CMHC SCHL
HOME TO CANADIANS

Canadian Home Builders' Association

WORKSHOP

INFRASTRUCTURE AND HOUSING: CHALLENGES AND OPPORTUNITIES

JUNE 18 AND 19, 1992
LONDON, ONTARIO

ACHIEVING INFRASTRUCTURE COST EFFICIENCY/EFFECTIVENESS THROUGH ALTERNATIVE PLANNING APPROACHES

Sponsored by:
CANADA MORTGAGE AND HOUSING CORPORATION
and
THE CANADIAN HOME BUILDERS' ASSOCIATION

Hosted by:
THE CENTRE FOR STUDIES IN CONSTRUCTION

VERITAS ET UTILITAS

The UNIVERSITY of WESTERN ONTARIO

ACHIEVING INFRASTRUCTURE COST EFFICIENCY/EFFECTIVENESS THROUGH ALTERNATIVE PLANNING APPROACHES

Prepared by

Marshall Macklin Monaghan Limited

June 1992

Cette publication est aussi disponible en français
sous le titre "De nouvelles approches de planification pour des
infrastructures plus efficaces et plus économiques"

TABLE OF CONTENTS

APPENDICES

ALTERNATIVE PLANNING APPROACHES

1.0 INTRODUCTION

This paper addresses a broad range of issues which affect and shape urban communities, both those that are being built in greenfield areas and those that are evolving in existing communities through redevelopment. Topics specifically addressed in this paper include:

- Land Use Intensification;
- Subdivision Design Standards (both Planning and Engineering);
- Joint Use Community Facilities; and
- Resistance to Redevelopment or new development (The Not in My Backyard Syndrome - NIMBY).

These subjects are all interrelated. As regulations change and we strive to develop in a more efficient manner, it is increasingly necessary for the various actors, (professionals, agencies and the public), to work together, early in the planning process in order to resolve a variety of conflicting objectives.

For example, a growing number of agencies and authorities (beyond local municipalities) are now in a position to influence the land development process and are imposing greater restrictions on development. Each of these restrictions serves the needs of the agency and, for the most part, they make the resulting community a better place to live. Unfortunately, the restrictions also have a significant impact on the cost of developing land and they often conflict with other objectives, such as the development of more affordable housing.

In fact, more than ever, there is a direct conflict between the objective of providing affordable housing and the objectives of the public agencies who are setting policies and standards which must be met by land developers.

For instance, school boards are increasing their requirements for the area of land they require for a school. Railway companies now require berms and significant setbacks to protect citizens from noise and potential derailments and spills and the Ontario Ministry of Natural Resources requires the protection of all water courses with a significant buffer strip. MNR also requires the treatment of storm water, which must be done on developable land, not in the floodplain.

In each case the objectives of the agencies setting the requirements are admirable. However, by working in isolation, this sectoral approach to land development issues is ill-suited to make the social, economic and environmental trade-offs necessary in any development decision. With a view to achieving infrastructure cost efficiency and effectiveness, this paper examines the opportunities to develop and redevelop land in a more comprehensive manner.

2.0 LAND USE INTENSIFICATION

2.1 INTRODUCTION

In Canada, and particularly in Ontario, municipalities are still utilizing relatively conventional or traditional planning and development standards. In an effort to achieve cost efficiency and effectiveness, alternative planning approaches have been examined.

The modified planning standards addressed in this paper focus on reducing land area requirements per housing unit in order to realize per unit savings and other benefits associated with more compact development. In all cases, the options considered include ground-oriented buildings only. The Ontario Ministry of Housing 1976 "Urban Development Standards" publication and recent updates to this study found that savings per lot resulted primarily from increased housing densities. Faciliated by innovative engineering and planning standards, housing intensification is one method of increasing residential densities. Intensification also has the potential to substantially reduce capital and per capita operating infrastructure costs.

2.2 INTENSIFICATION

In 1990, the Canadian Urban Institute identified the following five categories of residential intensification.

- Conversion - increasing the number of households within existing housing forms through renovations and additions;

- Infill - building new housing on vacant and under utilized land within existing residential developments;

- Redevelopment - building new housing on serviced sites where the original function has diminished;

- Adaptive Re-use - changing the function of a site to residential; and

- Suburban Densification - changing the specification governing subdivision developments (e.g., minimum frontages, setbacks,) to allow for higher density development."

Intensification means increasing densities, or accommodating more people in a given amount of space. It is about mixed use and low rise, about human scale and designs that are complementary to existing development. 'You can double the density of a single family neighbourhood without changing its character', notes architect Jack Diamond. 'You can still have single family home dwellings, you just go from a loose arrangement of houses to a tighter arrangement'".[1] Clearly, both modified and innovative planning standards are required in order to realize substantial increases in density within low rise residential neighbourhoods, whether in greenfield situations or in existing communities.

In the course of undertaking this review, specific planning standards related to minimum setbacks, minimum frontages, minimum lot sizes, and parking requirements were investigated. In traditional subdivision design, lot frontages and lot areas per housing unit have been generous. Many lots have been created with

1 *New Planning News, Vol. 2, No. 1 - March 1992, Cost, Environment Put intensification on the Agenda, Commission on Planning and Development Reform in Ontario*

fifteen metre (50 foot) frontages and thirty-six metre (120 foot) depths resulting in a lot area of five hundred and fifty eight square metres (6,000 square feet). Today, both planners and the public recognize that lesser lot frontages and smaller lot areas per dwelling unit will result in lower housing costs . Further, if lot frontage is reduced, the local access road abutting the lot is also reduced. To illustrate the impacts of alternative urban development standards favouring reduced lot dimensions, a number of "freehold" lotting scenarios and selected condominium examples have been analysed. Through an evaluation of these scenarios, the relative effectiveness of alternative development standards can be assessed. The assessment entails both quantitative and qualitative considerations.

Statistics are presented in Table 1 for various lot configurations and sizes. In all cases the "efficiency achieved" is calculated by comparing the proposed lot to the standard or traditional 15 m × 33 m lot. The configurations presented range from modest reductions in lot size and setback requirements to significant innovative planning scenarios reflecting a variety of housing forms and lot configurations.

The housing forms considered include single family, semi detached, quadruplex (double duplex) and townhousing. The lot types considered included conventional lotting, the use of rear lanes, zero lot line, key lots and zipper lots (the Trelawny concept)[2]. In addition, two concepts have been presented which are applicable to condominiums where the roadway and common open space are in private ownership.

Representative examples of the scenarios, along with their positive and negative .psects, are described in Appendix A. The scenarios reflect the potential for increasing densities through creative approaches to housing designs and lot

2 *First City Development Corp. Ltd. 1984 (Team Three, Planners and Miller Bobaljik, Architects.)*

configurations with at-grade access. In both Table 1 and Appendix A, statistics have been provided to allow for a comparison of the lot area, lot frontage, unit size, lot coverage, privacy space, municipal road area required for access and net density. (The net density figures include an allocation of municipal road area contiguous to the lot frontage or block but do not include land area required for collector roads, arterial roads etc. and community facilities such as parks, schools, local shopping area etc.)

In the scenarios outlined, comparative densities range from 11.6 units per hectare (4.7 units per acre) for large lot traditional subdivision housing to 53.8 units per hectare (21.8 units per acre) for quadruplex/double duplex units with frontage on one street. Condominium townhousing examples presented reflect densities of 16.0 units per hectare (6.5 units per acre) and 46.0 units per hectare (18.6 units per acre) depending on amenities such as semi-private open space and walkway systems. Traditional urban condominium townhousing projects have been designed and built at 30 to 35 units per hectare (12 to 14 units per acre) with 125% parking provided.

Each of the scenarios and associated planning standards has its own merits but the opportunity also exists to combine concepts. For example, the combination of the zero lot line approach with key lotting will increase the savings in land area per housing unit. Further, the design ideas presented may also be applied to residential intensification and infilling as well as "greenfields" planning. Through severances and zoning changes, the incorporation of key lots into existing older residential areas may be permitted, where sufficient lot frontages and lot depths allow, to increase densities. Redundant school sites or other pockets of land in older urban

TABLE 1

COMPARATIVE STATISTICS FOR "FREEHOLD" LOTTING SCENARIOS AND CONDOMINIUM EXAMPLES (#11 & #12)

Lotting Scenario	Lot Area		Lot Frontage		Unit Size		Lot Coverage %	Privacy/Landscaped Open Space		Public Access Road Area Attributable to Lot (52.5 ft./16 m R.O.W.)		Net Density	
	sq. ft.	sq. m	feet	metres	sq. ft.	sq. m		sq. ft.	sq. m	sq. ft.	sq. m	U.P.A.	U.P.Ha
#1. A.	4,500	418.2	45	13.7	2,000	185.9	27.5	1,800	167.3	1,485*	138.0*	7.3	18.0
B.	7,200	669.1	60	18.3	3,000	278.8	27.5	3,000	278.8	1,980*	184.0*	4.7	11.6
#2.	2,400	223.0	30	9.1	1,200	111.5	35.0	750	69.7	788	73.6	12.5	30.8
Lane										300	27.9		
#3.	2,000	185.9	25	7.6	1,200	111.5	42.0	625	58.1	656	61.3	15.0	37.0
Lane										250	23.2		
#4.	1,600	148.7	20	6.1	1,000	92.9	46.0	600	55.8	525	49.1	18.7	46.2
Lane										200	18.6		
#5.	1,688	156.9	12.5	3.8	1,000	92.9	42.0	625	58.1	328	30.7	21.6	53.3
#6.	1,750	162.6	25	7.6	1,000	92.9	42.0	625	58.1	656	61.3	18.1	44.7
#7.	2,275	211.4	35	10.7	1,200	111.5	37.0	633	58.8	919	85.9	13.6	33.6
#8. Front Lot	1,950	181.2	30	9.1	1,200	111.5	43.0	750	69.7	788	73.6	16.0	39.2
Rear Lot	3,250	302.0	10	3.0	1,000	92.9	23.0	1,200	111.5	263	24.5	12.4	30.6
Average	2,600	241.6	20	6.1	1,100	102.2	33.0	975	90.6	526	49.1	13.9	34.4
#9. Front Lot	1,950	181.2	30	9.1	1,200	111.5	43.0	750	69.7	788	73.6	15.9	39.2
Rear Lot	3,050	283.5	10	3.0	1,000	92.9	24.0	1,200	111.5	263	24.5	13.1	32.5
Average	2,500	232.3	20	6.1	1,100	102.2	34.0	975	90.6	526	49.1	14.4	35.5
#10.	6,491	603.3	58	17.6	3,331	309.6	26	1,474	137	1,119	104	5.9	14.6
#11.	1,755	163.1	21	6.4	1,160	107.8	33	727	67.6	204	19	18.5	45.8
#12.	1,221	113.5	20	6.1	962	89.4	39	500	46.5	231	21.8	6.5	16

* Assumes 66 ft./20 m R.O.W.

areas may also be redeveloped through the application of innovative planning standards.

