A PROCEDURE
FOR THE ACHIEVEMENT OF PLANNING STANDARDS
IN EXISTING NEIGHBORHOODS

Thesis submitted in partial fulfilment of the requirements for the degree of Master in City Planning by Daniel Driver, AB University of California 1948

Signed . . . .

Head of Department

June, 1950
LETTER OF SUBMITTAL

Massachusetts Institute of Technology
Cambridge, Massachusetts
May 19, 1950

Professor Frederick J. Adams
Department of City and Regional Planning
School of Architecture and Planning
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Adams:

In partial fulfilment of the requirements for the degree of Master in City Planning, I herewith submit my thesis entitled "A Procedure for the Achievement of Planning Standards in Existing Neighborhoods."

Sincerely yours,
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter of Submittal</td>
<td>1</td>
</tr>
<tr>
<td>PART I. DEVELOPMENT OF THE PROCEDURE</td>
<td>1</td>
</tr>
<tr>
<td>A. Statement of the Case</td>
<td>1</td>
</tr>
<tr>
<td>B. Types of Property Available</td>
<td>5</td>
</tr>
<tr>
<td>C. Design Procedure</td>
<td>14</td>
</tr>
<tr>
<td>PART II. APPLICATION OF THE PROCEDURE</td>
<td>24</td>
</tr>
<tr>
<td>A. Background of the Sample City</td>
<td>24</td>
</tr>
<tr>
<td>B. Factors Peculiar to Fairmont Which May Require Modification of the General Procedure</td>
<td>27</td>
</tr>
<tr>
<td>C. The Procedure as Applied to Fairmont</td>
<td>30</td>
</tr>
<tr>
<td>PART III. DETERMINATION OF PRACTICABILITY</td>
<td>44</td>
</tr>
<tr>
<td>A. Cost Analysis</td>
<td>44</td>
</tr>
<tr>
<td>B. Effectuation of the Plan</td>
<td>49</td>
</tr>
<tr>
<td>Conclusion</td>
<td>53</td>
</tr>
</tbody>
</table>

### MAPS

- Plates 1 - 7 following p. 34
- Plates 8 - 10 following p. 36
- Plates 11 - 13 following p. 38
- Plates 14 - 16 following p. 40
- Plate 17 following p. 41
"The problem of city planning, as of chess, is to improve the situation by, as far as may be, turning its very difficulties into opportunities. Results thus obtained are both more economical and more interesting, even esthetically, than those that are achieved by clearing the board and resetting all the pieces."

Patrick Geddes. *Patrick Geddes in India*. p. 26
PART I

DEVELOPMENT OF THE PROCEDURE

A. STATEMENT OF THE CASE

In 1948 the American Public Health Association published *Planning the Neighborhood*, an attempt to bring into focus the basic health criteria which should guide the planning of residential neighborhood environment.¹ The recommendations set forth are considered to be applicable primarily to developments in open or partially built up areas and to a lesser degree to urban redevelopment projects.² But neither new developments of sufficient size nor redevelopment projects have been occurring nor promise to occur in sufficient number to give these recommendations the wide application they merit. There have been only a limited number of developments of neighborhood size or larger during the past two years. Redevelopment

---

²Ibid., p. vi.
is getting under way - in some cities it is now in the construction phase. But it is practicable only in the central areas of large cities where the combination of poor housing and overcrowding produces the worst conditions and where population pressures are high enough to justify the resultant high rent.

Most of the residential areas of our cities do not justify, either by present condition or by the possibility of replacement by a more intensive use (residential or other), complete 'from the ground up' redevelopment, though a large part of the population will continue to live in them for the next fifty years at least. A large proportion of these residential areas are classified as "conservation" or "protection" areas - to be protected from blight. In 1939 over half the population of Chicago lived in such areas. Protection from blight and the more positive approach of the achievement of neighborhood environmental standards require the formulation of a definite program based on the standards in Planning the Neighborhood. The objective of this thesis is to see if a procedure may be developed by means of which our residential neighborhoods may be brought up to these standards.

A procedure which is to be widely applicable must involve a minimum of expense in relation to the results achieved; it must be capable of adaptation to a wide

3 Homer Hoyt. Principles of City Growth and Structure. Course notes, MIT. p. 127
variety of conditions; and it must be legally and politically feasible. In order to satisfy the first condition the procedure must involve property which is already publicly owned or which may be easily and cheaply acquired. Improvements must be of an extensive character in order to spread as far as possible their benefits. Public land, aside from streets, comprises 5% to 15% of the entire area of our cities. Streets occupy another 20% to 30%. This land (30% of the area of our cities as a conservative estimate) plus tax-delinquent and other easily acquired land, provides a sufficiently flexible base to permit wide variation in the application of the procedure. The legal and political feasibility is not so stringent as the other conditions, as a group which is sufficiently interested in applying this procedure can often sponsor the legislation necessary to its effectuation.

Keeping in mind the above limitations, a specific procedure will be examined with the aim of achieving desirable neighborhood standards with a minimum expenditure. The limitation to publicly-owned land suggests the following physical basis for the procedure:

1. The use of excess streets for parks and playgrounds.
2. The use of tax-delinquent property for public purposes.
3. The change of use of surplus public property.
4. The acquisition of private land in order to round out a particular site.

The main concern of this thesis will be the
establishment of the legality and workability of each of these techniques and their use in conjunction with each other to produce the desired result.

Due to the limitation of the procedure to the use of publicly owned land and its application to existing neighborhoods, Planning the neighborhood is applicable only in part—that is, the environment sought after can be achieved only in certain respects. Factors of site selection and development are already determined. Residential facilities must be supplied or are supplied by private individuals and thus fall outside the scope of the problem. Schools, community centers and other public buildings fall in the category of public facilities, but are outside the scope of a rehabilitation procedure as they must be furnished in any event. Parks and recreational facilities, and streets are the uses most susceptible to change through this procedure; therefore the sections of Planning the neighborhood devoted to circulation and outdoor recreation will be those most closely followed in the development of the procedure. The rest of the book will be followed wherever and whenever it is applicable.

Planning the neighborhood standards are based on national averages of family size and age distribution. Since this procedure is based on Planning the Neighborhood, it must be modified where the family size and age distributions vary from the national average. It must also be modified where social and physical conditions do not justify its full application. It must be stressed that the
procedure is not applicable to slums or blighted areas. These areas require more than protection or rehabilitation. The private development has deteriorated to the point where no procedure which involves public uses only can be expected to restore values. As a general rule, this procedure should be used only when an evaluation of the social and economic character of an area leads to the positive finding that the public pattern will lead to private improvement and stabilized use.

The use of this procedure is predicated upon the existence of a master plan. Where such a comprehensive plan does not exist its development must be a prerequisite to the use of this procedure.

b. TYPES OF PROPERTY AVAILABLE

The procedure contemplates the use of four types of property; excess streets, tax-delinquent parcels, existing public property (other than streets) and privately owned land. Each type of property requires a different technique in its acquisition or change of use. A discussion of each type of property in terms of its extent and pattern, availability, obstacles to its use and procedure involved in its use will provide a basis for a more effective use of these as techniques for the achievement of the desired objectives.

1. Streets and alleys

Streets provide the way of travel between cities and parts of cities and access to individual properties. In
earliest times "each person had to have the right to get to and from his dwelling, and to the market place and out of the city gates, and most of all to the well. Streets and public places, therefore, could not be encroached upon at the will of the individual; they were owned by all to be used by all."4 States depended upon easy access to and from all parts of their territory in order to enforce their authority. The right of way has thus come to be a public right, in contrast to the right of access, which is peculiar to the abutting property. This splitting of the "bundle of rights" which is the street property has produced two types of ownership. In one case, the fee remains with the abutting owners, each owning the land to the center of the street. The city, however, retains the right of passage in trust for the public and easements for its utilities. In the second case, the city acquires the fee of the right of way, held in trust for the public and subject to the right of access of the abutting owners. In special cases such as freeways and parkways, even the right of access is acquired by the public. Normally, however, there is little difference in practice between the two ownerships - both are burdened with easements and restrictions to achieve the same purpose.

