



A MANUAL OF DESIRABLE CHARACTERISTICS
OF RESIDENTIAL DEVELOPMENT

A thesis Presented to the Faculty of Graduate Studies and
Research in Partial Fulfillment of the Requirements for the
Degree of Master of Architecture (Community Planning)

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INTRODUCTION

The development of land for residential use and in particular the creation of a desirable environment for living is a complicated operation in which many persons are involved. This thesis is directed towards all persons interested in and involved in the subject.

The characteristics of residential development with which this thesis is concerned are physical. The thesis is intended to be explanatory and descriptive of densities, the street system, public open spaces, commercial areas, church sites, landscaping and general design in residential areas. It includes currently desirable standards for a number of these factors, which have been culled from experience here and elsewhere and which are presented as being minimal and necessary.

There is no document of this sort available in Metropolitan Winnipeg at the present time to the author's knowledge. The author believes that a treatise of this sort would be particularly useful to persons such as realtors, developers and members of government.

The first chapter contains a general statement of the physical requirements of a good residential area. The second chapter deals specifically with the major physical components or considerations which make up residential areas. The means of enforcement, the development plan, is described in Chapter 3.

The thesis has particular reference to Metropolitan Winnipeg.

(ii)

This fact has not been mentioned in the title because much of what has been recommended as good practice could be applied to other centres.

The background information on the school system and park system has been included not only because it is important information for planning, but also because it has not yet been described in planning documents relating to the Metropolitan Winnipeg area. This is no doubt because extensive legislation on both these subjects has been enacted very recently.

Information on population has been included to show that in the future, as in the past, knowledge of population trends is imperative to indicate the sort and quantity of facilities which are required now and throughout the life of any given residential area.

CHAPTER 1

DESIRABLE CHARACTERISTICS OF RESIDENTIAL DEVELOPMENT: A GENERAL STATEMENT

The purpose and intention of planning residential areas is to create a desirable environment for living by insuring as closely as possible that residential areas provide for safety, comfort and convenience, privacy and attractive appearance.

A residential area which provides streets which are safe and not subject to heavy through traffic, schools which are adequate in size and have facilities for games, green park areas for all, commercial areas within convenient reach, buildings which by reason of their siting and design are pleasant to be in and among, and which is attractively and realistically landscaped, will be a pleasant area in which to live in terms of its physical character.

The best environment cannot come about without careful attention to all the details which go together to produce a good residential development. The waste and/or undesirable effect which may come about from lack of planning are burdens which will be born by the residents.

The following seven points are general requirements which must be met in planning successfully for a desirable residential environment:

1. In determining the suitability of land for residential use at the

outset from a metropolitan and more local point of view, and from the point of view of the people who will be living in a given area, the requirements listed below must be met.

- a) The area must have good thoroughfare connection with the downtown area, with places of work, entertainment, and with other residential areas.
- b) The area, if it is to be in urban residential use, must be able to be serviced with sewer, water, power and telephone and these services must be of such standard as to require minimum maintenance. In an urban area, development should not be considered until and unless these services can be provided.
- c) The area must be free from possible flooding, and the possible instability of river banks for building purposes must be kept in mind.
- d) The area must be free from dirt, dust, and noise from adjacent development either existing or proposed, and free from the encroaching effect of any incompatible or undesirable land uses.

2. Land must be developed in an orderly manner. Individual groups of houses must not be allowed to spring up helter skelter about the landscape. Residential development must adhere to a pre-

determined development plan. Development plans, which are discussed later in this report, should allow certain freedom in the details of development of residential areas within the framework of essential services. The economic provision and maintenance of basic services such as sewer, water, roads, schools, public open spaces and commercial areas is heavily dependent upon orderly development of land.

3. Land uses which are not compatible with residential development should be kept out of residential areas. For example, industry is traditionally regarded as being incompatible with residential development. There are industries which, if possible smoke, noise dust, dirt and traffic could be sufficiently controlled might be compatible with homes. Few local governments, however, are prepared to assume the necessary continuing control.
4. Housing accommodation should be available to meet the requirements of each of the different family types which make up our cities: the single person, families with and without children, and senior citizens. Each of the different family groups have different housing requirements and if we insist that all groups tailor their living patterns and needs to whatever housing is available, then we are not meeting housing needs.

5. Residential areas should not be overcrowded. Each housing unit must have adequate daylight, air and yard space.
6. Residential areas must be provided with the space for parks, schools, commercial areas and other service uses such as church sites at the outset of the development, and in adequate supply to meet the ultimate needs of the area. It is essential too that these service uses be properly located to perform their function and be easily accessible from the dwellings in the area.
7. The design of residential areas, the location and relation of streets, buildings and service uses together with landscaping should come together to produce safety, convenience, privacy and an attractive appearance: all essential components of desirable living environments.

The responsibility which rests with those who make physical planning decisions is a large one for this reason: that whether the resultant area is ugly or beautiful, a success or a failure, it is usually permanent.

The first three general requirements listed in this Chapter; initial suitability of land for residential use, orderly development of land, and incompatible land uses, are not dealt with in any great detail in the thesis except fleetingly in the discussion on development plans. They have been mentioned here however because of their obvious basic importance.

The components which contribute to the remaining four general requirements;

density, the street system, parks and schools, commercial areas, church sites, landscaping and a general discussion of design are dealt with in the following chapter.

Development plans are described in Chapter 111 to show the means whereby desirable practice can be implemented by government.

CHAPTER 11

1. RESIDENTIAL DENSITIES

Residential density may be defined as the number of persons per acre or the number of units per acre of residential development. The gross density is a measure of the number of persons or the number of units per acre of land in residential and contingent service use. The net density is a measure of the number of persons or the number of units per acre of land in residential use alone, excluding streets, public open spaces, commercial and other local service uses. Diagram 1 on the following page is a graphic definition of gross and net density.

Residential density calculations may be used to convey an idea of living conditions in existing areas, and to determine the amount of land a given number of people will require in the development of a new area. It is the latter use of density calculations which are most frequently concerned in the design of new residential areas in order to ensure that new areas will not be overcrowded and that they will be adequately served with public open space and other services.

Floor Area Ratio, though not a measure of density, is related to density, because it is a measure of the bulk or massiveness of buildings on the land. It is particularly useful in the design of mixed housing areas where multi-storey buildings are used, for determining whether enough

RESIDENTIAL DENSITIES

7D

DIAGRAM 1 GROSS AND NET DENSITY

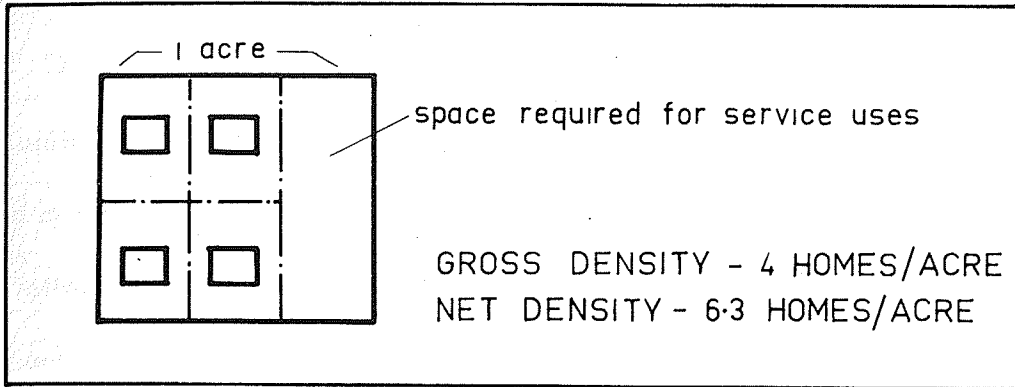


DIAGRAM 2 FLOOR AREA RATIO [far]

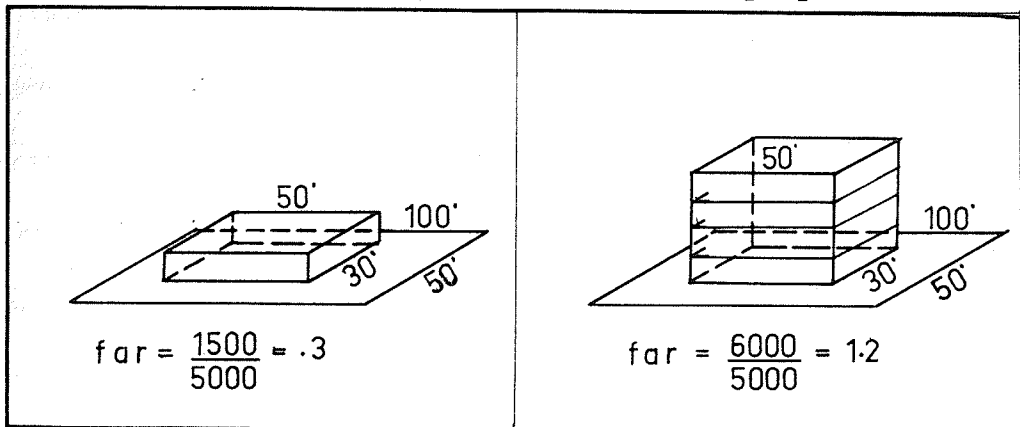
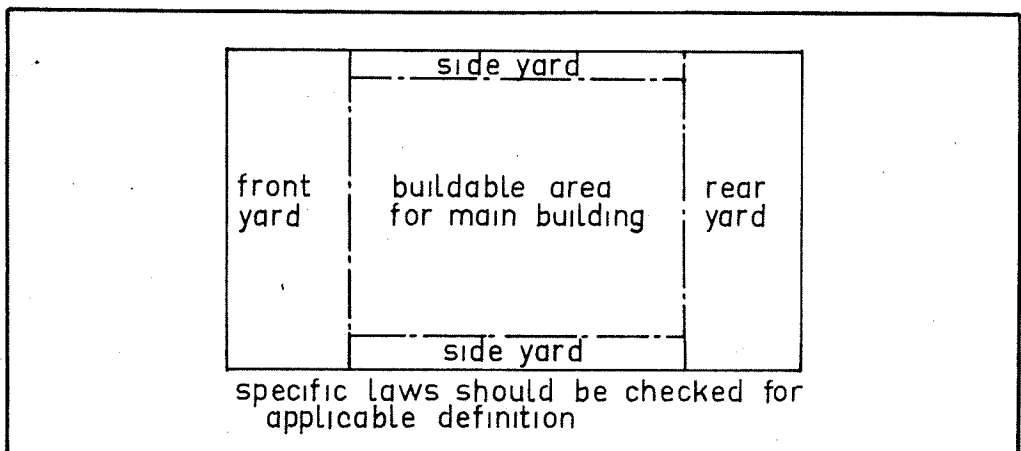


DIAGRAM 3 FRONT REAR AND SIDE YARDS



outdoor open space is available for the amount of floor area provided in the buildings. Floor Area Ratio may be calculated by dividing the floor area of a given building by its lot area, as shown in Diagram 2.

Density can be controlled to a certain extent by controlling the number of units allowed per acre, by establishing front, rear and side yard minima and by maintaining a control over the bulk of buildings by means of floor area ratio. Diagram 3 shows what are generally considered to be the front, rear and side yards of a lot, however, for any specific area, the definition given in the zoning law covering that area, must be consulted.

Different residential areas can reasonably have different densities within a certain range and still be desirable places in which to live. It is not the density which determines the desirability of an area but rather the design and organization of the buildings and the spaces between them. Density is simply a tool of the designer, a means of measuring and describing. One redevelopment project in the City of Montreal represents a very good example of what careful organization of space can accomplish. The area was determined a slum and had a density close to 300 persons per acre. The area was redesigned, with tall apartments and large open spaces between, replacing the lower storey buildings with no open space between which existed on the site. This reorganization of space resulted in adequate housing accommodation for approximately 325 persons per acre in addition to open space around the buildings for play and off street parking.

The following factors are a part of density considerations for living conditions.

- A. A variety of dwelling types (for example, single family houses, duplexes, semi-detached homes, terraces and apartments, all of varying size) is necessary within the community to accommodate each of the different family types. This variety should exist within each of the local areas of any city so that the family as its space requirements change, need not divorce itself from the district in which it has chosen to live. A residential area which is made up of only one dwelling type, quite obviously does not meet this need. The Royal Architectural Institute of Canada's Committee of Inquiry into the Design of the Residential Environment, had as its directive the investigation of "the broad range of problems associated with Canada's residential growth and environment". Its report published last year, stated that the following objective should be adopted for future housing:

"...every possible measure should be taken to encourage diversity among (these) new dwellings in size and nature, and mixture of several types in each new urban area, matching the variety of households in the local scene."¹

¹ Royal Architectural Institute of Canada, "Report of the Committee of Inquiry into the Design of the Residential Environment", Ottawa, 1960, 43-B

The Committee made the following observation:-

"But if economic extremes do not mix well, there is plenty of proof that grandmothers and brides, large families and smaller, owners and tenants could mix much better than most modern suburbs allow them to."²

- B. Dwelling units should be arranged so that rooms have adequate daylight, sunshine, ventilation, privacy and yard space for sitting outside and for visual relief from buildings and hard surface materials.
- C. Each dwelling unit must be convenient to such services as schools, parks, commercial areas and churches. The location of these services must, of course, be based upon the number of people living in the area rather than the amount of land in residential use.

Table 1 is a schedule of densities which has been included to indicate the characteristics of areas developed at given densities. The schedule deals in the first part with very low density areas and goes on to include mixed housing developments of varying densities. The range of the schedule has been tailored to include those densities which might reasonably be applied to a metropolitan area like Greater Winnipeg.

² Ibid, 28

TABLE 1 A SCHEDULE OF DENSITIES AND SOME OF THEIR CHARACTERISTICS

DENSITY	CHARACTERISTICS OF AREA DEVELOPED AT STATED DENSITY
1. Single Family 1 to 2 acre lots. .5 - 1 house per acre (net density).	Single family houses, suburban character, septic tanks, well water supply, perhaps large fairly expensive homes, relatively few children attending public schools.
2. Single Family 1/2 acre lots 2 houses per acre (net density).	Characteristics similar to above. Large areas of this type of development should not be encouraged because of problems of combining wells and septic fields on such a small lot area. One-half acre lots are the minimum acceptable size for septic field and well. Small groupings of housing of this character on smaller lots with a large common area for septic fields, might be satisfactory by special design.
3. Single Family 3.5 - 4 houses per acre (gross density)	Urban character, serviced with sewer and water. Lot size about 75 feet by 100 feet or 63 feet by 120 feet, intended to serve wide house plans currently popular. High assessment will encourage middle to high income families, probably largely single-family houses but might include some duplex or semi-detached houses.
4. Single Family 4.5 - 4.8 houses per acre (gross density)	Urban character, fully serviced. Resultant lot area about 6000 square feet. Might include some 1 and/or 2 storey row-housing and low density apartments, provided some consistency is maintained in Floor Area Ratio. This is a low density area. Where Single Family FAR* is .5, then apartment FAR should not exceed .75. With the intro- duction of different housing types the usual yard require- ments must be supplemented by a consideration of daylight angles to ensure that buildings will not overshadow one another.

*Floor Area Ratio

DENSITY	CHARACTERISTICS OF AREA DEVELOPED AT STATED DENSITY
5. Single Family	<p>Urban, small lots of about 5,000 square feet in area. This sort of development is entirely feasible provided houses are designed specifically for lots of this size, which is also entirely feasible. Building area would be 35 feet by 50 feet. Advantages lie in lower local improvement costs and lower land costs. Suitable for small homes and an advantage for low income families.</p>
6. 2 Family Approximately 8 units per acre (gross density)	<p>Urban character, with duplex units on lots about 60 feet by 120 feet. One might find small areas limited to duplex development; however these units are more likely to be interspersed to some extent with single family dwellings. Local improvement costs would be smaller for this sort of development than for single family areas. However, increased density and increased number of school children per acre, would have to be reflected in provision of public open space. Shorter walking distances to parks, schools, shops and churches provide an advantage over single family areas.</p>
7. Mixed Housing Area - including Apartment, Row House and Single Family Units	<p>Exact density in an area of this kind can be reached most satisfactorily through or after design, because of the problems of siting different types of dwellings in relation to one another so that each dwelling will have proper access, egress, daylight, view, ventilation and space around it. Density might range from approximately 30 to 50 persons per acre. Development of this sort could be considered for the purpose of providing a variety of accommodation in low density areas without substantially increasing the bulk of buildings beyond what is being provided in the single family portions of such an area.</p>
8. Multiple Family Units 50 persons per acre (net density)	<p>This density would be suitable for inclusion in low density residential areas away from the centre of the city where it is intended to retain a local suburban character. This density could be achieved through the use of the combination of a variety of housing types, possibly apartment, row houses and single family houses. A minimum of one</p>

DENSITY	CHARACTERISTICS OF AREA DEVELOPED AT STATED DENSITY
8.	parking space per unit would have to be provided. This could be done on the surface of the site and still provide adequate open space.
9. Multiple Family Area 80 persons per acre (net density).	This density is suitable for areas within the city, away from suburban residential areas, which are not close to the centre of the city. The sort of units which would satisfactorily provide this density would be two-storey row houses, possibly some four-storey maisonettes and a small number of multi-storey (6 - 10) apartment buildings.
10. Multiple Family Area 100 persons per acre (net density)	Areas close to the centre of the city might suitably develop at this density with apartment units and perhaps maisonettes and row houses.
11. Multiple Family Area 136 persons per acre (net density)	Areas of this density are suitable for location near the centre of the city and might include some type of row housing, maisonettes and tall apartment buildings. There may be isolated cases where small amounts of development of this density would be suitable in areas not adjacent to the centre of the city. The requirements for development at 200 persons per acre, should be strictly adhered to for this density as well.
12. Multiple Family Area 200 persons per acre (net density)	This is a very high density and suitable for small areas in the centre of the city. If a density of this magnitude is being considered, then the following requirements must be met. <ol style="list-style-type: none"> <li data-bbox="548 1587 1214 1696">1. The buildings should be adjacent to a park or a plaza of some sort to assure open spaces for residents. <li data-bbox="548 1696 1214 1766">2. Public transportation must be immediately available.

DENSITY	CHARACTERISTICS OF AREA DEVELOPED AT STATED DENSITY
12.	<ol style="list-style-type: none"> <li data-bbox="548 380 1243 520">3. The site must be designed in such a way that the traffic it generates will not cause congestion or hazard, should it be on or very close to a major traffic artery. <li data-bbox="548 527 1243 596">4. There must be adequate on-site parking which would necessitate a parking structure. <li data-bbox="548 602 1182 636">5. Services such as stores must be close by. <li data-bbox="548 642 1192 711">6. There must be adequate open space on or adjacent to the site. <li data-bbox="548 718 1304 787">7. The aesthetic quality of the buildings and their grouping must be most carefully considered. <li data-bbox="548 793 1281 890">8. The development must be able to be adequately serviced with sewer, water, power and telephones.

In establishing desirable densities each case or area must be considered separately on the basis of its location, the traffic it will generate, the demand it will make upon basic services and the effect it will have on surrounding development.

For example, we have stated that a density of 200 persons per acre is suitable for inclusion in the centre of the city. This does not mean that all central residential development should be at this density. Large concentrations of development at this density might create insurmountable traffic and parking problems. Similarly it may not be possible to provide the open space which is necessary to this density of development, which would of course result in overcrowding.

The density schedule is intended to serve as an indication of

of densities which are suitable for certain general areas provided that the necessary services can be provided.

2. THE STREET SYSTEM

Streets are designed within metropolitan areas and in turn within residential subdivisions to serve specific functions. Streets have always been a means of communication and intended to give access to properties as well as to facilitate individuals going from one place to another. The growth of cities and the number of automobiles found in contemporary cities have for the most part made obsolete the use of one kind of street to serve both these functions.

Today it is necessary to have one kind of street to carry large volumes of traffic quickly over long distances within cities; other kinds of streets to carry traffic shorter distances, and yet another kind of street to give access to local properties. Each of these different kinds of streets have different characteristics and must be designed to serve their specific functions.

The following is a list of the different kind of streets which make up a good metropolitan street system. There are variations possible on each of these types but in general, streets can be categorized as to function under the following four headings:

- a) Expressway This type of street is intended for large volumes of traffic at high speeds to serve relatively long trips. Access is limited

to points where service roads enter the expressway. The expressway may require a right-of-way up to 400 feet in width.

b) Arterial

This type of street is intended to serve major volumes of traffic through the metropolitan area not served by expressways. Access is controlled but available to adjacent properties and right-of-way may be from 100 feet to 150 feet in width. Arterials are spaced not more than a mile apart.

c) Collectors

Collectors are intended to provide traffic movement from local streets to arterial streets. They are shorter and of a more local character than arterial streets. Major collector streets are not usually more than about 1/2 mile apart and may vary from 66 feet to 100 feet in width depending upon the volume of traffic they are intended to carry. Most collector streets are designed with an 80-foot right-of-way and provide controlled access to abutting properties.

d) Local Streets

Local streets are intended to provide easy access to abutting property and to carry no through traffic

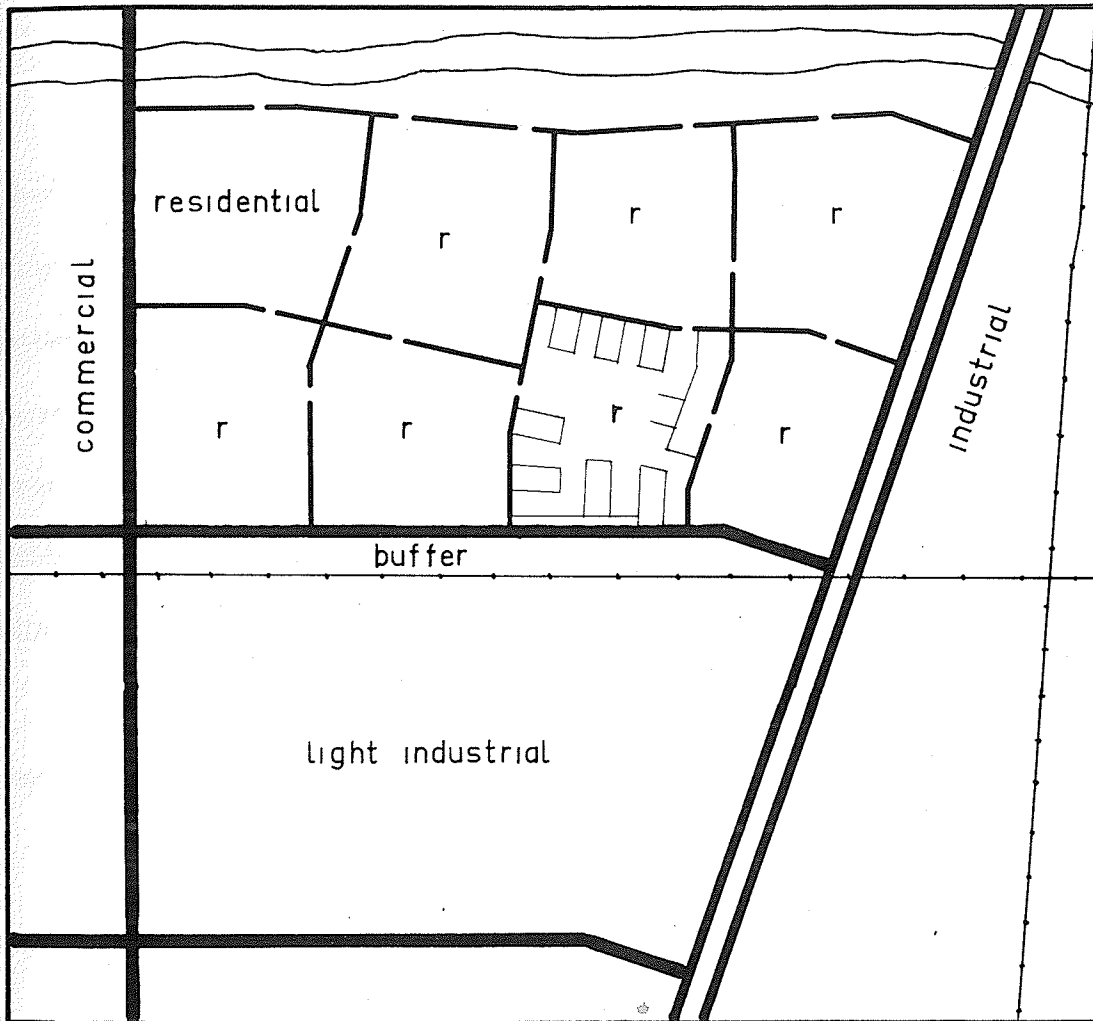




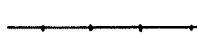


DIAGRAM 4 A DETAIL OF THE SEGREGATED STREET SYSTEM AS A FRAMEWORK FOR DIFFERENT LAND USES

Legend

- expressway . 
- arterial . 
- collector . 
- local . 
- railway . 

which in the case of residential development is intended to provide a measure of privacy. Right-of-way may vary from 50 feet to 66 feet in width.

The quality of the layout of a metropolitan street system cannot be established by legislation. The layout of a good street system is the product of good design by qualified persons. However, the major streets of a metropolitan street system can be established through design and become as a part of the development plan, the physical framework for development. A metropolitan plan for a street system or traffic circulation is basic to the layout and design of areas within the pattern of major streets. Diagram 4 shows a detail of a metropolitan street system as a framework for different land uses.

The design of residential streets will be discussed under the section of this report dealing with design of residential areas.

3. PUBLIC OPEN SPACES

The term "public open space" within the content of this thesis refers to both school and park sites. Separate standards for space for both school and park sites must exist in Metropolitan Winnipeg for administrative reasons. However, because both school and park areas can and do perform a recreation function, they are considered here in the light of their joint use by school and parks boards particularly with respect to facilities provided by local municipal authorities.

The importance of providing adequate space for the physical as well as

the academic education of school age children cannot be overstated. Physical education is increasingly recognized as an important function of the school system.

The provision of open space for the leisure time recreation needs of the population of the Metropolitan Winnipeg area is also a recognized function of government. Government must, however, know what the recreation needs of the community are so that it can carry out its responsibility in this regard as efficiently as possible. These needs vary from those of the pre-school child to those of the adult and the senior citizen, and from those provided locally to serve a small surrounding area to those which should be provided to serve the Metropolitan Winnipeg area at large.

This section of the thesis will deal with the school and parks systems, the joint use of facilities, space standards and development of sites. Considerable information on the subject of the characteristics of school population has been included to show the nature of the subject and the apparent trend. The author believes that the significance of the trend is not always appreciated when the development negotiations reach the specifics of "how big" and "how many" the school and park sites shall be.

Schools

Legislation. The Metropolitan Winnipeg Act does not bring school administration within its terms of reference and therefore for the purpose of this report it has been assumed that the present school division system will continue for some time to come.

For the purpose of school administration the Province of Manitoba

has been divided into School Divisions and a board established for each School Division. The Division boards are responsible for providing education for the secondary grades (9 to 12 inclusive). The elementary grades within the Division area are the responsibility of the local School District Boards within the Division: the School Districts being for the most part the same areas as existed previous to the Division system being established. The one variation from this division of responsibility allowed by the legislation, is that where a School District operated a junior high school (grades 7, 8 and 9) at the time the Act came into effect, that District Board could continue to operate the junior high school as a unit if it wished to do so.

The Provincial Government's purpose in establishing the School Division system was to provide the means of assuring equality of education throughout the Province. Larger and fewer high school plants were recommended for the rural areas with the elimination of high schools of less than 4 rooms.

The result of this legislation in many parts of the Metropolitan Winnipeg area with the exception of the City of Winnipeg, and in other places where junior high schools already existed or where the Division boundaries coincided with Municipal School Districts, has been the provision of grades 9 - 12 in one school plant. Where this has been done, grades 1 - 8 are usually in one school plant as well, though there are instances where grades 1 - 6 are schooled in one plant and grades 7 and 8 in a separate plant.