In terms of overall neighbourhood or community planning, more compact design resulting in smaller privacy areas makes the provision of parkland and open space increasingly important. In this regard, the siting of housing units on a common park area with rear access via laneways may well be a viable option to consider in future community design. Some successful examples of this residential land use pattern exist today in older parts of existing cities, such as the City of Toronto.

2.3 FACE-TO-FACE HOUSE SEPARATION

While every standard requires review and consideration, special attention should be given to the distance from house-to-house across a street, or the face-to-face house separation. There is considerable opportunity for land savings here if an integrated approach is taken. This issue is described as 'integrated' as it requires a reconsideration of both planning and engineering standards. Reducing the face-to-face' separation involves reducing both the house setback and the road right-of-way width. Examining these elements reveals the following.

House Setbacks

The first "half" of the face-to-face equation is the setback. Typically, setbacks are required to be about 6 metres measured from the property line. Setbacks provide a place to park a car in front of the garage, privacy in the house from people on the street, and, in some people's opinion, a more aesthetic streetscape. For each of these planning objectives, there are opportunities available that could help reduce setbacks.

For example, while in today's society we must expect to have to continue to provide a place for at least one car to park outside the garage, to achieve this, we do not need to set back the entire house 6 metres. Only the garage should be set back. In addition, the setback for the garage should not be measured from the property line, which in practice does not really exist. Rather, it should be measured from real barriers such as the sidewalk or, where there is no sidewalk, the curb.

The issue of privacy is perhaps one of perception. The real issue here is separation from the sidewalk. Methods of dealing with this concern include architectural and landscape treatment, building elevation, and window coverings.

Aesthetically, house designs with the house more predominant than the garage are in many peoples' opinions more attractive than our current, prominent garage designs.

Road Right-of-Way

One method of reducing the width of the road right-of-way involves reducing the number of sidewalks and modifying the location of the sidewalk within the right-of-way. In order to achieve this, it will often be necessary to integrate sidewalk locations into the draft plan process so that lot depths can be set accordingly. Chapter 4 explores this, and other opportunities for reducing R.O.W.'s more fully.

2.4 GRID PATTERNS OF DEVELOPMENT

In view of the transportation inefficiencies, feelings of isolation, and other problems associated with the curvilinear street patterns of conventional post World War II subdivision designs, many planners are now revisiting the relative merits of the grid pattern of development.

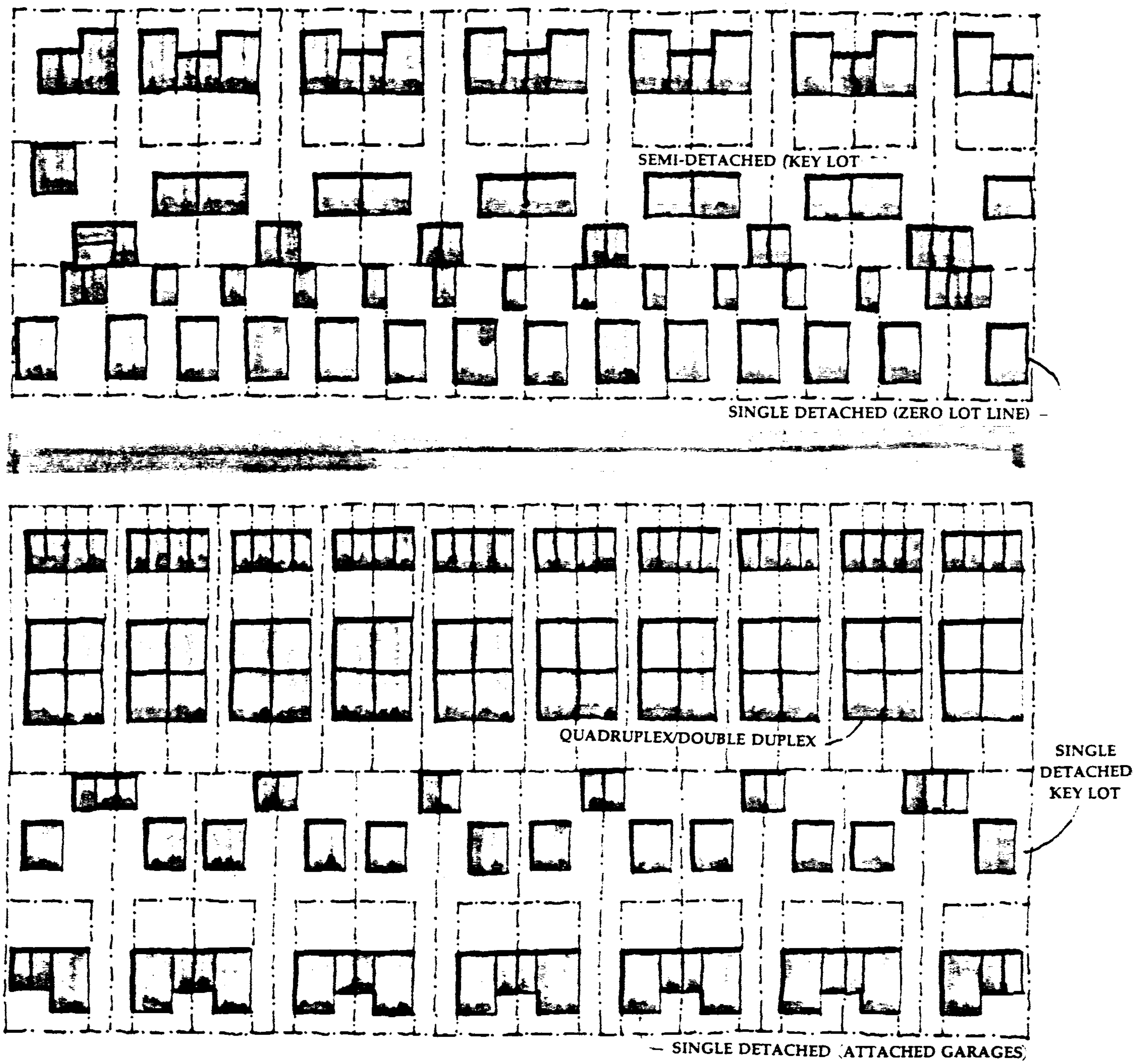
It is now widely acknowledged that compact development and efficient circulation systems are more easily achieved within a grid pattern. Generic applications of the grid system have been prepared to illustrate a variety of combinations of the lotting and housing form scenarios illustrated in Appendix A. Many applications of innovative planning standards can be generated. Three examples, presented in Sketches 1, 2 and 3, reflect a high degree of efficiency associated with specific "physical" factors affecting capital and operating costs of community infrastructure. These factors include density of development, urban form or shape, urban contiguity, street patterns (road layouts) and land use mix (variety of residential unit types).

The three figures illustrate how lotting approaches can be combined for choice, variety and interest within a grid system. They may then be incorporated into a grid "super block" layout incorporating green space linkages, community facilities and reasonable walking distances.