As a general principle the right of access is appurtenant to the land and is a property right of which the

4Henry S. Churchill. The City is the People. New York, Reynal and Hitchcock, 1945. p. 3
owner cannot be deprived without just compensation.\(^5\) Even an impairment of access may be cause for compensation.

A right of way appurtenant to a lot is property and any injury to it is injury to property. Whatever interferes with a street and permanently diminishes the value is as much a damage as injury to the land itself.

For the state to depreciate the value of the property of the citizen without making a compensation is a deprivation of property.....

Where access to private property has been materially impaired or destroyed by the vacation of a street, and there has been consequent depreciation in the value of the property, the owner is entitled to compensation therefore. ...In order that the owner may recover it is not necessary that the property should abut upon the obstruction or vacation.

Next to residence, streets usually form the largest single type of land use in a city. Harland Bartholomew, in his Urban Land Uses, finds street areas varying between 17% and 34% of the developed areas in 22 cities.\(^7\) San Francisco has 27.4% of its developed area in streets.\(^8\) Jack Howard includes the following table in his study of Land Use in Cuyahoga County:

In most cases this street property is needed neither for circulation nor for adequate access to homes. Cities are thought to have 15% to 50% more street area than would be required by careful planning.

A western city of medium size having a checkerboard street system of an extreme kind — blocks 400' x 400' and all streets uniformly about 80 feet wide — has in the past few years laid new pavements of the same type on nearly two-thirds of all its streets at a uniform width of about 55 feet. It has been estimated that if two of every four north-south streets had been closed in residential sections — entirely feasible because practically all lots face the east-west streets — and in addition pavement widths decreased 50%, the cost of pavement construction, maintenance, light, policing, and cleaning would have been reduced by about 50% and the cost of lots cut in half. Through a reduction by about 50% of the number of intersections, in addition to halving the width of pavements, the accident danger in residential districts would have been substantially reduced. 10

This excess street might well be converted to other uses with benefit to the community by both increased green area and more efficient circulation pattern. It is generally recognized that, under present legislation, a highway

---

9 John T. Howard. Land Use in Cuyahoga County. Regional Association of Cleveland, 1940. p. 28
10 Ladislas Segoe. Local Planning Administration. Chicago, The International City Managers' Association, 1941. p. 133
can be vacated only when the public authorities determine that it is no longer required for public use or convenience. The public interest must be paramount in determining whether or not a street may be closed, though a change in use, retaining access in some form, does not need to be regarded as a vacation. A survey by Burnham Kelly for the APHA revealed that, while few cities had had experience in converting streets to other uses and there was no available information on the subject, there would be no insurmountable obstacles to such a program.¹¹

2. Other publicly owned property

Other public and semi-public property forms the third largest land use category of the city. (It is actually an ownership category, since it includes uses of all types). It totals 15% to 35% of the developed areas of the city. Parks and playgrounds are the largest single use in this category, the break down being as follows:

¹¹Burnham Kelly. Excess Streets for Recreation. American Public Health Association, 1941. p. 6
Use Classification of Public Property

<table>
<thead>
<tr>
<th></th>
<th>San Francisco</th>
<th>Cleveland</th>
<th>Cuyahoga County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks</td>
<td>40.9%</td>
<td>57.5%</td>
<td>60.9%</td>
</tr>
<tr>
<td>Pub. Bldg.</td>
<td>3.3</td>
<td>4.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Schools</td>
<td>4.2</td>
<td>11.7</td>
<td>5.9</td>
</tr>
<tr>
<td>Pub. Utility</td>
<td>14.0</td>
<td>9.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Mil. Reserve</td>
<td>32.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Storage</td>
<td>-</td>
<td>0.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Pub. Service</td>
<td>-</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Leased</td>
<td>-</td>
<td>0.2</td>
<td>0.04</td>
</tr>
<tr>
<td>Other Uses</td>
<td>-</td>
<td>9.0</td>
<td>14.6</td>
</tr>
<tr>
<td>Vacant</td>
<td>5.6</td>
<td>6.9</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Strategically located parcels of public land can be combined with excess streets to form usable areas. The vacant land especially can often be assigned to this use. It can be seen that a not inconsiderable part of the public property is (or was at the time of the survey) vacant. There should be little difficulty involved in the re-allocation of available public property.

Parcels which are not in the right location, but which are available for use, may often be exchanged with other public agencies or with private individuals for parcels which are more strategically located. This technique is covered in a subsequent paragraph.

3. Tax-delinquent property

The tax-forfeiture process has been developed first as a penalty for non-payment of taxes and second as a method of

---

12 San Francisco City Planning Commission, Present and Future Uses of the Land. 1944. p.3

of acquiring unproductive land and reapportioning it or holding it off the market. The application of the tax-forfeiture process which concerns us here is the use of tax-delinquent property for public purposes. A number of states, including Minnesota, California, Massachusetts, Ohio and Michigan have enabled cities to acquire tax-delinquent land for a nominal price after a certain redemption period.

The extent of tax-delinquency is quite large in some localities. In Cuyahoga County in 1938 over 44% of the total number of taxed properties were delinquent. In 1939 nearly 20,000 property descriptions within the corporate limits of the municipalities in the northern 47 counties of Michigan reverted to state ownership for non-payment of taxes. While every city will not have this much tax-delinquent land, all will have a number of parcels which may be acquired for public use or to be exchanged for property in a more strategic location.

The procedure which must be followed in the acquisition of tax-delinquent property varies from one jurisdiction to another. That followed in Minnesota is probably similar to if not representative of the rest. In Minnesota, the city has two opportunities to obtain a particular parcel of tax-delinquent land. Before the public tax sale, the

---

14 Bernard S. Edelman. op. cit. p. 29
county auditor is authorized to sell tax-forfeited lands "to any organized or incorporated governmental subdivision of the state for any public purpose for which such subdivision is authorized to acquire property." In this case, fair value must be paid for the property. In the second case, the municipality may obtain the deed to a parcel of tax-delinquent property from the state provided it is used for an authorized public use. (The title of all tax-delinquent land not disposed of at the tax sale reverts to the state). No money consideration is required in this case.

The title obtained through tax-forfeiture proceedings is not clear in many jurisdictions; often there are long redemption periods during which the property may be redeemed by the former owner upon the payment of delinquent taxes, fees and penalties or, in many jurisdictions, a small fraction of these. In these cases it would be wise to use the property for some non-structural use while the title is in question.

Properties obtained by mortgage foreclosure should also be included in this category. Government agencies such as FHA, HOLC, FDIC, etc. hold and will hold large numbers of mortgages. They would most likely be willing to dispose of this property to municipalities for the amount of the outstanding debt.

16Minnesota Statutes Annotated. St. Paul, West Publishing Co., 1946, Sec. 282.01 vol. 18, p. 925

17Loc. Cit.
4. Exchange of publicly-owned property

Exchange is a recognized method of acquisition of public land. It has been used by the U.S. Forest Service for over 20 years to consolidate its holdings. It may not add anything to the total value of public holdings, but it permits the government to increase its holdings of a particular type of property, or in a particular section of the city. Its advantages are:

a) It provides an outlet for property which has come into public ownership but for which there is no public use.

b) It helps cities in dealing with property owners in purchase areas - some would rather swap for a similar piece of property than sell.

c) It allows governments to spread land acquisition costs over a period of years - a land reservoir may be built up of tax-forfeited property and property bought under favorable conditions.18

5. Property which must be bought to complete an area

There are two methods of land purchase in common use: direct purchase on the open market and eminent domain. Purchase is the most straight-forward technique and the most speedy, but expensive for large areas. Eminent domain acts as a deterrent to high prices, but is most effective in its influence on open market purchase prices. When it is invoked it requires judicial action and, therefore, a

great deal of time. Purchase is the most expensive form of land acquisition and should be used only when no other technique will produce the desired results. 19

C. DESIGN PROCEDURE

The objective of this procedure is to achieve a desirable neighborhood environment by replanning the public areas of an existing neighborhood according to the standards of recreation and circulation in planning the neighborhood. The recreation and circulation standards were selected from the entire range covered in the book because they are the most workable under the limitations of the procedure and because, used in conjunction with each other, they will produce the type of environment desired.