In the City of Winnipeg where the School Division Board is responsible for grades 1 to 12, a variety of distribution occurs. The 6 - 3 - 3 splitting of grades is favored and in certain cases where it has been tried, a 6 - 6 split has proved successful.

School Population Characteristics. Within the Metropolitan Winnipeg area and in fact across Canada, it is apparent that the school population has been and is increasing rapidly. In new residential areas the number of school children as a percentage of the total population particularly, is increasing.

It has been necessary to revise continuously the basis for estimating the number of school children which a new residential area could be expected to produce.

Single family development will likely produce more children per family than most types of multiple family development. It is characteristic of most Canadian and American cities, and particularly of Greater Winnipeg, that families with children like to live in single family homes. Houses built on small lots create a larger density of families per acre and therefore more children per acre than large lot development does.

In the City of Winnipeg where the population structure is much more varied than in new residential areas which tend to be limited to young families with children, a change in the relationship between school population and total population has taken place as shown in Table 2. It is apparent that while there has been no substantial increase in development in the City of Winnipeg, the school population

is continuing to increase.

TABLE 2 SCHOOL POPULATION AS A PERCENTAGE OF TOTAL POPULATION
CITY OF WINNIPEG

	1948	1958	1959	1960	1961
Elementary Students Grades 1 - 6	7.54 %	11.27%			
Junior H. Students Grades 7 - 9	2.96 %	3.90 %			
Senior H. Students Grades 10 - 12	1.89%	2.21 %			
TOTAL	12.39%	17.38%	17.6 %	17.68%	18.04 %

A review of Table 3, which is a compilation of pre-school and school age children throughout the metropolitan area, shows an increase in the percentage of both these age groups between 1951 and 1956 for a large part of the area. Unfortunately the results of the 1961 Government census are not yet available to provide a further and more current comparison.

With regard to new residential areas, in 1956 a survey was conducted of the St. George School area in St. Vital which indicated an average of about 2 children per family, most of which were in the pre-school and elementary school age group.

A survey was done of a small new residential area in Fort Garry in 1958. This survey indicated that at the beginning of the development there were

TABLE 3 - RELATIONSHIP OF PRE-SCHOOL AGE, SCHOOL AGE, AND ADULT POPULATION TO TOTAL POPULATION FROM DBS BULLETIN CT-8, 25-2-1953 and 4-11, 29-11-1957

Municipality	1951								1956					
	Total Popu-lation	Under 6 Years Pre-School Age	%	6-17 Years School Age	%	18+ Years Adult %	# Chil-dren At-tending School	% of Total Pop.	Total Pop.	Under 6 Years Pre-School	%	6-17 Years School Age	%	18+ Years Adult %
Winnipeg	235,710	25,067	10.6	31,936	13.6	75.8	32,081	13.65	255,093	28,550	11.1	41,271	16.1	72.8
St. Boniface	26,342	3,702	14.1	4,523	17.2	68.7	4,304	16.35	28,851	3,889	13.4	5,665	19.6	66.0
Transcona	6,752	939	13.9	1,188	17.5	68.6	1,074	15.92	8,312	1,263	15.2	1,698	20.4	64.4
Tuxedo	1,627	217	13.3	328	20.1	66.6	338	20.8	1,163	137	11.7	216	18.5	69.8
Brooklands	2,915	442	15.1	619	21.2	63.7	508	17.37	3,941	791	20.3	865	21.9	57.8
Assiniboia	2,663	443	16.6	498	18.7	64.7	461	17.29	3,577	625	16.5	773	21.6	61.9
Charleswood	3,680	683	18.5	661	18.1	63.4	623	16.93	4,982	879	17.6	1,124	23.0	59.4
Fort Garry	8,193	1,481	18.1	1,603	19.6	62.3	1,541	18.83	13,592	2,597	19.0	2,919	21.4	59.6
East Kildonan	13,144	2,092	15.9	2,222	16.9	67.2	2,028	15.42	18,718	2,922	15.6	3,794	20.1	64.3
North Kildonan	3,222	509	15.8	666	20.6	63.6	636	19.72	4,451	805	18.1	972	21.8	60.1
West Kildonan	10,754	1,697	15.5	1,842	17.2	67.3	1,806	16.8	15,256	2,367	15.6	3,042	20.0	64.4
Old Kildonan	869	138	15.9	174	20.0	64.1	157	18.06	1,011	162	16.0	218	21.5	62.5
St. James	19,561	3,242	16.6	3,167	16.2	67.2	2,972	15.2	26,502	4,042	15.2	5,264	19.8	65.0
Glenlawn S.D.	17,280	-	-	-	-	-	2,770	16.02	21,850	-	-	3,843*	17.2	-
St. Vital	18,637	2,992	16.0	3,312	17.7	66.3	3,018	16.2	23,672	3,850	16.2	4,974	21.0	62.8
METRO AREA	354,069	43,604	12.3	52,739	14.9	72.8	51,547	14.5	409,121	52,879	12.9	72,795	17.7	69.4

*- Attending School

about 1.4 children per family and that after 5 years a count indicated 2 children per family. It was thought that a further count at a later date might indicate 2.5 children per family, but no more than 70% of these children would be in school at one time. If one assumes a minimum of 2 adults per family and 2.5 children per family then the school enrollment in this area could reach 38.5% of the total population of this area. This would undoubtedly be a peak load. However at the beginning of this development with 1.4 children per family, the estimated percentage of school children was about 28.68%. This figure is considerably higher than that reached in any other area to the author's knowledge.

A survey of the Windsor Park area done in January, 1959, indicated a family size of 4 persons and a school population of 22.5%. The pre-school age children numbered 27.5% of the total population.

Table 4 indicates the increase in the percentage of school population related to total population from 1946 to 1959 for several areas within Greater Winnipeg.

It is obvious that not only the population of Greater Winnipeg has increased but the percentage of pre-school and school children has also increased and has done so more markedly in new areas than in old areas.

On the basis of a changing family structure, the Metropolitan Planning Commission of Greater Winnipeg established working figures in 1959 for use in estimating future school population of new primarily single family

TABLE 4 TOTAL POPULATION AND SCHOOL POPULATION - 1946 - 59

Year	Glenlawn S.D.		East Kildonan		City of Winnipeg ***		Town of Transcona		North Kildonan		
	T.P.	S.P. %	T.P.	S.P. %	T.P.	S.P. %	T.P.	S.P. %	T.P.	S.P. %	
1946	10,594	1849	17.42	9,071	1328	14.9	231,414		2,338	Believe 3 mo. average 408	16.4
1947	11,750	1899	16.2	9,900	1377	14.8	231,491	28,639	2,490		16.4
1948	12,850	2026	15.85	10,200	1462	13.5	234,201	28,374	2,670		16.8
1949	14,200	2170	15.2	10,439	1585	15.2	234,561	29,357	2,875		17.4
1950	15,700	2289	14.5	11,813	1778	15.1	238,604	29,927	3,050		17.4
1951	17,280	2426	14.01	13,144	1875	14.3	239,364	30,663	3,222		17.4
1952	18,000	2606	14.5	13,582	2434	17.9	240,257	31,811	3,470		17.9
1953	18,800	2941	15.65	14,746	2370	16.1	243,287	33,916	3,725		18.0
1954	19,800	3168	16.0	14,905	2637	18.7	244,033	35,473	3,975		18.8
1955	20,700	3582	17.3	15,812	3034	19.2	249,069	37,501	4,225		20.2
1956	21,850	3843	17.2	18,718	3521	18.8	254,030	39,153	4,451		20.5
1957	20,232	4061	20.0	19,978	3869	19.3	254,612	40,460	4,675		20.12
1958	21,266	4444	20.9	21,248	4674	21.9	255,510	42002	5,000		21.56
1959	25,184*	5200**	20.7	23,607	4916	20.8	257,898	43,263	5,800		22.5

*Population of Glenlawn S.D. based upon 85% of total municipal population of St. Vital for 1959

** St. Vital School Division

***City of Winnipeg population for March and school population for June of year stated

residential areas as follows, on the basis of an average family size of four persons:

TABLE 5 METROPOLITAN PLANNING COMMISSION WORKING FIGURES FOR SCHOOL POPULATION AS A PERCENTAGE OF TOTAL POPULATION

Population Group	Percentage of Total Population with 6 - 3 - 3 Splitting of School Grades	Percentage of Total Population with 8 - 4 Splitting of School Grades
Elementary School Population	15.5%	18.8% to 20.0%
Junior High School Population	5.0%	
Senior High School Population Grades 10 - 12	3.0%	
Secondary School Population Grades 9 - 12		4.7% to 5.0%
Total of School Population as a percentage of total population	23.5%	23.5% to 25.0%

It is most important that these figures be restudied from time to time to ensure their accuracy as closely as possible.

Whether or not the trend towards the school population representing an increasingly larger proportion of the total population can be expected to continue for a long period of time would involve study beyond the scope of this thesis. However, it is possible to make general observations and comments for the immediate future based on available information and predictions.

Table 6 is a compilation of vital statistics for the Metropolitan Winnipeg area from the year 1940 to 1959. The table indicates that while both the total population and the number of births per 1000 population have been increasing, the death rate has been holding quite steady and the number of marriages per 1000 population has been decreasing. There was, in keeping with the national statistics, a substantial increase in births per 1000 population in 1946 and 1947, followed by a decrease in the birth rate in 1948. The birth rate, however, steadily increased after 1948 until in 1959 it approached the post-war rate.

It seems reasonable to assume from this table that each marriage is producing more children than it used to. Barring a large and sudden migration of adults into the area, or a substantial and immediate increase in the death rate, the proportion of the total population which children represent will probably at least continue at its present rate and may possibly increase.

The factors which affect the percentage of school age children who actually attend school are availability of facilities, minimum school leaving

TABLE 6 VITAL STATISTICS FOR THE METROPOLITAN WINNIPEG AREA**

Year	Total Population	Total Births	Births/1000 Population	Total Marriages	Marriages/1000 Population	Total Deaths	Deaths/1000 Population
1940		4,486		5,429		2,442	
1941	299,937	5,042	16.8	5,004	16.6	2,621	8.7
1942	* 303,995	5,492	18.0	5,214	17.1	2,616	8.6
1943	* 308,108	6,075	19.7	4,148	13.4	2,910	9.4
1944	* 312,276	5,809	18.6	3,671	11.7	2,704	8.6
1945	* 316,501	5,982	18.9	3,961	12.5	2,770	8.7
1946	320,823	7,669	23.9	5,321	16.5	2,764	8.6
1947	* 325,385	8,497	26.1	4,747	14.5	2,908	8.9
1948	* 330,011	7,525	22.8	4,341	13.1	2,900	8.7
1949	334,695	7,939	23.7	4,341	12.9	2,980	8.9
1950	347,388	7,997	23.0	4,179	12.0	2,972	8.5
1951	357,723	8,611	24.0	4,353	12.1	3,137	8.7
1952	361,831	8,830	24.6	4,186	11.5	3,100	8.5
1953	374,080	9,158	24.5	4,147	11.0	3,342	8.9
1954	380,739	9,813	25.8	4,005	10.4	3,352	8.8
1955	392,905	10,113	25.7	4,002	10.0	3,325	8.7
1956	408,058	10,104	24.7	3,817	9.3	3,445	8.4
1957	418,094	10,477	25.0	3,769	9.0	3,710	8.9
1958	428,434	10,445	24.3	3,638	8.4	3,628	8.4
1959	439,472	11,057	25.1	3,747	8.5		

* Population figures interpolated.

** Includes Metropolitan Area as defined by the Dominion Bureau of Statistics in 1956.

N.B. Deaths, Births & Marriages information supplied by Division of Vital Statistics, Province of Manitoba.

May 25, 1960.

age established by law, and degree of prosperity in the country. Within the metropolitan area, facilities of some sort or other are available to all normal children, though overcrowding has created problems. Minimum school leaving age is 14 in the Province of Manitoba, so that primary grades are not affected by this. This minimum age could conceivably be increased to 16 as found in a number of other provinces.

General prosperity has been increasing and, while economists differ on what is to come in detail, there appears to be general agreement that, barring unforeseen problems, the country is not likely to experience a major or sudden serious recession in the years to come.

The Royal Commission on Canada's Economic Prospects Report, "Housing and Social Capital", published in 1957 estimated that on the national scene elementary school enrollment as a per cent total of elementary school age children was at that time near its peak at about 95%. The Commission estimated that there will be an increase in the percentage of secondary school age children who enroll for secondary schooling. The increasing complexity of business, industry, and government, and possible upward revision of school leaving ages in some provinces, are given as reasons for this estimate.

In summary, it appears reasonable to suggest that the number of children to be schooled will increase and that the school population as a percentage of total population will at least hold its present level, if not increase,

within the immediate future. However, the need to review the situation frequently in the light of local and national trends and conditions cannot be overstated.

With regard to the location of the increasing school population, it is apparent that it is appearing in its largest numbers in the suburban communities of the metropolitan area. The Dominion Bureau of Statistics publication "Vital Statistics 1958", has this to say about the national scene:

"While it is not clear whether the new birth rate level--nearly 50 per cent above pre-war will prove stable or not, the hypothesis may be advanced to explain the convergence on the two and three-child family size, that it is not the goals and values, but rather the means to achieve these, which have changed. If the early downward trend was associated with city life, the new rise is associated with the expansion of the suburbs. From this fact may be drawn the inference that, given a high enough income level, the modern family will prove to be an adequate procreation institution within an urban-industrial environment."

The Present Park System

The recent Metropolitan Winnipeg Act provided for the Metropolitan Corporation to take over existing park lands within the Metropolitan area of over 15 acres in area. The Act defines a public park as including a zoological garden, recreation area, square, avenue, boulevard or drive and areas or

ground set aside and used wholly or principally for the purpose of sports and includes buildings and other structures or facilities which may have been placed on these areas. The Act provides also that the Metropolitan Council can acquire land for and improve and maintain public parks not only in the metropolitan area but in any adjoining municipality.

This portion of the Act is now in force and the Council recently decided to take full administrative control of its major parks (Kildonan Park and Assiniboine Park) and golf courses, and four public parks over fifteen acres in area. The Council has also decided to acquire new land for park use in a five year program recently announced.

Park lands within the Metropolitan area, up until the occasion of the Metropolitan Winnipeg Act, had always been the responsibility of the individual cities, towns and municipalities which owned them. The local authorities will continue to maintain and provide smaller parks. The major park facilities in Metropolitan Winnipeg were provided and maintained by the City of Winnipeg up until the time they were taken over by the Metropolitan Council. Other local governments have provided facilities much smaller in area and where they have been developed were intended to serve for the most part, the immediate local area or community in which they were located.

School - Municipal Co-operation in the Planning of Recreation Facilities

The thesis so far has dealt with parks and schools separately, leaving the statement of space standards to follow this discussion on the importance of

school-municipal co-operation in the planning of recreation facilities.

It has been stated previously that both schools and parks serve a recreation function. Therefore, while it is necessary to establish separate space standards for each, it is most important that both be considered as a joint community resource.

George Butler, Director of Research for the National Recreation Association has made the following statement in one publication:

"The growth of co-operative action on the part of school and municipal authorities in the acquisition, planning, construction and maintenance of areas and facilities designed for school and community recreation use is a striking and significant development in recent years. The removal of real and imaginary obstacles that for many years deterred such co-operation and the resolution of jurisdictional differences between school and city authorities represent a drastic and desirable advance in relationships and practice."³

Mr. Butler goes on to quote Mr. Malcolm Kirkpatrick who has pointed out:

"Traditionally our school, park and playground sites have been purchased, developed and operated separately - and with little or no co-ordination... This procedure has been an extravagant duplication."⁴

School and park areas designed as a single resource can reap advantages in the economic use of land in layout and design. Joint use means that the facilities provided can be put to the maximum and best use.

³ George D. Butler, "School City Co-operation in the Planning of Recreation Facilities", Reprinted from "Recreation", April, May and June, 1953, National Recreation Association Inc., P. 1

⁴ Ibid

Joint use can be carried out in a number of ways, but in principle, it intends that community use can be made of certain of the school facilities when they are not in use and vice versa, depending upon the agreement reached.

Additionally, certain facilities which might not otherwise be available to the school program could be provided in the community portion of the site.

In order that the best plan can result from joint planning, school boards and councils should both be involved in the planning of the site from the beginning of its development.

Co-operative action has been achieved in a number of ways in some United States cities. In some cities, formal agreements covering acquisition and improvement of properties have been drawn up between school and city authorities; in other cities agreements refer only to specific properties. There are instances where co-ordinating committees have been established officially to consider all proposals for new areas and where informal arrangements have been made to allow for review of the plan by both school and recreation authorities in the early stages of planning.

Agreements have been drawn and are proving successful in such centers as Grand Rapids, Minneapolis, New York City, Austin, Seattle, Denver, and a number of other cities.

Joint use agreements have existed in the City of Winnipeg for some time and the Municipality of Fort Garry is developing its Community Centre and High School on the basis of such an agreement.

This thesis strongly recommends that future school and local recreation-park sites be located adjacent to one another and that their development be based on a joint participation by school and parks authorities from the beginning of the planning of the layout, through construction and development, to use and maintenance.

The following part of this report, dealing with recommended standards for school and park sites is based upon the concept of joint planning and use of the sites.

Facilities Required to Serve the School-Park Need

The function of school sites is to provide the facilities necessary to the curriculum. Space for the school building itself will be supplemented by the outdoor facilities required for the physical education program. Physical education is intended to contribute to the building of physical health, as well as to train children in teamwork and physical skills which will always be useful.

The following discussion of community recreation and requirements of different age groups is intended to serve as a prelude to determining the facilities which the community should provide at both school and park sites.

The basic difference between recreation facilities at school sites and those at park sites is that participation in community recreation is voluntary while participation in the school program is not voluntary for school students.

There is in both Canada and the United States an increasing awareness of the importance of recreation of all kinds to fill the increasing leisure time of the population. Our living standard and situation has been changing drastically as a result of higher incomes, increased ownership of cars, shorter daily working hours, shorter weeks and longer yearly holidays. We are a population with time to enjoy ourselves. It is most important then that this change in our living situation be incorporated in the planning of our cities and the fact that "planning is for people" not be evaded by government.

The following characteristics were assigned to the term "recreation" by the Greater Winnipeg Parks and Recreation Survey 1957, and have been accepted for the purpose of this thesis:

- (a) It is a leisure-time pursuit.
- (b) It is a voluntary activity.
- (c) It is recreative, in that it represents a change of pace in terms of either physical or mental activity.
- (d) It is wholesome and contributes to personal development.
- (e) It embraces all ages and both sexes.
- (f) It may be an individual or a group activity.
- (g) It may be sponsored or unsponsored.
- (h) It may be sponsored by either a public (government) or private agency or club or by a commercial entity.
- (i) It may be planned or spontaneous.
- (j) It may be active or passive.
- (k) It is not inclusive of activities pursued by any other reason than the enjoyment of the activity itself.
- (l) It usually has to be paid for by someone.⁵

This report is concerned primarily with the provision of public space for recreation.

⁵ "Greater Winnipeg Parks and Recreation Survey, 1957", sponsored by the Winnipeg Board of Parks and Recreation and the Welfare Council of Greater Winnipeg, P.5.

In determining what recreation facilities should be provided in Metropolitan Winnipeg, it is most important to examine the climate characteristics and leisure time requirements which influence the use of facilities. The vigorous climate of this area varying as it does between a cold crisp winter and a warm sunny summer with occasional hot spells means providing facilities for each climatic condition.

Passive park areas can be enjoyed in both summer and winter though certainly more so in the summer. The fact that there are many times during the winter months when people cannot stay outside except for short periods of time makes it more important than ever that facilities be available for the summer months, in addition to indoor and outdoor facilities for the winter months.

There appears to be a very significant trend for people to stay outside as much as possible during the summer months, whether camping, picnicking or barbecue cooking in the back yard. This trend within the city itself, over the past few years, is probably due to some extent, to a very successful mosquito abatement program which has made the outside entirely habitable and pleasant. No doubt, increased automobile ownership and leisure time account for the increased interest in driving out of the city during weekends and holidays. These trends are most certainly intensified by our severe winters.

It is becoming increasingly imperative that public open spaces for both active and passive use, and of a sort that can be used by all age groups, be

provided for the population of Metropolitan Winnipeg in much greater supply than presently exists.

Meeting the public open space needs of the population means providing space within the metropolitan area for active and passive recreation and outside the metropolitan area in the form of large reservations for camping, fishing, and picnicking.

Age Groups to be Served and the Facilities to be Provided

All of the population has both active and passive recreation requirements. A place to sit quietly and think or read a book has just as important a place in the provision of space for recreation as has a ball diamond. A good system of facilities must strike a balance between active and passive recreation spaces on the basis of what is required in any given community.

A good system will meet the needs of each age group.

The pre-school child plays close to his home and is usually supervised by a parent or guardian. His needs, like those of the younger elementary school children, do not involve complicated or expensive apparatus or very large amounts of space. The space must, however, be close enough to his home for him to make use of it. The very young child has this in common with the elderly citizen: he also requires a quiet space, not necessarily large, but near at hand.

Very young children tend to play as individuals and their activities

include such things as running, jumping, climbing, hopping, skipping, throwing and catching. Younger children change their activities more frequently than older children because they are capable only of short periods of interest. These facts reflect themselves in the sort of facilities which are suitable for inclusion in elementary school and adjacent park sites.

There is a need for adequate play space on the grounds and hard surfaced areas which can be used in wet or snowy weather. The hard surface areas can be used for general play. Space is also required by younger children for skipping, games with balls and relays.

Outdoor space for older elementary school age children might include space for basketball, volley ball, soft ball, soccer and football, running space, skating and hockey.

Space for outdoor teaching should also be considered. While the time during the year when such space could be used is limited in Greater Winnipeg, the space could be used for general outdoor gatherings such as closing exercises as well. It could be used as a nature study area and because it could benefit by a considerable amount of planting, the planting of this area could become part of the course on nature study. The idea of children participating in the planting and landscaping of school sites is a popular one among some educators in England and the United States and is discussed in greater detail in the section of this report dealing with landscaping.

The provision of car parking space for teachers and visitors to the

school and for those using the community facilities, should not be overlooked. Space for parking bicycles in racks should also be provided, particularly adjacent to the school building.

The recreation needs of older children differ from those of younger children because older children tend to play more as groups and teams and are capable of longer periods of interest.

The sort of facilities and activities suitable for secondary school age children is quite varied. One publication describes physical education programs in the United States as included the following activities:

Team games such as football, and soccer, speed ball, softball, volley ball and basket ball; individual sporting activities such as horse shoes, table tennis, archery, handball, golf, tennis, bowling; and rhythmic activities such as folk, square and contemporary dancing, and water and winter sports, such as skating and hockey where possible. Stunts, tumbling and gymnastics are taught as well as camping activities. Of course not all schools and park areas provide all of these activities but the list provides a basis for selection to fit local needs. Many of the activities require large grounds which it is suggested might be provided but not on a local basis.

While it has been suggested in the foregoing paragraphs that the facilities mentioned are suitable to serve the school age children, some of these facilities would no doubt come in for use by adults and perhaps the family as a group as well. It is apparent though, that the more specialized facilities such

as golf courses and swimming pools which would be provided on a community-wide basis would come in for greater use by adults and by families supervised by adult members than by young school age children alone.

Where families do things as a group it is probable that their needs are better served in large recreation spaces such as city parks where there are large open spaces for unorganized recreation such as picnics and points of interest such as a zoo or a pond. The family needs could also be well served by rural reservations provided outside the metropolitan area which could be reached in reasonable time (about 1 hour maximum driving time) for picnics, camping and fishing expeditions. The rural reservation would come in for its greatest use on weekends and holidays but would provide a pleasant afternoon or evenings' entertainment as well.

There is a further passive recreation requirement of all ages of occupants of residential areas. The benefit of being able to walk through or past or drive past a green space which may perform no other function than to alleviate the effect of road and building surfaces is a part of passive recreation. Breathing spaces such as these can vary in form from a small green space in the centre of a cluster of 6 or 7 homes to a larger space of a few acres. The function of spaces such as these, carefully integrated in the subdivision design, is primarily passive. One would expect to find benches and in the larger areas, open space where pre-school children could run and play, and perhaps a shuffleboard court or two for the interest of senior citizens.

Existing Space Standards for School Sites

Table 7 indicates space standards for school sites which have been recommended in other centres and includes three sets of standards which have been recommended in the Metropolitan Winnipeg area in recent years. It will be noted that most of the standards accept the joint use of school and park facilities and their location adjacent to one another.

The standards in Column 1 were established by the Metropolitan Planning Commission in 1947 for application in the Commission's recommendations to its member municipalities.⁶ The recommended minimum for elementary school sites has been attained in a number of cases, however, those for junior and senior high schools have rarely been attained.

The fact that these standards are not, and in fact never have been, excessive, but are quite realistic in their requirements, can be seen by comparing them with recommended standards recently proposed for use in the United States as indicated in columns 4, 5 and 6 of the Table.

The standards recommended in the Metropolitan Planning Commission Report to the Glenlawn School District in 1956, as shown in Column 2,⁷ are based on the 1947 Report outlined in Column 1. The 1947 standards were reviewed and thought suitable for application even though they had been established nine years before.

⁶ "Neighborhoods - Schools - Parks - Recreation Greater Winnipeg", The Metropolitan Planning Committee, Winnipeg Town Planning Committee, 1947 P.41-45.

⁷ "Future Growth of Glenlawn School District No. 1499", Metropolitan Planning Commission of Greater Winnipeg, 1956, P.10.

TABLE 7 EXISTING STANDARDS FOR SIZE OF SCHOOL SITE

	(1) M. P. C. Report 1947	(2) Glenlawn S. D. Report 1956	(3) Fort Garry Development Plan 1959	(4) Eldridge Lovelace Partner, Harland Bartholomew and Associates 1958	(5) Tucson Planning Department Tucson Board of Education	(6) National Council on School House Construction "Guide for Planning School Plant 1958 Edition
Elementary school sites	Grades 1 - 6 For 12 room school 1 1/2 acre plus playground, minimum 3 acre (or 200 sq. ft. per pupil Min. 4 1/2 acre (min. 2 acres neighborhood park to be located at or near elem. school site) Service radius - 1/4 mile	Grades 1 - 6 site area - 4 1/2 ac. classrooms 12 pupils 450 pupils/ac 100 adjoining a quiet park of some 2 1/2 ac.	For Grades 1-6 and 1-8 for school and play- ground 12 rms. - 4 ac. 18 rms. - 6 ac. 24 rms. - 7 ac. (based on 35 pupils per room)	For Grades 1 - 6 Min. site area - 5 ac. plus 1 ac. for each 100 students enrolled Service radius - 1/2 m.	For Grades 1 - 6 Site sz. - 10 ac. mx. clsm. 20 Service Radius - 5/8 m. School size range 180 - 600 pupils preferred Maximum pupils per room - 30	Min. site size - 5 ac. plus one acre for each 100 enrolled
Junior High School	Ages 12 - 14 (Grades 7-8-9) J. H. S. plus play- field - 12 ac. Service radius 1/2 mile	Grades 7-8-9 site area - 12 ac. classrms. 24 pupils 600 Pupils/acre 50 includes space for football and baseball.	15 rooms - 7 ac. (30 / room)	For Grades 7-8-9 Min. site area 10 ac. plus 1 ac. for each 100 enrollment Service radius - 1 1/2 m.	For 7 - 8 site sz. 20 ac. mx. clsm. 24 ac. ser. rad. 1-1 1/4 ml. preferred enroll. range 400 - 600 mx. pups./rm. 25	Min. site size 20 ac. plus one acre for each 100 students enrolled

	<p>(1) M. P. C. Report 1947</p>	<p>(2) Glenlawn S. D. Report 1956</p>	<p>(3) Fort Garry Development Plan 1959</p>	<p>(4) Eldridge Lovelace Partner, Harland Bartholomew and Associates 1958</p>	<p>(5) Tucson Planning Department, Tucson Board of Education</p>	<p>(6) National Council on School House Construction "Guide for Planning School Plant" 1958 Edition.</p>
<p>Senior High School</p>	<p>Ages 15-17 (Grades 10- 11 - 12) S.H.S. and playfield plus community centre 24 ac. Service radius 1 mile.</p>	<p>Grades 10-11 12 site area - up to 24 Clrms. 24 Pupils 600 pupils/rm 25 This site should be used as or - ganized recre- ation centre for some 35,000 persons.</p>	<p>30 rooms - 10 ac. 30/room</p>	<p>For Grades 10 - 11 - 12 Min. site area 20 ac. plus one acre for each 100 students</p>	<p>For Grades 9-12 Site size 40 ac. mx. clsrms 40- 80 service radius 2 miles preferred, enroll. range 1000- 2000 max. pupils /rm. 25</p>	<p>Min. Site size - 30 acres plus 1 acre for each 100 students enrolled.</p>
<p>Com- bined JHS & SHS</p>		<p>Elementary 35p/rm</p>	<p>30 rooms - 10-12 ac. (30/stud./rm) Landscaped parks and play areas to be located ad- joining all school sites on basis of 2.5 ac/1000 population</p>	<p>The standards recommended for elementary schools is the recom- mended minimum for 28 of the United States.</p>	<p>Elementary School should be combined with a neighbour- hood recreation area.</p>	<p>The standard recom- mended for elementary schools is the recommended mini- mum for 28 U.S. Standards for secondary school site have been re- vised from 1953 recommendations.</p>

The standard recommended in the Fort Garry Development Plan in 1959, shown in Column 3, also reflects the 1947 report. The site size stated is for the school site alone and the recommendation goes further to say that 2.5 acres per 1000 persons should be distributed adjoining school sites to serve the local park and recreation needs of the community. The joint provision, maintenance and use of lands adjoining the school sites by the School Board and the Municipality was recommended.