Each module or macro block examined is approximately 153 metres square (502 feet square). A density of 13 units per hectare (5.3 units per acre) can be realized with traditional single family lots laid out in an efficient grid pattern. Comparative densities are presented for the three block modules. These densities exclude an allowance for the area boundary roads which may vary in width, or not even be

A. BLOCK MODULE (153 METRES SQUARE)

- A COMBINATION OF SINGLE DETACHED, SEMI-DETACHED AND QUADRUPLEX/DOUBLE DUPLEX UNITS YIELDING 44 UNITS PER HECTARE

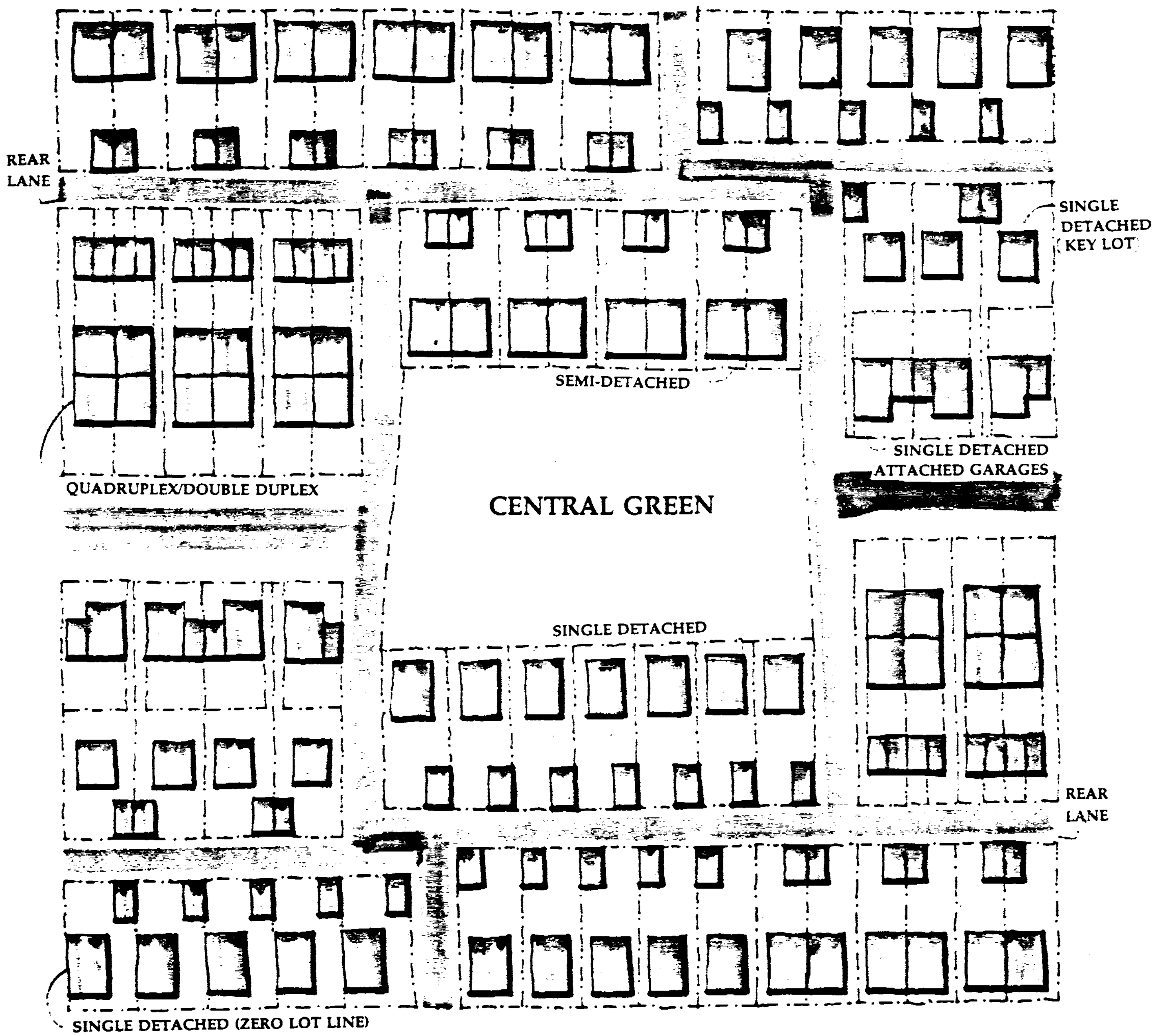


RESIDENTIAL UNIT SUMMARY	% OF TOTAL UNITS
• 19 single detached (zero lot line)	
• 20 single detached (attached garages)	51
• 13 single detached (key lot)	
• 10 semi-detached	10
• 40 quadruplex (double duplex)	39
102 units	100%

SKETCH 1

B. BLOCK MODULE (153 METRES SQUARE)

- INTEGRATION OF A CENTRAL GREEN SPACE MID-BLOCK INTO A COMBINATION OF SINGLE DETACHED, SEMI-DETACHED AND QUADRUPLEX/DOUBLE DUPLEX UNITS YIELDING 35 UNITS PER HECTARE

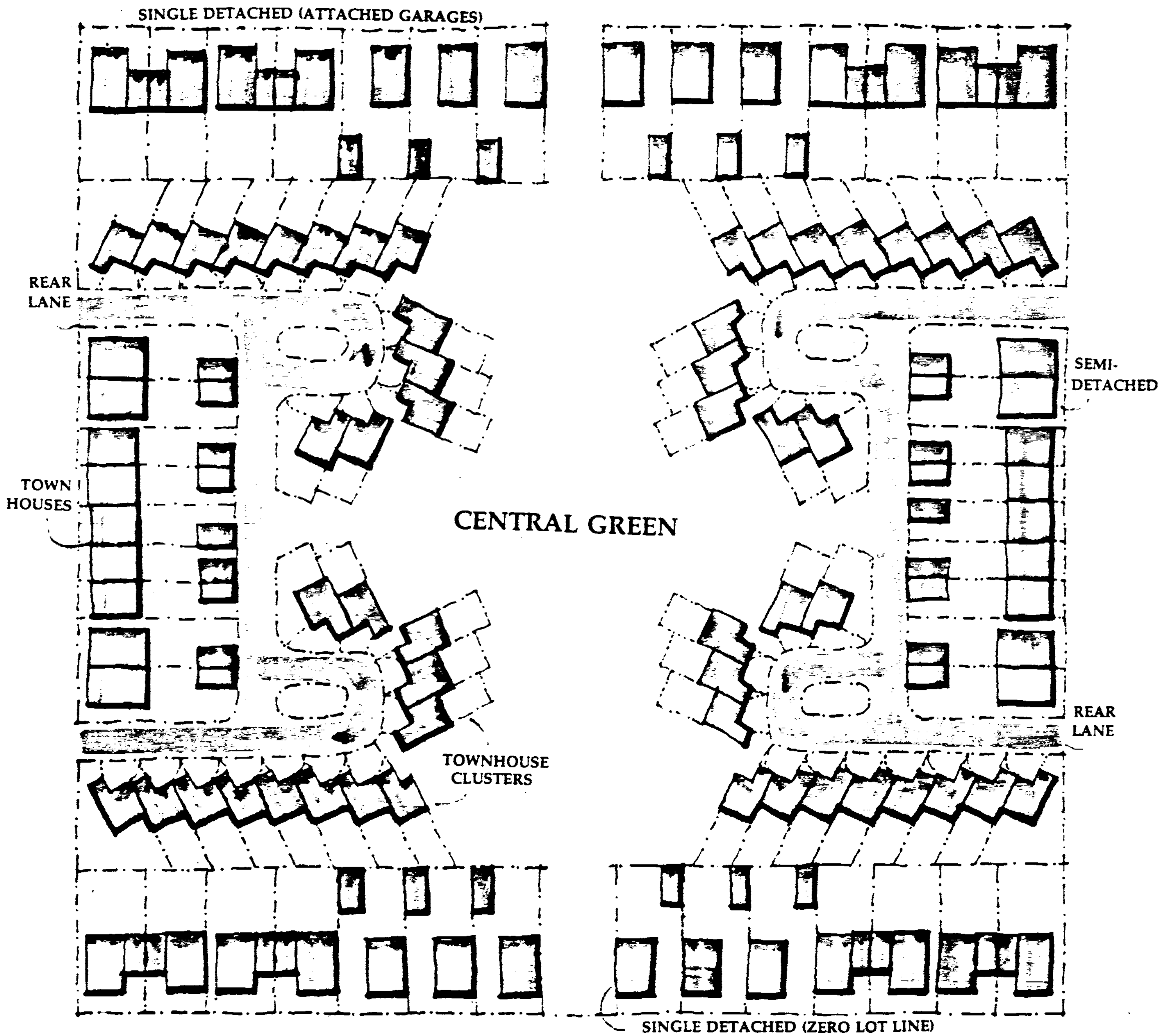


RESIDENTIAL UNIT SUMMARY	% OF TOTAL UNITS
• 15 single detached	
• 10 single detached (zero lot line)	44
• 4 single detached (attached garages)	
• 7 single detached (key lot)	
• 26 semi-detached	32
• 20 quadruplex/double duplex	24
82 units	100%

SKETCH 2

C. BLOCK MODULE (153 METRES SQUARE)

- A COMBINATION OF SINGLE DETACHED, SEMI-DETACHED, QUADRUPLEX/DOUBLE DUPLEX UNITS AND TOWNHOUSING (STREET AND CONDOMINIUM) LINKED BY LINEAR GREEN OPEN SPACE SEQUENCES YIELDING 42 UNITS PER HECTARE



RESIDENTIAL UNIT SUMMARY	% OF TOTAL UNITS
• 12 single detached	} 29
• 16 single detached (attached garages)	
• 8 semi-detached	8
• 10 townhouses	10
• 52 townhouse cluster units	53
98 units	100%

SKETCH 3

required in some instances. As illustrated in Block Module A, the combination of single detached, semi-detached and quadruplex/double duplex units can yield 43.6 units per hectare (17.6 units per acre). Block Module B illustrates the integration of a central green space mid-block to achieve densities of 35 units per hectare (14.2 units per acre). Further, as illustrated in Block Module C, the incorporation of condominium and street townhousing and generous linear green linkages can achieve densities of 41.9 units per hectare (16.9 units per acre). It is clear that minimizing the land area required per residential unit and taking advantage of innovative planning standards can result in creative and efficient mixed use housing concepts.

2.5 SUMMARY

The smaller lots and compact housing forms described above require a more integrated design approach than is necessary with traditional larger lot developments. The planner must work with the engineer and, if possible, the builder to identify areas where additional land must be allocated for grading, drainage, utilities and other issues normally incorporated in large lot developments without special provisions. Involvement of the entire design team at an early stage will allow integrated, cost effective and more attractive solutions than if the issues are ignored until the detailed engineering design phase.

In summary, the analysis of the various scenarios clearly shows a number of ways in which lot areas per housing unit can be reduced without jeopardizing the lifestyle associated with the traditional single detached house. In fact, many designers are convinced that the visual quality of innovative planning for residential areas is far superior to traditional subdivision layouts. Environmental quality can therefore be improved with enhanced common green spaces and a greater variety of house forms that produce more interesting streetscapes.