The more important standards to be incorporated in the design are:

1. The organization of the circulation system by street types according to function.

2. The discouragement of through traffic within the neighborhood.

3. Access to dwelling units exclusively from residential service and neighborhood feeder streets.

4. A maximum of 200' from dwelling entrance to vehicular way.

5. The separation of major vehicular traffic and major pedestrian traffic.

6. Minimum distance of 800' between intersections with

19 Loc. cit.
7. Total recreation provision of 10 acres per 1000 population.

8. Provision of minimum amounts of specific facilities:
   a) Neighborhood playground - 1.20 to 2.75 acres per 1000 population, 2.75 to 6.00 acres.
   b) Neighborhood park - 0.70 to 1.50 acres per 1000 population, 1.5 to 3.5 acres.
   c) Major city park - 3.00 to 4.00 acres per 1000 population, 50+ acres.
   d) Athletic playfield - 1.00 acre per 1000 population, 10 acres minimum.

9. Provision of from 0.38 to 1.90 acres per neighborhood for general community social and cultural facilities.

These standards can be most fully realized in a residential "precinct" or "island", a unit which is self-contained, surrounded by major streets or non-residential uses and closed to through traffic. This unit offers greater safety from traffic hazards, increased park and recreation area, separation of vehicular and pedestrian traffic and a sense of belonging which is lacking in an unorganized residential sprawl. In a publication of the National Housing Agency we find:

...Any neighborhood conservation project therefore should involve, first, the establishment of a program for containing neighborhood streets and, second, the creation of Street Improvement Committees. It is only through action of this type on this level that the imagination of the residents can be stirred. In many neighborhoods, streets will have already been contained through natural boundaries such as railroads, commercial developments, and so on. Where, however, there are not such natural walls, artificial walls
should be created. That is, on all streets not needed for thoroughfares, that are important neighborhood residential streets, there should be created artificial barriers to limit the extent of the street....

...Such artificial closing of streets would, of course, have very beneficial effects on traffic flow and would make the neighborhoods considerably safer for children. It would give property owners a chance to feel truly effective. 20

The closing of streets to contain neighborhoods and prevent through traffic has been recommended by the Regional Association of Cleveland in its pamphlet, Neighborhood Conservation; by the Chicago Plan Commission in its Woodlawn study; and by H. Alker Tripp in his book, Town Planning and Road Traffic. Mr. Tripp envisions the precinct as a quiet, secluded area, sequestered from the rush and peril of through traffic. He would take great care that no accidental shortcut through the precinct is created, for all traffic not having actual business there should be rigorously discouraged. 21 At the same time, the major streets bounding the precincts should be straightened, widened and otherwise improved to attract the through traffic which might thread its way through purposely indirect residential streets to escape an intolerably congested major street.

All of the above-mentioned authorities suggest the use of closed streets for park and recreational purposes. A report of the Subcommittee on Recreational Facilities of


the Committee on the Hygiene of Housing, APHA, attempts to develop a procedure for the use of excess streets for recreation. It recognizes the fact that excess streets are likely to be less desirable in location and less efficient as to use than areas selected as a part of a neighborhood or community park and playground plan. The street areas, however, are available now and in sufficient quantities, if we decide to use them, and at a nominal cost.

The design procedure is an application of the property acquisition techniques developed earlier toward the achievement of the standards just outlined. It will consist of the following steps:

1. Establishment of the framework of the community - permanent features, residential, commercial and industrial areas.

2. Fitting together of major street and residential precinct plans.

3. Redesign of the precinct street plan, with the aim of preventing through traffic and organizing residential streets.

4. Allocation of excess street area to other public or private uses - recreation, park, walkway, residential lots, etc.

5. Addition of available tax-delinquent and public land - exchanged land where these are not available in the right location.

22Burnham Kelly. op. cit. p.2.
6. Resolution of all preceding steps to arrive at a final solution which should be an embodiment of applicable standards from Planning the neighborhood.

1. Establishment of the framework

The major streets are usually pretty well determined and characterized by a higher type of land use - business, retail and high-density housing. These uses are firmly established and have a vested interest in the existence of the major street. For this reason, it is both difficult and expensive to change major streets in any way. The minor traffic streets are not so inflexible, however. They are usually lined with residential property characteristic of the adjoining neighborhoods. Therefore they can be closed or changed almost at will.

The major and minor traffic streets, together with the main business and industrial areas, large parks and cemeteries and rivers, lakes and other natural features form a web, the interstices of which are the natural residential precincts. The web is, for the most part, determined but the residential precincts are susceptible to considerable change. So long as some acceptable form of access is maintained, any street in the precinct may be closed.

In a small town the interstices are of less than neighborhood size. The scale of the town is small - every third or fourth street is a major street and the town center is the focal point of the entire community. While the neighborhood as it is commonly defined in planning terminology may not be realized, the residential precinct
may well fulfill some of the functions of the neighborhood. In particular, it will foster a healthy neighborhood spirit - a sense of belonging.

If the major or minor traffic streets are to be changed, it must be with a mind to increasing the precinct area or achieving a more direct route and a smoother, more efficient traffic flow.

2. Fitting together of major street and residential precinct plans.

There will often be a conflict between the standards for neighborhood size and the existing major street framework. Since the major streets may not always be changed, other solutions must be developed. The alternatives are:

a. A rerouting of through traffic, if possible.

b. A residential area of less than neighborhood size.

c. A neighborhood which complies with the standards in every respect except that it is cut by the traffic artery. In this case special adjustments must be made, including pedestrian underpasses or overpasses at regulated points.

The decision as to which solution to use must be based on such factors as the size of the area, the type of residence in the area, the importance of the traffic artery, alternate routes available and the character and extent of adjoining neighborhoods.

3. Redesign of the precinct street plan.

There must be no direct or nearly direct path for through traffic across a residential precinct. The realization of this standard requires a physical block across
existing streets which, at present, extend from one end of the city to the other. This block may take one of three forms:

a) The closing of an entire block or half-block and its conversion to park, recreation or other open use.

b) The closing of an intersection to through traffic by a diagonal curb - this creates two loop streets.

c) The closing of a street at its intersection with a major street by the erection of a barrier.

Any or all of these methods may be used in a single precinct. The choice between one and another may depend upon alternate access, type and extent of frontage, residential street pattern desired and individual preference for one or the other.

Where streets are closed entirely the property fronting on them must not be left without some acceptable form of vehicular access. For this reason, streets with existing frontage should not be closed entirely unless there is access from an alley or another street. Where the majority of the lots fronting on a street are vacant, the street should not be closed unless there is alternate access to the lots in case of future development or unless the city intends to acquire the lots as a part of its park and recreation plan.

The streets remaining should form a planned network, designed to prevent through traffic yet providing uncomplicated access for the residents of the area. For instance, it would be desirable to put no more than two
90° turns between any residence and the nearest access point to a major street. An attempt should be made to differentiate in alignment and width between residential streets and neighborhood feeder streets. The feeder streets lead from intersections with major or minor traffic streets into — not through — the precinct and the residential streets branch from them in the form of loop streets and cul-de-sacs. Existing alleys will serve admirably as residential streets provided they are at least 26 feet wide with a concrete or bituminous surface or can be improved to this standard. The minimum distance of 800' between intersections with arterial streets should be observed.

The standard of a 200' maximum distance between dwelling entrance and vehicular way need not be strictly observed with respect to the front entrance when there is rear access via street or alley. A 15' or 20' pavement should be left in a closed street for access of emergency vehicles, such as fire engines, ambulances and moving vans, which could not negotiate a narrow alley.

The pattern of neighborhood feeder and residential streets will be influenced by existing parks, playgrounds and schools and by future extensions of the same. A closing of the streets surrounding such areas will enlarge the areas and substantially reduce the dangers of access.

