.0	36.4	27.2	42.7
1966	26.3	26.5	35.3	43.7	55.1	58.1	69.1	66.8	62.9	44.0	34.0	29.5	45.9
1967	31.0	34.5	34.0	40.9	51.4	60.3	70.0	71.2	62.2	44.6	31.9	22.9	46.2
1968	20.2	32.4	41.7	42.1	52.6	59.8	69.8	64.2	54.7	42.0	33.7	21.8	44.6
1969	17.9	20.7	29.0	46.5	54.3	58.8	64.3	67.0	56.8	40.2	31.8	26.0	42.8
1970	22.9	32.2	34.3	39.8	52.6	63.0	68.2	67.7	50.6	41.5	33.9	22.5	44.1
1971	26.3	32.2	35.5	44.8	54.5	58.3	67.1	71.5	51.9	42.2	33.7	21.1	44.9
RECORD MEAN													
MAX	21.9	27.5	35.2	44.8	52.9	59.8	67.8	66.1	56.2	45.1	33.1	25.1	44.6
MIN	29.9	36.4	45.7	57.4	66.5	74.1	85.1	83.3	71.2	57.6	41.4	32.2	56.7
	13.8	18.5	24.7	32.1	39.2	45.5	50.4	48.8	41.2	32.6	24.7	17.9	32.5

TOTAL DEGREE DAYS

MISSOULA, MONTANA

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1932-33	42	63	258	645	812	1466	1223	1276	889	649	491	85	7899
1933-34	4	76	330	526	810	982	958	853	709	379	237	148	6012
1934-35	22	5	385	546	777	1129	1295	960	960	749	431	184	7443
#1935-36	40	68	152	633	1009	1132	1176	1526	937	494	204	116	7487
1936-37	1	24	250	483	1030	1040	1875	1079	853	620	271	175	7701
1937-38	10	55	147	398	801	1068	1222	1061	865	525	361	79	6592
1938-39	17	49	67	508	1010	1041	971	1131	779	484	244	246	6547
1939-40	30	9	173	518	848	980	1447	971	735	539	263	88	6601
1940-41	10	2	125	474	1090	1102	1213	880	704	529	310	128	6567
1941-42	1	53	396	663	910	1163	1598	1210	929	519	450	263	8155
1942-43	35	62	208	553	983	1217	1580	1121	1176	530	479	281	8225
1943-44	58	46	175	520	940	1403	1328	1056	1056	559	326	168	7635
#1944-45	40	58	231	521	960	1404	1165	934	936	730	346	269	7614
1945-46	17	22	329	505	935	1269	1205	954	755	558	367	186	7102
1946-47	23	38	317	753	1030	1187	1346	948	818	584	262	261	7567
1947-48	13	70	282	533	1050	1228	1327	1110	1035	655	377	111	7791
1948-49	72	67	307	667	985	1592	1878	1220	1031	539	277	189	8824
1949-50	59	41	225	755	811	1250	1679	1086	962	684	500	231	8283
#1950-51	59	34	304	569	1052	1119	1424	978	1086	633	408	270	7936
1951-52	67	83	306	663	1022	1408	1474	1112	1015	500	348	206	8204
1952-53	82	59	171	514	1041	1203	897	924	840	680	511	257	7179
1953-54	27	62	175	546	825	1016	1285	927	1007	665	354	276	7165
1954-55	37	122	300	677	790	1220	1316	1186	1221	750	528	199	8346
1955-56	117	19	324	587	1217	1370	1302	1286	1019	566	296	186	8289
1956-57	54	90	226	626	1024	1078	1686	1078	906	599	256	161	7784
1957-58	26	58	178	699	964	1017	1116	879	889	634	173	132	6765
1958-59	47	30	295	608	964	1098	1201	1159	872	613	505	134	7526
#1959-60	67	101	337	617	1151	1185	1494	1135	988	636	466	148	8325
1960-61	8	136	256	655	957	1442	1340	856	862	679	425	67	7683
1961-62	6	10	448	734	1128	1343	1541	1117	1048	580	455	234	8644
1962-63	83	104	298	674	925	1065	1745	941	808	623	350	204	7820
1963-64	76	51	183	535	899	1449	1327	1222	1124	680	492	240	8278
1964-65	30	153	409	698	1031	1406	1246	1124	1218	602	491	230	8638
1965-66	44	88	509	555	849	1165	1194	1075	914	631	304	216	7544
1966-67	23	46	94	645	921	1097	1045	848	952	712	416	145	6944
1967-68	2	4	116	630	987	1299	1383	941	718	678	379	168	7805
1968-69	10	97	305	705	935	1333	1456	1234	1109	546	325	201	8256
1969-70	69	46	262	763	991	1200	1297	911	942	751	377	140	7749
1970-71	32	12	425	722	928	1313	1195	911	908	600	319	211	7576
1971-72	75	12	386	700	934	1352							

TOTAL PRECIPITATION

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1932	0.54	0.80	1.00	0.82	3.58	0.74	0.54	1.41	0.15	0.71	0.51	0.47	11.27
1933	1.02	1.00	0.20	0.81	2.64	1.52	0.19	1.12	1.17	2.87	0.70	2.35	15.59
1934	0.92	0.08	2.02	0.69	0.55	2.67	0.31	0.25	0.78	1.80	0.78	0.69	11.54
#1935	0.60	0.20	0.83	0.78	2.02	1.04	0.77	0.44	0.33	0.81	0.57	0.28	8.67
1936	1.23	2.63	0.54	0.51	1.54	2.05	0.50	0.39	1.22	0.47	0.13	0.68	11.89
1937	0.75	1.03	0.52	0.93	0.97	1.08	0.47	0.33	0.57	0.68	0.56	2.47	10.34
1938	0.59	1.35	0.76	0.74	2.69	3.13	0.66	0.63	0.66	0.91	0.50	0.40	13.02
1939	0.59	1.25	1.03	0.83	2.31	2.14	0.49	0.10	0.88	0.86	0.14	1.94	12.56
1940	1.01	1.43	1.22	1.64	0.88	1.14	1.08	0.14	1.68	0.83	1.04	0.23	12.32
1941	0.55	0.63	0.27	1.04	2.72	3.10	1.38	0.93	1.62	1.07	1.55	0.93	15.79
1942	0.55	0.71	0.33	0.66	3.77	2.05	0.55	0.64	1.51	1.21	1.41	1.50	14.89
#1944	1.79	0.82	0.73	3.15	1.93	2.70	0.78	0.46	0.05	1.73	0.54	1.03	15.71
1945	0.04	0.72	1.24	1.11	1.69	3.47	0.45	1.43	1.20	0.38	0.44	1.05	13.22
	0.31	0.34	0.40	2.00	1.42	0.73	0.20	0.16	1.31	0.48	0.92	1.51	9.78
1946	0.41	0.34	0.76	0.33	0.36	1.38	3.05	0.44	0.78	2.33	0.82	1.43	12.43
1947	0.42	1.05	0.47	0.38	1.50	1.92	0.78	2.18	1.70	1.09	2.41	0.78	14.68
1948	1.32	0.97	0.41	0.65	4.10	3.36	1.50	0.24	0.13	0.23	0.92	1.04	14.87
1949	0.34	0.97	0.51	0.12	1.71	1.06	0.57	0.22	1.33	0.74	0.72	0.65	8.94
1950	1.75	0.50	0.58	0.71	0.61	2.35	1.19	1.62	0.61	1.41	1.74	1.11	14.18
1951	1.08	0.51	0.92	2.25	1.29	1.15	0.92	0.83	1.28	1.31	1.67	1.81	15.02
1952	0.79	0.62	0.48	0.08	1.96	1.76	0.24	0.63	0.69	0.13	0.61	0.63	8.62
1953	2.19	1.37	0.20	0.89	2.78	1.12	0.11	0.45	0.72	0.09	0.62	0.82	11.36
1954	2.21	1.05	0.48	0.68	1.60	2.42	0.79	1.14	2.22	0.40	0.23	0.38	13.60
1955	0.61	0.87	1.16	1.04	2.28	1.85	2.49	0.02	0.62	0.48	1.66	2.74	15.82
1956	0.80	0.95	1.17	2.46	0.66	2.87	1.96	1.00	0.49	1.35	0.46	0.99	15.16
1957	1.12	0.51	0.94	0.53	3.22	0.86	0.69	0.92	0.21	1.35	0.45	1.41	12.21
1958	0.52	1.14	0.41	1.42	1.27	4.19	1.67	0.67	1.15	1.35	1.78	1.41	16.98
1959	2.08	1.14	0.62	0.88	2.43	1.69	0.13	0.93	3.11	1.71	1.30	0.27	16.29
1960	1.04	0.53	0.72	0.72	1.41	0.53	0.13	1.69	0.37	0.67	1.09	0.97	9.87
1961	0.53	1.01	1.39	1.52	2.58	0.35	0.40	0.69	1.53	1.34	1.38	1.18	14.10
1962	1.21	1.32	0.66	0.72	1.88	1.49	0.40	0.59	0.90	1.35	0.61	0.86	11.99
1963	2.38	0.80	1.26	0.68	0.25	3.29	1.11	1.29	1.54	0.62	0.61	1.06	14.89
1964	0.70	0.51	0.67	1.49	1.22	3.13	0.94	1.64	0.51	0.50	0.56	3.15	15.22
1965	1.46	0.62	0.67	1.68	0.63	1.55	1.59	2.24	2.11	0.17	1.05	0.43	14.20
1966	1.44	0.96	0.86	0.66	0.50	1.81	0.71	1.01	0.96	0.81	0.59	0.79	11.10
1967	1.22	0.27	1.09	0.93	1.33	2.67	0.40	T	0.49	1.64	0.65	1.71	12.40
1968	0.87	0.73	0.60	0.94	1.05	1.89	0.21	2.38	1.92	0.54	0.55	1.17	12.85
1969	2.94	0.52	0.72	0.64	1.21	4.18	0.25	0.04	0.66	0.87	0.42	0.92	13.17
1970	2.87	0.34	1.06	1.07	1.75	2.84	1.68	0.08	0.48	1.00	0.97	0.94	15.08
1971	1.81	0.56	0.78	2.09	1.35	1.74	0.53	0.91	0.30	0.24	1.18	1.63	13.12
RECORD MEAN	1.07	0.84	0.87	1.03	1.76	2.04	0.92	0.85	1.20	1.04	1.05	1.12	13.79

TOTAL SNOWFALL

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1932-33	0.0	0.0	0.0	1.5	0.0	6.3	7.4	15.6	2.5	1.3	2.0	0.0	36.6
1933-34	0.0	0.0	0.0	T	1.3	10.3	0.5	1.5	5.0	2.0	0.0	0.0	20.6
1934-35	0.0	0.0	1.5	0.0	3.2	8.5	9.6	T	2.0	1.5	0.0	0.0	26.3
#1935-36	0.0	0.0	0.0	3.3	1.0	T	10.0	43.5	2.8	1.1	T	0.0	61.7
1936-37	0.0	0.0	0.0	0.2	1.5	8.6	12.6	18.0	7.2	0.4	0.0	T	48.7
1937-38	0.0	0.0	T	0.0	0.9	7.2	7.8	14.3	3.5	T	T	0.0	33.7
1938-39	0.0	0.0	0.0	T	3.5	2.6	5.5	15.8	5.1	T	0.0	0.0	32.5
1939-40	0.0	0.0	0.0	3.0	T	5.1	11.2	5.8	1.1	T	0.0	0.0	26.2
1940-41	0.0	0.0	0.0	0.0	5.0	1.4	3.7	3.3	T	1.4	T	0.0	14.8
1941-42	0.0	0.0	0.0	T	0.7	5.9	10.6	10.6	3.2	T	0.8	0.0	31.8
1942-43	0.0	0.0	0.0	0.4	12.1	12.7	21.2	11.3	5.3	T	0.9	0.0	63.9
1943-44	0.0	0.0	0.0	T	T	5.8	0.8	9.2	10.4	T	T	0.0	26.2
#1944-45	0.0	0.0	T	0.0	0.8	19.2	2.2	4.6	3.6	2.5	0.0	0.0	32.9
1945-46	0.0	0.0	T	T	5.0	13.2	3.0	3.3	2.7	T	0.0	0.0	27.2
1946-47	0.0	0.0	0.0	0.2	9.2	11.9	5.8	2.0	3.8	T	0.0	0.0	32.9
1947-48	0.0	0.0	T	0.0	17.7	10.0	4.2	4.0	4.7	2.6	1.0	0.0	44.2
1948-49	0.0	0.0	T	0.3	5.4	15.2	6.0	12.5	8.1	T	0.0	0.0	47.5
1949-50	0.0	0.0	T	0.7	2.0	8.5	19.5	3.4	3.0	6.9	0.1	0.0	44.1
1950-51	0.0	0.0	T	0.1	12.9	12.3	11.6	4.8	8.5	6.1	T	0.0	56.3
1951-52	0.0	0.0	0.0	2.0	12.1	25.0	13.0	6.3	6.6	T	0.0	0.0	65.0
1952-53	0.0	0.0	0.0	0.0	0.6	5.8	6.5	14.7	0.5	2.2	3.4	0.0	33.7
1953-54	0.0	0.0	0.0	0.0	T	4.2	24.2	2.1	1.4	2.8	0.0	T	34.7
1954-55	0.0	0.0	T	T	T	2.0	9.6	11.4	13.4	2.0	0.5	0.0	38.9
1955-56	0.0	0.0	T	0.6	16.0	20.1	11.4	15.6	7.1	3.5	T	0.0	74.3
1956-57	0.0	0.0	0.0	2.5	1.6	1.8	19.9	6.5	9.6	T	0.0	0.0	41.9
1957-58	0.0	0.0	T	1.2	4.5	4.0	5.3	14.5	2.2	2.9	T	0.0	34.6
1958-59	0.0	0.0	0.0	T	4.3	9.0	13.8	18.5	4.9	0.5	1.3	0.0	52.3
1959-60	0.0	0.0	T	0.2	13.8	2.7	17.9	7.4	7.2	2.3	T	0.0	51.5
1960-61	0.0	0.0	0.0	0.2	5.1	11.7	7.9	3.3	5.2	4.7	6.5	0.0	44.6
1961-62	0.0	0.0	T	4.6	15.1	11.3	9.0	10.4	6.9	T	0.0	0.0	57.3
1962-63	0.0	0.0	T	T	0.8	1.1	42.5	3.5	6.7	1.5	0.1	0.0	56.2
1963-64	0.0	0.0	0.0	T	3.0	20.6	12.2	8.9	11.1	0.5	7.5	0.0	63.8
1964-65	0.0	0.0	0.0	1.7	3.7	31.6	21.5	11.2	8.4	4.0	T	0.0	82.1
1965-66	0.0	0.0	0.2	0.0	3.2	6.4	14.3	18.6	9.0	5.7	T	0.0	57.4
1966-67	0.0	0.0	0.0	0.2	3.4	11.2	7.4	2.2	8.9	5.7	2.6	0.0	41.6
1967-68	0.0	0.0	0.0	0.3	5.1	12.6	14.5	2.8	1.5	5.8	T	0.0	42.6
1968-69	0.0	0.0	T	T	1.5	19.5	27.5	9.2	9.0	T	0.0	0.0	66.7
1969-70	0.0	0.0	0.0	T	1.9	8.6	23.5	1.5	9.5	8.2	3.0	0.0	56.2
1970-71	0.0	0.0	T	1.1	4.4	12.7	9.9	3.4	6.3	3.5	T	T	41.3
1971-72	0.0	0.0	T	0.7	13.1	16.7							

Record mean values above (not adjusted for instrument location changes listed in the Station Location table) are means for the period beginning in 1892 for temperature and 1886 for precipitation.

# Indicates a break in the data sequence during the year, or season, due to a station move or relocation of instruments. See Station Location table. Data are from Cooperative locations and the Montana Building through November 1944. Later data are from Airport locations.

METEOROLOGICAL DATA FOR THE CURRENT YEAR

Station: MISSOULA, MONTANA — JOHNSON-BELL FIELD — Standard time used: MOUNTAIN — Latitude: 46° 55' N — Longitude: 114° 05' W — Elevation (ground): 3190 feet — Year: 1971

Month	Temperature: Averages: Daily maximum	Daily minimum	Monthly	Extremes: Highest	Date	Lowest	Date	Degree days (Base 65°): Heating	Cooling	Precipitation: Total	Greatest in 24 hrs.	Date	Snow, Ice pellets: Total	Greatest in 24 hrs.	Date	Relative humidity: Hour 05 (Local time)	Hour 11	Hour 17	Hour 23	Wind &: Resultant: Direction	Resultant: Speed	Average speed	Fastest mile: Speed	Direction #	Date	Percent of possible sunshine	Average sky cover 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	Temperatures: Maximum: ‡ 90° and above	32° and below	Minimum: 32° and below	0° and below	Average daily solar radiation - langleys
JAN	33.1	19.4	26.3	52	29	-7	13	1195	0	1.81	0.29	16-17	9.9	2.6	11	85	82	82	87	27	0.7	6.2	34	NW	21	22	9.1	1	4	26	23	2	0	4	0	13	25	5	
FEB	39.7	24.7	32.2	57	14	15	28+	911	0	0.56	0.32	9-10	3.4	1.3	9-10	85	73	60	78	29	2.5	6.4	30	NW	26	40	8.4	2	6	20	8	0	0	2	0	6	24	0	
MAR	45.2	25.7	35.5	66	29	8	2	908	0	0.78	0.15	26	6.3	1.5	3	82	59	49	73	29	2.9	7.6	33	SW	20	52	8.2	1	9	21	13	3	0	0	0	1	27	0	
APR	58.9	30.6	44.8	77	6	20	1	600	0	2.09	0.79	23-24	3.5	1.8	24	86	52	40	69	29	2.2	7.7	39	SW	15	66	7.3	3	9	18	12	2	0	0	0	0	17	0	
MAY	68.4	40.5	54.5	86	26	30	21	319	1	1.35	0.54	4-5	T	T	20 +	85	56	44	71	32	2.3	7.8	39	NW	15	68	6.7	7	6	16	11	0	5	0	0	0	1	0	
JUN	72.4	44.2	58.3	92	22	33	16	211	14	1.74	0.68	3-4	T	T	4	90	54	45	76	32	3.8	6.6	29	NW	23+	63	7.0	1	16	13	13	0	7	0	1	0	0	0	
JUL	85.8	48.3	67.1	99	16	31	7	75	146	0.53	0.16	10-11	0.0	0.0		78	40	28	56	36	2.7	7.5	34	NW	6	87	2.8	20	7	4	7	0	4	0	12	0	1	0	
AUG	91.8	51.1	71.5	101	4+	36	24	12	220	0.91	0.49	29-30	0.0	0.0		70	39	24	51	31	2.1	6.4	36	NW	22	87	3.1	19	7	5	6	0	7	0	22	0	0	0	
SEP	67.8	35.9	51.9	89	10	23	21	386	0	0.30	0.23	1-2	T	T	16	83	49	35	65	31	2.4	7.0	28	SW	13	69	5.1	12	5	13	4	0	0	0	0	0	10	0	
OCT	56.4	27.9	42.2	79	5	0	29	700	0	0.24	0.10	23	0.7	0.7	30-31	87	62	45	72	29	0.7	6.5	40	SW	26	54	6.7	8	7	16	5	0	0	1	0	3	21	1	
NOV	42.1	25.2	33.7	61	10	12	6	934	0	1.18	0.30	26-27	13.1	4.3	28-29	88	82	74	88	30	1.8	5.5	34	NW	4	25	8.9	2	2	26	17	6	0	7	0	2	29	0	
DEC	29.2	13.0	21.1	46	17	-10	8	1352	0	1.63	0.37	5-6	16.7	2.5	5	86	82	85	88	08	0.3	6.2	31	NW	22	21	8.5	3	4	24	18	9	0	5	0	20	30	4	
YEAR	57.6	32.2	44.9	101	AUG. 4+	-10	DEC. 8	7603	381	13.12	0.79	APR. 23-24	53.6	4.3	NOV. 28-29	84	61	51	73	31	1.9	6.8	40	SW	OCT. 26	59	6.8	79	82	204	137	22	23	19	35	45	185	10	

NORMALS, MEANS, AND EXTREMES

Month	Temperature: Normal: Daily maximum	Daily minimum	Monthly	Extremes Ø: Record highest	Year	Record lowest	Year	Normal heating degree days (Base 65°)	Precipitation: Normal total	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets: Mean total	Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity: Hour 05 (Local time)	Hour 11	Hour 17	Hour 23	Wind &: Mean speed	Prevailing direction	Fastest mile: Speed	Direction #	Year	Pct. of possible sunshine	Mean sky cover sunrise to sunset	Mean 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	Temperatures: Max.: ‡ 90° and above	32° and below	Min.: 32° and below	0° and below	Average daily solar radiation - langleys
(a)	(b)	(b)	(b)	12		12		(b)	(b)	27		27		27		27	27		27		11	11	11	11	27	15	27	27		27	27	27	27	27	27	27	27	11	11	11	11	
J	28.0	10.3	19.2	52	1971	-27	1963	1420	0.92	2.94	1969	0.21	1945	0.88	1948	13.5	42.5	1963	11.2	1954	85	81	78	83	5.2	ESE	52	S	1953	28	8.5	2	5	24	15	5	*	5	0	17	30	6	
F	34.0	15.9	25.0	60	1967	-10	1964+	1120	0.87	1.37	1953	0.27	1967	0.76	1953	7.7	18.6	1966	9.7	1959	85	79	68	81	5.6	NW	47	NW	1963	38	8.2	3	4	21	11	2	0	4	0	7	26	1	
M	43.8	23.6	33.7	70	1966+	-9	1965	970	0.73	1.39	1961	0.20	1953	0.44	1969	6.3	13.4	1955	6.5	1969	82	67	53	75	6.6	NW	47	NW	1951	49	7.8	3	7	21	11	2	*	1	0	4	28	1	
A	57.1	31.4	44.3	83	1969+	16	1966	621	0.97	2.46	1956	0.08	1952	1.65	1951	2.7	8.2	1970	6.9	1950	80	55	43	68	7.4	NW	51	NW	1950	52	7.6	4	6	20	10	1	*	*	0	0	20	0	
M	66.6	38.5	52.6	91	1966	22	1965+	391	1.87	4.10	1948	0.25	1963	1.82	1957	1.0	7.5	1964	6.5	1961	81	52	42	67	7.2	NW	57	SW	1954	57	6.9	6	8	17	12	*	3	*	0	7	0		
J	72.8	44.2	58.5	97	1970	31	1960	219	1.91	4.19	1958	0.35	1961	1.61	1964	T	T	1971+	T	1971+	85	55	44	70	6.8	NW	51	S	1956	57	6.6	6	9	15	12	0	5	*	2	0	*	0	
J	85.0	49.0	67.0	105	1960	31	1971	34	0.85	3.05	1946	0.11	1953	1.47	1946	0.0	0.0		0.0		77	43	30	56	6.7	NW	72	SE	1957	81	3.5	17	10	4	6	0	7	*	9	0	*	0	
A	82.7	46.9	64.8	105	1961	32	1960	74	0.72	2.38	1968	T	1967	1.43	1947	0.0	0.0		0.0		70	42	28	53	6.5	NW	58	SW	1956	75	4.3	15	8	8	7	0	6	*	12	0	0	0	
S	71.5	39.2	55.4	99	1967	20	1970	303	1.02	3.11	1959	0.13	1948	1.34	1954	T	0.2	1965	0.2	1965	83	57	41	70	5.9	NW	41	W	1952+	64	5.6	10	8	12	7	0	2	1	1	0	5	0	
O	57.5	30.4	44.0	85	1963	0	1971	651	0.99	2.33	1946	0.09	1953	1.49	1946	0.6	4.6	1961	2.0	1951	88	70	53	79	5.0	NW	51	SW	1950	50	6.8	6	8	17	8	*	*	4	0	*	19	*	
N	39.9	21.0	30.5	65	1965	-8	1967	1035	0.90	2.41	1947	0.23	1954	0.60	1960	6.1	17.7	1947	6.2	1961	88	81	73	85	4.8	NW	42	NW	1961	33	8.2	2	5	23	12	2	*	5	0	4	26	*	
D	31.6	15.4	23.5	57	1965	-30	1964	1287	1.08	3.15	1964	0.27	1959	0.94	1964	11.5	31.6	1964	9.6	1955	87	83	81	85	4.7	E	56	W	1957	25	8.6	2	4	25	13	4	0	6	0	17	30	3	
YR	55.9	30.5	43.2	105	AUG. 1961+	-30	DEC. 1964	8125	12.83	4.19	JUN. 1958	T	AUG. 1967	1.82	MAY 1957	49.4	42.5	JAN. 1963	11.2	JAN. 1954	83	64	53	73	6.0	NW	72	SE	JUL. 1957	54	6.9	76	82	207	124	16	25	28	24	50	191	10	

Ø For period March 1960 through the current year.

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Lowest temperature -33 in January 1957; maximum monthly precipitation 7.09 in December 1917; minimum monthly precipitation 0.00 in August 1917 and earlier; maximum monthly snowfall 43.5 in February 1936; maximum snowfall in 24 hours 22.8 in February 1936.

(a) Length of record, years, based on January data. Other months may be for more or fewer years if there have been breaks in the record.
(b) Climatological standard normals (1931-1960).
* Less than one half.
\+ Also on earlier dates, months, or years.
T Trace, an amount too small to measure.
Below zero temperatures are preceded by a minus sign.
The prevailing direction for wind in the Normals, Means, and Extremes table is from records through 1963.
‡ ≥ 70° at Alaskan stations.

Unless otherwise indicated, dimensional units used in this bulletin are: temperature in degrees F.; precipitation, including snowfall, in inches; wind movement in miles per hour; and relative humidity in percent. Heating degree day totals are the sums of negative departures of average daily temperatures from 65° F. Cooling degree day totals are the sums of positive departures of average daily temperatures from 65° F. Sleet was included in snowfall totals beginning with July 1948. The term "ice pellets" includes solid grains of ice (sleet) and particles consisting of snow pellets encased in a thin layer of ice. Heavy fog reduces visibility to 1/4 mile or less.

Sky cover is expressed in a range of 0 for no clouds or obscuring phenomena to 10 for complete sky cover. The number of clear days is based on average cloudiness 0-3, partly cloudy days 4-7, and cloudy days 8-10 tenths.

Solar radiation data are the averages of direct and diffuse radiation on a horizontal surface. The langley denotes one gram calorie per square centimeter.

& Figures instead of letters in a direction column indicate direction in tens of degrees from true North; i.e., 09 - East, 18 - South, 27 - West, 36 - North, and 00 - Calm. Resultant wind is the vector sum of wind directions and speeds divided by the number of observations. If figures appear in the direction column under "Fastest mile" the corresponding speeds are fastest observed 1-minute values.

To 8 compass points only.

STATION LOCATION

MISSOULA, MONTANA

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude North	Longitude West	Elevation above Sea level: Ground at temperature site	Elevation above Ground: Wind instruments	Extreme thermometers	Psychrometer	Telepsychrometer	Tipping bucket rain gage	Weighing rain gage	8" rain gage	Hygrothermometer	Elevation above Sea level: Pyranometer	Remarks
COOPERATIVE																
Fort Missoula 1.75 miles SW of Post Office	11/01/70	5/31/98		46° 51'	114° 04'	3150		b5					a3			Location of equipment uncertain for cooperative stations. a - Breaks in record prior to 1886. b - Added 4/1/93.
L. J. Elrod 605 5th Street	6/01/98	10/31/35	3.5 mi. ENE	46° 52'	114° 00'	3204		5					3			
CITY																
Montana Building Higgins Ave. & Broadway	11/01/35	10/31/38	1/3 mi. N	46° 52'	114° 00'	3218	91	81	80		77		77			Nearness to mouth of canyon caused winds to reflect local up canyon day winds and down canyon night drainage winds.
Post Office Building Pattee & Broadway	11/01/38	11/30/44	300 ft. E	46° 52'	114° 00'	3218	91	81	80		77		77			Instruments were left on top of Montana Building.
AIRPORT																
Missoula County Airport Temporary Administration Building	10/01/41	9/30/50	6.5 mi. WNW of P. O.	46° 55'	114° 05'	3202	32	5	4		4	4	3			CAA to 12/1/44. Excellent instrument location.
Permanent Admn. Building Missoula County Airport	10/01/50	9/04/53	300 ft. W	46° 55'	114° 05'	3200	33	17	16		15	4	15			
Administration Building Missoula County Airport †	9/04/53	Present	No Change	46° 55'	114° 05'	#3190	a20	17	16		3	d16	b3	c4		# - 3200 feet to 3/1/60. a - 33 feet to 9/4/53, then 36 feet to 4/5/58. b - Removed 6/61. c - Commissioned 1700 feet S of office 3/1/60, moved to site 1420 feet SSW of office 11/1/65. d - 4 feet to 6/4/69.

† Name changed to Johnson-Bell Field in June 1968.

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

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Locally these blizzards are referred to as 'Hellgate Blizzards'. After the valleys of western Montana are filled with the cold air, prolonged cold spells may occur. January is the coldest month, although periods of subzero weather occur occasionally in December and Feburary. Rarely there are brief periods of subzero weather in November and March. During the winter months the sunshine is limited to about 30% of the time. See temperature chart on page (

POPULATION CONDITIONS

According to the 1970 U.S. Census, Missoula County had a population of 58,263, whish was the third highest in Montana. This is a population density of 15.4 persons per square mile.

Missoula has had a steady growth since the begining of its history. The 1970 Census states the population of the greater Metropolitan Area as 54,878. See page (

The expected state population for 1985 was forecasted for Montana by the Census Bureau, and adjusted by the State Planning Board, estamates for 1960 to 1965, produced the state's 1985 projected population. To arrive at this figure, the step-down method was used. That is, the expected relationship of Region to State, County to Region, and City to County, based on past trends.

An increase of 182,000 over 196 5 for a total of 887,000 persons by 1985 is anticipated for the state of Montana. The REgion's share of this, an estimated 13.6%

P O P U L A T I O N

YEAR	MISSOULA, CITY		METROPOLITAN AREA	
	Number	Increase	Number	Increase
1900	4,366	--------		
1910	12,869	8,503		
1920	12,668	- 201		
1930	14,657	1,989	18,000	--------
1940	18,448	3,791	23,278	5,278
1950	22,485	4,037	34,000	10,722
1960	27,090	4,605	40,575	6,575
1970	29,497	7,012	54,878	14,303

	MISSOULA COUNTY		MONTANA STATE	
1900	13,964	------	243,329	------
1910	23,596	9,632	376,053	132,724
1920	23,041	445	548,889	172,836
1930	21,782	-2,259	537,600	11,283
1940	29,038	7,256	559,476	21,850
1950	35,493	6,455	591,024	31,568
1960	44,663	9,170	674,767	83,743
1970	58,263	13,600	701,573	26,806

by 1985 would amount to 120,700 persons. Missoula County's estimated 1985 population is 78200, an increase of 27,970 persons over 1970. The 1985 estimate for the County means an increase to 64.8% of the total region and to 8.8% of the state. Assuming a continuation of the trend toward centralization of population within the county. The Metropolation Area is likely to increase to 73,500 persons by 1985. A gain of approx. 27,000 over 1965. The new population will represent an estimate 94% of the County, nearly 61% of the Region and 8.3% of the state. The forecast for the Metropolation Area means an average annual increase of 1,350 persons or 2.9% per year.

ECONOMIC CONDITIONS

Missoula's history has exhibited a stable and steady rate of growth, both of its economy and it's population. Because it is an urban area, such areas tend to grow more rapidly, Missoula has come to hold a large share of the state's and county's population. This established trends toward urbanization and centralization are expected to continue in the future.

Missoula's position as the retail center of a trading area extending throughout five neighboring counties and occasionally even further. Figure ( ) shows the trading area for Missoula's merchants.

Natural resources, notably forest product industry have long been the backbone of the city's economy, but the University of Montana has increased and will continue

CITY OF MISSOULA

Retail Sales Estimates

Division	1966	1967	1968	1969	1970
Total Retail Sales	$ 92,941,000	$ 91,937,000	$ 98,208,000	$112,927,000	$116,020,000
Food	20,128,000	19,545,000	20,398,000	23,588,000	25,412,000
General Mdse.	14,943,000	15,177,000	16,390,000	17,699,000	18,760,000
Furn.-House Appl.	3,393,000	3,410,000	3,653,000	4,655,000	4,614,000
Automotive	18,029,000	13,282,000	19,097,000	29,042,000	27,146,000
Drug	3,321,000	3,412,000	3,594,000	4,676,000	4,962,000
Effective Buying Income					
Net Dollars	90,462,000	97,960,000	102,408,000	106,459,000	94,049,000
Per Household	8,240	8,554	8,806	8,946	9,797

MISSOULA COUNTY

Retail Sales Estimates

Total Retail Sales	99,332,000	97,803,000	104,015,000	120,993,000	124,047,000
Food	21,027,000	20,353,000	21,177,000	25,176,000	27,035,000
General Mdse.	15,007,000	15,237,000	16,451,000	18,093,000	19,156,000
Furn.-House Appl.	3,692,000	3,410,000	3,927,000	4,960,000	4,902,000
Automotive	18,980,000	17,282,000	19,958,000	29,589,000	27,731,000
Drug	3,418,000	3,412,000	3,683,000	4,962,000	5,250,000
Effective Buying Income					
Net Dollars	125,482,000	133,652,000	144,710,000	157,464,000	168,764,000
Per Household	8,201	8,576	8,563	8,896	9,589

to grow in economic importants;it's payroll is almost $14,000,000 annually. See table ( ) for Missoula Business Barmeter.

Missoula is also on the fringe of the Bitterroot Valley in which farming and raising of purebreed cattle, horses, and forest are a source of income. Missoula's unique and beautiful location offers a varietyof vacation activities, which is a source of income that can not be ignorid.

SOCIAL CONDITIONS

Missoula has a wealth of recreational facilities which include: three golf courses, three theatres, two ski areas, three swimming pools and twenty five parks with picnic facilities.

The sourrounding mountains are natural habitat for deer, elk bear, mountain, sheep, goat and lion. Big game hunting is one of the top attractionof the area. Missoula is also surrounded by two of the largest wilderness area in the Contenintal United States, the Bob Marshall Wilderness and the Bitterroot Selway Wilderness, both areas can provide a challenge and thrill to the hiker and fishermen or hunter

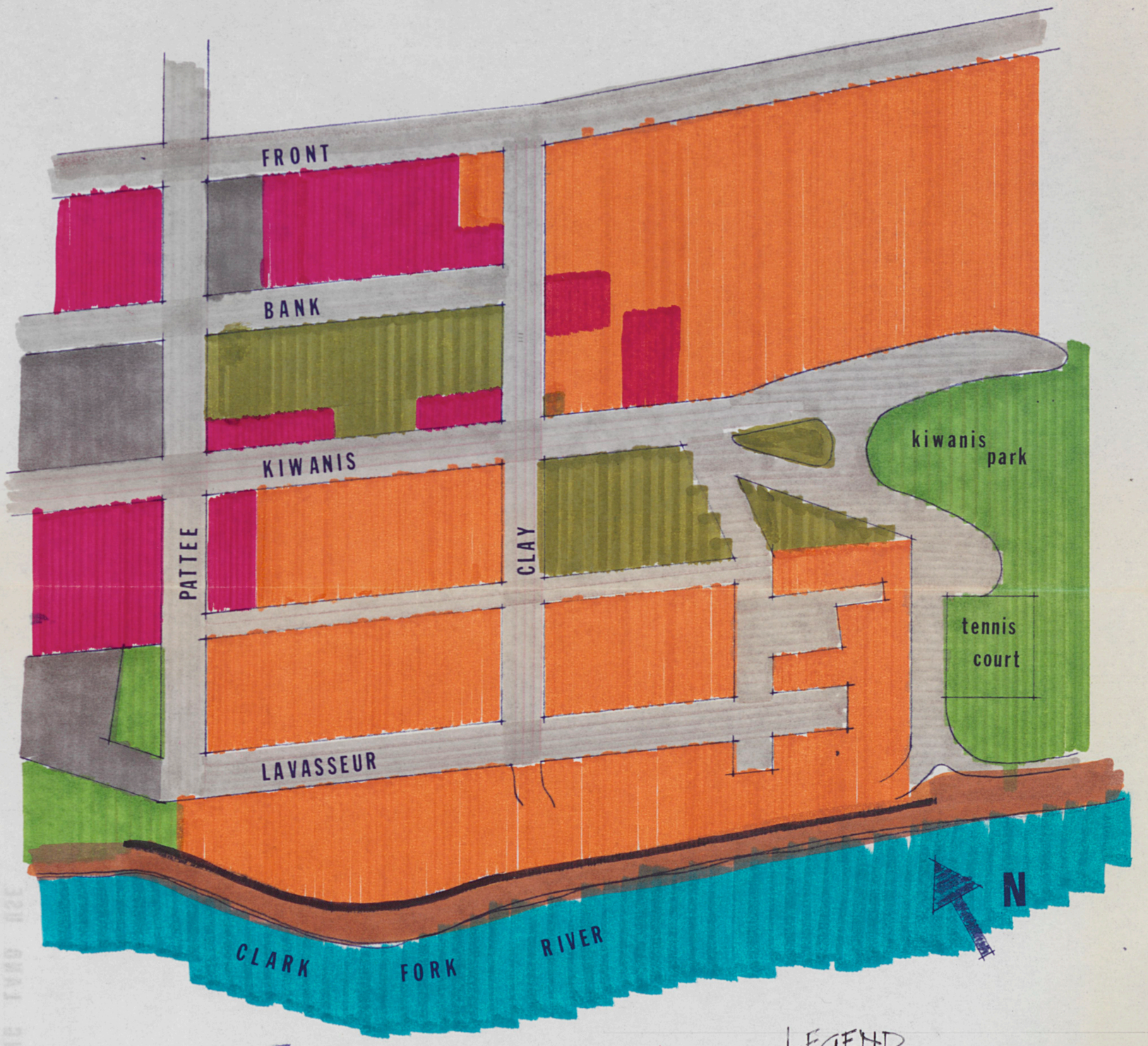
Close to Missoula are many blue ribbon steams and lakes for the fishmen and boating enthusiast. Missoula's location has put itself halfway between Glacier and Yellowston National Parks, a favorate vaction spots for people all over the nation and the world.

