

A RESIDENTIAL DEVELOPMENT FOR FORT GARRY, MANITOBA

A Thesis Presented in Partial Fulfillment of the Requirements for the Degree of Master of Architecture (Community Planning) to the Faculty of Graduate Studies and Research, University of Manitoba.....April, 1962

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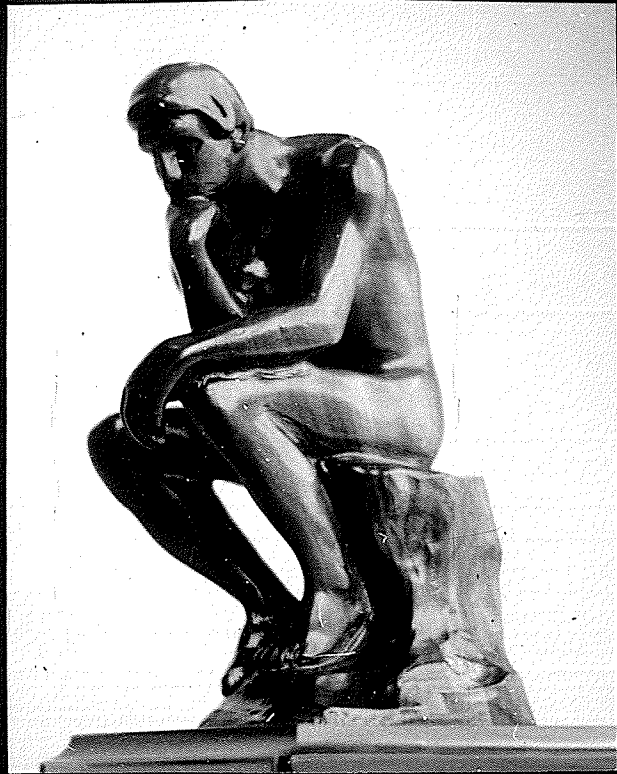
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*Philosophy for Planning*

(I) INTRODUCTION.

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Fort Garry, a Suburban Municipality of Metropolitan Winnipeg, is situated approximately four miles south of the downtown area of the City of Winnipeg. Its close proximity to the City, and to the other municipalities of this Metropolitan complex,\* dictates that a review of any proposed development in Fort Garry must be undertaken with reference to the complex as a whole, and not merely to Fort Garry "in vacuo." For not only do the various municipalities form one single unbroken urban mass - they are, in reality, mutually interdependent, economically, politically and socially. The only real division that exists is one of a purely technical nature: that of local administrative autonomy, to ensure the continual safeguard of communal interests.

Projecting this network of relationships still further, Metropolitan Winnipeg is but one of

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\* St. Boniface, St. James, St. Vital, East Kildonan, West Kildonan, Transcona, Charleswood, North Kildonan, Brooklands, Assiniboia, East St. Paul, West St. Paul, Tuxedo, Old Kildonan.

a world-wide community of large cities. They are all alike in that they exist to serve the basic essential requirements of "civilized" living to those that live in them. This common purpose breeds common characteristics, modified only by the difference in geographical and regional context in which these cities exist. Superiority of location naturally enables some cities to be further advanced than others.

But one unique characteristic, never encountered previously in the history of city building, seems to be ever present in Twentieth Century population and urban growth. This is the seemingly unending rate of their growth, resulting in what is so aptly described by some critics as "The Exploding Metropolis."

Modern progress in the field of medicine and social services has helped significantly in the lowering of death rates due to famine, disaster and pestilence. The balance that Nature had provided to restrict and control population growth was upset,



and world population figures rose dramatically in the Twentieth Century.

While this has proved to be an unending source of frustration to the process of government and planning in the less affluent countries of the world, in Canada, it has been an indispensable tool in her economic development. For although Canada is the third largest country in the world, she ranks only twenty-seventh in terms of population. The relative imbalance between vast unexploited natural resources and a small population has always served as an effective restraint to the full realization of Canadian economic potential.

A young developing nation, Canada has in fact found it necessary to accelerate population growth beyond the rate normally achieved, and to this end, government policy has always tended towards the encouragement of larger Canadian families, and a vigorous immigration policy. This is in contrast to birth control measures and closed door policies practiced by other nations.

Urban growth in Canada was given further impetus by rural depopulation, which occurred as a result of technological improvements in farm production methods. The displacement of so many farm workers caused a mass population movement from a hitherto rural to an urbanized society.

While it is true that the nett result of this rural depopulation in Canada represents an overall loss by the Prairie Provinces to the more developed areas of Ontario and British Columbia, it is equally true that the Prairie urban centres have benefitted as well.

To the physical planner, such population increases have to be translated into more homes, shops, schools and factories, roads and railways, essential services, and the multitude and complexity of tangible (and often intangible) necessities that collectively contribute towards the shaping of an environment for modern living. This thesis is concerned with only one aspect of physical planning;

namely, the creation of the domestic environment of the city.

The purpose however is not to make any quantitative analysis of the rate of growth that Metropolitan Winnipeg has experienced in the past, or will be experiencing in the next few decades. This specialized field of research has been thoroughly covered by various planning agencies from time to time. It is significant that the results of their investigations have always justified the evaluation of the growth of Metropolitan Winnipeg with the concept of " The Exploding Metropolis."

What will be attempted is a qualitative analysis of the domestic environment of the city, from the point of view of the planner: to examine how it has evolved; how satisfactory it is at present; and, if possible, what improvements can be made for the future. The results of this examination are therefore not necessarily restricted in their application to the chosen site in Fort Garry, Manitoba. It was chosen at random, and serves merely as an experimental model to illustrate the planning principles.

Being a qualitative analysis, it is, like other philosophical theses, a denunciation of accepted standards, and an outcry against the conditions engendered in society by these standards. It condemns the present pattern of urban sprawl, and the effect that it has on social and human values for the present and for future generations. It condemns the shortsighted public policy of reckless spending for today, and not of wise investment for the future. It points an accusing finger at the urban blight that is a heritage to us from the previous generation, and at the slums that we are already building in our suburbs, as our legacy to the following generation. It warns too that the problems of social rehabilitation and urban renewal will multiply the longer we delay the enforcement of effective countervailing measures to combat the forces that seek to perpetuate these social diseases of urban growth by their very exploitation. It is in short, an attack on current social attitudes, and the obsolete values that society has, in its apathy, accepted as its guiding principles.

However, recognizing that it is both impossible and undesirable to inject and impose artificially any new planning philosophy on a democratic society, this thesis seeks only to expound, in the hope of acceptance. It does not dictate a new way of life to society - it is not a blueprint for Utopia.

Believing in the power of persuasion, it hopes to add its share to the total planning philosophy that is slowly but surely reshaping the thoughts and action of men. It does not claim any greater status, except that it contributes but one small drop to the mounting ocean of opposition and criticism, levied by critics, philosophers, technicians, administrators and private citizens at the present course of urban growth.

(II) THE PROBLEMS OF URBAN GROWTH.

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What is wrong with modern cities, particularly those on the North American continent? This is one question which defies simple diagnosis and straight-forward answers. For cities are living and vital organisms, growing with and reacting to the influences and stimuli that are exerted on them by the society that built them. These influences are many and varied in their action, and complicated in their reaction, so that it is impossible to pinpoint the cause of any defect to any one source. One can only review the background behind their growth, in the hope of gaining an overall balanced outlook on the problem. In the inexact science of human relations, there can only be many truths, and many half truths.

There are however, some things that society cannot deny. No one can deny that cities are undesirable places to live in today. Nor can anyone negate the awful truth that filth, disease, poverty, squalor

and unbelievable human degradation exists in the slums and blighted areas side by side with the wealth and ostentation of modern commercial and business districts. One cannot, in all honesty, say that the plague-like spread of urban deterioration is not a cause for alarm. Indeed, it seems that every suburb, however remote it may be at present, is in danger of being eventually swallowed by the relentless advance of the creeping blight.

Fatalists all, the citizens accept the decay and deterioration of their cities as "The Inevitable Death" of all organic things. Not knowing, and perhaps too apathetic to care, they sit back and watch its progress with occasional mute anxiety. Those who can afford to escape, flee to the greener pastures of the new suburbias that are being built further away from the decaying and dying heart of the mother-city.

These refugees are ever on the run. Defeated before the battle is begun, they are unwilling to stay behind, make a stand to preserve what they have built,

and try to control and check the cancer that is eating away at the very fabric of their existence.

Waste-makers all, they discard the old for the new, leaving behind the empty shell of a community, that will soon be lost in the anonymity of a slum. Creeping suburbia is indeed matched by creeping blight.

This contradiction between progress and deterioration is a constant dilemma facing planners. It is more so in the affluent North American society, where progress, and consequently decay, is all the more spectacular. Americans are ever striving to increase their personal standard of living. There was a time when scarcely any but the wealthy lived in suburbia. A home there was a desirable goal. Now, it has become a social imperative.

The private automobile, packaged deals, hire purchase and mortgage loans, built-in sanitation and power, telephones, T.V., and supermarkets all contribute towards the acceleration of the exodus



from the cities and the threatened suburbs by the rich, and the status seekers. Their fears, hopes and ambitions are all reflected in their desire to escape and find their Utopia in a suburban house and garden.

Nor were businessmen slow in exploiting this status symbol of North American society. The picture of a typical American family, living a typical American life, in a typical American community is well known. With the mass medium of modern advertising, this image has been glorified, and consumers' habits have been subconsciously shaped to reflect it faithfully.

The morality of this economic exploitation of society by businessmen may indeed be questioned when one considers the true intent, and the social consequences of it. It cannot be justified merely by the excuse that it is satisfying the needs of modern society. For in an artificially induced high standard of living, people are encouraged to live beyond their means for the time being. They cannot possibly maintain

that standard, and when this happens, decay sets in. Therefore the market cannot be said to reflect the real needs of society.

Mass indoctrination of the consumers' market to satisfy economic ends, has far-reaching effects, not only in North America, but throughout the civilized world. Modern communication has spread the picture so vividly that they too are patterning their needs and desires on the image of this " typical American family."

How true to reality is this picture? Based upon Hollywood standards, it is unfortunately only true for a selected few. For the majority who hope to emulate this image, reality and disappointment come quickly, for it is only an illusion. Once the chase is off, having been successfully wooed, wined and dined by the salesmen; and once the honeymoon and glamour of moving and settling into an imaginary dream-home is over; romance is ended in the cold light of the morning after. For suburbia is far from the Utopia it claims to be.

Traffic jams and inefficient public transport, inadequate highways and erring pedestrians, frustrations and delays, frayed tempers and dented fenders, wasted time, money, energy and effort. This is the daily lot of father, commuting to and from his place of work. In his private automobile, the symbol of his independence, he feels as free as a sardine in a tin can.

In contrast to this movement (or rather, lack of it) mother's life is a dull routine, devoid of the human contact which she, as a social animal, so obviously needs. For suburbia, with its population spread out so thinly, is a cultural and social desert. It cannot be otherwise. Without an effective demand, there are no thoughtful philanthropic commercial enterprises to provide those nodal points, where she, and others of her kind can come into contact during the course of their daily routine.

There are no nearby drugstores, and convenient "shop round the corner" where they can meet and gossip in an intimate atmosphere. The gleaming supermarkets, removed and aloof out on the highways

and inhuman in their streamline efficiency, cannot offer this opportunity.

In the suburban house and garden, symbols of her independence, the housewife has found the soul destroying solitary confinement of the prison cell. How she envies her husband for his daily escape to the excitement and vivacity of the city! How she envies the children for the companionship they find in their school life!

For both husband and wife, P.T.A. meetings, bridge parties and insipid afternoon teas, with people that have very little in common with them, can be very trying indeed if carried on without any variation "ad nauseum." More often than not, neither husband nor wife have any other alternative in the sterile atmosphere of suburbia.

Opportunity to pursue individual interests, in such quantity and variety to satisfy each and every need and taste, can only be economically catered for in a more urbanized society, and not in a suburban

one. The luxury of isolation is something that only the rich can afford to enjoy.

This is what is wrong with modern cities! In the process of mass suburbanization, cities have lost their very lifeblood and source of vitality; urban renewal programmes in the wake of the more powerful spreading blight and decay have had little to no effect in changing the total picture of urban deterioration; already weakened, the mother-city grows progressively weaker, and more inefficient in providing for the needs of her runaway offsprings.

And all this for a Utopia that never was, and never will be. The fetish of the house and garden has been stretched to an illogical absurdity. When the dream of the "typical American family" is multiplied a million fold, the result can only be a nightmare of mass produced uniformity and monotony.

"Already, huge patches of once green countryside have been turned into vast, smog-filled deserts

that are neither city, suburb nor country, and each day - at a rate of some 3,000 acres a day - more countryside is being bulldozed under. You cannot stop progress, they say, yet much more of this kind of progress and we shall have the paradox of prosperity lowering our real standard of living." \*

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\* William H. Whyte Jr., "Urban Sprawl", The Exploding Metropolis, (Doubleday & Company Inc., New York, 1958), page 133.

(III) A REAPPRAISAL OF POLICIES.

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It has so far been established that the present trend of urban development is undesirable. If cities are to continue in their growth, and this is inevitable, then clearly some programme must now be formulated to prevent the present trend from repeating and perpetuating itself for the future.