4. Allocation of excess street area.

In the closing of blocks, the pattern of excess streets should be kept in mind, as well as the pattern of those
retained. The distribution of parks, playgrounds and schools suggests a system of walkways connecting them and providing pedestrian access to them. The closed streets will provide such a system — not continuous, perhaps, but a pleasant combination of residential park and residential street. Streets running into parks should be closed, if possible, and used as wedges of park thrust into the residential area. Those blocks which cannot be incorporated into the park and walkway pattern but which may be closed for the purposes of circulation may be used as common yards or play space for the children of the block. This play space may also be created by closing the alleys and combining them with the back 20 of 30 feet of the residential lots in order to create common yards. Where it is considered desirable in order to obtain larger blocks, streets may be vacated entirely and put to residential use.

5. Use of Tax Delinquent and Public Land.

Tax-delinquent land and unused public land will form the basis for new parks and playgrounds, augmented by closed streets and parcels of purchased property. If this land is not in the desired location, it may be exchanged for parcels which are. Using the exchange technique, a large park or recreation area may be built up from a number of small parcels scattered about the city. Under the tax-forfeiture laws of some states, parcels of tax-delinquent land may be given to the city, sold or withheld from sale by the state, at the option of the city. This allows a wider range of possibilities in the use or non-use of
this type of property.

6. Resolution of preceding steps

As a final step in the design, all the elements of the plan must be reviewed in their relationship to each other, to the goal desired and to the techniques used. The plans of adjoining precincts must be considered together in order to make sure that pedestrian circulation continues and vehicular circulation is not continuous across the major street. The individual precinct plans must be related to the city recreation and park plan and other elements of the city development plan. All conflicts should be resolved at this time. It must also be determined whether the standards originally set have been achieved within the limits of the procedure.
PART II

APPLICATION OF THE PROCEDURE

A. BACKGROUND OF THE SAMPLE CITY

The procedure developed in Part I is applicable to the "conservation" areas of all cities, but it applies most directly to cities built on a gridiron street plan with no differentiation, either by width or alignment, between major streets and residential streets. It is in these cities that the greatest improvement in residential environment can be achieved with the least expenditure of time and money - from a situation where every street is a major street to a completely organized street pattern, by closing a few blocks.

The gridiron pattern is typical of pioneer settlements in new countries and a characteristic pattern of American cities, particularly in the Midwest where section lines were established before the country was built up. It was of these Midwest towns and cities that an English traveler of a hundred years ago wrote:

In nothing is this uniformity more drearily oppressive than in the invariable rectangular arrangements of the country towns throughout the west. The traveler may journey for weeks upon the prairies, and visit hundreds of towns which, by the exercise of a little
taste in adapting their arrangement to the natural features of their situations, might have assumed the character of charmingly attractive rural villages, but which are all so nearly repetitious of the same pattern that he can scarcely retain a distinctive recollection of a single one.  

The situation has changed but little during the past century with regard to the dreary sameness of pattern of the thousands of midwestern towns. It was with these towns in mind and, incidentally, the sample city, that this procedure was developed.

The sample city, Fairmont, Minnesota, was selected because the data was readily available and because it lent itself to the application of this procedure. Fairmont is a small retail trading center in south central Minnesota, about 10 miles north of the Iowa line. Its population in 1940 was 6,988 and an estimate in 1947 showed that it had grown to 9,000 by that time. It has a trading area with a radius of about 50 miles, which includes some of the richest farm land in the country.

As a settlement Fairmont dates from 1856, when three families first took claims in or around what was later to become the City of Fairmont. The town was organized in 1859 and extended across Martin County from east to west, including about seven and one-half townships. The territory was gradually reduced by the formation of other towns until it now includes only one township with the city, now the county seat, at its heart. The settlement was further

\footnote{Henry S. Churchill. \textit{The City is the People.} New York, Reynal and Hitchcock, 1945. p. 42}
strengthened by the erection of Fort Fairmont in 1862 to protect the settlers from the Indians in the Dakota uprisings. The fort was located on the site of the present County Courthouse near the center of the present city. In 1878 the railroad came and in the same year the nucleus of the township was organized as a village. Thereafter the community enjoyed a steady and substantial growth.

The street pattern of the original village was laid out before 1878, when the railroad came, temporarily restricting growth to the north. The street pattern of the north side was laid out before 1900, but it is only recently after other, more distant areas have been built up that it has been developed for residence. The railroad originally fostered Fairmont's development as a wholesale and retail trading center for the surrounding agricultural area, but more recently it has enabled industry to locate there. Fairmont is still primarily a trading center, but manufacturing is becoming increasingly more important.

The climate is characteristic of the Plains states — severe winters and hot summers. The mean temperature in January is 17.5 degrees, in July 72.6 degrees, the annual mean being 46.4. Over a ten-year average the annual rainfall has been 26.74 inches and the annual snowfall 32.3 inches. There has rarely ever been a blocking snow or a crippling storm, however.

Fairmont is more fortunate in its physical setting than most midwestern cities as it is located along the eastern edge of five of a chain of twelve lakes. These
are glacial deposit lakes, probably strung along one of the twelve terminal moraines left in Minnesota by the retreating glaciers, so they have steep banks on every side. The highest part of the city is at the top of the bluff, with a general, gentle slope away from the lakes. The lakes are used extensively for swimming, boating and other aquatic sports. Their usefulness is being impaired, however, by a gradual silting up due to the deforestation of the area and the high coefficient of runoff in the city.

The housing in Fairmont is fairly uniform in quality. There are no slums or blighted areas though there is, of course, a variation in the size and value of the housing. The largest, most expensive homes are located on the peninsula between Lake Sisseton and Budd Lake, extending to Park Avenue and along the lake to the south. The rest of the city is more or less homogeneous, varying between good and fair. New homes are being built generally north of the railroad and in the southeast part of the city.

b. FACTORS PECULIAR TO FAIRMONT WHICH MAY REQUIRE MODIFICATION OF THE GENERAL PROCEDURE

The political background in Fairmont is particularly favorable for a venture of this type. As cities go, it is young, vigorous, alert and busy. Its wealth is founded in the soil of Martin County, which has not experienced a crop failure in its 90 years of agricultural history. The people of Fairmont, then, are justifiably optimistic over
the future. They are liberal and not too much bound by tradition. They are shrewd and hard-headed, however, and must be convinced of the practicality and feasibility of a proposal before they give it their full support.

The legal restrictions on the use of the procedure are no more than may be expected. Most of the streets in Fairmont have been dedicated to the use of the public forever, in which case the city holds the title in trust for the public. Some have been deeded for public use and some deeded to the City of Fairmont by straight quit claim deeds. These last two methods have been used only rarely, and then only to connect two streets or to extend streets. Generally, the streets have been held to be non-transferrable to other public uses, as there is no provision in the law for a use other than the dedicated use or the use in the easement grant or deed with reservation. In the opinion of the city attorney, streets could not be made into parks even though other means of access were made available; in any event, the restriction of access over an established road would be considered illegal.

Fairmont has taken no action under the 1941 Minnesota statute enabling cities to acquire tax-forfeited land for public purposes. The city had an unfortunate experience some years ago in the acquisition of a parcel of property which had been bid in by the state many years previously. The city had to pay the state's share of the taxes with interest that had been accumulated against the property
through the years. This experience may have acted as a deterrent to further interest in tax-forfeited lands by the city. In any case, the amount of tax-delinquent property in Fairmont at the present time is negligible - not over 40 parcels at the most.

The lack of legal precedent should not be regarded as an obstacle to the effectuation of this procedure. If it has sufficient merit, the necessary steps will be taken, whether they involve new ordinances or even state legislation. As Fairmont operates under a home rule charter, it may be easier to accomplish the necessary legal steps here than in other jurisdictions.

It has been shown in the development of the general procedure that the procedure is inapplicable to areas of physical and social decay. Fairmont is fortunate in the fact that it has no such areas - the general level of physical conditions is high due to the stable economic base of the community. In all cases the public improvement will be reflected by a general improvement of private facilities.