MISSOULA BUSINESS BAROMETER

	1967 Total Year	1968 Total Year	1969 Total Year	1970 Total Year	1971 Total Year
Bank Debits	$771,280,000.00	$874,683,000.00	$942,131,000.00	$1,014,993,000.00	$1,217,095,000.00
Postal Receipts	928,893.77	1,160,700.24	1,139,028.29	1,191,702.70	1,302,395.52
Parking Meter Revenues	68,358.05	69,878.99	68,412.50	66,711.23	67,847.40
Utilities (Average)					
Residential Gas Customers	12,839	13,351	13,810	14,286	14,840
Commercial Gas Customers	1,181	1,227	1,272	1,318	1,361
Residential Electric Cust.	15,020	15,439	15,838	16,244	16,856
Commercial Electric Cust.	1,660	1,723	1,800	1,866	1,942
Telephones (Average)	26,475	27,922	29,619	31,151	33,140
Building Permits					
No. of Residential Bldgs.	196	146	134	114	158
No. of Commercial Bldgs.	88	81	49	54	77
Value, Residential Bldgs.	1,362,490.00	1,482,162.00	2,407,119.00	2,549,150.00	4,806,336.00
Value, Commercial Bldgs.	2,134,440.00	4,465,142.00	11,672,450.00	7,538,300.00	5,579,730.00
Missoula Community Hospital					
Employees (Average)				115	115
Payroll				634,538.00	681,771.91
Admissions				2,354	2,282
Missoula General Hospital					
Employees (Average)					103
Payroll					572,053.06
Admissions					1,537
St. Patrick's Hospital					
Employees (Average)	484	491	520	542	509
Payroll	1,982,276.79	2,200,038.00	2,591,808.00	2,844,328.00	3,030,691.00
Admissions	8,152	8,990	10,137	10,228	9,998
University of Montana					
Employees (full & Part time)	2,052	2,273	2,511	2,664	2,701
Payroll	8,649,258.29	10,093,151.58	11,791,088.75	12,963,299.52	13,721,764.79
U. S. Forest Service					
Employees (Average)	822	859	809	759	833
Payroll	6,764,821.00	6,929,259.00	7,365,061.00	8,452,431.16	9,639,543.00
Frontier Airlines					
Originating Passengers	2,355	11,946	12,739	17,112	14,033
Deplanings				17,932	14,954
Northwest Airlines					
Originating Passengers	30,273	28,347	25,313	16,693	36,997
Deplanings				16,599	34,778

SITE

3



LEGEND

- COMMERICAL
- RESIDENTIAL
- TRAFFIC
- PARKS
- OPEN SPACES
- PARKING
- WATER
- FLOOD CONTROL

SITE

CONDITION: EXISTING LAND USE

EXISTING COMMUNITY FACILITIES

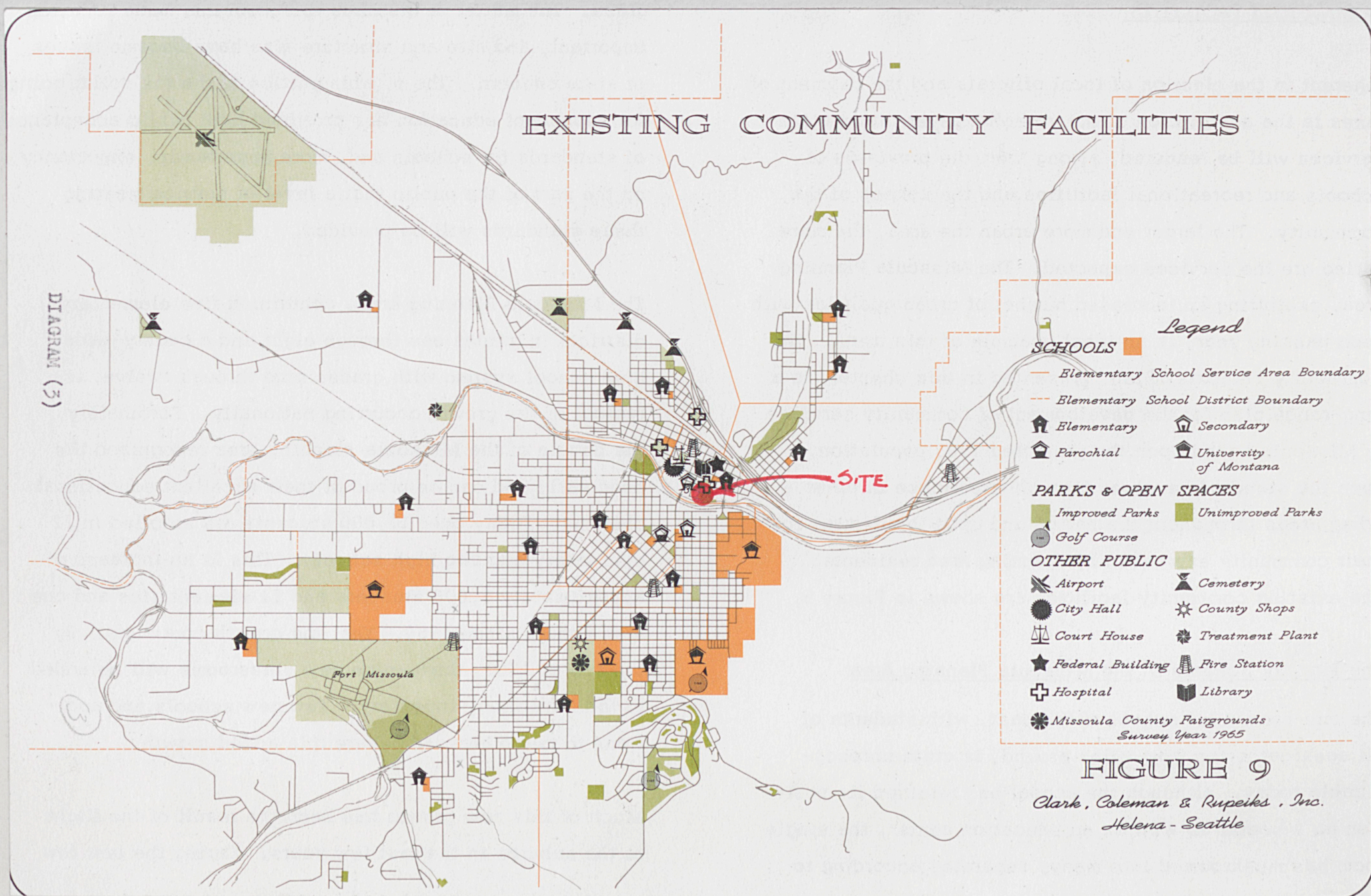


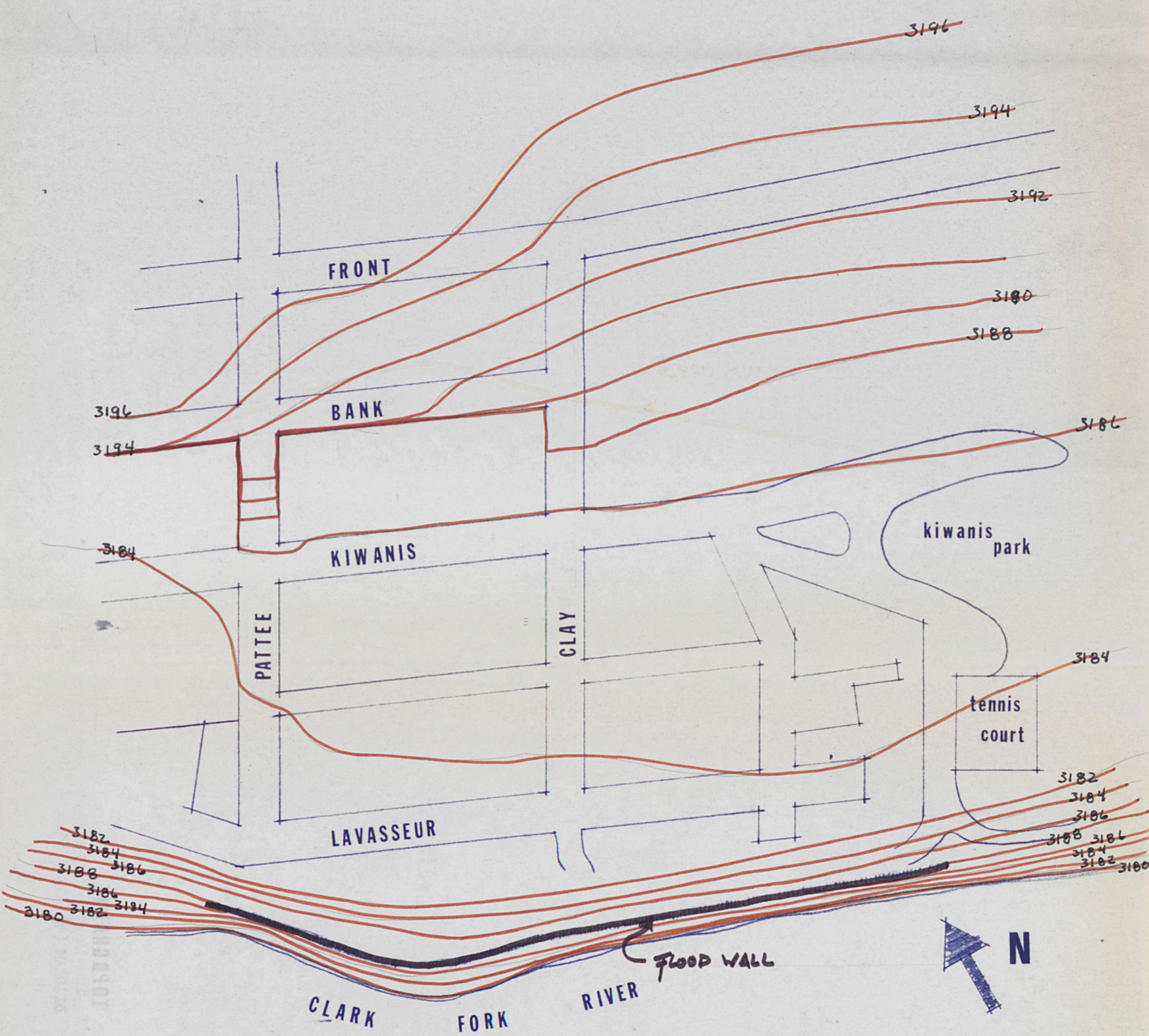
FIGURE 9

Clark, Coleman & Rupeiks, Inc.
Helena - Seattle

3196

TOPOGRAPHY

DIAGRAM (4)



SITE

CONDITION: TOPOGRAPHY



BUILDING CONDITION

5 DIAGRAM (5)



LEGEND

GOOD
ABOVE AVERAGE
AVERAGE
BELOW AVERAGE
POOR

SITE

CONDITION: BUILDING CONDITION



VEGEATION

DIAGRAM (6)



SITE

CONDITION: VEGEATION

LEGEND

CONIFER
DECIDUOUS
SHRUBS
GRASS

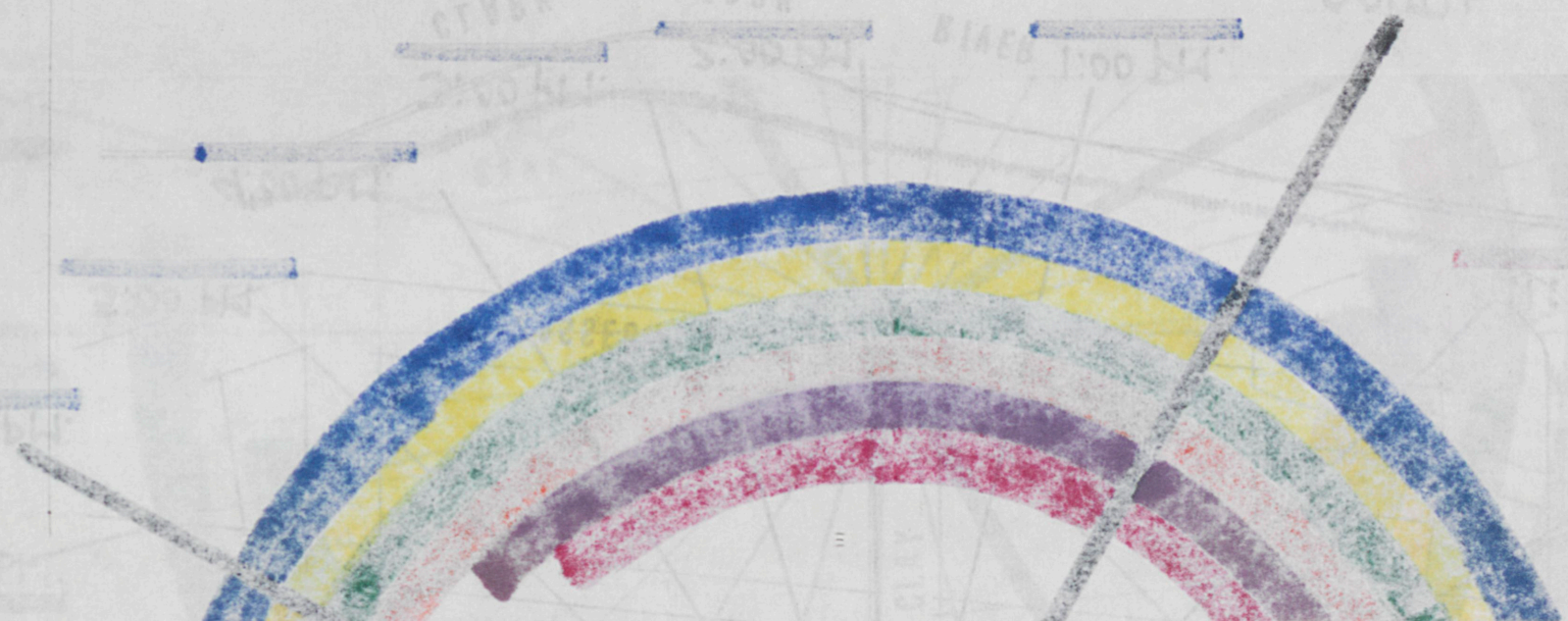
NORTH

12:00 MIDNIGHT

1:00 AM.

2:00 AM.

3:00 AM.



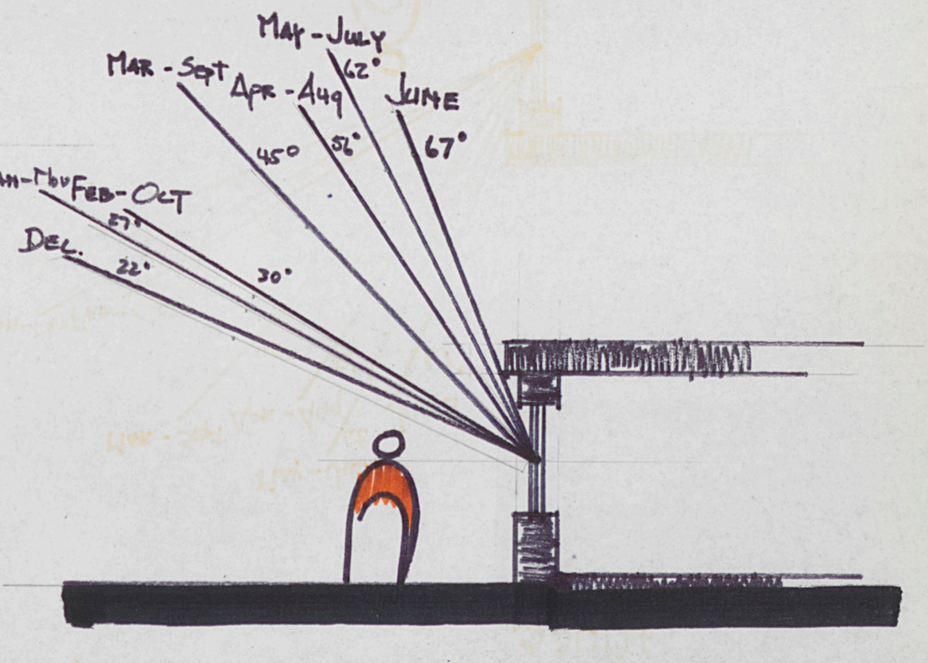
SUN ANGLES

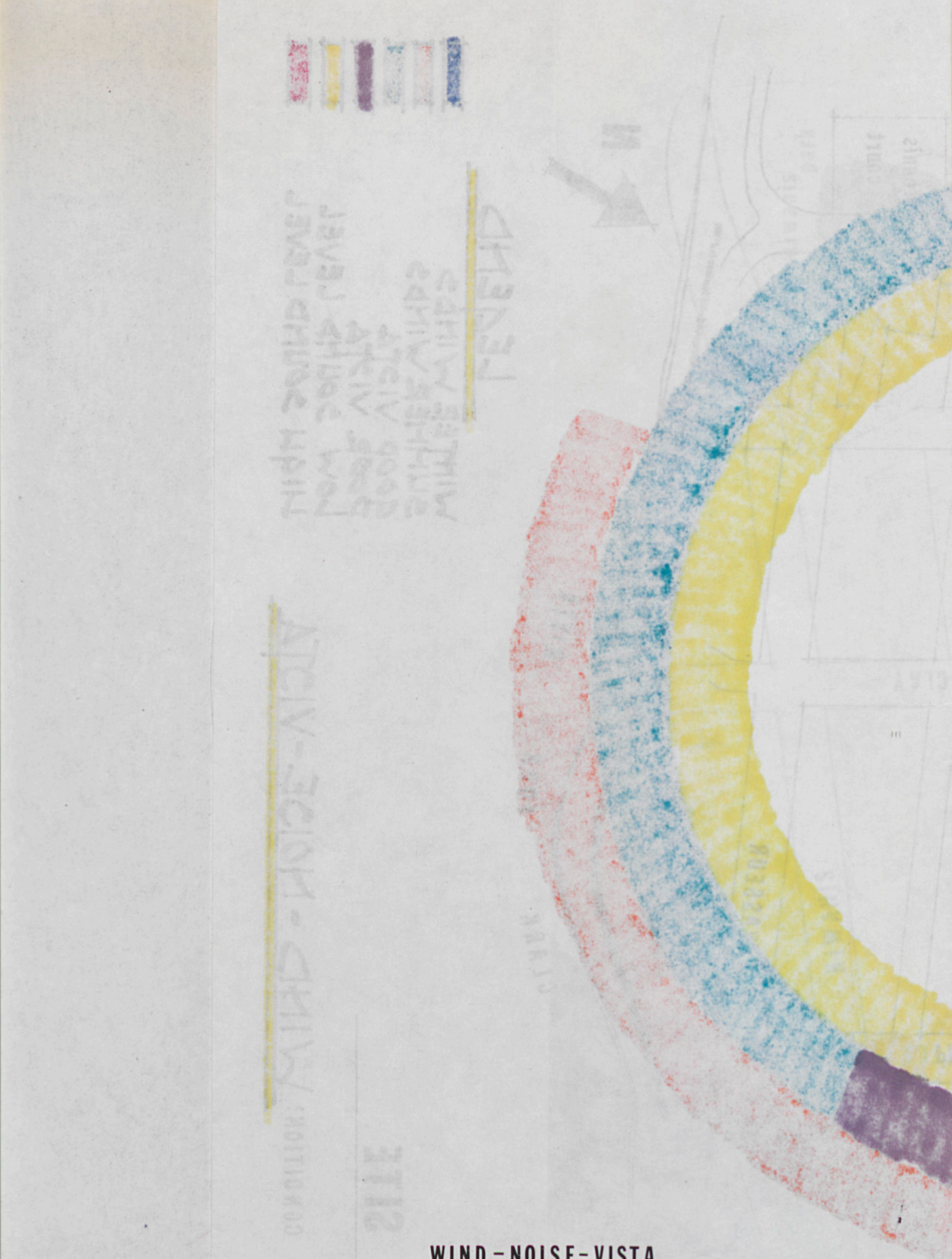
DIAGRAM (7)

NORTH
12:00 MIDNIGHT
1:00 AM.
2:00 AM.
3:00 AM.
4:00 AM
5:00 AM
6:00 AM.
7:00 AM
8:00 AM
9:00 AM
10:00 AM.
11:00 AM.
10:00 PM.
9:00 PM.
8:00 PM.
7:00 PM.
6:00 PM.
5:00 PM
4:00 PM.
3:00 PM.
2:00 PM
1:00 PM.
SOUTH
12:00 NOON
FRONT
BANK
KIWANIS
CLAY
LAVASSEUR
CLARK
FORK
RIVER
kiwanis park
tennis court
N

SITE

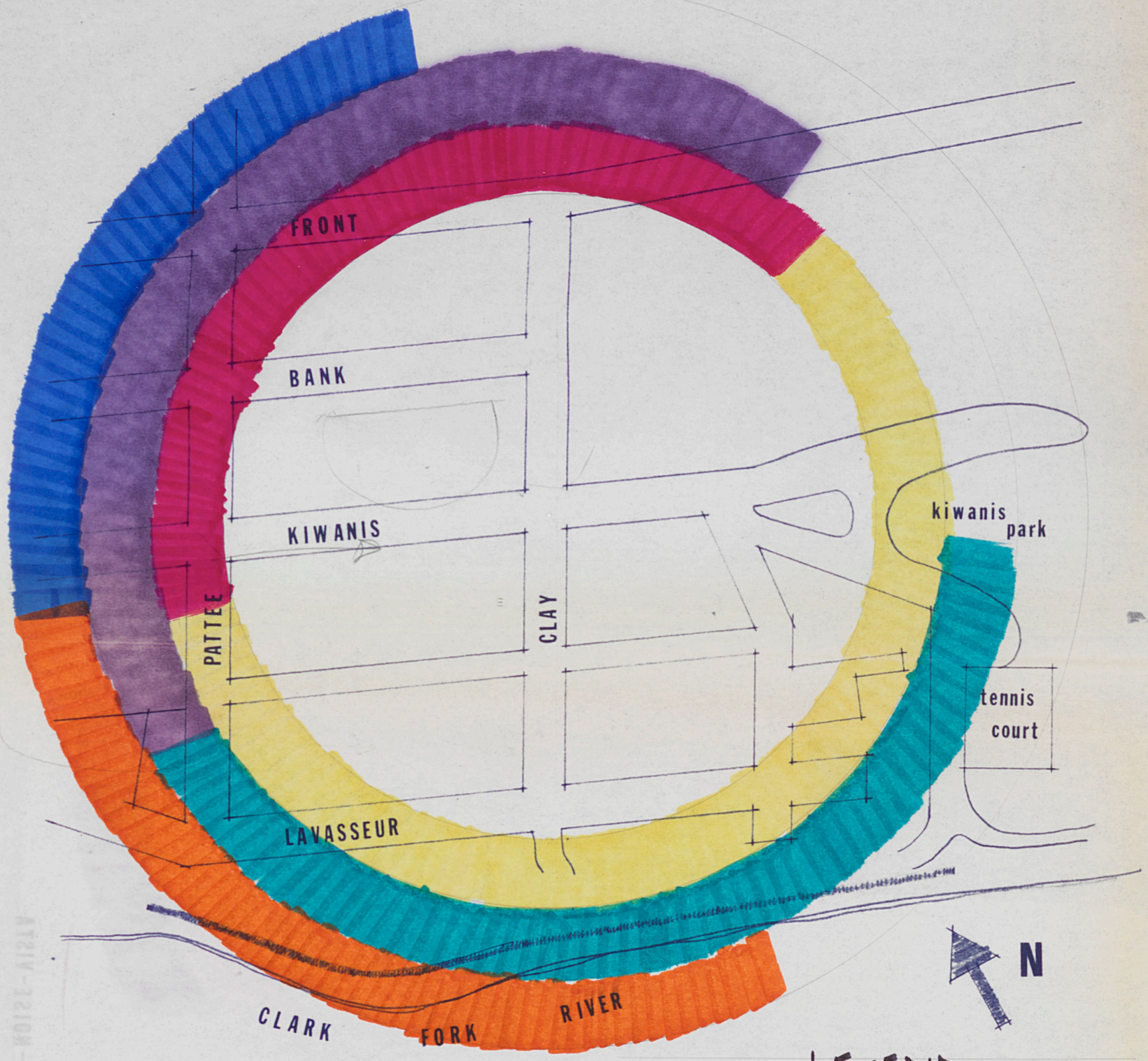
CONDITION: SUN ANGLES





WIND – NOISE – VISTA

DIAGRAM (8)



LEGEND

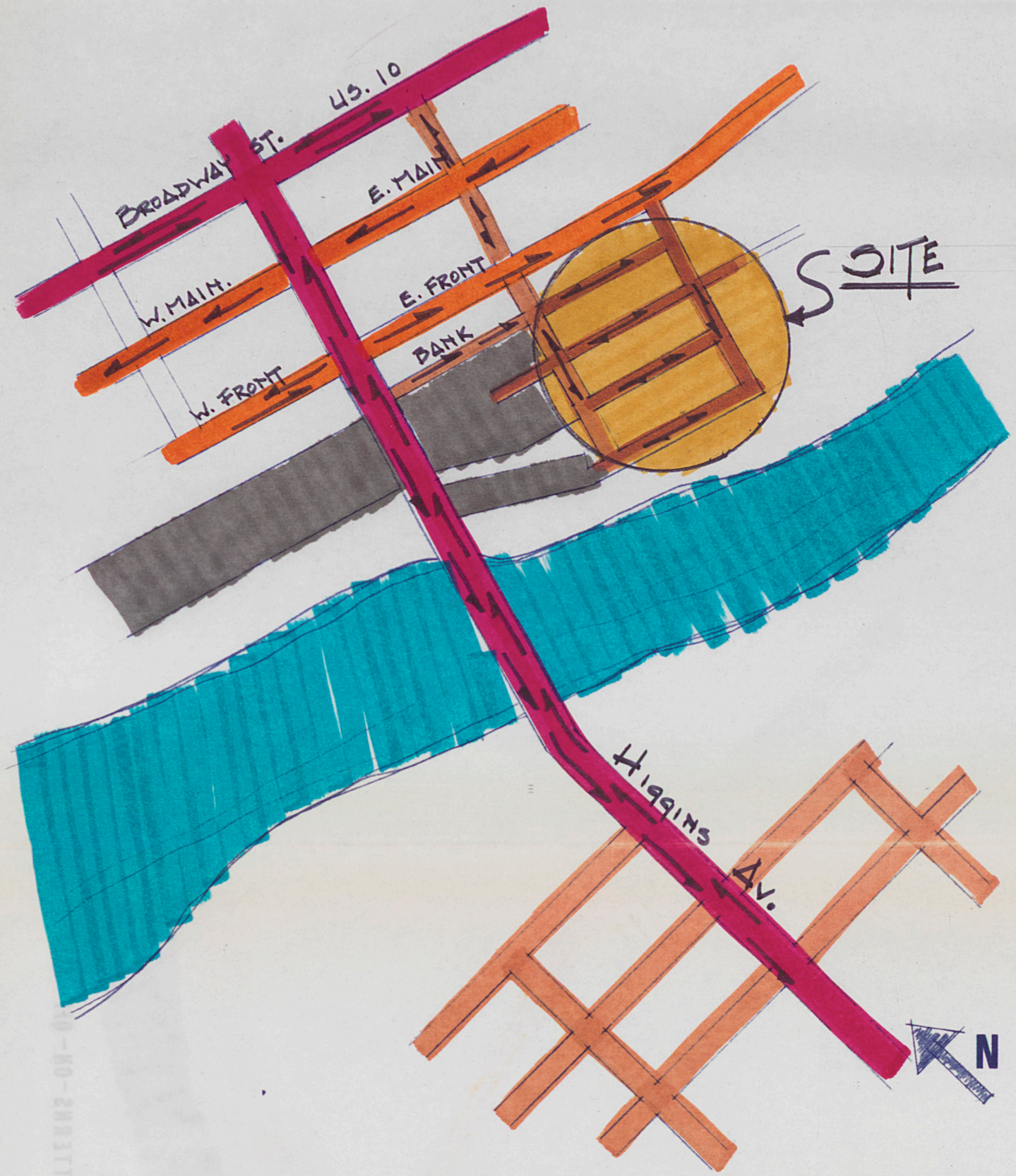
WINTER WINDS
SUMMER WINDS
GOOD VISTA
POOR VISTA
LOW SOUND LEVEL
HIGH SOUND LEVEL

SITE

CONDITION: WIND - NOISE - VISTA

TRAFFIC PATTERNS-ON-OFF-SITE

DIAGRAM (9)



SITE

CONDITION: TRAFFIC PATTERNS ON-OFF SITE

LEGEND

PRIMARY ARTERIALS
SECONDARY ARTERIALS
COLLECTORS
LOCAL ACCESS

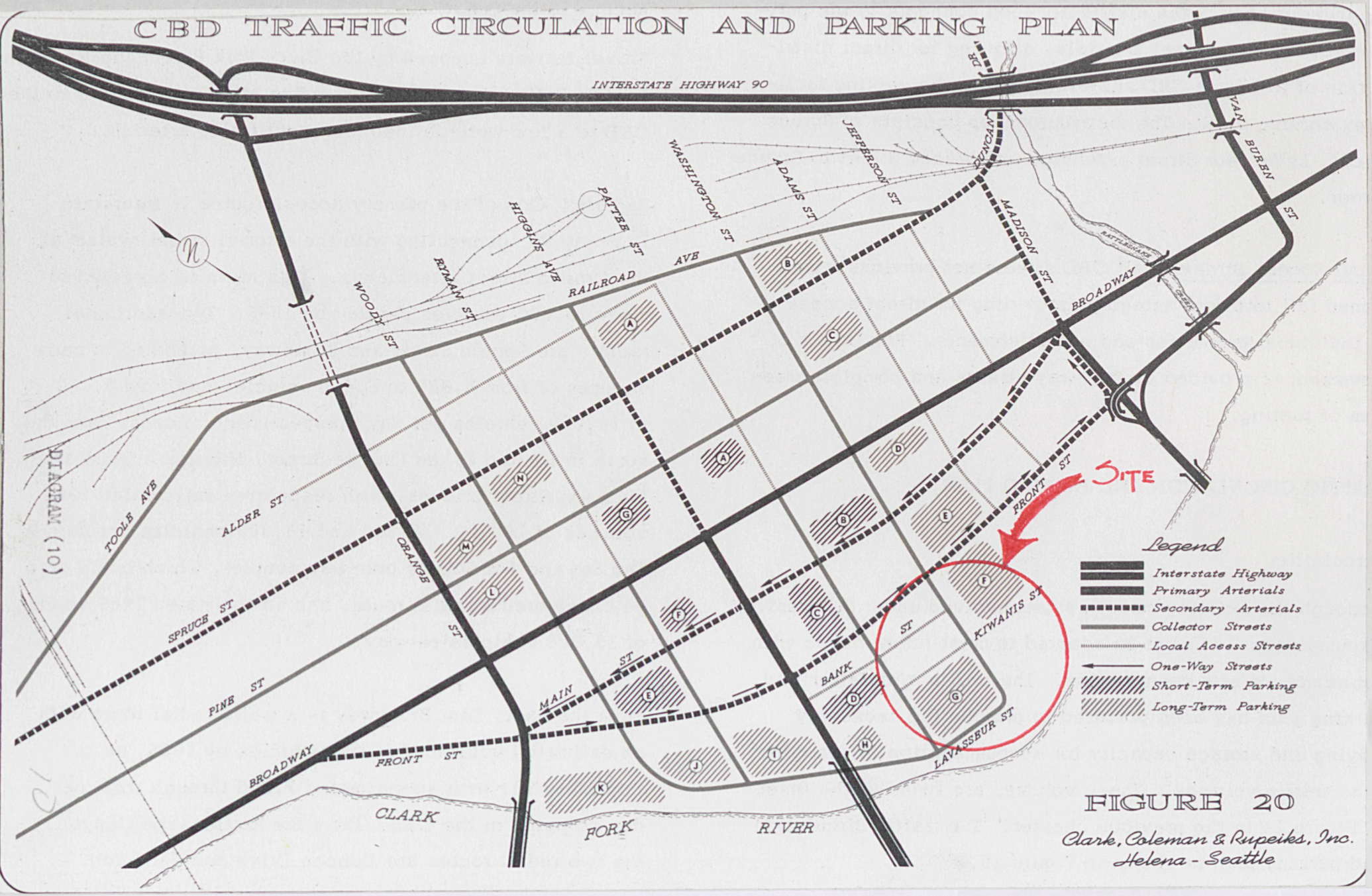
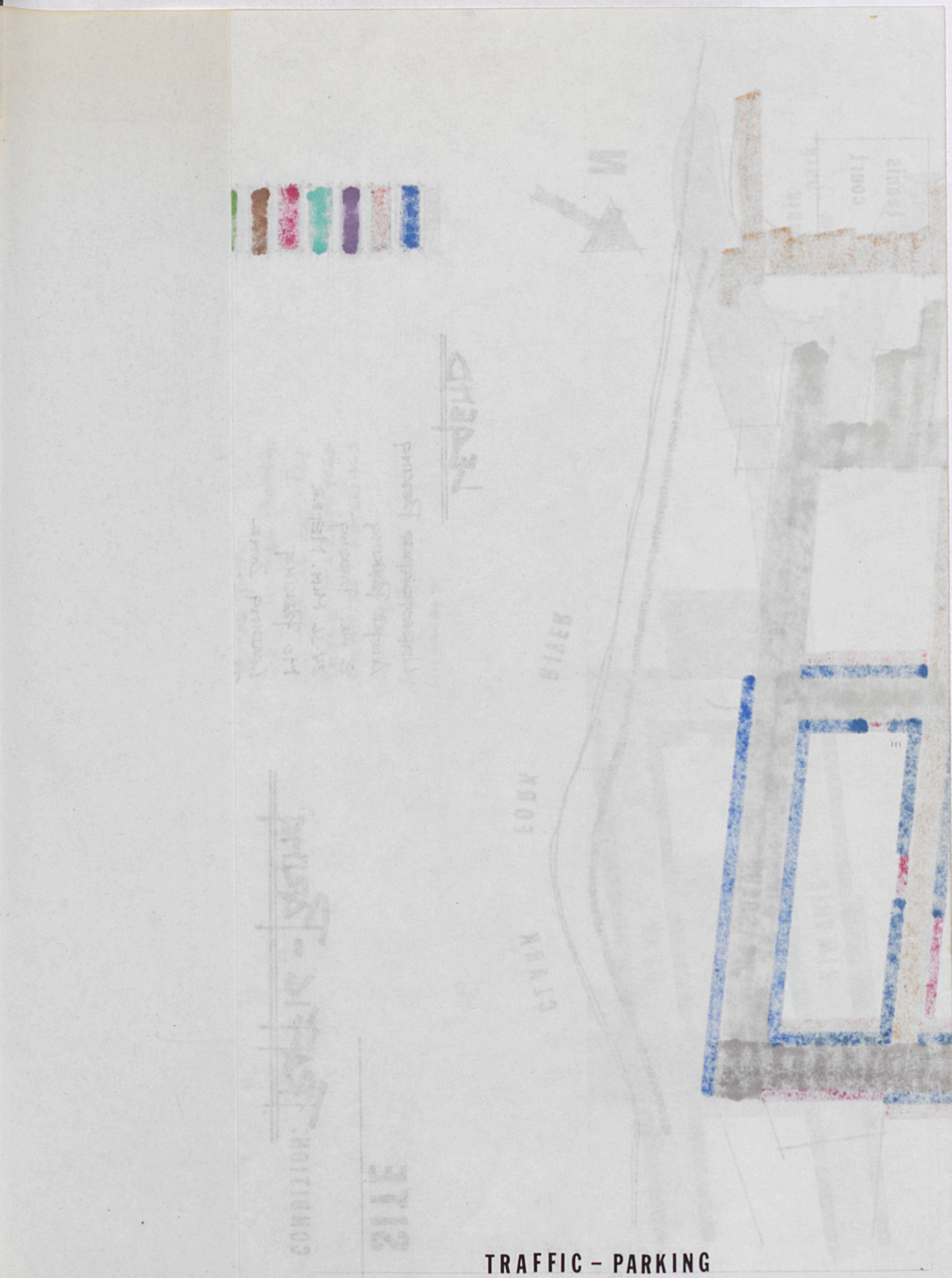


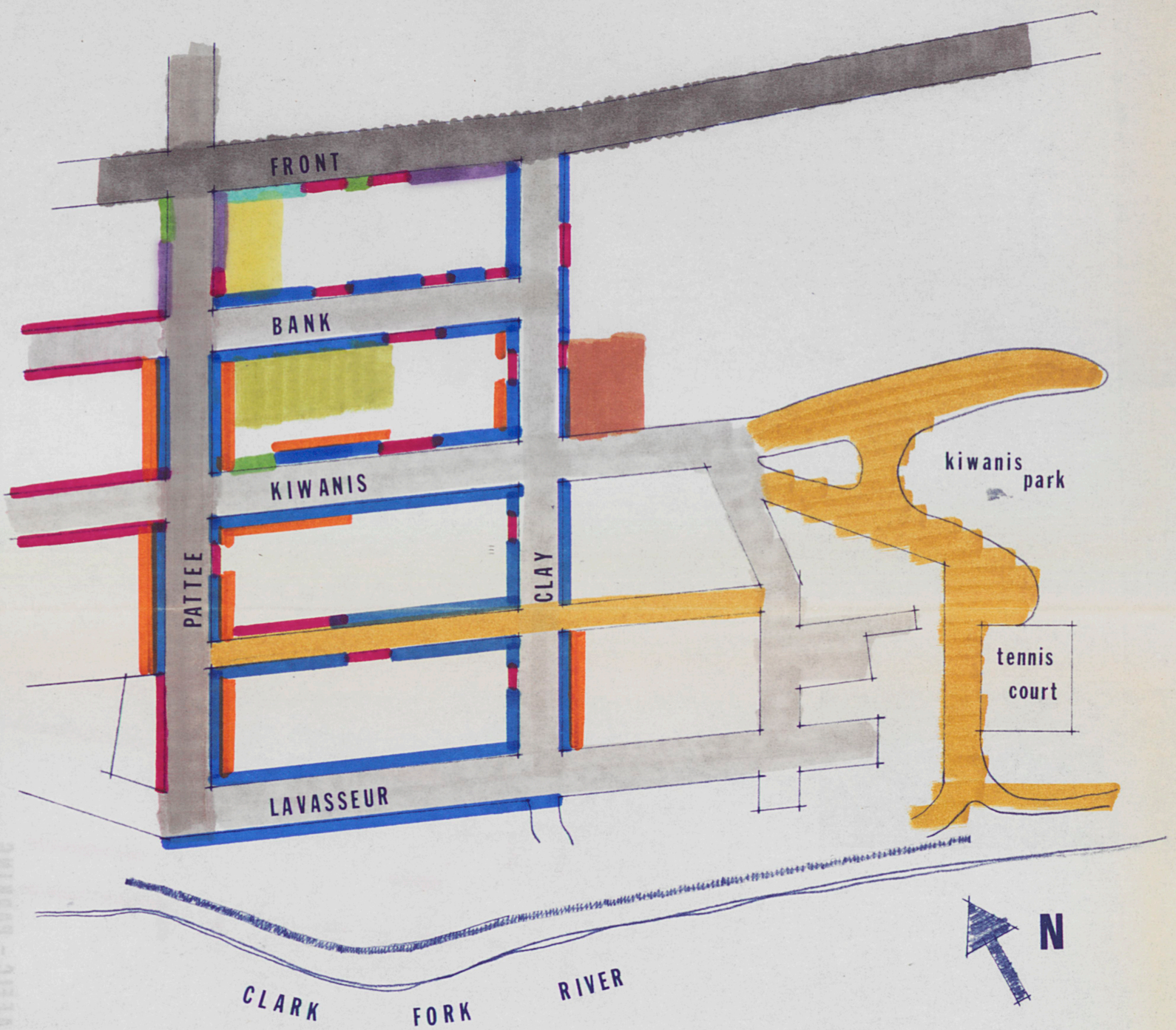
FIGURE 20

Clark, Coleman & Rupeiks, Inc.
Helena - Seattle



TRAFFIC - PARKING

DIAGRAM (11)



SITE

CONDITION: TRAFFIC - PARKING

LEGEND

- UNRESTRICTED PARKING
- ANGLE PARKING
- 2 HR. PARKING
- 24-36 MIN. METER
- NO PARKING
- LOADING ZONE
- POSTED TIME
- CUSTOMER FREE PARKING
- COMMERICAL LOT - PAY
- RESTRICTED - EMPLOYEES
- SOOMDERY ARTERIALS
- COLLECTORS
- LOCAL ACCESS
- UNPAVED


1


PUBLIC PARKING
PRIVATE PARKING
2


3


4


5


6


7


8



9



10



11



12

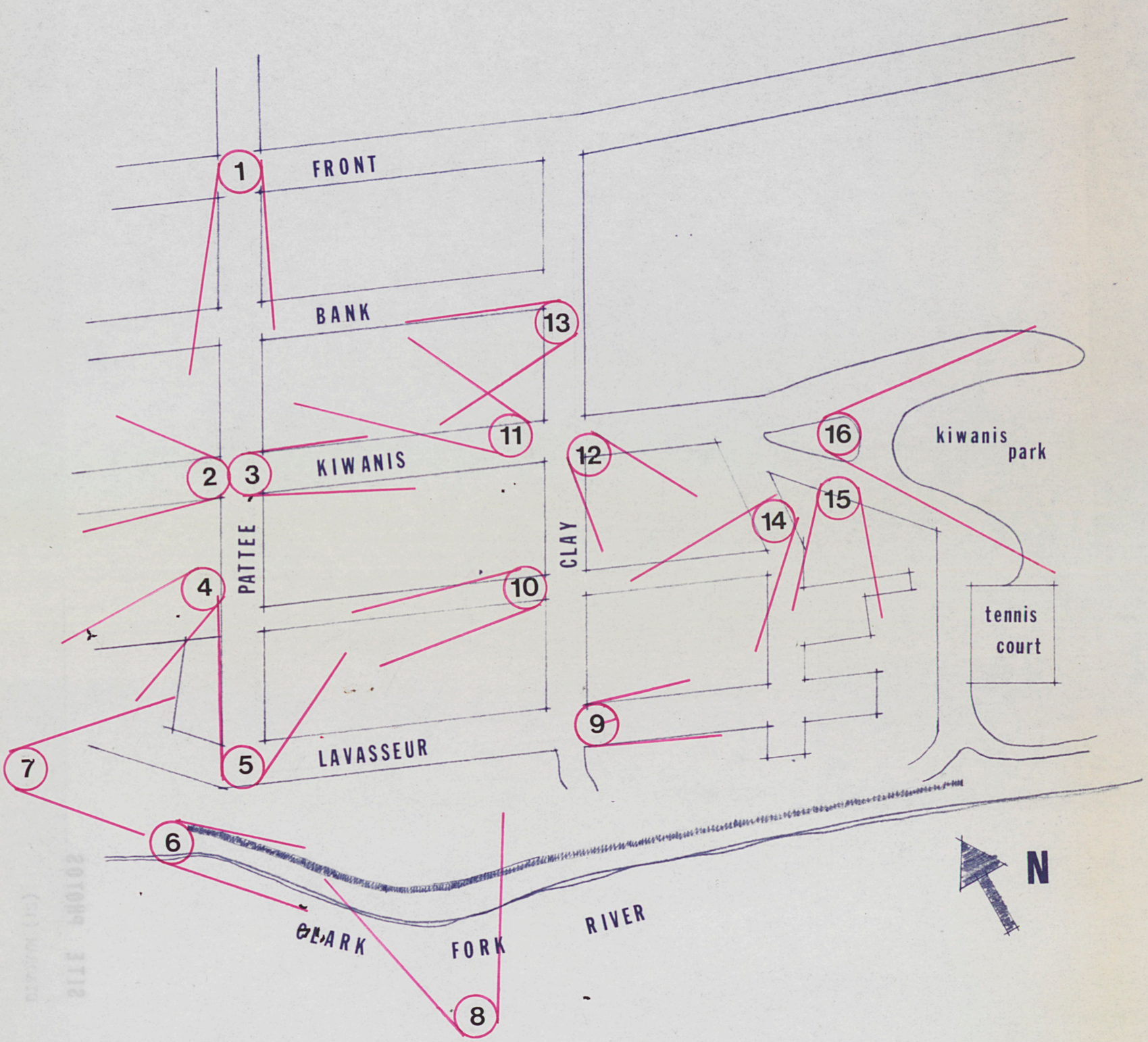

13


14


15


16


SITE PHOTOS
DIAGRAM (12)



SITE

CONDITION: SITE PHOTOS

THEATER

4

FUNCTION

GENERAL

Several of mans art forms are temporal in nature, and are created by live performers in the presence of an audience. Although the performers work from a script, a score, or choreography, the art form they create endures only for the space of time it takes to perform it. Consequently, no two creations from the same script are identical. These art forms include drama, musical comedy, operetta, light opera, grand opera, concert and dance. Each requires a special architectural structural which provides facilities for the performers and for the audience.

The design criterian for this architectural structure, which in itself is an art, is that it must provide space in which the performers may work and a space in which the audience may be comfortably accommodated and from which they can see and hear performers.

Attempts to solve the architectural problems pecular to the live performing arts have resulted in different kinds of structures. In some cases, a structure has beendesigned to meet the requirements of one particular art form, such as the opera. In other cases, the structure has been designed to accommodate several, such as drama and musical comedy. Not all of the performing arts can be produced successfully in a single structure, although from a economic standpoint this might be desirable. Nevertheless, attempts have been made to house several in a single structure, by making the structure sufficiently

flexible that it can be quickly and easily modified to meet the demands of various types of performers.

In the layout of a theater auditorium the following design and functional consideration will affect acoustical conditions.

1. Shape of aucience area and seating capacity.
2. Size of acting area.
3. Type and scale of production envisaged and priorities of use.
4. Audience- performer relationship.

SHAPE OF AUDIENCE AREA AND SEATING CAPACITY

The seating capacity of an auditorium is usually established by a compromise between economics which presses for more seats, and audience-performer satisfaction, which places intimacy above large capacity. The larger the audience capacity, the greater the distance between acting area and remote seats and the more difficult it is for adequately loud unamplified speech to reach these seats.

ACTING AREA

The shape and arrangement of the acting area are functions of the kind of action and amount of movement inherent in the production type and of the audience-performance relationship which provides totaluniform effect for the particular kind of action.

If the action is of the concert or recitationalkind, face to face relationship between audiences and performers is necessary. If any part of the action, whether by individual performers or groups require the optimum conditions for expressive communication between the performers and the audience, the shape and arrangement must permit the entire audience to see the performers face to face. If the performance involves communication, inter-reactions or opposition between performers, the shape and arrangement of the acting area must permit that action to take place on a line perpendicular to the general audience sight line to be uniformly perceived by the audience.

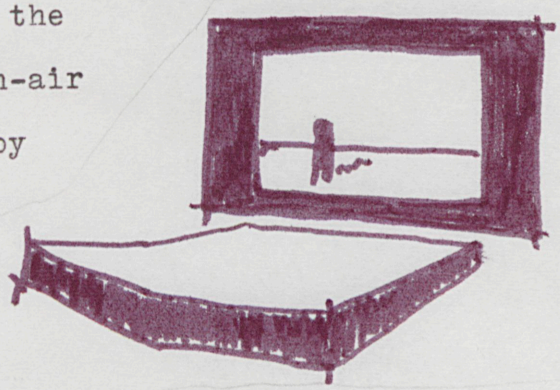
If the movement is to any considered degree two-dimensional, as in the ballet, optimum perception requires that the audience be elevated so that it may have a good view of the entire acting area, and thus become aware of the depth dimension of the movement. And if the entire action is truly two-dimensional, with no necessity for frontal expression by any of the performers with no situation involving linear opposition between performers or group of performers, and with no purely linear movement of performers, the acting area may be centrally located within a close circle of audience.

The relationship of the performing area to the audience area, is a crucial factor in theater design and acoustics. They are normally set according to one of the following four basic stage forms or a combination of them.

1. Proscenium stage.
2. Open stage.
3. Arena stage.
4. Adaptable or multiform.

PROSCENIUM STAGE

In a theater with a proscenium stage the performing area is at one end of the auditorium. With the audience observing through the frame of the proscenium opening. This stage from developed from the performing area of the ancient Greek and Roman open-air theater and was stimulated by the popularity of the opera, with it continuously increasing demand for colorful stage settings.



PROSCENIUM STAGE

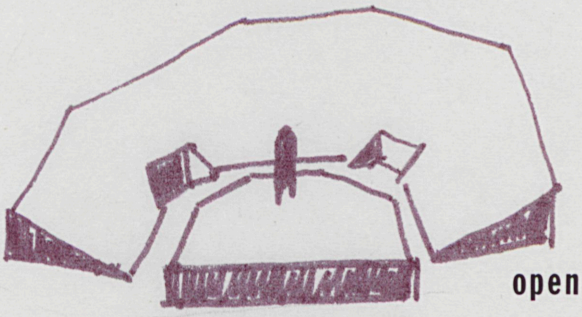
It separates performers from the audience and poses several problems.

1. Since the audience can face the performing area from one side only, it is difficult to seat a large audience close to the proscenium opening. Therefore, the distance between actors and remote seats is often excessive.
2. In an attempt to seat a large audience not too far from the stage, one or several balconies may be planned, requiring a considerable vertical space.

For this reason the lowest level of audience floor is usually inadequately sloped.