The Fort Garry Development Plan went further than previous plans in recommending a variation in school site size depending upon the number of rooms being provided. This was done because it has been apparent that not only is there a difference of opinion amongst educators regarding the most desirable number of rooms for a school, it has frequently been proved necessary to provide a number of rooms in excess of what may be considered to be most desirable number because of an unanticipated increase in school population.

Additionally, the Commission felt that it was important to provide a space standard guide which could be used in a variety of situations.

The standards in Column 4 were stated as recommendations by Eldridge Lovelace, a partner in the firm of Harland Bartholomew and Associates, in a paper delivered to the American Institute of Park Executives in New Orleans in October, 1958.

Mr. Lovelace states that the facilities for recreation as well as school needs of the age groups concerned within the community can probably be

adequately provided if the school system is based upon space standards such as these. These standards present a sliding scale for use for sites of varying ultimate capacity. It is important to mention that these standards are similar to those being recommended in a number of the United States.

Mr. Lovelace also states that theoretically all the recreation needs of the age group in the elementary schools would be largely served by a completely adequate system of elementary schools. This is true of high schools also. It is his opinion that many economies can be realized by schools making use of park facilities and by non-school groups making use of school facilities.

There is no substantial variation in the elementary school standards in columns 5⁸ and 6⁹. There is some variation in the junior high school standard and considerable variation in the senior high school standard.

The National Council on School House Construction revised its secondary school site standards upwards in 1958 in recognition of the following observed trends:¹⁰

- (a) Space for outdoor teaching areas. This is a trend which has some, but limited application to Metropolitan Winnipeg.
- (b) The prevalence of single storey schools being built.

⁸ Pima County Arizona, City County Planning Department, "Tuscon Public Schools (District No. 1) A Plan for School Locations", Proposed Part of Master Plan for the City of Tuscon, 1955, P. 14

⁹ National Council on School House Construction, "Guide for Planning School Plants", The Council, George Peabody College for Teachers, Nottsville, Tennessee, 1958, P. 23.

¹⁰ James L. Taylor, "School Sites, Selection, Development and Utilization", U.S. Department of Health, Education and Welfare, 1958, P. 40

- (c) The increasing use of single loaded corridors in school building designs.
- (d) The emergence of campus and cluster type layouts. This type of plan appears in two new Metropolitan Winnipeg High Schools, Grant Memorial and Windsor Park. The latter is located on a 7 acre site which is completely inadequate for the building and outdoor facilities as well.
- (e) The little school within a school concept of school organization: this has not been adopted anywhere in the Metropolitan Winnipeg area.
- (f) Consolidation of attendance areas, resulting in larger schools. This is a factor which may emerge as having particular importance in the Metropolitan area, particularly in the rural municipalities, in the light of the recent legislation establishing School Divisions within the Province.

Existing Space Standards for Park Sites

Table 8 indicates standards for park spaces which are in use in other centres ¹¹ and some which have been suggested for the Winnipeg area in the past. ¹²

Each of the American examples shown in the table, with the exception of the Baltimore Regional Plan, used the city-wide guide of 1 acre.

¹¹ Eldridge Lovelace, "More for the Dollar through School Park Combinations" Paper presented to American Institute of Park Executives, New Orleans, La. 1958. "Standard for Parks, Recreation Areas and Open Spaces" Technical Bulletin #2, Baltimore Regional Planning Council, Maryland State Planning Commission, Nov. 1958, P.15-17. Standards - Playgrounds Playfields, Recreation Buildings, Indoor Recreation Facilities, National Recreation Association, 315-4th Ave., New York 10, N.Y.

¹² "Neighborhoods - Schools - Parks - Recreation, Greater Winnipeg", Metropolitan Planning Committee, Winnipeg Town Planning Committee, 1947, P. 41-45. "Greater Winnipeg Parks and Recreation Survey, 1957" sponsored by the Winnipeg Board of Parks and Recreation and the Welfare Council of Greater Winnipeg, P.6,7,8,9.

TABLE 8 - EXISTING SPACE STANDARDS FOR PARK SITES

National Recreation Association.	Minneapolis Requirement - 1955	Metro Winnipeg Neighbourhood Report - 1947	Harland Bartholomew and Assoc. 1958	Baltimore Regional Plan Nov. 1958	Greater Wpg. Park & Rec. Survey	City of Winnipeg	City of Toronto-1956
City Wide: 1 acre for each 100 population	City Wide: 1 acre for each 100 population	City Wide: 10% of urban area	City Wide: 1 acre for each 100 population			City Wide 5 acres /1000 pop within city lmt.	City Wide: 4.6 acres/1000 within city limits.
Playgrounds: 1 ac./800 pop., 4.6 ac.-5000 per 1/4 to 1/2 mile sq.rd.	playgrounds & playfields classified as neighbourhood unit - playground & playfield.		1 acre/200 pop. in neighbourhood park. 1 ac. for each 200 pop. in large parks of interest to the community.	Neighbourhood parks, playfields & playgrounds 7 ac./1000	Neighbourhood Pk. 1 ac./1000 or approx. 4 ac plus 1 or appr. 5 ac. N. Centre 5 ac. (incl. elementary school. Community Park: 1 ac/1000-10-15 ac. Community Centre 1 ac/1000 or 10-15 ac. inc. J.H. School District Park Playfield 40 acres 20 ac. for act. rec. 20ac for park J.H.School inc.		1.4 in neighbourhood and District type.
Playfield: 1 ac./800 pop 10-20 ac. 20,000 to 40,000 people 1/4-1 mile radius (max.)	Playgrounds min. 5 ac/unit. Playfield min. 15 ac./unit each approx. 1 ac. to 800 persons						
Playlots Children 7-8 Min-5000 sq. ft. loc. within super block or apt. area 1/4 min. radius.	Not recommended as part of city program			Urban Parks 10 ac./1000 persons Regional & State Parks, Parkways, etc. 10 acres per 1000 persons			
Large Recreation Park: Min.-100 ac.	Large Recreation Park: 13 units		Comment: Park areas should provide about 50% active recreation				Major and special use parks - 3.0 ac. per 1000 persons

..... continued on (2)...

(2)
Table 8 - Existing Space Standards For Park Sites
(Continued)

National Recreation Association	Minneapolis Requirement - 1955	Metro Winnipeg Neighbourhood Report - 1947	Harland Bartholomew and Assoc. 1958	Baltimore Regional Plan Nov. 1958	Greater Wpg. Park & Recreation Survey	City of Winnipeg	City of Toronto-1956
<p><u>Large Recreation Park:</u> (Continued)</p> <p>Max. - 300 acres</p>	<p><u>Large Recreation Park:</u> (Continued)</p> <p>2084 acres equal approx. 1 ac./250 or 4 acres per 1000 pop.</p>			<p>Hunting and Fishing areas <u>20 acres per 1000 pop.</u></p> <p>Open Spaces <u>33 acres per 1000 pop.</u></p>	<p><u>Athletic Field</u> Special facility conditioned in size by local needs, e.g. golf courses</p> <p><u>Large City Park</u> 100 - 500 acres</p> <p>Natural Undeveloped areas:</p> <p><u>The Rural Reservation:</u> 1000 acres more or less within 20 mile radius or one hour drive</p>		<p>.2 acres per 1000 persons in commercial and industrial areas</p>

of park area for every 100 inhabitants within the city, therefore, relating areas provided to population rather than to city land area. Parks authorities in a great many centres have accepted this basic standard and most are careful to point out that while it is a good standard there are cases where a city can be well served with park and recreation spaces having provided less area than the standard dictates. Similarly because of bad distribution and bad quality of sites chosen, a city could be badly served though more land has been provided than the standard requires.

Generally there is agreement that about half the area provided within a city should be for active recreation and about half for passive areas.

There appears also to be agreement that local community facilities for school age children bear a close relationship to schools and the facilities they provide, and it is recognized that as both can and do perform a recreation function, each can benefit by joint provision and use of facilities.

It will be noted that the city-wide standard recommended for both the Cities of Winnipeg and Toronto, is considerably lower than that for the other examples stated. In both cases the standard is intended to apply to the cities themselves and not to the entire metropolitan area of which these cities form a part.

The Baltimore Regional Planning Council's recommendations, while concerned primarily with major facilities, also includes standards for local facilities. Its city-wide standard of 14 acres per 1,000 population or 1.4 acres



per 100 population for urban parks is higher than that indicated in the other examples. The Committee which prepared the standards suggests that travel time and distance are important elements effecting use of facilities and suggests that city facilities be within 1/2 hours travel time of 85% of the population they are intended to serve and that regional facilities be within one hour's drive of 75% of the population they are intended to serve. The Committee also suggests that the standards recommended for inclusion in the city itself can reasonably be expected to be valid at least until 1980. It suggests that regional facilities should come under review quite frequently, because the factors affecting their need and use are changing and are perhaps less well understood.

The term "open spaces" which appears in the Baltimore Regional Planning Council's list of standards is defined as "undeveloped lands as well as those lands, either publicly or privately owned, to which non-residential, non-commercial, non-industrial low intensity type uses apply and which are essentially permanent in nature, both serving as relief from intensively built up community areas."¹³ The Committee suggests that "open space" is desirable and useful in the form of space breaks in the path of new development to assist in controlling sprawl. Open spaces amongst many other things could

¹³ Baltimore Regional Planning Council, Maryland State Planning Commission, "Standards for Parks, Recreation Areas and Open Spaces, Technical Bulletin #2, Nov. 1958, P. 15

consist of the grounds around large public or private institutional buildings such as hospitals. Smaller sized "open spaces" sites could be grouped together to be effective in appearance and to provide visual breather space.

Recommended Standards for Public Open Space for Metropolitan Winnipeg

On the basis of the foregoing observations of standards for school and park sites, the following portion of this section presents standards which are desirable and which in the opinion of the author are suitable goals to be aimed for in the Metropolitan Winnipeg area. School site size should of course be based upon what is regarded as a desirable program for the curriculum, allowing for possible necessary expansion of the building itself and certain flexibility for changing ideas in the field of physical education. The facilities listed as being suitable for school sites cover a large range and as it is stated not all of them can be expected to be included in every site. It is important to bear in mind that the school site standards recommended in this thesis are based on the theme of schools and parks being a joint community resource which together provide an important part of the physical education, recreation and leisure-time facilities of the population.

General Park Space Standard. It is recommended that the standard of one acre of park area for every 100 residents be accepted as the basis for establishing park areas within the metropolitan area. It is further recommended that about half of this area, or one acre for every 200 residents be provided to serve local park requirements for the use of residents in the immediate area in

which they reside and that the remaining one acre for every 200 residents be provided to serve the metropolitan area at large with special facilities, district and large city parks.

Local Parks Standards. One acre for every 200 residents has been recommended to serve the local parks requirements. A portion of this requirement should be located adjacent to the school sites of the area so that the combined school and park sites can be developed and used as a single unit to serve the recreation and physical education requirements of the school age children of the community.

It is recommended that the amount of park area to be provided adjacent to school sites should be based on the enrollment at the school. This is suggested so that the park provision will be suitably related to the number of children it is intended to serve. One acre of park for every 100 students enrolled at the school should be provided adjacent to the school site. For example, an elementary school with a site area of five acres and an enrollment of 500 students should have a park area of five acres located adjacent to it, resulting in a combined site of ten acres for school and community use.

Similarly junior and senior high school sites should have park areas adjacent to them the size being based on the standard of one acre for every 100 students enrolled at the school.

It is believed that combined school and park sites developed in this manner can adequately serve both the school and community active recreation requirements of the school age children in the area.

The aforementioned facilities make up the active recreation spaces portion of what is intended within the term "local park requirements".

It is suggested that the remainder of the one acre of park for every 200 residents be distributed throughout the community to be integrated in the subdivision design as quiet green spaces for passive and generally unorganized recreation use. These quiet landscaped green spaces could appear in a number of forms and serve a variety of functions but are visualized as primarily passive. They could take the form of very small parks which are simply pleasant to look at or walk past. They could be small areas for pre-school children to play. They could be larger, possibly a few acres in size and contain paths and benches, shuffle board courts and large checker boards for senior citizens, and some play apparatus for very small children.

Metropolitan Park Needs. These are the facilities intended to serve the metropolitan area at large and to be located within the metropolitan area. It is recommended that they be provided on the basis of one acre for every 200 residents and consist of large city parks, golf courses and certain other specialized facilities which it is not reasonable to provide locally.

Large city parks should be a minimum of about 100 acres in area and

could possibly be much larger. They should contain large open spaces for unorganized recreation, some facilities for active participation in sports or cultural events, and points of interest such as a zoo or gardens. Assiniboine Park is an excellent example of what is meant by the term large city park.

The distribution of large city park areas will depend upon the following factors:

1. Locations where large tracts of land can be purchased.
2. They should be located near to areas they are intended to serve so that travel time is not excessive.
3. They could be provided on the basis of a few very large sites or could be smaller sites in greater number. This will depend to some extent on the use to which the areas are to be put.

It is certainly outside the scope of this report to recommend a precise pattern of distribution and exact locations and it is very likely that there are several different solutions to the problem of distribution, each of which will serve this area well.

Golf courses for public use are a facility which falls into the category of metropolitan wide facilities. There are at the present time only two municipally operated golf courses in the metropolitan area. The National Recreation Association suggests that public golf courses should be provided on the basis of one hole for every 3000 persons or one 18 hole golf course for about 54,000 persons. Golf courses are a specialized facility and it is very likely that there

will be a greater demand for golfing facilities in some cities than in others. Private golf courses with restricted memberships and privately operated courses to which the public is admitted for a fee, assist in serving the golfing needs of the population. For these reasons it is suggested that the number of publicly operated courses required for the metropolitan area should be subject for special study.

There are many other less space consuming facilities of a special nature which should be provided in part locally or within the large city parks. As they are active recreation facilities, a number could be provided in areas such as athletic fields for community wide recreation use.

The following space standards for school sites are recommended for use in the metropolitan Winnipeg area. Standards are suggested for elementary, junior high and senior high school sites and for secondary school sites.

Elementary Schools. It is recommended that a minimum of 5 acres be established for elementary school sites. This is a suitable minimum for elementary schools which provide either grades 1 - 6 or grades 1 - 8 to accommodate the school building and the outdoor recreation facilities which are suggested as suitable for the school's physical education program.

The elementary school and park site combined is visualized as a joint resource to serve both the school and community recreation needs of the elementary school age group and certain adult facilities as overlapping in use by

different age groups is inevitable. It has already been recommended that a park site be located adjacent to the school site on the basis of one acre for every 100 students enrolled in the school. The combined site of such a size is believed to be adequate to accommodate a variation in enrollments.

If, for any reason, it is not possible to locate a park adjacent to the school and the school site becomes isolated, then the site should be increased from the 5 acre minimum by at least one acre for every 100 students beyond the first 300 students enrolled. This is suggested to allow for any unforeseen expansion of facilities which may be necessary. Expansion of facilities which could take place fairly easily on a large combined site but certain re-arrangement of facilities should be allowed for in the isolated site. It can be seen from Diagram 5, on the following page, that the five acre site developed with the sort of facilities necessary to the school program, allows practically no room for expansion of facilities or inclusion of new facilities which new ideas in school program might require.

The following is a summary of the sort of facilities which are suitable for inclusion in the combined elementary school-park site. These follow from an examination of recreation requirements of different age groups and from opinions of persons experienced in the field of physical education and recreation. One might not see each of these facilities represented on every elementary school-park site and their use must be tempered in application by local requirements, however, they are intended to serve as a guide to site development.

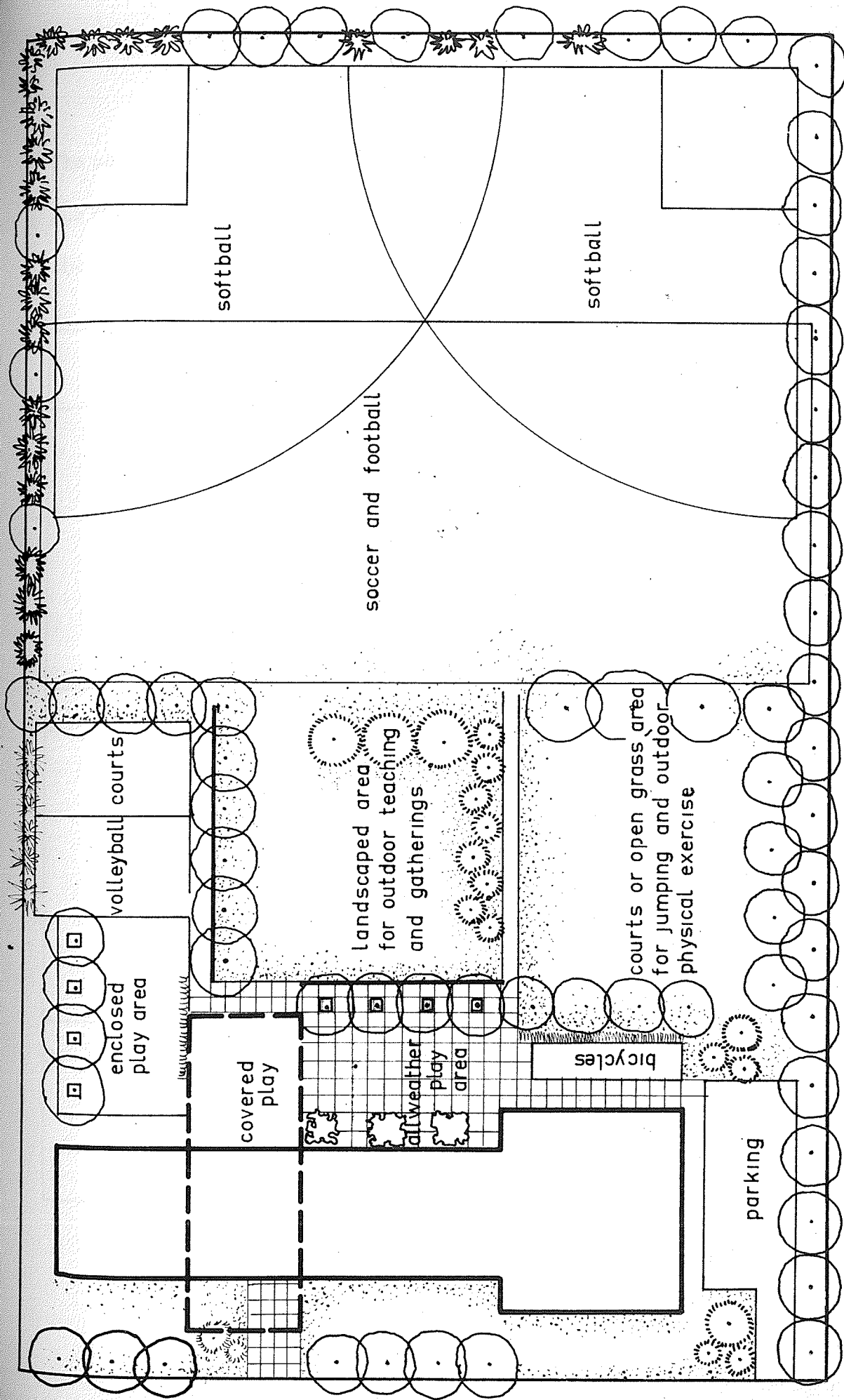


DIAGRAM 5 SUGGESTED LAYOUT · 5 ACRE ELEMENTARY SCHOOL SITE

The suggested facilities are geared to the requirements of elementary school age children, however, certain local requirements of other age groups are also represented.

FACILITY	COMMENTS
1. The School Building	Should be located close to vehicle access for cars and buses but not on major thoroughfares. Should be sited for amenity of appearance and far enough from roads to avoid noise from traffic.
2. Parking Areas	Off-street parking for teachers and visitors to school should be near school building. Further space may be necessary for community use and might be located close to those facilities most used by non-school groups.
3. Bicycle Racks	Should be located near building on paved area with paved walks to school building.

4. All-weather hard surface area	Should be located adjacent to school and preferably partially covered. For use before school and during recesses.
5. Fenced play area	For use by very young children and should be fenced for easy supervision. Apparatus should be sturdy, free from hazards and anchored in concrete below ground level.
6. Court games area (volley ball, basketball)	Moveable posts and nets would allow for more extensive use of this hard surface area for other activities.
7. Softball diamonds	One for boys and one for girls, not too close to school building. Orientation is important.
8. Football and Soccer	One field with moveable goal posts could be provided to double the use. Orientation is important.

<p>9. Landscaped area for outdoor teaching, gatherings and nature study.</p>	<p>This is one of the areas in which students could participate in planting as part of a nature study program. Locate near school entrance but with landscape screening for outdoor school gatherings.</p>
<p>10. Tennis Courts</p>	<p>Locate near shelter for changing.</p>
<p>11. Hockey</p>	<p>Recently less popular as part of school program but would receive community use.</p>
<p>12. Skating</p>	<p>Doubling of hockey and skating facilities not recommended. Locate close to shelter.</p>
<p>13. Shelter</p>	<p>Changing rooms for winter and summer, washrooms and small meeting rooms. These facilities might be provided as a part of the school structure where considered desirable.</p>

14. Small playground (pre-schoolers)	Easily supervised fenced area for pre-schoolers.
15. Bowling green	An adult activity.
16. Shuffle Board	Usually an adult activity.
17. Quiet green space	Probably in conjunction with 15 and 16.
18. Space for arts, crafts, drama and music.	Community teaching could take place in school building.

Secondary Schools. Secondary schools usually include grades 9, 10, 11 and 12, or the 14 - 17 year age group. It is recommended that the minimum area for secondary school sites be 20 acres. It is recommended also that a park site be located adjacent to the secondary school site on the basis of one acre for every 100 students enrolled. This is in keeping with the use of the combined site as a joint community resource. As with the combined elementary school-park site it is believed that both the school physical education and the public recreation requirements of this age group can be served on such a combined site.

The following facilities are recommended as being suitable for inclusion in the secondary school-park combined site.

FACILITY	COMMENTS
1. Football fields	
2. Softball diamonds	
3. Baseball diamonds	
4. Tennis courts	Groups of three courts, allow two outer courts for spectators at competitions.
5. Running track	Running track is frequently combined with a football field.
6. Games courts	Volleyball, basketball, hand ball.
7. Skating Rink	
8. Recreation building for: <ul style="list-style-type: none"> (a) Office and storage (b) Changing rooms (c) Kitchen (d) Gym (e) Social Hall (f) Arts and Crafts shop (g) Branch Library 	Some of these facilities might be provided in the school building itself. A Branch library might not be located at every combined site, however, a

(h) Music Room	site of this sort devoted to school and community interest appears to be a desirable location for such a facility.
9. Swimming Pools	This is a facility which would not likely be found at every site. However, it does provide excellent activity and would come in for a lot of community use.

Some of the more specialized facilities such as speed skating ovals, picnic areas, toboggan runs, ski slopes, water features and archery ranges might be found at secondary school or senior high school sites, but for the most part they might be included at district or large city park facilities.

In areas where the junior high school unit is retained to serve grades 7, 8 and 9 and the senior high school serves grades 10, 11 and 12, the following standards are recommended:

Junior High Schools. It is recommended that the junior high school site be a minimum of 10 acres in area and that the size of the park for community use adjoining the site be provided on the basis of one acre for every 100 students enrolled.

Senior High Schools. The recommended site area for senior high schools is a minimum of 20 acres with the adjoining park site provided on the basis of one acre for every 100 students enrolled.

The recreation and physical education facilities for these two school

sites can be taken from those listed as being suitable for secondary schools. Where the senior high school is being provided as a unit, one might expect to see the introduction of some of the more specialized facilities as there would naturally be fewer senior high school sites than secondary school sites.

School and Park Sites in Downtown Locations. The economics of land values in downtown areas makes necessary a slightly different approach to the provision of school and parks sites than would normally be applied to suburban and rural areas where land is more readily available. The differences encountered in both cost and availability of land between two different areas of a city must be admitted and faced realistically. The remainder of this part of the thesis dealing with recommended space standards contains suggested practice with regard to downtown schools and parks and presents recommended standards for downtown park sites.

High costs of land in central locations makes the need for combined provision and use of facilities by school and community more necessary than ever. It is important too, to review the reason for providing these facilities. With regard to schools, facilities are necessary to serve the academic and physical education requirements of the curriculum. They are the school building and whatever is required for the physical education and recreation.

The trend to plan one storey schools and single loaded corridors which can be observed in many suburban residential areas is not suitable for application to central areas. It is suggested that the site area required could be reduced by the use of two or even three storey structures.

With regard to physical education and games, it should be pointed out that the purpose of physical education is to provide instruction for healthful physical development, useful physical skills and for activity and recreation. This is the purpose of the program regardless of where in the city it is located. It would seem reasonable to suggest that a program could be worked out to serve the basic function of physical education with less space consuming activities than are normally provided on suburban sites. Softball, soccer, football and track facilities could be replaced by such activities as court games, swimming and perhaps greater emphasis on calisthenics. Where instruction and practice are required in the former group of activities in order to allow students to participate in inter-school competitions, arrangements could be made to use facilities provided elsewhere.

The possibility of a central sports area located in the central area of the city to contain a group of facilities which are too space consuming to be provided at every school site might be investigated. Such a centre could be used by all the schools in the central area on a carefully time tabled basis and by the public as well.

With regard to the school sites themselves, a balance between the relative economy of acquiring land to provide facilities outdoors and containing them inside the school building for the most part must be found. For example, the relative cost of providing a swimming pool inside the school building should

be balanced against the cost and possibility of acquiring land for other sorts of facilities out of doors which will provide the same amount of activity for the school and community program.

The siting of the school building so that classrooms are not hindered in any way by noise from traffic and glare from hard surfaces is particularly important in downtown locations where these two sources of annoyance are likely to be greater than in suburban locations. Where the amount of outdoor space is limited and will be intensively used, care must be taken to see that it is properly developed with landscaping and hard and grass surfaces, so that the open space provided is used to the ultimate efficiency. The bald, open, cinder-surfaced school sites now existing in downtown Winnipeg are the direct antithesis of desirable development and can hardly be considered as a source of community pride.