This thesis therefore recommends, as the first step, the re-vitalization of the blighted and wasted areas at the heart of the cities. More ambitious and vigorous redevelopment programmes are needed, not only in the initial physical re-building stage, but also in the subsequent re-education for rehabilitation, management and maintenance of the projects.

There are many good examples of this sort of redevelopment work in Canada, particularly in the Toronto area where urban growth has been the

most intense, and the problem consequently the most acute. The only criticism that can be levied at these projects is the limited nature of their operation. It is however not the fault of the planners. It was a limitation forced on by the ever chronic shortage of public funds for such purposes. This is an age of individual affluence and public poverty!

The result of such limitations has been that these redevelopment projects have had very little effect in improving the total urban environment. The scale of future redevelopment operations is therefore very important if significant progress is desired in the field of urban aesthetics.

Remedial measures in themselves are not sufficient for the elimination of any disease. Preventative measures are necessary to prevent its recurrence. Therefore concurrent with the attack at the core of the cities, further spread of the present pattern of low density of middle income residential developments at the fringes of the cities must be stopped. The wasteful space-eaters of indiv-



individual houses on individual lots must be replaced by the more efficient and more economical forms of collective housing, such as row houses, duplexes, terrace blocks and apartment buildings.

Land so freed from the individual lots can be combined into larger green areas, which will allow greater opportunity for effective landscaping and more visual beauty and amenity to the residents of the surrounding areas. Using such elements of design - the variety of larger dwelling units, landscaping, plus creative planning - the nett result will be an elimination of the visual, cultural and social monotony associated with the present pattern of middle class suburbia. Let us humanize living for the middleman!

There will undoubtedly be much suspicion and opposition to this new planning policy. Tradition, even if proven retrogressive, dies hard. Conservatism in accepting anything new is further augmented in this case by the bad reputation that previous attempts at "collective housing" have created

in the eyes of the public. As a result, there is today, a certain stigma associated with collective housing, and those that live in them.

While such public suspicion is perfectly justified in view of the low standards set by these early attempts at collective housing, condemnation of the whole field of collective housing on the basis of a few bad examples is certainly not justified.

One has only to study the recent developments along these lines in England and some of the European countries to see the success of this type of housing. There the land is at a greater premium, and necessity, being the mother of invention, has resulted in greater advance being made in this field by the European planners.

Much has been written on the ways and means of introducing collective housing to the American public. In almost every case, it has been suggested that the terminology be changed. But if

this is meant to be a way of deluding the public; of disguising the same product behind a more glamorous package, then it is to be deprecated as gross misrepresentation to exploit the public. It is not a product we wish to sell - it is an idea.

Success in introducing new planning ideas in a democratic society can, and should only be achieved by democratic means. The example of the success in the propagation of ideas and impressions on society for the purpose of business exploitation can indeed be emulated by planners.

We must however be more honest with the public. The reasons behind the proposals, the advantages as well as the disadvantages, and the ultimate aims and purpose of the ideal must be presented in all honesty to the public. For it is only by their democratic approval that such ideals will be realized.

(IV) A STATEMENT OF THE PROBLEM.

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In the light of what has been said, what then is the future of suburbia? This is a question which vitally affects the logical evolution of this thesis. For the chosen site in Fort Garry, situated as it is on the fringe of a Metropolitan Area, is true suburbia.

If we are at all true to ourselves, any proposals for the development of the area must reflect the basic philosophy announced in the earlier part of this thesis.

It is therefore proposed that the site be developed in line with the concept of the true suburbia, and not as an extension of the suburban sprawl of Metropolitan Winnipeg. The amenity of a house and garden and true isolation here will only be achieved at a price that only the rich can afford. It is the best built-in insurance policy to guarantee the perpetuation of these virtues in the face of creeping blight.



*Survey for Planning*

(I) THE SITE IN ITS METROPOLITAN CONTEXT.

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The site of the proposed development, as shown in the accompanying figure 1, is approximately seven miles south of the heart of the City of Winnipeg. It is basically a highway map, \* used to indicate the excellent road links that the site has with the other areas of Metropolitan Winnipeg.

To the west of the site is Route 75, more commonly known as Pembina Highway. This is the major North-South axis of Winnipeg, and the point of entry to the City from the Canadian - United States border at Emerson, some sixty miles south of Winnipeg.

To the south of the site, running in an East - West direction, is the Trans-Canada Highway Metro Winnipeg Bypass, commonly known as Perimeter Highway. When complete, this highway will form a

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\* Province of Manitoba, Highways Branch, "Official Highways Map", (R.S. Evans, Winnipeg, 1961).

complete ring road around the Metropolitan area of Winnipeg.

Perimeter Highway however is a high speed, limited access road, and consequently direct access from the site onto the Highway cannot be expected. The clover-leaf grade interchange structure between Pembina Highway and Perimeter Highway is so close to the site that virtual direct access may be said to exist in reality.



FIGURE 1 ~ THE SITE IN ITS METROPOLITAN CONTEXT.



## (II) THE SITE IN ITS IMMEDIATE ENVIRONMENT.

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The shape of the site for the proposed development, as shown on the accompanying figure 2, is irregular, and is demarcated by the following features:- the western and southern boundaries of the site are formed by Pembina Highway and Perimeter Highway respectively. These have already been described in detail in the previous chapter.

At the intersection of the two highways, there is a clover leaf grade-interchange structure. A portion of the site in the south-west corner has therefore been vested in the Provincial Government as part of the land required for the construction of the interchange structure.

The eastern limit of the site is formed by the Red River, a perennial watershed which flows in a northerly direction, draining the large hinterland of North and South Dakota and Minnesota in the United States, to Lake Winnipeg in the North of Manitoba. The Red River is subject to periodic spring

inundation of the banks and surrounding countryside, which can be quite widespread and serious in view of the extreme flatness of the land, and poor drainage qualities of the soil. The last serious flooding of the Metropolitan area occurred in 1950.

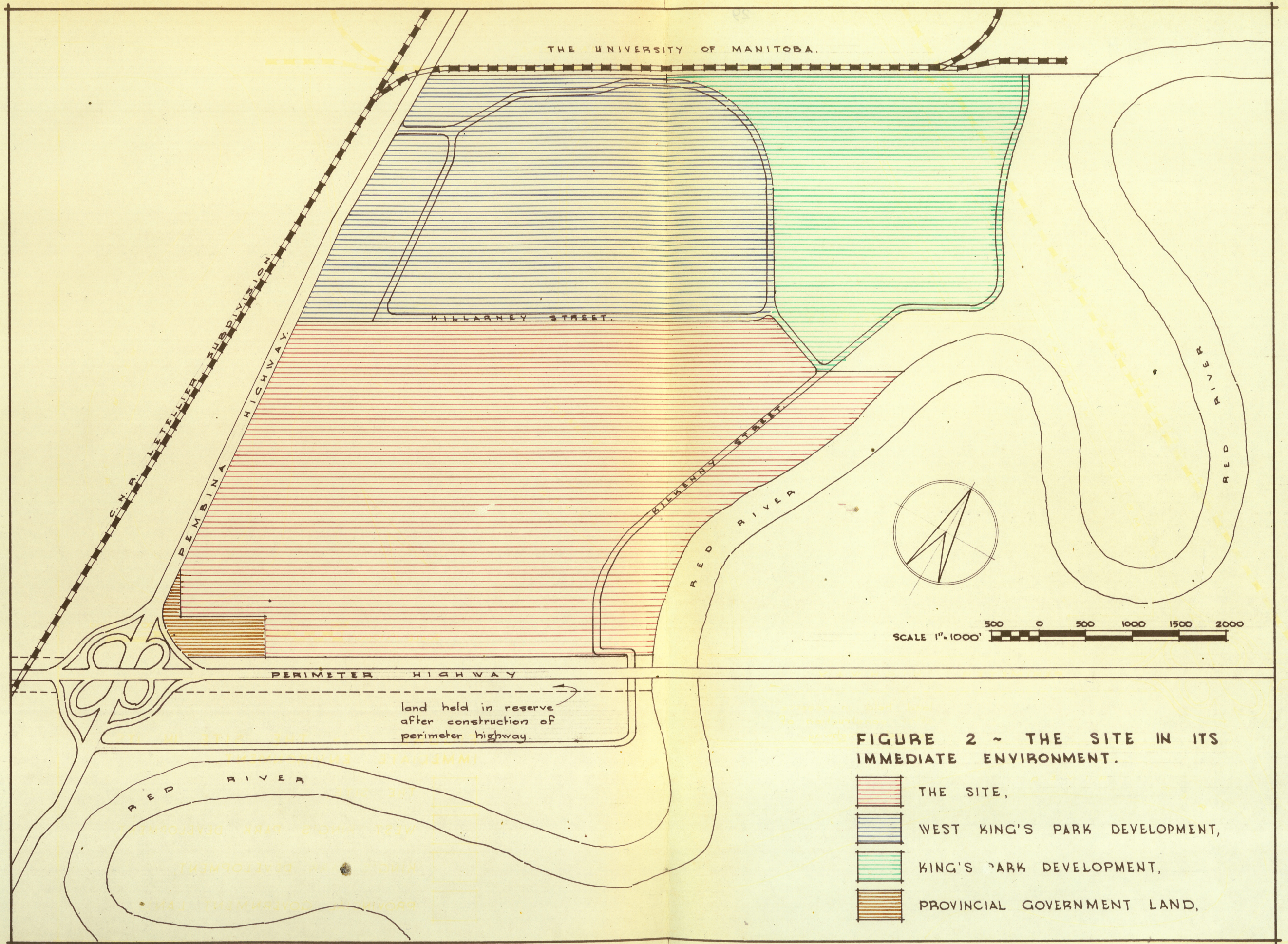
Very little can be done about it locally, for this is a problem which requires planning on a regional scale, if it is to be at all effective. The proposed Federal-Provincial Floodways Project is a step towards this direction, and when complete, Metropolitan Winnipeg, and more specifically, this development site, will be virtually immune from the danger of these periodic floods.

Parallel with the Red River, some 600 feet away from the river bank, is an existing road known as Kilkenny Street. This is linked with the existing major road system of King's Park in the north, and by an underpass beneath Perimeter Highway to a sparsely developed residential area beyond the highway in the south.

The northern limit of the site is delineated by Killarney Street , an existing boundary road of the residential developments to the immediate north of the site. These are West King's Park in the north-west, and King's Park in the north-east. Part of the latter has already been built, while the former is still in the planning stage.

Plans of these developments are available, and the implications of the proposals contained therein, especially insofar as they affect the main street pattern of the proposed development, have been given due consideration.

The total area of the site so described is approximately 440 acres.



(III) DETAILED DESCRIPTION OF THE SITE.

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(A) SOILS:

The soils of the area are surface deposits of clay and silt, as much as 60 feet deep, over a geological base classified as "Stony Mountain formation"\* of limestone, dolomite and red shale. These deposits are black in colour, and extremely fine textured, resulting in low water permeability and poor natural drainage.

The soils have been classified for agricultural purposes into three distinct types:- the Riverdale soils, the St. Norbert Clay and the Osborne Clay.

The Riverdale soils are the highly fertile alluvial deposits found on the terraces and flood plains of the rivers in this area. Their texture range from sandy loams to silty clays. They are highly prod-

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\* Manitoba, Department of Industry and Commerce, "Economic Atlas of Manitoba," (Stovel-Advocate Press Limited, Winnipeg, 1960.) page 8.

uctive soils, and may be used for the production of all classes of agricultural crops. They are especially suited for market gardening and small fruit culture. They will also support a wide variety of utility and ornamental trees. These soils may be rated good or excellent, with few natural problems except that the river terraces are subject to floods during the spring.

The St. Norbert Clay is the wooded associate of the Red River association. It occurs chiefly along the river channels, where woodland invasion of prairie has developed to the greatest extent. The vegetation of these soils is predominantly oak with some aspen.

The Osborne Clay is the meadow type soil associate of the Red River association. These soils have been developed on flat or depressional topography under meadow or swale grass vegetation. The top soil, 3 to 6 inches thick, is rich in organic matter, granular and friable when moist, lumpy and hard when dry, and usually alkaline in reaction. A lime carbonate accumulation, sticky and plastic when wet may or

may not occur immediately below this. The subsoil is similarly plastic and sticky when wet, but very hard when dry.

(B) TOPOGRAPHY:

Insofar as topography is concerned, the general classification of the area falls under that of flat to gently undulating lacustrine (lake) plains, with very low relief. In this case it is a matter of 4 feet between the highest and the lowest contour of the developable site. The latter is that portion of the site beyond the slope of the river bank. There is an average of 30 feet between the top of the bank and the level of the water during the summer months.

(C) NATURAL VEGETATION:

The natural vegetation classification of the area in which the proposed development is located falls under that defined as "sparsely wooded grassland."\* The virgin areas of the site are therefore covered with

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\* Manitoba, Department of Industry and Commerce, "Economic Atlas of Manitoba," (Stovel-Advocate Press Limited, Winnipeg, 1960.) page 20.