OPEN STAGE

In theaters with an open stage (also called a thrust stage), the main performance area projects into the audience and is surrounded by it on several sides. While performers and audience are contained within the same space, some acting can also take place behind opening of the back wall of the stage. Developed from the Elizabethan stages, this stage forms creates an intimate and sometimes embarrassingly close relationship between performers and audience and poses few serious acoustical problems.



open stage

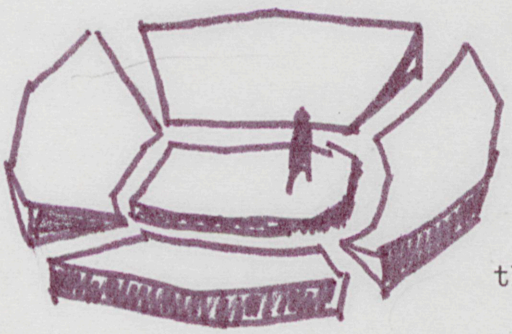
The first problem is inherent in the layout of open stages; the audience to some extent incircles the performing area, and consequently the actors, at least for parts of the play have their backs to one section of the audience or another. In addition to the unfavorable visual and acoustical effects of this condition, it also makes an increasing demand on the performer's acting technique.

The close relationship between performers and audience alleviates some of the acoustical problems normal for theaters with a proscenium stage. The increased intimacy of open stages permits accommodation a large number of spectators close to the stage;

an audience of 1,000 to 2,000 can be seated around an open stage, none more than 55 to 80 ft. from the stage and probably no seat further than 15 to 18 rows from the front. In a proscenium theate of the same capacity the distance between the stage and the remotest seat would be 100 to 120 ft.

ARENA STAGE

The arena stage (or theater - in - the - round) developed from the radial layout of classical amphitheaters and certainly goes back to a circle of primitive people gathered around their dancers. Like the open stage, this form eliminates separation between performers and audience. The popularity of arena stages is to some extent attributable to the low cost of production; very simple scenery is needed, and any hall can accommodate this type of stage with relative ease. Since the layout of an arena stage is a further continuation of the open-stage concept.



arena

MULTIFORM

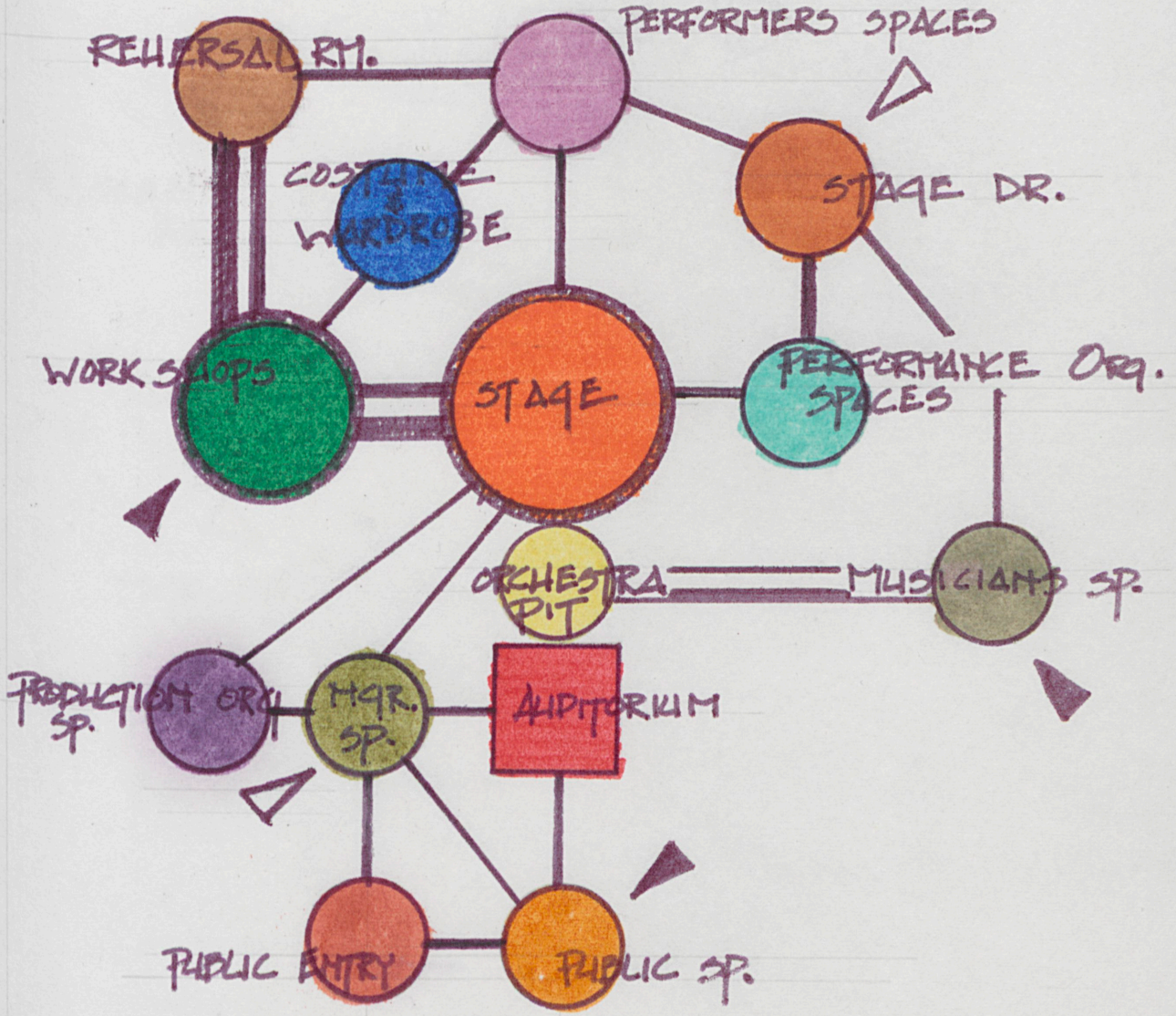
In the three types of performer audience relationship described so far, acting area and audience area are more of less fixed. In contemporary theater practice, with continuously changing aesthetic needs, these three types of performer-audience relationship are often consedered too

traditional and restrictive. It is becoming incfeasingly necessary to make fundamental transformations in the relationship between actors and spectators not only for a particular performance, but several times during a performance. This transformation in adaptable theater or multiform can be accomplished by manual or mechanical means so that position, shape and size of the acting area and its relationship to the audience area can be changed almost without limit.

This multiform or adoptable theater does not limit itself to just live performances, but must adopt itself to live concerts, small blalets, films or social gatherings. Each activity has its own visual and acoustical limitations. For example, a live theater performance calls of close relationship with actors, short reverberation time, and a relatively small audience. A symphony concert requires a much longer reverberation time, very little contact with performers and can accommodate an audience of any size. Unfortunately, these visual and acoustical ideals must be ignored, in as so fare as to provide optimum conditions once the theateris put to multiple use, thus narrowing the range of acoustical or visual experience.

Thetype of theater that I proposed for the center will be of the multiform or adaptable use theater discussed above. Because of Missoula population and economic conditions I considered it could not support a theater of large magnitude to stage a large ballet or opera, or symphonic orchestra, therefore, to provide space to house these type of production will not be taken

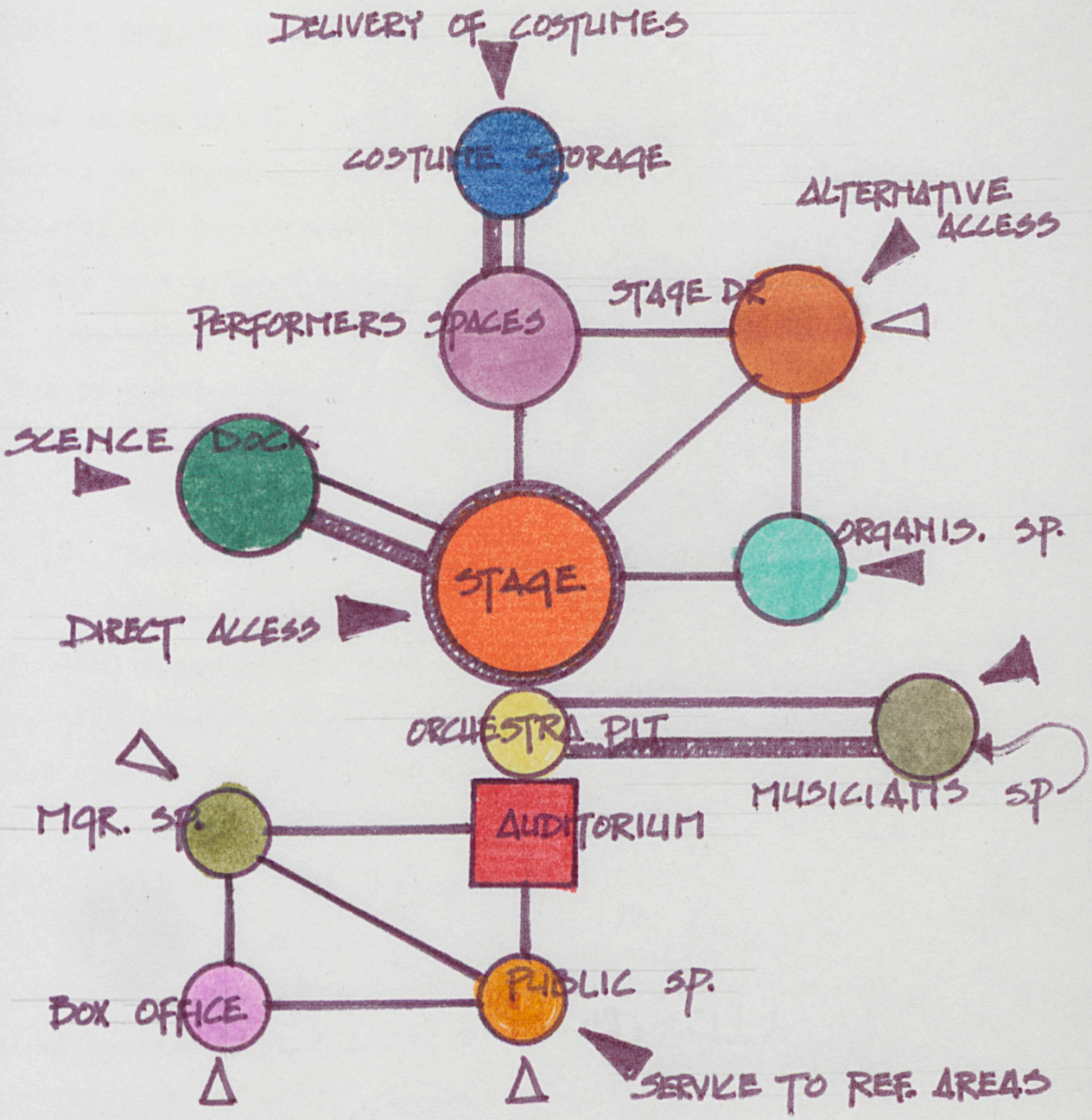
into consideration during the design, phase of this project. The structure should be sufficiently flexible that can be easily modified to meet the demands of various types of performances such as town meetings, lectures, theatrical production, small concerts, jazz sessions, dance productions, and movie films.



12

THEATER - PRODUCTION FACILITIES ON SITE

DIAGRAM (13)



PRODUCTION FACILITIES – OFF SITE

DIAGRAM (14)

PRODUCTON ORGANISATION SPACES

The spaces are for people responsible for initial decisions as to choice of play, or opera, and so on, choice of performers, and development of the design of the setting and performers into a production. See figure (15%) for flow chart of the functional relationships between the spaces.

The production space in a theater is that space for:

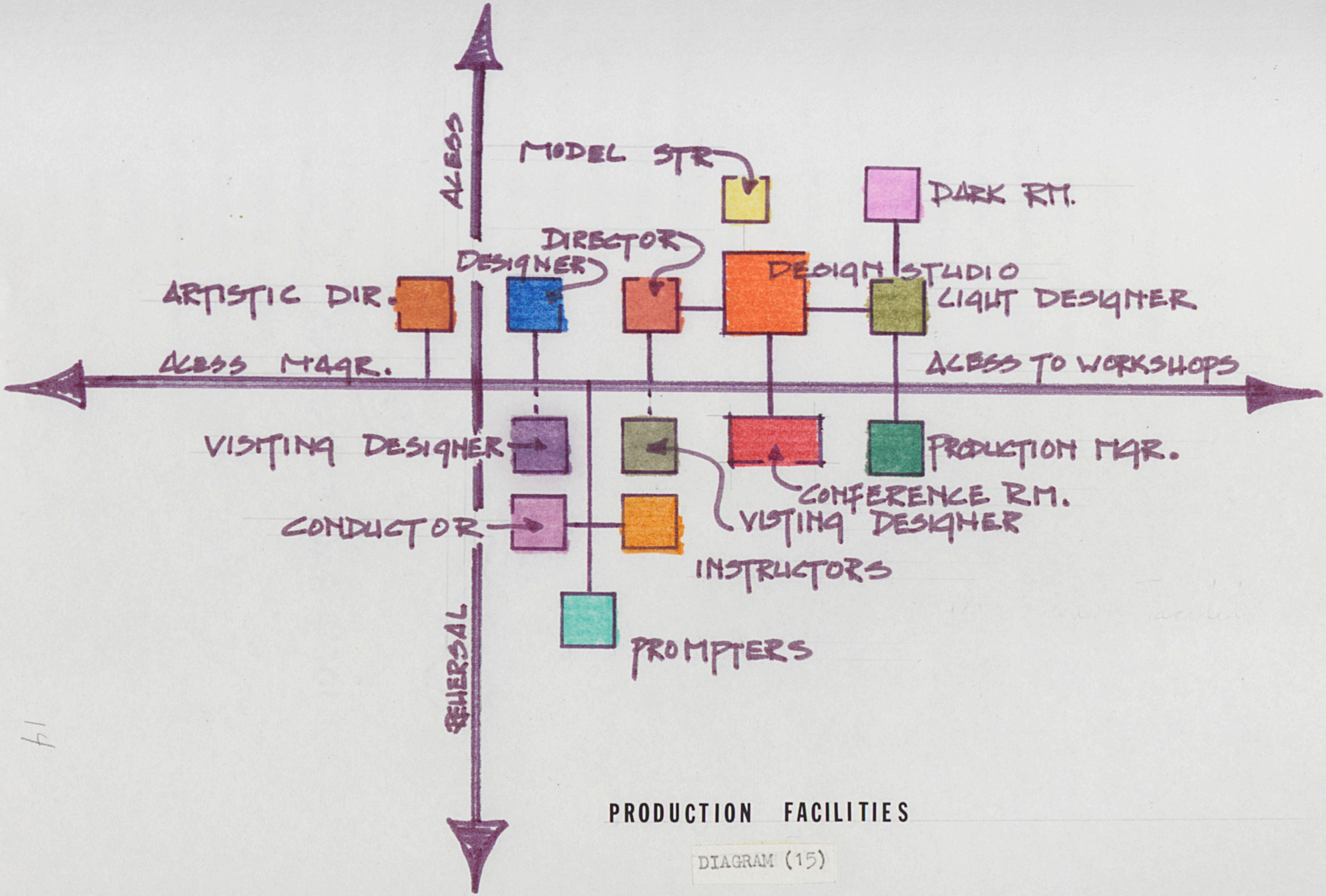
1. The organization and preparation of scenery, properties and costumes, and storage for these items.
2. Rehearsal and practice by performers for a production.

A production space is not always included within the building complex of a theater; whether it is or not depends on the extent and type of scenery, costumes, etc., frequency of use and change of production, land and labour costs and if land costs are high, availability of facilities away from the building. Whether full production space facilities are provided or not, however, an area must be provided at the side of the stage for repair of scenery and properties in use during a performance.

FACTORS INFLUENCING EXTENT OF PRODUCTION SPACE

The facilities to be provided and the extent of the production spaces or spaces depend on:

1. type of production: opera, ballet, variety etc., or drama;
2. production policy:
   (a) repertoire of productions
   (b) short run repertoire of productions



PRODUCTION FACILITIES

DIAGRAM (15)

(c) receiving touring companies

(d) long run productions only;

3. scale and complexity of productions
4. method of production organization
5. size of stage and method of moving scenery
6. whether all functions are to be carried out within the building complex
7. whether certain responsibilities are combined with related ones under performance organization to be carried out by one person. In this case several people will resume several responsibilities

DIRECTION AND DESIGN

The activities within the production space are closely related to and in effect, motivated by the activities of the director or choreographer who has overall responsibility for the staging of a production, and the designers who are responsible for the design of scenery, lighting and costumes. Unless resident, designers may not work within the building complex, except for the initial co-ordination and supervision of the execution of their designs. See table III for requirements of directors and designers.

PRODUCTION SPACES: GENERAL

The production space divides broadly into:

1. office and associated areas for those directly concerned with production organization(see table IV abd V)
2. workshops and facilities for the preparation, repair, maintenance and storage of scenery,properties,costumes.

WORKSHOP AND WARDROBE DEPT.

The main activities are carpentry and painting for the manufacture of scenery, and property and costume making. Carpentry, painting and the property department are interrelated. It is often difficult to distinguish between scenery and properties, especially in designing sets for open stage theaters. The property departments and wardrobe department share dyeing and printing facilities. See flow chart, figure ( ).

SCENERY

The sequence of operations for preparing scenery is:

1. delivery and storage of materials
2. cutting and making-up
3. trial assembly
4. painting
5. storage before movement to stage area
6. return for reuse or permanent storage

PROPERTIES

Preparation of properties follow a sequence similar to that used in preparing scenery:

1. delivery and storage
2. making-up
3. storage before use on the stage
4. return for reuse or permanent storage

The basic form of a property may be made in the carpenter's shop or the item may be finished in the paint shop.

WARDROBE DEPARTMENT

The sequence of operation for preparing costumes is:

1. delivery of materials
2. cutting
3. making-up
4. fitting costumes
5. finishing off and adjustment
6. storage before delivery to costume storage associated with dressing rooms
7. reuse or into permanent storage

Workshops are required for the construction and maintenance of scenery. The following notes provide a guide to basic requirements.

CRITICAL DIMENSIONS: CHECK LIST

The size of workshops are governed by the maximum dimensions of the items to be worked on. It is important to establish the following:

maximum length of timbers	----------	depends upon maximum height of scenery.
maximum height of scenery	----------	determined by height of proscenium opening plus 2 ft., or the lowest height restriction of an open stage, standard heights being 12, 14,16,18 ft.
maximum width	----------	width of scenery, when broken down, is usually

regulated by the internal dimension of a railway goods carriage, 6'9".

maximum width and height of backcloth ---------- determined by the width and height of the proscenium opening and the projection of audience sight lines restricted by wing and border settings; usually the width of the proscenium plus 8ft to 15ft times the height of the proscenium opening plus at least 2'.

CARPENTRY SHOP

PLANNING AND LAYOUT:

The carpentry shop should be rectangular in shape with machinery and benches along opposite long walls or adjacent wall to permit a clear floor space fro assembly of frames and flats, and for trial assembly of a set.

SPACE REQUIREMENTS:

Height---- Allow for maximum height of scenery. Trial assembly area should be maximum height of scenery plus 6 ft.

Width----- Should be narrow as possible to allow minimum length of cable for power tools.

TRIAL ASSEMBLY AREA;

An area is required for the erection of a trial assembly of the stage set; it should,therefore, be equal in area to the acting area on the stage.

STAFF FACILITIES:

Provide a separate area adjacent to the carpentry shop for changing, resting and preparation of refreshments. Provide access to lavatory.

PAINT SHOP

PLANNING AND LAYOUT:

A paint shop must be large enough to accomodate one or more paint frames and a number of three-dimensional pieces of scenery.

SPACE REQUIREMENTS:

Floor area--- 800 sq. ft. will accomodate one paint frame and space for painting 3-dimensional pieces of scenery.

Length --- determined by length of paint frames

Width --- Allow at least two-thirds the height of the frame in width in front of the frame in order to view backcloth. It is desirable for the width of the paint shop to be at least equal to the height of the paint frame.

RELATIONSHIP BETWEEN WORKSHOPS, STORAGE AREA, UNLOADING BAY AND STAGE

The relationship of these areas should be based on the

logical progression: delivery and storage of raw materials, preparation and assembly of scenery in carpentry shop painting, storage of scenery or scenery moved directly onto the stage.

PLANNING CONSIDERATIONS:

1. Carpentry shop and paint shop should be separate areas because of noise and possible sawdust penetration from the carpentry shop.
2. Floors of workshops, unloading bay platform, scenery storage areas and stage should all be at the same level.
3. The paint frame and the backcloth storage should be located so that backcloths, when rolled, can be moved horizontally into position under the fly tower.
4. The carpentry shop and paint shop should be so planned that noise from them does not penetrate the stage. Scenery storage located between workshops and stage will act as a sound barrier.
5. If touring companies are anticipated, an unloading bay should be provided direct onto the stage.
6. It should be possible to get from workshops to stage without having to open doors, or shutters to opening in the access route for scenery.
7. Movement of scenery and materials in the production spaces should not interfere with the stage. Noise should not penetrate the stage.
8. Openings between spaces and the relationship between spaces should be designed to facilitate the easy move-

ment of scenery. Minimum dimensions of openings are determined by the maximum height and width of scenery.

STORAGE OF SCENERY

The type of scenery and extent of storage facilities depend on production policy. The extent of storage is usually determined by one of the following: scenery used during a repertoire of production; scenery to be retained for use in future seasons or for hire.

PROPERTY DEPARTMENT

PLANNING AND LAYOUT:

A property workshop is required for the fabrication of properties in wood, metal, plastic, and fabrics. It should be rectangular in shape with worktops and shelves and a clear floor space for the laying out and fabrication of larger items. If there is likely to be an extensive armoury, for instance, for opera productions a separate area should be provided. Provide a door wide and high enough for the largest properties to pass through.

SPACE REQUIREMENTS:

Minimum floor area of workshop--400 sq. ft.

Minimum ceiling height--10 ft.

LOCATION:

The workshop should be within easy access of the carpentry shop and the stage.

STORAGE OF PROPERTIES

A storage area for properties may be required if a repertoire of productions is to be performed or if properties are to be retained for future use. The extent of storage space and types of items to be stored depend on production policy.

Minimum space required

Repertoire of production	500 sq. ft.
Properties stored for future use	800 sq. ft.

WARDROBE

If costumes are to be made within the building complex, an extensive wardrobe area will be required, containing facilities for cutting, sewing and fitting costumes, for dyeing and painting cloth, for millinery, for making accessories and for cleaning costumes. If costumes are not to be made within the building complex, provision need be made only for storage and for cleaning and repair. In the proposed building there will be no provisions for making costumes but only for storage and repair.

COSTUME SHOP

PLANNING AND LAYOUT:

A costume shop should be rectangular in shape with tables arranged down the center of the room to accomodate a sequence of operations.

SPACE REQUIREMENT:

Repair only	200 sq. ft.
Fitting room	100 sq. ft.

STORAGE OF COSTUMES:

Space is required for storing costumes; it must be easily accessible from the dressing-rooms. The extent depends on production policy and is governed by whether storage is for costumes used in a current production, a repertoire of production or for the future reuse.

PERFORMANCE ORGANISATION

It goes without saying that for a performance to be staged successfully the work of the performers must be complimented by a considerable amount of work backstage which is unseen by the audience. Scenery and properties are positioned on stage, moved and replaced; sound and lighting equipment is set and controlled; and the stage generally is controlled by the stage management.

Direct access is required to all stage lighting positions in fly tower, on stage, front of house lighting position, auditorium, at sides of proscenium and in ceiling slots, follow-spot box over auditorium and projectors at rear of auditorium. Access is necessary from stage to control rooms behind auditorium. All these circulations should be out of sight of the public. This work comes under the heading performance organization. The way it is carried out and the requirements of those involved in it are outlined below.

OFFICES AND ASSOCIATED AREAS

Table II lists staff functions and requirements for a performance organization. The stage manager, head carpenter, property manager, flyman and stagehands must have direct access to the stage. The wardrobe mistress must have direct access to dressing rooms.

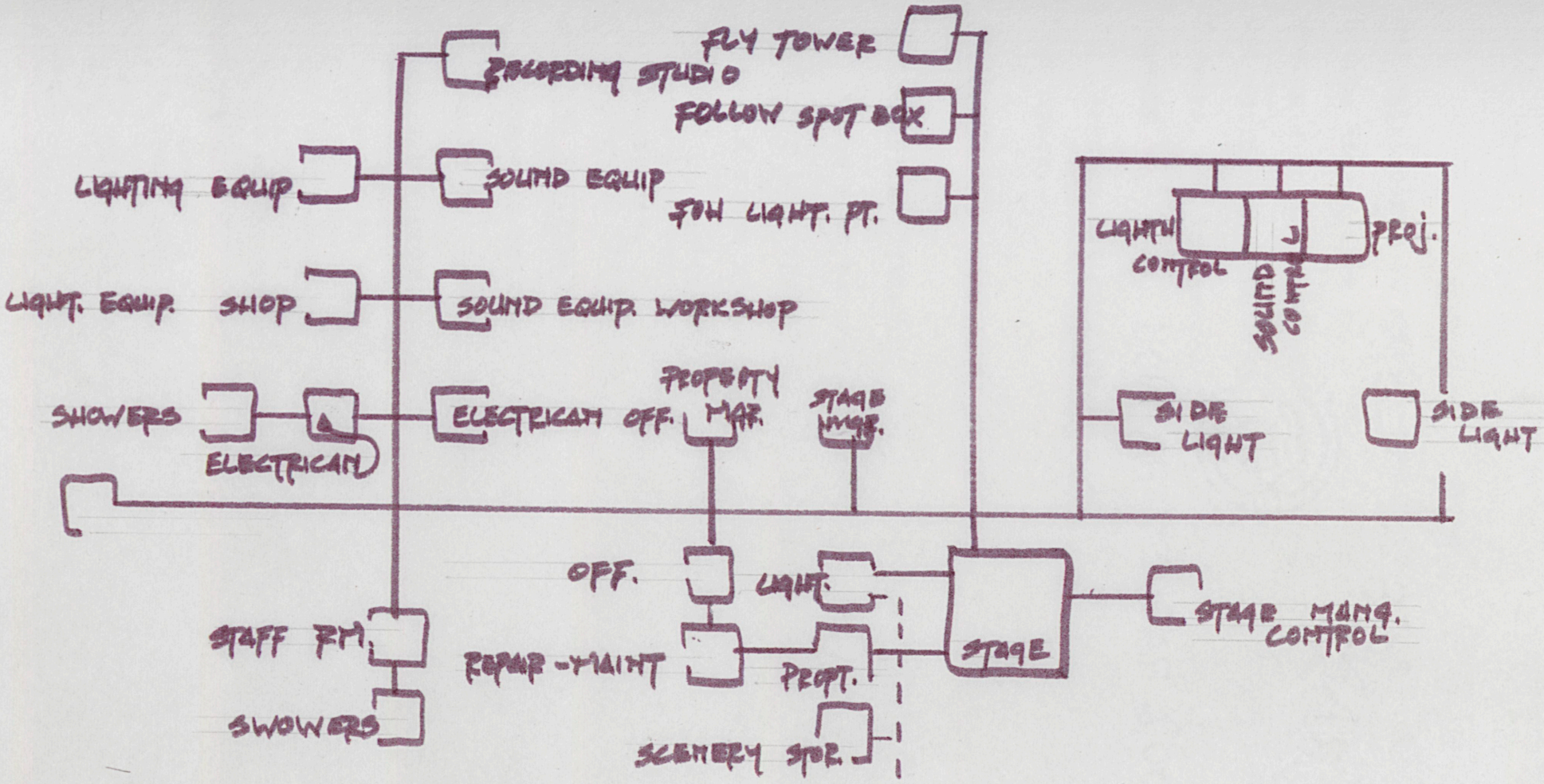
SCENERY AND PROPERTIES

REPAIR AND MAINTENANCE

An area is required at the side of the stage for repair

Table II *Performance organisation: Staff functions and requirements*

Staff	*Function*	*Staff requirements*	*Space requirements (sq ft)*
Stage manager	Organisation of the stage for and during a performance; interviewing	Desk, chair, filing cabinets, plan chest, shelves, pin-up board, easy chair, bed	120–150
Deputy stage manager	As above	As above	120–150
Secretary (may be personal to one executive or shared by a number; does most of the administrative and paper work; may share an office with the person for whom she works or have a separate office)	Secretarial	Desk with provision for typing, chair	100
Master carpenter	Responsible for providing for a performance scenery for the stage and for maintaining it	Drawing board, stool, plan chest, filing cabinets, space for models, pin-up board	120
Property master	Responsible for providing for a performance properties for use on the stage and for maintaining them	As above	120
Wardrobe mistress/master	Responsible for providing for a performance costumes for the performers and for maintaining them	As above	120
Chief electrician	Responsible for lighting, sound equipment and stage machinery	Desk, chair, filing cabinet	100
Electricians	Operation of lighting, sound equipment and stage machinery for and during a performance	Provision for changing and resting, lockers, table, chairs, easy chairs, bunk beds (1 per 3 persons), shelves	30 per person (minimum)
Flymen and stage hands	Movement of scenery	As above	30 per person (minimum)



PERFORMANCE ORGANISATION

DIAGRAM (16)

and maintenance of scenery and properties currently in use on the stage for a performance. The area should be totally enclosed so that maintenance and repair work can be carried out during rehearsals on the stage without disturbing performers, and in emergencies, during a performance.

STORAGE

Scenery not currently in use is stored in the production space.

COSTUMES

REPAIR AND MAINTENANCE:

Space must be provided within easy access of the dressing-rooms for the repair and cleaning of costumes and associated items. Minimum space required. These facilities should be regarded as additional to any that may be provided in production spaces.

LIGHTING EQUIPMENT

Space is required for the assembly, storage, maintenance and repair of lighting equipment.

REPAIR AND MAINTENANCE

A separate workshop is required, 100 sq. ft. It should ajoin the stage areas but be isolated from them so that noise from the workshop does not penetrate to the stage.

STORAGE

Storage areas should have broad access to the stage; movement of equipment between the two should be made as easy as possible.

PERFORMERS SPACES

GENERAL

It is essential to provide sufficient space and the right fitting and furniture for a performer properly to prepare for a performance.

The number of rooms required depends on the type of production; the number of occupants per room is generally determined by the status of the performer.

DEFINITIONS:

DRESSING ROOM

A room for actors and other performers who require provision for applying make-up and for changing into costumes.

CHANGING ROOM

A room for musicians and other performers who require provisions only for the removal of outdoor clothes and changing into evening dress.

TYPES OF PRODUCTION AND REQUIREMENTS:

Tables 1 to 1x list the dressing room and/or changing room requirements for various types of productions.

DRAMA: CHANGING-ROOMS

It is not essential to provide changing-rooms where only drama is performed. However, when it is certain that productions requiring an orchestra will be staged, communal changing rooms should be provided for a minimum of 30 musicians. There should be at least two separate rooms; if only one is provided

Table I Opera: dressing-rooms

Type of performer	Number	Occupancy of room	Requirements and comments	Associated areas
Male principals	3	Single	Must be at stage level Piano in at least one room Direct access to wc and shower desirable	Preperformance practice-room necessary if piano not provided in dressing-room Waiting area for visitors and dressers Wig store Provision for making hot drinks
Female principals	3	Single	As above	
Male minor principals	20	Shared, 2 or 3 per room	Must be at stage level Rooms planned for 2 occupants should be adaptable for a single occupant	
Female minor principals	20	Shared, 2 or 3 per room	As above	
Male chorus	35	Communal (maximum 20 per room)	Communal dressing-rooms should be planned so that they can be subdivided into smaller spaces if required. It is necessray to segregate the sexes. Numbers of performers of each sex vary from time to time. Storey-height partitions should be used with a door into each subdivision Numbers of chorus members, supernumeraries, etc depend on scale of opera and size of stage	Green room for use of all performers except children Specialist make-up room necessary if make-up is not self-applied Kiosks with GPO outside line telephones
Female chorus	35	As above		
Extra chorus	30	As above		
Male opera ballet dancers	10	As above		
Female opera ballet dancers	10	As above		
Male supernumeraries	40	As above		
Female supernumeraries	12	As above		
Children	20	As above		Specialist make-up room Supervisor's office

Table II Opera: changing-rooms

Type of performer	Number	Occupancy of room	Requirements and comments	Associated areas
Conductors (1 performance)	2	Single	Direct access to wc and shower. Room should be large enough to accommodate an ensemble of 6 musicians for rehearsal during a performance These rooms are for the use of performance conductors as distinct from facilities for the resident conductor	
Leader of orchestra	1	Single	Desirable to have direct access to wc and shower	
Section leaders	6	Shared, 3 per room		
Musicians	120	Communal	Communal changing-rooms should be planned so that they can be subdivided into smaller spaces if required. The sexes should be segregated. Number of performers of each sex varies from time to time	Instrument store Two practice-rooms Orchestra assembly area Common-room Kiosks with GPO outside line telephones

		per room	to be sub-divided into single rooms At least 4 of the rooms for principals and minor principals should be at stage level	
Chorus, etc	60	Communal, 3 rooms accommodating 20 each	The number of performers depends on the type of production and size of stage. Figures given are for average requirements	Green room (available to all performers other than children), which can be used as a communal dressing-room if necessary. Kiosks with GPO outside line telephones
Children	Variable	May be accommodated in one of the above rooms		Specialist make-up room Supervisor's office

Table VI Variety, musicals, spectacles: changing-rooms

Type of performer	Number	Occupancy of room	Requirements and comments	Associated areas
Conductor	1	Single	Room should be large enough to hold auditions and recording sessions. Direct access to wc and shower	
Musicians	30	Communal		Instrument store Practice-room Kiosks with GPO outside line telephones

Table VII Drama: dressing-rooms

Type of performer	*Number**	*Occupancy of room*	*Requirements and comments*	*Associated areas*
Principals	2 (6)	Single	Must be at stage level. Should be adaptable for 2 occupants if necessary. Desirable to have access to shower and wc	Green room Laundry (desirable to be accessible to all performers) Kiosks with GPO outside line telephones
Minor principals	16 (16)	Shared, 2, 4 or 6 per room	Majority of rooms should be at stage level Occupancy of 4 per room preferred	
Supporting cast	20 (40)	Communal, 2 (4) rooms accommodating 10 each		

* Figures in brackets are for large-scale productions

Table VIII Concerts: changing-rooms

Type of performer	*Numbers*	*Occupancy*	*Requirements and comments*	*Associated areas*
Conductors	2	Single	Piano in at least one room Desirable to have direct access to shower and wc	Conductor's green room
Soloists (musicians)	4	Single		
Leader of orchestra	1	Single		
Musicians	120	Communal	Communal changing-rooms should be planned so that they can be subdivided into smaller spaces if required. The sexes should be segregated. Number of female musicians in an orchestra varies from time to time	Instrument store Practice-room Orchestra assembly area Musicians' common-room Kiosks with GPO outside line telephones
Soloists (singers)	4	Single	Provision for make-up must be included Desirable to have direct access to shower and wc	
Choristers	250	Communal	Communal changing-rooms should be planned so that they can be subdivided into smaller spaces if required. The sexes should be segregated. Number of female musicians in an orchestra varies from time to time	Choir assembly area Rehearsal room if choir is a resident professional one

Table IX Recitals: changing-rooms

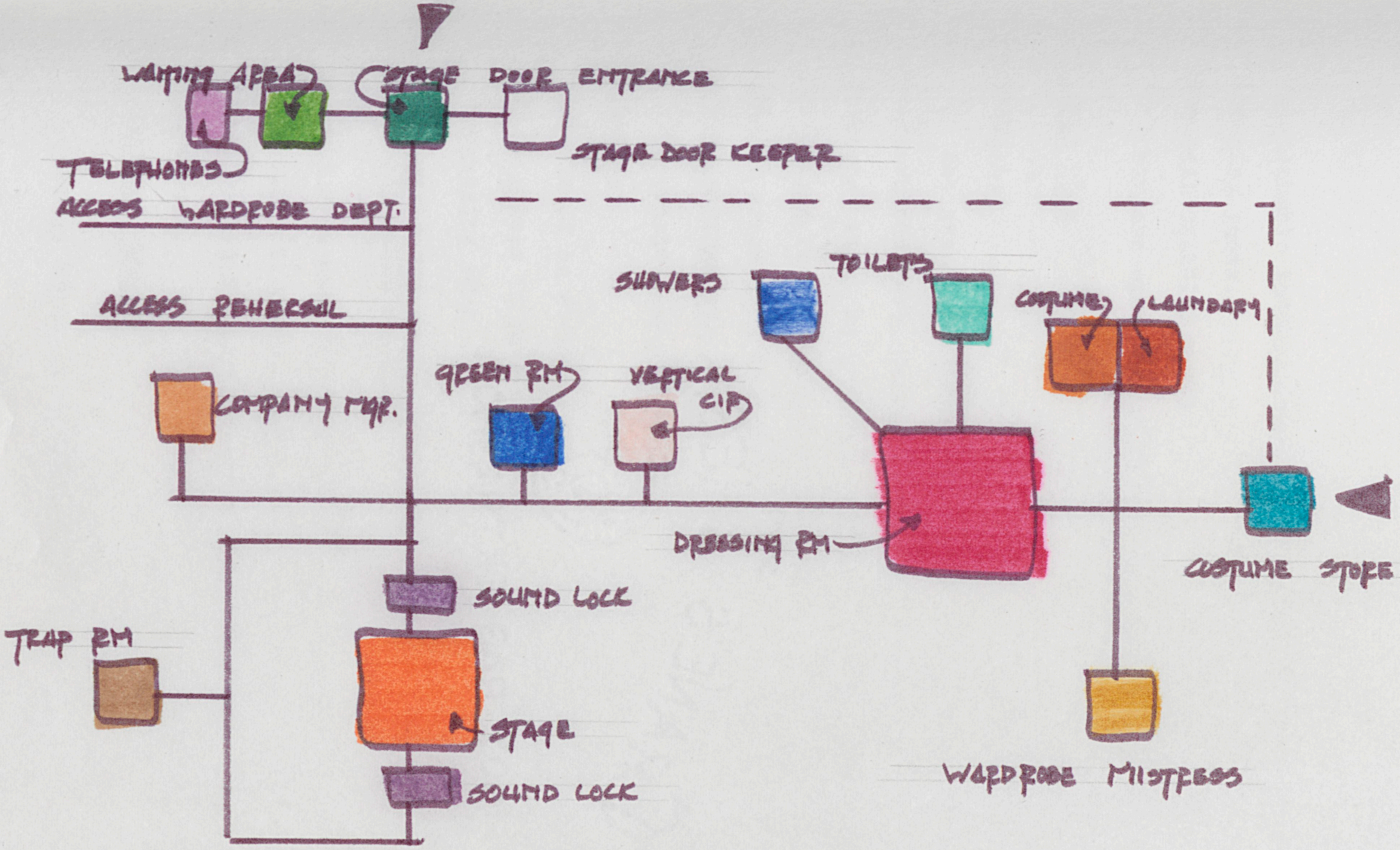
Type of performer	*Numbers*	*Occupancy*	*Requirements and comments*	*Associated areas*
Conductors	2	Single	Piano in at least one room Desirable to have direct access to shower and wc	Conductor's green room
Soloists (musicians)	2	Single		
Musicians	40	Communal	Communal changing-rooms should be planned so that they can be subdivided into smaller spaces if required. The sexes should be segregated. Number of female musicians in an orchestra varies from time to time	Instrument store Practice-room Orchestra assembly area Musicians' common-room Kiosks with GPO outside line telephone
Soloists (singers)	2	Single	Desirable to have direct access to shower and wc	
Choristers	40	Communal	Communal changing-rooms should be planned so that they can be subdivided into smaller spaces if required. The sexes should be segregated. Number of female musicians in an orchestra varies from time to time	Choir assembly area

1 urinal between every 5 males
lavatory basin, approx. 1 to every 3 urinals

CHANGING ROOMS

PLANNING:

Drawing and show minimum practical dimensions and



PERFORMER'S SPACES

DIAGRAM (17)

relationship between items of furniture and fittings in single changing rooms.

COMMUNAL CHANGING ROOMS:

Minimum space required for each occupant 15 sq. ft.

GREEN ROOM

GENERAL:

The green room is an area where all performers, except children can rest, take refreshment, write letters, entertain visitors, etc. As principals generally have the space and facilities in their own dressing rooms, they are less likely to use the green room than other performers.

SPACE REQUIREMENT:

Approximately 300 sq. ft. minimum.

LOCATION:

Should be at stage level near the entry to the stage from dressing room if possible. Direct access for performers from the dressing room, stage and stage door is necessary.

ORCHESTRA ASSEMBLY AREA

An area must be provided large enough for the orchestra to assemble before entry on to the platform or into the orchestra pit. It should contain bench seating and wide shelves for instruments.

INSTRUMENT STORAGE

Storage space is required for the larger musical instru-

ments and their cases; it should be located at stage level or at the same level as the platform or orchestra pit.

STAGE DOOR

It should be possible to have direct access between the entrance door and the stage without passing through any other spaces.

REHEARSAL SPACES

Spaces for rehearsals and practice and for the initial development of a production is required for all types of production. If rehearsal spaces are to be incorporated within the main building complex, they should be located within easy access of both stage door and stage.

REHEARSAL STUDIO

This is a term for the space used for dance and ballet productions; the studio is used for the development of routines. It should have a flat floor. Performers require to exercise and practice before a performance so the studio should be within easy access of the dressing rooms.

MUSICIAN'S SPACES

The musicians' spaces discussed are suitable for theatres with large orchestras.

Access for musicians is through the stage door where entry can be checked. Preparation for a performance requires changing facilities. At least two changing-rooms with their own lavatories and showers should be provided. Three changing-rooms would be preferable to cope with varying numbers of men and women in different orchestras.

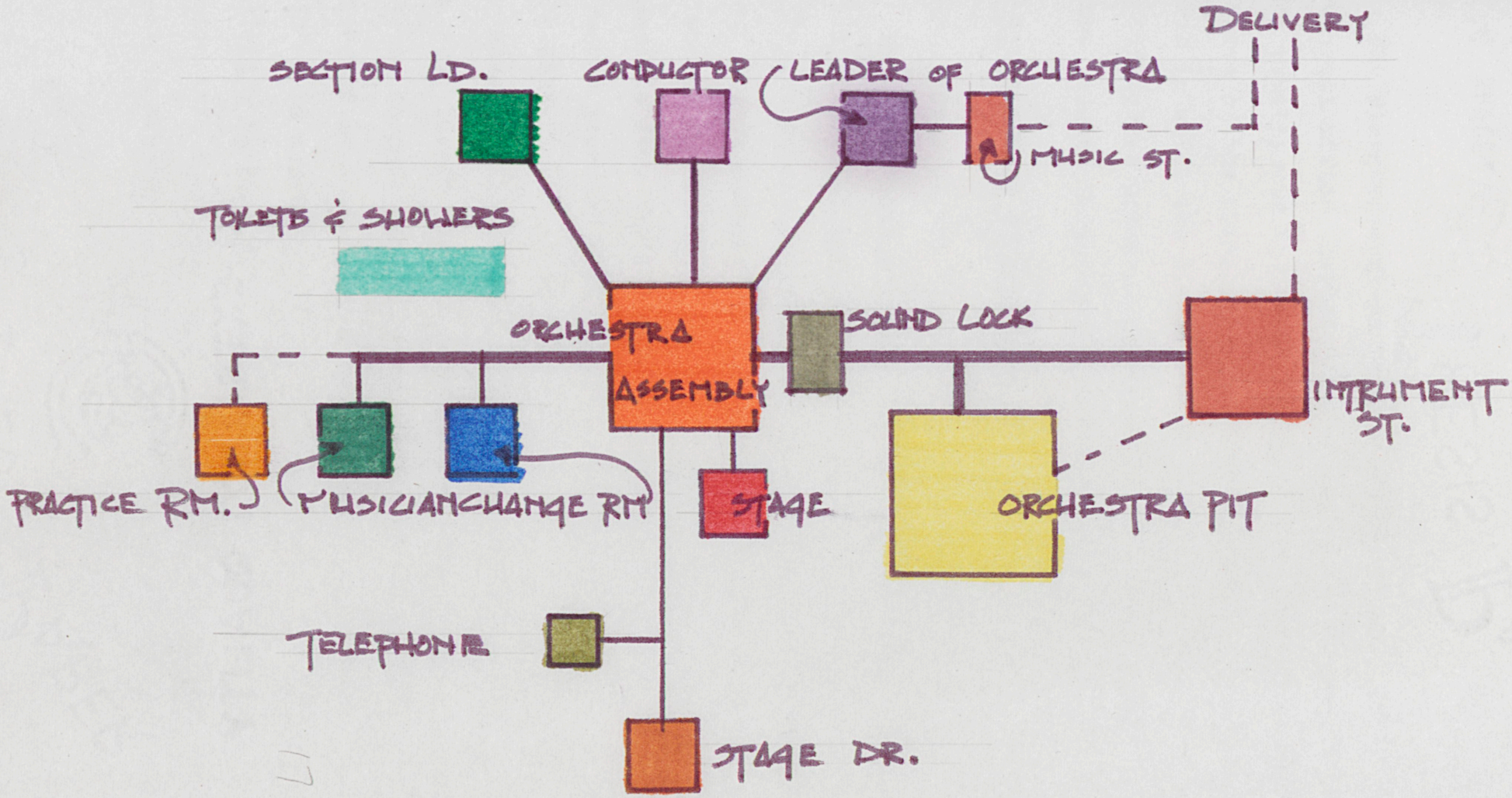
Separate rooms should be provided for conductor(s), the leader of the orchestra and section leaders. These rooms should be grouped about an assembly area with access to the orchestra pit. The assembly area could be used for practice before a performance. A sound lock is necessary between assembly area and orchestra pit. Separate practice rooms may be required.