In designing new neighbourhoods, no single solution will suffice. Rather, the sensitive application of a series of innovative concepts will generate not only efficient, but also high quality residential environments. For many, these environments may be the only communities offering affordable grade-related housing. The acceptance of change by the public is critical if cost savings associated with alternative planning standards are to be realized in both the short and long term.

3.0 SUBDIVISION DESIGN STANDARDS - ENGINEERING EFFICIENCY

Subdivision design standards have evolved over many years. They have changed in response to various pressures and requirements, including government agencies such as the Ministry of the Environment, pressures from the public for increased levels of service, problems with past standards and availability of new materials and techniques.

In virtually all cases. changes have had the effect of increasing the cost of servicing and developing lands for residential (or other) purposes. The one exception may be changes to accommodate innovative materials or construction techniques. These changes are driven by contractors or material suppliers and manufacturers who have developed a technique to deliver an equal or better product which is less expensive than the previous standard.

The term 'gold plated' is often used to describe engineering standards. This 'negative' label is often applied in too simple a fashion. It is appropriate for many reasons to have a high standard for a service which is required. What should be questioned (or termed gold plated) is the requirement for services or infrastructure to be constructed which are in excess of what should be required.

This chapter examines trends in construction costs, right-of-way widths, standards, and the subdivision assumption process.

3.1 CONSTRUCTION COSTS

The cost to construct a residential subdivision in southern Ontario increased steadily from 1976 to 1990 by a total of 137% or approximately 6.5% per year on average. As illustrated in Figure 1, the costs have increased each year up to 1990, with some levelling off during the recession of 1982 - 84 and more recently in 1990. Construction costs for 1991 are shown to have dropped for the first time in the past 15 years. It is difficult to determine precise costs for 1991, due to low volumes. It is however, clear that the number of subdivision starts decreased, causing contractors and suppliers to reduce profit margins and other costs as competition increased. It is anticipated that once the current economic slow down is over the construction costs could rebound very quickly as was observed after the 1982 to 1984 slow down.

Over the same time period (1976 - 1990) Canada's Consumer Price Index has risen by 152% or approximately 6.9% per year on average (also illustrated on Figure 1). While the percentage increase from year to year differs for residential subdivision costs and the CPI, the overall increase from 1976 to 1990 has been comparable.

Increases in construction costs due to inflation are to be expected. Increasing standards and requirements would be expected to drive servicing costs beyond the rate of inflation. They have however, been held in check by the application of innovative construction techniques and materials. Figure 2 illustrates the forces impacting upon servicing costs.

Fluctuation in year-to-year increases in construction costs are due to the market forces of supply and demand. Construction contracts are generally negotiated in a competitive environment and thus contractors, and to a lesser extent suppliers, adjust their margins based upon the amount of work expected in their market area,

FIGURE 1

RESIDENTIAL SUBDIVISION COSTS

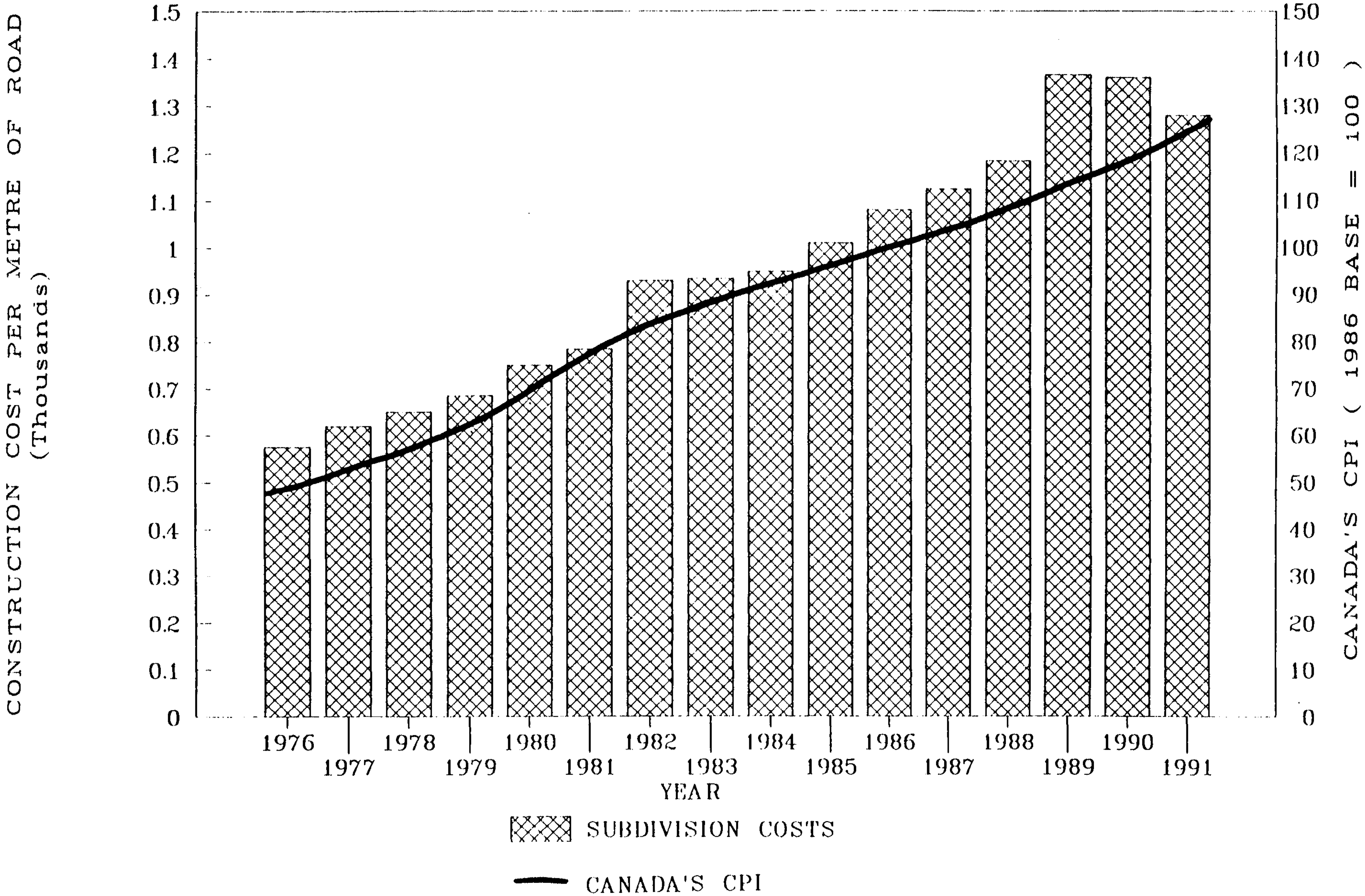


FIGURE 2

FORCES IMPACTING ON SERVICING COSTS

▲ ITEMS TENDING TO INCREASE COSTS	* HIGHER STANDARD FOR BASEMENT PROTECTION * LOOPING OF WATER SYSTEM ON CUL-DE-SACS * MORE "RIGOROUS" ASSUMPTION PROCESS * MORE RESTRICTIVE GRADING PRACTICES (VARIES BUT ALWAYS PRESENT) * EXTENSIVE USE OF ROAD SUBDRAINS * CURB AND GUTTER REPLACING BARRIER CURBS * WATER VALVES IN CHAMBERS * INCREASED NUMBER OF VALVES
ITEMS TENDING TO DECREASE COSTS ▼	* LARGER CONSTRUCTION EQUIPMENT * MORE SPECIALIZED CONSTRUCTION EQUIPMENT (CURB AND SIDEWALK MACHINES ETC.) * USE OF GEOTEXTILES * PLASTIC SEWER AND WATER PIPE * GREATER USE OF PRECAST CONCRETE PRODUCTS * COMMON TRENCH SEWER CONSTRUCTION * TWO STAGE CURB AND GUTTER (INSTEAD OF SINGLE STAGE) * DECREASED NUMBER OF SIDEWALKS

the resources of others who could do the work they are competing for, and their own workload. As a result, a graph of year-to-year construction cost increases could, to some extent, be considered a barometer of demand for serviced lots.

3.2 ROAD RIGHT-OF-WAY WIDTH

Chapter 2 addressed the 'Face-to-Face' distance between houses and the house setback's role in determining this distance. Equally important, however, is the road right-of-way (R.O.W.) width. In fact, a reduction in the road right-of-way width is the single most effective 'engineering' contribution that can be made to achieve infrastructure cost efficiency (measured on a per dwelling unit basis). With more compact housing forms there will likely be more road per hectare of developable land and thus reductions in the right-of-way widths will have a more significant effect.

The traditional 20.0 m (66 feet) wide right-of-way has its origins in early land division in southern Ontario. At that time, the predominant methods of measuring length was a 66 foot long chain known as a "Gunters chain". When southern Ontario was originally being sub-divided, the surveyors allowed for a future road 1 chain wide between 100 chain wide Concessions. This dimension of 1 chain, or 66 feet, has been used ever since as the standard for road right-of-way widths when in fact, the only reason it was initially chosen was as a matter of convenience when land values were not a significant concern.

As illustrated in Figure 3, in the 1990's, a typical 20 metre (66 feet) local road R.O.W. contains the following components:

- *8.5 metre pavement width;*
- *5.75 metre boulevards;*
- *1 or 2-1.5 metre sidewalk(s);*
- *curb and gutter;*
- *storm drainage system - including sewers, manholes, catchbasins and foundation drains;*
- *sanitary drainage systems - including sewers, manholes and service connections;*
- *water distribution system - including watermains, valves chambers, hydrants and service connections;*
- *underground utilities - Hydro, Gas, Bell and Cable T.V. including alternate location for future installation;*
- *above ground utility pedestals for Hydro, Bell, and Cable T.V.;*
- *streetlights;*
- *trees.*

In short, it is the lifeline of the community.