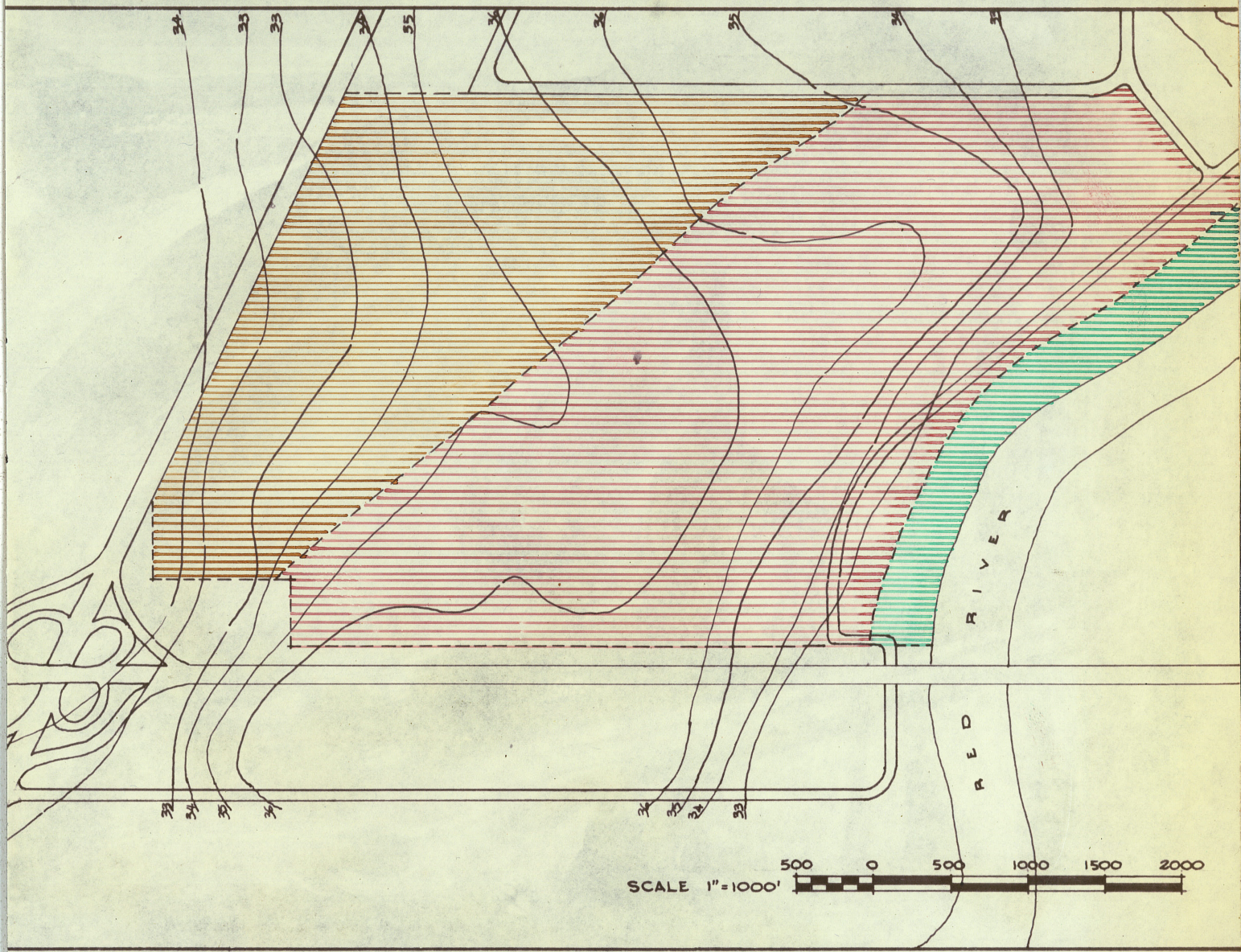


FIGURE 3 - SOIL AND  
CONTOUR MAP

- RIVERDALE SOILS.
- ST. NORBERT CLAY.
- OSBORNE CLAY.



an abundant layer of grass, with large patches of shrubs and trees, particularly along the river bank and the area immediately adjacent to it. The natural disposition of trees and shrubs over the site bears a strong relationship to the variation in soil type over the site. The accompanying figure 4 shows the location of the vegetation, and a comparison of this with the previous figure 3 will illustrate how strong this relationship is in reality.

The names of the shrubs are Saskatoon (Amelanchier), Silverberry (Elaeagnus), Snowberry (Symphoricarpos) and Dogwood (Cornus Stolonifera). They are most profuse along the river bank. Further away from the river are the larger trees, such as the Aspen Poplar (Populus Tremuloides), Bur Oak (Quercus Macrocarpa) and the Willow (Salix Sp.), many of which are well developed and extremely attractive.

It is the recommendation of this thesis that as many of the larger trees as possible be retained in the development, and not cleared away as is the common practice with most subdivision develop-

ments. The example already set by the existing development in King's Park, where many of the original trees have been retained, should be emulated in this development.

The trouble and extra care required in avoiding damage to these trees in the initial survey and subsequent site development will be well worthwhile in view of the additional amenity that the whole area will gain merely by the retention of these trees. The extra development cost involved will be recovered by the higher prices that such sites can command.

(D) EXISTING SITE DEVELOPMENT:

Existing development on the proposed site is extremely spasmodic, occurring in three different ways. The first is a very scattered and extremely unsightly ribbon development along Pembina Highway, consisting of some houses, many of which are very badly run down, a few shops, sheds and workshops, and the usual ugly clutter of scrapped automobile bodies that seem to be a traditional feature of the

modern American rural landscape.

The second is a similar scattered and erratic location of small bungalows within the site. These are mainly along the west side of Kilkenny Street. Fortunately there are only three or four of them at present.

Lastly, there is a more attractive riverside residential retreat, set in clearings in the thick underbrush just above the steep rise of the riverbank. These are for the extremely wealthy. The natural site, with its lush vegetation, offers excellent opportunity for utmost privacy in these hermits' retreats.

The remainder of the site is farmed, or left still covered by its natural cover of prairie grasses, shrubs and trees.

Insofar as the developed portions are concerned, there seems to be a complete lack of coordination to any master plan for the area. The "Metes and Bounds" system of land transfer, whereby small pockets of land can be portioned off and sold for

minor individual developments, without any co-ordinated planning other than a restriction to the number per farm lot, is partly to blame for this erratic development.

In practice, these existing developments, however awkward, ugly and contrary to good planning principles they may be, will have to be accommodated and "fitted in" to any proposals for an overall development of the area. It is extremely doubtful whether any developer will incur the extra expense of removing those already entrenched in the area merely to satisfy planning ideals. A compromise policy is the only course of action where economic considerations are of paramount importance.

However for the purpose of this thesis, where one can afford the academic pursuit of planning ideals, it was decided to ignore the present undesirable development, and the site be regarded as a virgin tract of land that is waiting for a comprehensive development plan.

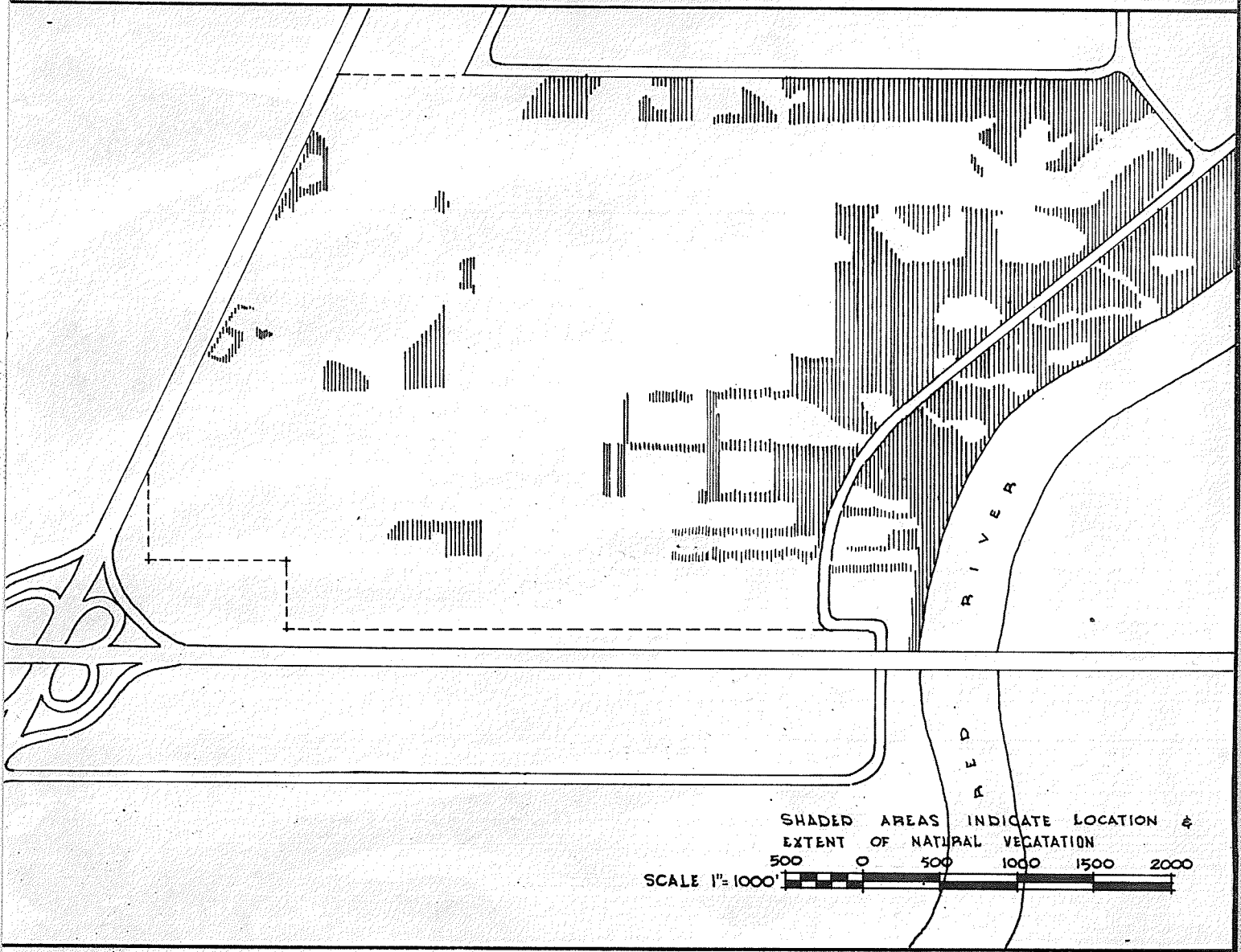


FIGURE 4 ~ NATURAL VEGETATION MAP

(IV) SERVICING THE SITE.

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(A) DRAINAGE:

The extreme flatness of the site, described earlier, does lead to drainage difficulties, but it is typical of the conditions to be found almost everywhere on the Prairie. Indeed, it is a problem which has to be faced if any building is to be undertaken at all.

A redeeming factor in this case is the close proximity of the Red River, which provides a convenient natural drainage outlet for the site. Therefore insofar as rainwater disposal is concerned, considerable savings can be anticipated by the short runoffs possible between the development and the river.

Sewage disposal, following the traditional pattern employed in the area of discharging directly into the river without any treatment, equally presents no problems. This does not signify approval of such a method of disposal. It is objectionable from the point of view of health and good neighbourliness to communities further downstream.

However, the problem of providing suitable treatment is one which can only be effectively solved by a central agency, such as the Metropolitan Government of Winnipeg. The implications of this is beyond the scope of this thesis. One can only strongly recommend an improvement and extension of the existing facilities in the City of Winnipeg to cover the whole of the Metropolitan area in the near future. Until such time, the individual municipalities lying outside the present network of sewage treatment facilities can only continue with the present practice.

In anticipation of such future changeovers, the separate sewer system is recommended for this development. While it does entail a certain amount of duplication in piping and equipment, it is felt that in the long run, the additional cost of such initial installations will be far outweighed by the expensive replacement necessary when treatment facilities are finally extended to the development. It is estimated that such extensions will be effected by 1986.\*

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\* Metropolitan Corporation of Greater Winnipeg, Development Plan Report No. 1, (Winnipeg, November, 1961)

For the present, the separate system does result in certain economies in the installation of stormwater sewers. More than one discharge point can now be provided, resulting in a considerable reduction in runoff lengths, trench depths and pipe sizes for the stormwater lines. Such economies do help in the alleviation of the total additional expense of the separate system.

Discharge of raw sewage from the development into the Red River is at present restricted by municipal requirements to one outlet from an existing 42" diameter sewer in the north-east corner of the site. This sewer line has been designed to serve the proposed development, King's Park, West King's Park and certain portions of the land west of Pembina Highway

(B) ELECTRICITY:

It is felt that the prevailing practice in Canadian cities of overhead wiring for the supply of electricity to the individual consumer calls for some re-examination from the point of view of planning. For the urban scene, resulting directly from this practice,





is far from satisfactory. Architects, and others who are concerned with urban aesthetics, have long recognized and condemned this practice, advocating instead the introduction and widespread use of underground wiring. But their outcry has never been strong enough to arouse sufficient public support. Indeed the North American public have by now become so accustomed to the sight of transmission poles and drooping lines, that they can no longer recognize them for the visual eyesores they are.

As a result, power supply companies have never had any serious cause to re-examine their policies and practices periodically to keep up to date with technological progress in other fields. Lulled into a feeling of complacency and mental inactivity, and indeed confident in their almost monopolistic position, suppliers have become stagnant in positive thinking and active research for the improvement of their services.