For curtain calls, the conductor may have to travel quickly from orchestra pit to stage. The accepted location for musicians' space is below the stage-approx. at the level of the orchestra pit.

INSTRUMENTS

Access is required for delivery of musical instruments, in particular in theatres which receive touring companies. A separate entrance preferable but it may be combined with the scenery entry or stage door. Lift or ramp access to the level of the instrument storage may be necessary.

Pianos are usually permanent but, ir not, delivery can be accross the stage and into the pit via a forestage lift. Music may be carried bulk by touring companies with instruments; it should be stored near the orchestra leader who will be responsible for distributing it. See figure (18).



MUSICIANS SPACES

DIAGRAM (18)

PUBLIC SPACES

The playgoer arrives under the marquee and proceeds to foyer, box office, lobby, house, lounge, and back to marquee again usually via lobby and foyer. It is good showmanship to conceive of the playgoer's progress through the theater as a parade in which the playgoer will enjoy participating. Comfort and safety are primary consideration in planning those parts of the theater through which the patron moves.

GENERAL PLANNING CONSIDERATIONS

CIRCULATION:

Main circulation routes for the public from the entrance to all levels and points of entry to the auditorium should be easily recognisable by the public and free from cross-circulation. Crowds gathered at counters should not impede circulation nor should furniture. All public areas, such as lavatories, accessible from the main circulation routes should have their entrances recessed from the circulation routes.

ATMOSPHERE:

Movement along circulation routes should be easy and pleasant; layout and atmosphere should perpetrate the sense of occasion according to the type of production method of presentation and type of audience and can be either formal or informal. If there is a pleasant external aspect or interesting view from the foyer, it should be exploited. The possibility of being able to look into the foyer and circulation spaces from outside also should be considered. Consider providing an external area or

terrace for the public to move about, smoke, sit and talk and for the permanent display of work of art and poster display of items of interest and detail of current productions.

PUBLIC ENTRANCE

DESIGN REQUIREMENTS:

1. Locate entrance in an easily recognisable position for public approaching the building
2. Provide self-closing doors.
3. Provide two lines of doors separated by a lobby to reduce noise and draught penetration into the foyer.
4. Provide protection for entrance doors.

FOYER

The principal functions of the foyer are to provide:

1. means of access to all parts of the auditorium.
2. facilities for the public to sit, talk, walk about, smoke, and take refreshments.
3. means of access to lavatories and cloakroom

The entrance foyer should be broad enough to allow for people to stand and wait for friends before going to their seats, and should act as a service area with cloakroom, lavatories and sales.

AUDITORIUM POINTS OF ENTRY

1. Ensure that noise and light do not penetrate from foyer and refreshment areas into the auditorium

during a performance.

2. Provide space for checking tickets and selling programs.

3. Allow for a container for tickets collected by staff.

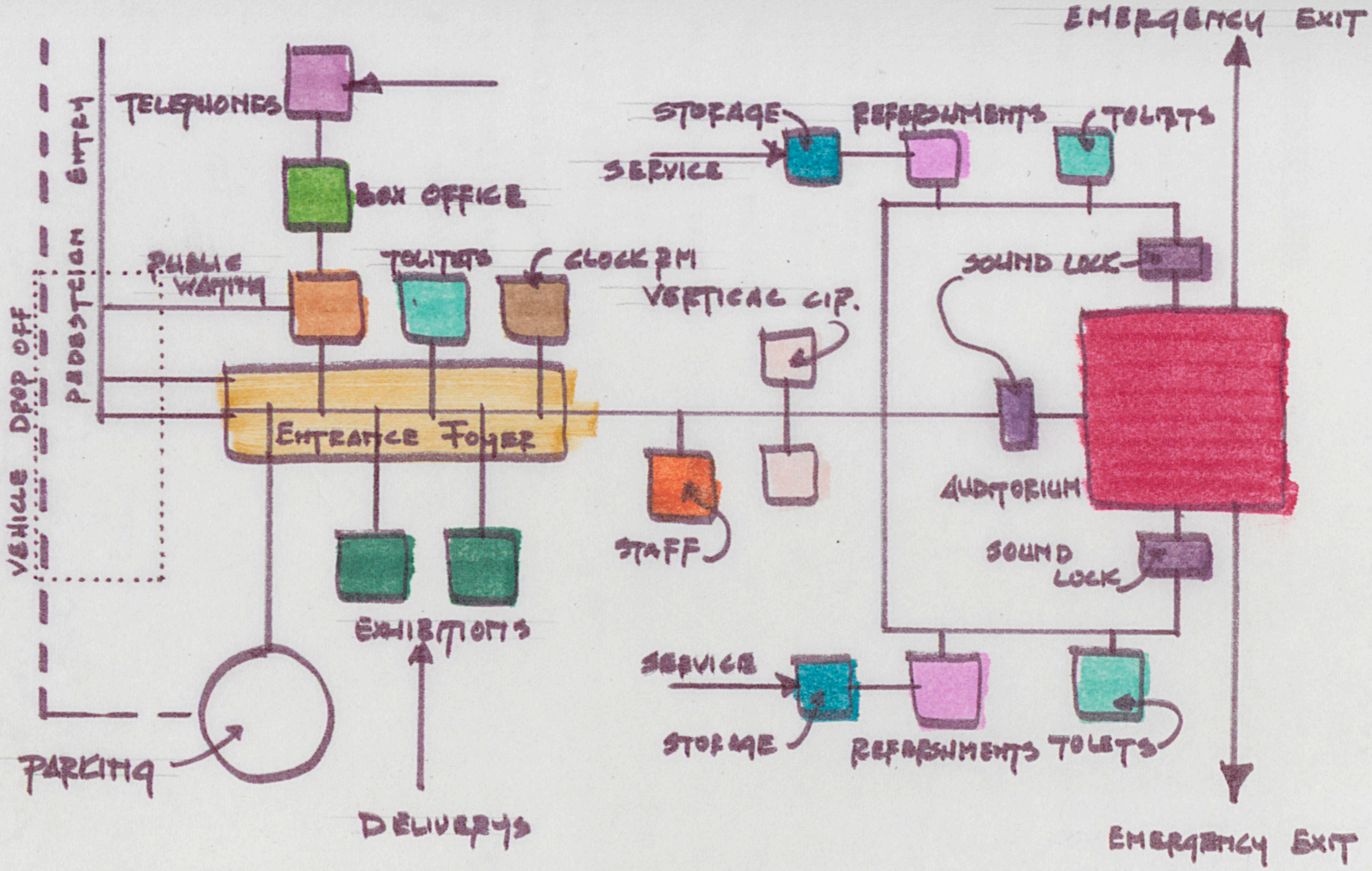
Points of entry are governed by the number of levels in the auditorium and/or the degree of encirclement by the audience around the stage or platform. Care should be taken in the design of the auditorium to relate points of entry to levels accessible to the public and to provide adequate head-room between levels.

LAVATORIES

Check local building and health codes set down a minimum provision, but this is often inadequate, particularly the provision for women. It is recommended that this should be at least doubled. Lavatories should be located directly off the main circulation route near the entrance, at each foyer level near the point of entry into the auditorium and near refresh-ment areas.

CLOAKROOMS

Cloakrooms can be either attended or unattended according to the type of user and managerial policy. For unattended cloak-rooms consider allotting the same number of coat hooks as there are seat numbers. Cloakrooms should be located directly off the main circulation route near the entrance.



81

PUBLIC SPACES

DIAGRAM (19)

REFRESHMENT AREA

Provision may be required for the sale of alcoholic and non alcoholic drinks, coffee, ice-cream and other refreshments. Counter service may be in a separate area off foyer, or preferably, in the foyer but well away from circulation areas.

BOX OFFICE

The box office should be off the main flow and should have a separate or limited entrance. There should be enough space clear of the main circulation to the theatre for people waiting to purchase tickets. The public should be able to pass direct to their seats without encountering cross-circulations. There should be clear indications of direction. All points of entry into the auditorium should be easily recognisable and have a sound lock.

Public refreshments areas-bars, buffet and so on should be close to the main auditorium.

BOX OFFICE

A separate area is required for issuing tickets to the public. Tickets may be bookable or not and sold either some time in advance of or immediately before a performance. Allow 50 sq. ft. per ticket-selling space, at least two spaces will always be required.

The public requires covered access to the box office both during times of performance and at other times. The box office should be near the main public entrance, but off the main circulation route, and clearly recognisable.

MANGERIAL SPACES

GENERAL

The type, size and number of offices depend upon managerial policy and organization, size of company, number of staff employed and whether all functions are carried out within the building complex. Table (1) describes staff functions and requirements and should be used as a guide in planning managerial spaces. Each one of the facilities in the cultural core could provide their own managerial space or they all could be combined into one central area. This decision will be made during the design process.

LOCATION

Managerial offices should be grouped together and located within easy access to all parts of the front of house including auditorium. The house manager and assistant should also have easy access to the stage. Entry to the managerial offices area may be either separate with a reception area, or through the foyer.

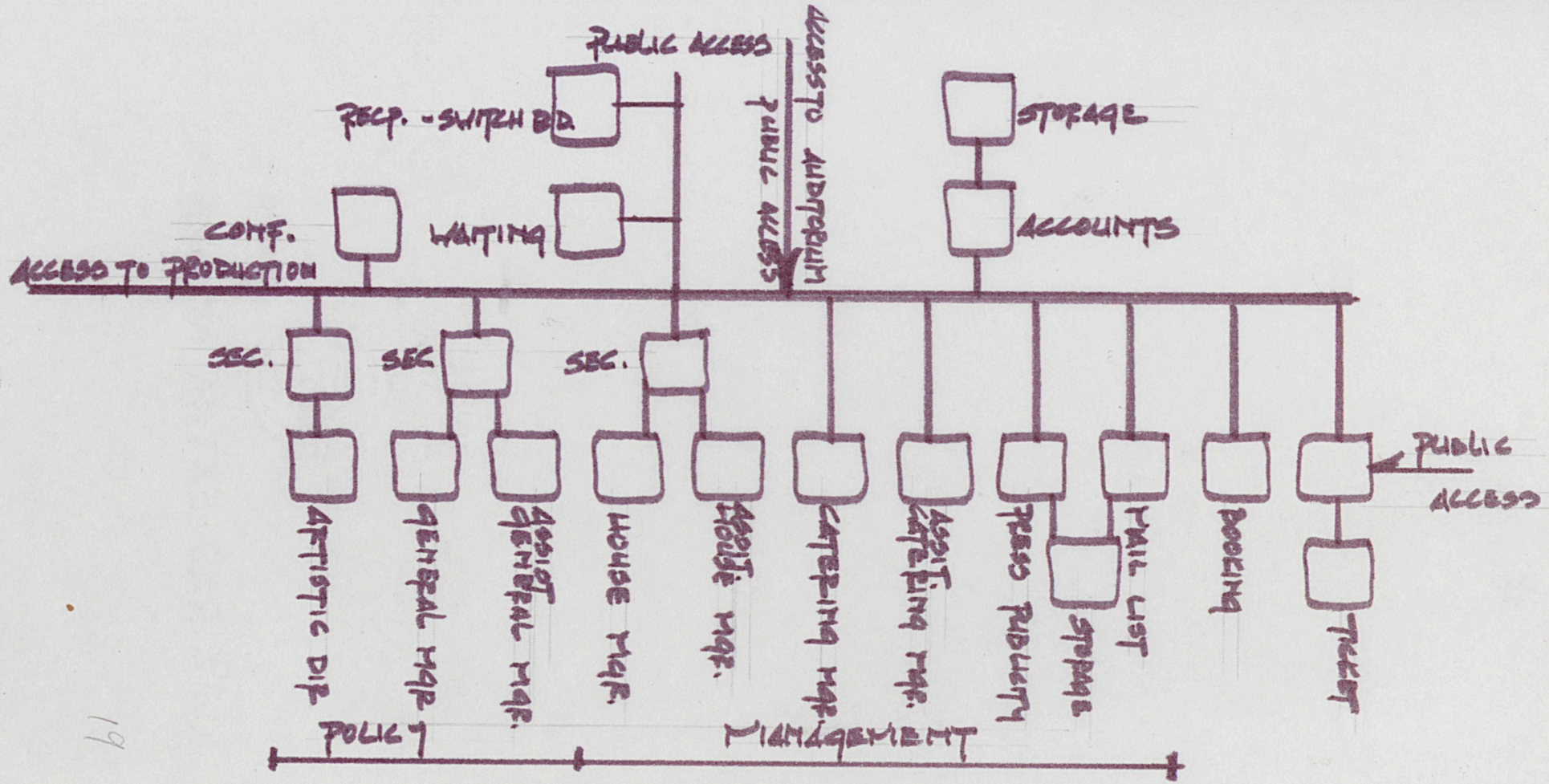
STAFF FACILITIES

The size and extent of staff facilities depend on the number of staff employed.

Separate areas are required for male and female staff. Facilities for changing and resting must be provided and access to staff lovatories. Staff areas should have direct access to public spaces.

Table 1 Company organisation: Staff functions and requirements

Function	*Staff*	*Staff requirements*	*Space requirements (sq ft)*	*Associated areas and requirements*
Business management of the company	Company manager	Desk, chair, filing cabinets, wall safe	120–150	
Artistic policy	Artistic director	Desk, chair, storage for personal effects, easy chair, bed, conference table, chairs, piano (for opera or ballet company), shelves for reference library	200–300	Music library (shelves, table chairs, gramophone and listening booths, desk and chair for librarian) Audition room (chairs, piano) allow 250–350 sq ft
Secretarial	Secretary (may be personal to one executive or shared by a number; does most of the administrative and paper work: may share an office with the person for whom she works or have a separate office)	Desk with provision for typing, chair, filing cabinets, copying machine	100	
Instruction and development, according to type of company	Conductor in residence	Desk or table, chair, storage for personal effects, easy chair, shelves for reference library	50–100	
	Director in residence	As above	50–100	
	Instructors (eg repetiteur, ballet master, etc)	As above	50–100	
	Prompters	As above	50–100	



MANAGERIAL SPACES

DIAGRAM (20)

LIBRARY

5

FUNCTION

GENERAL

Since Missoula is making provisions to assume the role as the Library Federation Headquarters for the Northwest area of Montana, the headquarters building of a library system should be located and designed to provide maximum accessibility and space for the full range of library service needed by the area it serves.

The library should be located to stimulate extensive use, and should provide inviting, comfortable space and efficient facilities to serve as a library center for its area. The function of the library is to serve the people of the community and surrounding areas and to attract the public into the use of their building.

The building should exemplify the spirit of service-library service. It should offer to the community a compelling invitation to enter, read, look, listen, and learn. The interior and exterior features should attain the functional efficiency and beauty found in the best architectrual achievements.

The effective and smooth harmony of the services of a library depends largely on whether the areas of the library have a sensible arrangement for both the staff and patrons. The plan must be developed on the basis of a clearly thought out scheme of organization.

In planning this portion of the center, one should design with maximum slexibility in mind to permit the library to make relatively painless transitions to different kinds of library

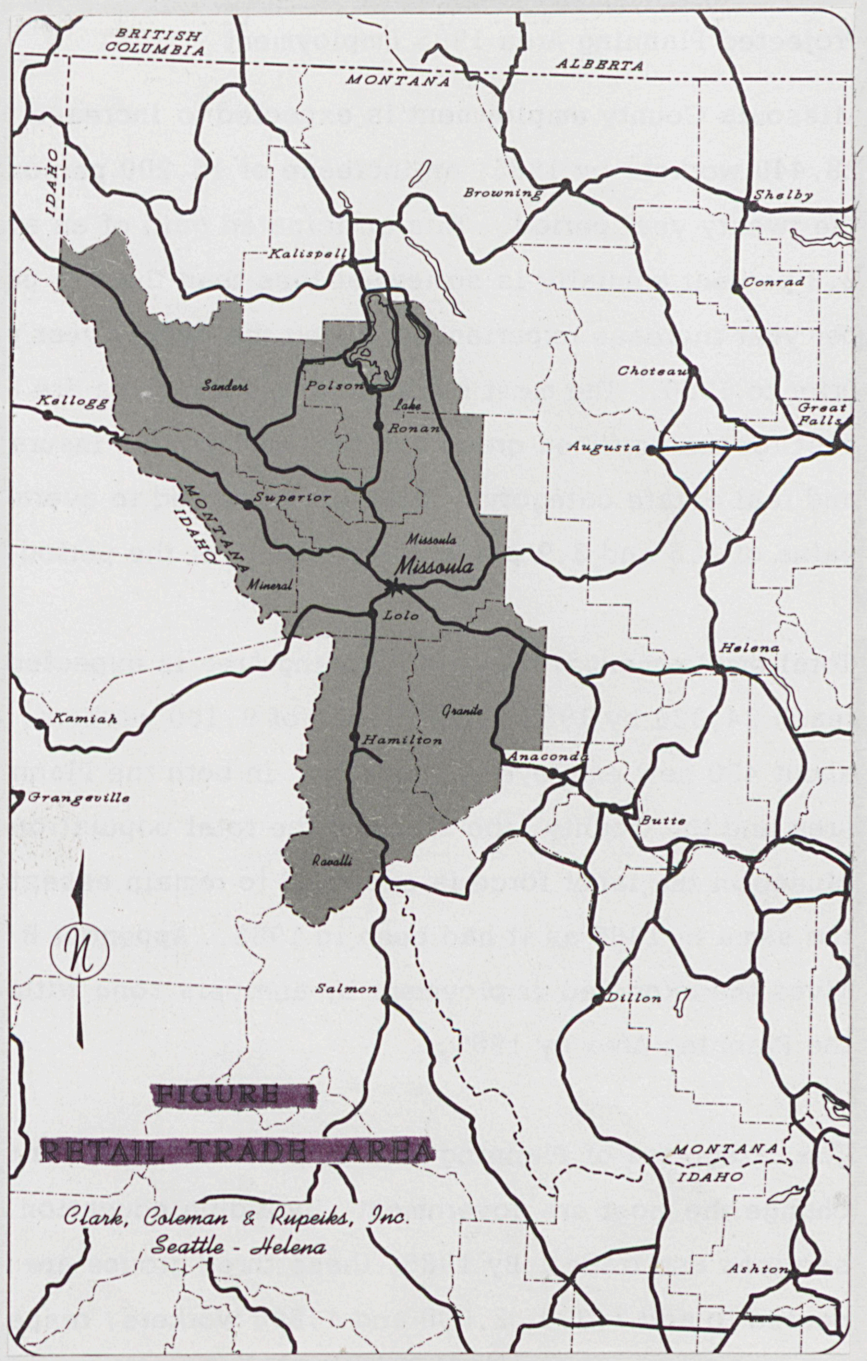


DIAGRAM (21)

NORTHWESTERN FEDERATION

services, as conditions and technology dictate. The plan is to adopt a flexible form of organization in which interior load bearing walls are kept at a minimum since they limit flexibility. This will allow that books, readers, and service points may be shifted from time to time or according to changing needs. The plan shall be arranged so that related facilities are together; readers and staff are near the books they use; staff service points are placed on reader-traffic aisle; work spaces adjoin service desks, and one public entrance with service desk and staff members near it for close supervision. See diagram (22). The services will be arranged for clarity of the entire organization and with a view to their particular needs. The frequented and noisier zones, and those less sensitive to noise are located close to the entrance. The further one gets into the library, the quieter the atmosphere, less expected number of users; traffic and noise at the information desk, near the entrance, leisure in the book selection rooms, and quietness in the study zones. See diagram (22).

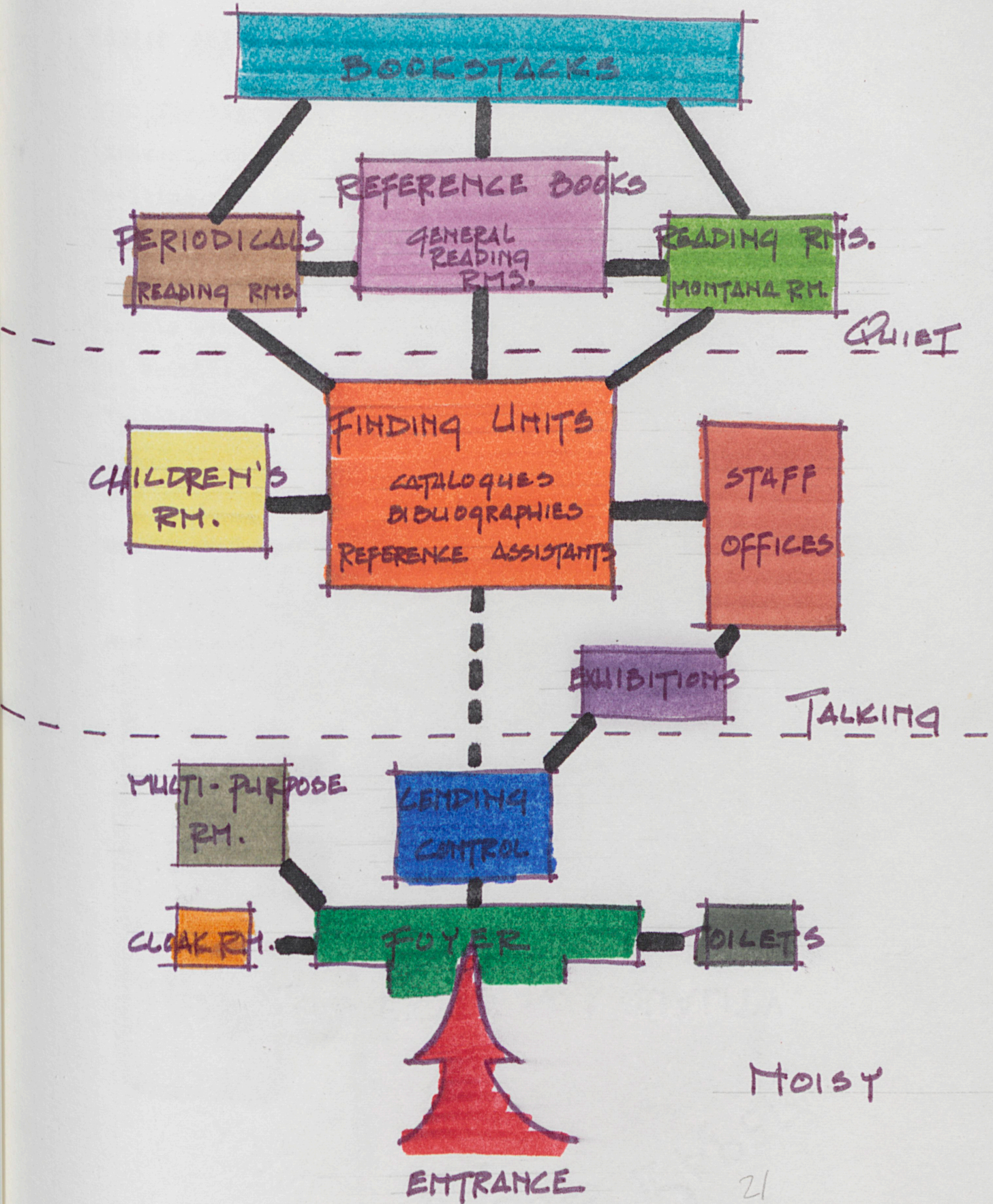

BOOKSTACKS
REFERENCE BOOKS
GENERAL READING RMS.
PERIODICALS READING RMS
READING RMS.
MONTANA RM.
QUIET
FINDING UNITS
CATALOGUES
BIBLIOGRAPHIES
REFERENCE ASSISTANTS
CHILDREN'S RM.
STAFF OFFICES
EXHIBITIONS
TALKING
MULTI-PURPOSE RM.
LENDING CONTROL
CLOAK RM.
FOYER
TOILETS
NOISY
ENTRANCE

DIAGRAM (22)

PUBLIC AUXILIARY SERVICES (OUTSIDE OF BUILDING)

The library of today is much like any business establishment, in that it must be conveniently located, attractive, inviting, and have the proper facilities to handle the public. Parking for the public and parking for the employees must be provided. Area should be provided for drive-up book return. Bicycle stands should be provided for the parking of bicycles and benches or other public resting places should be provided. See diagram (23).

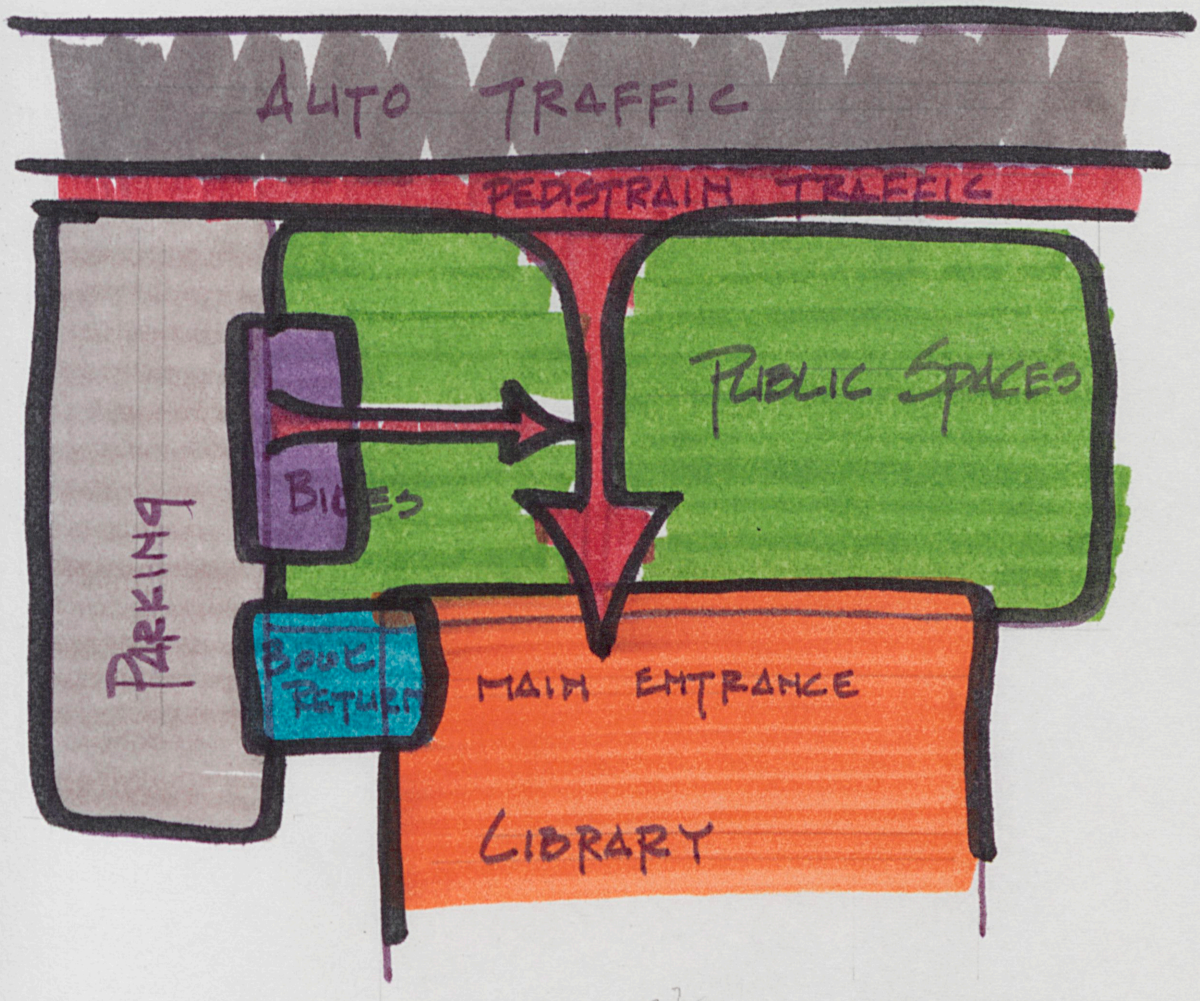


DIAGRAM (23)

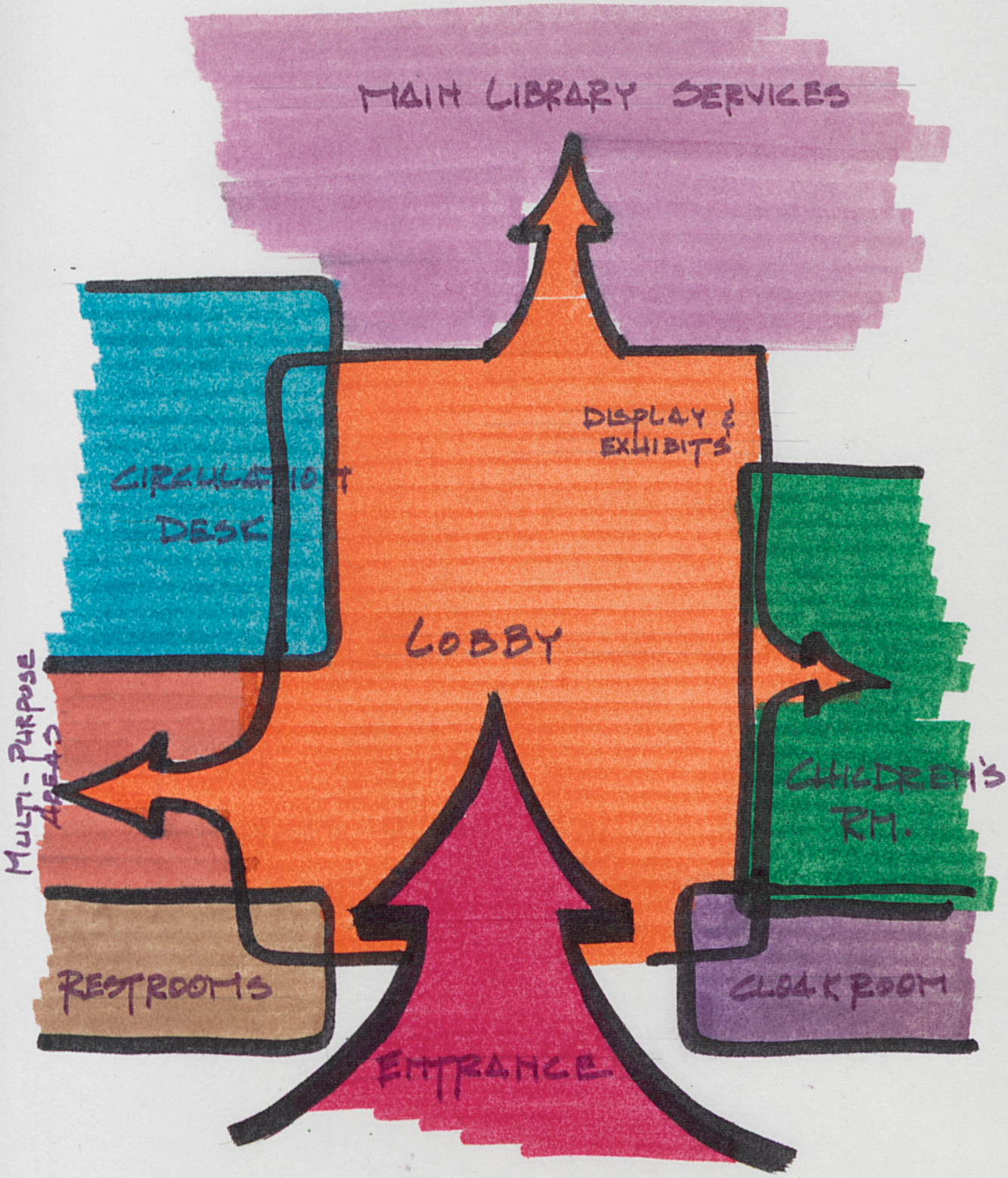
PUBLIC AUXILIARY SERVICE (INSIDE OF BUILDING)

ENTRANCE AND LOBBY

The entrance and lobby are circulation areas and should be large enough to handle the traffic of the library. The entrance must be in view of the circulation desk for control purposes. Entrance should be ramped from grade level and should be no steps. The lobby area should contain a public telephone, access to cloakroom, and areas for displays and exhibits.

CLOAKROOM

There should be provided areas to leave coats etc. in the library which may or may not be in the form of cloakrooms. There must be such space near the children's department, the adult and young adult department, and the meeting room. Some of these areas may be shared by each department depending upon the final design solution. See diagram (24).



PUBLIC AUXILIARY SPACES (INSIDE OF BUILDING)

23

DIAGRAM (24)

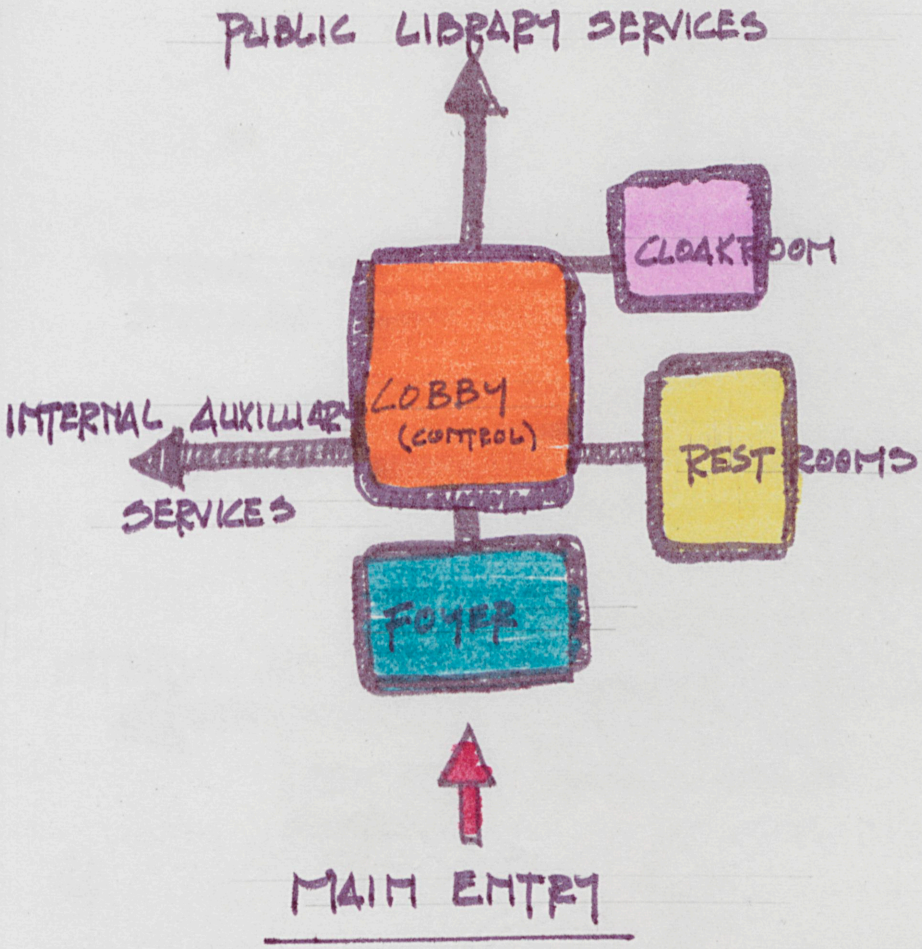
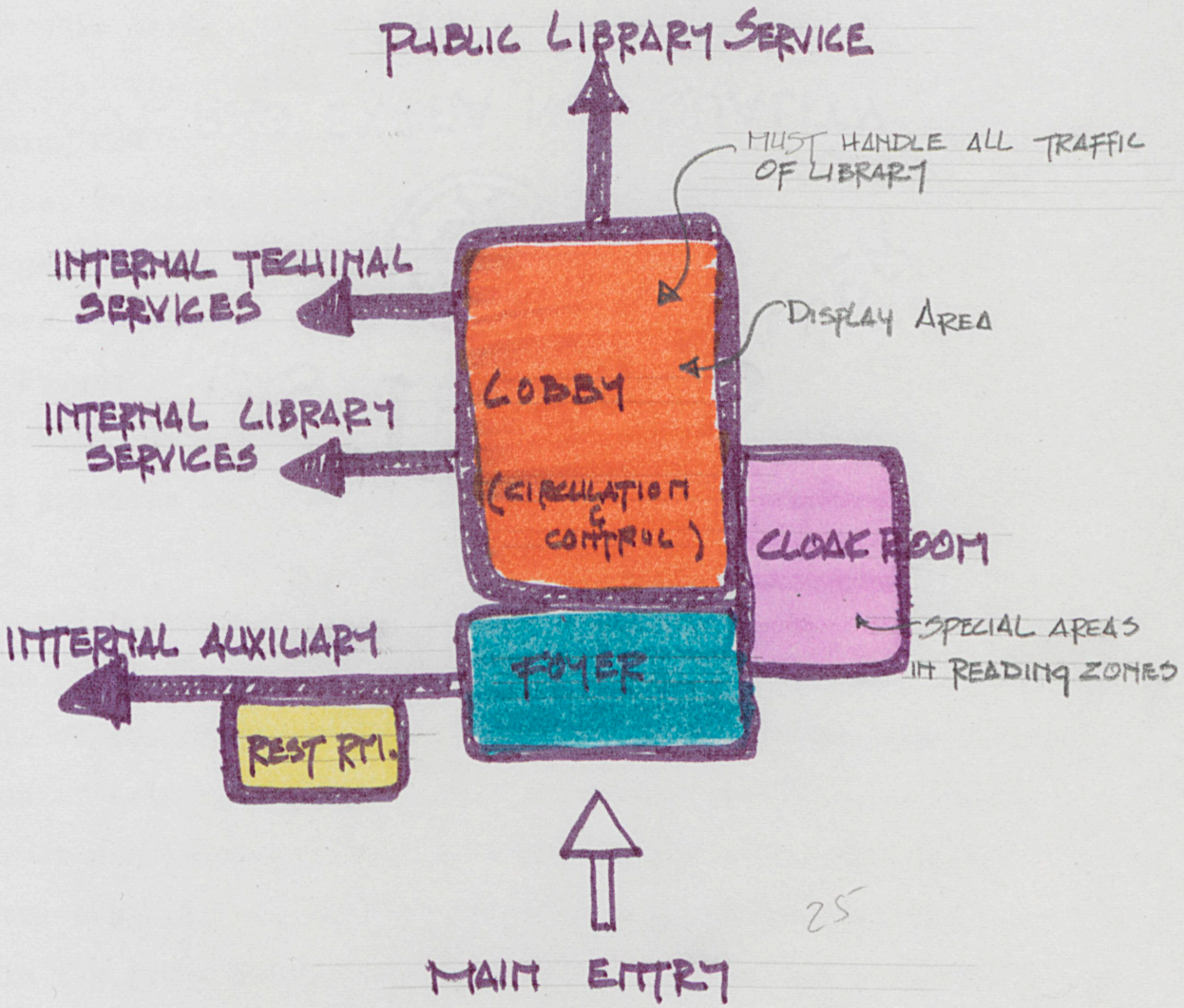


DIAGRAM (25)

PUBLIC AUXILIARY SPACES



25

DIAGRAM (26)

PUBLIC - INTERNAL TECHNIGAL LIBRARY SERVICE

The technical library service comprises all work connected with the borrowing of books, periodicals, and other materials by the users of the library. Public service consists of using membership cards, booking of outgoing and taking back incoming material, reserving books, collection fees, and control of the incoming and outgoing users. In connection with the Internal Service, the librarian checks through returned books for damages, repairs books, writes up statistics, and issues reminders for overdue boks.

Whenever it is possible, all public services will be put behind one counter. This counter should be located so that it is possible to carry out a reliable control of the visitors and so that the staff work areas are easily accessible. The circulation desk can be arranged in several basic schemes in the public technical section. If it is placed right in the middle of the floor of visitors as a kind of island, the supervision of both entrance and exit is easily possible, although a direct combination with the technical office is then not practicable. If the counter is given a marginal location within the front lobby, a direct connection to the technical office is the natural result. There are two ways of combining the advantage of the island and marginal schemes. Either the counter is located between the separate entrance and exit of the library on one outer wall, or it is divided so that incoming and outgoing users pass between the two desks, See fig.(2) table ( ). is a survey of the four schemes of the technical area.