Notwithstanding the importance of the right-of-way there are opportunities to reduce it. The following are general comments on how the R.O.W. width can be reduced. Each municipality will need to consider these suggestions and the requirements of the users of the R.O.W. to set their own reduced R.O.W. requirements.

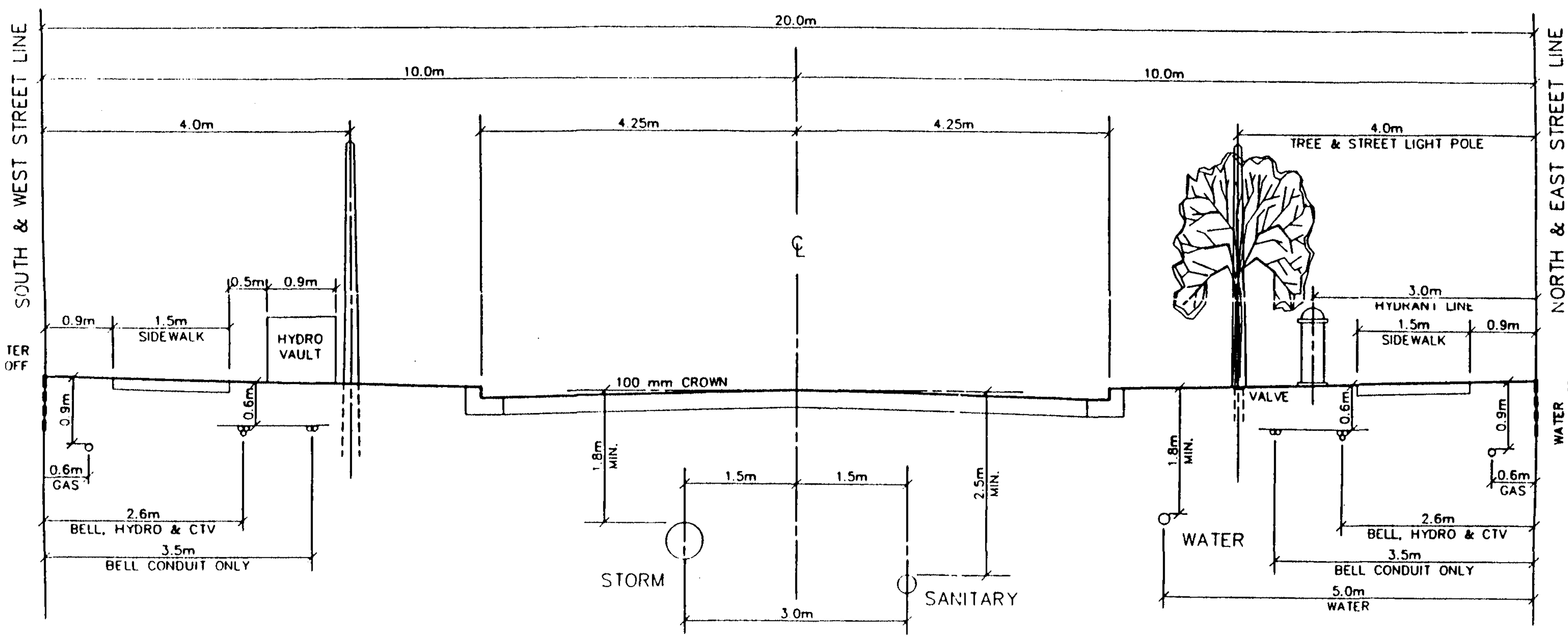


FIGURE 3
TYPICAL 20.0m R.O.W.

Sidewalks

Most 20 m right-of-way layouts allow for two - 1.5 m sidewalks, however, in many cases only one, or none, are constructed. Sidewalk requirements should, therefore, be determined at the very beginning of the planning process and at the very latest they should be set at the draft approval stage. Fewer sidewalks (a logical step) can save land and construction and maintenance costs.

Even where sidewalks are required land savings can be realized. Generally, sidewalks have been given an exclusive location within the road right-of-way. This is not necessary, they should be located on top of utilities which are also placed in the right-of-way. Utilities are seldom dug up after a subdivision is developed and if they are, the cost of removing and replacing a section of sidewalk is marginal compared to the cost of separating utilities and sidewalks.

Recently, sidewalks have been set back from the curb as much as possible primarily to maximize the available space for snow storage. There is great advantage to moving the sidewalk closer to the curb. Depending upon the amount of snowfall an area expects and the maintenance habits of the municipality, the maximization of this setback may not be cost effective. A more effective approach involves constructing sidewalks at the curb line, and, as necessary, providing extra width to allow storage of snow in the gutter and on the edge of the sidewalk. Once or twice per winter, this snow would be removed by the City. The cost of removing the snow should be investigated locally. However, it is not expected to be prohibitive as it would be done between snowfalls by works crews and equipment which are otherwise on standby. This method is practiced by the City of Toronto and parts of Ottawa, and both authorities have confirmed that it is cost effective.

Eliminating sidewalks, or moving them closer to the curb, will theoretically allow a reduced setback for the garage and thus a reduced lot depth. To be effective, the progressive standards for house setback discussed above (i.e. measuring setback from the sidewalks or where there is no sidewalk, from the curb) must also be implemented.

Within the right-of-way, moving or eliminating the sidewalk is the single most important measure that can be undertaken. In fact, if this was done and if setbacks were measured from the sidewalk, instead of from the property line, and maximum coverage limits were relaxed, it would actually not be necessary to reduce the R.O.W. width to decrease the face-to-face housing separation and achieve more compact housing.

Pavement

Historically, local roads are 8.5 m wide. This standard should be reviewed especially in local areas where off-street parking is prohibited. In areas where parking is permitted, a local road 8.0 m wide can safely (at local street speeds) allow a parked car on one side with 2 cars passing. Circumstances with trucks could arise which would require some cooperation; however, this should not be a problem at the local level.

Not only does a narrower pavement width save land it also reduces the capital cost of the road and the cost of ongoing maintenance.

The opportunity to reduce pavement widths should be considered in conjunction with sidewalks as it may not be appropriate to reduce pavement widths if both sidewalks have been removed.

Watermains

Traditionally, watermains are located within the boulevard area. As this area is the most crowded area of the right-of-way from a utility point of view, consideration should be given to moving the watermain out of the boulevard and under the travelled portion of the road allowance. This is done successfully in some jurisdictions.

Utilities

Prior to the 1960's and 1970's, utility (Hydro, Bell and later Cable T.V.) cables were located above ground on either utility poles, which doubled as light poles, or on utility poles in rear yard easements. Primarily out of a desire to improve aesthetics, these utilities were placed underground in the road allowance. Consideration should be given to whether or not we can still afford this practice since as much as $500 per unit (assuming a 10 m wide lot) could be saved with above ground utilities. As well, the right-of-way could be dramatically reduced, if no locations were reserved for underground utilities, resulting in further cost savings. As this idea has not been well received wherever it is presented, no further effort is made here to promote it. It should be noted, however, that many highly desireable areas in cities throughout Canada are serviced in this manner.

For underground services, utility companies are a major user of the allocated space within the right-of-way. Due to the nature of their installation they are typically located on both sides of the R.O.W. Separate spaces are allocated for Bell, Hydro and Cable T.V.; however, it is general practice to install utilities in a common trench, thus leaving four space allocations (2 on each side of the road) unused. These are typically allocated for future use. To accommodate a reduced R.O.W., utilities should be installed in common trenches and locations for future use should only be reserved where there is a realistic future need. Alternatively, it may be practical to install a duct bank where future utilities could be installed to allow them to be pulled in without excavation at a later date.

Effecting Change

The local municipality generally has jurisdiction over the road allowance. By Federal or Provincial Charter, utility companies have the right to locate their services within the road allowances. Recently, attempts to reduce road R.O.W. width's have been stalled in jurisdictional disputes involving conflicting objectives and requirements.

To negotiate through this jurisdictional maze requires the cooperation of all involved and typically a leader, or "champion", preferably at the local government level.

A systematic, thorough, and concise presentation to senior staff in the various "stakeholder" organizations is necessary to effect changes in standards. After their commitment is obtained, a working committee is typically required to follow up and recommend the appropriate changes.

The Regional Municipality of Ottawa-Carleton has recently undertaken an exercise similar to the one described above. The result of this exercise was that they were able to reduce the road R.O.W. from 20 to 16 metres wide.[3] Further details of their positive undertaking are included in Appendix 'B'.

The Benefits

An example of an achievable 16 m R.O.W. is illustrated in Figure 4. The benefits of reducing road rights-of-way from 20 m to 16 m, and front yard setbacks from 6 m to an average of 3 m are significant. On a typical development with mixed frontages (6 m to 15 m) these reductions will save about 10% of the land required without changing the other characteristics of the development. Restated, this one step alone will allow 10% more houses to be constructed on a given tract of land. With reduced lot sizes overall, the savings would be even more significant.

3.3 MUNICIPAL STANDARDS

Since detailed standards and design criteria vary from municipality to municipality, it is difficult to make broad general statements about how standards can be made more cost effective. Rather than focus on individual issues it is more appropriate to develop a series of guidelines against which standards and rules can be tested. As stated at the outset, it is generally appropriate to have a high standard for services which are to be constructed to ensure a long life, however, the non-essential elements of the system should be removed. Both the developer and the municipality will benefit by this removal of non-essential elements as the capital cost, and the ongoing maintenance and eventual replacement costs, are also eliminated.