Fairmont is relatively flat - certainly the topography is not of a character to influence the design of the precinct areas. The primary influence of the natural setting upon Fairmont is the effect of the lakes upon the recreational space requirement of the city. The light, air, view and air-conditioning they furnish, as well as the opportunities for aquatic recreation, reduce substantially the park and playground requirements in the individual
precincts. A small park-playground in each precinct or
group of precincts is all that is required. Most of the
recreation needs will be provided for by the existing
lakeside parks and a proposed system of walks along the
shores.

As for the precinct street design, the flat topography
will permit a demonstration of what can be done with the
typical flat, undifferentiated gridiron plan of the mid-
western city. A more interesting pattern could perhaps be
achieved in a more rugged terrain, but it would not demon-
strate the solutions possible in a flat topography, which
is the more typical case.

C. THE PROCEDURE AS APPLIED TO FAIRMONT

The procedure developed in Part I has been followed
very closely in the specific application to Fairmont. The
seven steps outlined have been considered consecutively.
As a preliminary step, however, it was found necessary to
make certain assumptions with respect to Fairmont which
were not included in the general procedure. As the com-
prehensive plan for Fairmont has not yet been completed,
it was necessary that an assumption be made as to the
existence of recreation and major street plans. These
plans were developed in rough form, brought into general
agreement with those in process of development by Mr. Nord
Davis, planning consultant for Fairmont, and assumed to be
the plans as finally completed. A second assumption was
made to the effect that age and family size distributions
in Fairmont conform to the national average and no deviations need to be made from the Planning the Neighborhood figures.

The major street and recreation plans were determined in conjunction with the plan of residential precincts for the entire city. Three precincts were selected for more detailed consideration of the application of the last five steps of the procedure. These are shown in yellow on the precinct plan, Plate 6. They were chosen because they are large enough to provide a workable design area and because they are clearly residential.

The major street and precinct plans were evolved together, one influencing and being influenced by the other. They were based on land use, zoning, pavement type and width and local concepts of major streets. The land use map, Plate 1, shows a well-defined industrial belt along the railroads, a compact business center and a preponderance of single family homes. The parks are generally along the lakes, as are the more expensive homes. The residential area is separated into two parts by the railroads, industry and business area and it can be seen in the zoning plan (Plate 2) that this pattern is perpetuated by law. The existing zoning is a primitive type of ordinance, merely differentiating between residence and business-industry, and allowing any use not a nuisance in the business-industry zone. The pavement width (Plate 3) and type (Plate 4) define roughly the major streets,
though in some instances the streets which were chosen for major streets were neither the wide ones nor the paved ones, but rather those which connect directly one part of the city with another.

The major street plan (Plate 5) shows the pattern of major and secondary streets finally evolved. The major streets are the main routes of access to and through the city; the minor traffic streets are those required for access from one part of the city to another. The routes chosen have generally been those which are the most direct and which are now accepted as major streets. In one case, however, the minor traffic street was offset from a direct connection in order to increase a precinct to a workable area.

The residential precincts (Plate 6) have been accommodated so far as possible to the pattern of major streets and non-residential land uses. In several cases they are traversed by major streets, but only for special reasons. Precinct 1 is too sparsely populated at the present to be broken up, though in the future it may be subdivided into two precincts. The area of Precinct 4 to the right of Prairie Avenue is largely vacant, with only a few residential structures. It is too small to be a separate precinct and may eventually be taken over by the expansion of the industrial uses. Precinct 5 necessarily includes the residences on the opposite side of the main highway - though this is undesirable, there is no other solution. Precinct 6 is an area of changing land uses - most of it
may be swallowed up by the business district. For this reason it was felt to be unnecessary to resolve the conflict with the minor traffic street. Precinct 10 is cut by a minor traffic street which cannot be rerouted as it serves several subdivisions across the lake. At the present time, at least, it has little traffic. The other precincts are all bounded by major streets and non-residential land uses and can be designed so as to discourage through traffic.

The recreation plan (Plate 7) is based on existing facilities with the addition of the following areas. The number are keyed to those on Plate 7.

1. Lakeside walks, acquired by easement where the lakeshore is not built up.

2. A large city recreation park located generally on the north shore of Lake George.

3. A civic center located on the site of an existing elementary school.

4. A small neighborhood park, obtained by exchange or purchase to serve the area of the city most in need of recreation facilities.

5. A park incorporated in a proposed subdivision, to be deeded to the city.

6. A system of walkways connecting existing and proposed recreation areas, to serve as a guide to the location of pedestrian ways in individual precinct designs.

While this is not a finished plan, it does attempt a
distribution of recreation areas based on need, availability of land, land use pattern, major street pattern and recreational standards.

The individual precinct plans are based on the last five steps of the design procedure and are pointed toward the standards set forth in Part I. An explanation of them will show how the procedure may be applied in specific cases.
FAIRMONT MINNESOTA

LEGEND

- CONCRETE
- BLACK TOP
- WOOD BLOCK
- OILED SURFACE
- GRAVEL

4

M.C.P. THESIS DANIEL DRIVER 1950
DEPARTMENT OF CITY AND REGIONAL PLANNING
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
NOTE: NUMBERS ARE KEPT TO THE TEXT - P. 33
Precinct 2

The precinct land use map (Plate 8) shows that this precinct approximates current standards in its distribution of uses. Single family residence predominates, with industry confined to one corner, and a school site provides a nucleus for community activity. The structures face the north-south streets with few exceptions. This enables the east-west streets to be used as neighborhood feeder streets with the majority of houses fronting on park strips and serviced by alleys. The pattern of assessed valuation (Plate 9) is based on the per square foot value of land and buildings by half block totals. It indicates that, though values are higher along the major streets, the general level of values is low in this part of town, the average being near $0.20 per square foot. The land use and valuation patterns indicate that the area may be profitably improved as contemplated here.

In the design of this precinct (Plate 10) an almost ideal plan of neighborhood feeder and residential streets was achieved, due to the regular pattern of streets and alleys. Generally the east-west streets were kept as feeder streets with the alleys serving as residential access where the north-south streets were converted into parks. The alleys here are 20' wide and about 350' long, which necessitates a 40 foot diameter turning circle at the end. The alleys should be widened to 26 feet to meet the standards for two-way residential streets. This may
be done without trouble if the rear of the lots is not too much built up. Access to the minor traffic streets is from the neighborhood feeder streets only; there is no access to the major traffic street forming the western boundary of the precinct. Intersections with the minor traffic streets have been reduced from 13 to 5, and all eight alley intersections with traffic streets have been closed. Hampton Street and the east end of Thirteenth Street are devoted entirely to industry and have been cut off from the rest of the precinct to keep heavy trucks off the precinct streets. The total area of streets in the precincts has been reduced 29%.

Ten city blocks and three half-blocks have been closed totalling 6.82 acres. These blocks are centered about the Lincoln School and Lincoln Park just across North Avenue, with the purpose of providing safe pedestrian access to park and school, concentrating pedestrian traffic crossing North Avenue and tying into the walkway system shown on Plate 7.
Precinct 7

The land use map for the precinct (Plate 11) shows it to be predominantly single-family residential, little invaded by the industry along the railroads on two sides of the area. This precinct is more in need of recreation facilities than any other part of the city, so an effort was made to provide some form of recreation area. The level of assessed valuations (Plate 12) is essentially the same here as in Precinct 2, though here they grade generally from the center of the city outward. The land use and assessed value indicate that the public improvement contemplated in the achievement of the plan will not be wasted here, but will stimulate similar improvement of the private property.

In the design of this area, a workable pattern of neighborhood feeder and residential streets has been achieved. It was considered necessary to close three blocks of Fifth Street and convert them to residential property in order to increase the size of the blocks. The enlargement of the blocks results in cul-de-sacs over 500' long, which require turn arounds 80' in diameter. These have been taken out of the closed portions of Fifth Street and smaller supplemental turn-arounds placed at the ends of the cul-de-sacs. The number of intersections with minor traffic streets has been reduced from six to three; all alley intersections with traffic streets have been closed. The percentage of the precinct area in streets
has been reduced by 37% - from 30.2% of the area to 19.05%.