CIRCULATION DESK ARRANGEMENT

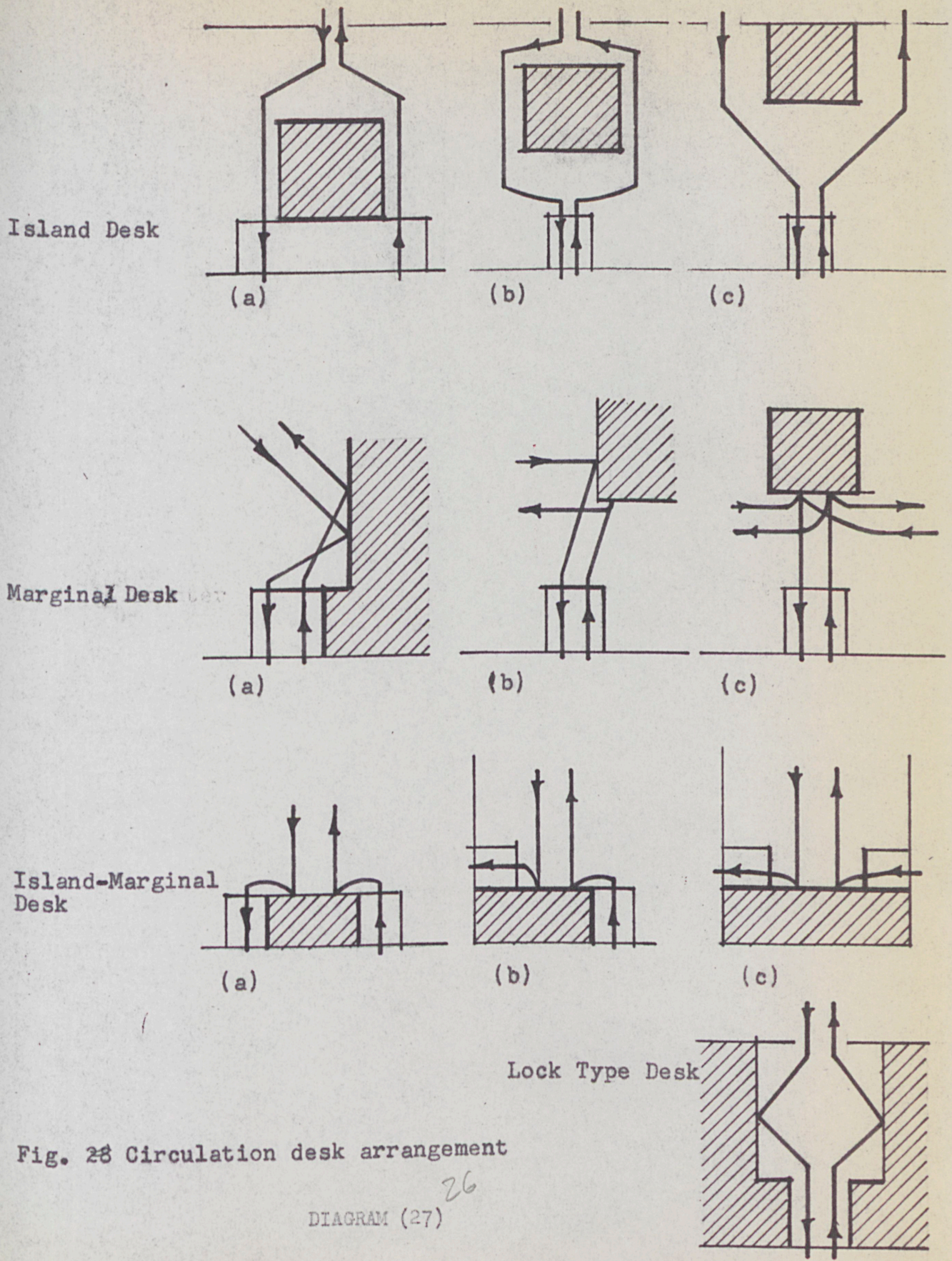
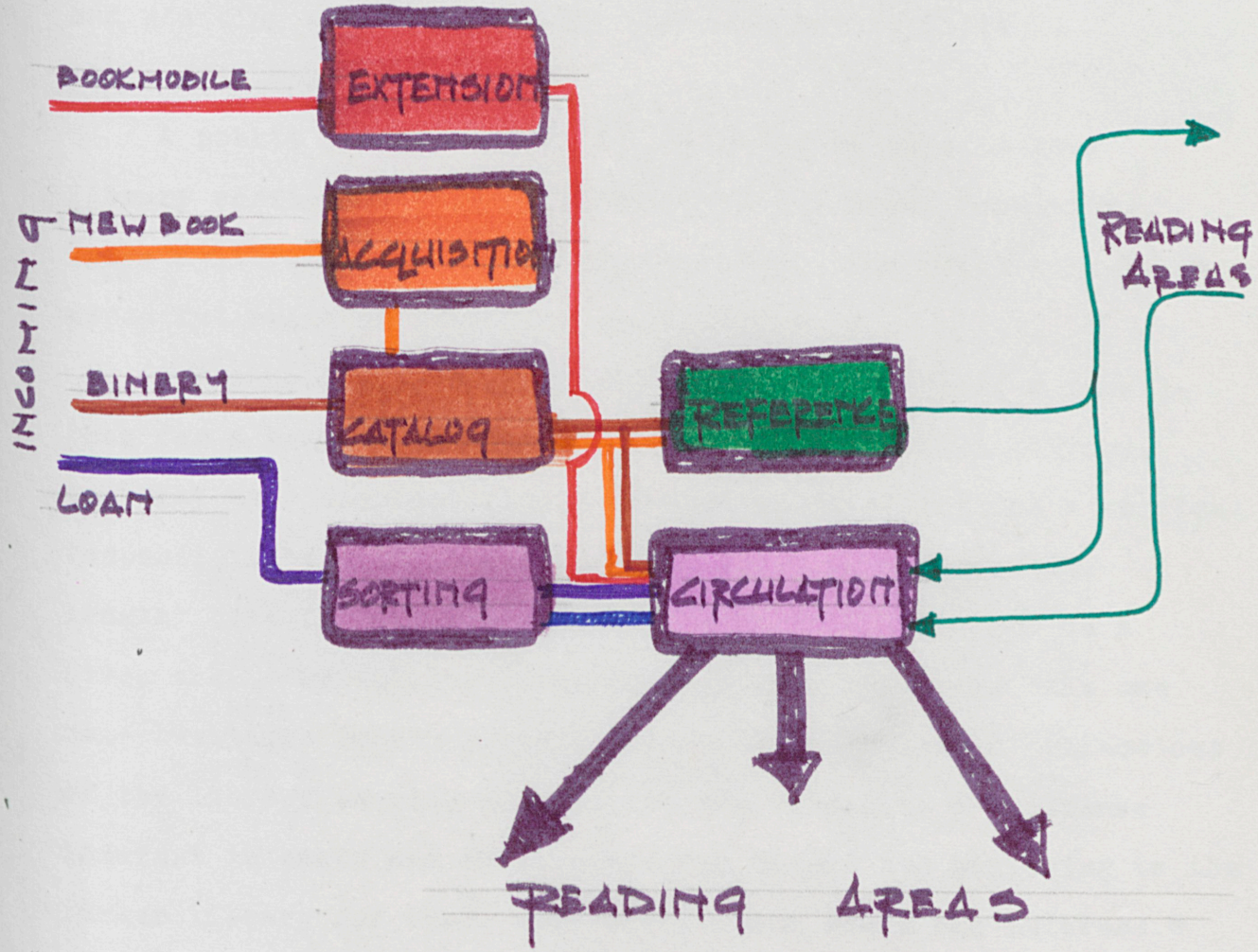


Fig. ~~28~~ 26 Circulation desk arrangement

DIAGRAM (27)

Desk Schemes	Solution	Crossing Traffic Lines	Control Entrance Exit	Connection to Office	Effect on Staff
Island	a) Touching porch-inner wall; entrance/exit separated.	No crossing	Very good	None	Exposed, not comfortable, tiring.
	b) Detached in room.	No crossing	Very good	None	Exposed, not comfortable, tiring.
	c) Touching wall betw. front hall & book selection; entrance, exit of book selection separated.	No crossing	Very good	None	Exposed, not comfortable, tiring.
Marginal	a) Right or left of entrance; touching outer wall	2 crossings	Poor	Yes	With back to wall or office, pleasant working place, gives confidence.
	b) Right or left of entrance; pushed back - to inside.	1 crossing	Entrance poor, exit good.	Yes	Back to wall or office, pleasant working place, gives confidence.
	c) Touching outer wall opposite entrance	1 crossing per dept.	Adequate	Yes	Back to wall or office, pleasant working place, gives confidence.
Island/ Marginal	a) Between separated entrance & exit, touching outer wall of front side.	No crossing	Very good	Yes	Back to wall or office, pleasant working place, gives confidence.
	b) Between entrance & exit, niched in corner of building	No crossing	Very good	Yes	Back to wall or office, pleasant working place, gives confidence.
	c) Touching side-wall	None	Same	Yes	Same
Gangway	R. & L. of entrance, return touching outer wall, booking detached in room.	None	Good	Yes	Same

Table 3 Survey of Circulation Desk Arrangements Source (4:58)



CIRCULATION OF BOOKS

DIAGRAM (28)

EXTENSION SERVICE

The Extension Department provides book rotation and supervision for the branch libraries and book mobile service to the Federation Counties. It houses the extension book collection and the mobile fleet. It should be located near the service entrance. At this time and would like to discuss the function and planning considreation for the book mobile service.

BOOKMOBILE SERVICE

A public library system is obligated to provide free library service to every individual in his local community. Where a library building is not practical, the bookmobile is an expedient means of extending such service.

A bookmobile service should never be considered a substitute for a branch, a community library, or a school library, but only as a specialized and limited means of meeting a service responsibility. It cannot serve research needs, provide lengthy time for browsing, or make very frequent stops in a given area. By filling specific requests, the bookmobile can make available to its patrons the entire circulation collections of the library service system. It can stimulate a wholesome interest in books and reading and can direct its borrowing to the larger library for their more specialized needs and interest.*

1. Bookmobile Headquarters- should be of adequate size with seffilient equipment and special facilities for this service should be provide to house the bookmobile, its

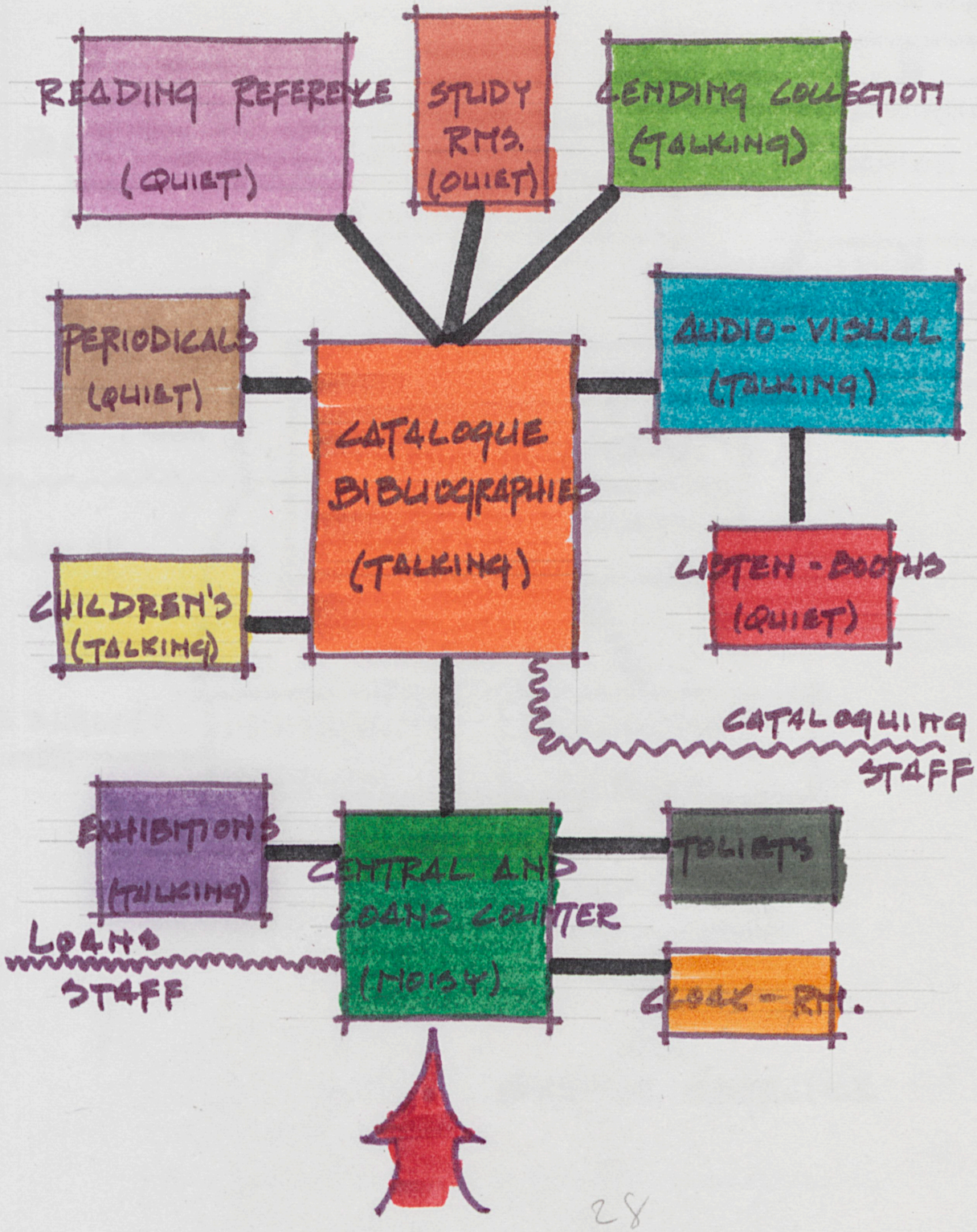

READING REFERENCE
(QUIET)
STUDY RMS.
(QUIET)
LENDING COLLECTION
(TALKING)
PERIODICALS
(QUIET)
CATALOGUE
BIBLIOGRAPHIES
(TALKING)
AUDIO-VISUAL
(TALKING)
CHILDREN'S
(TALKING)
LISTEN-BOOTHS
(QUIET)
CATALOGUING
STAFF
EXHIBITIONS
(TALKING)
CENTRAL AND
LOANS COUNTER
(NOISY)
TOILETS
LOANS
STAFF
CLOAK-RM.

DIAGRAM (29)

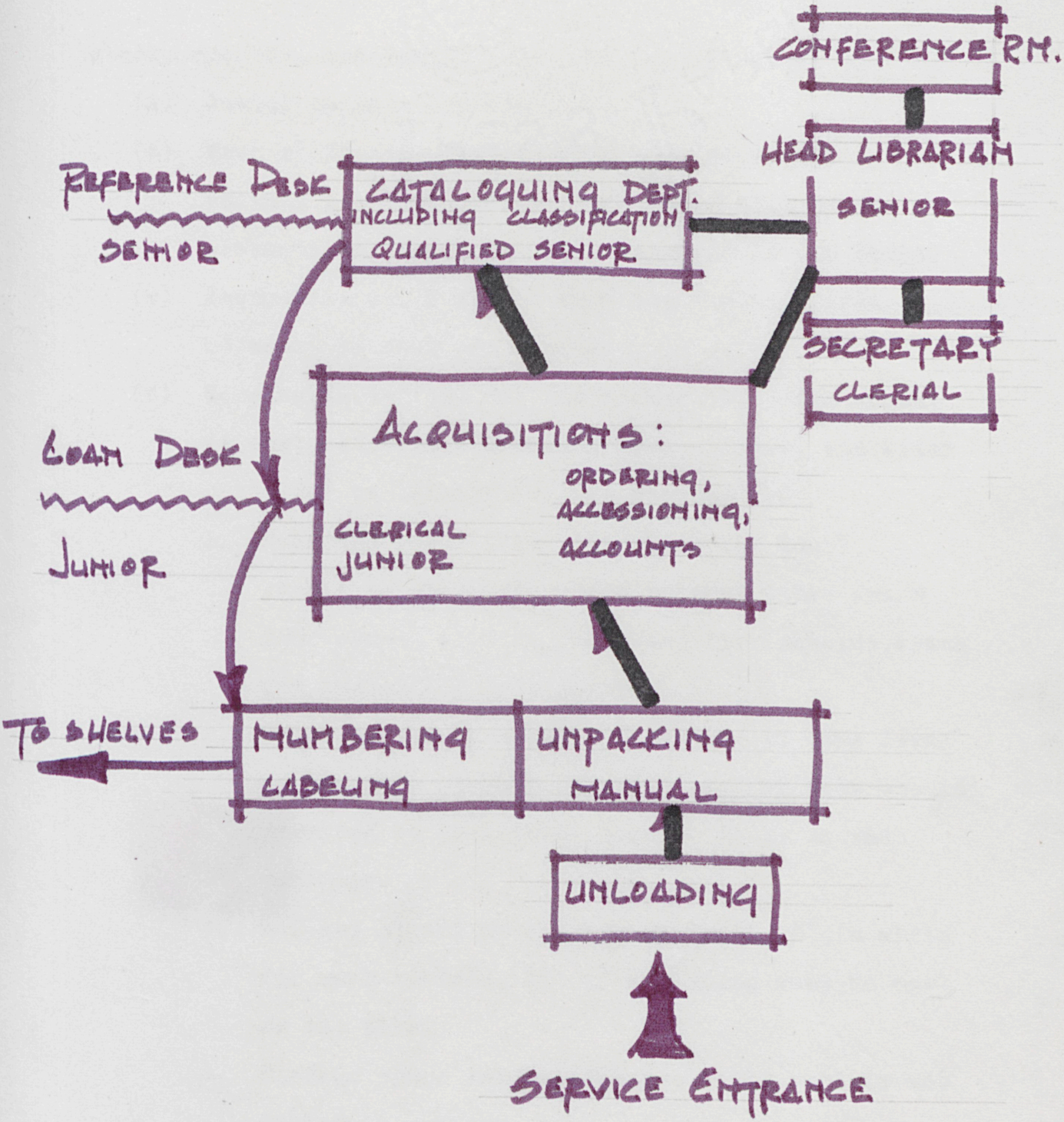

CONFERENCE RM.
HEAD LIBRARIAN
SENIOR
SECRETARY
CLERIAL
REFERENCE DESK
SENIOR
CATALOGUING DEPT.
INCLUDING CLASSIFICATION
QUALIFIED SENIOR
ACQUISITIONS:
ORDERING,
ACCESSIONING,
ACCOUNTS
CLERICAL
JUNIOR
LOAN DESK
JUNIOR
TO SHELVES
NUMBERING
LABELING
UNPACKING
MANUAL
UNLOADING
SERVICE ENTRANCE

DIAGRAM (30)

stock, records, and staff.

(a) Attach to main library

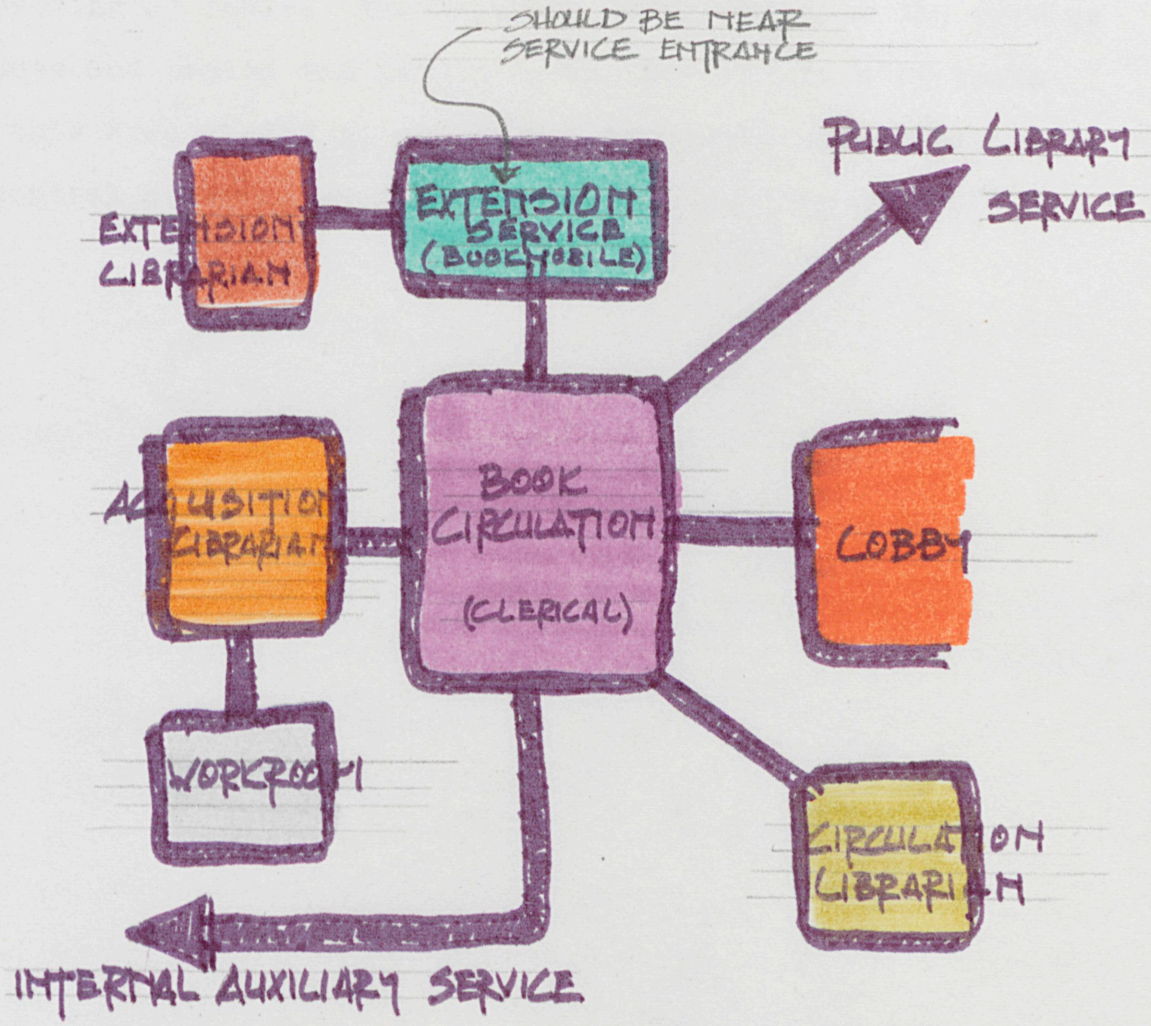
(b) Book stock area should house min. of 10,000 volumes per bookmobile, since there will be two bookmobiles, space should accomodate 20,000 books.

(c) Bookmobile staff should have its own work area adjacent to book stock area.

(d) Housing facilities for the bookmobile units should be designed to accomodate longer, higher, and wider units for in the future. See diagram (31).

1. Door and partitions (fire wall and door) should be provided, which protect other areas from noise, drafts, fumes and fire hazards which are inevitable in a garage.
2. Floor of the bookmobile should be at same level as the book storage area and loading dock should provided to facilitate loading books on the vehicles.
3. Garages should be allowed at least 15' in width for each vehicle, 18' if a loading ramp is part of the plan.
4. Storage space for maintenance tools vehicle and equipment tools.
5. Hot and Cold H_2O with sewer connection, and sand traps for washing units.
6. Heated garage

7. Electrical outlets for plug in lights and cleaning equipment.
8. Driveway should be long enough for the units to be parked outside and off the street.

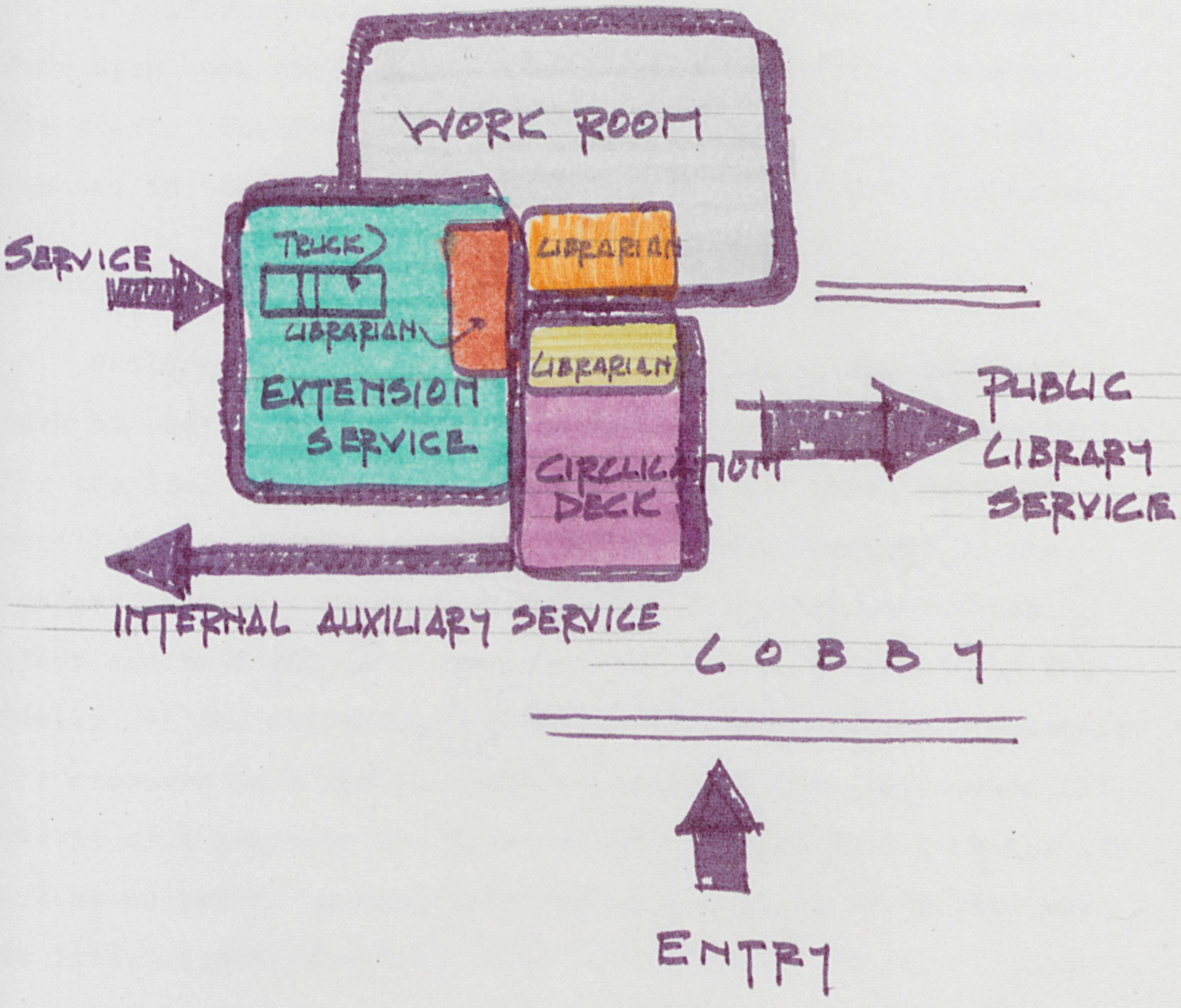


PUBLIC - INTERNAL TECHINICAL SERVICE

DIAGRAM (31)

INTERNAL TECHNICAL SERVICE

The internal technical service consists of a work room that is ussd for the repair, service, sorting, ordering, evaluation, and packing of books. The workroom should be near the service entrance and behind the return desk. Distribution of books from this area should be easily handled, with accessibility to the control desk and no public access. See diatram (32).



INTERNAL TECHNICAL SERVICE

DIAGRAM (32)

PUBLIC LIBRARY SERVICE

The public library service consists of book selections, information areas, study zones, and lounge area.

BOOK SELECTION

The library user selects his books from the catalogues, from open book shelves and according to the advice given by the staff. The lounge areas and study areas should not be located in the same area as book selection and browsing areas.

CHILDRENS ROOM-OBJECTIVES AND FUNCTION

Children seek in their reading the same thing that adults seek in theirs, excitement, vicarious experiences as substitutes for the real experience with their youth and their physical, mental and emothinal limitations deny them, security or the comfort that is cometimes missing in their lives but which often can be found as a result of the relationship within the family, or the individual character in their books. Frequently the exposure to a problem such as death, a divided home,an ill parent or a new baby can first be encountered in a book and its situation met in reading this act as a cushion to reality when it later must be faced.

Although the child remains an individual throughout his years of development certain interest can be charted as occurring at different stages of his development. As an infant the nursery rhymes and jingles with their rhythm, alliteration and complete little story often concerning people or animals with

the child can establish rapport, are important; simple stories of object events and children like himself enable the child to identify with his own familiar world.

The objectives of the childrens library are as follows:

1. To make a wide and varied collection of books easily and temptingly available.
2. To give guidance to children in their choice of books and materials.
3. To share, extend and cultivate the enjoyment of reading as a voluntary, individual pursuit.
4. To encourage lifelong education through the use of public library resources.
5. To help the child develop to the full his personal ability and his social understandings.
6. To serve as a social force in the community together with the child's welfare.

The Children's Room should be colorful, informal and attractive enough to invite children to enter, browse, read, and listen. It provides services to adults working with children and to children who may fall in one or more of these groups:

1. The preschool child and the child who is learning to read.
2. The child intent on informal or on a school assignment.
3. The browser looking for a good book.

4. The child (generally the junior high school reader) who is being introduced to more mature reading material.

The childrens' area should be located with direct access to the central charging area and with easy access to the adult and young adult collections, but there must be some form of separation because it is considered a noisy area in the library.

YOUNG ADULT AREA

DEFINITION AND FUNCTION

For some years librarians have been concerned about service to the 7-9th graders. Sometimes labeled as the "Forgotten Age" group, these youngsters have floundered, neither assisted in the childrens room nor in the adult department. The childrens librarian with the pre-schoolers, his parents, and the almost overwhelming increase of primary the elementary age children, has out of necessity and at times out of disinterest failed to serve his needs. The young adult librarian concerned with introducting the high school group to adult literature and problems as soon as possible, has often left the junior high age child to his own devices assuming that he has found what he wanted in the childrens room.

At the age where interests lying outside of books becomes most pronounced and the young person uses the library less, the services and sometimes the recognition of the pre-adolescents needs have been neglected. The young people, gravitating between

childhood interests and those for more sophisticated, yet for less mature than their older colleagues in the tenth through twelfth grades, are nonetheless curious about personal and social problems which they meet with cometimes startling rapidity. Life crowds in upon them, and they strive to understand not only their own personalities but their relationships with other (especially the opposite sex), and with a world often too contradictory and complex for them to comprehend. Books frequently provide these children with needed insights and guidelines to the adult world, into which they emerge to quickly.

Their liveliness, their enthusiam, their desire for independence of selection, and their flexibility to life enables them to sample and to read from all areas if they are permitted to do so, and if books are skillfully shelved so that the child is made easily aware of the diversity of reading material.

The primary purpose of young adult area is "to introduce young people to a wide range of reading in the adult collection". Books recommended for a yound adult collecton, therefore, should be interesting rather than "easy" and should introduce the young person to the adult collection in so provocative a way that he will move naturally into adult reading as he matures into adulthood.

The location of the young adult area should be in a reasonably prominent position adjacent to the adult collection in order to identify the work with young adults, with adult service. Since service to young adults is basically recreational, the young adult

area is best located between the adult fiction and non-fiction and should be informally furnished. Study tables are not necessary. The young Adult area is separate and distinct from the Childrens' Room.

ADULT AREA

Adult readers desire quiet and atmosphere conduces to serious comtemplation and study. This area should be separated from the exuberance and restlessness of the younger borrowers. It should fan out from the main entrance and with easy access and a minimum of through traffic and clear visibility of all area upon entering.

MONTANA ROOM

Houses distinguished of Montanians and valuable Missoula material. This should be a handsomely appointed room with limited access.

REFERENCE DESK AND REFERENCE AREA

This area should be centrally located and adjacent to the catalog. Supervision of the entire library should be possible from the reference desk, if and when necessary. There should be shelving for 8,000 books with some low shelving, which can be used as counters for ease in consulting reference books. There should be shelving for 400 current periodicals. If possible, close to this area there should be an area where older issues of periodicals can be stored, both in physical and microfilm form. This area should be flexible and should not be set off

by walls. There should be, however, controlled access to the area.

BROWSING AND PERIODICALS

The purpose of this space is so that the visitor can come into the building and become aware of what is new, as far as newly aquired books and at the same time be aware of what is happening around him by the assortment of different news media such as periodicals and newspaper.

This should be a comfortable area with shelving for about 1,000 books. These books are ones that have just been aquired by the library and could be of special interest to the adult before they are put into the permanent stocks. Also in this area should be a display of up to date issues of newspapers and periodicals.

ADULT READING AND STOCK AREAS

This should have tables and chairs for seating 100 people and shelving for 80,000 books.

Seating should be dispersed throughout the stock area. The only classification division would be by broad Deway classification so that fiction could be shelved on wall shelving, and books in the floor stocks arranged in numerical order but grouped so that the ends of the stock would indicate the five broad class groups. Departmentalization of the collection is not desired except, if possible, in a broad general way.

a. Philosophy, religion, sociology and language
b. Science, technology and business
c. Art and music
d. Literature
e. History and biography

See diagram ( ).

AUDIOVISUAL AREA

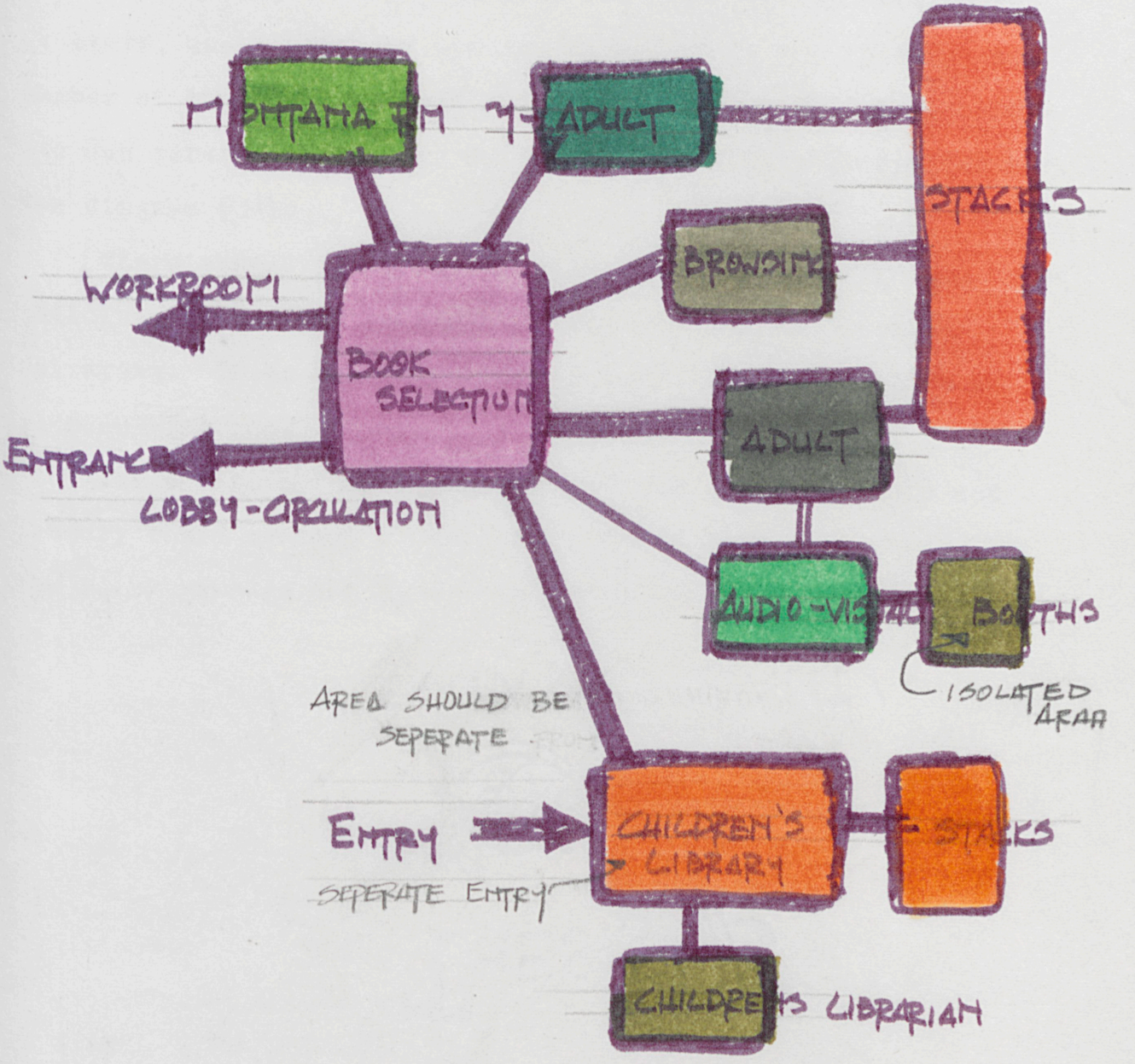
The modern public library is in essence a center of communications providing materials in all media through which ideas and information are transmitted. The newer forms of communications with the public library commonly grouped under audiovisual services including recordings, tapes, films (16mm and 35mm sould, slides and filmstrips, microtext materials), and quality art reproductions.

The Missoula Public Library should be completely equiped to handle audiovisual materials and allow for expansion and growth in this area. Minimum Montana Library Assoication standards provide for 200 film titles and membership in a film circuit with at least 25 added per year and 5,000 long playing discs or tapes with 500 new discs or tapes purchased annually. The audiovisual area shall provide housing for atleast 5,000 recording in open stock using browsing units. Listening area shall be provided in the form of at least two listening tables specifically designed for the building that will include seating capacity each for 6 people. Each table will contain two 4 speed turntables, an stereophonic amplifier, 1 stereophonic tape deck, 6 pairs of stereophonic headsets, and 3 inputs for each of the six stations. There should be counter area for charging and discharging of audiovisual materials. A small workroom should be located behind the counter area. It would be possible to shelve the film collection entirely on one or two free standing metal

film shelving units within the workroom which should also be well ventilated and illuminated. The work area should be glassed partially for supervision ease. Much of the wall space in the public area should be lined with plastic coated cork board to allow picture display of framed art reproduction or original art loans. A storage area for prints could be in the workroom. Some shelving in the public area should be included for music scores which can be used in coordination with the record listening areas. See diagram (33).

SPECIAL SERVICE AREA

This area should be an extension of the audiovisual area. It will be supervised from the AV counter. It will contain 3 typing rooms and one seminar room. The rooms should have glass walls for easy supervision, locked doors and through acoustic treatment. Drapery tracks should be provided on the outside of the rooms. An outlet for future use of electric typewriter or other equipment should be provided in each of the typing rooms. An outlet on all four walls of the seminar room should be provided. Space and outlets should also be provided for microfilm reader-printers.



PUBLIC LIBRARY SERVICE

DIAGRAM (33)

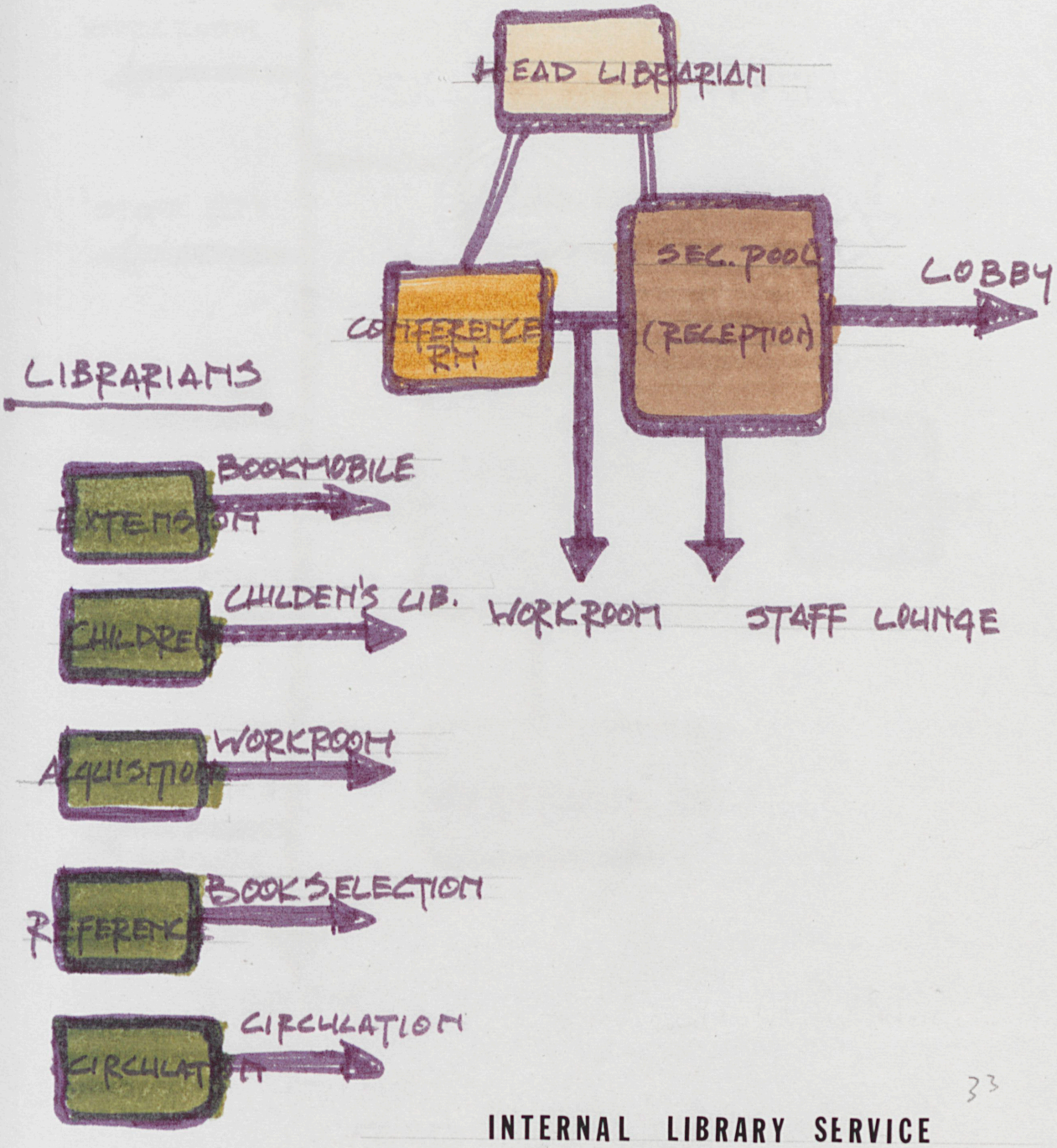
INTERNAL LIBRARY SERVICE

The internal library service consists of the administration areas of the library; the office of the librarians and assistants and a conference room.

The head librarian will have a separate office to carry out his or her duties. The duties of the librarian include; head of staff, supervision of monies, direction of the library, and member of the library board. The head librarian will also have his own personal secretary and space should be provided for her. See diagram (34).

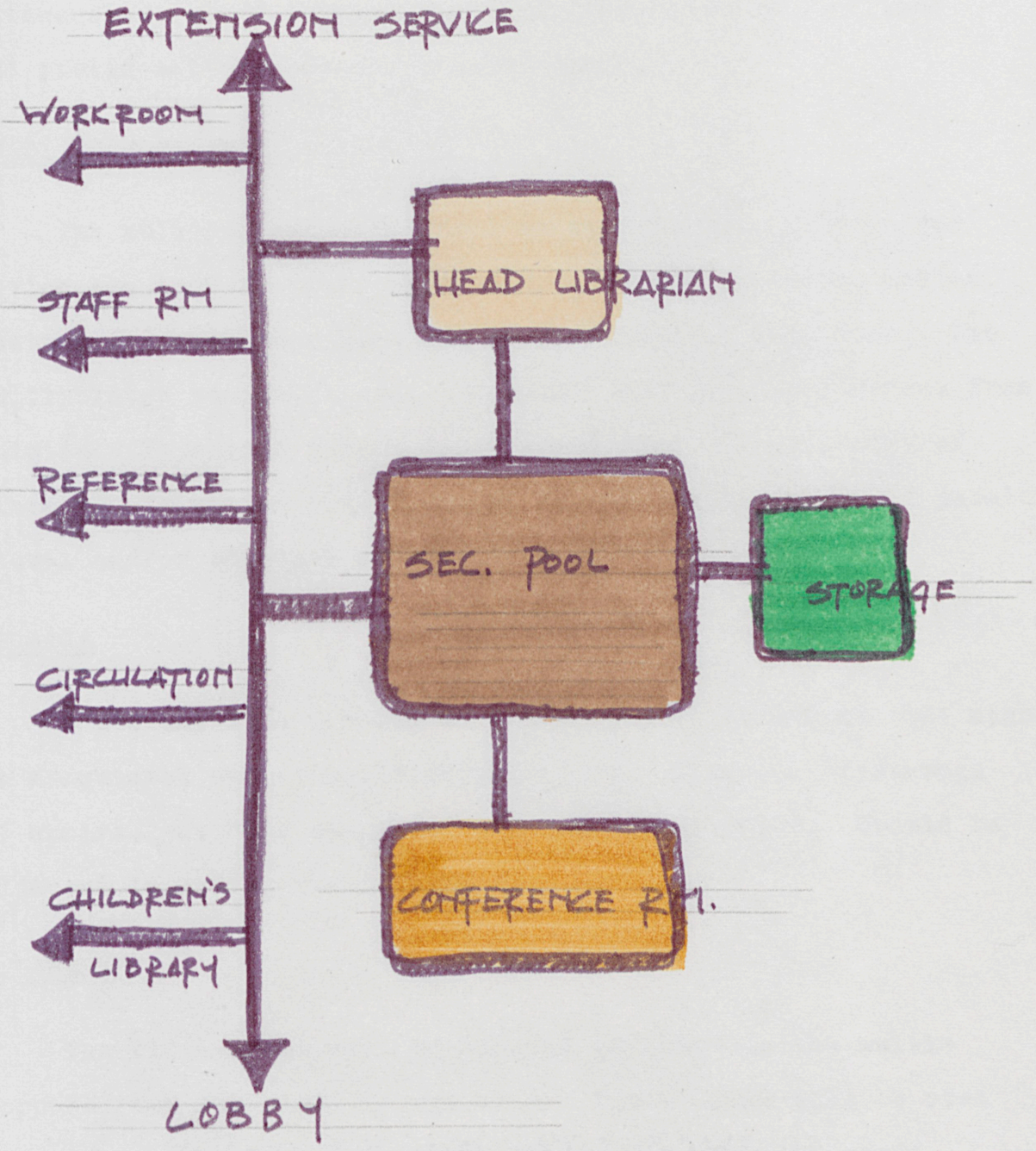
There should be office for the Circulation Librarian, Childrens Librarian, Extension Librarian, and Acquisitions Librarian. These should be located in strategic location in each service area.