3) *Alternative Development Standards: Proposals to Reduce Housing Costs by Regional Working Committee on Alternative Urban Development Standards, September 1991.*

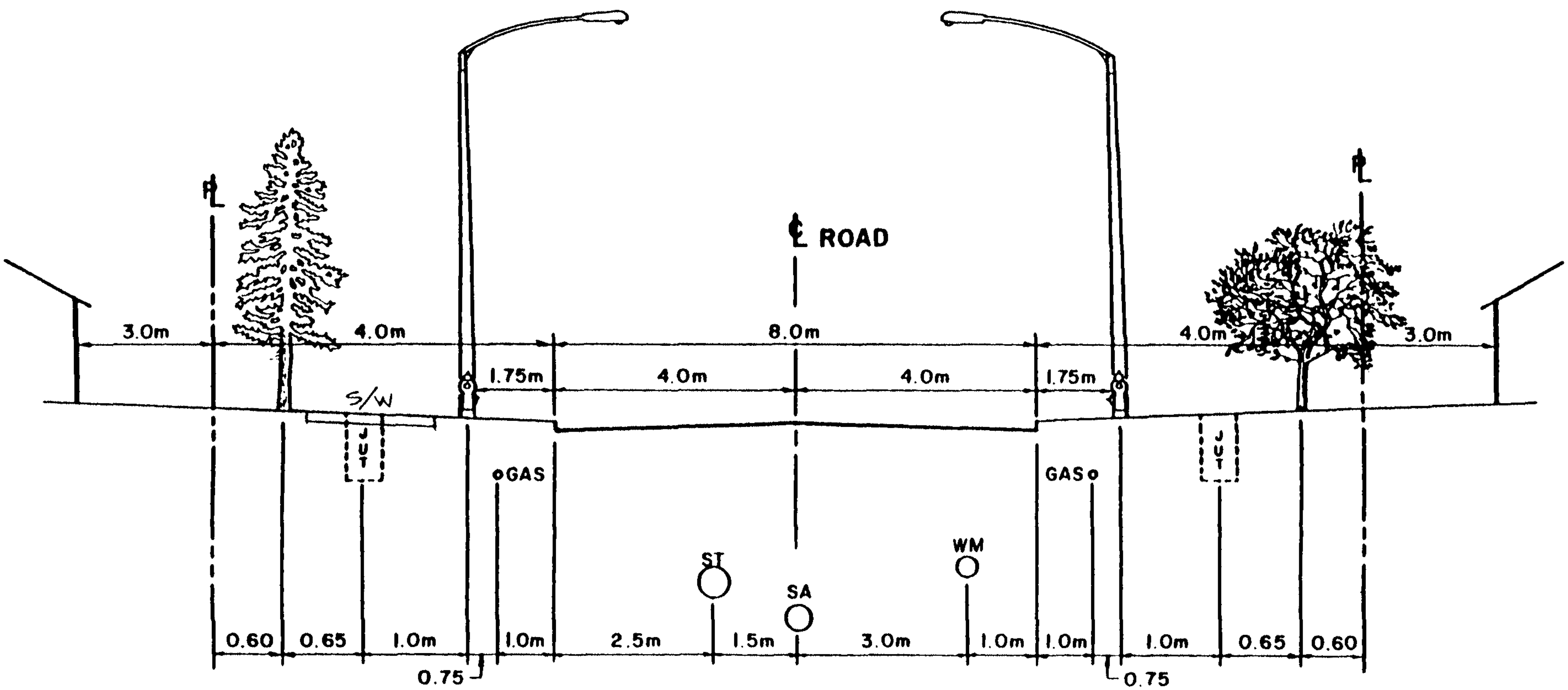


FIGURE 4

TYPICAL 16.0m R.O.W.

The proposed guidelines outlined in Table 2 are followed by an example of how each guideline might be applied to question an existing or proposed standard.

In addition to specific standards, there are a number of areas of practice by local municipalities which could be revised to lower the cost of development while not affecting the end product. These include:

- Reducing performance security requirements at an earlier time and to a great extent.

- Streamlining the process of transferring the responsiblity for maintaining services within subdivision rights-of-way from the land developer to the municipality. (The assumption process)

- Taking a more practical approach when dealing with deficiencies. For example, it is common to require a bay of sidewalk to be replaced if it contains a minor crack. While the crack is undesirable and may reduce the life expectancy of the sidewalk it does not render the bay unsuitable for use. Where works are less than perfect but still have a significant useful life, a method should be developed which would not require them to be replaced at the assumption stage but rather would allow for only the lost portion of the system life to be compensated for.

TABLE 2
GUIDELINE QUESTIONS TO EVALUATE A MUNICIPAL STANDARD

GUIDELINE	EXAMPLE
1. Would it be more appropriate to use a performance specification to achieve the objective of this standard..	*Many municipalities set maximum overall lot grades. Their ambition is really to ensure that a useable rear yard is achieved. This could result in the construction of an expensive retaining wall.* *A performance standard would state the objective rather than the rule.* *For example, an 'integrated solution' coordinated at the draft plan stage could allow through deeper lots the objective of a useable yard to be achieved with the grade difference made up with a slope on the excess land thus eliminating a retaining wall.*

TABLE 2
GUIDELINE QUESTIONS TO EVALUATE A MUNICIPAL STANDARD

	GUIDELINE	EXAMPLE
2.	Where a system could fail and back-up facilities are required the following questions would apply. • How likely is the system to 'fail'? • Will anyone be inconvenienced or put at risk by the failure? • How long will it take to restore service? • How serious is the inconvenience or risk? • How could this be mitigated by action at the time of a failure? • What is the cost of the backup system relative to the risk?	*Questions of this nature could be applied to evaluate the requirement for a looped water system on a cul de sac or the requirement for an emergency or secondary access.*
3.	Where standards are set to achieve convenience of operation the objectives should be stated in terms of performance.	*On water systems it is common to require 3 valves at a tee and 4 valves at a cross. While slightly more convenient for the system operator this results in an expensive system which provides an inconsistent level of service.*

TABLE 2
GUIDELINE QUESTIONS TO EVALUATE A MUNICIPAL STANDARD

	GUIDELINE	EXAMPLE
		More appropriate 'performance' standards might state: *'The maximum number of valves which will be required to be operated to isolate a particular piece of W/M is 4 valves.* *The maximum number of households which can be interrupted during a shut down is 40 (this number should be as high as possible given the unlikelihood and minimal consequence of a failure).'*
4.	Where standards are set in response to homeowner complaints the following questions should be asked: • Would homeowners react differently if they were educated on the operation of the facility in question? • Is this an isolated case which requires a specific solution - if so implement it, do not set a blanket standard.	*This applies particularly to lot drainage where several costly standards have been set to eliminate complaints.*
5.	Where a need is identified to solve a particular problem ensure that it is only applied where that problem exists.	*Gutters have been added to curbs to promote drainage and alleviate ponding on relatively flat roadways. In the implementation of this standard, gutters have become the standard with all roads even though they are not required on steeper roads. In this case a two tiered standard would be more appropriate.*

TABLE 2
GUIDELINE QUESTIONS TO EVALUATE A MUNICIPAL STANDARD

	GUIDELINE	EXAMPLE
6.	Where a standard is set to reduce maintenance or operating costs the following should be considered: • How often is the facility maintained? • What is the cost of the new standard? • What is the cost of maintaining the system with a lesser standard?	*There is a tendency to more frequently require that valves be placed in chambers rather than boxes (as was the practice in the past). While this change aids in the maintenance of valves its application should be reviewed given that it quadruples the cost of a valve.*

3.4 SUMMARY

All standards, including right-of-way widths should be examined and reduced where appropriate. Individual changes may not seem significant but the cumulative effect will be.

4.0 A FINANCIAL ANALYSIS OF THE BENEFITS OF EFFICIENT/EFFECTIVE PLANNING AND ENGINEERING STANDARDS

The benefits of efficient/effective planning and engineering standards have been discussed up to this point in primarily a qualitative manner. The relative land efficiencies of each alternative have also been considered. In this chapter an example is provided which illustrates the impact of innovative planning and engineering standards on the total cost, and more importantly the per unit cost, of the servicing.

In 1976 the Ontario Ministry of Municipal Affairs undertook an examination of the impact of alternative planning and engineering standards on total and per unit servicing costs. In 1990 this study was updated for the Ministry of Housing by Marshall Macklin Monaghan Limited. With the permission of the Ministry of Housing, a summary of the findings of this study is presented below.

BACKGROUND

The original study was commissioned to investigate the impact of innovative (efficient/effective) servicing standards on development costs. In this study the impact of these standards was measured by applying them, and conventional standards, to a specific 20 hectare tract of land.

Four standards were investigated. These are described as follows:

Name	Characteristics
Suburban Conventional	• *Conventional standards.* • *Typically applied in locations where land values are not too high.* • *20 metre ROW.* • *15 to 20 metre lots.* • *All lots are single family.* • *Lots 33 m deep.*
Suburban Innovative	• *Innovative standards.* • *Smaller lots although still considered suitable for locations where land values are not too high.* • *15 to 20 metre ROW.* • *10 to 12 metre wide single family lots.* • *17 m semi-detached lots.* • *Lots 30 m deep.*
Urban Conventional	• *Conventional standards.* • *Typically applied on locations where land values are relatively high.* • *20 m ROW.* • *Single family lots 12 to 13.5 m wide.* • *Semi-detached, link and street townhouse blocks.* • *Lots 33 m deep.*
Urban Innovative	• *Innovative standards.* • *Typically applied in locations where land values are relatively high.* • *15 to 20 m ROW.* • *9 to 12 m single family lots.* • *21 to 18 m semi-detached lots.* • *Street townhouses.* • *27 m deep lots.*

The four plans developed by applying the above standards to the theoretical land parcel follow as Figures 5 to 8.