The green area achieved by this design totals 6.52 acres - 4.4 acres in closed streets and 2.12 acres in a small park-playground located in cheap land next to the railroad. The walkways are so located that they provide access to the park from all parts of the precinct and also tie the precinct to the high school and to the athletic field south of Blue Earth Avenue. This pattern conforms to the citywide recreation plan developed earlier (Plate 7).
PRECINCT 7
ASSESSED VALUATION 12

LEGEND

- 0.00-0.19/SQ. FT.
- 0.20-0.29/SQ. FT.
- 0.30-0.39/SQ. FT.

FAIRMONT
MINNESOTA

M.C.P. THESIS DANIEL DRIVER 1950
DEPARTMENT OF CITY AND REGIONAL PLANNING
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
LEGEND

- GREEN: STREETS CLOSED
- DARK GREY: STREETS RETAINED
- LIGHT YELLOW: RESIDENTIAL

FAIRMONT
MINNESOTA

M.C.P. THESIS DANIEL DRIVER 1950
DEPARTMENT OF CITY AND REGIONAL PLANNING
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Precinct 11

The land use map (Plate 14) shows that this precinct is less homogeneous than the other two just explained. It is still primarily a residential area, but there is a generous scattering of two-family and multi-family units among the single-family ones. This is due to the proximity of the precinct to the center of the city and is reflected in a higher level of assessed valuations than in the other two precincts (Plate 15). There is again evident a gradation of values down from the maximums near the center of the city. The residential character of the precinct and high level of values indicate a stable area, where the procedure may profitably be applied.

The design of this precinct (Plate 16) offered more of a problem than was encountered in either of the other designs. The street pattern is more irregular and, except in the northern part of the area, there are no alleys to furnish access to the abutting property. It was possible to design the neighborhood feeder streets in such a way that no access was provided to Blue Earth Avenue from the precinct. It was necessary to provide access to Prairie Avenue at one point because of the great length of the precinct in a north-south direction. In the entire precinct, the number of intersections with traffic streets was reduced from twenty-one to seven and the four alley intersections were closed. Here, as in Precinct 7, two blocks were closed entirely and converted to residential
use. A loop street was formed in conjunction with a proposed realignment of Prairie Avenue. The total street area of the precinct was reduced by 20.5%, the smallest reduction in the three sample designs due to the irregular street pattern and lack of alleys.

The green area achieved by this design totals 6.82 acres. It is concentrated in the northern part of the precinct and oriented to Ward Park, across Albion Avenue to the east, and the proposed civic center, just across Blue Earth Avenue.
PRECIION II PROPOSALS

LEGEND

- Streets Closed
- Streets Retained
- Residential
- Public

FAIRMONT, MINNESOTA

M.C.P Thesis Daniel Driver 1950
Department of City and Regional Planning
Massachusetts Institute of Technology

SCALE
The typical block design (Plate 17) features the neighborhood feeder street on one end, residential access by means of the alley and a park strip with the houses fronting on it. The alley being a cul-de-sac, it needs a turn-around of some kind at the end. For this purpose, it will be necessary to acquire about 10 feet of the lot on each side of the end of the alley. In the case of cul-de-sacs over 350' in length, a turn-around of 80' in diameter must be provided - this is done in three instances in Precinct 7.

A fifteen foot pavement has been left in the closed streets to provide access for fire engines, ambulances, moving vans and other emergency vehicles. This strip can either be left from the original pavement or provided by widening the sidewalk when the street pavement is torn up. The first method is less expensive and therefore more easily achieved; the second provides a better distribution of lawn and paved area for play purposes and also a better paved surface for the use of wheeled toys and pavement games.

We have accomplished what we set out to do. The standards set out on page 14 have been achieved, at what cost it will be seen in Part III. In detail, the attainment of the standards has been as follows, keeping the numbering used on page 14:

<table>
<thead>
<tr>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
</table>
| 1. Undifferentiated grid-iron pattern - every street a thoroughfare. | 1. An articulated street system with each street type giving access to the
LEGEND
- MAJOR STREET
- NEIGHBORHOOD FEEDER
- RESIDENTIAL ACCESS
- EMERGENCY STRIP

TYPICAL BLOCK PLAN

SCALE
2. Through traffic along every street - excessive width and strength of pavement.

3. Streets undifferentiated with access possible to all.

4. Immediate access to all dwelling entrances from adjoining streets.

5. Pedestrian and vehicular traffic use the same rights of way, with conflicts at every intersection.

6. Intersections on all streets at 150 to 350 foot intervals.

7. Existing park acreage is 11.53 acres for 9000 people. Probably 5 acres/1000 population would be a good standard for Fairmont considering the lakes and the predominant single-family residences.

---

2. Only local traffic within precincts - routes through precincts are purposely circuitous. Neighborhood feeder and residential access streets need not be replaced with as wide or heavy a pavement as now exists.

3. Access from major streets must be permitted - traffic in a city this is not heavy enough to justify restriction of access on any streets.

4. Dwelling entrance within 100' of both residential street and emergency way.

5. Partial separation of traffic achieved. Pedestrian traffic flows generally along closed streets and neighborhood feeder streets and crosses major streets at controlled points.

6. Almost no intersections of neighborhood feeder streets with major traffic streets. Intersections with minor traffic streets at over 800 foot intervals where possible - in no case under 400 feet.

7. 19.8 acres added in three precincts. The area acquired in all the precincts plus the new parks created would bring the total recreation area in the city up to standards.
Standards 8 and 9 have not been determined quantitatively, but the additional recreation space provided includes areas for all types of activities.

The areas involved in the redesign are:

<table>
<thead>
<tr>
<th></th>
<th>Precinct 2</th>
<th>Precinct 7</th>
<th>Precinct 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area</td>
<td>76.9 A</td>
<td>48.5 A</td>
<td>120.4 A</td>
</tr>
<tr>
<td>Block area</td>
<td>53.45</td>
<td>33.85</td>
<td>87.3</td>
</tr>
<tr>
<td>Streets and alleys</td>
<td>23.45</td>
<td>14.65</td>
<td>33.1</td>
</tr>
<tr>
<td>% in streets</td>
<td>30.5%</td>
<td>30.2%</td>
<td>27.5%</td>
</tr>
<tr>
<td>Pavement Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td>9.92 A</td>
<td>6.18 A</td>
<td>15.85 A</td>
</tr>
<tr>
<td>Blacktop</td>
<td>1.5</td>
<td>2.28</td>
<td>4.64</td>
</tr>
<tr>
<td>Wood block</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td>8.42</td>
<td>3.9</td>
<td>2.82</td>
</tr>
<tr>
<td>Pavement Area Removed</td>
<td>1.66</td>
<td>1.87</td>
<td>1.51</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.15</td>
<td>0.15</td>
<td>0.54</td>
</tr>
<tr>
<td>Blacktop</td>
<td></td>
<td></td>
<td>0.71</td>
</tr>
<tr>
<td>Wood block</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td>1.51</td>
<td>1.72</td>
<td>0.26</td>
</tr>
<tr>
<td>Right of Way Closed</td>
<td>6.82</td>
<td>5.4</td>
<td>6.82</td>
</tr>
<tr>
<td>Right of Way Retained</td>
<td>16.63</td>
<td>9.25</td>
<td>26.28</td>
</tr>
<tr>
<td>New % in Streets</td>
<td>21.6%</td>
<td>19.05%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Green Area Created</td>
<td>6.82 A</td>
<td>6.52 A</td>
<td>6.82 A</td>
</tr>
</tbody>
</table>
PART III

DETERMINATION OF PRACTICABILITY

A. COST ANALYSIS

Of the two factors involved in the practicability of the procedure developed and applied in the first two parts of this thesis, cost and effectuation, cost is of lesser importance. It may determine how much of the project is accomplished or in what way it is accomplished, but is the accomplishment of the project is deemed to be necessary, cost, so long as it is within reason, will seldom be a deterrent.