Diagram 6 shows a suggested layout for a junior high school site in a central location. The very minimum space has been provided around the building and the physical education and recreation facilities are contained within the school structure for the most part. The exceptions to this are two outdoor volley ball courts, a screened area for physical education instruction and class exercises, and one outdoor teaching and calisthenics area. The outdoor teaching area would also be suitable for school gatherings.

Bicycle racks have been eliminated from the plan but off-street parking, thought to be particularly important in downtown locations, has been provided.

PUBLIC OPEN SPACE

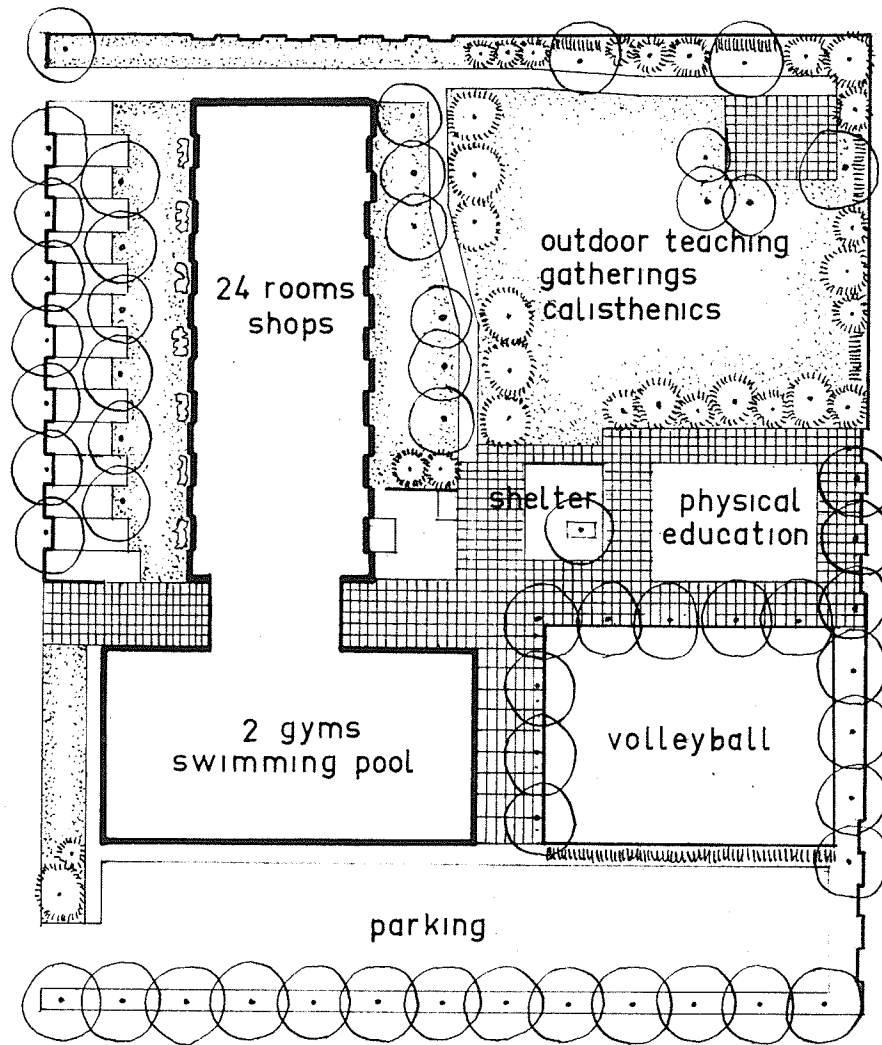


DIAGRAM 6 SUGGESTED LAYOUT FOR A
JUNIOR HIGH SCHOOL SITE
IN A DOWNTOWN LOCATION
SITE AREA . 1.8 ACRES

It is suggested that in a location of this sort that much of the school sponsored activity periods could take place in the two Class 1 gyms and swimming pool provided inside the school structure. The walls of the gyms could be designed to open in part to the fresh air during good weather. The swimming pool and two gyms could be made available for community use when school is not in session without opening the entire school building.

A large amount of hard surface area has been provided adjacent to the school. This has been done so that the outdoor parts of the site which will receive large amounts of student traffic will not deteriorate in usefulness or appearance from a high intensity of use. It is most important, however, that shade trees be introduced to reduce heat, glare and noise from these surfaces.

The ground surface of this site could be expanded further by developing some court games on the roof of the structure or by eliminating some of the ground floor rooms in the classroom wing of the building, raising that portion of the building on stilts and providing a covered open space at that point. This has been done at Grosvenor School in the City of Winnipeg where the site area is very limited.

A similar approach to the design and layout of both elementary and senior high schools for the central area is recommended in recognition of space shortage and high cost of land.

There are two types of parks to be considered in central areas. The first type is the parks intended primarily for the use of central area residents

and the second type are those intended primarily for the use of those persons who work, shop and have business in the downtown area. Any park which can serve both these functions simultaneously is doubly valuable to the community.

As in the case of central area school sites, the space provided for park areas in the central area should be based on the function the facilities are intended to serve with the realization that land is more costly and less available as a rule than in suburban locations.

Parks intended to serve the working population of the downtown area are extremely difficult to set an area standard for. This is basically because in a downtown location a very small amount of space strategically located and well designed can have tremendous impact as a breathing or resting space by virtue of the very marked contrast its presence has in the midst of streets, buildings and straight sidewalks. Parks or open spaces in commercial areas do not need to serve an extensive active recreation function but should probably meet some or all of the following requirements:

1. They should be pleasant to walk through or past, or sit in, and to drive past.
2. They should provide a visual "breathing space".
3. They should enhance the appearance of their location and the buildings which surround or are adjacent to them.

It is important to investigate all possible resources for providing green space in downtown areas. On Manhattan Island and, in fact, throughout the

urban complex of the New York area, the use of roof tops to provide both public and private open space has been extensive. The reason for investigating the use of roof tops for open space being basically a shortage of land and high cost thereof, it is suggested that this be investigated as a possibility for downtown Winnipeg. This has already been suggested in the development of downtown school sites.

Private companies providing perhaps tennis courts and gardens on the roofs of their buildings for the use of employees during evenings or weekends would be contributing a valuable community service. Large retail stores might find the development of their roof areas with gardens, games courts, a skating rink possibly in conjunction with a restaurant, creating a valuable attraction to shoppers.

The design of small open spaces for downtown is discussed in the section on design under the heading of "The Design of Small Park Areas".

With regard to a standard of open space to be provided in commercial areas, the City of Toronto suggests that .2 acres for every 1,000 population should be provided by public resources in commercial and industrial areas. It is suggested that this be adopted as a standard for application to the commercial areas of Metropolitan Winnipeg. Its distribution would have to be determined by a master plan. This amount would be a part of the 1 acre for every 100 persons recommended for application to the Metropolitan Winnipeg area. A separate standard for park areas in downtown residential areas should be

established. It has been assumed that the active recreation requirements of school age children and in some cases of adults will be met by those facilities provided at school sites and made available for community use.

The space required for a downtown sports centre for the use of downtown schools and for community use will depend upon the facilities being provided. It may be necessary to provide two such centres: a fact which will come to light when a master plan for parks and recreation facilities is prepared for the Metropolitan Winnipeg area.

It remains, therefore, to provide downtown residents with open spaces primarily for passive use. This may be considered a requirement local to the residents of central areas. Because the active recreation requirement usually comprises about 50% of the park space provided locally and the active facilities for downtown have been accounted for, in the schools and suggested sports centre, it is recommended that 2.5 acres per 1,000 persons be provided in primarily passive park areas for the use of downtown residents. The provision would, of course, be a part of the standard recommended for the metropolitan area, and not in addition to it.

4. COMMERCIAL AREAS

There are several levels of retail outlets within a metropolitan area. Each has a specific function: not to compete with one another, but to service the shopping needs of the population. All will not necessarily be represented.

The different levels of outlet are the central business district, the regional shopping centre, the community shopping centre, and the neighborhood shopping centre.

The central business district is the heart of downtown and provides facilities to serve the whole metropolitan area. All sorts of retail outlets are found downtown, including specialty shops which rely on a large population for support.

The regional shopping centre is intended to serve a large area and is usually located a good distance away from the Central Business District because, while it has a different function from the downtown area, it does have some of the same retail facilities, such as branches of downtown stores, but usually carries less variety in stock. It is usually dominated by a department store and is found in very large centres where an intermediate facility is required between downtown and the community shopping centre.

The two smaller types of facilities which are suitable for serving the outlying residential areas, the community shopping centre and the neighborhood shopping centre, are the ones which are of primary concern in this thesis.

The community shopping centre usually serves a population of from 10,000 to 15,000 persons or more and frequently contains such facilities as a supermarket (which is its dominant feature), a variety store, men's and women's apparel store, a children's apparel store, a hardware store, a drug-

store, a barber shop, a beauty parlor, and perhaps a household appliance and furniture store, a restaurant, and some offices.

The neighborhood shopping centre usually serves areas of from 2,000 to 4,000 population and contains small convenience goods stores to serve the day to day shopping needs of the local neighborhood. The sort of facilities which might be included are a small grocery store, a drugstore and perhaps a barber shop, beauty parlor, medical and/or dentist office. The grocery store would take the place of the corner grocery store found in older residential areas but would probably be slightly larger, better equipped and better stocked than its older counterpart. The drugstore would be local in nature, containing possibly a lunch counter.

Space Requirements

The factors which determine the amount of land required for commercial use are shopping needs and habits, total family income and size, and proximity of existing facilities. The land required for a specific facility varies with space needed for "on the spot" warehousing and processing of goods, employee conveniences, and customer and employee parking.

Existing methods for determining the amount of land required for commercial uses are at best approximations. Experts in the field of development of retail selling facilities believe that it is desirable to overestimate land requirements, rather than to underestimate.

One method used for determining the acreage requirement in the preliminary stages of land use planning is to assign $3/4$ to 1 acre of gross area for each 1000 population for the combined requirements of both neighborhood and community facilities. This method is crude but is considered valid in the preliminary stages of planning.

A second method which could either replace or follow the first method is the use of a market analysis: a slightly more refined approach. Market analysis is dependent upon an estimate of total family income for the area under consideration. Total area of retail sales space is then determined on the basis of figures for percentage of income spent on different commodities and the amount of sales space needed per dollar of sales. The resulting figure gives the required amount of retail selling floor area only. To obtain the minimum land requirement for buildings and parking space, a ratio of parking space to retail sales space varying from 3:1 to 5:1 is used. Space which may be required for any additional use, such as special loading and unloading, warehouseing, and customer and employee conveniences, would have to be added to the above figure for a detailed estimate of land requirement.

The size of both the neighborhood and the community shopping facilities may vary substantially in each community depending upon the requirements of the community. However, the neighborhood centre generally requires between $3/4$ to 1 acre of land for buildings and parking.

Location of Commercial Facilities

The size and location of the community shopping centre is greatly influenced by existing and future patterns of subdivision, particularly in regard to major thoroughfares and collector streets. A community centre should be easily accessible by automobile from all parts of the community it is intended to serve. However, it is desirable to avoid the need for customers to cross major arterial routes.

The need for easy accessibility means more than just locating on a major traffic route. The ease with which the customer can drive into the centre is most important. A location at the intersection of two busy streets, once thought to be desirable, may make the centre easily seen, but present traffic problems. The actual entrances to the centre should be away from busy intersections or any other point where congestion may result from people driving in or out of the centre. This is most important both from the point of view of customer convenience and to avoid interference with the normal traffic-carrying function of the adjacent streets.

It was once believed that the most desirable location for a community shopping centre was in the centre of a residential area. However, experience has shown that merchandisers will not locate unless a market exists or is reasonably assured and so unless the major shopping facility is located near the first stages of a new residential development, a considerable time lapse may occur before shopping facilities are available to the residents. Automobiles are

used by most community centre shoppers and so a location in the interior of the residential development is not necessary for community shopping facilities.

Neighborhood shopping facilities, because of their local character and function, are best located in the interior of a residential development, probably on a collector street. Even local stores generate more traffic than ordinary residential uses and, therefore, it is important to ensure that approaches are arranged in such a way that no traffic hazard or congestion will result. Off street parking is essential even at local stores.

Community shopping facilities do not as a rule directly abutt residential properties and generally there is at least a street separating the two uses. However, dust and cars and glare from the parking lot itself can be most unpleasant to adjacent residences if the parking lot is not properly landscaped. The landscaping of parking lots is discussed in greater detail under the section of this report dealing with landscaping.

In the case of local neighborhood shopping facilities which may directly abutt residential property, precautions should be taken to ensure that the uses will be compatible. Landscaping in the form of screen planting, sodding, and the use of shrubs can greatly enhance the neighborhood centre in its residential environment. Special care should be given to the location of vehicle approaches.

5. CHURCH SITES

The historical significance of the church institution and the church building as a centre of local or community interest is well known. The history of church and religious buildings in many respects reflects the history of culture as strongly as does the history of living places.

The church building is still a focal point of community interest and in it lies the possibility for great imagination in architectural expression and structural techniques.

Because of the importance of the church as a gathering place for many activities and its potential as a building of architectural significance and community pride, it deserves very careful consideration in respect to location and siting.

Size of Church Sites:

The size of the church itself and the scope of the program planned will determine an adequate site size. It is important to point out that an inadequate size of site may not only adversely affect the function of the church program, it may also create nuisances and hazards to public safety. The following are the problems which inadequate church site size may create.

1. Crowds attending church functions such as services, weddings and funerals may mill around near busy streets and create a safety hazard. If there is adequate green

space around the church and adequate walkway and driveway approaches, particularly at main entrances, safety hazards can be overcome.

2. If off-street parking is insufficient, traffic congestion may result.
3. Sounds emanating from churches may be unpleasant to adjacent properties if screening by suitable landscaping with trees, shrubs and green space is not incorporated in the development of the site.

There does not appear to be any common agreement on the adequate size of a church site, no doubt because of the variation in size of churches and scope of program. It is, therefore, the responsibility of the churchmen to make their requirements known and that of the responsible authority and its planners to ensure that the site development is adequate to avoid hazards to the community of the sort previously mentioned.

The Conference on Church Extension held in New York in 1953 by the National Council of Churches of the United States recommended the following standards. These standards are presented here merely to serve as a guide in assessing the adequacy of church sites.

0 - 400 membership	1 acre
400 - 800 membership	2 acres
800 - 1200 membership	3 acres
1200 or more members	4 acres

The addition of a parochial school to the church plant would, of course, require additional space.

Off-street parking at church sites is most important. The size of the congregation, the extent of the program and the service area of the church must be considered in arriving at the amount of space to be set aside for off-street parking.

Churches whose service areas encompass much more than the immediate residential area and which rely on the major streets on which they are located to bring the congregation to the church, should provide off-street parking in the vicinity of one car space for every three seats in the church.

Church institutions which are located at the centre of residential areas and whose service area coincides approximately with the residential area should have less provision for off-street parking. This is suggested to discourage automobile traffic from residential streets and to encourage walking. For this type of church, off-street parking should be provided on the basis of one car space for every ten seats provided in the church.

Location of Church Sites

It is not the responsibility of the planner to decide which denominations will be represented in a residential area or to decide the location within a residential area of a given denomination. The responsibility for these decisions lies with the churchmen and if residential areas are going to be well served by churches, the decisions should be made through co-operative

action by churchmen of all denominations.

This report will, however, make some general observations regarding the location of church sites.

- A. Churches whose service areas coincide approximately with the limits of a residential area bounded by collector streets or similar barriers of definition could reasonably be located in the interior of a residential area without bringing a great deal of automobile traffic into the interior of the area. The church could be sited at a vantage point possibly in conjunction with a park or elementary school site. The interior of a residential area is a particularly suitable location for a church if a sufficient number of the population within the area are of the same denomination so that the congregation is largely pedestrian.
- B. Churches which draw from an area much larger than the immediate residential area should be located on the periphery of the area so that the traffic which they generate does not permeate the quiet residential streets. Locations adjacent to shopping centres are frequently recommended so that the large parking areas not in use on days of worship can be used. Churches in such a location should, however,

provide sufficient off-street parking to accommodate cars which attend programs taking place during hours of shopping.

- C. Churches should be placed at points of visual advantage so that the appearance of the community as well as the church itself will benefit from the location. Located strategically at major intersections, at the end of a street, or adjacent to a park or square or a well developed school, the church can add substantially to the appearance of residential areas.

6. LANDSCAPING IN RESIDENTIAL AREAS

Landscaping is an art and a science which can accomplish highly desirable and very necessary things for our living environment. This thesis is concerned with desirable environment.

Landscaping is a basic design tool and must be regarded as such because it can enhance and assist in the layout of good residential areas. Landscape architecture is concerned with the open air, outdoor surroundings of human life. Unfortunately, it is an element which is very often left to chance as an afterthought, and in the case of some of our public open spaces and school sites, it is a completely forgotten factor.

Simply stated, the tools of landscaping are trees, shrubs, flowers and grass, the proper soil in which to grow these things and in fact, any other material used in conjunction with these things. The success of creating a

desired effect in an individual landscaping enterprise rests with the skill with which these tools are used in relation to one another, and to buildings, and the degree to which the stated purpose of the landscaping has been achieved.

Aesthetic Appeal

Green areas and trees and shrubs not only have an aesthetic appeal in themselves, they have the ability to lend aesthetic appeal to buildings and open spaces which might otherwise have a stark and even ugly appearance.

One very good example of the skillful use of trees and shrubs and open green spaces in a residential development is the Village of Radburn, New Jersey. Radburn has many other superior characteristics; however considering aesthetic appeal, it points up one very important fact. The dwellings are not architecturally outstanding. They are simple red brick or white wood-sided structures with muted coloured roofs, frequently black. As one walks through Radburn between the houses and through the public open spaces, one has the feeling of always being in a park setting and that, quite clearly, the space outside the buildings was designed to be lived in. Walkways between houses lead to parks and schools and community gathering places. The layout was, of course, specifically designed to keep automobiles out of the interior of the area completely and to allow safe and pleasant walking to the different parts of the area. This has become a widely accepted principle in contemporary planning and will be discussed

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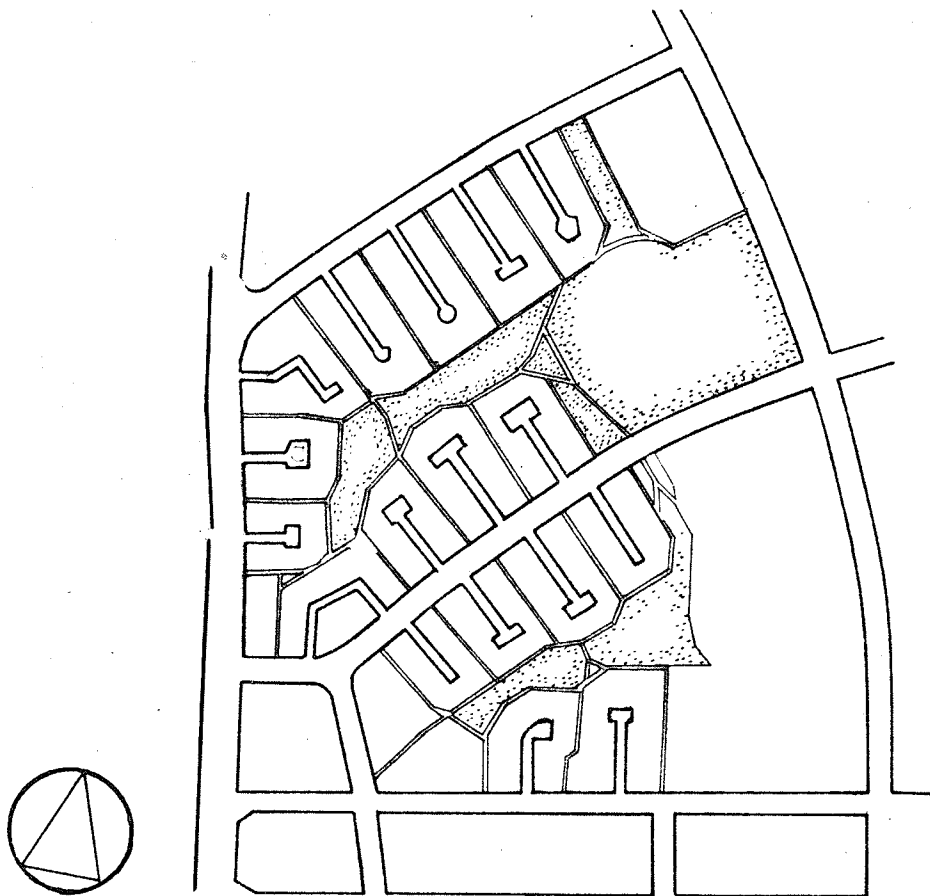


DIAGRAM 7

SKETCH PLAN OF A PORTION OF THE VILLAGE OF RADBURN N.J. SHOWING PRINCIPLE OF VEHICLE AND PEDESTRIAN SEPARATION

further under the section on design. However, it is the author's opinion that one of the major reasons these interior areas are so extremely pleasing is because of the beautiful green areas and the planting of trees and shrubs around the buildings and throughout all the public and private spaces. It is said that initially before the planting was completed and had grown up Radburn was heavily criticized as being a stark, unpleasant place: it is now a very beautiful residential area. It should be pointed out that while a few ornamental varieties have been used, for the most part the trees, shrubs and grass are hardy well-known varieties which require minimum maintenance. Diagram 7 is a sketch plan of the major portion of the Village of Radburn.¹⁴

Sound and Sight Buffering

Trees, shrubs and grass areas can frequently be used to reduce the level of sound between games areas on school sites and the school buildings, and between play areas and dwellings. Screen planting is also effective when placed between major traffic arteries and dwellings which abutt the arteries, in reducing the sound level and in creating a measure of privacy for the dwellings. Screen planting in such a case also improves the appearance of the thoroughfare itself, in addition to reducing the amount of dust created by heavy traffic. An example of this is shown in Diagram 10.

¹⁴ Clarence S. Stein, "Toward New Towns for America", The University Press of Liverpool, 1951, P. 48.

Unightly land uses which sometimes appear in residential areas for one reason or another can be screened or at least improved in appearance by the use of planting.

Glare and Heat Reduction

Trees, shrubs and green areas are most effective in reducing glare and reflection of light adjacent to buildings, to roadways, to sidewalks and in fact adjacent to any hard surface such as a play area.

The effect of hard surfaces adjacent to buildings with respect to heat and glare is shown in Diagram 8. In Example (B), a portion of the heat from the direct rays of the sun is dissipated first by the foliage of the trees and second by absorption into the ground; grass being a far less reflective surface than masonry or concrete. Trees and grass areas have an air-conditioning and cooling quality because of the natural process of transpiration, that is, the evaporation of moisture off the leaves. This quality gives a scientific basis in addition to the aesthetic basis for using them adjacent to buildings, sidewalks, roads and open areas for alleviating glare and reflected heat and light.

Privacy

Planting may be used as a means of creating the privacy so necessary to a good living environment. The use of planting around and between dwellings, for outdoor living spaces, between different uses such as a commercial use and a dwelling, and between dwellings and major thoroughfares

LANDSCAPING

DIAGRAM 8 LANDSCAPING FOR THE REDUCTION OF HEAT AND GLARE

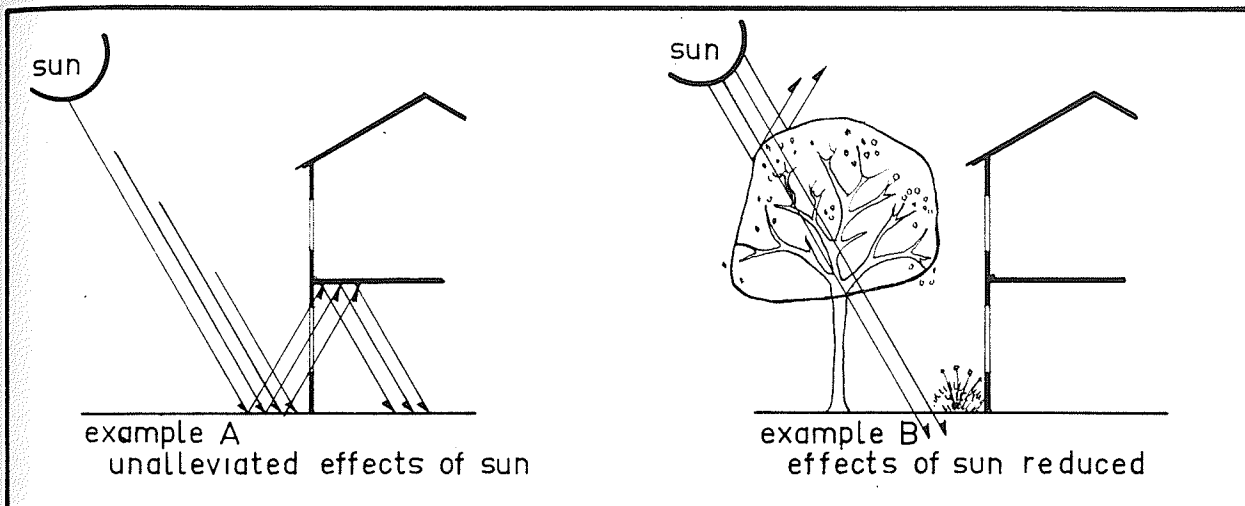


DIAGRAM 9 EXAMPLES OF SCREEN PLANTING

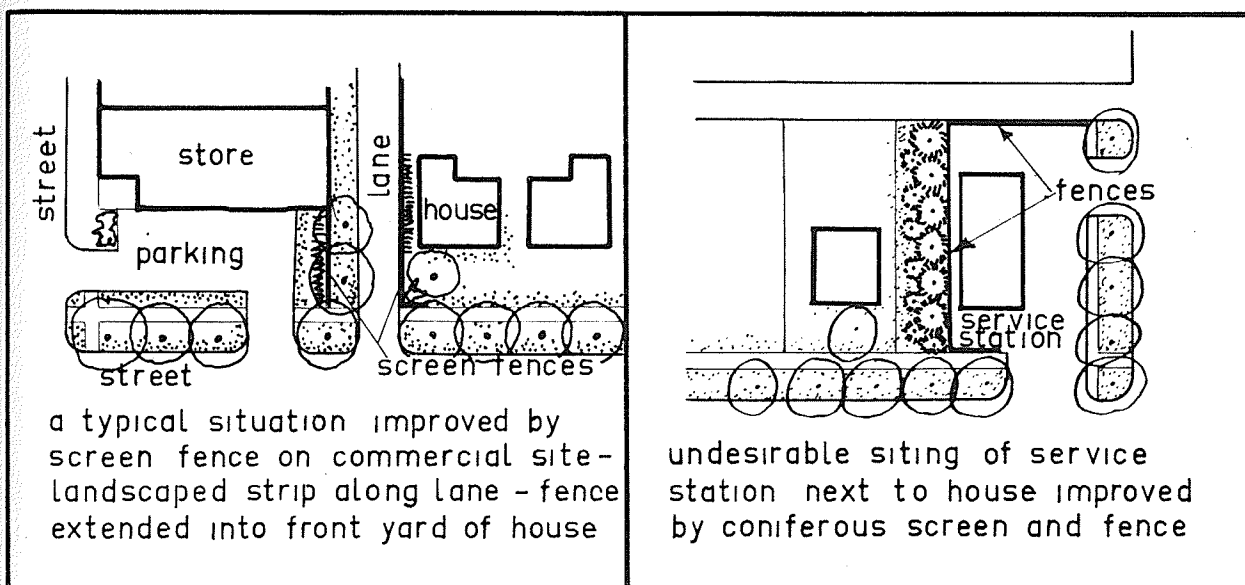
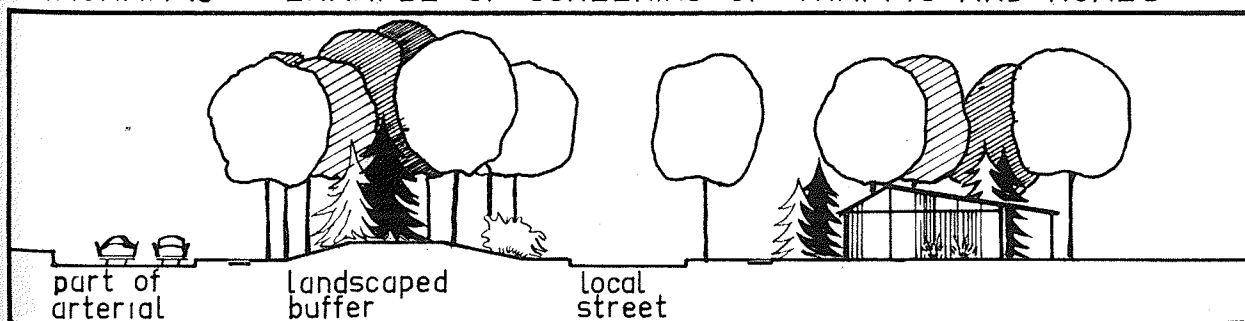


DIAGRAM 10 EXAMPLE OF SCREENING OF TRAFFIC AND HOMES



can assist in creating privacy, as shown in Diagrams 9 and 10.