Indeed, they have even become hostile to any suggestions for improvement by other planning agencies. Their excuse has always been that underground wiring is neither a practical nor an economical proposition.

The warning of the possibility of increased rates due to technical difficulties caused by such non-conformity can only be regarded as the threat of an economic blackmail. The truth is that they have lost the initiative for improvement and all that they are now concerned with is the extension of their service. The quantity, rather than the quality, has become the prime objective. In an age of materialism, technology has indeed triumphed over the humanities.

Underground wiring is not an untried innovation. Nor is it an expensive one. It has had widespread application elsewhere in the world. The result has not only been a more aesthetic appearance to the urban scene - it has also been an achievement in the use of new technologies to serve mankind.

The slavish adherence to established norms, and the unwillingness to change and to experiment, can only be regarded as contrary to the very concept of progress. For true progress means more than the short sighted policy of satisfying immediate human wants. It must also look to the social consequences of the methods employed to satisfy these wants. For it must be remem-

bered that what is of interest to the public is not necessarily in the public interest.

Besides the inherent visual ugliness of the transmission poles and lines, this strict insistence on overhead wiring has had great influence in the shaping of subdivision designs, and consequently, the urban environment of our cities. Unfortunately, it is not a good influence. For by its very nature, it is an inflexible and demanding system, imposing such a rigid geometry on any design that one can hardly escape from the pattern of the grid iron, the rectangular, and their other permissible "modifications."

Guided by such negative considerations, subdivision designs have become little more than mechanical processes. The result of the widespread application of this can be seen in the monotonous, non-descript, and seemingly infinite checker-board pattern of North American suburban sprawl. The failure of suburbia as an environment for civilized living can indeed be partly blamed on this blind subservience to a technology. It is perhaps another instance of man

submitting himself to a technique instead of retaining his mastery over it.

One can go on at great lengths decrying the system and its results. Indeed, much has already been written about it by many other people. In Winnipeg, it is heartening to see that the crusade has at least some official support by responsible planning agencies, as illustrated by the following statement issued by the Metropolitan Planning Committee and the Winnipeg Town Planning Commission.

"It would be desirable from the viewpoint of appearance to have all such wires located underground, but due to the expense involved, it is acknowledged that such a programme of underground installations could not be undertaken all at once. It is suggested however, that an improvement programme spread over a period of years might be <sup>a</sup>feasible and would certainly be highly desirable. Where new installations are being made, it is recommended that wiring be placed underground wherever possible."\*

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\*Metropolitan Planning Committee-Winnipeg Town Planning Commission, Preliminary Report on City's Appearance, (Winnipeg, 1948), Page 25.

It is therefore the recommendation of this thesis that underground wiring for electrical services be employed throughout the proposed development as part of the total consideration for the provision and preservation of amenity in the development.

(C) TELEPHONE:

In view of the recommendation for the elimination of power transmission poles and overhead wiring in the development, the method of providing telephone service similarly requires some re-consideration. Here again, it is recommended that cables be buried underground, for similar reasons, and in the same manner as power supply lines.

(D) WATER SUPPLY:

There are no problems envisaged in the supply of adequate potable water to the proposed development. This merely entails an extension of the services which are already existing in the adjacent King's Park and West King's Park developments. At present, there is an existing 10" water supply main along Pembina Highway. As

development progresses in the area, further supply mains have already been proposed by the Fort Garry Municipality. The one, 14" in diameter, comes in from the north-west along Pembina Highway. The other, 10" in diameter, comes in from the north-east, cutting across the property of the University of Manitoba.

(E) GAS SUPPLY:

Similarly, no difficulty is envisaged in the supply of gas to the proposed development, other than a routine extension of facilities already available in the neighbouring developments along University Crescent in the north, and St. Norbert in the south.

(F) UNDERGROUND SERVICES:

Because all services are to be provided underground, a word must be said about the installation and maintenance of such services. The complexity of underground services demanded in the scheme requires greater technical proficiency in their initial installation. The location, special equipment and other relevant data of each and every service must be planned

ahead, standardized as much as possible, recorded accurately, and supervised carefully in the final installation to ensure compliance with these specifications.

Such accuracy in planning and recording is necessary to facilitate subsequent location of the underground services for future maintenance.

As a result, greater planning control must be retained by a central planning agency, in this case, the developer, to ensure co-ordination of all the specialists involved in the servicing of the site.

(G) BACKLANES:

All services will be provided by the major and minor streets, and the backlanes, so common in Canadian cities, have been eliminated entirely from the development. The reason is an aesthetic one; the very fact that these backlanes are the "back" portions of any development, and are supposedly hidden from the eyes of the public, does not encourage good house-keeping of them by the householders that are served.

by them. The result has been that these backlanes are untidy and unsightly passages, littered with garbage cans, difficult and expensive to maintain and police adequately.

While the current policy in Manitoba still favours the retention of backlanes for residential subdivisions, it is significant to note that this policy has undergone revision with time. The following recommendation by responsible planning agencies in Metropolitan Winnipeg is significant, "establishment of desirable standards as a guide to developing of new subdivisions providing for.....elimination of lanes except in the rear of property which may be used for commerce." \*

(H) THE ROAD PATTERN:

Looking at the existing framework of roads in and around the site of the proposed development, it can be seen that the site is bounded on two sides by

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\* Metropolitan Planning Committee-- Winnipeg Town Planning Commission, Summary of Recommendations, Comprehensive Plan Greater Winnipeg, (Winnipeg, 1950).



major highways, and on a third side by a river. Its boundaries are therefore clearly defined, and the possibility of it overflowing these original limits are very remote indeed.

It can be appreciated that this piece of land, even in its natural state, is clearly defined and therefore ideally suited for a development following the concept of a self contained residential neighbourhood.

Roads within the development are therefore purely local in character, designed to serve only the traffic generated by the development itself. As a result, considerable economies can be possible because of the consequent reduction in pavement widths and specifications, and the general lowering of standards of performance possible.

#### (I) PUBLIC TRANSPORT:

The role of public transport in a development of this nature is not a very predominant one. For even in the normal suburban development, at higher densities than the one envisaged for this site, public

transport is forever operating at a deficit because of lack of patronage. It would therefore be wholly unfair to expect an extension of municipal transport facilities into the proposed development. The most that can be expected is a transit route along Pembina Highway, to serve this and other developments south of the area.

This is in keeping with the basic concept of suburbia advocated by the thesis. For those that can afford to live in the development can well afford the provision of their own transport facilities.

(J) OTHER SERVICES:

Fire and police protection, health and medical facilities, and other large scale conveniences and services associated with urban living cannot, as such, be provided in the development itself. As part of the larger urban environment of Metropolitan Winnipeg, it will have to rely on the responsible municipality to provide these facilities.



(I) A GENERAL STATEMENT.

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The prelude to design is over - the stage is set, and now, a solution is required. The philosophy, announced in Section A, tempered by the conditions, outlined in Section B, must now be translated into practical reality.

Two solutions are presented. They are by no means offered as alternatives. Rather, they have been done to show the contrast that can exist out of a common basis and a difference in planning philosophies. Only by such means can some criteria for comparison be possible.

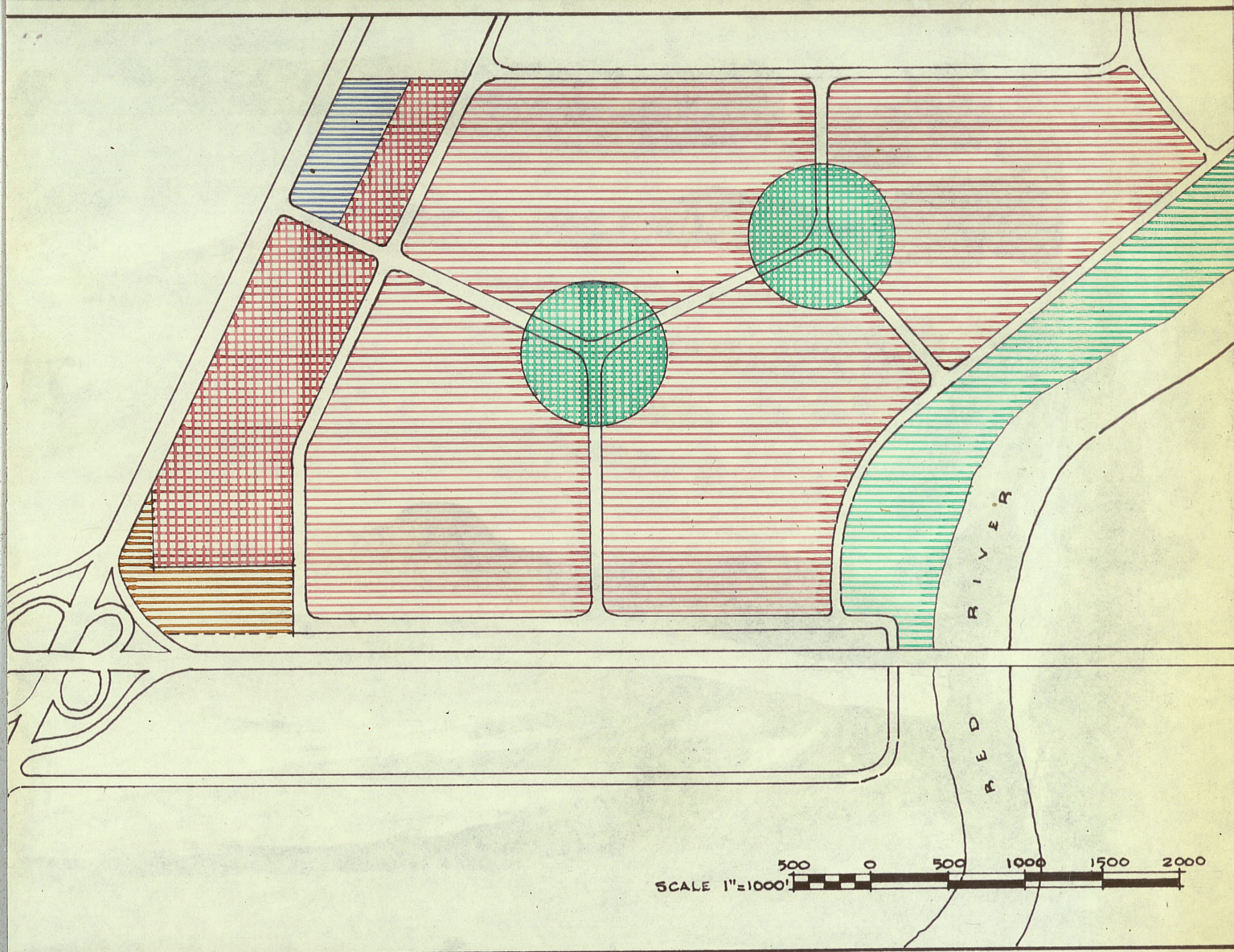
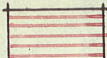


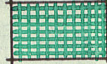




FIGURE 5 ~ ZONING MAP

-  INDIVIDUAL LOTS.
-  HIGH DENSITY RESIDENTIAL.
-  COMMERCIAL
-  COMMUNITY CENTRE
-  PUBLIC OPEN RECREATIONAL.
-  PROVINCIAL GOVERNMENT.

## (II) THE BASIC PATTERN OF DEVELOPMENT.

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Zoning of the site for development purposes has been undertaken with reference to the site conditions as outlined in the "Survey for Planning" portion of this thesis. The conditions have been analysed, and the results are diagrammatically illustrated in the accompanying zoning map (figure 5).

The steep slope of the river bank naturally precludes any sort of building development. Coupled with the fact that portions of it will be submerged with the rise and fall of the water level, it was decided that this area, and the land immediately west of it as far as Kilkenny Street, be dedicated to the community as a whole, and zoned as a public open recreational space.

It is proposed that the land so zoned be developed as one large riverside park, with formal and informal landscaping, golf course and other outdoor recreational facilities, club houses, picnic and barbeque areas, and provisions for boating and

swimming in the future, when rivers and streams in the area have been cleared of the pollution menace.

This is the area of informal community living, as opposed to the formal community centres of religion and education, located in the heart of the development, and as hereinafter described. Other more convenient neighbourhood parks will be provided in the scheme as and when required.

The financial loss to the developer of not utilizing this land as exclusive river lots has been realized, but it was decided that the interest of the community should have priority over the interests of a few individuals fortunate enough to occupy and monopolize such choice land.

It was felt that the whole strip of land bordering on Pembina Highway is not suitable for a normal residential subdivision because of the reduction of amenity caused by the proximity of the highway. Any attempt to provide the same facilities as land further away from the highway would only result in such land be regarded as a second class sort of development.

Accordingly, it was decided that the whole area between Pembina Highway and the extension of the first parallel collector street in the existing West King's Park development, be zoned for a high-rise or high density type of residential development. By concentrating the population in this area into larger residential units such as apartment buildings and row houses, land otherwise utilized for individual gardens can now be combined into one large park setting, in which such dwelling units can be located.

The extra amenity as a result of more widespread and more effective landscape treatment, will compensate for the loss of that caused by the proximity of the highway.