The costs involved in the application of the procedure include both capital costs and maintenance costs. The capital cost is the cost of tearing up the excess pavement in the streets to be closed, grading the area, improving it and improving the alleys to be used as residential access streets. The maintenance cost is the net cost to the city after conversion of the streets to park area— that is, the difference between what it would cost to maintain the areas as streets and what it will cost to maintain them as parks.
Areas in square feet were derived from the table of areas on page 43. Unit costs for the various operations involved in the conversion of street to park were taken from current contractors' bids for street widening projects in the city of Fairmont. Those used in the computation of the cost estimates are as follows:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Unit Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove concrete pavement, per sq. yd.</td>
<td>$0.75</td>
</tr>
<tr>
<td>Remove bituminous pavement, per sq. yd.</td>
<td>0.60</td>
</tr>
<tr>
<td>Remove gravel surface, per sq. yd.</td>
<td>0.50</td>
</tr>
<tr>
<td>Remove curb and gutter, per lin. ft.</td>
<td>0.30</td>
</tr>
<tr>
<td>Sidewalk, per sq. ft.</td>
<td>0.30</td>
</tr>
<tr>
<td>Bituminous paving, 7&quot;, per sq. yd.</td>
<td>2.25</td>
</tr>
<tr>
<td>Topsoil, per cu. yd.</td>
<td>1.00</td>
</tr>
<tr>
<td>Preparation of lawn, per sq. ft.</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Estimates have been made for both alternatives in the block design: that leaving half of the original pavement as an emergency way and that which widens one of the existing sidewalks and removes the entire pavement.

The first alternative solution involves the removal of 4,064 square yards of concrete pavement, 3,420 square yards of bituminous pavement and 152,460 square yards of gravel surface. After the removal of the pavement, this area, with the exception of the two streets devoted to residential use, is to be covered with 4 inches of topsoil and graded, then seeded. This will require 2,060 cubic yards of topsoil and 166,540 square feet of lawn preparation. The cost is as follows:
1. Removal of concrete pavement 4,044 sq. yd. at 0.75 = $ 3,048
2. Removal of bituminous pavement 3,420 sq. yd. at 0.60 = 2,049
3. Removal of gravel surface 16,980 sq. yd. at 0.50 = 8,490
4. Topsoil, a 4" layer 2,000 cu. yd. at 1.00 = 2,000
5. Seeding 166,540 sq. ft. at 0.02 = 3,330
6. Bituminous paving (alley) 40,700 sq. yd. at 2.25 = 91,500
Total 110,467

The second alternative contemplated the removal of the entire width of the pavement in the area of the closed streets and the widening of one of the sidewalks in order to accommodate emergency vehicles. This will require the removal of 6,770 square yards of concrete pavement, 7,420 square yards of bituminous pavement and 32,600 square yards of gravel surface. To put the area into lawn, 4,360 cubic yards of topsoil and 353,165 square feet of lawn will be required. 164,550 square feet of sidewalk will be required to widen one of the sidewalks to the desired 15 foot width and continue both walks across the intersections. The cost will be as follows:

1. Removal of concrete pavement 6,770 sq. yd. at 0.75 = $ 5,070
2. Removal of bituminous pavement 7,420 sq. yd. at 0.60 = 4,450
3. Removal of gravel surface 32,600 sq. yd. at 0.50 = 16,300
4. Topsoil, a 4" layer 4,360 cu. yd. at 1.00 = 4,360
5. Seeding 353,165 sq. ft. at 0.02 = 7,050
6. Sidewalk 164,550 sq. ft. at 0.30 = 49,400
7. Bituminous paving (alleys) 40,700 sq. yd. at 2.25 = 91,500
Total 178,130
It is impossible to determine the per square foot cost of cleaning and maintaining streets in Fairmont. Working from the budget and expenditure of the street maintenance department, however, we may determine the total cost of maintaining streets and an approximation of the reduction in expense which may be effected by a redesign as is anticipated in this thesis. The total expenditures of the Street Maintenance Department in 1948 were $55,512.58. Of this total, the following items have been determined to be reducible in the new street system:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor - Streets</td>
<td>10,426.20</td>
</tr>
<tr>
<td>Labor and Truck hire - Snow removal</td>
<td>1,302.85</td>
</tr>
<tr>
<td>Supplies and Repair</td>
<td>1,975.95</td>
</tr>
<tr>
<td>Regraveling of Streets</td>
<td>4,685.14</td>
</tr>
</tbody>
</table>

In three precincts the area of streets open to traffic has been reduced an average of 28.8%. These three, with precincts 3, 4, 6, 8 and 12, in which the same reduction of street area might be achieved, contain about 70% of the street area of the city. In the rest of the city, including business and industrial areas, a reduction of about 10% might be achieved. Over the entire city the percentage reduction would be 23%. This percentage may be applied directly to the first three items of expense listed above, resulting in a saving of $3,160 per year. The area of graveled streets would be reduced by approximately 50%, as the existing gravel streets are minor streets in the residential precincts and they are the streets which are the first to be closed. A 50% reduction in the area of streets to be regraveled would result in a saving of
$2342.60 a year or roughly $2000. A total saving in street maintenance costs of $5000 thus results from the new street pattern.

There is another side to the question of maintenance, however. The streets which have been converted to parks must still be cleaned, the grass cut, etc. This work can be done most efficiently by the existing park department. The area to be maintained is 60' x 27,800' (23% of the total of 22.8 miles of street in Fairmont) or 42 acres. In 1948 the Park Department of Fairmont operated its 11.53 acres of parks under a budget of $14,800 with an actual expenditure of $11,431.54. The area in question would not be so difficult or expensive to maintain as a regular park; all that would be required would be a periodic mowing of the lawn and cleaning up of scattered papers. Considering the increased efficiency of the Park Department which would result from an enlarged sphere of operations, the per acre cost of maintaining the strip parks should not be more than one-quarter of the cost in the existing parks. This would be $250 per acre per year or $10,500 per year. In addition to this, there would be a certain expense for supervision of children's play. Probably $2600 for part-time assistants ($1 per hour x 2 hours per day x 100 days per year x 13 precincts) and $1500 for additional part-time directorship would be sufficient. Adding up the park maintenance costs and subtracting the $5000 saving in street maintenance, we arrive at a net cost to the city
of $9100 per year.

In terms of people and property, the impact of this cost is either $5 or $8 per linear foot of frontage on the closed streets for the capital cost, depending on whether the first or second alternative solution is used, and $1 per capita per year for the net increase in maintenance cost. Generally, the capital cost should be levied as an assessment against the abutting property and the maintenance cost included in the general tax rate. The special assessment should be divided between the closed and the non-closed streets in each precinct, as some of the benefits of the program are distributed over the entire precinct, but the front foot assessment on the closed streets would probably not be reduced below $3.50 to $6.00 in any case.

This does not seem an excessive charge in relation to the benefits received and should not be an obstacle to the realization of the program provided it is accepted on its own merits.

b. EFFECTUATION OF THE PLAN

Effectuation is the most important step in the progress of a plan. There have been plans without number, many of considerable merit, which have been developed with the intention of improving the conditions in a particular city, but which now lie gathering dust in the city archives. In the case of a plan so revolutionary, with such an effect on the everyday life of the citizen as that
proposed in this thesis, a consideration of the means of effectuation becomes of paramount importance.

Ladislas Segoe treats the effectuation of the master plan under four headings: A Strong Local Planning Agency, Good Planning Legislation, Cooperation with Administrative Officials and Departments, and Informed and Active Public Support. All four points are important in the effectuation of any planning program.

In the effectuation of the procedure under consideration, the planning board must take full responsibility. It must develop the plan as outlined in Part I, break it down into phases and priorities, and include it part by part in the yearly capital expenditures budget. Of course, the board must have the necessary legislation to back up its actions, the confidence and cooperation of the other departments of the city and the support of the public at large.

Legislation is necessary which will give a city the power to change street area to other uses, so long as the change is part of a complete development plan for the city. The legislation should require the provision of acceptable access for each parcel of property when access by street is restricted.