Landscaping of School Sites

Because school sites are usually adjacent to dwellings, and because school sites are focal points of interest to most everyone, they should not be allowed to develop as bald open spaces without definition and without beauty. They should, instead, be a source of community pride.

Diagram 11 is an example of the use of landscaping in the development of school sites. The diagram is much the same as Diagram 5 presented in the section of the thesis dealing with public open space, with certain alterations in the landscaping details. The reader will recall that Diagram 5 was presented to show that a 5-acre site is absolutely minimum for the provisions of the basic facilities shown. The limits of the site have been extended by 30 feet through the narrow dimension of the site in Diagram 11 to allow for a more effective arrangement of screen planting around the periphery of the site.

Screen planting of varying density is provided around the games area of the site for the purpose of providing a pleasant appearance to the site, to define the limits of the site and to help screen adjacent properties from the site and from the noise of the games. Both coniferous and deciduous trees have been used in the periphery planting and in some cases where different varieties of trees have been used together, each variety has been placed in a group of its own kind. For example, a group of three spruce trees is

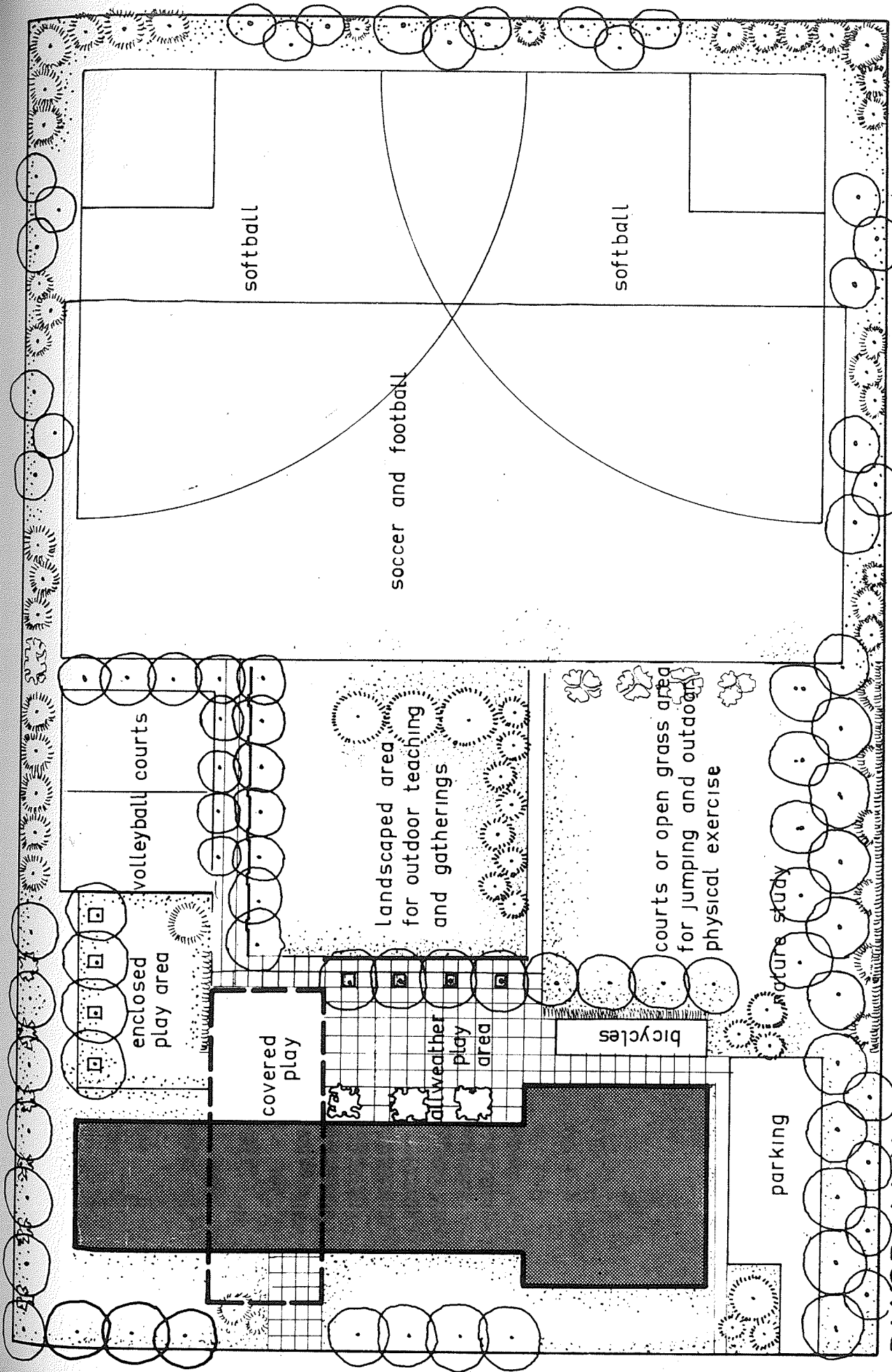


DIAGRAM II USE OF LANDSCAPING IN ELEMENTARY SCHOOL SITE

followed by a group of three elm trees so that each variety retains its identity and an orderly appearance is maintained. A row of spruce trees forms a back drop behind each of the baseball diamonds so that the space is well defined for the players in estimating distances.

A deeper screen has been provided between the edge of the site and the area for outdoor exercises by using two rows of elm trees offset from one another and backed by groupings of fairly tall evergreen shrubs. This has been done for privacy.

Shade trees have been used extensively throughout the site in areas where they are required, such as along the front of the school building to eliminate glare from the street and direct sun into the building, in the small children's play area where the trunks of the shade trees are surrounded with low benches, and in the outdoor teaching and calisthenics area as well as around the volleyball courts. The shade trees and shrubs in the all-weather play area have been included to avoid glare and radiation into the classrooms from the hard surface area as well as for appearance. The remainder of the area around the school building is planted with grass and shrubs for these same reasons. The parking lot, a source of glare and possible dust, is located against the windowless wall of the school gymnasium.

Additional screening and separation of areas within the site itself has been done through the use of two masonry walls on two sides of the outdoor teaching area. These walls not only provide privacy for this area, but

assist in deflecting sounds from the games areas away from the school building. The remaining two sides of this area are screened by coniferous trees.

Had the school site been located adjacent to a park site, the screen planting around the periphery of the site could have been less dense and arranged so that the areas would flow into one another where practical.

Diagram 11 is intended to show that very real and practical advantages can be obtained through the careful use of planting in the development of school sites.

Landscaping of school sites must be considered to be a part of the site development and be under the direction and jurisdiction of the school board concerned.

There are cases where planting has been carried out by school children as a part of the education program in nature study. Educators in areas where programs of this sort exist believe that children benefit from a close association with the planting program. It is a means of getting the job done and at the same time of instilling in young children a knowledge of, and respect for growing things.

As a rule, deciduous trees and shrubs are less expensive than conifers, although it is desirable to have both types represented. A long range planting program for a number of school sites could be undertaken and by quantity buying, school sites could become fully landscaped over a period of years at a

reasonable cost.

It is entirely possible that service clubs and commercial nurseries might be interested in making donations of landscaping materials where the planting program is established as a part of the school curriculum.

Landscaping of Parking Areas

Landscape planting has an important contribution to make to the design of the parking areas of service facilities in residential areas.

Local shopping facilities of one to two acres in area frequently abutt residential properties and these parking areas and service entrances should be screened from adjacent dwellings. This is desirable to reduce the dust, glare and noise of automobile traffic to a minimum. Grass areas, shrubs and trees can be used adjacent to buildings of this sort to enhance their appearance particularly in view of their close proximity to dwellings.

Large shopping centres can benefit from the use of planting for the same reasons. However, with the shape and layout of large contemporary shopping centres, the cluster of buildings or stores set in the centre or at one side of a large parking area, the parking area itself deserves special mention.

The use of trees within large shopping centre parking lots has the advantage of providing shade for people walking to their cars, reducing the intense reflection and radiation from the hard surface on hot days by the cooling effect, providing a wind break and shelter from cold winter winds, and generally improving the appearance of what is usually a vast sea of asphalt.

The trees can be planted within the divider strips and in some cases, particularly long parking lots, the divider strip can become a walkway. Some walkways can be covered by the use of a very simple structure open at the sides thereby creating a much more human scale within very large parking lots, in addition to improving immeasurably the comfort and convenience of customers especially during the peak of the extremes of our climate. Diagram 12 is an example of the development of a large shopping centre parking area.

Boulevard Planting

The planting of trees at regular intervals along the boulevards of streets has a most pleasing resultant appearance when the trees are mature. The result is both orderly and attractive. It should be pointed out, however, that variation of regular interval planting can be pleasing also. Boulevard planting has special limitations which must be born in mind. The species must be hardy and easily maintained, adequate space must be provided for the tree or shrub to grow and above all, there must be no hazard to automobile or pedestrian safety through obstruction of visibility. This is particularly significant at street corners.

Variation can be achieved by spacing, type, height and set-back from the street of the varieties used. The pattern can be varied on each side of the street provided one side compliments the other. Generally when trees are arranged in groups of similar variety, it is better to have each group contain an

LANDSCAPING

DIAGRAM 12 LANDSCAPING OF SHOPPING CENTRE PARKING AREAS

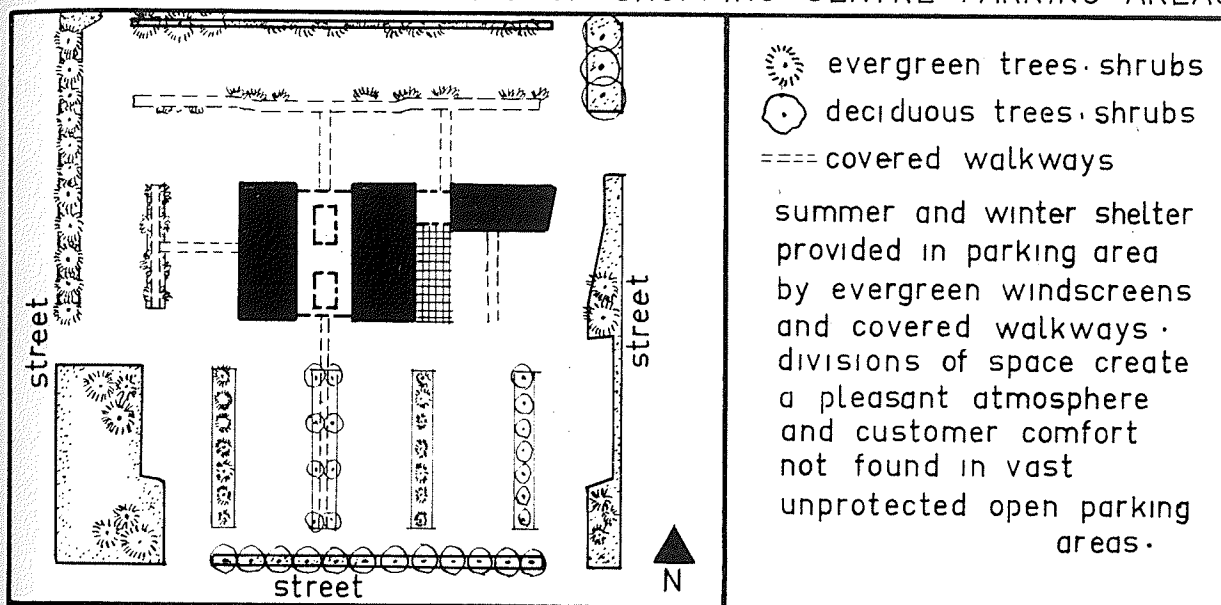
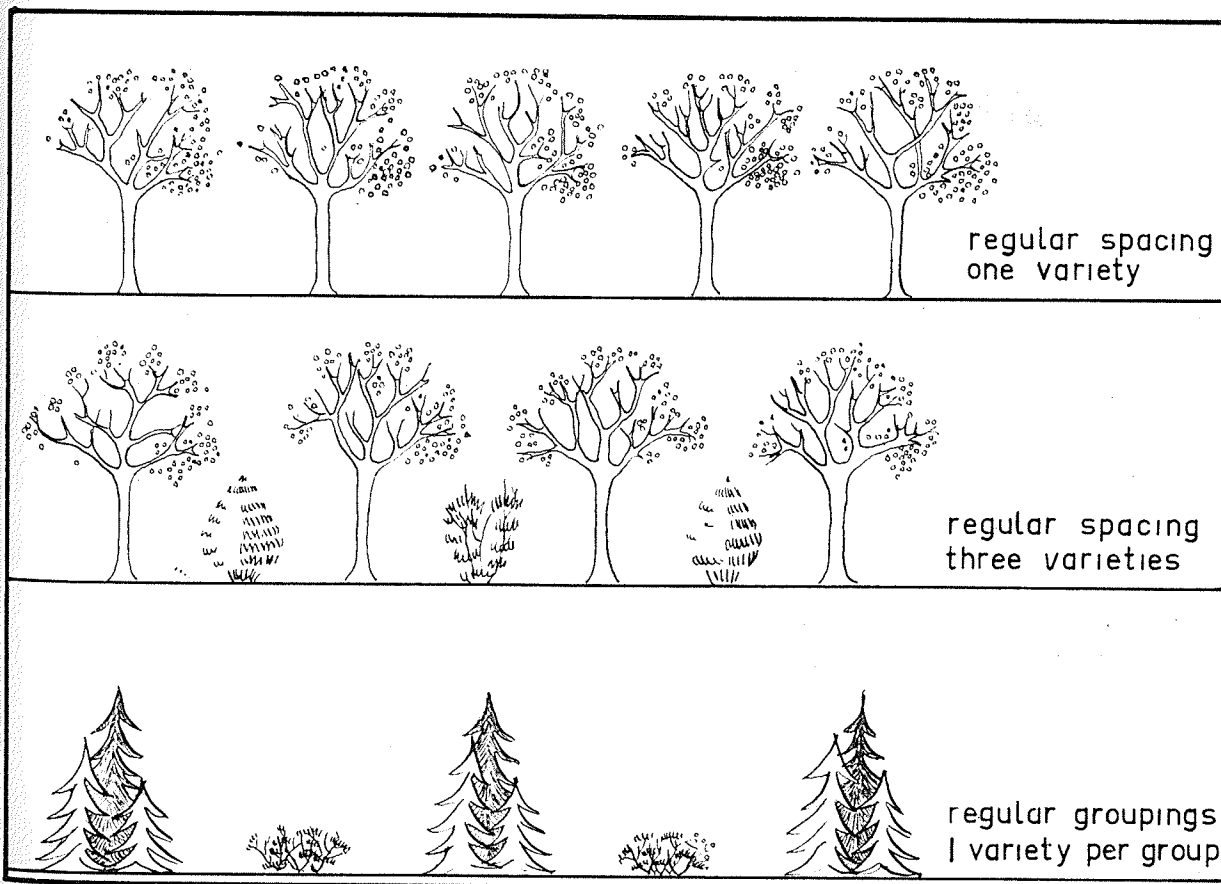


DIAGRAM 13 BOULEVARD PLANTING



odd rather than an even number of trees.

Groups made up of a mixture of varieties should be avoided as a rule, particularly in boulevard planting, because they tend to be disorderly in appearance. The possibilities for different arrangement of boulevard planting are limitless. Diagram 13 shows an example of the traditional planting of one variety at regular intervals and two possible variations.

Climate

Climate is a very important consideration in arriving at a suitable landscaping plan. A good landscaping plan should have aesthetic appeal in both summer and winter. While deciduous trees are usually less expensive than coniferous trees, their leafing season is only about five months. Therefore, for our climate it is considered that coniferous trees and shrubs should be used much more extensively than is being done at present to ensure an effective landscape in both winter and summer.

A climate such as that of Greater Winnipeg which has cold winters and hot summers needs to have out of door spaces made into much smaller divisions than one currently sees in most residential and commercial areas in the city. This can be achieved through the use of massed tree planting to give shelter for pedestrians in the winter and shade in the summer.

This theme will be expanded under the section on design.

Temporary Planting

The use of fast growing trees and shrubs planted at the same time as the

ones which are to remain permanently, is effective in reaping the advantages of planting as quickly as possible. This is a technique which is frequently used in growing windbreaks on farms, and it has particular application to screen planting.

The fast-growing, short-life trees can be removed when the permanent ones have reached sufficient size. Manitoba maples and cottonwood trees, for example, are fast growing, but not particularly desirable for permanent use; their most effective life being about twenty years.

Information is available on planting materials suitable for various uses in this climate, from the Department of Agriculture of the Manitoba Government. The Department's two pamphlets, "Recommended Horticultural Varieties and Zonation Map for Manitoba", and "Recommended List of Herbaceous Perennial Flowers for Manitoba" are contained in Appendix "B." to this thesis.

7. DESIGN

The Committee of the Royal Architectural Institute of Canada, inquiring into the Residential Environment includes in its report the reactions of a number of persons and groups which presented briefs to it. The following are comments regarding the post-World War II house which at present houses one third of all urban Canadians:

"There is now a noticeable reaction. These very people (those who commented on new suburbs) have misgivings about the character of their housing, seen in bulk. The intensity of this dismay is evident in statements made to us on behalf of hundreds of housewives all across Canada, who have lived for some years in this kind of post war environment (typical outlying areas of our cities consist of nothing but bungalows).

'Monotonous, boring, dull, rubber-stamp similarity are some of the terms used to describe developments where the same (or nearly identical) house is repeated over and over...this absence of interest and good taste (could) result eventually in a district degenerating...through lack of incentive to the individual owner to improve his property.'

National Council of Women

'These places (built in 1954) looked like slums almost before they were occupied...How could they help it, being ugly, unimaginatively planned, and the same plan used for every exposure...and garish colors shouting for attention? Good design would have cost no more.'

University Women's Club of Ottawa¹⁵

These opinions are presented as being representative of those held by a large group of Canadians and it can be seen that they could easily be those held by many residents of Metropolitan Winnipeg because the things which they criticize are rampant here as well as in other centres.

It is not within the scope of this report to present house plans: the scope is more general. While constant repetition of house plans and of one type of housing unit such as the three bedroom bungalow justifies severe criticism, lack of imagination and good taste in the design of streets, grouping and appearance of buildings, variety of dwelling types, privacy and landscaping also contribute heavily to monotony and dullness.

15

Royal Architectural Institute of Canada, Report of the Committee of Inquiry into the Design of the Residential Environment, Ottawa 1960, 21.

Good design in residential areas is the successful combination of the component characteristics of a satisfactory living environment. It is the arrangement of streets so that traffic moves smoothly and at the same time does not interrupt the privacy and quiet which are necessary to living. It is the design of buildings and their arrangement in relation to one another to provide the maximum privacy, the best orientation for daylight and sunlight, and the most pleasing arrangement of service buildings and public open space to provide maximum convenience and the most pleasant appearance for residents. It is the arrangement of streets so that basic services such as sewer, water and power can be provided as easily and economically as possible in balance with the importance of the other elements of good design. It is the adequacy, in terms of size, of all the spaces within the development for serving the people who will live there. Good design cannot be legislated but is dependent almost entirely upon the competence of the designer. It is aided considerably, however, by an understanding by laypersons of why certain things are necessary.

Suggested standards for sizes of school and park sites, church sites and suggestions in relation to the size of commercial areas have already been dealt with in the thesis. A discussion of the design of local streets, the grouping of buildings, their appearance and the design of small park areas follows in this section of the thesis.

The Street System in Residential Design

The Village of Radburn, New Jersey, already discussed in the thesis under the section on landscaping, and a portion of which is shown in Diagram 7, established a principle in the design of residential areas which is now widely accepted and which has not been surpassed as a basis for the design of residential development in today's urban areas. The principle is the separation of automobile and pedestrian traffic by establishing a large "super block" in which traffic is kept on the outside and the focus of the area is turned inward to the centre of the "super block" in which the elementary school and public park areas are located. The central areas may be reached by way of pathways from each home leading into the centre of the area. Commercial areas may be reached in this way too, so that streets need not be crossed. The principle represents a system which allows privacy for all residents and ultimate safety for the very young and the very old. The system comes to terms with the automobile by allowing it to enter the area along dead-end streets to residences but not allowing it to usurp the privacy and peace of the area by transversing it.

It is not recommended that all new residential areas should be carbon copies of the Radburn plan, however the principles it establishes are sound because it has been successful in accomplishing the things which we need in our residential areas: privacy, comfort, convenience, safety and attractive appearance.

There are two basic types of street systems: the grid system which

DESIGN

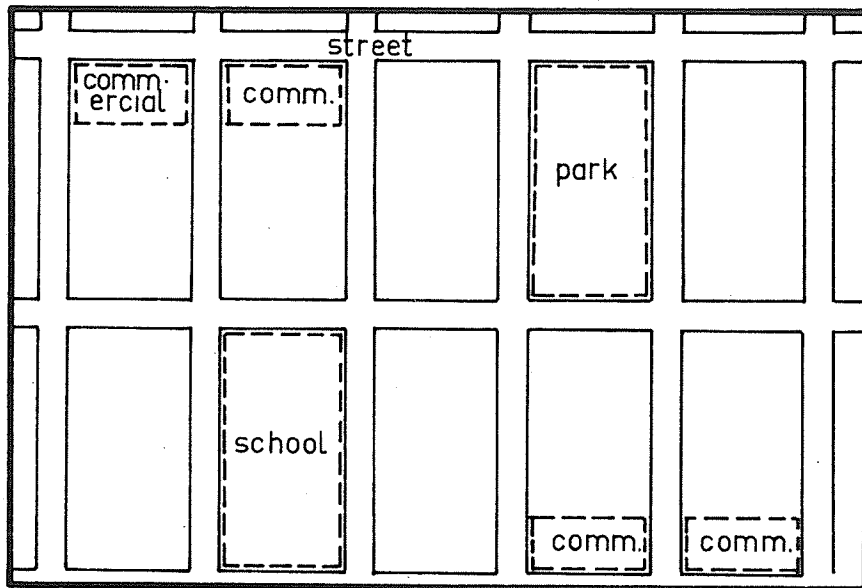


DIAGRAM 14 EXAMPLE OF GRID STREET SYSTEM

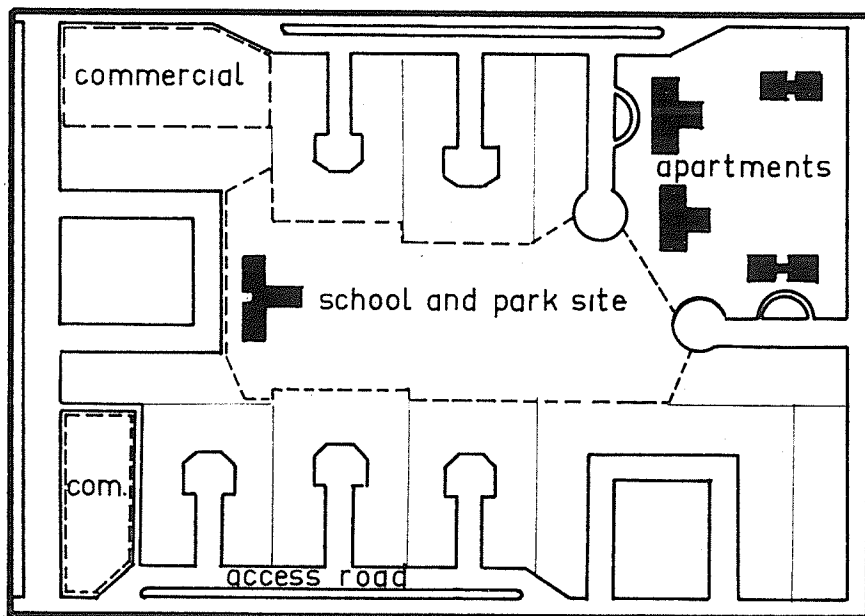


DIAGRAM 15 EXAMPLE OF SUPERBLOCK FORM AND SEGREGATED STREET SYSTEM

appears in quantity in nearly every North American city, and the segregated street system in which each street has a function and which within local areas allows for the development of the "super block" type of residential development. Diagrams 14 and 15 show an example of each of these systems; the example of the segregated street system being an adaptation of the Radburn principle. The following Table 9 is a comparison of these two systems in terms of most of the elements which go together to make up a residential area, their design and location.

TABLE 9 A COMPARISON OF THE SEGREGATED STREET SYSTEM AND THE GRID STREET SYSTEM

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
1. <u>Vehicular traffic</u>	Function of each street defined by design alignment in addition to width thereby eliminating through traffic from local streets.	Streets can be designated by different widths to serve a given function but local residential streets will continue to carry a certain amount of through traffic. Only limited control of traffic movement is possible.
2. <u>Pedestrian traffic</u>	Pedestrian traffic between home and stores or schools can go through pedestrian walkways located in centre of area away from cars.	Pedestrian traffic is always along streets and it is impossible to go from one block to the next without crossing a street.