This proposal for some collective housing to be included in the development is not as far-fetched as it may appear at first glance. For it was felt that this type of communal living will appeal to some of the senior students and staff members of the nearby University of Manitoba. A large proportion of them are from overseas, with an already innate appreciation for the sophistication of communal living. They



will furnish the human component for this experiment in collective living in Metropolitan Winnipeg. If successful, it may well pave the way to the realization of the planning philosophies of this thesis.

Within the high density area, shopping facilities will find their optimum location. It is proposed that this be situated in the north-west corner of the site as a continuation of the commercial strip of the existing West King's Park development.

There is no intention of developing the whole Pembina Highway frontage as a ribbon commercial development. Therefore only sufficient shopping area as is required by the development itself, will be allocated as commercial.

The remainder of the site will be developed as a residential subdivision of individual sites. Major collector streets have been placed in such a manner as to break down this large area into four smaller parcels of land, designated A, B, C and D for reference purposes, and as indicated in figure 5.

At the intersection of these major streets, the formal public spaces are located. These are nodal points for the community, around which the schools and churches will be grouped in suitable landscaped settings.

The decision to concentrate these facilities rather than spreading them haphazardly throughout the development, was made in the hope thereby of creating a more concentrated, and as a result, a more vigorous source of formal communal living to the development.

The site is sufficiently compact to allow such tight concentration in the centre, and it can be seen that every site within the development lies within a half mile radius from these community centres.

There is no need to provide for industry or commerce as the economic basis <sup>of</sup> the community. For it is not supposed to be an economic self contained entity. As part of the Metropolitan area of Winnipeg, it will be linked inexorably with the economic life of the mother-city, and its role is purely that of a dormitory unit of that city.

### (III) THE ELEMENTS OF DESIGN.

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#### (A) THE ROAD PATTERN:

An important adjunct to the zoning pattern described in the previous chapter is the proper provision and location of roads to link the different parts of the scheme and make the whole development function efficiently as a unit.

Roads proposed for the development are of two categories, namely, major and minor roads. The latter are 60 feet wide, and provide service to the individual lots. These in turn feed onto the major collector roads which are 80 feet wide. They in turn, provide as direct access as possible to the points of entry to the development.

As stated previously, the main collector road pattern has been greatly influenced by that existing in the adjacent developments of King's Park and West King's Park. It was felt that some continuity of roadway, especially the major ones, will be in the interest of

all three areas. Furthermore, together they are not so large as to generate sufficient local traffic to the detriment of any one area.

Only one further point of entry for the combined development is proposed. This has been necessitated partly by the limited frontage onto Pembina Highway, the only line of discharge, and partly by the designer's wish to concentrate the major traffic within the development to the nodal points, and accentuate them by their very location. The proposed new point of entry is located at the southern limit of the area zoned for commercial purposes, on the western boundary of the site.

Again it is felt that the volume of traffic generated by purely local needs will be sufficiently low, and can be adequately handled by two points of entry.

In both major and minor road systems, the four way intersection has been avoided, and the three way intersection used instead. This is consistent with the recommendations of traffic engineers.

(B) THE COMMUNITY CENTRES:

There are two community centres in the development in which the formal processes of education and religion for the community are located. Two centres were provided because it was realized that the total estimated population of the area would ultimately require the provision of two elementary schools.

These centres are nodal or concentration points both in their abstract concept, and in their physical manifestation. For the major roads, the life-lines of the community, converge and concentrate upon these points, making the community ever conscious of their presence at all times.

It was decided to group the various elements around the intersection of the three roads, rather than off one side of it. In such a way, the passer-by must traverse the centre rather than bypass it, and he cannot but be aware at all times of the facilities existing there. The three sectors of land so provided will form sites for one school and two churches at each intersection.

(C) SCHOOLS:

The schools, as the educational element of the centres, get priority in the matter of site selection. The basis for this has been formed by the practical consideration of the stages at which the development will take place. Portion A will be the first area to be developed for the following reasons:- it is the nearest parcel of land to an existing development, and consequently the cost of installing new roads, services and other facilities will be least expensive in this area. All it entails is an extension of such services as and when required.

Consequently, there will not be any needless expenditure in the installation of services that are not required immediately. Further, it was realized that in the infant stages of the development of portion A, the population will not be sufficient to support a school of its own. It can however rely temporarily on the facilities provided by the adjoining development in West King's Park. Such an arrangement can only be temporary, for it does necessitate an additional strain on the existing facilities.

However, as portion A becomes filled up, a start must be made with the establishment of a school within the area, hence its location in this particular sector of the road intersection. This embryonic development will reach maturity when portion B is developed. The reasoning can be applied to the location of the school in the second community centre.

Insofar as space standards are concerned, there seems to be a general consensus of opinion among Canadian planners of a minimum of 5 acres for an elementary school site. This is the smallest area which can contain all school buildings, and outdoor recreational facilities forming part of the school's physical educational programme.

Such a school will serve a neighbourhood of 4,000 to 5,000 people, with an approximate school population of 360 to 450 pupils, providing for either grades 1 to 6, or grades 1 to 8.

(D) CHURCHES:

There are no set standards on the desirability

of sizes of church sites. The only assessment that can be made is on the basis of the expected size of the congregation. The following figures are the recommendations of the Conference on Church Extension, held in New York in 1953 by the National Council of Churches of the United States:-

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

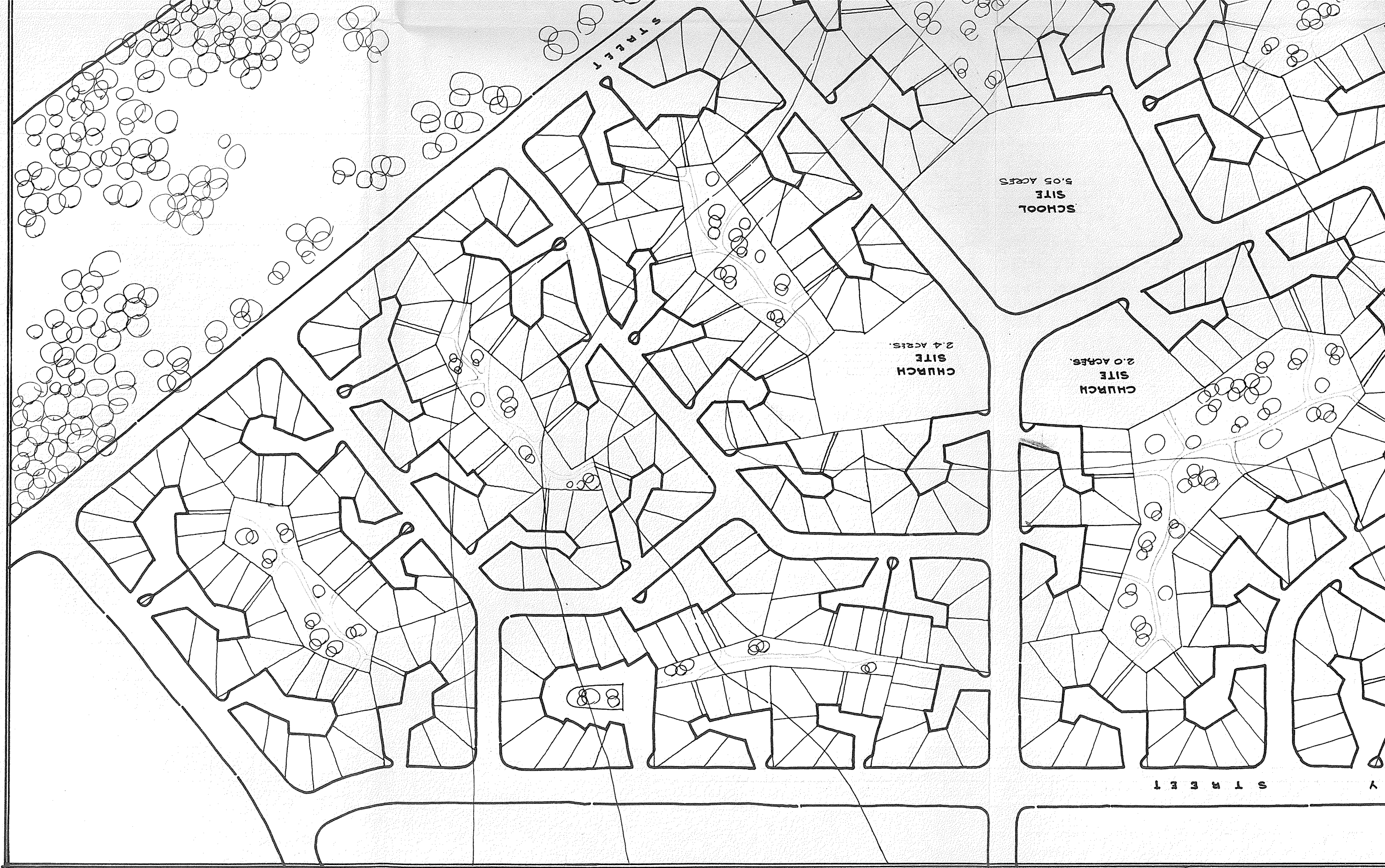
In view of the large number of church sites provided (four in all) in relation to the total estimated population of the development, the size of the church sites have been limited to about 2 acres each. This was considered more desirable than having a few larger church sites, since in Canada, there are many small congregations that must be catered for. According to the standards above, a total congregation of 1,600 to 3,200, or 20% to 40% of the total population can be catered for by the sites provided.

Parking facilities for these various activities will be located in treed parking lots attached to each site. Curb parking will not be allowed since it destroys the amenity of the area, as well as creating traffic hazards in the obstruction of sight lines.



(E) SHOPPING:

There are more definite standards on the desirable size of shopping facilities to be provided for a new residential development. In this case, these standards were adhered to, namely 10 shops, or the equivalent area thereof, for every 4,000 to 5,000 population that the shopping facilities have been designed to serve. In addition, off-street parking facilities for shoppers in the ratio of 1:4 or 1:5 ( the latter being the more desirable) must be provided, on or adjacent to the shopping site.



SCHOOL  
SITE  
5.05 ACRES

CHURCH  
SITE  
2.4 ACRES

CHURCH  
SITE  
2.0 ACRES

S  
T  
R  
E  
E  
T

S  
T  
R  
E  
E  
T

H I L L A R N E

COMMERCIAL SITES.

P E M B I N A  
H I C H W A Y

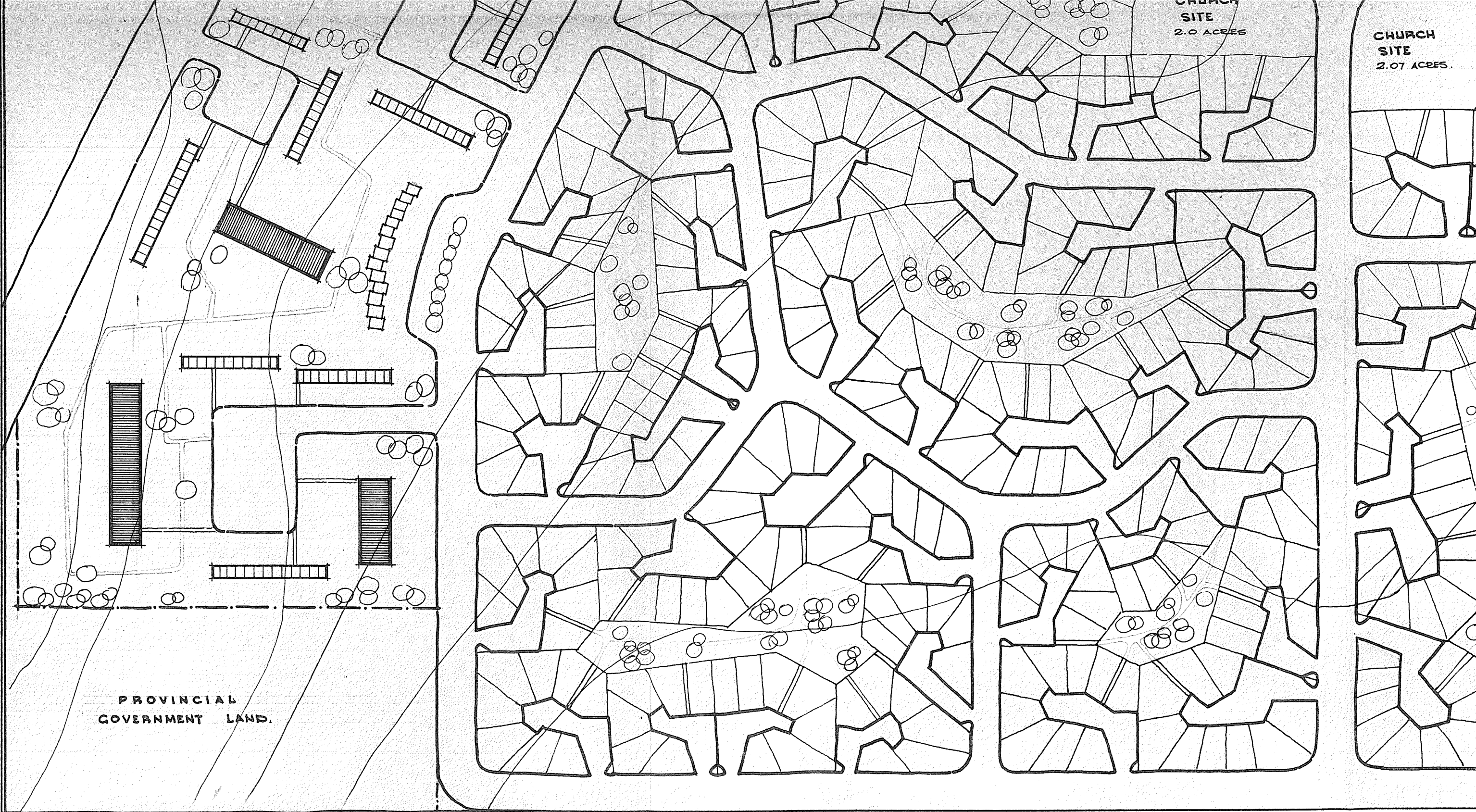
SCHOOL SITE  
6.9 ACRES

CHURCH SITE  
2.0 ACRES



CHURCH  
SITE  
2.0 ACRES

CHURCH  
SITE  
2.07 ACRES.