ANALYSIS

A financial analysis was undertaken on each of the four plans. A land value of $125,000 per hectare was assumed. While it is acknowledged that this method of analysis has some limitations, and that some of the innovative standards may not be appropriate, the results of the analysis are nonetheless interesting and informative.

Table 3 illustrates the impacts of the various planning and engineering standards on total cost and cost per unit.

Table 4 illustrates the servicing cost associated with each standard.

CONCLUSIONS

The following conclusions are drawn from this exercise:

1. The source of the greatest savings is a reduction in lot size. For the suburban and urban examples, the land cost per unit drops by $3,467 and $2,422 respectively. Similarly, the servicing cost per unit drops by $5,970 and $4,139 respectively. Most of the servicing cost saving is a function of the reduced lot frontage.

2. Innovative standards can result in savings of between 9% and 12% ($115 and $175) of the per metre servicing costs.

3. The primary benefit of a reduction in road right-of-way width from 20.0 m to 16.0 m is a reduction in land useage. For the suburban and urban conventional examples theoretical savings of $157,000 ($380/unit) and $171,000 ($337/unit) could be achieved.

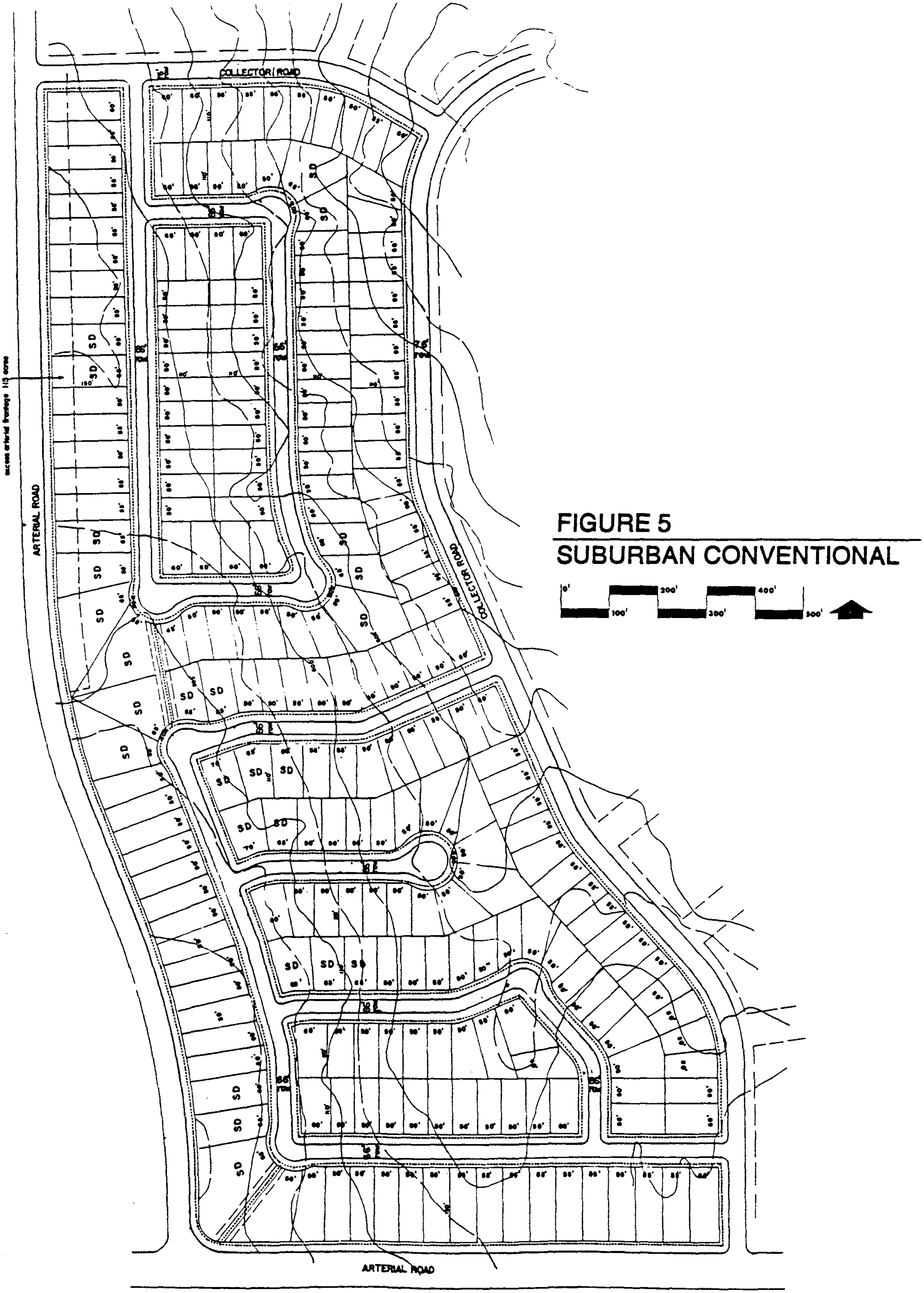
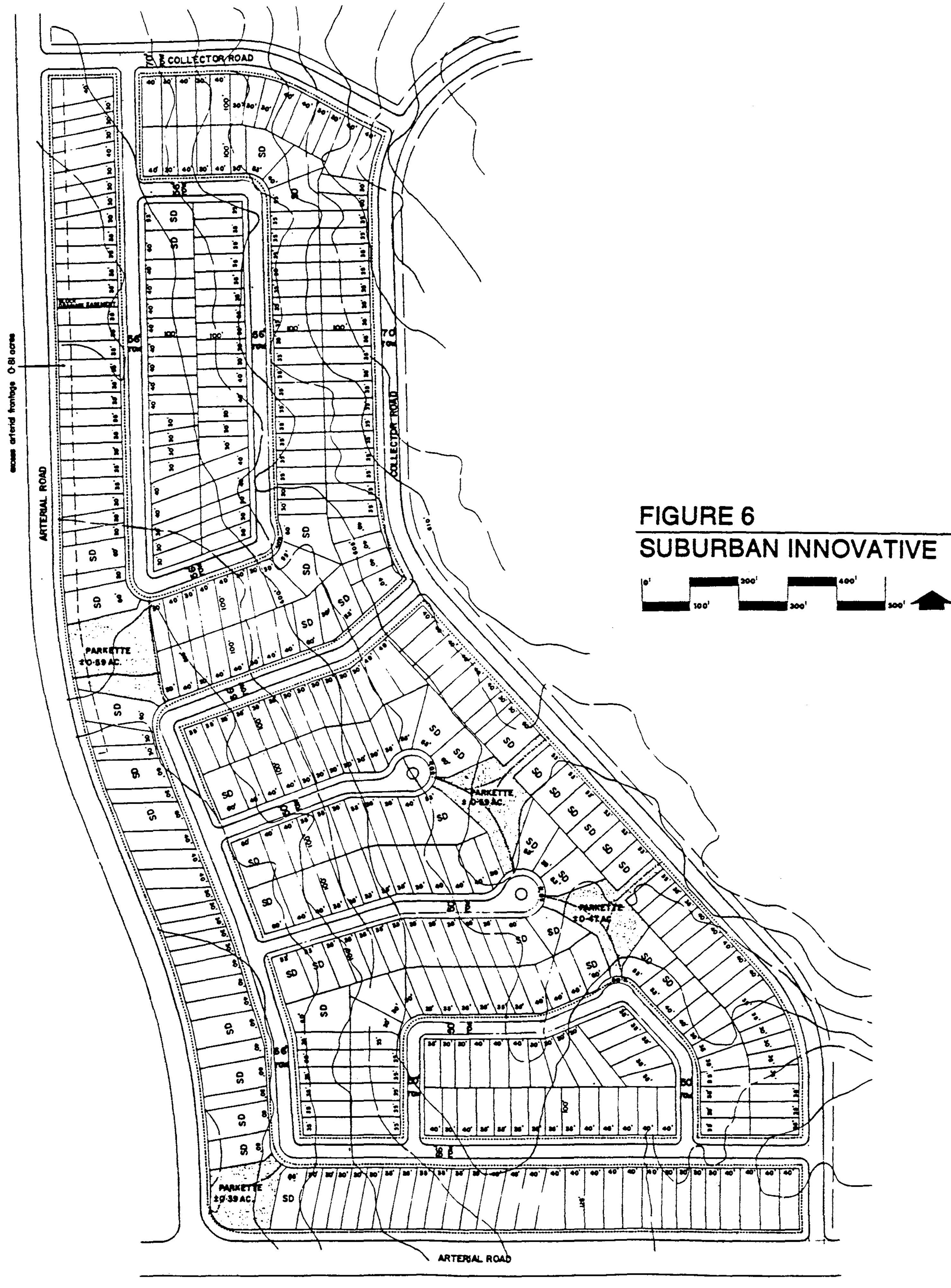