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
3. <u>Elementary School Sites</u>	<p>Elementary school can be located in interior of development with one vehicle access from one of the local streets in conjunction with a central park. It can thus be kept aloof from major traffic routes and can be reached by children walking along the pedestrian walkways through the centre of the area.</p>	<p>An elementary school requires an area of at least 5 acres and it is desirable to locate it in connection with a small park. At least one block and possibly part of a second block would be required in the grid system. This means that the site would be ringed by at least two and possibly four roads from which through traffic cannot be eliminated. This creates limitations on the design of the site itself and problems of supervising young children crossing streets.</p>
4. <u>High School Sites</u>	<p>The high school can be located on a collector street. At high school age children are old enough to handle themselves in traffic. Frontage on a collector street gives good vehicle access for cars and buses. This is more significant in the case of high schools because students travel further to high school than to elementary school and many come on buses. With one or two sides of the site abutting the</p>	<p>Less control of traffic around the site is possible in grid system. This is less important than in the case of elementary school. Privacy for school activities and reduction of noise coming into the site are more difficult. Offers less flexibility in the development of the site than does the segregated street system.</p>

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
	<p>street, traffic around the site is more easily controlled. The site can be located in conjunction with the central park site and perhaps adjacent to more central land uses.</p>	
5. <u>Park Sites</u>	<p>The segregated street system resulting in a large block free from through traffic allows the location of a park site in the centre of the development giving all residents easy access by way of pedestrian walkways from their homes. The park in this sort of location provides a pleasant green space through which to walk to the elementary school, commercial area or church.</p>	<p>It is impossible to locate accessible parks which are not ringed by streets carrying through traffic in a grid subdivision.</p>
6. <u>Church Sites</u>	<p>A church is a building with shape and other architectural characteristics which set it apart from other types of buildings in residential areas. It can therefore be used as a point of accent at a T - intersection of collector streets, or in relation to other central use buildings or within a park area. Any one of these locations would add to the appearance of the residential area and the church building itself.</p>	<p>The grid system, which is made up of long straight streets, makes it difficult to take full advantage of the characteristics of a church building in creating interesting views and appearances. The effective siting of a church building is not impossible in a grid system, by any means, but it is rarely achieved</p>

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
		without considerable control of the siting of adjacent buildings. Such control is rarely available.
7. <u>Commercial Sites</u>	The segregated street system allows for the locating of major commercial areas on major streets which are assured of carrying the major volumes of traffic going in or out of a given residential area. It is possible to control the access and egress from the property thereby eliminating blocking of traffic on the street and inconvenience to customers because of jamming traffic. It is possible too to control the development of the site in relation to adjacent land uses more successfully than in the case of a grid subdivision.	Commercial areas in grid subdivision tend to be strip developments along a major road. This creates traffic problems in that even if off street parking is provided, many access points to the major streets are necessary, i.e., one at each store. Even if an entire block is taken for commercial use, residential uses fronting upon the block are subject to the noise and dust of the large parking space which usually surrounds such a development.
8. <u>Corner Stores</u>	Small corner store developments can be located on residential streets so that they can be reached by way of the walkways through the centre of the residential area.	From the point of view of vehicle access to corner stores the grid system does not offer much difference in siting from the super block. The main disadvantage is that of difficulty of pedestrian access

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
9. <u>Housing types</u>	The segregated street system allows all housing types to be situated on local residential streets where there is no through traffic. More interesting possibilities for the siting of houses are possible in a development where residential streets are short.	All housing types must necessarily be located on streets where through traffic is being carried. Childrens play areas can rarely be reached without contact with traffic.
(a) <u>Single family use</u>	Single family homes with the inevitable quantity of children can be located near to a central park area and elementary school, and these places can be reached without contact with traffic. The absence of heavy traffic provides a sense of privacy for houses.	
(b) <u>Multi family</u>	The super block is sufficiently flexible to allow for attractive siting of row and apartment houses in conjunction with single family uses. The additional traffic which multi family areas produce, and the parking areas can be more easily controlled. Apartment areas do not as a rule have as many children as single family areas, therefore can easily be located a	

POINT FOR COMPARISON	SEGREGATED STREET SYSTEM (Super Block Form)	GRID SYSTEM
	fair distance from the elementary school. Location of multiple family areas adjacent to a commercial area and a park area is desirable for easy shopping and access to public open space.	
10. <u>Senior Citizens Housing</u>	Senior Citizens housing should be provided in a location that offers both quiet privacy and access to the central activities like shopping and park areas and to bus stops. This sort of siting is far more satisfactorily achieved in the segregated street system or super block layout. Access to these areas, like apartment areas, need not be directly off a collector street but rather from a service road with a screen planting strip separating it from the main road.	

It is quite apparent, from the comparison of the two systems, that the segregated street system has many more advantages to offer to our living environment than has the grid system.

Basic Patterns for Local Streets

There are three basic patterns in the design of local streets; the grid, the loop and the cul-de-sac. An infinite number of variations of these patterns

is possible. The following portion of this section describes these three basic patterns and some of their variations in terms of their desirability and siting buildings on them.

The grid pattern, shown in Diagram 14, has most of the same disadvantages for local streets as it has as a general street system. The length of the streets, stretching sometimes for miles, encourages speeding. Monotony in appearance is almost impossible to avoid. The invasion of privacy and safety by through traffic is a sufficiently bad characteristic to mention here a second time. Long straight streets are very monotonous both from the point of view of living on them and of driving or walking along them; their monotony can be relieved only by landscaping and variation of house types, both of which are only superficial remedies. Variations are possible, provided the streets are not too long, which can create interest and charm to offset some of the unpleasant effects. For example, the introduction of a bend or curve in the long straight street, thereby arresting the eye by changing its view, can help to avert the monotony and reduce speeding because of its psychological effect. Diagram 16 is an example of this suggestion.

The curving street must, however, intersect the cross street at a right angle starting at least 150 feet prior to the intersection. The lot lines being at right angles to the street rather than parallel to one another on a curve is, as a rule, claimed to be good practice because private approaches can then be at right angles to the street. However, the author believes that having the

lot lines parallel to each other on the curve, as shown on the north side of the street in the diagram, allows a more orderly and interesting siting of buildings and greater privacy for the residents, provided the set back of the houses is such to preclude a view of rear yards from the front street. It must be mentioned that both sides of the street should use the same system, and that houses should be opposite one another across the street, or nearly so, so that main views from houses are not into the side yards across the street.

The loop pattern is a variation of the grid but has sufficient advantage over the grid to deserve its own category. The loop pattern, shown in Diagram 17 is intended to create a private street to be limited in use to the people who live on it. The street is aligned in such a way that there is no incentive for through traffic to regard it as a possible shortcut. In order to benefit from the privacy and attractive "human" scale which the loop pattern has to offer, the loop itself should not be too long. A length of from 300 feet to 400 feet can give an economical layout and still retain the desired privacy for the group of homes.

The "knob" on the corner of the loop at "A" in Diagram 17, has been designed specially to provide greater frontage for corner lots, to facilitate driveway approaches and driving around the corner, not to allow for parking on the corners as some of its critics have suggested. The pavement, of course, should be aligned in a similar way.

The corner or "gore" lots within the loop inevitably have a large area and very small frontage compared to the rectangular lots. An alternative solution

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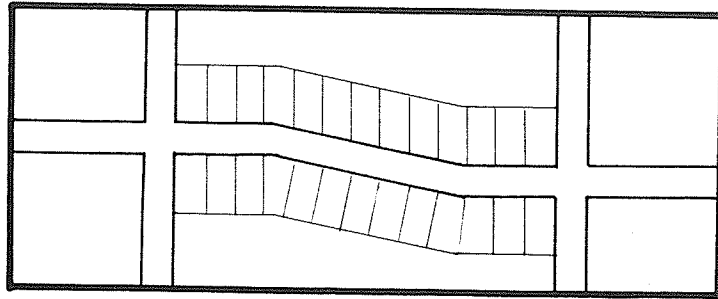


DIAGRAM 16 · INTRODUCTION OF CURVE TO VARY LONG STRAIGHT STREET

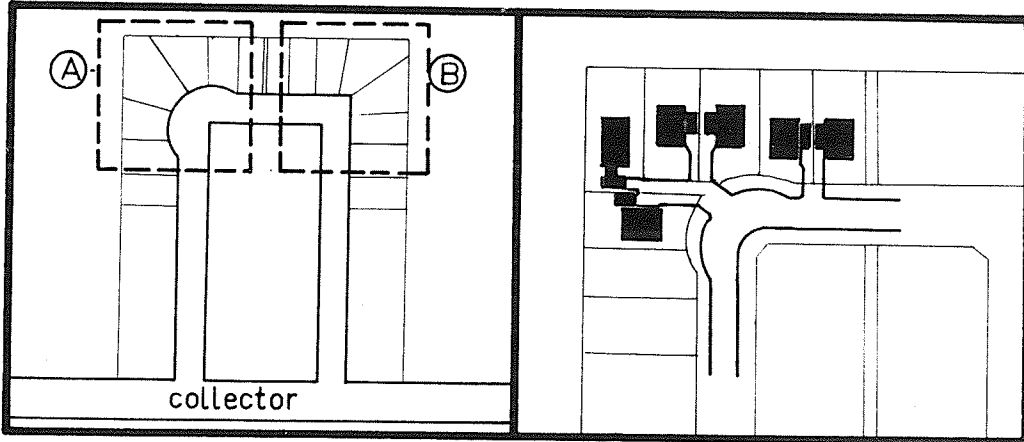


DIAGRAM 17 · LOOP PATTERN DIAGRAM 18 · CORNER DETAIL

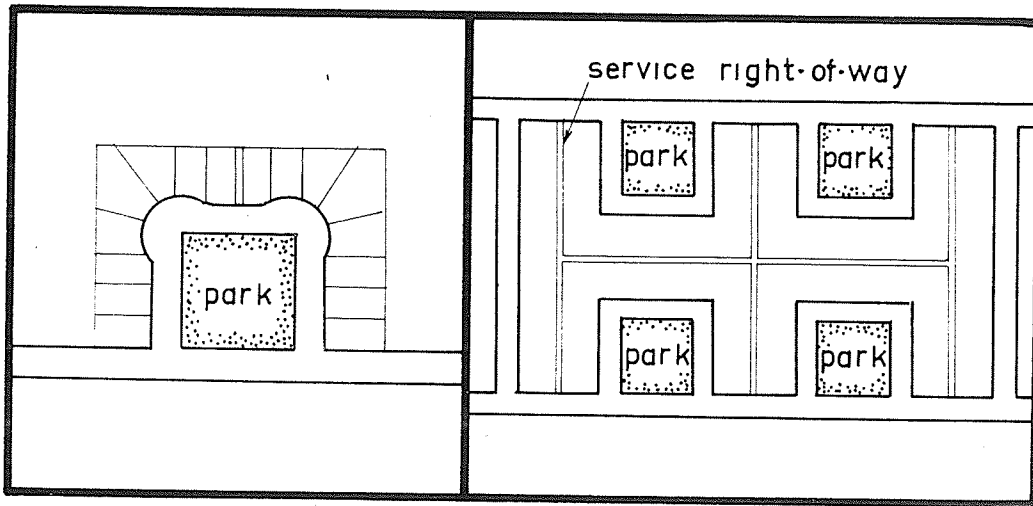


DIAGRAM 19 · LOOP AROUND A PARK

DIAGRAM 20 · PREVIOUS FIGURE IN A GROUP

to the use of gore lots at the loop corner is being attempted by a development company in Greater Winnipeg at the present time and is shown in Diagram 18. This suggestion results in a greater number of lots and is a more orderly solution than the "gore" lot. However, its success depends upon careful siting of the house involved and the two on either side to ensure that the windows in the major rooms will not be facing into a row of back yards. It is suggested that driveways be provided in pairs, thereby limiting the number of points of access to the street and making on-street parking easier.

Further observations concerning the loop pattern are as follows:

1. A central park area or pedestrian walkway to schools or other central uses can be reached by residents by a path-way at the rear of the houses, practically eliminating crossing of streets for the very young and the very old.
2. Power and telephone services can be carried on a right-of-way at the rear of the lots if it is necessary to carry the lines on poles, rather than underground.
3. Sewer and water services are usually carried in the street right-of-way. Lanes, therefore, are not necessary for carrying services and the cost of building and maintaining them is thereby avoided. Very few lanes have an attractive appearance because they tend to become dumping grounds for garden and other refuse.

Variation on the loop pattern are possible. A very short loop, as shown in Diagram 19, may be developed with the houses arranged around a small island park. This has been done in the City of Winnipeg in the River Heights area and is very popular with the residents, especially the young children.

This sort of development is an expensive form of land use, when developed in isolation, because of the amount of frontage which the park area has and the length of street required to serve the number of houses. However, in developing groups of this pattern, as shown in Diagram 20, all services could be carried in a right-of-way at the rear of the lots and would thereby serve two banks of houses. The street, of course, would be serving only a single bank of houses. This pattern represents a substantial improvement over the grid system, because the traffic around the park is limited to residents.

Because corner lots have traffic passing on two sides, they should be slightly wider than interior lots by at least 50 to 10 feet.

The sort of house which is most suitable for use in this type of development has a plan and elevations which make it equally attractive and approachable from the rear as from the front.

Occasionally some physical characteristic of the layout of a development will necessitate bending a loop as shown in Diagram 21. This layout presents some problems in designing suitably shaped lots at the point of the bend, but has the advantage of providing an additional curve in the street to

DESIGN

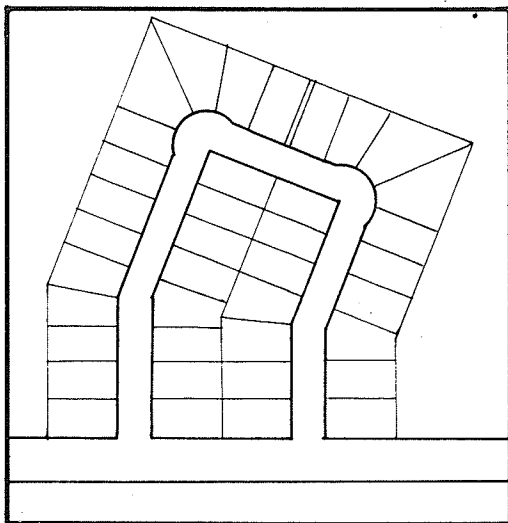


DIAGRAM 21 THE BENT LOOP

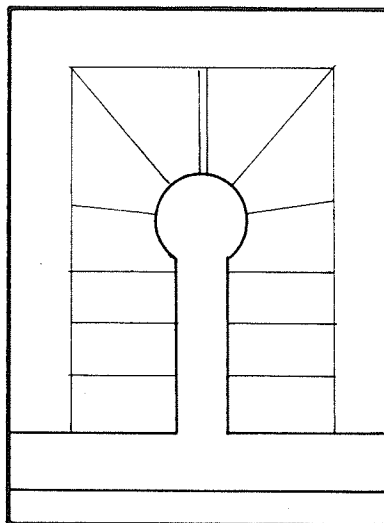


DIAGRAM 22 CUL-DE-SAC

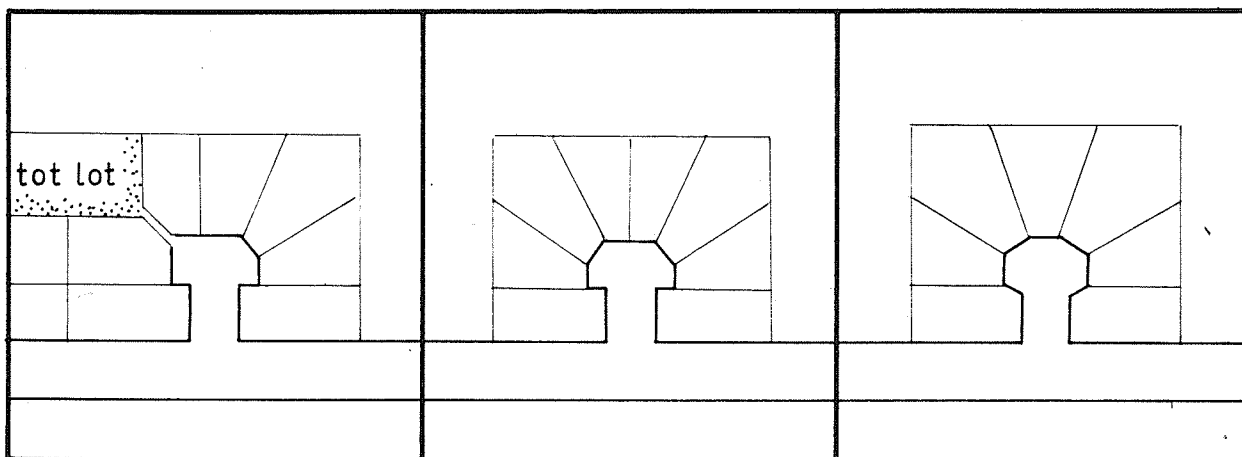


DIAGRAM 23 VARIETY OF CUL-DE-SAC DETAILS

arrest the eye and avoid monotony in the larger loops. This pattern is unpopular with the electric services people, but underground lines would alleviate this difficulty.

The cul-de-sac is a type of street which appears in many forms and variations. Basically, it is a single dead end street access to a group of dwellings and has a turn-around at the end.

The most familiar form of the cul-de-sac is shown in Diagram 22. The turn-around should have a minimum radius of 50 feet. Pairing of driveways into adjacent homes is particularly important on the turn-around because the lots on the curve have a very small frontage.

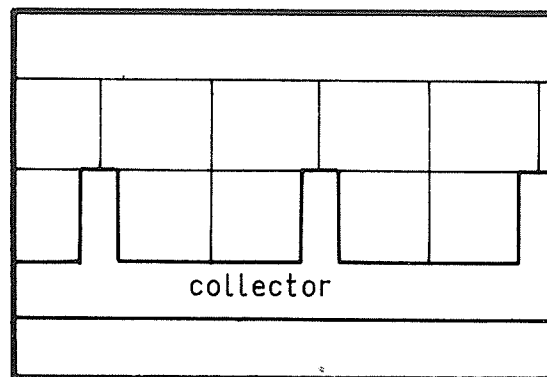
The cul-de-sac is frequently criticized by water services authorities because in a good water supply system there should be no dead ends; the water must be kept moving in the pipes. This problem can be alleviated by designing the cul-de-sac to allow a right-of-way through between the end lots as shown in the diagram so that a continuously circulating water system can be maintained.

Culs-de-sac must be short, maximum 300 to 400 feet in length, so that should the street be blocked for any reason, people will not be trapped behind the blocked portion. A short cul-de-sac in addition allows a very much more pleasant grouping of houses than a large one.

A further variation of the cul-de-sac theme, shown in Diagram 24 is extremely useful for the subdivision of small parcels of awkward depth. Parcels

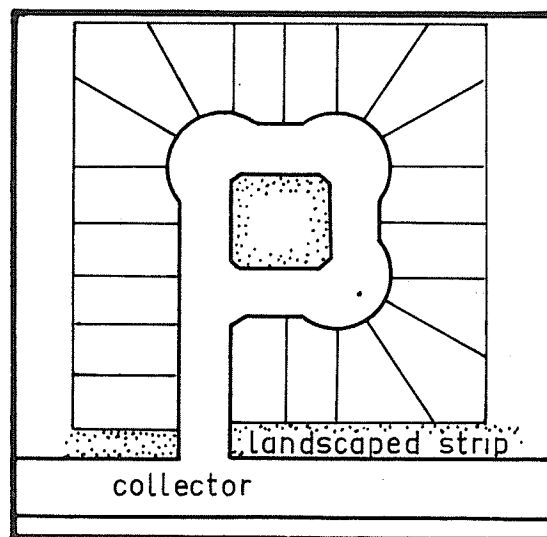
DESIGN

DIAGRAM 24



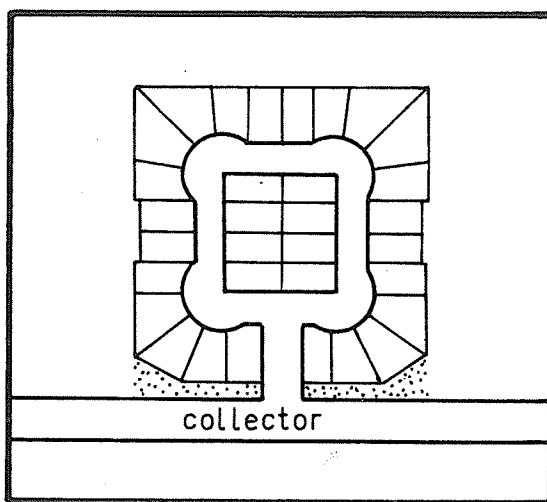
PATTERN FOR PARCELS OF AWKWARD DEPTH

DIAGRAM 25



CLUB SHAPED CUL · DE · SAC

DIAGRAM 26



KEY PATTERN

of awkward depth occur when there is a fair amount of existing development in an area where no development plan exists and the left over vacant parcels are now being considered for development. Awkward depths may also be forced by other limitations of the subdivision. The pattern shown results in large lots. Service vehicles and visitors' cars can turn around in driveways or park on the main street and walk into houses. A hydrant located at the entrance will serve the group adequately in case of fire. Larger lots of this type frequently have parking on the lot for two or three cars. This pattern offers more interesting possibilities for grouping houses for privacy than does the narrow deep lot.

Diagram 23 shows figures of culs-de-sac with details of layout of lots. The club shaped cul-de-sac shown in Diagram 25 is a very pleasant design taking advantage of the privacy obtained through grouping a small number of houses in a square around a green.

One further local street pattern which is a variation of both the loop and the cul-de-sac, which can be seen in Diagram 26, is the "key" pattern which has access from a collector street. The loop portion must be kept short as indicated in the drawing because of the single access and because of this a very pleasant and private grouping is maintained. The access street must be a minimum of 80 feet in width with a divider strip for traffic safety and to insure as closely as possible that the access cannot become blocked.

Pedestrian Walkways

Pedestrian paths through the interior of a residential development, through and around central park areas leading from one part to another, provide the most desirable means of getting from one place to another within the area. Safety and convenience for school children and pre-schoolers, and the general ease and pleasantness of going from one place to another in a park-like setting, are all major advantages in a residential area.

The climate of Metropolitan Winnipeg makes it desirable to provide landscape windbreaks in addition to other landscaping along pathways. Such landscaping would not only be extremely practical in providing shelter but would add to the appearance of the area as well.

Siting of Buildings

Houses should be grouped to provide the maximum privacy and attractive appearance for the residents, and so that each home owner can make the maximum and best use of his property.

Where homes have been built individually or where contractors build a number of houses each of which has not been regarded by the builder as a part of a group, as is the case in most Metropolitan Winnipeg residential areas, the only control which the responsible authority has is in the layout of streets, the minimum size of lots and yards and the density of the area.

There has not been any extensive use of architectural control in residential areas and rules regarding fences have had general application so that no one

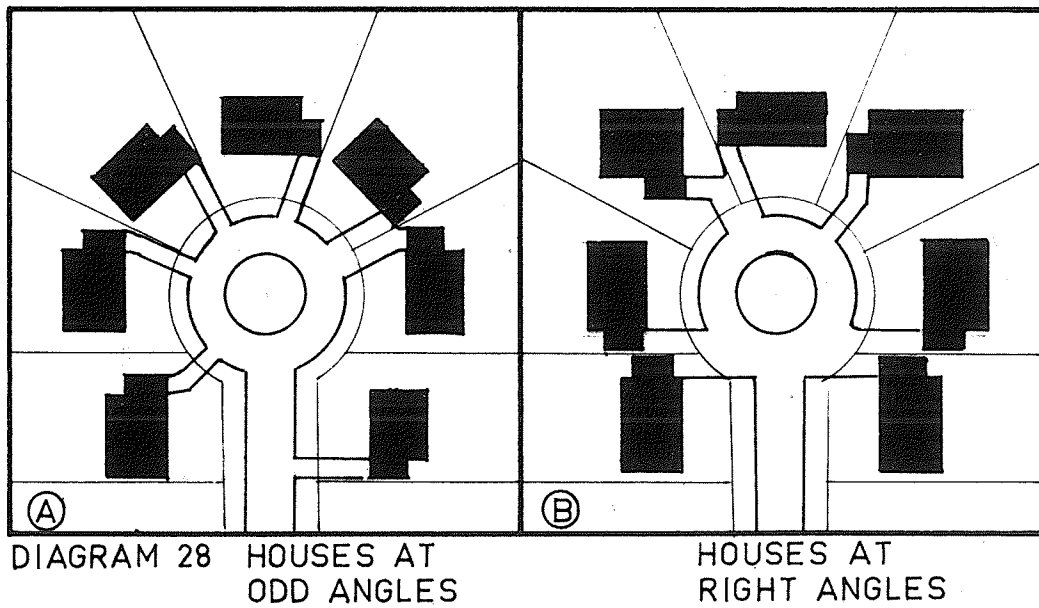
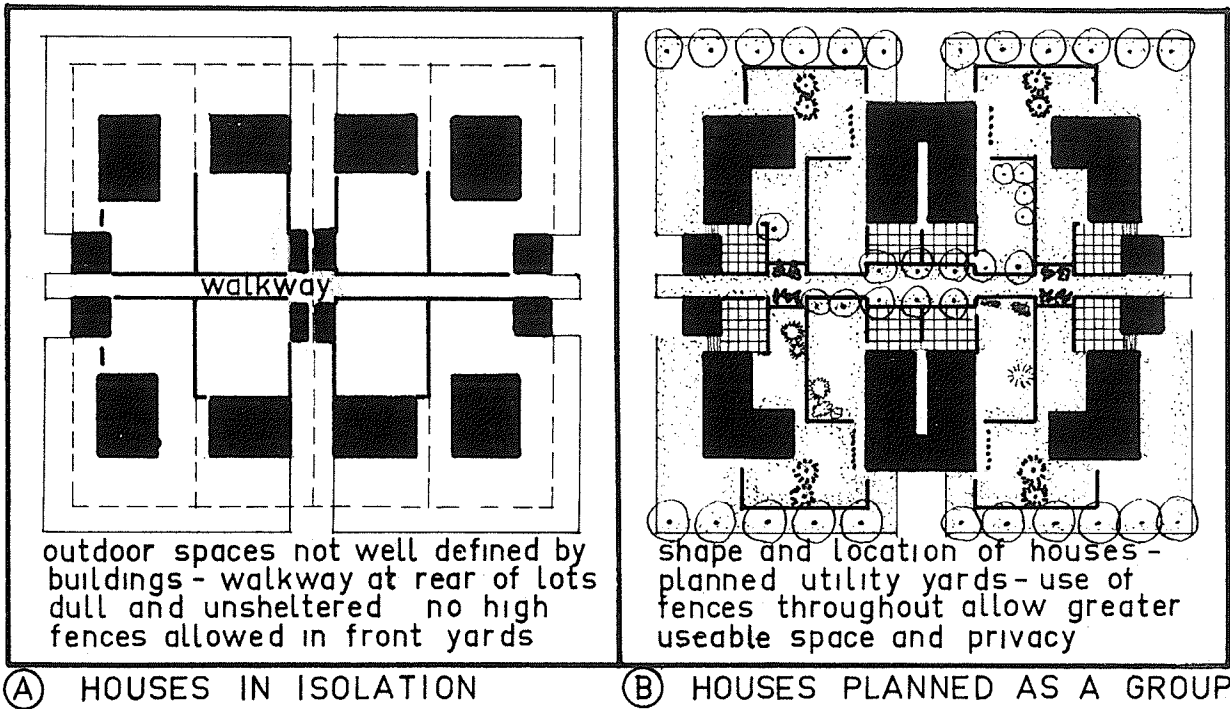
property could be developed to the detriment of any other property.

Houses must be considered in groups if the resultant appearance is to be pleasing and maximum and best use is to be made of the individual properties. This can be accomplished through architectural control, not for the purpose of limiting individuality but to ensure that each house and property is a harmonious part of the group in which it is located. It can be accomplished more easily where a developer has control over a group of homes because it is then possible to design the houses and their outdoor spaces as a group. Fences and landscaping can then be planned for the best interest of the group. Greater privacy and greater use of individual properties can be attained in this way.

Diagram 27 is an illustration of the siting of houses. Part "A" indicates the available use of individual property where homes are built on an individual basis with little concern for the group: the houses being located according to the requirements of zoning by-laws pertaining to this sort of development. In part "B", the houses have been sited and properties planned as a group. Most zoning by-laws at present in the metropolitan area are sufficiently flexible to allow for group development under certain controls.

Diagram 28 is an example of grouping single family houses built on an individual basis. It is included to show that individual houses in close proximity to one another are more successfully sited at right angles to one another than at odd angles. Pairing of driveways limits the number of access

DESIGN



points to the street, allows for a larger uninterrupted expanse of front yards, and is more orderly in appearance.

Diagram 29 shows several examples of the grouping of row houses for privacy and attractive appearance. Buildings of this size can be located to create small private squares and other interesting spaces which add to the amenity of the area.

Diagram 30 is an example of the siting of single family homes, row houses and apartment buildings in one area. The apartment buildings have a considerable amount of space around them so as not to overshadow the other smaller buildings and to allow a reasonable amount of open park and play space for an area of this density.

The siting of churches and commercial areas has already been dealt with elsewhere in the thesis. These facilities should be accessible from pedestrian walkways through the interior of the residential area. Schools, particularly the elementary school, should also be accessible in this way. The elementary school should be located in the interior of the residential development along with its adjacent park site. The elementary school will, however, need vehicle access provided to it and this can be provided from one of the local streets in the area. Under no circumstances should an elementary school be located on a major traffic artery. Such a location is dangerous for the school children and impedes the function of the major artery.