 APARTMENT BUILDING


 ROW HOUSING

FIGURE 6.

SCALE 1"=100'

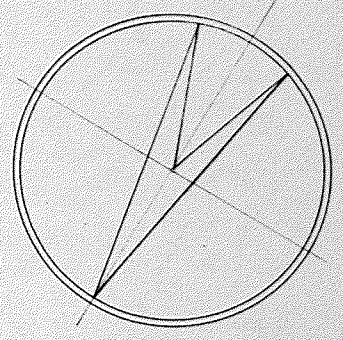
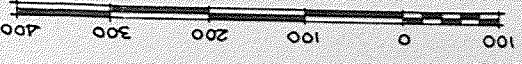




FIGURE 6.

DEVELOPMENT PLAN A.

#### (IV) DEVELOPMENT PLAN A.

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This is the first of the two development plans presented in this thesis. It is the one that represents the culmination of all the discussion, criticisms and comments that have preceded it, and is indeed the type of suburbia that is advocated for the future.

The subdivision layout employs a series of clusters around a central green core; the whole forming large blocks which resembles very closely the "super-block" concept advocated by the architect Clarence Stein. His proposals for the residential district of Radburn, New Jersey is shown in the accompanying figure 7. This was his answer to the enigma "how to live with the auto," or, "how to live in spite of it."

Radburn was an attempt to separate completely the pedestrian and the automobile, the latter being banned entirely from the heart of the superblock, and in so doing, ensure the complete freedom of the pedestrian within the precinct of the superblock.

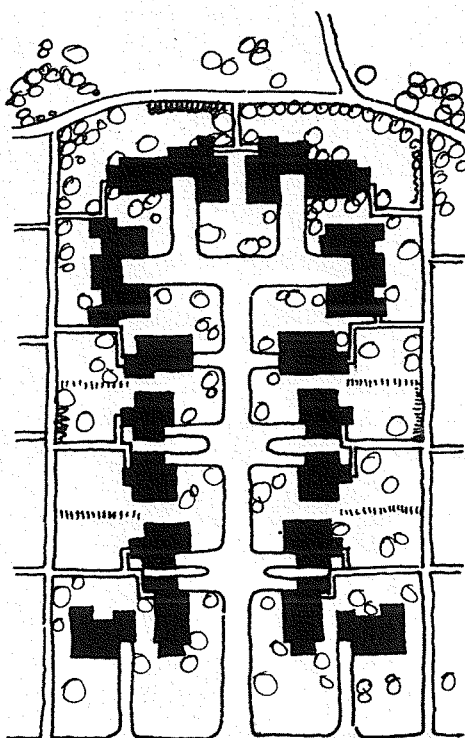


FIGURE 7 .

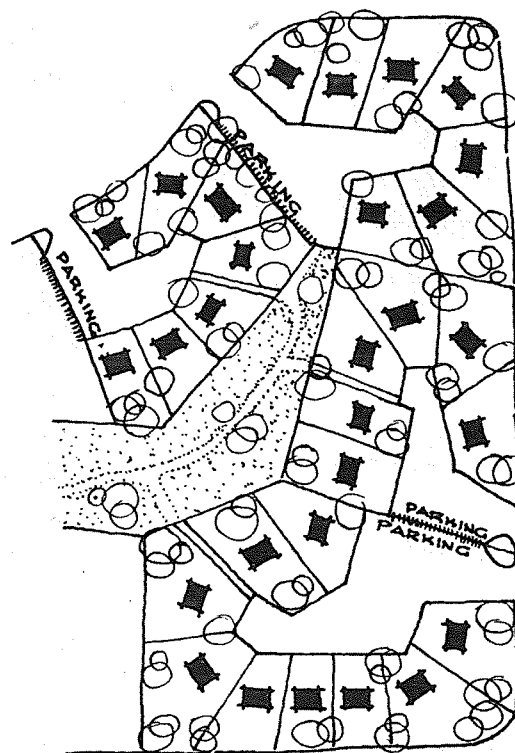
MAP OF RADBURN, N. J.



Whereas Stein has used the cul-de-sac arrangement of roadway, thereby carving and penetrating partly into the superblock, the proposals for this development favour the more subtle "service pocket" opening off the main roadway, and creating the nucleus round which the lots can develop in cluster formation. The comparison between the two is shown in the accompanying figure 8.



typical Radburn  
cul-de-sac.



proposed clusters for  
the development.

FIGURE 8.

The courtyards so formed provide auto access to the individual lots, some hard surfaces for children's play areas, as well as visitors' parking in secluded bays away from the main line of traffic.

There is direct access from each cluster to ~~their~~<sup>its</sup> respective green core by way of a 10 foot wide path, located as near as possible to the end of the motor court. This was done to ensure continuity and cross-linkage of water supply mains, and the elimination of the dead-end problem so prevalent in cul-de-sac layouts.

In this case, the water supply mains are carried through the clusters along the footpaths to connect with other supply mains from other clusters in the central parks. This is not an additional expense, since water must in any case be provided for the planting in the parks.

The cluster formation was considered more informal and more suitable to the easy pace of suburban living. It also permits a more interesting and pleasing grouping of houses, and because the view is always limited by the confines of the cluster, there is more of

a feeling of intimacy and "oneness" to each individual cluster.

The house is the individual unit, the cluster is the group unit.

In arranging the clusters around the central green park, the boundaries have been purposely shaped to echo the informality already achieved in the grouping of the individual lots, into the heart of the scheme. There too, groups of trees, planting and landscaping will be carried out in an informal manner.

The house is the individual unit; the cluster, the group unit; and the superblock, the neighbourhood unit.

The following is a detailed statistical analysis of this development plan:- residential areas are of two types, the low density individual lots, and the high density collective housing. The area covered by the individual lots is 175.2 acres, or 40% of the total area of the site. There are 1050 lots, giving a total population of 3,780, based upon a family unit of 3.6 persons per

family. This is a density over purely residential land of 21.5 persons per acre.

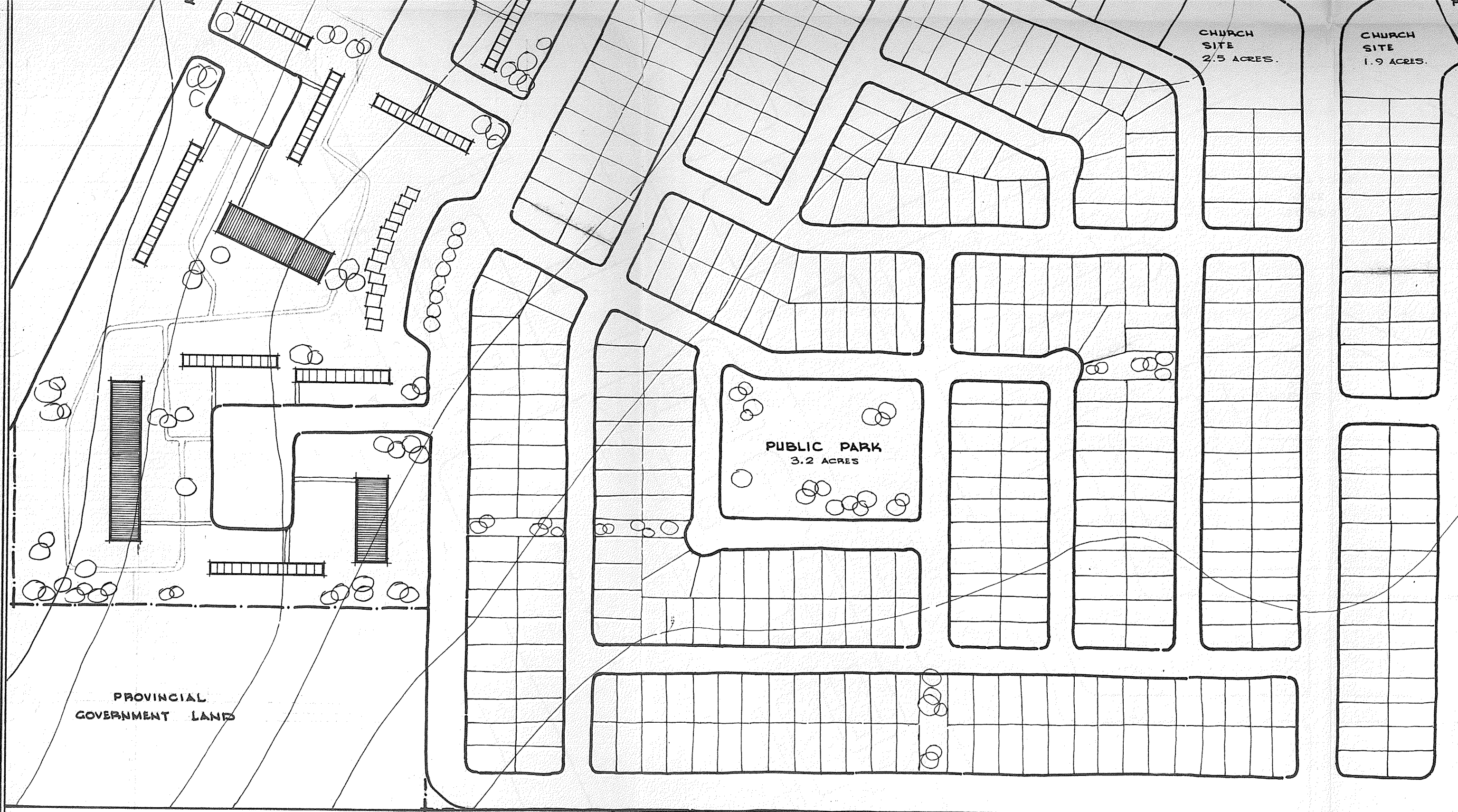
The area covered by the high density type of development is 47 acres, or 10.7 % of the total area of the site. Actual building area is only 5.7 acres, the rest being devoted to parklands associated with the high density development. There are a total of 217 dwelling units provided in row houses, and 804 dwellings in the 6 storey apartment buildings, giving a total population of 3,675. This is a density in this area of 78 persons per acre.

The total population of the proposed development is therefore 7,455, that is, a density over purely residential land of 33.6 persons per acre, or a gross development density of 16.7 persons per acre. \*

Based upon this population, the remaining statistical data has been compiled, and shown in the table on the following page.

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\* gross development density is defined as the number of persons or dwellings per acre of the total area of the site acquired or required for development purposes, and includes all residential sites, roads, parks, shops and schools.



PROVINCIAL  
GOVERNMENT LAND

PUBLIC PARK  
3.2 ACRES

CHURCH  
SITE  
2.5 ACRES.

CHURCH  
SITE  
1.9 ACRES.

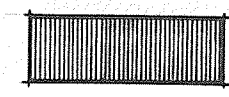
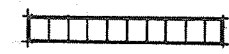
-  APARTMENT BUILDING
-  ROW HOUSING

FIGURE 9.