Close contact must be maintained with the other departments of the city government both in obtaining information

---

1 Ladislas Segoe. Local Planning Administration. Chicago, The International City Managers' Association, 1941. pp 608-22
and advice during the preparation of the plan and in assisting other departments in carrying out the plan under the capital improvement program.

A plan with such far-reaching changes in the day-to-day activities of the people must be presented directly to the people. Every means of publicity should be used—newspaper coverage, progress reports on the plan and its accomplishment, radio, lectures to citizen organizations, etc. A citizens planning organization would be especially useful in bringing the meaning of the plan to the people.

It would be wise to break down the procedure into three consecutive steps in order to reduce the impact of the revolutionary change. In the first step, the major streets would be defined, the precinct areas determined and through access made more difficult by closing off the ends of certain streets. This would be quite acceptable to most cities because of the resultant quieter, safer residential streets. The second step would be to reduce pavement widths on the cul-de-sac streets to about 26 feet, provide a turn-around at the end and give over the remainder of the street area to grass. The third step would be the closing of certain of the residential streets to traffic and the development of the alleys for access, the achievement of the plan as presented in Part II of the thesis. Each of these steps would be preceded by a public relations campaign acquainting the people with the advantages to be gained through the new street system.

The advantages which can be presented to the public
are:

Step I:

No through traffic in the precinct
A sense of belonging to a neighborhood group
Safer areas for children
Concentration of through traffic, making it easier to handle
Reduction of street maintenance costs in precincts
- heavy pavements used only on the major streets

Step II:

More play area for children
Less street area to maintain
Non-essential traffic discouraged from entering cul-de-sacs

Step III:

One street does the work of two
Safe play area for children
Pleasant place for neighborhood activities
Considerable reduction of street area to be maintained, plowed, etc.

In this way the change may be less revolutionary and the ultimate goal more capable of achievement.
C. Evaluation of the Results of the Specific Application

The design developed in Part II as an application of the procedure set forth in Part I is an ideal solution, related more to the standards set as a goal than to the practical problems involved in its effectuation. Analyzing this design in terms of practical considerations, some questions are raised as to the practicality of imposing it on a small city such as Fairmont without some modification. In the first place, a small city will not accept many of the planning proposals involved simply because most of the problems which demonstrate the need for these solutions either do not exist or are not acute in a smaller city. For instance, where there is no traffic problem the idea of confining through traffic to the major streets will not receive much support. Neither the neighborhood nor the precinct will have much social significance when everyone "belongs" to the whole city. In the second place, the necessity of compromising with the neighborhood-size unit creates problems in the scale of the design. It is much more difficult to produce a workable design for, say, 10 blocks than it is for a 100 block area.

There are few immediate advantages to the program in a small city of single family homes. Those listed on page 52 break down when examined in detail.

1. No through traffic in the precinct... There are only a few streets in the city with a traffic load heavy enough to justify remedial measures. In some instances
both major streets and residential streets are gravel-surfaced. Obviously, the same degree of organization of streets need not be achieved in the latter case. In the case of the two or three heavily travelled streets, however, intersections with residential streets should be reduced by half or even more.

2. A sense of belonging to a social group... There is no doubt that in a city as small as Fairmont the whole community will constitute a social group of which each individual may feel a part.

3. Additional play area for children... Sufficient area of the type which will be acquired by closing streets already exists in single family areas in the individual lots. The great need in these areas is for neighborhood playgrounds - areas large enough for a softball diamond - which cannot be met by closed streets unless they are augmented with adjacent property acquired by some other method.

4. Reduction of street maintenance costs... The street maintenance costs have been reduced with the reduction in the area of pavement, but the high cost of park maintenance in the park strips created will result in a net increase in yearly cost to the city. These park areas are actually in excess of the existing requirement for a low density development, and must be reduced in a design which is to be immediately applicable.

5. Safe play area for children... There is a definite
advantage to be attained in providing safe play area for children outside the individual lots, but this area may be realized without the vacation of the street by closing one end of a block, thereby creating a cul-de-sac and preventing through access.

The arguments against the adoption of the more ideal solution are based on custom but are none the less real:

1. It will no longer be possible to park in the street in front of every house... This custom can conceivably change with changing circumstances.

2. Guests will no longer be brought to the front door by car, but must either approach through the backyard or walk half a block from the nearest vehicular street... The half-block walk should not be a deterrent in any but the worst weather.

3. Access to individual properties is made more circuitous... But at the same time access through the precinct is also made more circuitous. An extra block is of little consequence in vehicular access and pedestrian access is not changed in any way.

These arguments in themselves would not be sufficient to block the adoption of the more ideal solution, but on the other hand there is no striking advantage which would cause this program to be adopted in preference to a less revolutionary one. Standards may change in the future so that it will be desirable from an esthetic standpoint to have houses fronting on parks, but in relation to existing
criteria the only advantage which stands up is the increased safety which is achieved within the residential precinct. This may be achieved by other means than those included in the ideal solution, however. A modified solution which might be immediately applicable to Fairmont is suggested. This solution would involve the closing of the streets by blocking off the ends and creating cul-de-sacs. Streets would be vacated and converted to parks only where it would increase the usefulness of an existing or proposed park or playground. A technique which should be further investigated is that of enlarging residential blocks by closing streets and devoting the areas to private uses, as illustrated in several instances in the application to Fairmont. This would reduce the street areas, lowering maintenance costs and improving the organization of the circulation system without at the same time increasing the park area and park maintenance costs.

The aim of any procedure should be, as was stated at the very beginning, to achieve the most improvement for the least expenditure. If, as a practical measure, nearly the same results can be achieved whether or not the streets are devoted to parks, it may be a matter of expediency for the city council to sponsor the program which offers the most for the least - for the immediate future, at least.
The procedure which was developed in this thesis is based upon a number of studies which have been made on the general topic of conservation and rehabilitation of residential areas. It is most directly related to the study made by Burnham Kelly for the Committee on the Hygiene of Housing, APHA, *Excess Streets for Recreation*; to the M.C.P. thesis by Burnham Kelly, *Recreation Space, a Case Study in the South End of Boston*; and to the study produced by the Chicago Plan Commission, *Woodlawn, a Study in Community Conservation*. In these studies are found all the techniques incorporated in the procedure, but in no one of them is there a complete presentation of the procedure as developed here. The major contribution of this thesis, therefore, is felt to be the organization of existing techniques and procedures and their presentation in a single six-point program. Another important contribution is the application of the procedure as developed to an existing small city and an analysis of the costs and legal and political problems involved.

Though the application of the procedure as followed in Part II is felt to be idealistic and unattainable at the present time in a city of the size and character of Fairmont, it is likely that a modification of the procedure, as suggested in the last chapter of Part III, would be more closely related to present problems and attitudes and
therefore more conceivably attained in the foreseeable future. Where higher densities and population/recreation area ratios prevail and park and playground problems exist, the solution which was ideal for Fairmont becomes practical.

The general procedure outlined on page 17 should not be regarded too much as a rigid pattern, permitting no deviations, but should be modified, enlarged or abridged to fit the individual situation. Any of the six steps may be changed as the local circumstances dictate. The fifth step in particular, relating to the use of tax-delinquent and excess public land, depends entirely upon the availability of these properties in the community. It must be kept in mind that the procedure is not developed for any particular city but is intended to have general application.

In closing, several conclusions may be drawn with respect to the accomplishments of the thesis:

1. The procedure has practical application only to the extent that it solves existing problems in the community.

2. The procedure is more fully applicable to a densely settled, closely built-up city or section of a city.

3. A wide variety of procedures must be developed in order to cope with local problems and attitudes.

4. The application to Fairmont is not practicable at present, but it is useful as an ultimate pattern, to which will be related a series of intermediate steps, developed
as the problems of the city change and the standards upon which the plans are based expand.
BIBLIOGRAPHY


Edelman, Bernard S. *First Report on Public Land in Cuyahoga County.* Cleveland, Regional Association of Cleveland, 1939. 36 pp. mim.


Howard, John T. *Land Use in Cuyahoga County*. Cleveland, Regional Association of Cleveland, 1940. 41 pp.