DESIGN

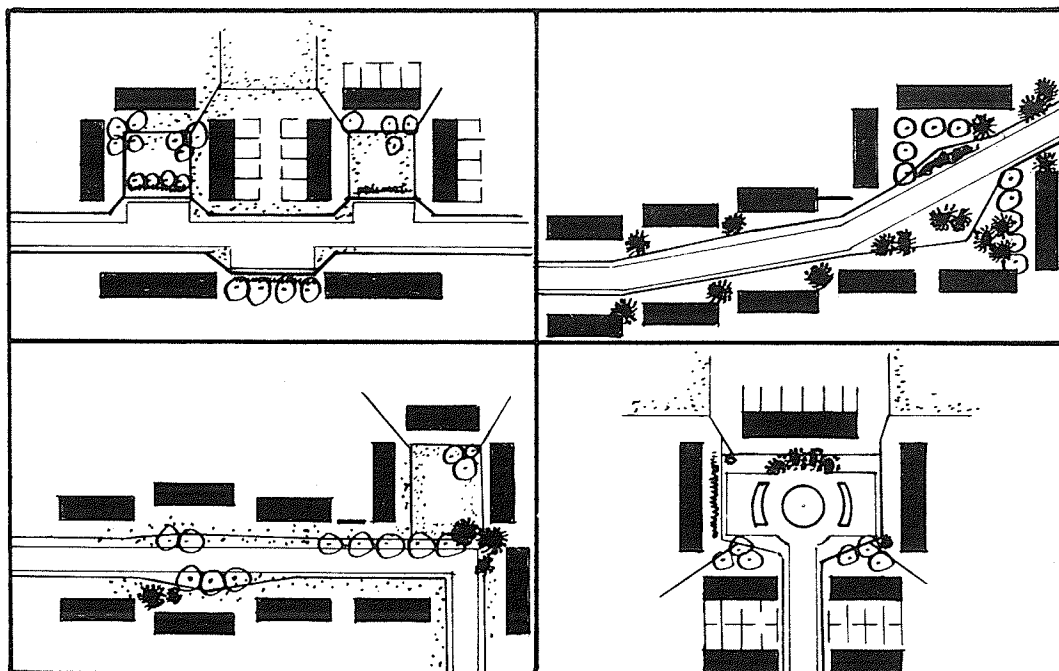


DIAGRAM 29 SITING OF ROWHOUSES all units shown face or abutt street

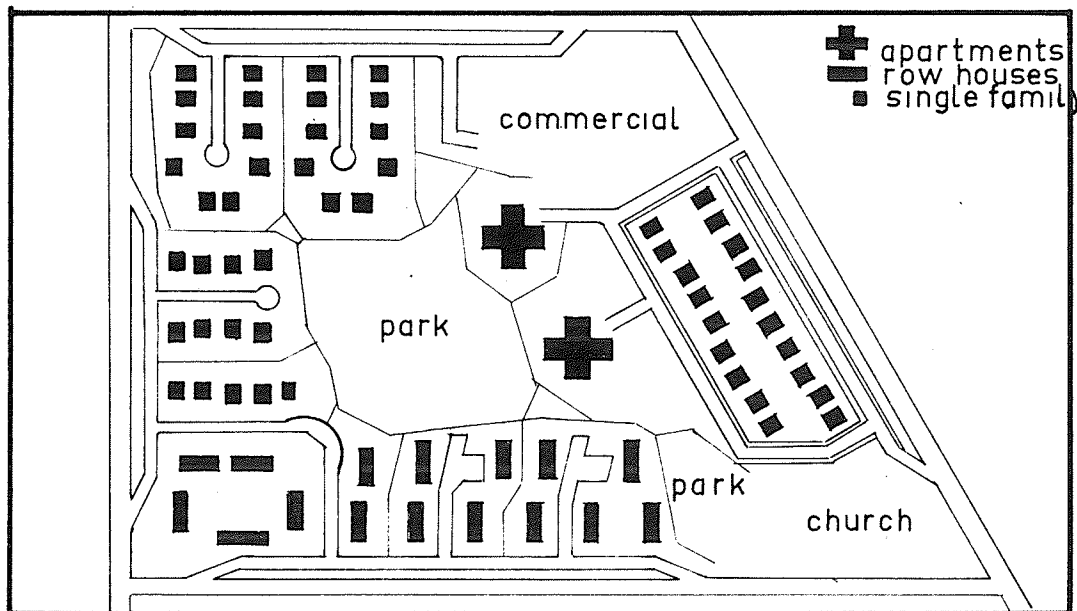


DIAGRAM 30 SITING OF A MIXTURE OF HOUSING TYPES

Appearance of Buildings

The siting of buildings and their appearance are two very closely related factors. This part of the thesis is concerned with the appearance of houses as a group; that is, with the streetscape.

Diagram 31A shows a group of houses on a street which have been built with little or no consideration for their neighbors. Diagram 31B shows the same group of houses altered by changing the use of materials and location of doors and windows. Diagram 31C shows the same group of houses altered again by the introduction of landscaping. The trees behind the houses give some uniformity to the varying roof lines, and the shrubbery also helps to soften the previously stark effect of houses at particularly the ground level.

Diagram 32 is a sketch of a group of houses which have been designed as a group and in which fences have been used extensively for privacy within the individual property. The effect of high fences at the sidewalk is one we are not accustomed to seeing and the street is made to seem much narrower. However, the layout gives each owner maximum use of his property because the houses have been designed together as a group.

The successful appearance of houses on a street lies not in violent contrasts between colors and between materials and between the shapes of the houses themselves, but in having colors, materials and shapes which complement and harmonize with one another. Thoughtful and purposeful landscaping is a further ingredient which mellows, softens and relates houses well to one another and to the ground.

DESIGN

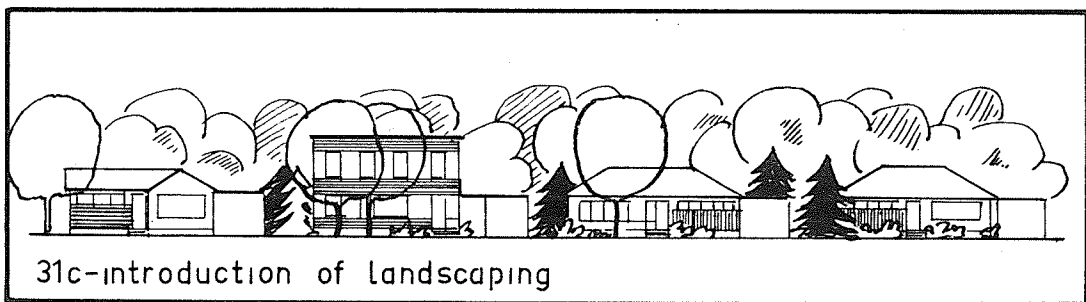
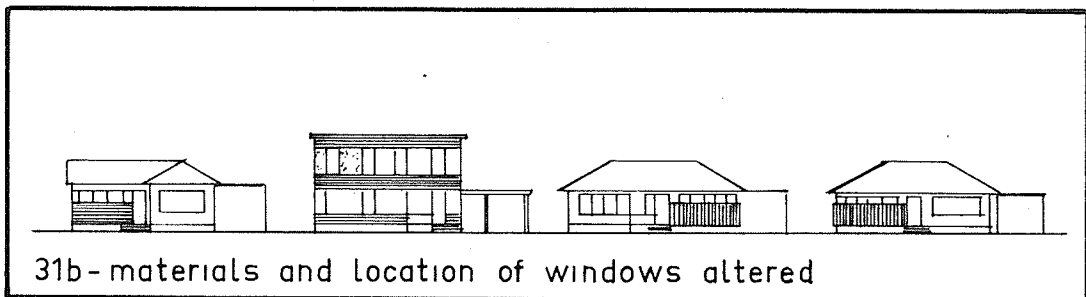
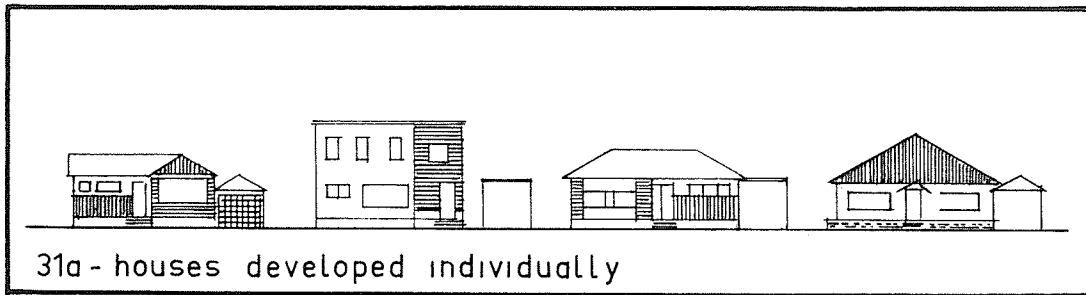


DIAGRAM 31.

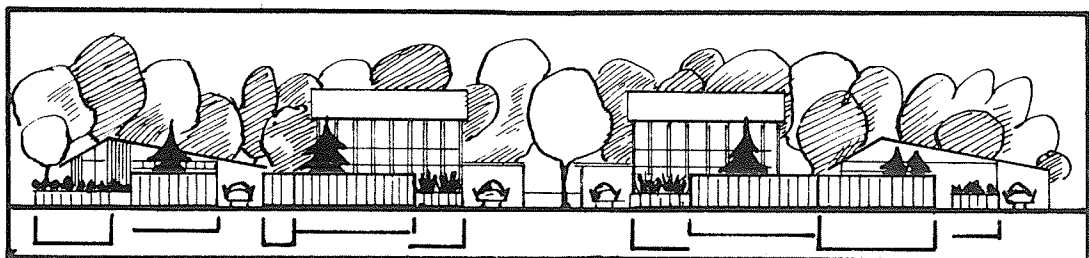


DIAGRAM 32 GROUP DEVELOPMENT OF FENCES FOR PRIVACY

The Design of Small Park Areas

It has been stated previously that park areas may be active or passive in the nature of their function and it is the small primarily passive use parks with which this portion of the thesis is concerned. Small green public spaces dotted throughout residential areas have the capacity to add immeasurably to the pleasure of the residential environment if they are well designed for their purpose. The value of small parks lies in the fact that when they are all around us and we drive past them and walk through them, their impact upon us is stronger than any other type of park because consciously or not they become a part of our everyday life. It is for this reason that this particular type of park area has been chosen for more detailed attention. The character of these spaces should vary according to whether they are located in low or high density suburban areas or high density central areas.

Small parks in downtown locations will be used by shoppers and by people just walking by. These areas should be urbane in keeping with the character of the surroundings. They should be a place to stroll, a place to sit and watch the passing scene; a small refuge. Their main use will be to office workers and shoppers but they will also serve people living near by. They must be designed in such a way that maximum use and beauty can be achieved within the small space. Growing things should be arranged so that they will not be adversely affected by normal use of the area.

LAYOUT PROPOSALS PARK PLAZA

LEGEND

 EXISTING BUILDINGS

 PROPOSED BUILDINGS

 AREA INCLUDED IN THE
PLAZA PROPOSAL

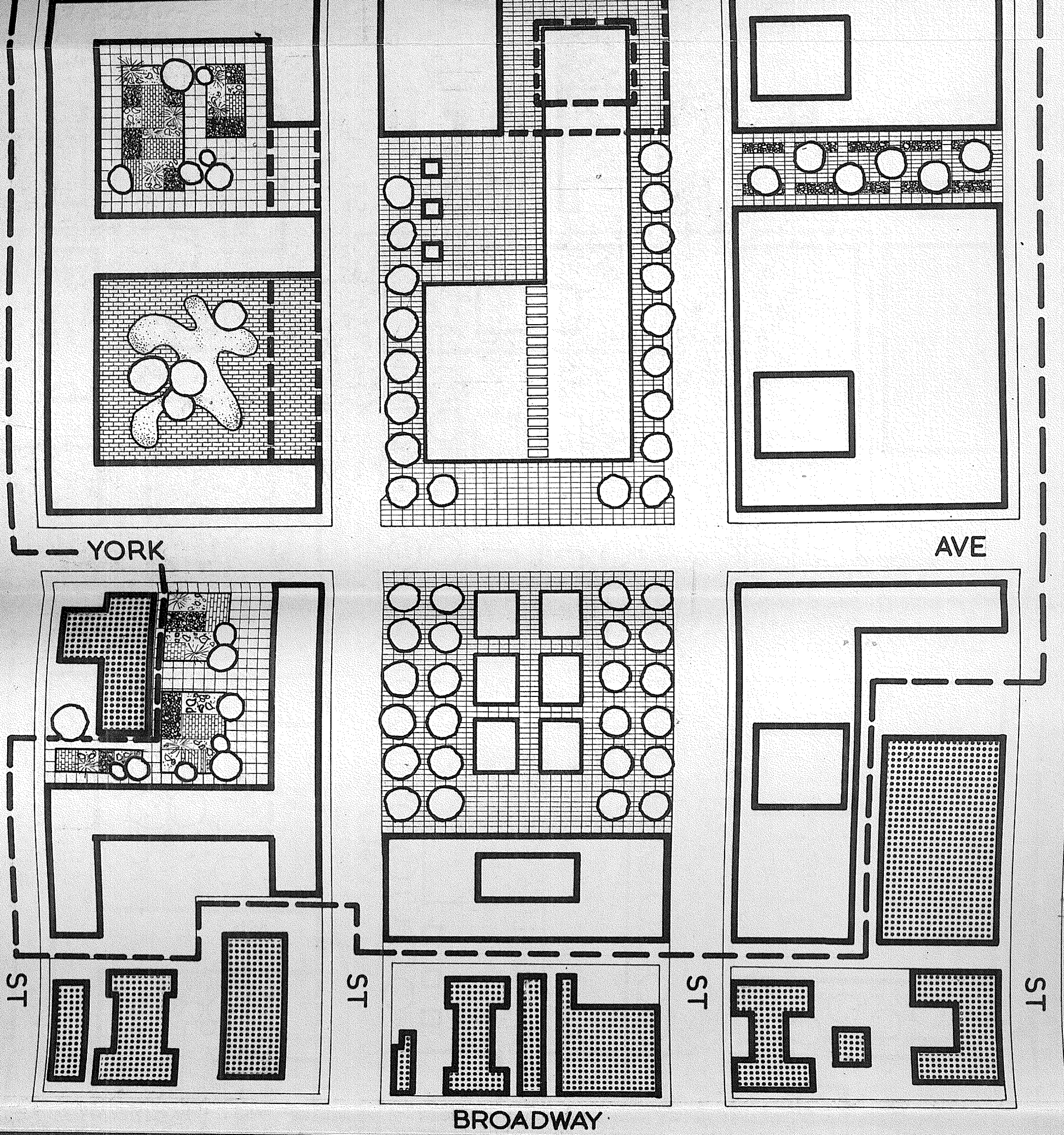
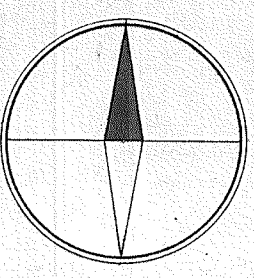


DIAGRAM 33



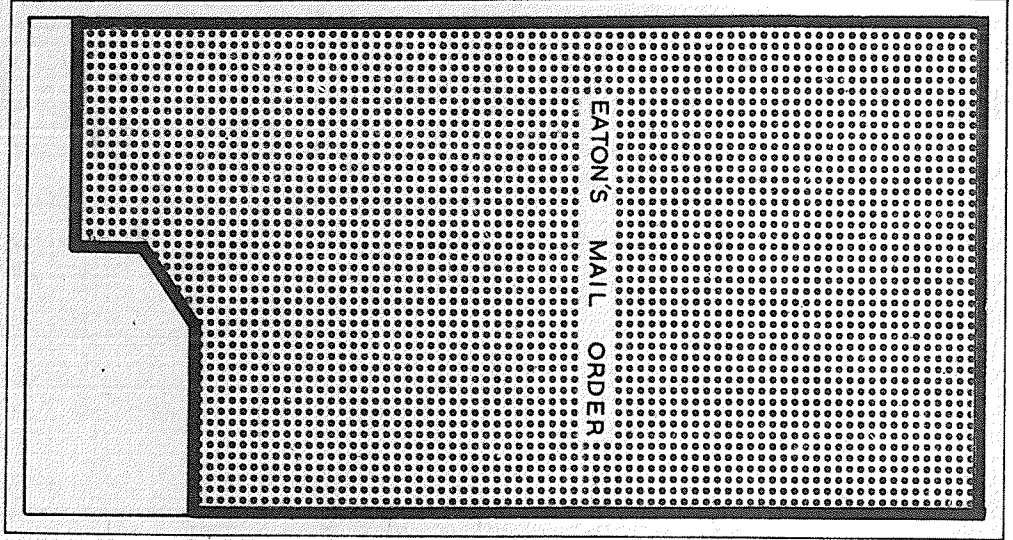
SCALE: ONE INCH EQUALS 100 FEET

JUNE 1960

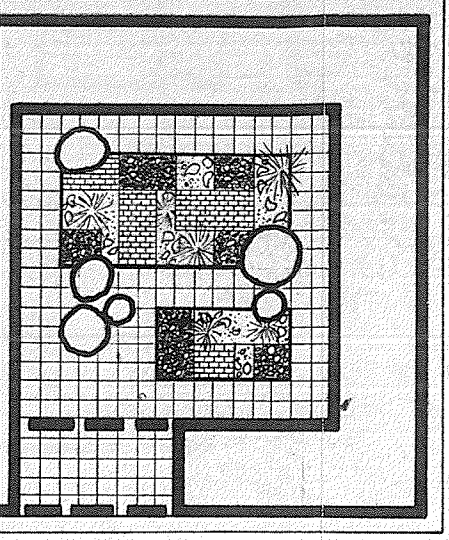
URBAN RENEWAL AND REHABILITATION BOARD

CITY OF WINNIPEG

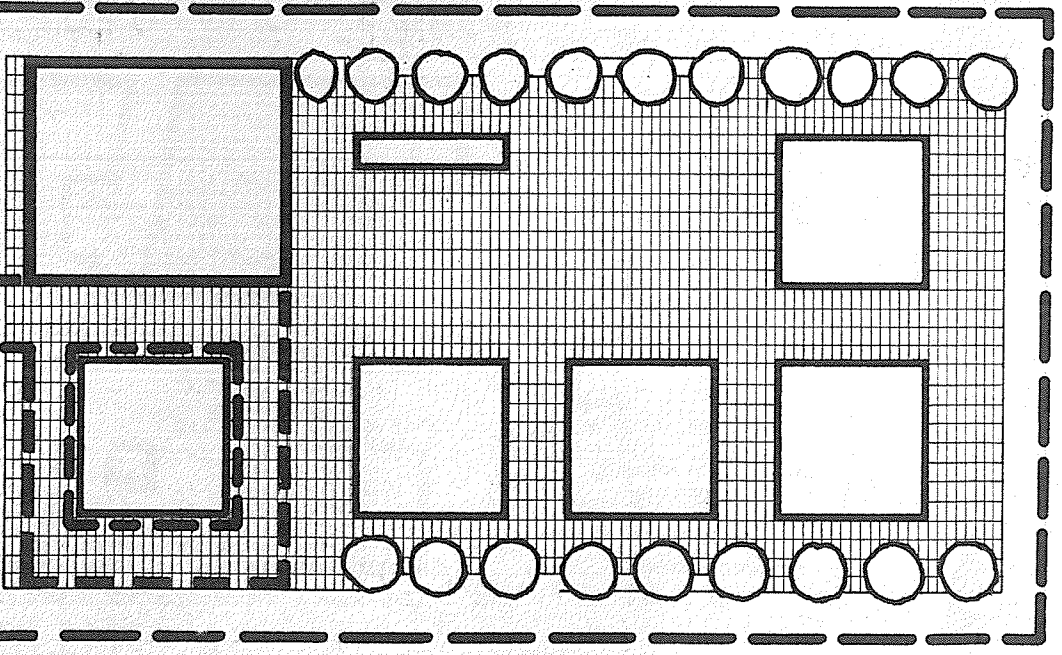
GRAHAM



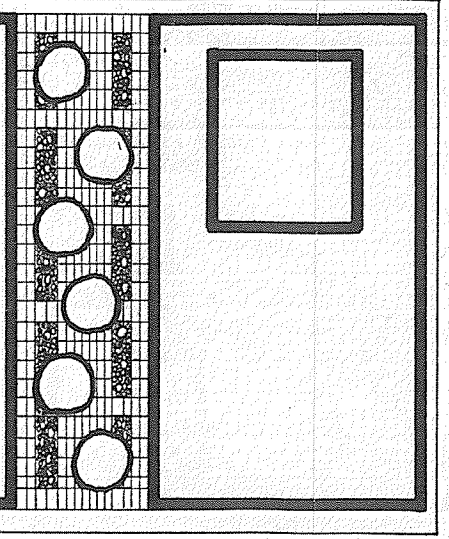
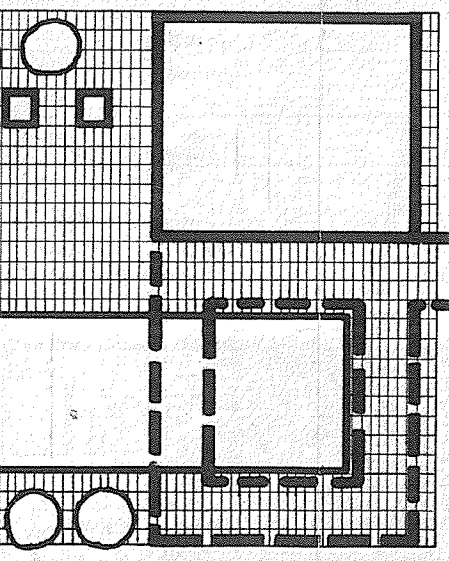
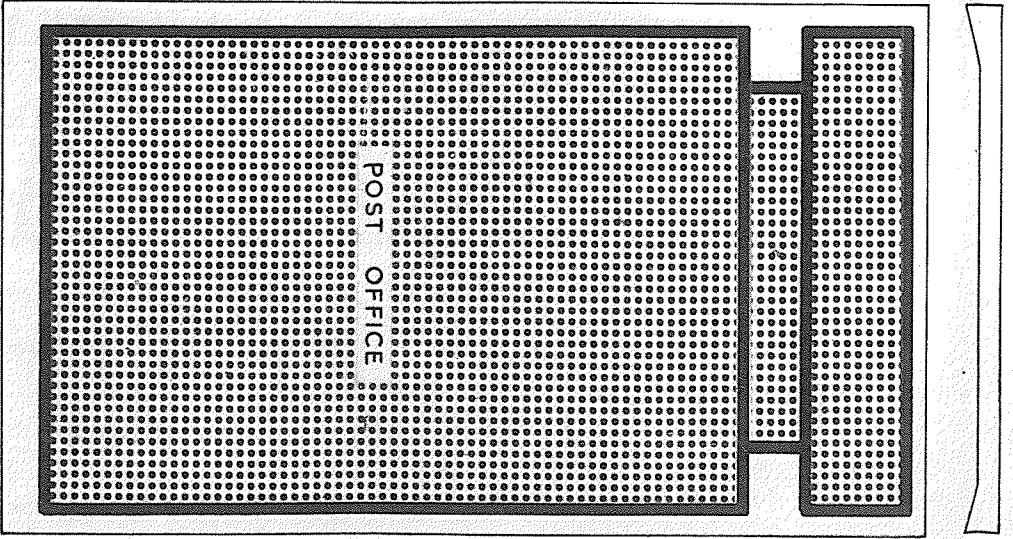
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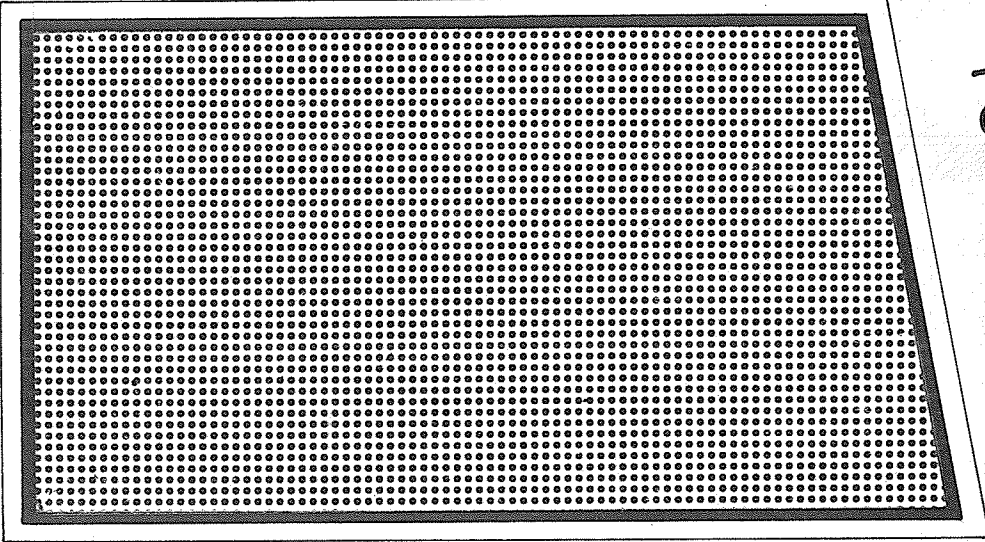
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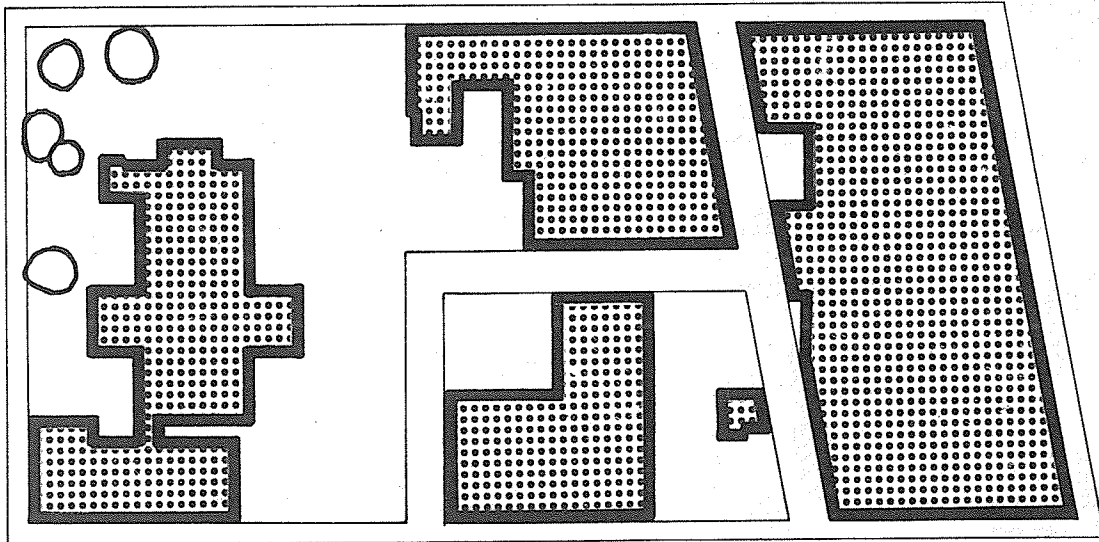
HARGRAVE

PORTAGE

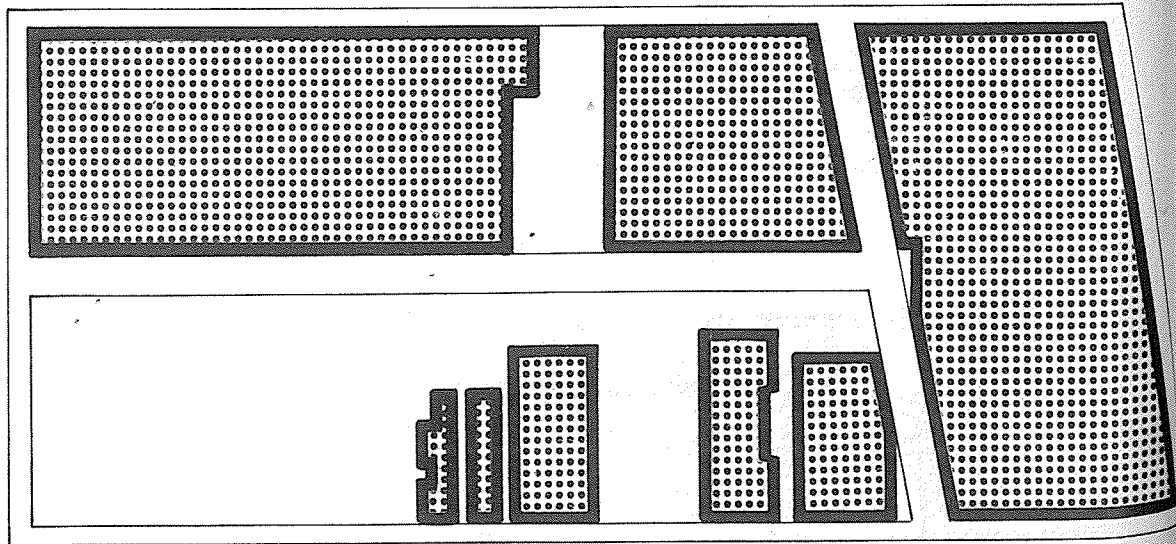
GRAHAM



DONALD



SMITH



AVE

GARRY

One very large project, but one which has urbane character in its suggested design, which was recently proposed for downtown Winnipeg is the Park Plaza. This suggested project covers a very much larger area than that envisaged in the term "small parks" but Diagram 33 showing the suggested type of design suitable has been included to show what the character and appearance of a downtown park should be if it is going to serve its intended purpose. Smaller areas of the kind suggested in this part of the thesis are intended to be provided in addition to areas like the suggested Park Plaza.