SCALE 1"=200'

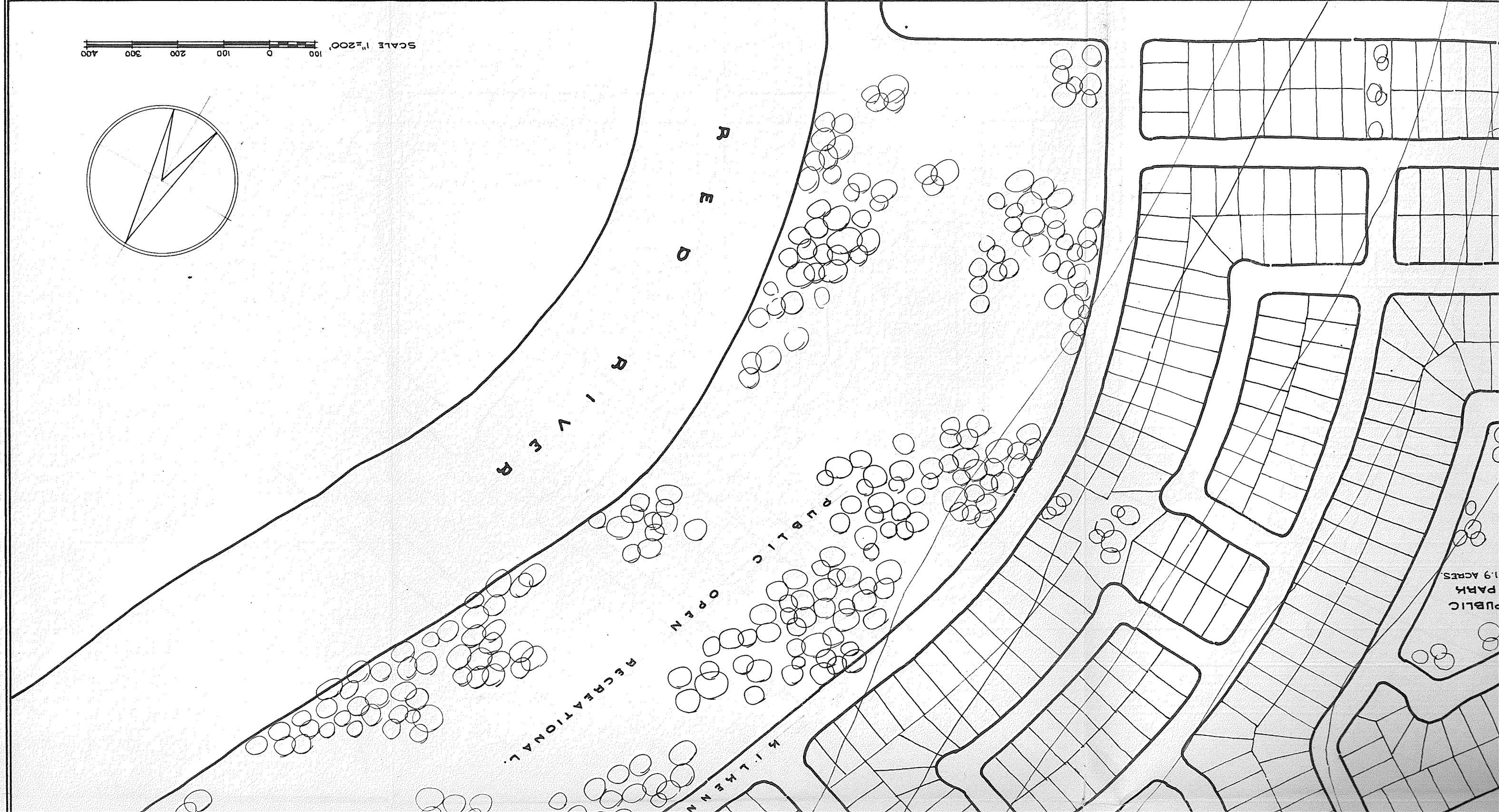
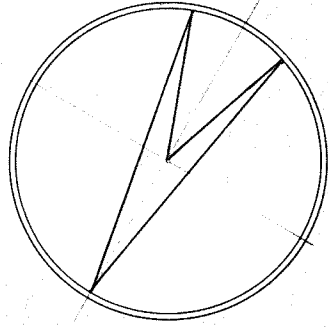


PUBLIC PARK  
1.9 ACRES

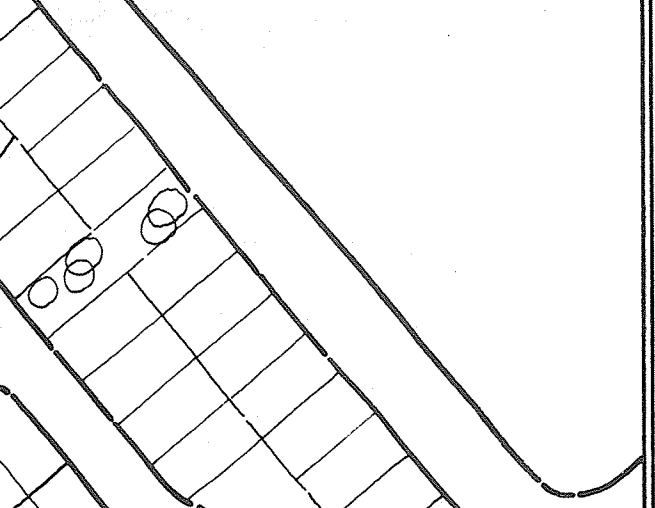
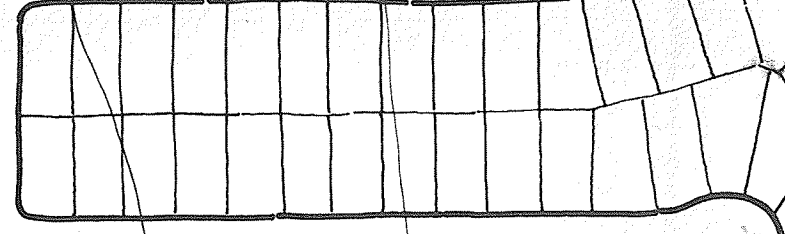
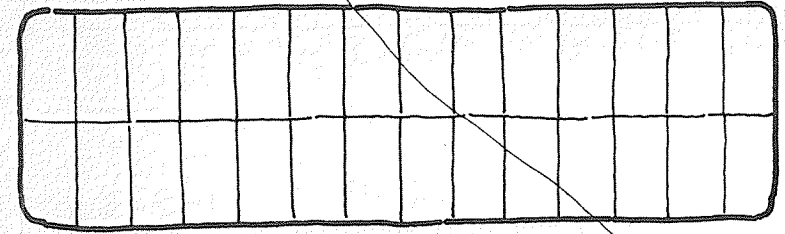
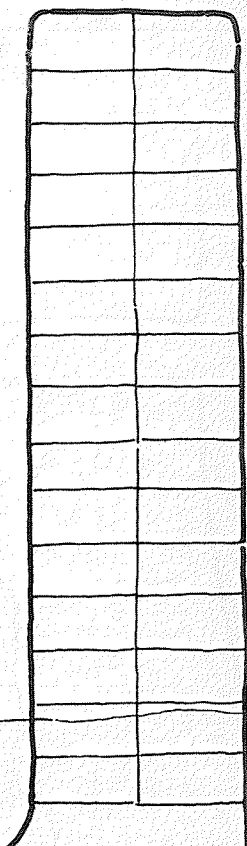
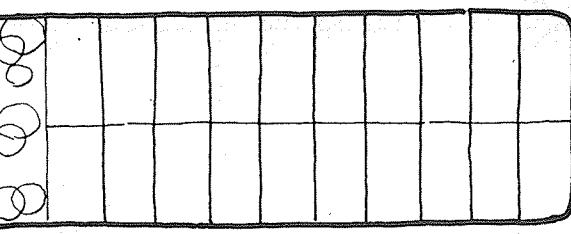
CHURCH SITE  
1.9 ACRES

FIGURE 9.

SCALE 1"=200'

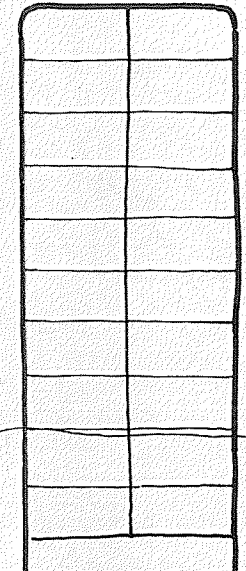


E Y STREET

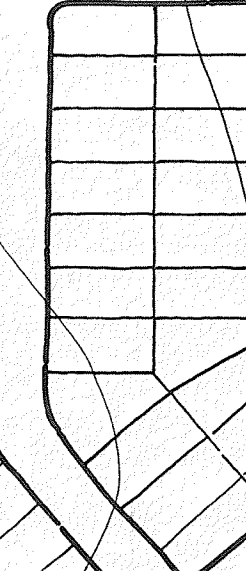
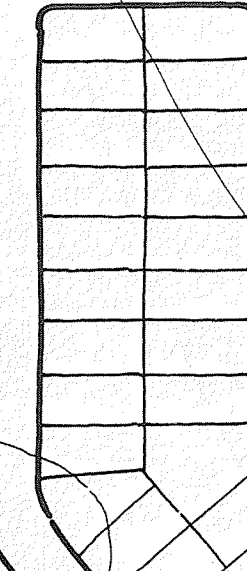
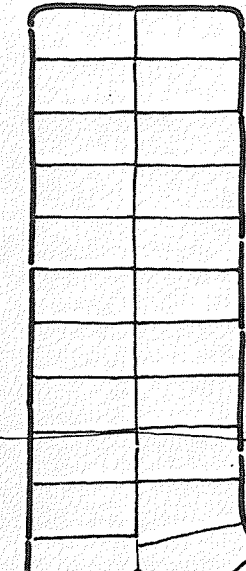


CHURCH SITE  
2.0 ACRES

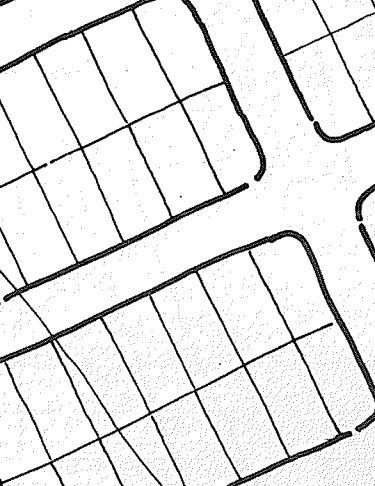
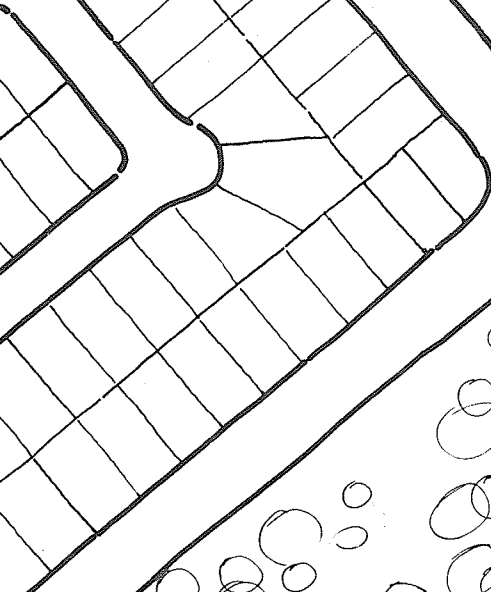
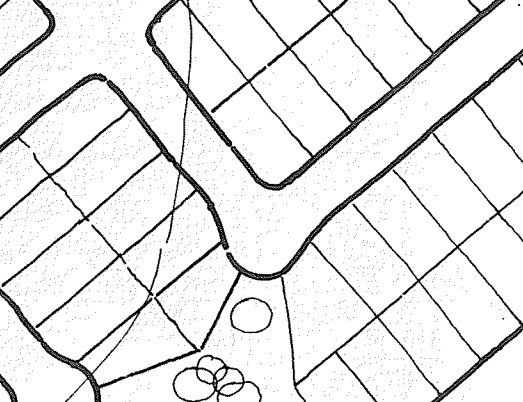
PARKING.