The conference Room will be used for staff meetings and library board meetings. This room should have easy access for the board members and direct access to the head librarians offic.



INTERNAL LIBRARY SERVICE

DIAGRAM (34)



INTERNAL LIBRARY SERVICE

DIAGRAM (35)

INTERNAL AUXILIARY SERVICE

The internal auxiliary service consists of a multi-purpose room, storage facilities adjacent to the multi-purpose room, kitchenette, staff lounge, janitors closet, mechanical room and public toilets and circulation space.

MULTI PURPOSE ROOM

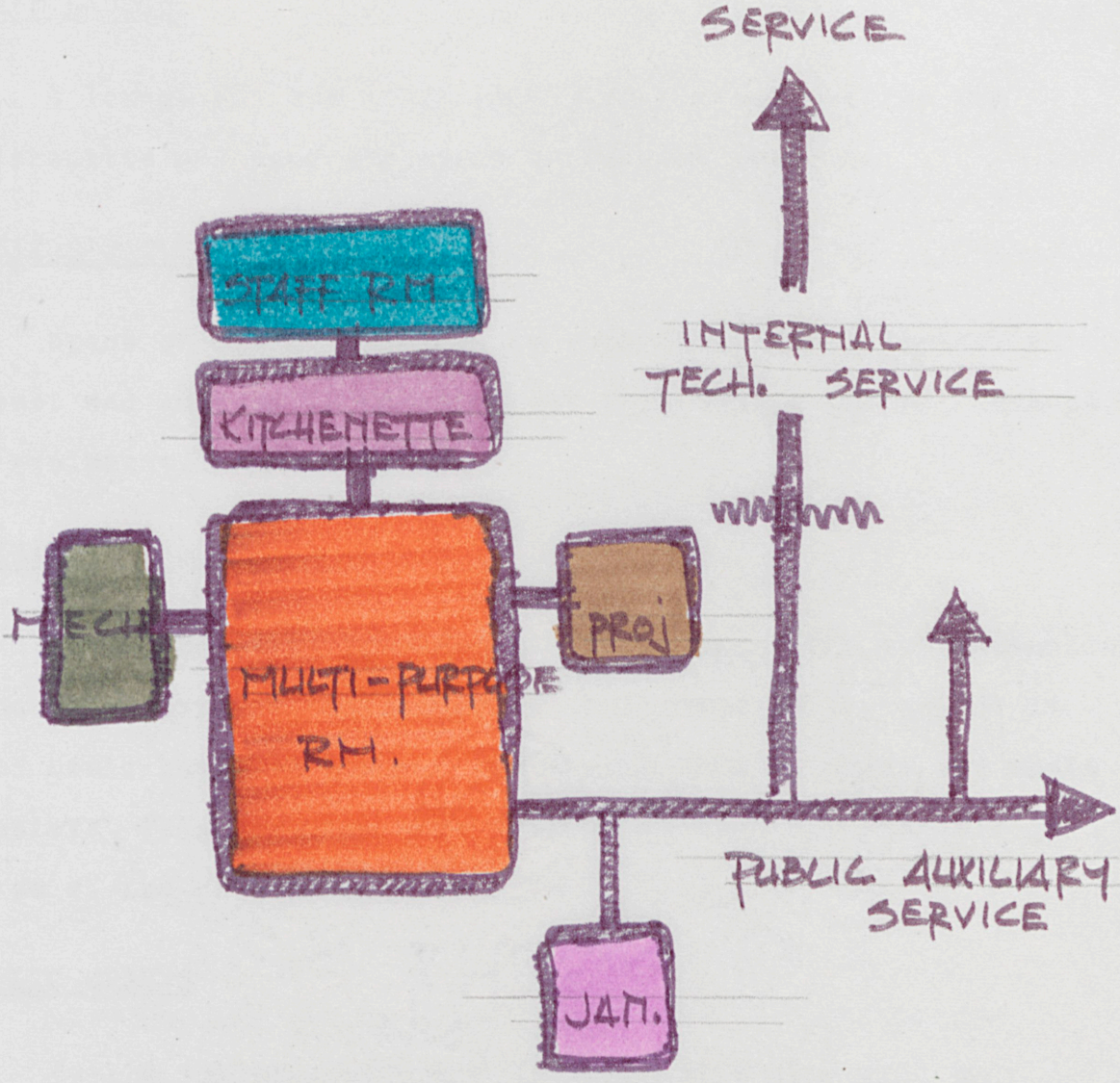
The multipurpose room shall be used by the children for movies showing and other productions. Adult lectures, movies, meeting and other programs can be presented in this room. The multipurpose room will seat 100 people and have easy access from outside. It should permit locking off from the main part of library. It should permit use of public restrooms and if possible visual and/or physical control from circulation desk.

STORAGE

A storage area for all of the necessary equipment that might be associated with themultipurpose room. Area use of storage of chairs, portable stage and projection equipment. Should be adjacent to multipurpose room.

KITCHENETTE

The kitchenette will be located adjacent to the multi-purpose room and staff lounge area. The kitchen will be used for snack area service to the multiprupose room and staff lounge area.



35

INTERNAL AUXILIARY SERVICE

DIAGRAM (36)

STAFF LOUNGE

A lounge for the staff should be located next to the kitchenette and near the staff toiletsand coatroom.

JANITOR'S CLOSET

Space should be provided on each floor for a janitor's closet and an area in the basement for storage and maintenance of equipment.

MECHANICAL ROOM

Space should be provided in the basement for the mechanical room if individual buildings has their own, or the center it self could have one central mechanical room to serve the whole complex. This decision will be made further into the design phase of the project.

PUBLIC SPACES

Public toilets, corridor spaces, and stairs will be determined in the final design according to the amount of access needed to let the building function properly.

EQUIPMENT AND MATERIAL

Flooring is a major finish material of every building and should be chosen properly. The right floor material should be applied in the right area. Eash area has different requirements and each basic type of material has different physical characteristics. Also, flooring differs greatly in their maintenance costs. Flooring should be chosen according to the traffic and upon projected maintenance costs.

Another of the major materials of a library is the lighting. The American Council of Lighting recommends the following illuminations:

Area	Foot Candles on Task
Reading room	
Study and notes	70
Ordinary reading	30
Stacks	30
Book repair and binding	50
Cataloging	70
Card files	70
Circulation desk	70
Lobby	20
Corridors, elevators, public area	20

Lighting systems involve a little more than just the lamp and the fictures. The color of the ceiling, walls, floors, table and desk tops, all contribute in some measure to redistribute light around the room and provide an atmosphere conducive to eye comfort.

To avoid direct glare from the light sources, fixtures must be selected which have a low brightness surface. Furthermore, ceilings and walls should be light in color and of nonglossy finish, so that light received at these surface will be efficiently reflected back into the room.

Table and desk tops should be finished with a fairly light, diffusing surface to provide a comfortable brightness rota between the white pages of a book and the immediate surroundings. For comfortable, balanced brightness ratios the following reflection factors of room surfaces are recommended by the Illuminating Engineering Society:

Recommended Reflectances

Ceilings	85%
Walls	60%
Furniture	35%
Table and desk tops	40%
Floors	30%
Window walls	80%
Door trim	40%

HEATING AND VENTILATING

Air conditioning is recommended for the preservation of documents. Only through air-conditioning can the temperature be kept constant. The temperature can vary from 68-74 F. and the humidity should be kept at approximately 50%.

Types of heating systems vary, but hot water and steam should be considered because they are a little cleaner than forced air, and this would make maintenance of books easier.

MUSEUM

6

FUNCTION OF BUILDING

GENERAL

A museum was originally a temple or sanctuary of the Muses. Musus were orgininally the nymphs, or goddesses of inspriation. According to Hesiod, they are the nine daughters of Zenus and Mnemosyne, each one associated with a different area of endeavor. Later it became a place dedicated to the work of the Muses.

Today, we think of a museum, definitively,as a building devoted to the collection, preservation of works of nature, art, and antiquity or to the exhibition of rare and instructive articles of the art, science, or literature.

The difinition of the function of the museum has of course, not remained unchanged for centeries nor has there necessarily always been a general acceptance of a single definition.

The notion of work of art-other than architecture-as public property or at least as public enjoyment is of relatively recent orgin. The notion is largely of Western orgin. This orgin is due to two causes; a level of physical wealth which allows and abundant production of art and a form of culture in which this art is seen as a kind of surplus, not immediately winted inany everyday secular or religious activity.

At first, museums were the endivors of the rich. As people is a position of wealth and power. collected material objects from their empires. These precious objects were

aquired and housed in a safe place by those affluent enough to do so. These collections and their "safe places " became what we know as today as museums, but they wre limited in their exposure to only the chosen few.

Since museums and their collections have now largely passed into the hands of the public, the experience and educational opportunities which were at first reserved for only a few, are now offored to people from all strata of economic, social, and educationial backgrounds.

The essential function or "reason for being " of a museum lies in its capacity as a "container" or "safe place" for the various exhibits and precious articles. Resulting from the "container" function, there goes the function of a museum that is the basis of public museums. By observing the collection in a museum, people can do more than learn-they can be motivated, they can experience, they can visualize other cultures and other times, and they can even relax. Not everyone comes to the museum with academic fulfillment in mind. For many the trip to the museum is just an interesting or relaxing time-filler between work hours or during a slack afternoon, or day-off. The type of people and the kind of visit they make are just as varied, if not more so than the number of people visiting a museum.

PURPOSE

The museum is a medium of communication-visual and tactile experience encounter between object and observer. It is primarily, but not necessarily exclusively concerned with the visual communication of object cultural and scientific interest, both cultural andscientific used in their wildest sense. Unless therefore, the museum is able to fulfil this task it is failing in its purpose. Museum design, both in terms of architecture and display must at least make possible such communication and preferably, actively contribure to it.

The museum is not obviously, the only aviable medium of visual communication; on the contrary, the cinema, television , also a mass medium, but unlike them does not presuppose a simultaneous audience, it is like the illustrated book or journal, able to communicate to an individual at a time. Yet through it shares characteristics with each of these media, it profoundly differs from them. The printed illustration, the cinema screen and the television set are only able to transmit reproductions of the object, they create a new image; the museum is able to exhibit the object itself. Museum architecture and display must therefore exploitthis unique sense of immediacy, this direct encounter between viewer and viewed.

The building is to preserve and exhibit object called work of art,science, nature, and literature and enable as many people as possible to experience those object as

effectively and as pleasantly as possible; the encounter of object and viewer.

PROGRAM

Fundamentally three question initiate a museum progrem: (1). What is going into the museum? (3). What kind of audience is the museum to get? (3). What is the museum trying to communicate?

The frist question is multi-layered. The major consideration for an architect is whether he is to design spaces for a permanent collection or for changing exhibitions. Designing to fit a permanent collection is the familiar static situation in which most architects feel at ease.

Not every museum starts with a strong permanent collection however, nor does every museum director aim to acquire one. For art museum, the source of supply is so critical that traveling exhibitions may ultimately be their only stock in trade. Unless someone yet unknown cache of paintings from the four great centuries of paintings is muaculously discovered, we can fairly safely assume that no more major collections, like those of the Louvre, the Metropolitan, or the British and American „ational Galleries will be assembled in the future. The source of paintings and status created between 1500 and 1900 have surely been tapped nearly dry. As a consequence, the museum that are built in the future to house permanent collections of past

culture

cultures will have to resign themselves to being either small and specialized (unpopular periods, minor masters, local artists, or prints and other media) or road houses for traveling segments of the great metropolitan museums.

Spaces for traveling exhibitions, however more difficult to plan than space for permanent collections can be well designed. As Ludwig Glaeser of the Museum of Modern Art, points out large, flexible, multipurpose spaces are better coped with by American architects since they cannot or will not take the time to design individualized settings for each work of art in a permanent collection as Italian architects do.

The essential point is clear: no matter whether the museum exhibitions are to be static or changing, the initial question to be determined is: What of the two will it be? In other words, what is going into the museum?

It this time, I should mention something about the type of museum that I propose for the complex. There is no known art collection in Missoula that could be permenantly displayed in the structure and the finical cost of aquireing one is too great for the community to support. But Missoula does have a source of local talent, mainly from the University. To provide a place for them to show their work, gives them the opprotunity for exposure which otherwise would be nonexsistent. The bulk of exhibit will not soley come from local artists but from traveling display from major

museum throughout the country. The museum will not necessarlydisplay art objects but nature,scientific, etc. The museum could have and art display in one space witha NASA space exhibit in another. With proper mangement and scheduling, the museum could have good variety of refreshing subgect on display for the community.

Getting back to the program, it must ask what kind of audience the museum is to get. An architect may ask about what possible difference this fact can make if the exhibit type is constant, but he will not ask again if he understands designing a museum for children versus adults.

Third, it is essential for an architect to know what the museum is trying to communicate through its exhibits. This is an area formely neglected by architects as soley the province of the exhibition designer. Not only is there a curatorial decision about how important a painting should look, which was the major consideration of the past, but now there is a more cretecal question of the interrelationship between the exhibit and the audience, a question of how much involvement can be extracted from the museum audience.

ACTIVITIES

There are four basic activites which occure in the operation of a museum.

PUBLIC ACTIVITIES

These include reception,education, meetings, and sales functions. These activities take place during the day as well as at night, without intruding on the other functions

EXHIBITION

Two distinct activities are evident here. There are visitors absorbing information from and being enriched by the exhibits. Also ther is the continual flow of exhibits -those which change monthly or annually,, galleries which have a 10-year turnover and which change according to new social and educational needs.

Two very different types of activity are involved in the exhibit area- the flow of public and the flow of exhibits and staff.

CURATORIAL AND PRODUCTION

In the third distinct area are concentrated the museum's internal operating functions. There is a central core in which all exhibits are designed, prefabricated and pre-assembled, so that only installation is required in the galleries

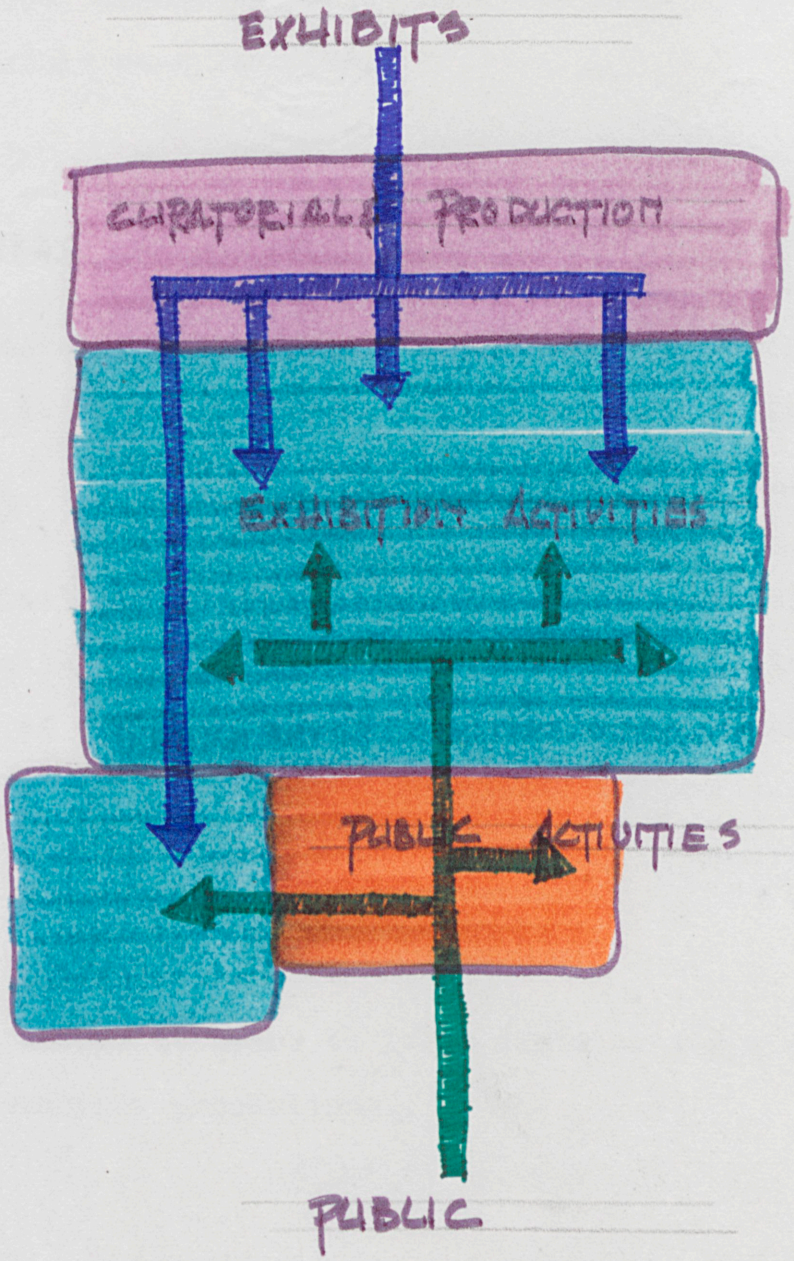
In this working area, one of the outstanding characteristics is movement of volume, weight, and diversity in

materials, exhibits and collections. There is a two-way stream of these activities following major traffic arteries -comming into the loading bay, passing to curatorial areas, then on to exhibit production, to exhibit galleries and back agian. See diagram (37).

Extensive areas make up a major production operation are provided for exhibit production and preperation of object Here there are quite different kinds of activity, areas assigned to organizing collection, planning, and publication.

MECHANICAL

The normally hidden function provides for environmental conditioning-lighting, atmospheric control, cleaning and communications.



FLOW OF ACTIVITIES

DIAGRAM (37)

There are three basic functions into which any small museum is logically disposed because of the different nature of activities, personnel, equipment, and type of spaces required within each function.

PUBLIC AREAS

All those activities that the musuem produces for public benfit and in which the public participates or attends.

ENTRY FOYER

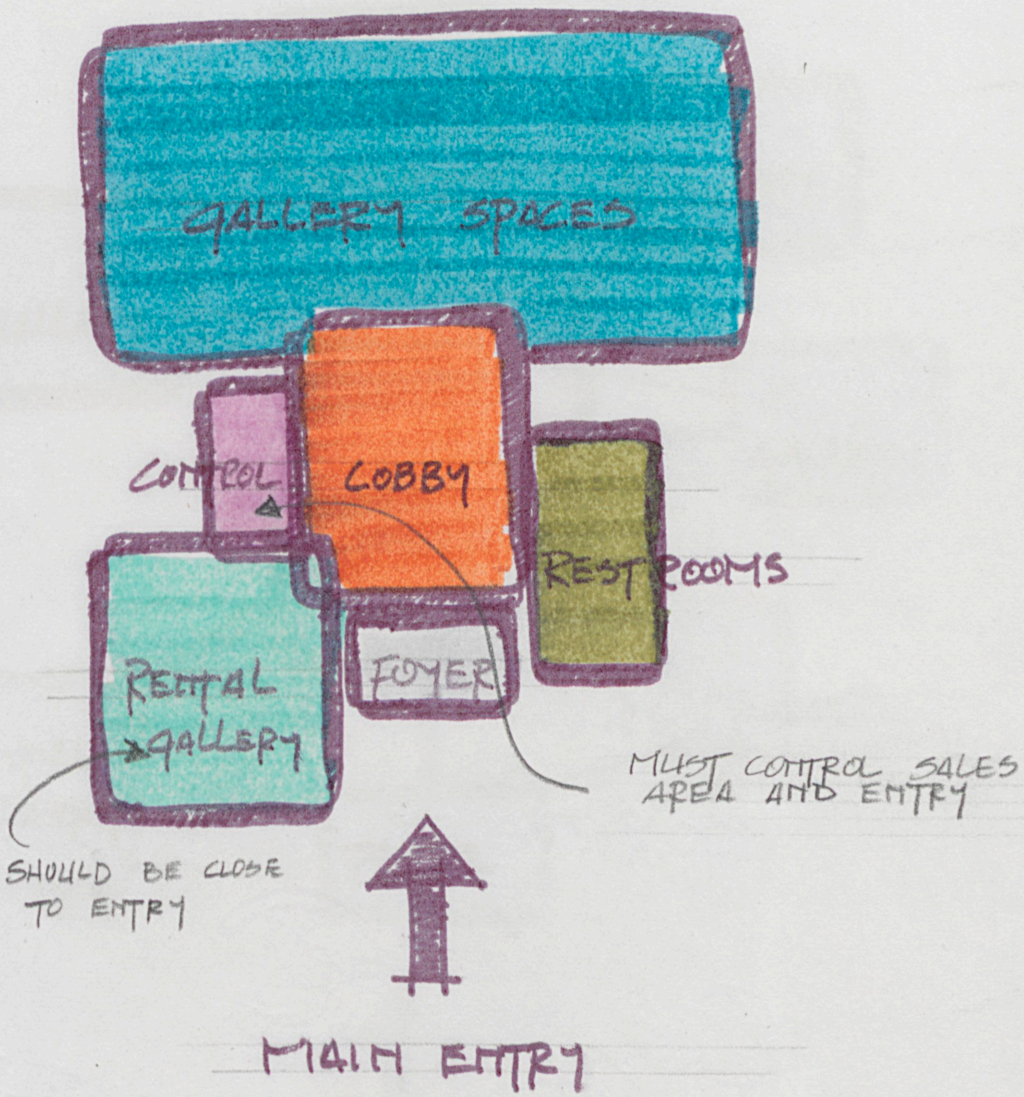
Circulation area and should be larger enough to handle the traffic in the museum. The entrance must be in view of control of Reception desk. Ideally an museum should have but one public point of ingress and egress: security control.

CLOAKROOM

There should be areas to leave coats or lagge packages or purse: security precautions.

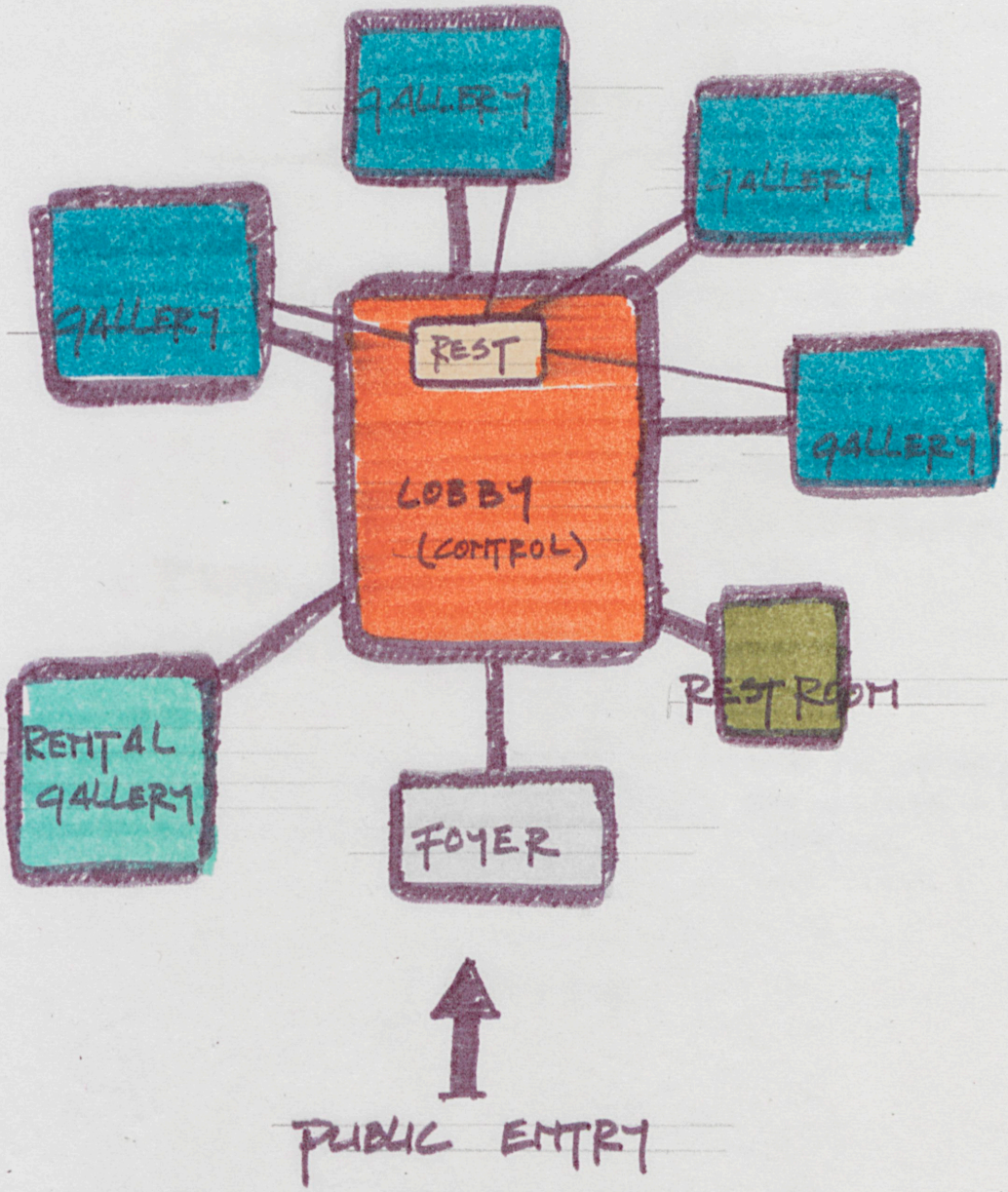
LOBBY

Control of entrance area for all vistors and provisions of general information on the museum, its purpose and special facilities. Familiarize and orient the visitor with regards to the exhibits and the building. Should provide small lounage, information and control desk.



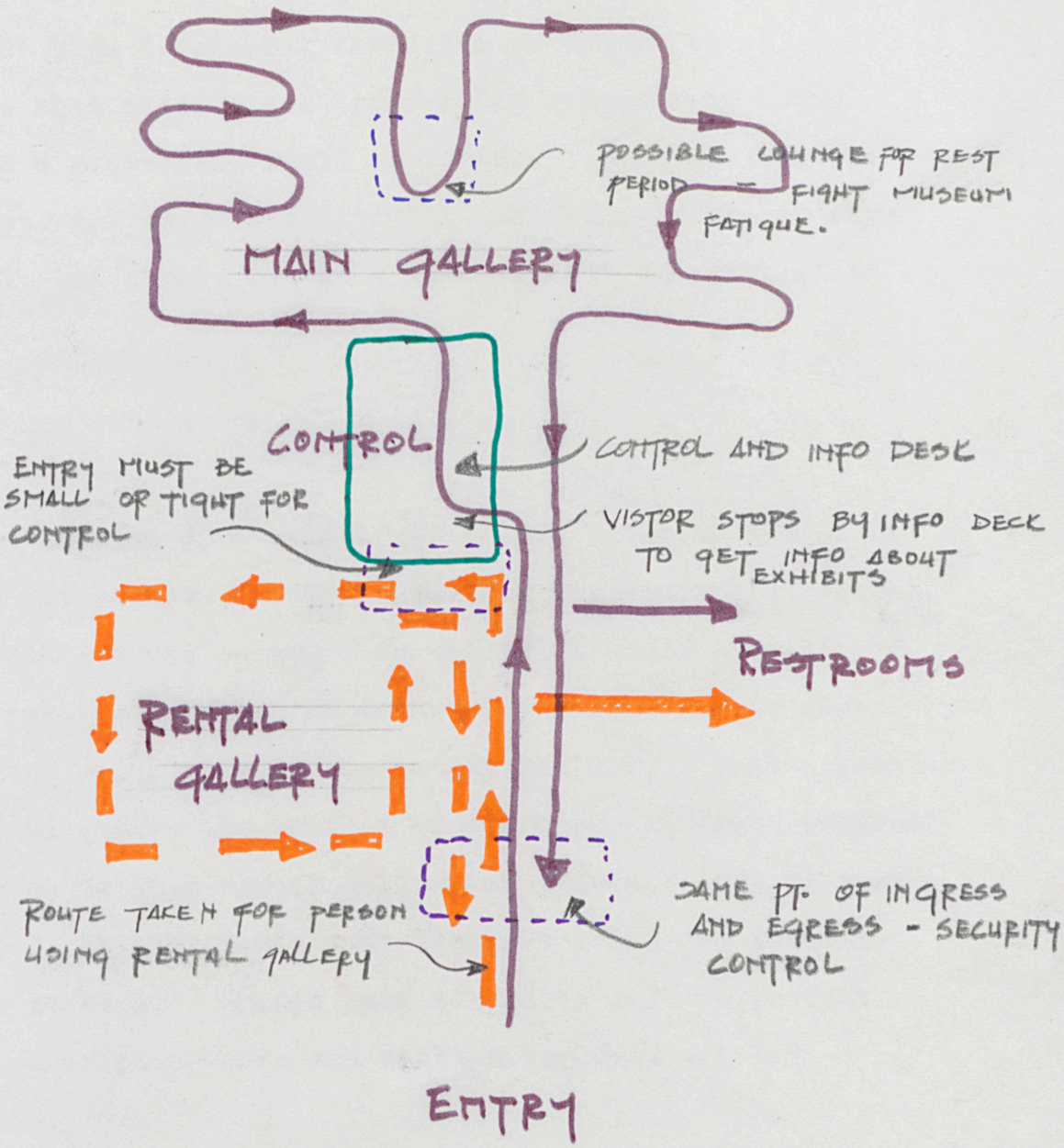
PUBLIC AREAS

DIAGRAM (38)



PUBLIC SPACES

DIAGRAM (39)



CIRCULATION - PUBLIC AREAS

DIAGRAM (39)

MAIN GALLERY SPACES

Display area for current exhibits. Exhibit wall to be 11'-12' high (vertical field for paintings,etc.) Layout so that objects are apprehended visually by being placed in a controlled field of vision. Seen os sequence (this does not mean historically, chronologically or stylistically, but simply one at a time against the controlled field.

SALES

Area consist of a rental gallery for display and sales of local art objects. Should be walk-in, browsable, self-service to increase sales. Should be at front entrance of museum, permits waiving the entrance fee-if there is one-for visitor going only to the rental gallery. Such a location also minimizes the problem of customers carrying wrapped packages containing rental gallery art through rest of museum. The rental gallery should have distinct areas for exhibitions and storage. Should have elongated desk to prevent congestion of purchasers and tight entry-exit way for control.

PUBLIC TOILETS

Should be located near lobby lounage.

ADMINISTRATIVE SPACES

Adminstration, office work, files, financial control and any other activities which manage the physical plant and the total public program. Close to entrance. See diagram (44).

RECPTION AND SECRETARIAL OFFICE

Area provided for recieving offical visitors, telephone switchboard and for general secetarial work such as stenography, records, and accounting.

ADMINISTRATIVE OFFICES

Area provide for individual work, appointments for the Museum Director and his staff.

STAFF LOUNAGE

A lounage for the staff use during break time, should be located next to staff toilets and cloakroom.

STORAGE

Use for the storage of administrative supples. Located near secretarial spaces. Should have safe for revenue from sales area.

MAILING AND PRINT ROOM

Serv Service area for preparation or reproduction of outgoing mail and museum literature.

CONFERENCE ROOM

Intra, as well as inter-museum personal meetings.

NOTE: Determined by the final design, some of these spaces could be incorperated into the main adminstrative offices of the Cultural Center. If so some of these spaces can be eleminated.

CURATORIAL AND PRODUCTION

Shipping,recieving, mechanical, maintenance, storage, and all other activities that make the physical operation of the museum possible. Also the collection, preperation, restoration, assemblage of all incoming collection.

RECEIVING AND SHIPPING AREA

Space for inspection of incoming exhibits, material and final packing of outgoing shipments.

LOADING PLATEFORM

Exit and entry to museum for trucks. Should have overhang or canopy to protect unloading and loading operation in inclement weather.

CARPENTRY AND PAINTING ROOM

Includes raw material storage for construction of special exhibitions, cases, pedestals. Also for the repair of traveling exhibits. Should include shop office at 150 sq. ft.

LAYOUT AND ASSEMBLY

More exacting and refined work in preparation of exhibit.

PHOTOGRAPHY ROOM

Taking of pictures and developing them in recording and preparing exhibits.

STORAGE

Storage for materials not currently in use in the exhibit area.

STAFF ROOM AND LOUNAGE

Area for the staff ot change into work clothes. area includes restroom and showers.

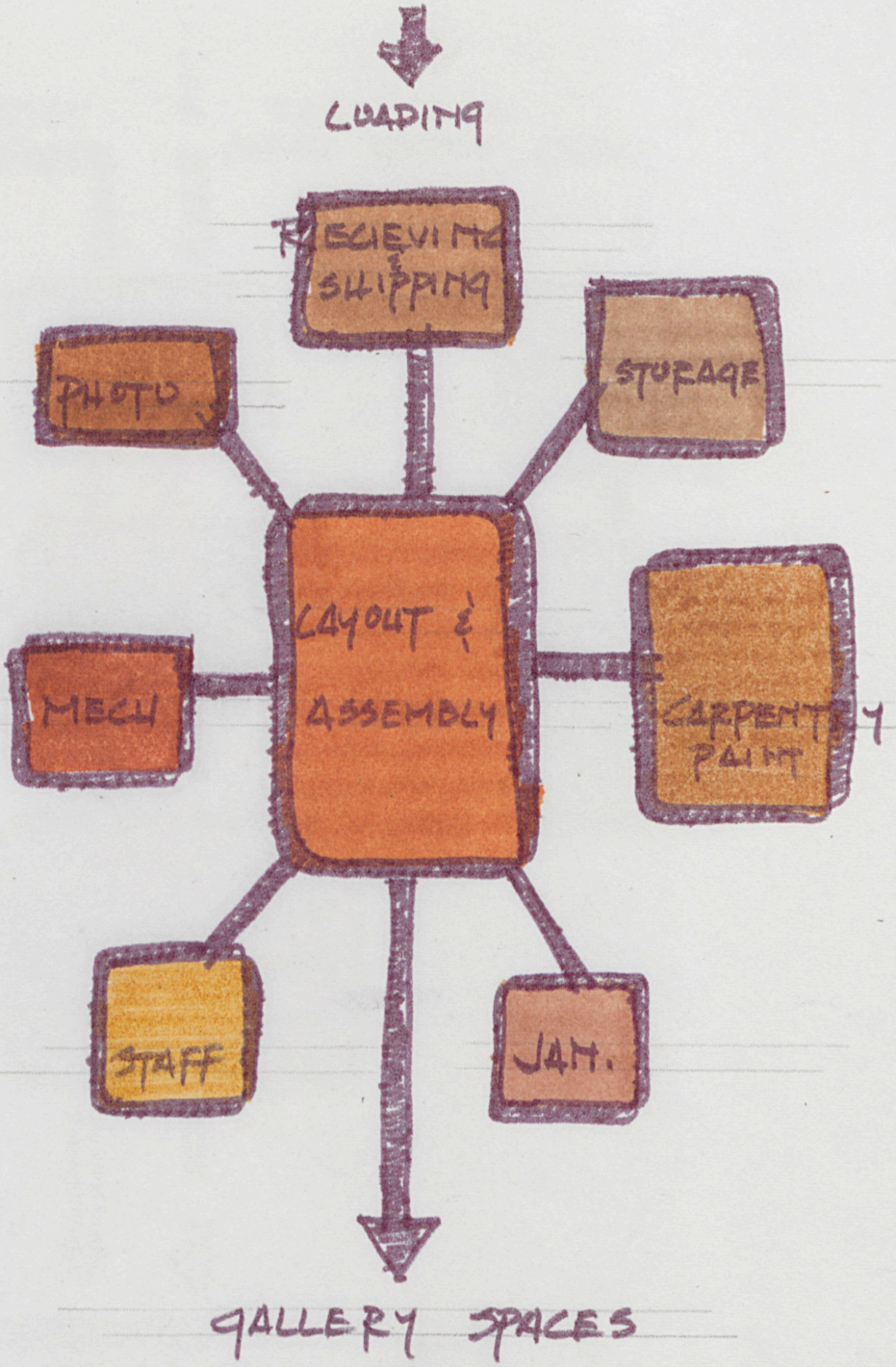
MECHANICAL EQUIPMENT ROOM

1. heating and air conditioning
2. fan room
3. electrical equipment
4. telephone relay panel

JANITOR

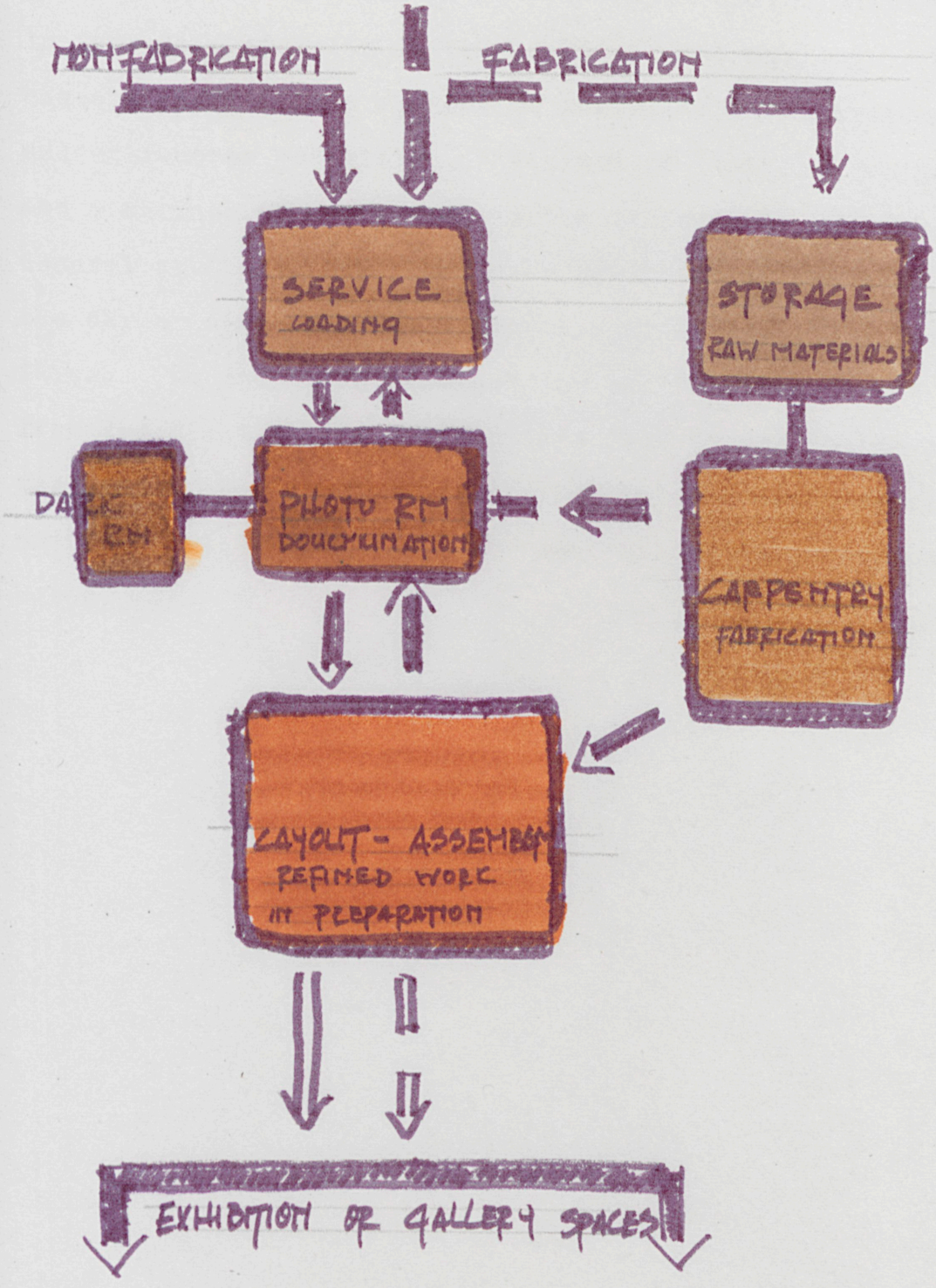
Storage of materials required for maintance of the museum, janitor's tools.

NOTE: Some of these areas can be incoperated into the Work-shop Dept. of the theater . Depending on final design decisions.



CURATORIAL AND PRODUCTION

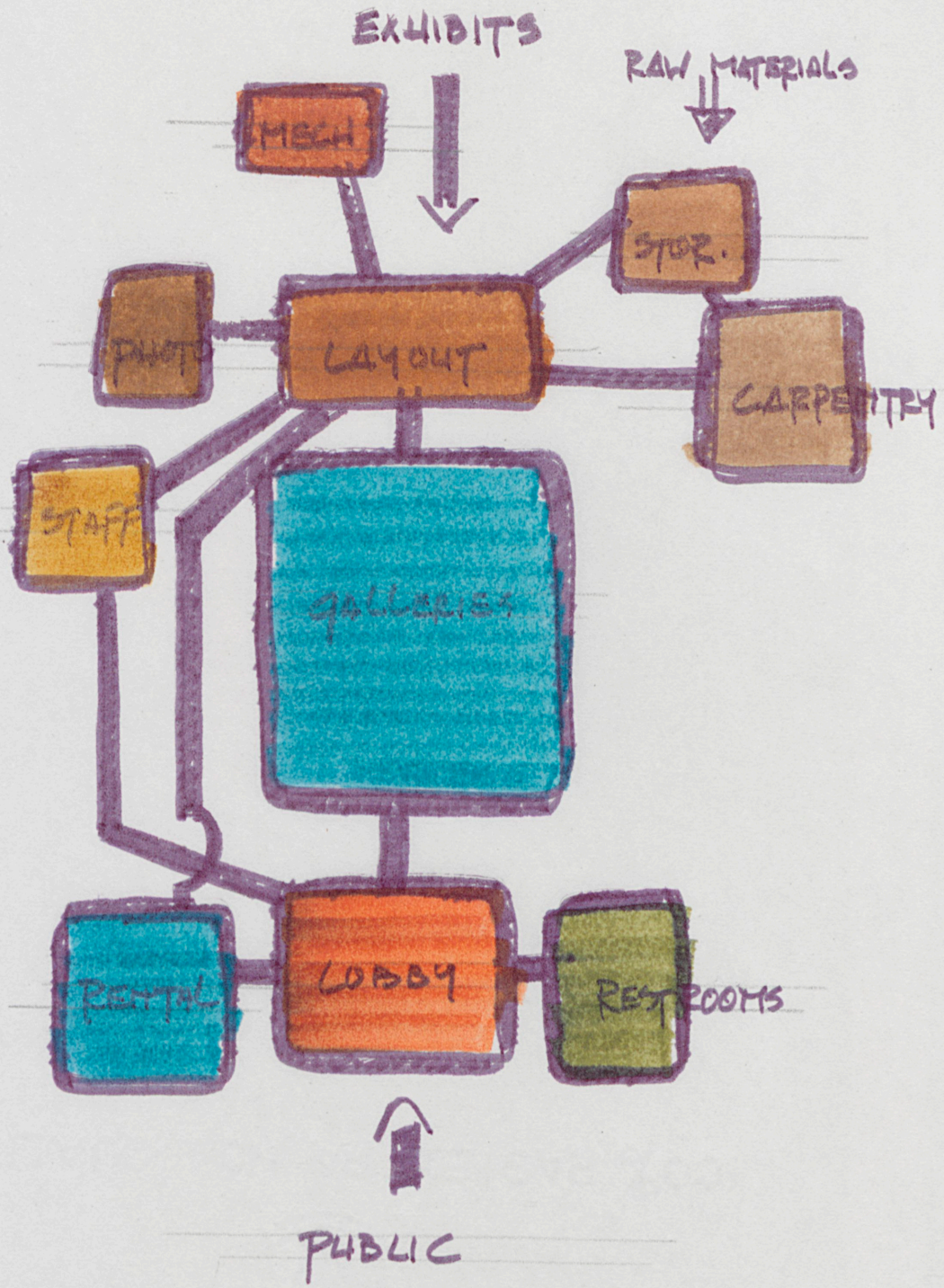
DIAGRAM (40)



CIRCULATION OF EXHIBITS

DIAGRAM (41)

The four major groups of activities can be reflected in four distint units in the architectural massing. This concept results in a minimum of confusion and intrusion and extraneous activities, a minimum of "traffic" congestion and a maxinum of protection to the collections and exhibits. General public activities can be conducted at any time of the day or night with out adversely affecting other activities. In the exhibits block the public flows in and out from the front, while the exhibits flow in and out through the rear. The curatorial and production activities are conducted without intrusion by the public; See diargam below.