It must be pointed out that in the case of downtown, the effectiveness of a small park area is not measurable on the basis of size but rather on the basis of how strategically it is located. The pedestrian who has walked along several blocks of a downtown street and suddenly comes upon a building which has been set back a few feet from the sidewalk allowing for sufficient space to place perhaps two trees, a pot of flowers and a bench, will find the effect just as pleasant and alleviating as if he had been walking in a suburban residential area and had come upon a park of an acre in area. Diagram 34 shows three examples of this type of open space for downtown locations.

Slightly larger spaces of perhaps an acre or less in area are also desirable for downtown locations. Spaces of this kind depend for much of their appeal on the buildings around them to give them a definition. They are pleasant to be in and to walk and drive past. They add too to the value and stature of the buildings around them. A small sketch plan of how a space like this might be

DESIGN

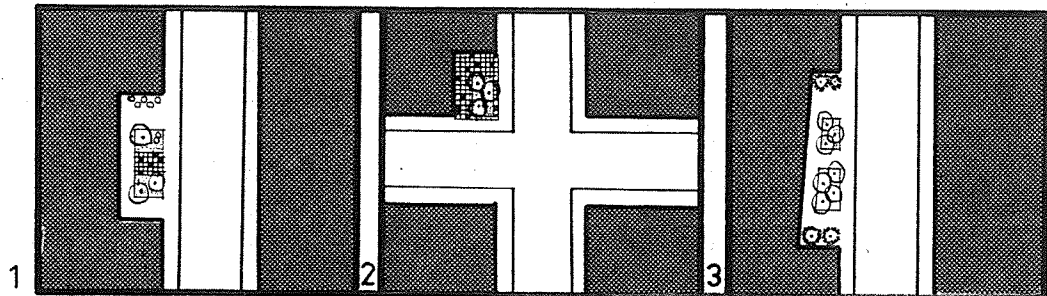


DIAGRAM 34 SMALL GREEN SPACES ON DOWNTOWN STREETS

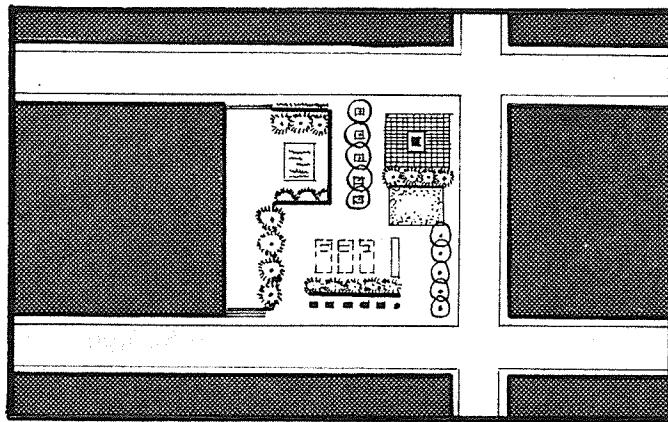


DIAGRAM 35 A DOWNTOWN SQUARE

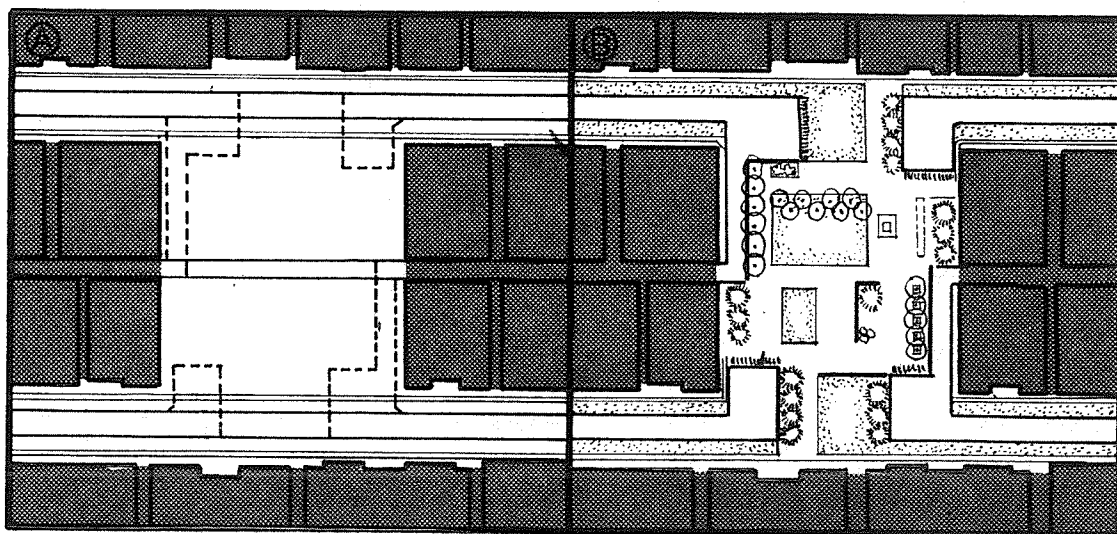


DIAGRAM 36 A PARK IN A DOWNTOWN RESIDENTIAL AREA
 (A) SHOWING EXISTING SITUATION AND STREET CHANGES
 (B) SKETCH LAYOUT OF PARK AREA

designed is included in Diagram 35.

Small Parks in Downtown Residential Areas. Small parks located outside the central shopping and business area, though still downtown, and intended to serve residents of the high density residential areas which surround downtown will have a slightly different character than that of downtown parks. These small green areas of perhaps an acre or less in area would serve the senior citizens of the area, small children, mothers with babies: all those persons who, like suburbanites spend most of the day in and around the residential area. In the evening of course such a park would see a different group of strollers. Small parks in this sort of location perform much the same function as those less centrally located, but greater intensity of use can be expected. Therefore its design should reflect this fact so that while its original development may cost more than that of its suburban counterpart, it will be relatively easily maintained. In areas developed with the grid street system, where many substantial and fairly new buildings exist, it may happen that the only available property for a park is located in the centre of a block such as shown in Diagram 36.

The space, shown in the diagram is small and is rigidly defined by the apartment buildings surrounding it. It is suggested first of all that the existing lanes be diverted into the parallel streets and that the possibility of ending both streets at the park with space for some parking and for service vehicles, be seriously investigated as shown by the dotted lines in part "A" of Diagram 36.

This would eliminate through traffic, making the streets much more pleasant for the residents, and the park area itself and its approaches much safer for small children. Additionally it would allow for a more flexible and interesting design. The normally undeviating straight sidewalks could then be altered to pass through the park or at least close to it. The site would be improved for park use even if it were possible to close only one of the through streets.

Part "B" of Diagram 36 shows a suggested development of the park site taking into account the closed streets. A considerable amount of hard surface material such as concrete, brick and stone have been used. Where grass areas are used it is suggested they are raised above the level of the adjacent walk, so that while they are accessible to anyone who wishes to use them they are not subjected to constant pedestrian traffic. Shrubs and flowers should be arranged in such a way that they are not likely to be trampled by children at play. Walls of varying heights to give shade, to bounce things against and to create interest could be included. The diagram and description are intended to show that this kind of park should be designed so that in the normal course of events, very little can be done to damage it. Benches and a limited amount of playground equipment should be included in a park of this sort.

It should be pointed out that the character suggested for this type of park would be suitable also for a high density apartment project in a suburban location.

Small Parks in Suburban Locations. Small green areas located in less densely populated areas can reasonably have more open grass area but again care should be taken in the design to keep maintenance costs down. Surfaces should be provided which are suitable to the use to which they are going to be put. The amount of active play equipment to be included should be kept to a minimum because it will be contained in other parks around the area intended for active recreation use. Green areas in this category should contain a number of shade trees, a secluded place for sitting and quiet contemplation and open grass areas for young children to run and jump. Interest can be created by changes of level involving a low masonry wall and perhaps one step. Carefully worked out details of landscape are very important in creating an attractive appearance however simple the detail may be. Diagram 37 shows several details which could be included.

Thought should be given to the development of the small spaces inside the turn-about or cul-de-sac roads and to the usually small and awkwardly shaped pieces of land which are sometimes left over when the subdivision of land into lots is completed. A small amount of planting can turn these small spaces into pleasant little areas which add amenity to the surroundings as shown in Diagram 38.

DESIGN

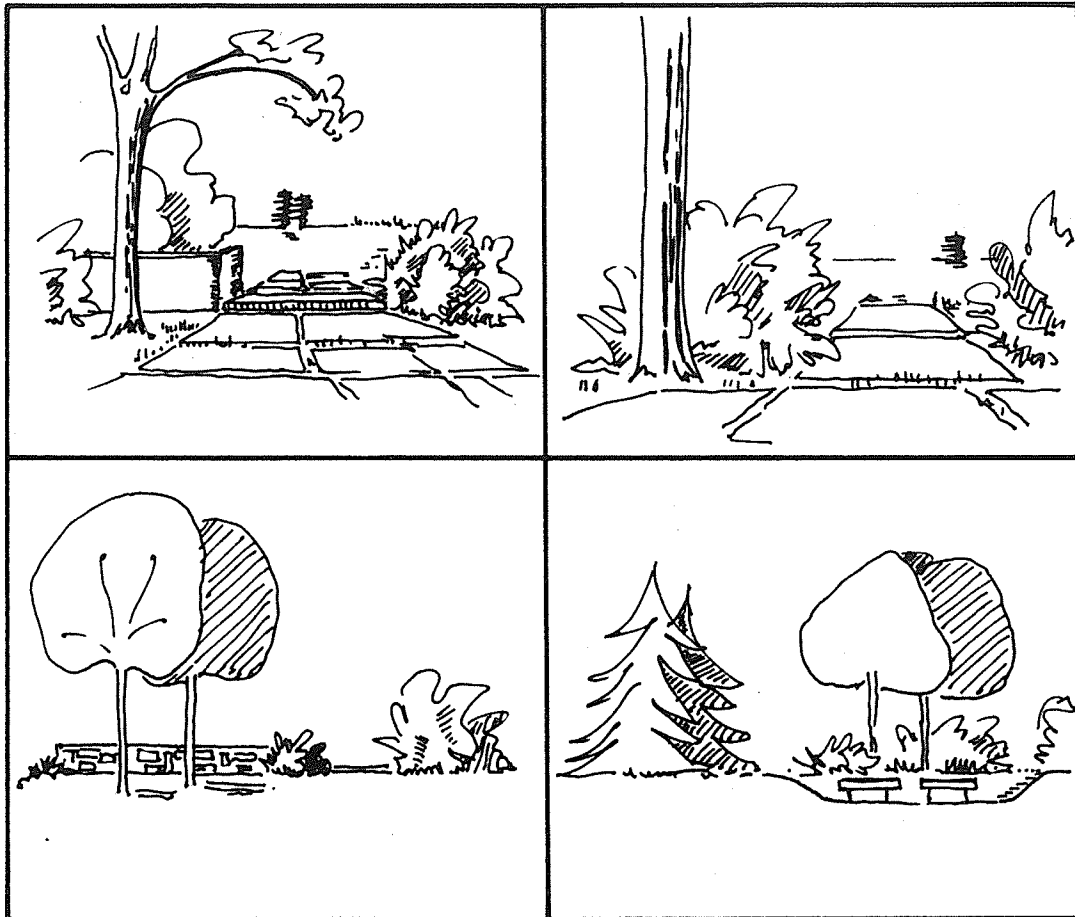


DIAGRAM 37 DETAILS SUITABLE FOR SUBURBAN PARK SITES

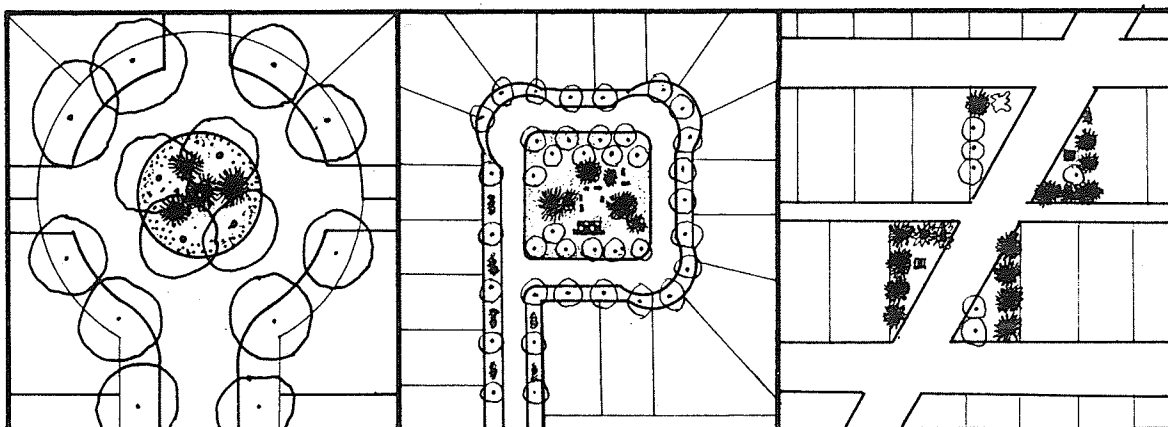


DIAGRAM 38 SMALL GREEN SPACES

CHAPTER 111

THE DEVELOPMENT PLAN

The most effective means of contributing to the orderly and economical development of land is the establishing of a development plan.

The establishing of a development plan is the responsibility of the government concerned, because it is a statement of policy and forms a frame within which the developer can work to arrive at a detailed plan of subdivision for the individual area with which he is concerned. The development plan is not, as a rule, concerned with the details of subdivision layout, such as the exact location of possible future local residential streets or the specific location of park and school areas, but it does establish policy regarding these things. While the development plan is general in nature and must be reasonably flexible, adherence to the principles it establishes is very important to the orderly and economical development areas covered by it.

The purpose of the development plan is to establish what basic services are necessary to serve a given area and to recommend their approximate, and when feasible, their exact location within the area. The following elements should be included in the development plan:

1. The amount, sort and location of each of the different kinds of land uses intended to be included within the area. In the case

of residential development, the different kinds of residential uses should be indicated as far as possible so that the approximate density (number of persons per acre) can be anticipated in planning the basic services. The pattern of land use will be made effective by comprehensive zoning.

2. The sort and location of major thoroughfares necessary to serve the area and to connect it with the rest of the metropolitan area. The development of the street system should be a part of the general transportation system also including rail, air, highway facilities and their terminals.
3. The approximate location for collector streets within a residential area so that a street pattern can be worked out which will both move traffic quickly from residential streets to major thoroughfares and keep through traffic off residential streets. The establishment of the exact locations of collector streets within a development is a further refinement after the establishing of the land use. Some plans have street systems which once adopted, remain indefinitely. It is the opinion of the author that the exact location of streets of which use will be made in the near future, particularly main traffic routes should be definitely established. However, streets of

a local nature should have their locations approximated in areas where development is far in the future, so that changes in location are possible if they should prove desirable when development actually does take place.

4. The amount and approximate location of public open space including park and school sites for the area.
5. The amount and location of commercial areas which are necessary to serve the residents of the area and an indication of suitable locations for church sites and other public service uses such as fire halls and police stations.
6. Suitable locations for major public buildings should also be established by development plan.

Policy should be established on the following points also, in order to give further direction to developers and to assure a cohesive development of land, and that provision has been made for all the necessities.

1. Density or number of persons per acre

The maximum allowable number of persons per acre can and should be established by the development plan. However, the government concerned should have a flexible policy on this subject for application to areas not covered by a detailed development plan.

In the case of areas of single family dwellings and possibly duplexes, density can be established in general terms by a minimum size of lot and minimum front, rear and side yard requirements. In the case of multi-family developments, this can be done by establishing a maximum desirable number of persons per acre. In the detailed planning stage, this would allow certain freedom in choosing the kind and number of housing units which would go together to make up the permitted density.

Floor area ratio should be established for residential areas by the development plan. Floor area ratio has been defined under the section of this thesis in Chapter II dealing with residential densities. It is particularly important that the bulk of buildings i.e. the space they occupy be closely controlled in the design of multiple family areas and mixed housing types. It must however, be used in conjunction with building coverage and daylight angles as well as orientation in the design of multiple and mixed dwelling areas, if it is to be intelligently applied.

2. Street Width

A desirable standard for width of a right-of-way for each type

of street should be established by policy so that the community can be assured that the rights-of-way are of a width adequate to carry out the intended function. Desirable widths should be established for residential, minor collectors, collector and arterial streets.

3. Landscaping

The government concerned should establish a policy regarding landscaping. First of all the community should make sure that public areas receive all the attention possible in this sphere. In the case of private lands, where trees are removed for construction, they should be replaced and some policy should be established for provision of trees when new residential areas are developed. This could be established in line with the suggestions made earlier in this report on this subject.

4. Off-Street Parking

A policy should be established to insist upon off-street parking in residential areas in line with the recommended standards which appear in a previous section of this report. This is particularly important in the case of multiple family developments.

5. The Appearance of Buildings

This is one of the most difficult aspects of the development plan to administer. It would be a mountainous task to deal with

all private homes, however, a competent design committee could deal with major commercial and industrial buildings, all public buildings and all housing projects under the control of single developers, to start. It is not possible to cover all points which may arise in development by a general policy, however, the above mentioned points are important.

6. Public Advertising

Bill boards and all other signs deserve serious consideration in the development plan and could come within the terms of reference of a design committee.

The responsibility for the following points, in relation to specific areas of subdivision should also be covered by a general development policy. These are, however, engineering considerations and, therefore, it is outside the realm of this report to do more than mention their importance.

1. Engineering design and supervision of sewer, water & roads.

Will this be the responsibility of the developer or the government concerned and what contribution will the developer be expected to make toward their cost?

2. The installation and construction of roads, sanitary and storm sewer and street lighting.

Who will be responsible for this and what will be the distribution of cost?

3. The minimum standards to which water lines, sanitary and storm sewers, road paving, sidewalks and street lighting will be built.
4. The installation of trunk services and trunk roads.

Who will be responsible for this and what will be the distribution of cost?

The development plan is not a single plan, but many plans covering each of the necessary points, and many written laws covering all the details which cannot be covered by graphic means. Some existing development plans vary in the number of factors which they include, however, a comprehensive development plan should cover at least all of the points outlined in this chapter.

Plans of Subdivision

The procedure for obtaining approval of plans of subdivision within the Metropolitan Winnipeg Area is contained in Appendix "A" to this thesis.

APPENDIX "A"
SUBDIVISION PROCEDURES
WITHIN THE METROPOLITAN AREA
AND THE ADDITIONAL ZONE

The processing and approval of plans for the development of land within the Metropolitan area and the additional zone is now the responsibility of the Metropolitan Corporation. In order to centralize and simplify this procedure all of this work will be administered through the Planning Division.

Because of the varying type of land development proposals that can be expected, the processing has been set out in two stages.

1. Applications for Information
2. Applications for Approval

1. Application for Information

This is an application made to the Corporation for preliminary consideration of a development proposal. The purpose of this stage is to give to the applicant as much information regarding Corporation policy and development requirements that will affect the proposal. At this stage the applicant will deal with the senior staff of the Planning Division.

The Application for Information may take one of two forms, depending upon the size, location and nature of the development proposed and each application must be studied so that unnecessary supporting material is not called for.

1.1 If a developer wishes to obtain information on the policy of the

Corporation regarding development in an isolated and largely undeveloped area or for the development of a sizable tract of land which would probably be carried out in stages and if no Corporation policy has been established which could cover his proposal, this proposal should first be discussed with the Director, or a senior staff member.

If, as a result of this discussion, the developer or his agent wishes to make an application without incurring considerable cost or delay, he should submit to the Director of Planning, two copies of a letter containing the relevant items from the following list:

- a) The legal description of the lands to be developed.
- b) The name of the legal owner or owners of the lands to be developed and whether all parties affected have knowledge of the proposal.
- c) The type and purpose of the development proposed.
- d) A description of any special, natural, or topographical features of the land.
- e) A description of any special features or works, included in the proposal.
- f) The type of sanitary sewer, water, and storm sewer facilities proposed.
- g) The type of road works proposed.
- h) Who will be responsible for the installation of sewer and water facilities.
- i) Who will be responsible for road works.
- j) Is public transit anticipated for the development.
- k) Is CMHC mortgaging anticipated.

1.2 In the case of a proposal within an area partially developed or in the vicinity of developed land, or of relatively small scale, the following items may be required.

1. Two copies of a letter containing the relevant items from the list given in 1.1 a-k above.
2. A maximum of ten copies of a Location Plan to a small scale (1"-1000') indicating the relationship of the proposal to surrounding development, and the distances to local schools both elementary and secondary, parks, playgrounds, and shopping facilities. This item may be combined with item 3 below.

3. A maximum of ten copies of a Draft Plan of Subdivision at a suitable scale showing:
- a) the limits of the area outlined in red
 - b) the layout of the area with the size of road allowance and lots indicated
 - c) the location of registered plans and road access abutting the area
 - d) The location of any existing buildings or structures to be retained
 - e) the location of existing sewer lines and lift-stations, water, hydro and gas lines, if any, adjacent or within a reasonable distance of the proposal
 - f) proposed land use for the area
 - g) any other information which will aid in evaluating the proposal

If the proposal for subdivision will involve the lands or legal interests of a party or parties other than the applicant, the following information may be required:

- a) The existing holdings of the other party or parties must be clearly indicated on the Draft Plan.

The Application will be forwarded by the Planning Division to all or any of the following Divisions or agencies for their information or comment as necessary:

- a) The Area Municipality
- b) Water and Waste Division
- c) Street and Transit Division
- d) Parks and Protection Division
- e) The area School Board(s)
- f) C.M.H.C.
- g) City Hydro or Manitoba Hydro
- h) Manitoba Telephone System

While the application is with the other divisions or agencies, they will be expected to contact the applicant directly for any additional data that may be required to give a fair evaluation to the application.

When all the comments of the Divisions and agencies have been received by the Planning Division, the Developer will be notified by the Planning Division of either of the following actions:

1. If a policy decision is necessary, the proposal will be submitted to the Planning Committee of Council. The decision of Committee may be conditional.
2. If no policy decision is required at this time all available information will be given to the applicant together with instructions on preparing the Application for Approval and a listing of supporting data necessary. This is not a form of approval but an assistance to the developer to prepare his submission to Committee, then Council for Approval.

Applications for information which will be sent to Planning Committee as described in 1. above are those which require a policy decision, e.g. should development be allowed in isolated or relatively distant area; the development of a large tract of land which will substantially change the normal development pattern; or one that will require substantial capital outlay by the Corporation or other agency.

2. Application for Approval

This is the final process for the approval of a plan for registration. By this stage the plan should have been thoroughly reviewed and any changes or revisions necessary will have been carried out by the applicant.

The application for Approval will be made to the Planning Division in the following form:

1. Two copies of a letter of transmittal by the owner or his agent, containing:

- a) Legal description of the land to be subdivided.
 - b) The name of the Manitoba Land Surveyor surveying and preparing the plan of subdivision.
 - c) The name of the engineer or engineers responsible for the design of services (sewer, water, road works, as the case may be).
 - d) The name of the legal owner of the land involved and the written consent of the owner to the subdivision of the land.
2. Two copies of general engineering drawings for the area. Detailed drawings will be required at a later stage of development, these can be submitted directly to the director of Water and Waste, at his request.
 3. If road works are to be carried out by the Developer and involve metropolitan roads, or future metropolitan roads, two copies of the general engineering drawing for these works with the provision that detailed drawings be submitted directly to the Director of Streets and Transit, at his request.
 4. Three original drawings on linen, or two original linens and one photo linen of the detail plan of subdivision prepared by a registered Manitoba Land Surveyor, indicating the area of subdivision outlined in red.
 5. A maximum of ten prints of the above plan of subdivision.
 6. If necessary one copy of the plan of subdivision indicating the class and location of zoning required for this subdivision proposal. (any necessary Zoning By-laws will be prepared by the Corporation).
 7. If the plan will involve cancellation of an existing plan and the vesting of the property of another party other than a co-applicant:
 - a) Two copies of the applicant's affidavit stating that the other party or parties have full knowledge of and consent to his actions.

- b) Two copies of the final plan of subdivision indicating the existing property of the other party or parties.
8. Any other material necessary for the evaluation of the subdivision.

Copies of the application and any supporting material will be circulated to all affected Metropolitan Divisions and outside agencies for their final report.

Based upon these reports, the Director of Planning will submit his final report to the Committee of Planning for Council.

The Planning Committee will recommend that Council approve or reject the subdivision by resolution and approve any Zoning By-law necessary, instructing the Director of Planning to certify the three linen plans as follows, if approved.

Approved by the Metropolitan Corporation of Greater Winnipeg

Resolution No. _____

Director of Planning

_____ day of _____ 19____

The Resolution of Council approving any Plan of Subdivision for registration will be conditional upon:

- a) the Area Municipality having been satisfied as to the payment of all outstanding taxes on the lands in the plan.
- b) any other conditions deemed necessary to achieve the registration of the Plan of Subdivision.

The applicant will then be informed of Council's action by the Secretary of the Corporation.

The Director of Planning will return to the applicant the three original linens, uncertified or certified, as instructed by Council.

If cancellation and the vesting of property is involved, any legal affidavits and agreements other than those specifically requested as part of the application will be returned to the applicant if they have been submitted as supporting evidence. The applicant will be expected to deal directly with the Municipal Board and supply them with all necessary documents and material.

If the linen plan is approved by the Metropolitan Council and the Municipal Board, or does not need to be submitted to the Board, the applicant will then deposit the plan for registration in the Land Titles Office.

These linens will be distributed as follows upon registration:

- | | | |
|------------------------------|---|--------------------|
| 2 originals | - | Land Titles Office |
| 1 original or
photo linen | - | Municipality |

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