CHURCH SITE  
1.8 ACRES

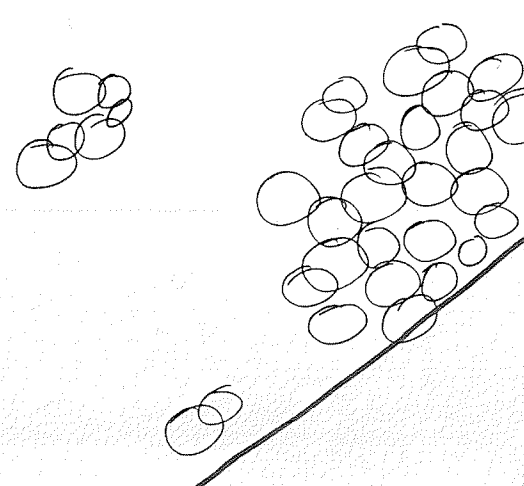
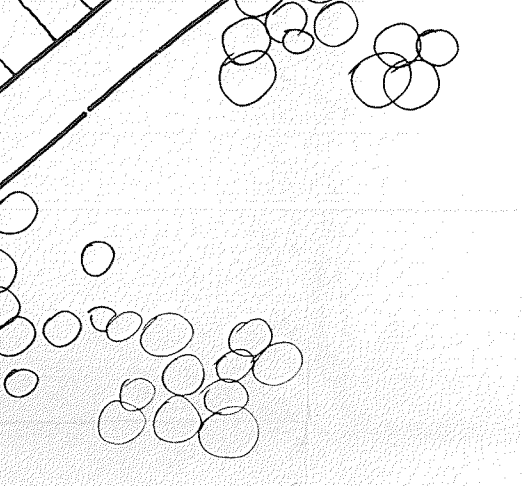
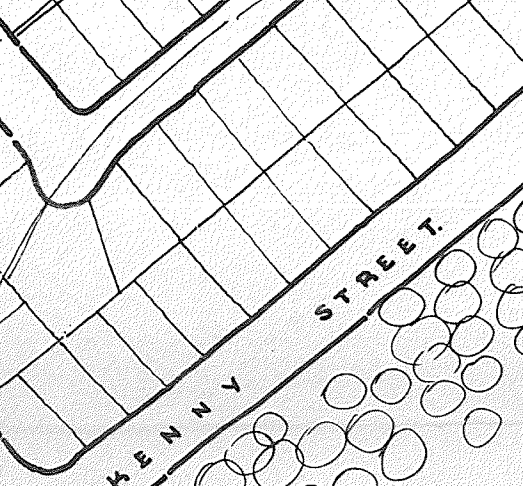
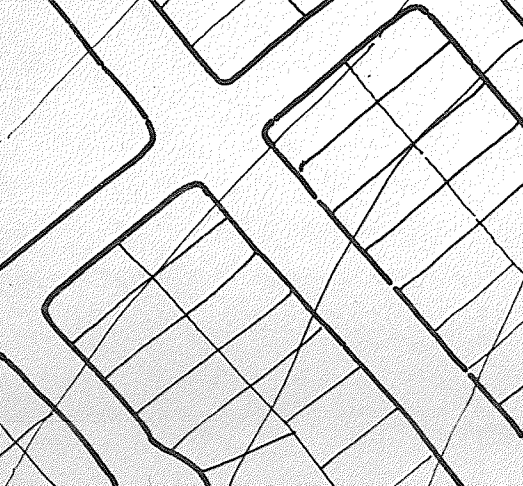
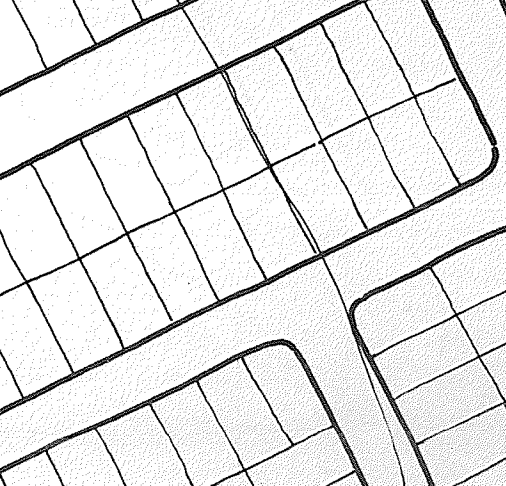
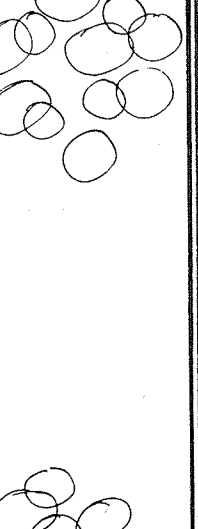
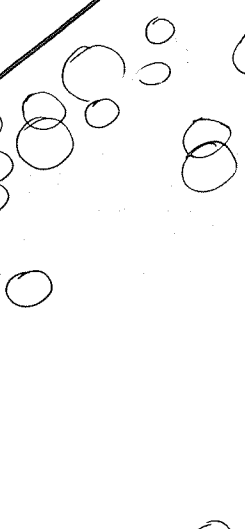
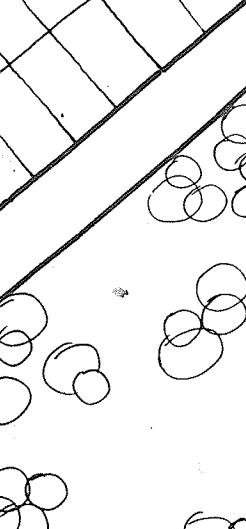
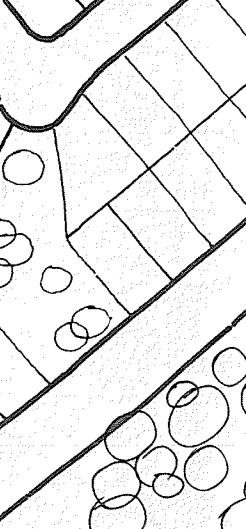
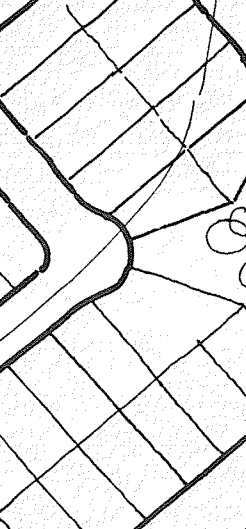
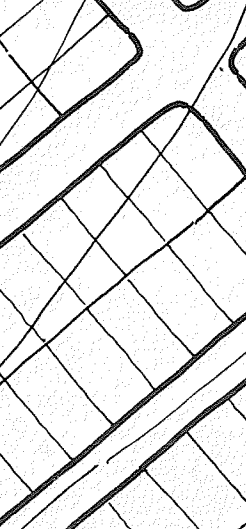
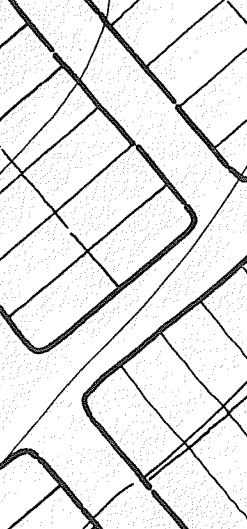
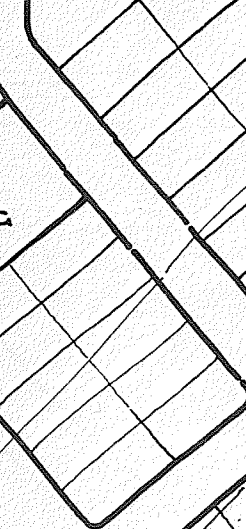


PUBLIC PARK  
3.1 ACRES

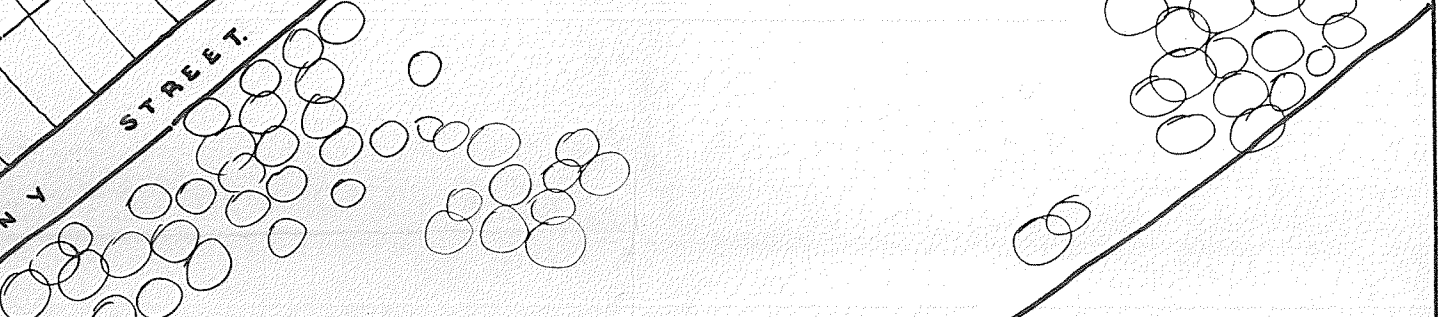


SCHOOL SITE  
7.0 ACRES.

PARKING



LKENNY STREET







HILLARNEY ST

COMMERCIAL SITES

PEMBINA HIGHWAY

PUBLIC PARK  
2.0 ACRES.

SCHOOL  
SITE  
6.7 ACRES.

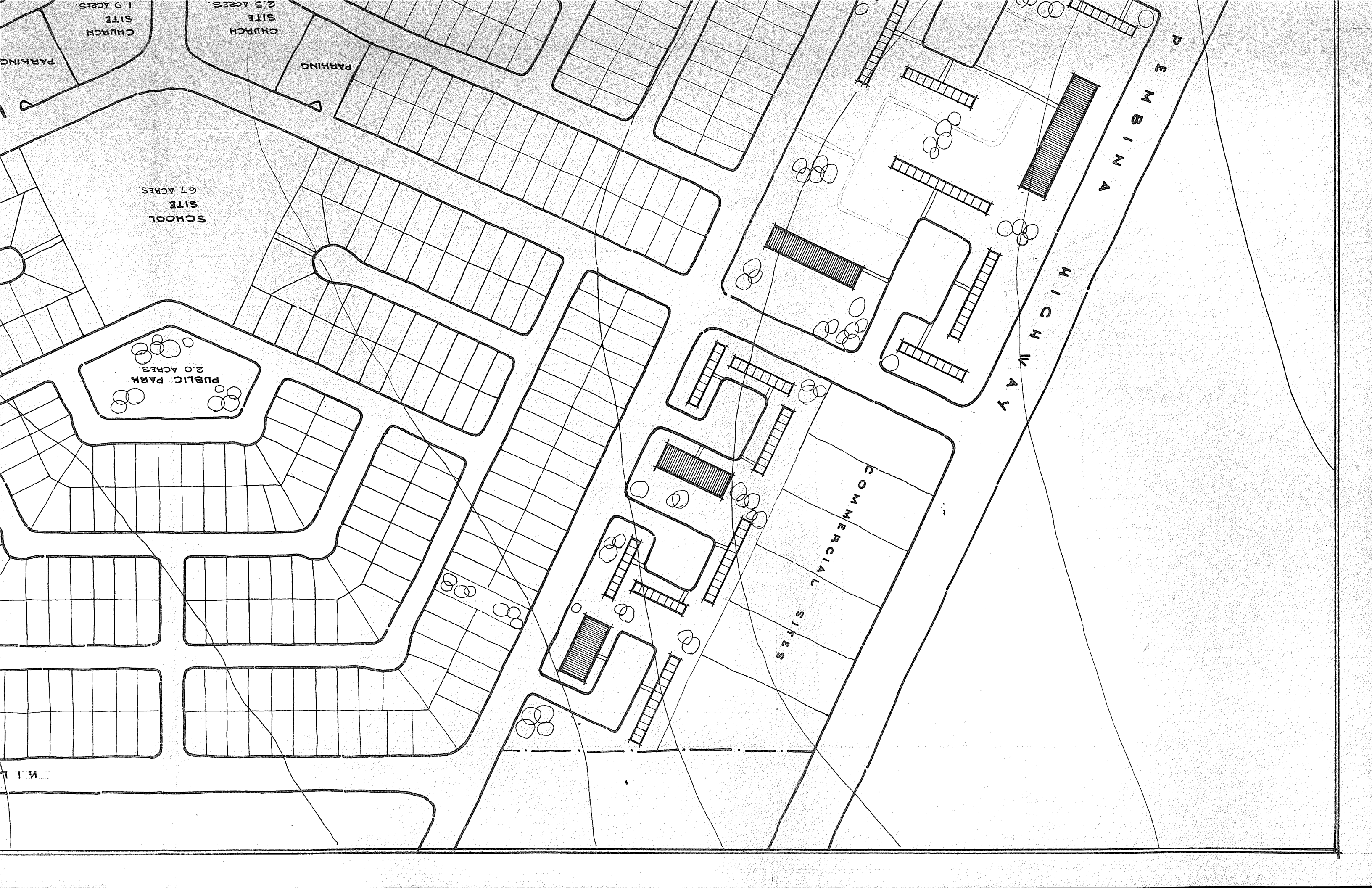
PARKING

CHURCH  
SITE

CHURCH  
SITE  
1.9 ACRES.

PARKING.

PARK



CHURCH SITE

CHURCH SITE

SCHOOL SITE

PUBLIC PARK

COMMERCIAL SITES

PEMBINA HIGHWAY

PARKING

PARKING

1.9 ACRES

2.5 ACRES

6.7 ACRES

2.0 ACRES

R 1 D

(V) DEVELOPMENT PLAN B.

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As a contrast to Development Plan A, this scheme was prepared following currently accepted planning standards. It should therefore be judged purely on that basis. It is a very efficient scheme, with the minimum size lots, to fit the budgets of everyone; the maximum number of lots, to the satisfaction of the developer; and ease and flexibility in the provision and installation of services, to the delight of the technicians. It is, in other words, ideally suited to the mass production technique of subdivision design.

The objections to this type of layout have already been discussed at length in the earlier parts of this thesis. It is therefore unnecessary to repeat them again. It suffices merely to give the detailed statistical analysis in the same manner as that undertaken for Development Plan A.

The area covered by normal residential sites is 196.5 acres, or 44.8% of the total area of the site. The number of lots is 1,429. The population will be 5,144. This is a density over the purely residential land of 26.2

persons per acre. The figures for the high density residential development is the same as that analysed for Development Plan A.

The total population is therefore 8,819, that is, a density over the residential land of 36.2 persons per acre, or a gross development density of 20 persons per acre.

TABLE SHOWING ALLOCATION OF LAND - DEVELOPMENT PLAN B.

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individual lots	196.50 acres	44.8%
high density	47.00 acres	10.7%
schools	13.60 acres	3.1%
churches	8.20 acres	1.9%
parks	14.10 acres	3.2%
minor roads	61.20 acres	13.9%
major roads	30.50 acres	6.9%
shopping	7.90 acres	1.8%
riverside recreational area	61.00 acres	13.7%
	<hr/>	
	440.00 acres	100.00%

(VI) CONCLUSION.

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The task is now complete. The philosophy has been expounded, and a solution, based upon this philosophy, has been reached for the chosen site in Fort Garry, Manitoba.

The rest is up to society. Whether this solution is acceptable or not will depend upon its social attitudes, and the values that it places upon its judgement of what is right and what is wrong.

However, it must be remembered that social values change with time. What is acceptable today may not be acceptable tomorrow. This is the concept of progress. The power to force that change does not lie in the hands of the planner. He can only anticipate it, and plan for it when it does come. Until that day, he can only nourish and propagate the idea, in the hope of accelerating its acceptance by society.

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