RELATIONSHIP OF SPACES

DIAGRAM (42)

ADMINISTRATIVE

Administrative Activities

Possible Space Requirements

1. Reception - Sec. Pool
2. Conference Room
3. Multi-Purpose Rooms
4. Storage
5. Offices : (6) → 1. Accountant
   2. Business Mgr.
   3. Center Mgr. - (Theater)
   4. Museum "
   5. Catering Mgr. - (Restaurant)
   6. Publicity "
6. Print - Mailing Room
7. Staff Lounge - Restrooms
8. Box Office (Theater)
9. Safe Room.

Duties

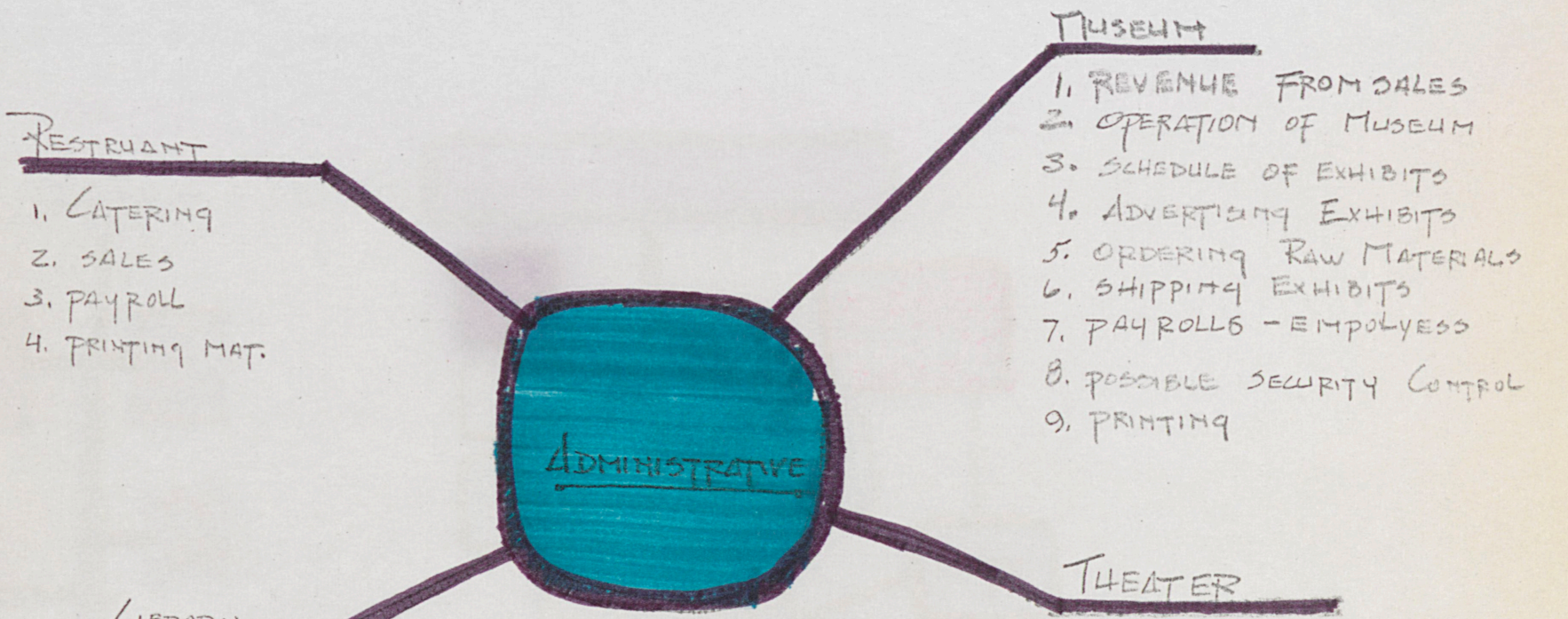
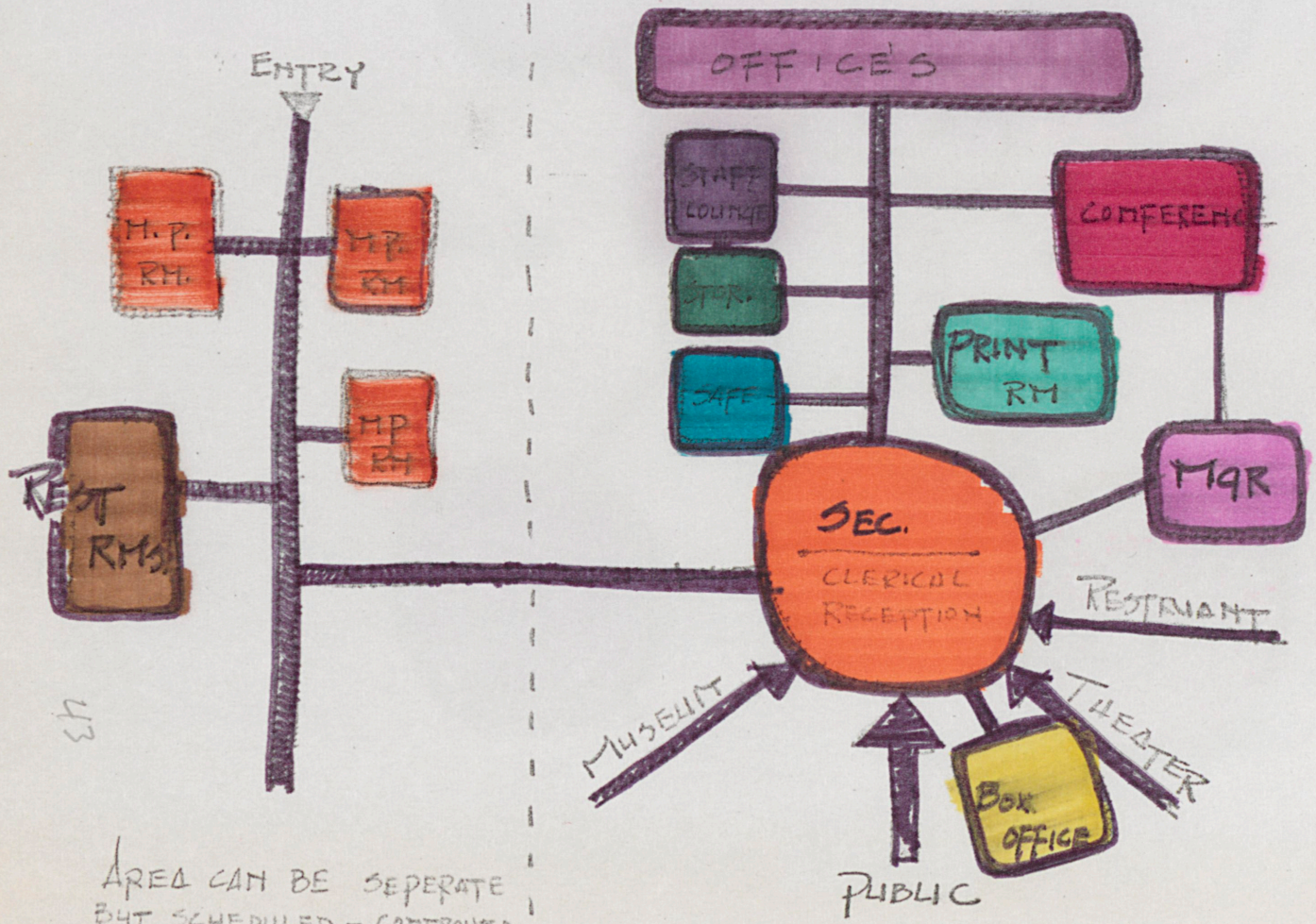


DIAGRAM (43)

4/2

RELATIONSHIPS WITHIN ADMIN. AREA



AREA CAN BE SEPERATE BUT SCHEDULED - CONTROLLED AT ADMIN. AREA.

DIAGRAM (44)

RELATIONSHIP

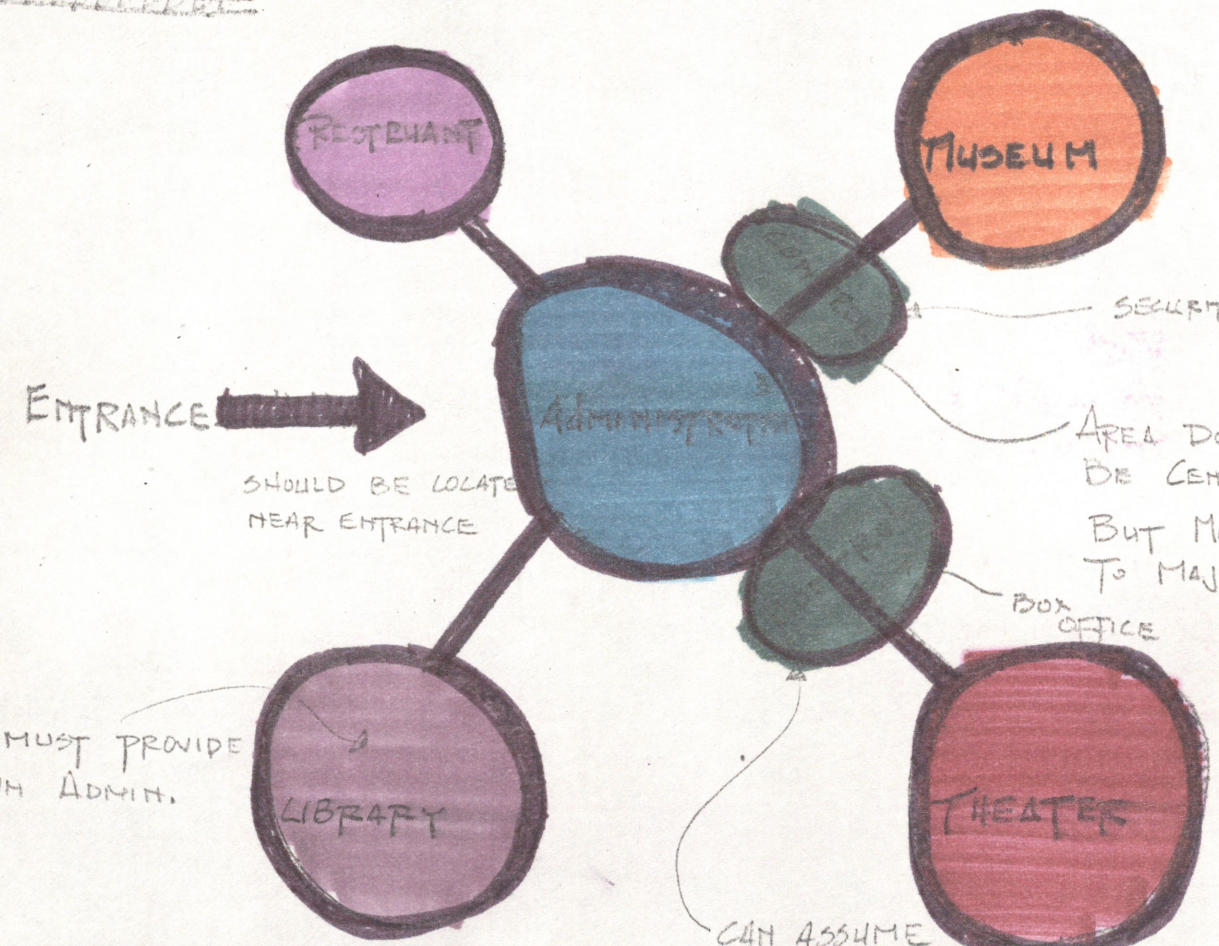
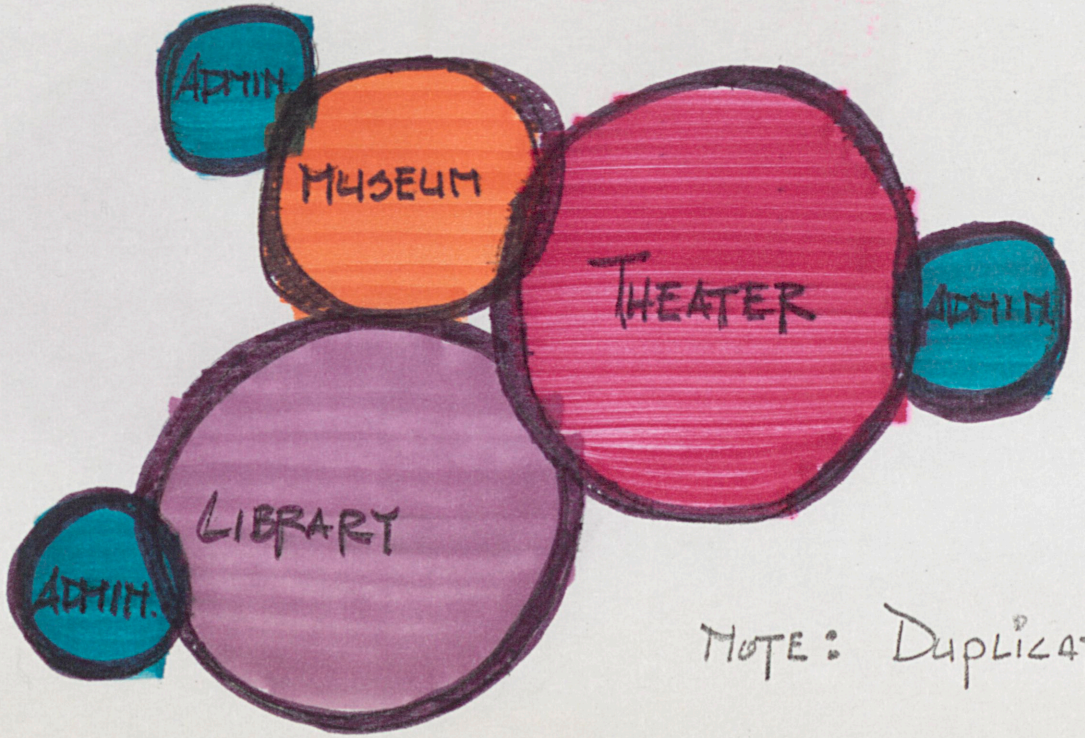


DIAGRAM (45)

SOLUTION : #1 ONE SINGLE SPACE ASSUMES AND HOUSES ALL ADMINISTRATIVE DUTIES FOR THE CULTURAL COMPLEX.

REASON : LIBRARY HAS SPECIAL FUNCTION THAT REQUIRE ADMINISTRATIVE (SPECIALIZED PERSONNEL)

SOLUTION : #2 EACH AREA HAS OWN ADMINISTRATION AREA



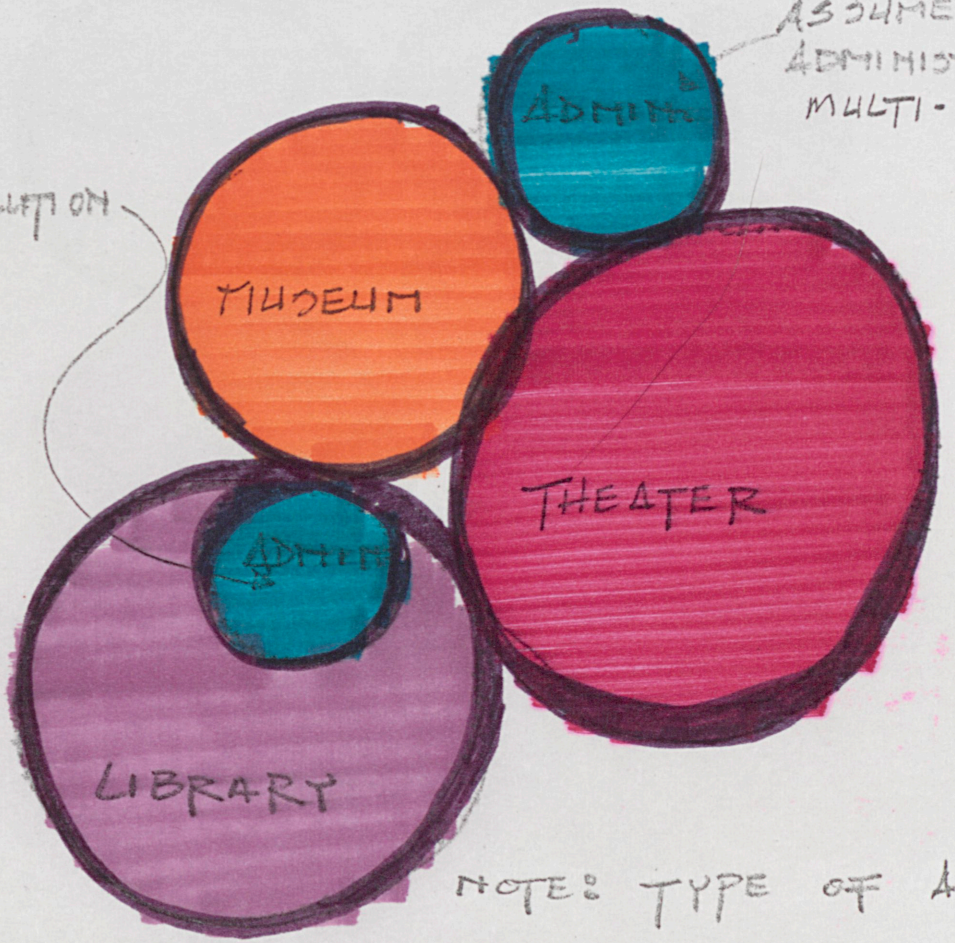
NOTE: DUPLICATION OF FUNCTION

DIAGRAM (46)

SOLUTION : # 3 MUSEUM - THEATER SHARE ADMINISTRATION SPACE, LIBRARY PROVIDE OWN.

ASSUME AND RESPONSIBLE FOR ADMINISTRATION OF COMMON, MULTI-PURPOSE SPACES

* MOST IDEAL SOLUTION



NOTE: TYPE OF ADMINISTRATION NEEDED FOR LIBRARY, BEST IT PROVIDE OWN SPACE.

DIAGRAM (47)

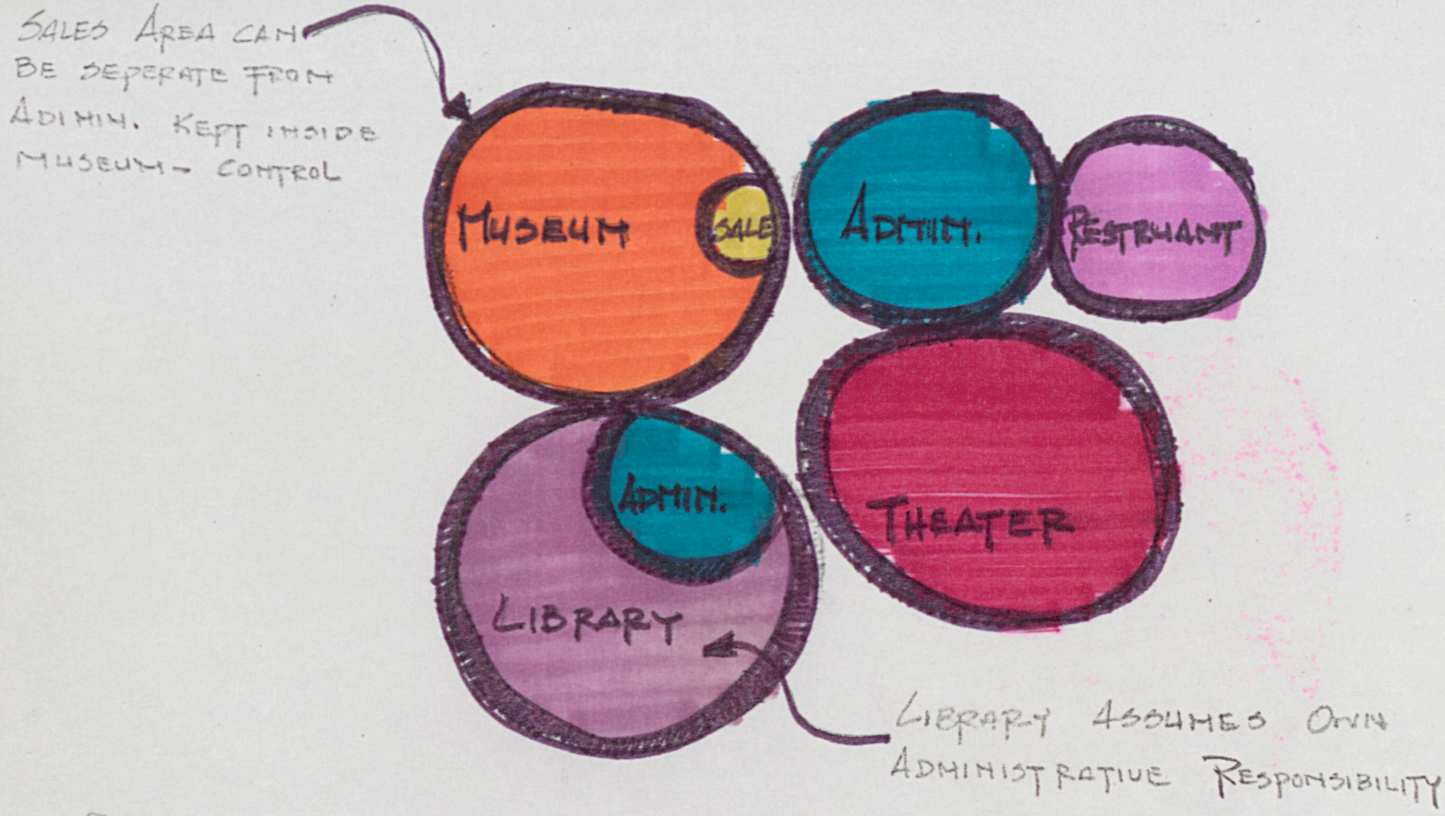

SALES AREA CAN BE SEPERATE FROM ADIMIN. KEPT INSIDE MUSEUM - CONTROL
MUSEUM
SALE
ADMIN.
RESTAURANT
ADMIN.
THEATER
LIBRARY
LIBRARY ASSUMES OWN ADMINISTRATIVE RESPONSIBILITY

DIAGRAM (48)

RESTRUANT

8

COMMERICAL ACTIVITES

POSSIBLE SPACE REQUIREMENTS

1. KITCHEN
2. DIMING AREA
3. SERVING COUNTER - FOUNTAIN AREA
4. ENTRY SPACE
5. SALES COUNTER
6. STORAGE
7. OUTDOOR SPACE

RELATIONSHIP - SPACE

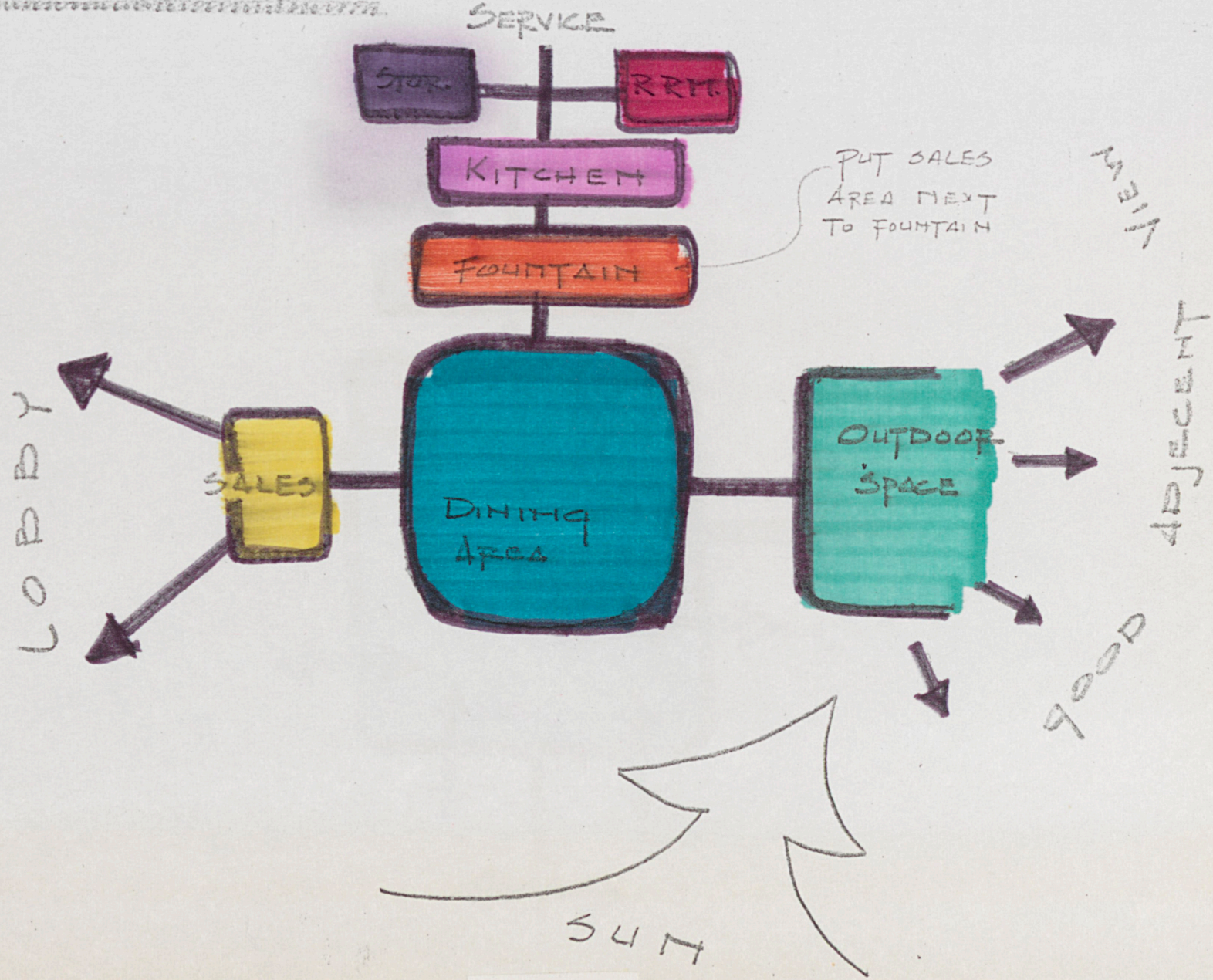


DIAGRAM (49)

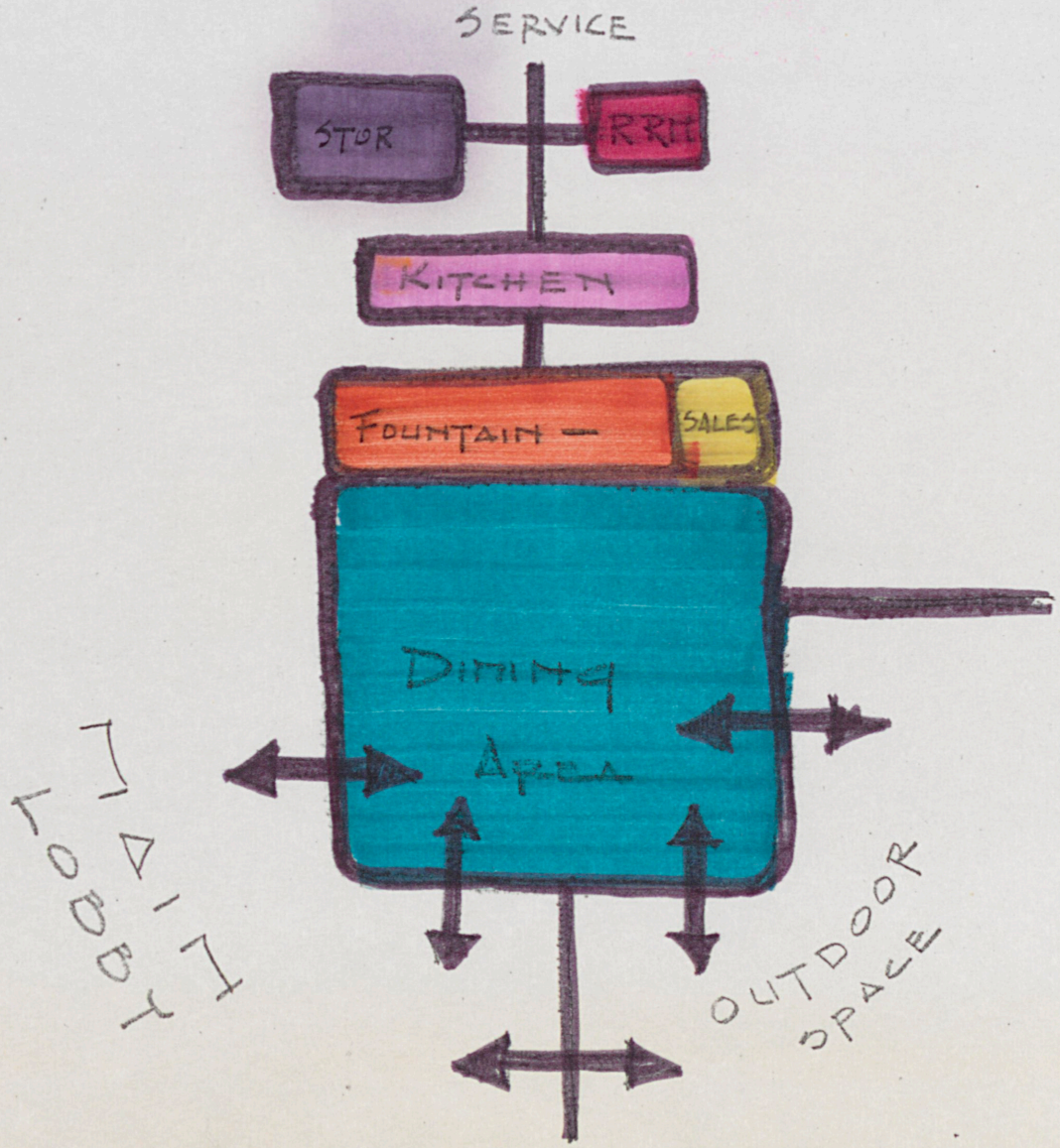

SERVICE
STOR
RRM
KITCHEN
FOUNTAIN
SALES
DINING
AREA
MAIN
LOBBY
OUTDOOR
SPACE

DIAGRAM (50)

PROGRAM

9

THEATER

SPACE	DESCRIPTION	QUANTITY	AREA
PUBLIC SPACES			
ENTRANCE FOYER			
Function:	Entrance space need for removal of snow,and mud from shoes	1 @	
Related:	Lobby and circulation desk		
LOBBY			
Function:	Entrance space leading to all public spaces in the theater.Circulation and display areas	1 @	
Related:	Entry and Box office, Cloakroom,auditorium, restrooms		
CLOAKROOM			
Function:	Depository for outer garments	1 @	
Related:	Auditorium,Lobby		
REFRESHMENT AREA			
Function:	Place to buy liquid refreshment	1 @	
Related:	Lobby, restrooms		
MANAGERIAL SPACES			
OFFICE			
Function:	To provide working space managerial staff(could assume duties ofcenter as a whole)	4 @	4,~~000~~ sq.ft.
Related:	Waiting area, conference room, secretary spaces.		
CONFERENCE ROOM			
Function:	Meeting room for staff and production organization	1 @	250 sq.ft.
Related:			

SECRETARIAL SPACES

Function:	space for administrative and paper work duties	1 @	300 sq.ft.
Related:	Waiting area.		

STORAGE

Function:	Storage space for administrative material	1 @	100 sq.ft.

PRODUCTION ORGANIZATION

OFFICES

1.Director		1@	100sq.ft.
2.Scenic designer		1 @	150 sq.ft.
3.Costume designer		1 @	150 sq.ft.
4.Lighting designer		1 @	150 sq.ft.
Function:	Planning of stage production		
Related:	Associated areas, workshops, conferences		

CONFERENCE ROOM

Function:	Meeting room for staff	1 @	250 sq.ft.
Related:	offices, stage		

WORKSHOPS AND WARDROBE DEPARTMENT

CARPENTRY SHOP

Function:	preparation of scenery and props	1 @	1,000 sq.ft.
Related:	paint room, service entrance stage,storage		

PAINT SHOP

Function:	space for painting sets	1 @	500 sq. ft.
Related:	carpentry,stage,storage		

PROPERTY SHOP

Function:	fabrication of properties	1 @	300 sq.ft.
Related:	stage,storage,service entrance		

WARDROBE DEPARTMENT			
Function:	Manufacture of costumes	1 @	400 sq.ft.
Related:	dressingrooms, costumes, designer, storage		
COSTUME STORAGE			
Function:	Storage of costumes	1 @	600 sq.ft.
Related:	dressingrooms, stage		

PERFORMANCE ORGANIZATION

SOUND EQUIPMENT ROOM			
Function:	Storage and fabrication of sound equipment	1 @	400 sq.ft.
Related:	Service, stage		
LIGHT EQUIPMENT ROOM			
Function:	Storage and fabrication of lighting equipment.	1 @	400 sq.ft.
Related:	Service, stage		
STAFF ROOM			
Function:	Space of changing into work clothes and cleanup	1 @	
Related:	Stage		
PROPERTY STORAGE			
Function:	Storage space for props	1 @	400 sq.ft.
Related:	Stage		
SCENERY STORAGE			
Function:	Storage space for sets	1 @	700 sq.ft.
Related:	Stage		
LIGHTING AND SOUND CONTROL			
Function:	Control lighting and sound during performance	1 @	200 sq.ft.
Related:	Stage		

PERFORMERS SPACES

DRESSINGROOMS			
1. Group dressing room		4 @	800 sq.ft.
2. Individual dressing room		4 @	400 sq.ft.
Function:	Space for changing into costume		
Related:	Green room		
GREEN ROOM			
Function:	Resting and conversation space for actor and actress between performance	1 @	300 sq.ft.
Related:	Dressing room, stage		
KITCHEN:			
Function:	Preparation of snacks	1 @	100 sq.ft.
Related:	Green room		
RESTROOM			
Related:	Storage, green room	2 @	

MUSICIANS SPACES

INSTRUMENT STORAGE			
Function:	Storage of instruments between productions	1 @	300 sq.ft.
Related:	Orchestra pit		
ORCHESTRA PIT			
Function:	Musicians placement during performance	1 @	
MUSICIANS CHANGING ROOM			
Function:	Remove of street garments to concert apparal	1 @	600 sq.ft.
Related:	Orchestra pit		
RESTROOM			
Related:	Changing room	2 @	150 sq.ft.

NOTE: Most of these space requirements are a minimum that of can use. Some of these spaces can take on duel roles or can combine to save one or duel functions. Some requirement will and are subject to change during the designing process.

LIBRARY

SPACE	DESCRIPTION	QUANTITY	AREA
PUBLIC AUXILIARY SPACES (INSIDE THE BUILDING)			
FOYER			
Function:	Entrance space used for removal of snow and mud from boots, shoes,etc.	1 @	1,000 sq.ft.
Related:	Lobby and circulation desk.		
MAIN LOBBY			
Function;	Entrance space leading to all public spaces in the library.Circulation and display space.	1 @	
Related:	Reading areas, lounges and entry.		
CLOAKROOM			
Function:	Deposit of outer garments.	1 @	
Related:	Restroom, lobby		
PUBLIC AND INTERNAL TECHNICAL LIBRARY SERVICE			
BOOK CIRCULATION AREA			
Function:	The loan and return of books and other material- clerical work.	1 @	
Related:	Foyer		
WORKROOM			
Function:	Shipping and other routine matters take place here.	1 @	500 sq. ft.
Related:	Behind circulation desk.		
EXTENSION SERVICE			
Function:	Garage for loading of the bookmobile and storage for books.	1 @	3,000 sq.ft.
Related:	Staff workroom and service entrance		

INTERNAL TECHNICAL SERVICE

TECHNICAL SERVICES			
Function:	Ordering, receiving, evaluation, discarding, of books	1 @	1,000 sq.ft.
Related:	Reference desk		
SHIPPING AND RECEIVING			
Function:	Delivery of parcel and freight deliveries.	1 @	300 sq.ft.
Related:	Service door.		

PUBLIC LIBRARY SERVICE

BOOK SELECTION			
Function:	Catalog area for staff and reference desk.	1 @	425 sq.ft.
Related:	Adult areas.		
CHILDRENS ROOM			
Function:	Provide service to adult working with children and children themselves. Shelving for 24,000 books	1 @	4,000 sq.ft.
Related:	Circulation desk,reference, book stacks		
YOUNG ADULT AREA			
Function:	Relaxing area for reading periodicals, Area for 2,000 volumes.	1 @	1,500 sq.ft.
Related:	Adult area		
ADULT BROWSING AREA			
Function:	Relaxing area for reading periodicals; smoking lounge.	1 @	1,000 sq.ft.
Related:	Adult reading and stock area,reference and periodicals		

ADULT READING AND STACK AREA			
Function:	Seating for 100 people and shelving 80,000 books	1 @	12,500 sq.ft.
Related:	Reference,card catalog, periodicals.		
AUDIOVISUAL AREA			
Function:	House all audiovisual equipment and materials.	1 @	1,000 sq.ft.
Related:	Adult Area.		

INTERNAL LIBRARY SERVICE

LIBRARIANS OFFICE			
Function:	Provide office space for the head librarian.	1 @	200 sq.ft.
Related:	Main lobby and conference room.		
ASSISTANT LIBRARIANS OFFICES			
Function:	Provide office space for five assistant librarians.	5 @	125 sq.ft.
Related:	Staff work area.		
CONFERENCE ROOM			
Function:	Meeting room for staff and library board.	1 @	150 sq.ft.
Related:	Office area and head librarian.		

INTERNAL AUXILIARY SERVICE

MULTIPURPOSE ROOM			
Function:	Meeting area for different groups and organizations.	1 @	1,400 sq.ft.
Related:	Lobby andfoyer curculation area.		
PROJECTION ROOM			
Function:	Movie projection room for multipurpose room.	1 @	70 sq. ft.
Related:	Multipurpose room		

STORAGE ROOM			
Function:	Storage for multipurpose room.	1 @	100 sq.ft.
Related:	Multipurpose room.		
KITCHENETTE			
Function:	Area for preparation of small snaks and lunches.	1 @	150 sq.ft.
Related:	Multipurpose room and staff lounge.		
STAFF LOUNGE			
Function:	Lounge area for staff on off duty hours.	1 @	
Related:	Kitchen and staff toilets.		
JANITOR CLOSET			
Function:	Storage for janitorial supplies and equipment.	1 @	250 sq.ft.
Related:	One per floor.		
MECHANICAL ROOM			
Function:	Space for mechanical and maintenance equipment.	1 @	1,500 sq.ft.
Related:	Basement.		

SPACE	DESCRIPTION	QUANTITY	AREA
PUBLIC AREAS			
ENTRY FOYER			
Function:	Circulation area, ingress and egress of the musuem.	1 @	200 sq. ft.
Related:	Reception desk and cloakroom.	1@	150 sq. ft.
CLOAKROOM			
Function:	Area to leave coats and large packages or purce.	1 @	150 sq. ft.
Related:	Restroom, lobby.		
LOBBY			
Function:	Familarize and orient the visitor with requards to exhibits and the building.	1 @	400 sq. ft.
MAIN GALLERY SPACES			
Function:	Display area for current exhibits.	1 @	8000 sq.ft.
Related:	Lobby.		
SALES			
Function:	Area consist of rental space for display and sales of local art objects.	1 @	1000 sq. ft.
CURATORIAL AND PRODUCTION			
RECEIVING AND SHOPPING			
Function:	Space for inspection of incoming exhibits and outgoing shipments.	1 @	500 sq. ft.
Related:	Loading plateform.		
CARPENTRY AND PAINTING ROOM			
Function:	Construction of special exhibitions cases and pedestals.	1@	1000 sq. ft.
Related:	Storage--theator		

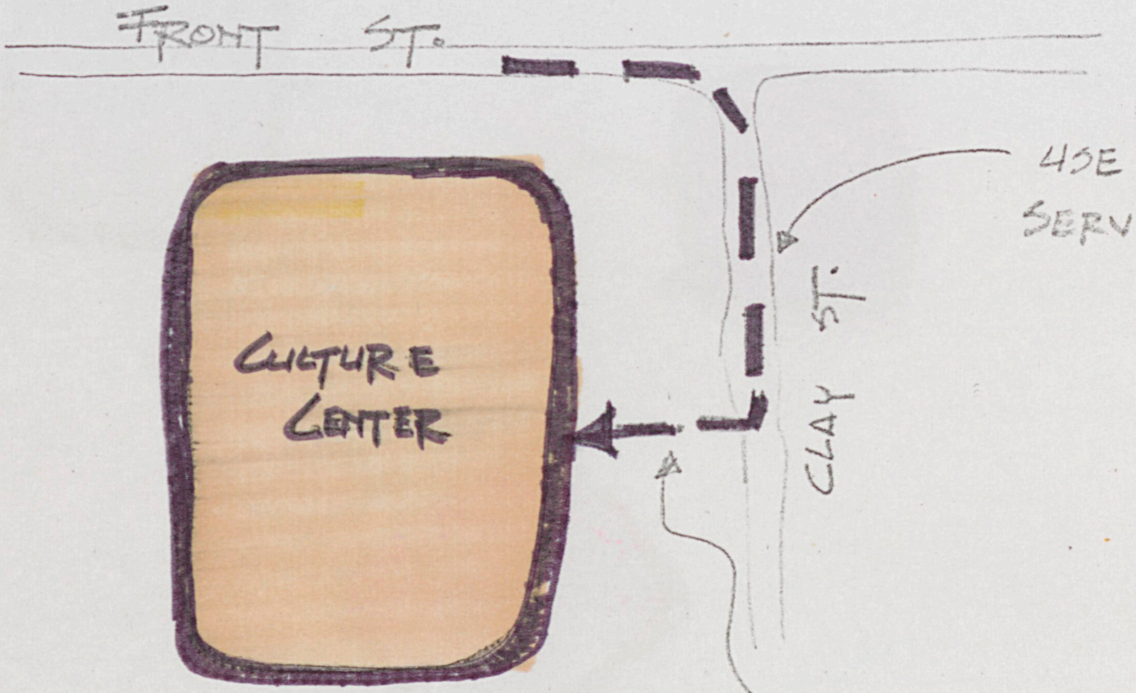
SPACE	DESCRIPTION	QUANTITY	AREA
LAYOUT AND ASSEMBLY			
Function:	Refined work in preparation of exhibits.	1 @	800 sq. ft.
Related:	Storage, shopping and receiving/		
PHOTOGRAPHY ROOM			
Function:	Documentation ~~of~~ exhibits	1 @	400 sq. ft.
Related:	Layout and assembly-- dark room.		

SPACE	DESCRIPTION	QUANTITY	AREA
OFFICES			
Function:	Area provides for individual work.	6 @ 150	900 sq. ft.
Related:	Reception		
RECEPTION AND SECRETARIAL			
Function:	Clerical work and receiving visitors.	1 @	300 sq. ft.
Related:	Main Lobby.		
STAFF LOUNGE			
Function:	Area for work break.	1 @	200 sq. ft.
Felated:	Restrooms.		
STORAGE			
Function:	Storage of administration supplies.	1 @	100 sq. ft.
Related:	Secretarial pool.		
MAILING AND PRINT ROOM			
Function:	Service area for preparation of outgoing material, literature.	1 @	400 sq. ft.
Related:	Secretarial pool.		
CONFERENCE ROOM			
Function:	Intra as well as inter complex.	1 @	200 sq. ft.
Related:	Personal meetings, offices.		

SOLUTION

10

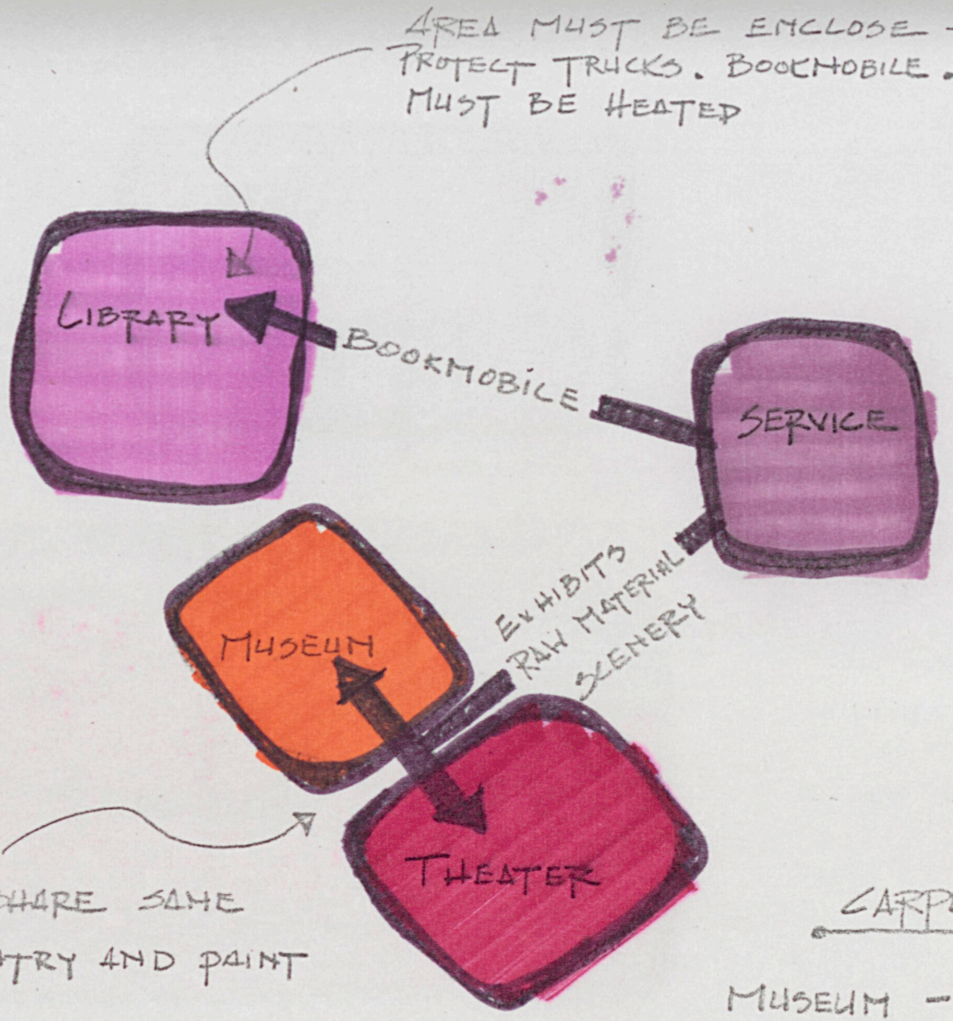
SERVICE ENTRY



IDEAL SITUATION - HAVE ONE SERVICE ENTRANCE.

1. DOESN'T BREAK UP TOO MANY SPACES
2. CONCENTRATION OF ALL SERVICES INTO ONE ENTRY
3. BETTER CONTROL

DIAGRAM (51)



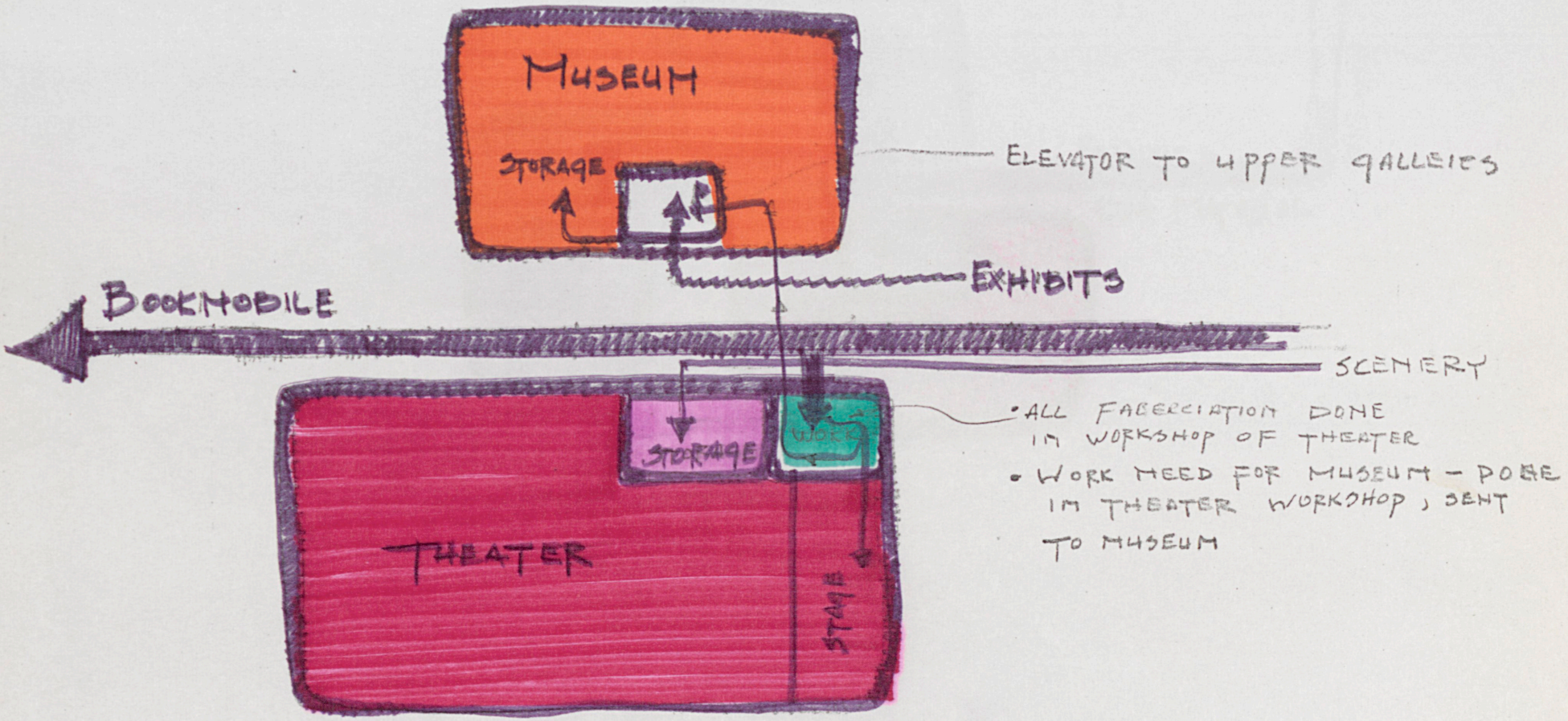
CARPENTRY - PAINT AREAS

MUSEUM - DETAIL WORK, REPAIR EXHIBITS, MOSTLY SMALL OBJECT. WORK MUST BE OF HIGH QUALITY

THEATER - NOT DETAIL WORK, MANUFACTU OF PROP - SCENERY - LARGE OBJECTS - NOT HIGH QUALITY WORK REQUIRE.

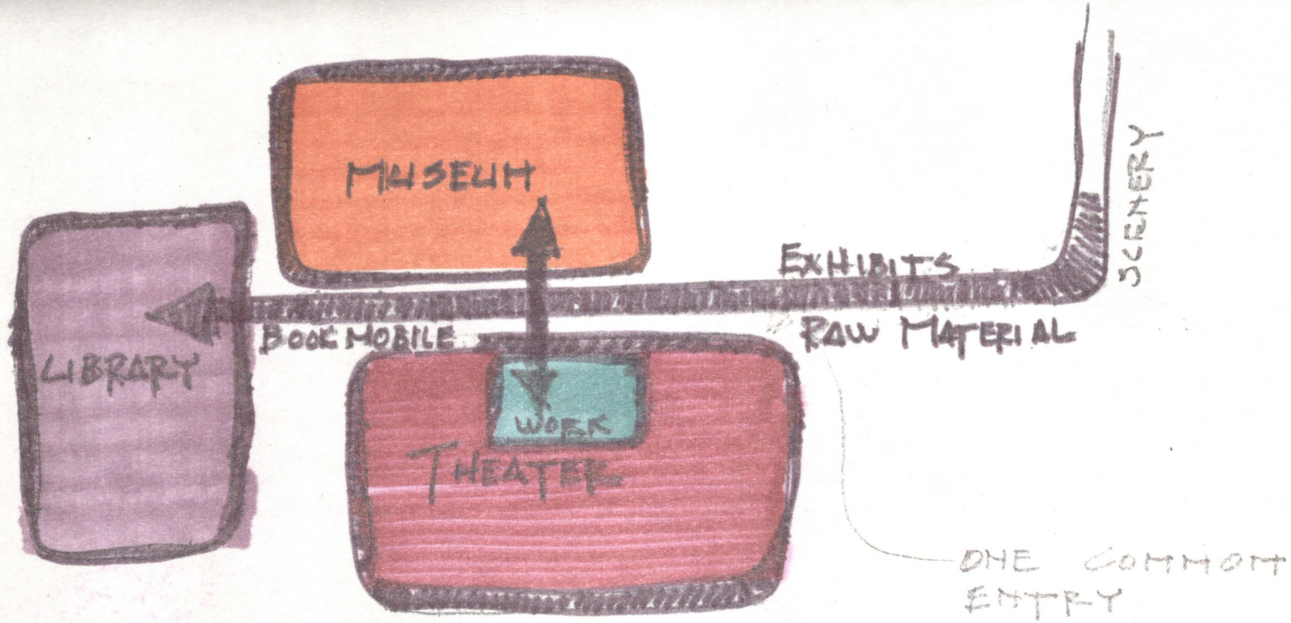
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DIAGRAM (52)



52

DIAGRAM (53)



53

DIAGRAM (54)

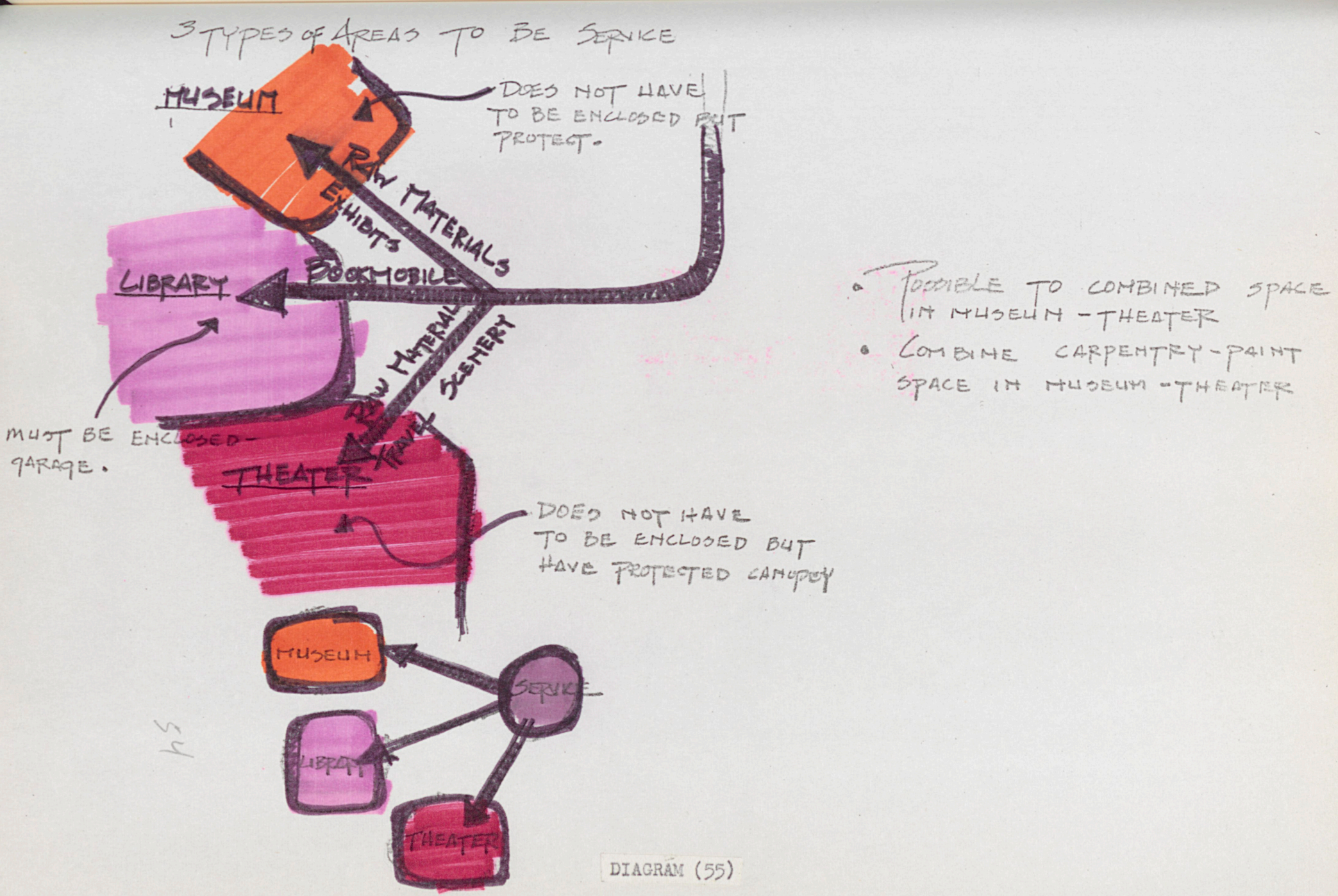
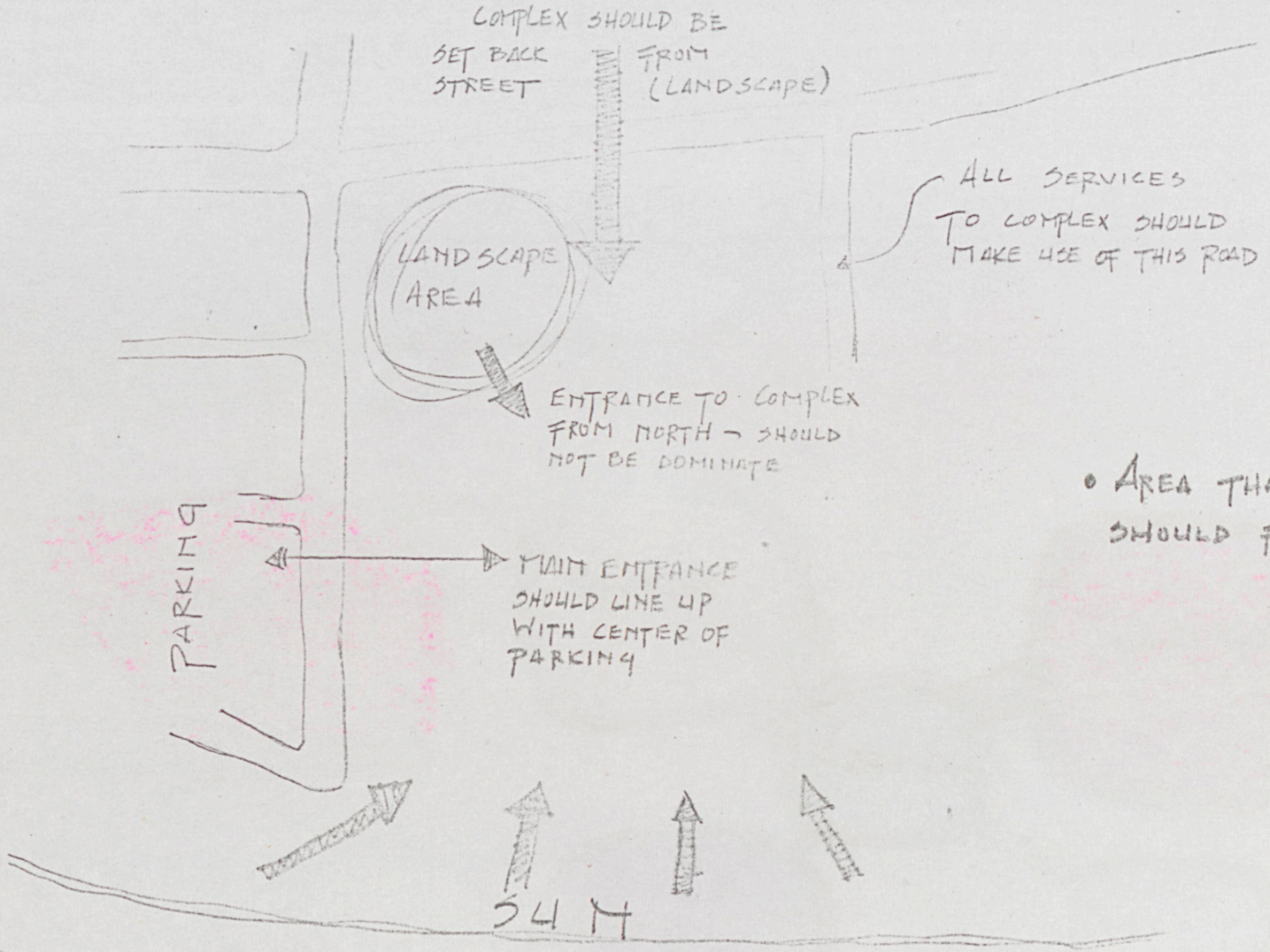

3 TYPES of AREAS TO BE SERVICE
MUSEUM
DOES NOT HAVE TO BE ENCLOSED BUT PROTECT.
RAW MATERIALS
EXHIBITS
BOOKMOBILE
LIBRARY
RAW MATERIAL
SCENERY
MUST BE ENCLOSED - GARAGE.
THEATER
DOES NOT HAVE TO BE ENCLOSED BUT HAVE PROTECTED CANOPY
MUSEUM
SERVICE
LIBRARY
THEATER
• POSSIBLE TO COMBINED SPACE IN MUSEUM - THEATER
• COMBINE CARPENTRY - PAINT SPACE IN MUSEUM - THEATER

DIAGRAM (55)



• AREA THAT REQUIRE SUN SHOULD FACE SOUTH.

DIAGRAM (56)

DIAGRAMS

RELATIONSHIPS IN COMPLEX

ADMINISTRATION SPACES #1

1. SEC. POOL
2. CONFERENCE RM.
3. ACCOUNTANT
4. CATERING MGR.
5. THEATER MGR.
6. PUBLICITY MGR.
7. MUSEUM DR.
8. MULTI-PURPOSE SPACES
9. BUSINESS MGR.
10. PRINT-MAILING RM
11. STORAGE
12. SAFE
13. LOUNAGE - RESTROOMS

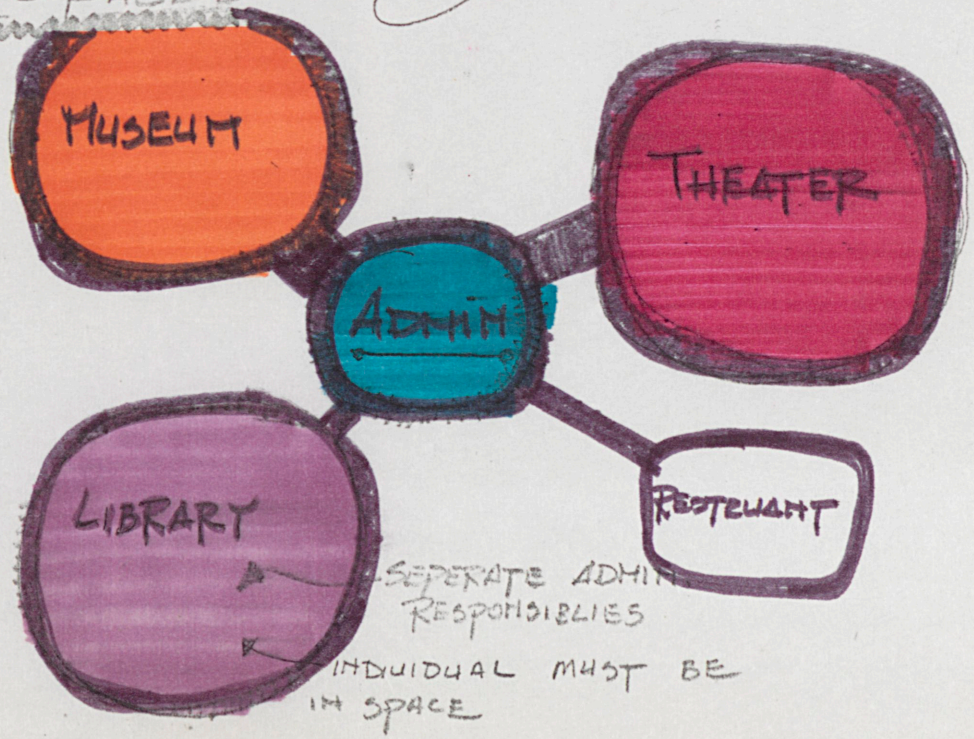
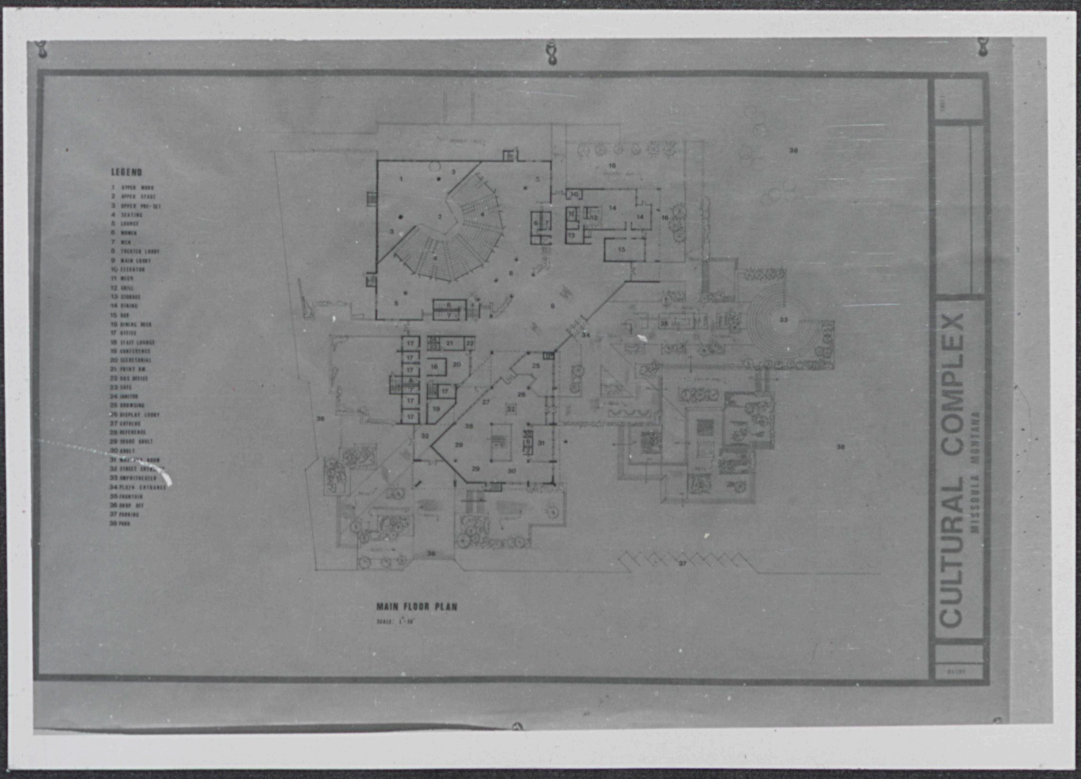
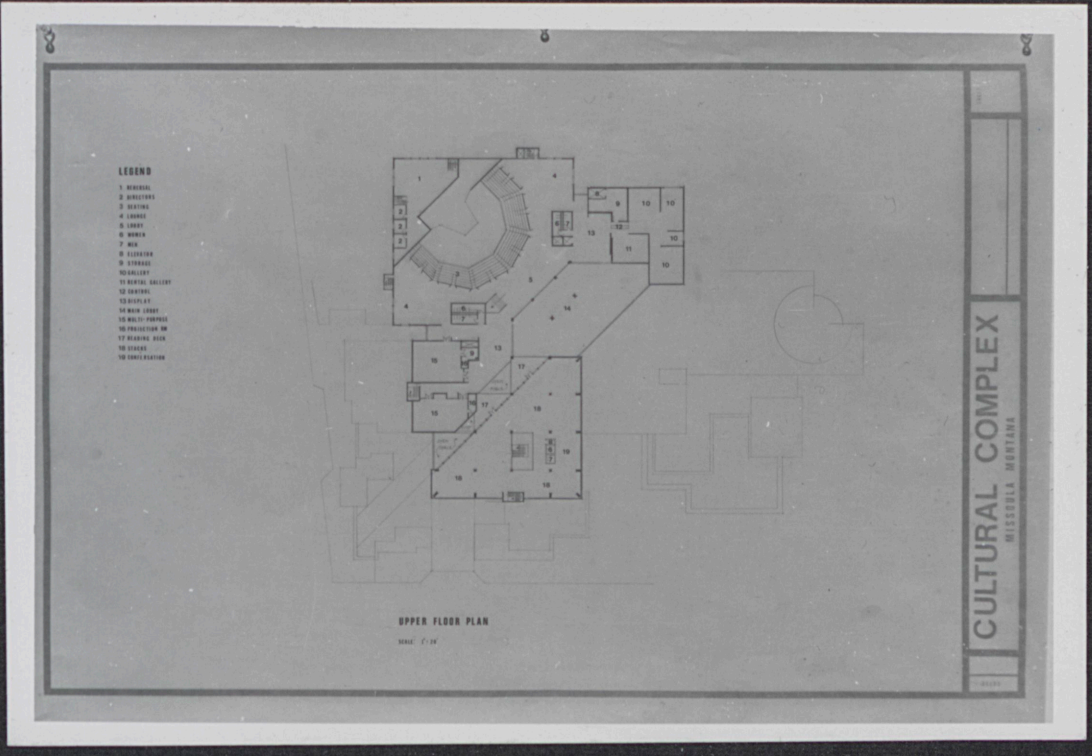
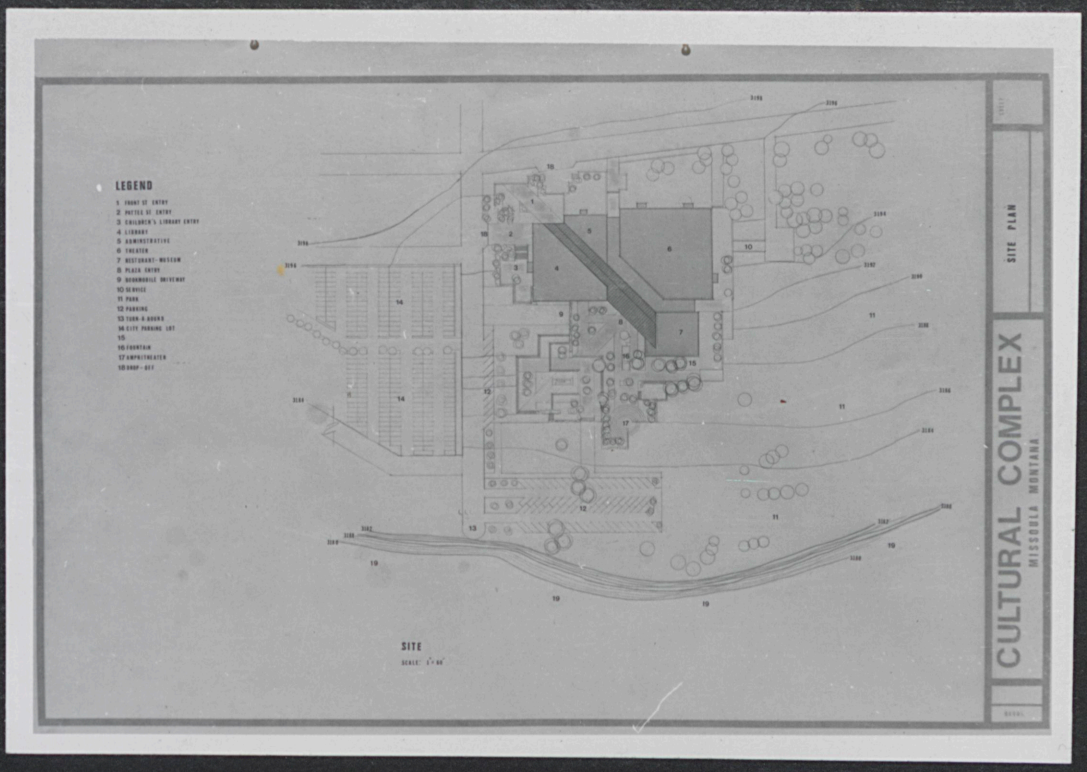
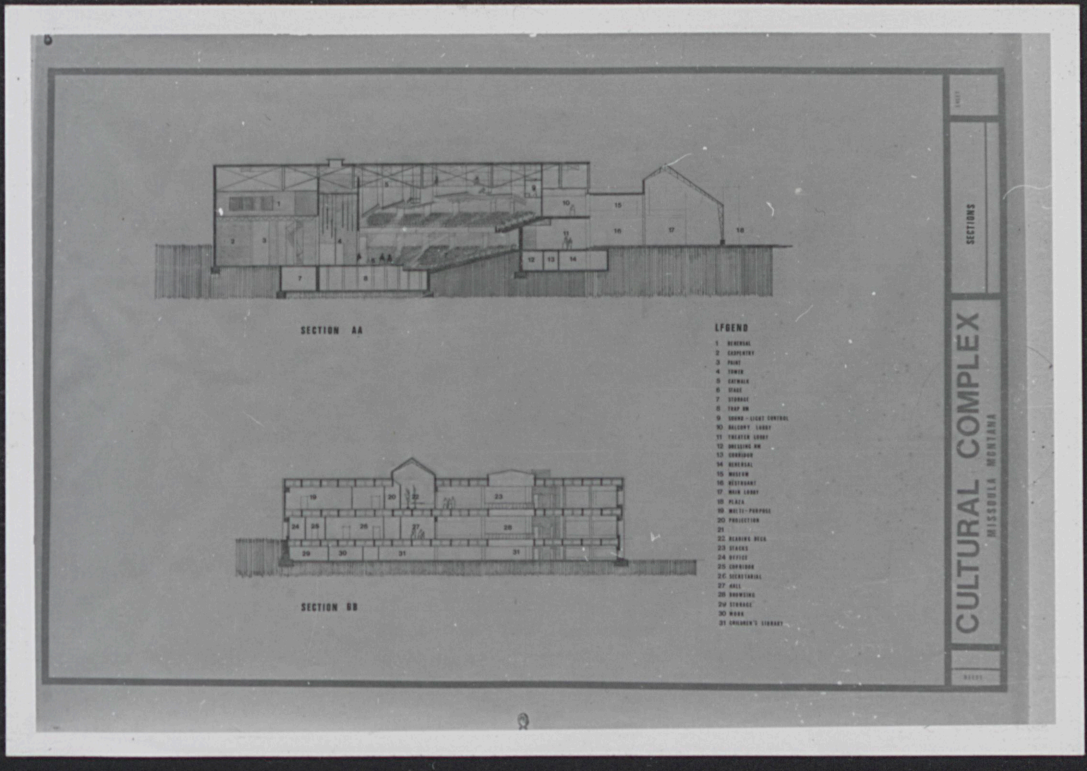


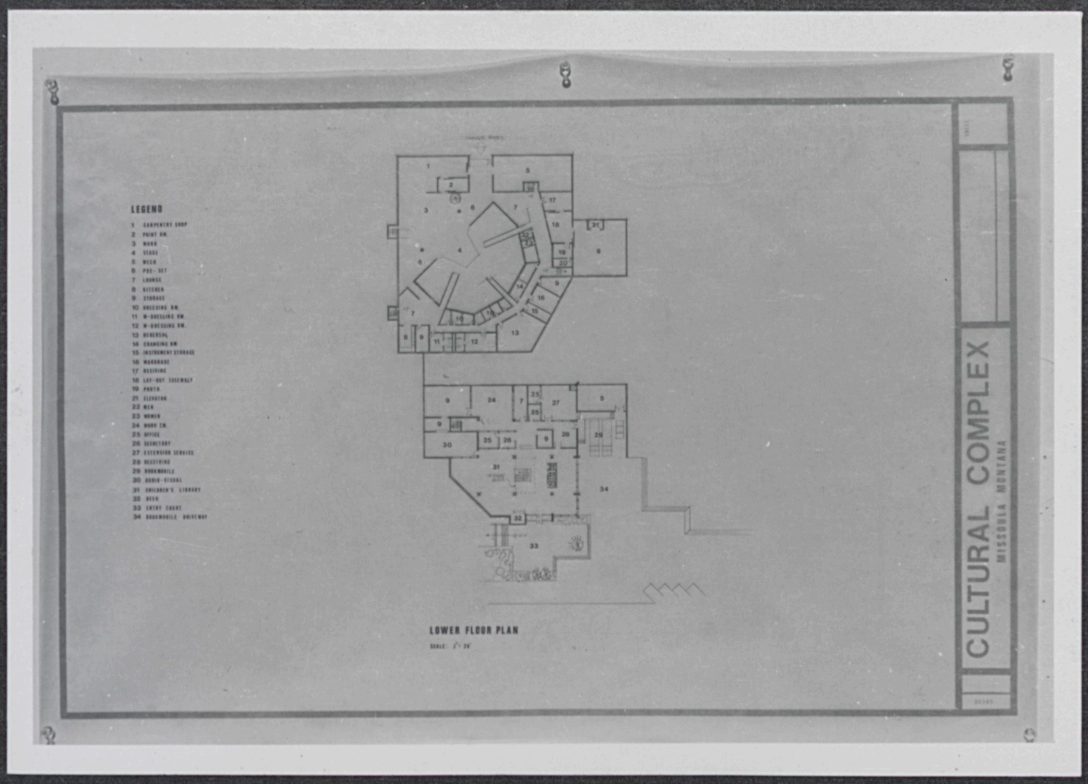
DIAGRAM (57)

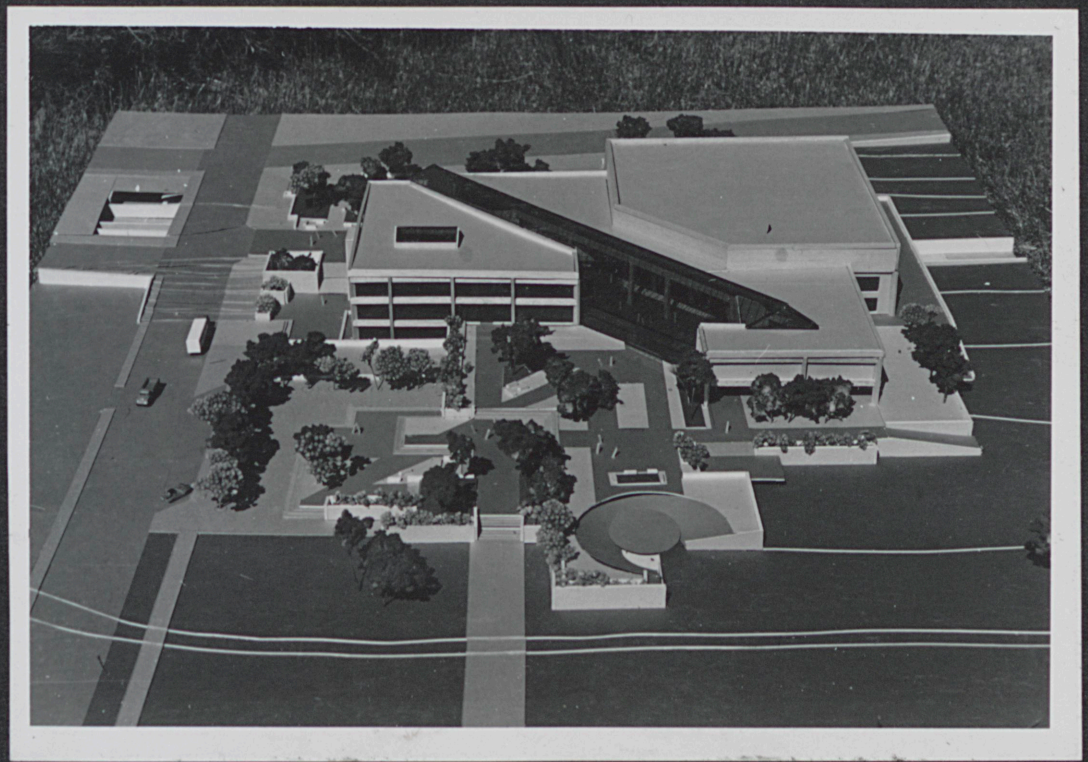

LEGEND
MAIN FLOOR PLAN
CULTURAL COMPLEX
MISSOULA MONTANA

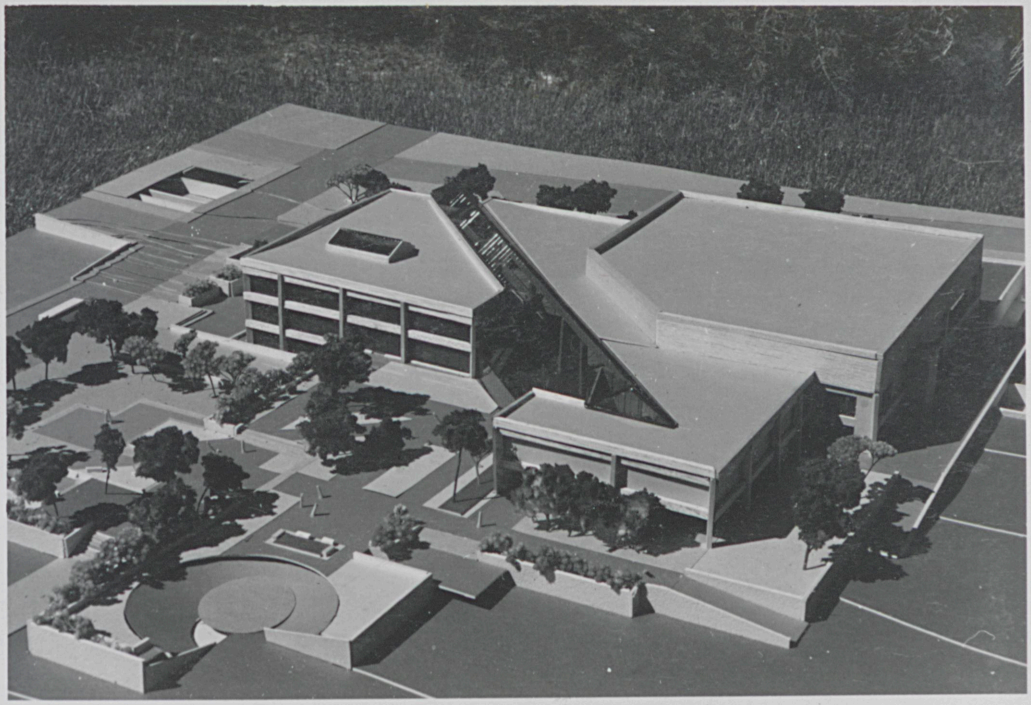

LEGEND
1 REHEARSAL
2 DIRECTORS
3 SEATING
4 LOUNGE
5 LOBBY
6 WOMEN
7 MEN
8 ELEVATOR
9 STORAGE
10 GALLERY
11 RENTAL GALLERY
12 CONTROL
13 DISPLAY
14 MAIN LOBBY
15 MULTI-PURPOSE
16 PROJECTION RM
17 READING DECK
18 STAGES
19 CONFLAGRATION
UPPER FLOOR PLAN
CULTURAL COMPLEX
MISSOULA MONTANA


LEGEND
SITE
SITE PLAN
CULTURAL COMPLEX
MISSOULA MONTANA

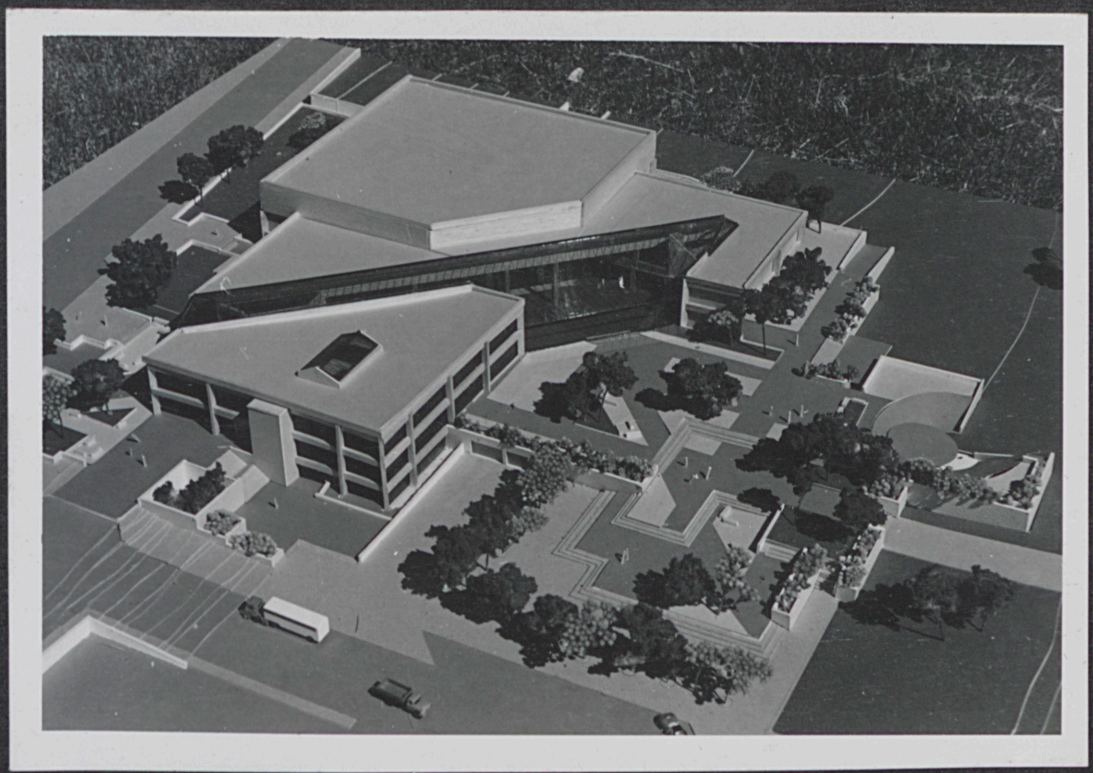

SECTION AA
SECTION BB
LEGEND
SECTIONS
CULTURAL COMPLEX
MISSOULA MONTANA


LEGEND
1 CARPENTRY SHOP
2 PAINT RM.
3 WORK
4 STAGE
5 WELD
6 PRE-SET
7 LOUNGE
8 KITCHEN
9 STORAGE
10 DRESSING RM.
11 M-DRESSING RM.
12 W-DRESSING RM.
13 REHEARSAL
14 CRAMMING RM
15 INSTRUMENT STORAGE
16 WARDROBE
17 RECEIVING
18 LAY-OUT ASSEMBLY
19 PORCH
21 ELEVATOR
22 MEN
23 WOMEN
24 MAINT CR.
25 OFFICE
26 SECRETARY
27 EXTENSION SERVICE
28 RECEIVING
29 BOOKMOBILE
30 AUDIO-VISUAL
31 CHILDREN'S LIBRARY
32 DECK
33 ENTRY COURT
34 BOOKMOBILE DRIVEWAY
LOWER FLOOR PLAN
CULTURAL COMPLEX
MISSOULA MONTANA









MONTANA STATE UNIVERSITY LIBRARIES
stks 720.6.M76D361 CA
Cultural complex, Missoula, Montana /
3 1762 00155031 6

~~NA 2540~~
[redacted]
~~720.6~~
~~M76~~
D361

~~LIB. USE ONLY~~

College
Place
Bindery
College Place, Wa.