FIGURE 5
SUBURBAN CONVENTIONAL

FIGURE 6
SUBURBAN INNOVATIVE



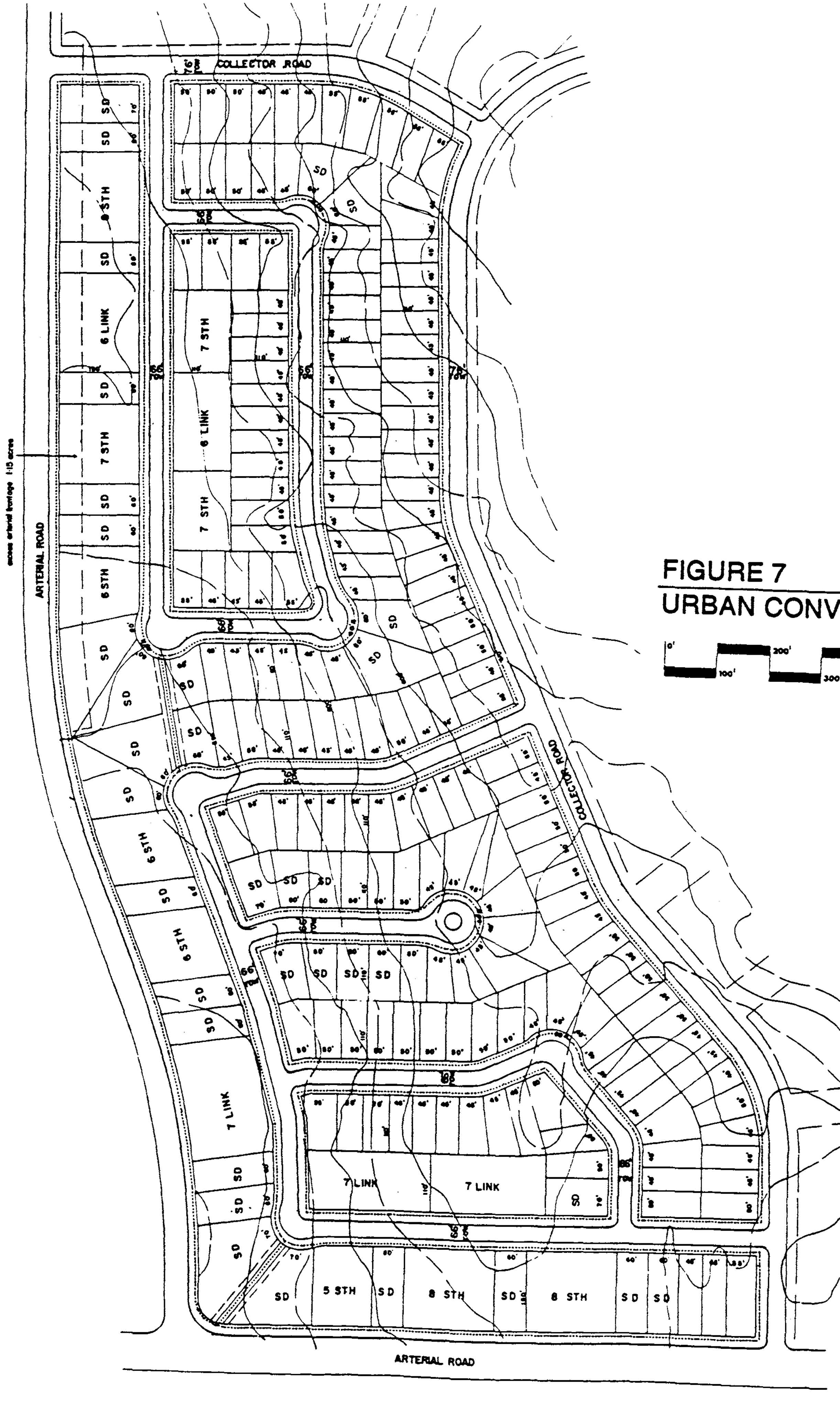


FIGURE 7
URBAN CONVENTIONAL

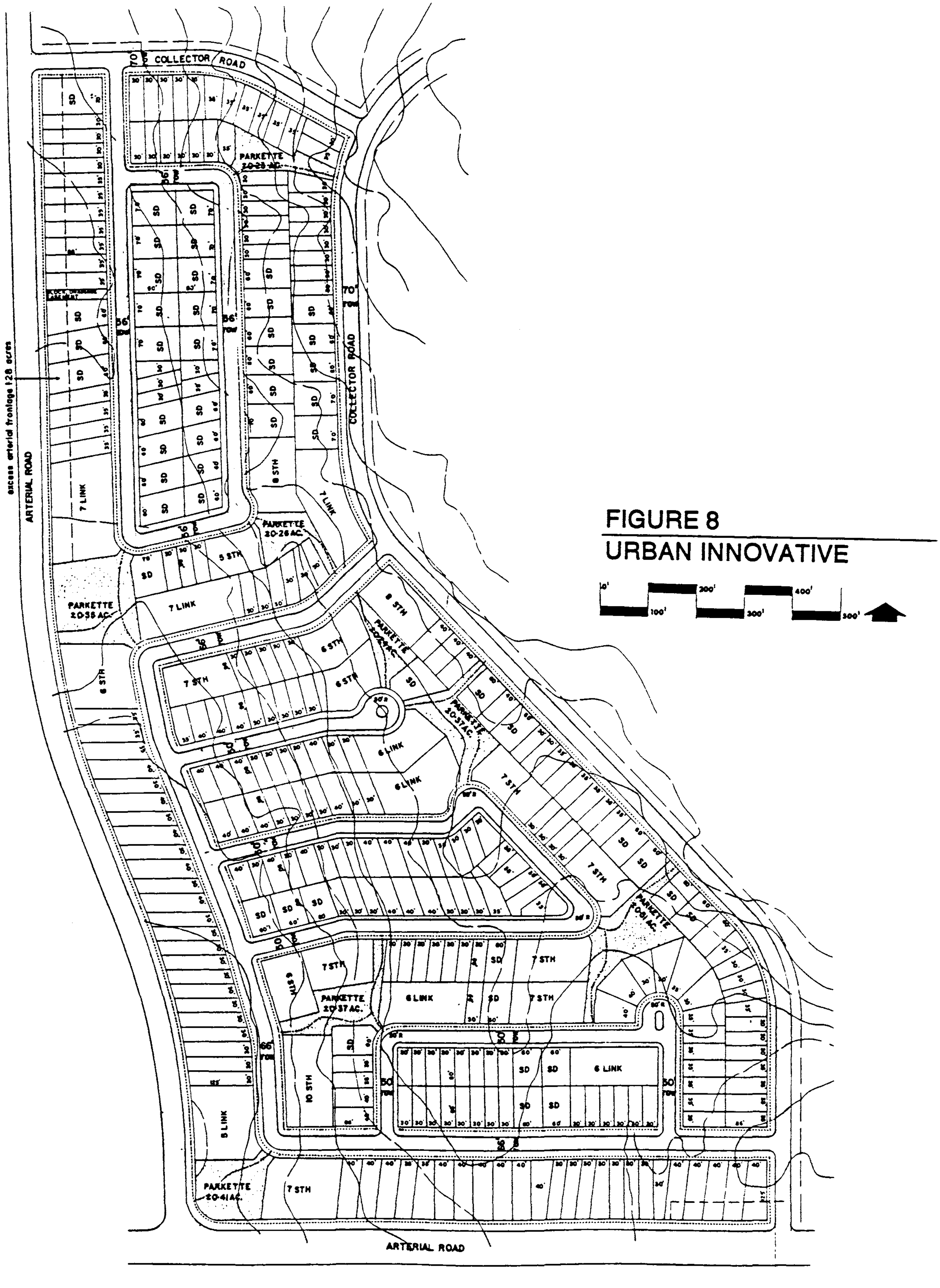


FIGURE 8

URBAN INNOVATIVE

TABLE 3 : COST COMPARISONS

		TOTAL PROJECT COSTS			PER UNIT COSTS			
STANDARD	NUMBER OF HOUSING UNITS	LAND COST ($)	SERVICING COST ($)	TOTAL COST ($)	LAND COST ($)	SERVICING COST ($)	TOTAL COST ($)	PERCENTAGE OF SUBURBAN CONVENTIONAL
SUBURBAN CONVENTIONAL	263	$2,500,000	$4,029,200	$6,529,200	$9,506	$15,320	$24,826	100.0%
SUBURBAN INNOVATIVE	414	$2,500,000	$3,870,800	$6,370,800	$6,039	$9,350	$15,388	62.0%
URBAN CONVENTIONAL	340	$2,500,000	$4,312,200	$6,812,200	$7,353	$12,683	$20,036	80.7%
URBAN INNOVATIVE	507	$2,500,000	$4,331,850	$6,831,850	$4,931	$8,544	$13,475	54.3%

NOTE : ALL COSTS IN 1990 DOLLARS.

CMHC/TAB3.WK1

TABLE 4 : SERVICING COST COMPARISONS

STANDARD	NUMBER OF METRES OF ROAD	TOTAL PROJECT CONSTRUCTION COST	COST PER METRE *
SUBURBAN CONVENTIONAL	2990	$4,029,200	$1,348
SUBURBAN INNOVATIVE	3140	$3,870,800	$1,233
URBAN CONVENTIONAL	2990	$4,312,200	$1,442
URBAN INNOVATIVE	3420	$4,331,850	$1,267

* As lot widths decrease for the innovative standards,the per metre of road costs attributed to service connections increase.

<u>NOTE:</u> ALL COSTS IN 1990 DOLLARS.

CMHC/TAB4.WK1

5.0 JOINT USE COMMUNITY FACILITIES

5.1 INTRODUCTION

Community facilities are defined here as those users of land within a community which are accessible for public use regardless of ownership. These facilities include schools, libraries and community centres as well as parks and stormwater management facilities. They could also be extended to public services such as fire, police and ambulance service. Often, these land uses are thought of as being independent entities within a community when, in fact, they may share many common characteristics. It is appropriate to revisit many of these community facilities to investigate where opportunities exist to combine uses in one building or on one site. The objectives behind combined or "joint use" facilities are threefold: to save land; to reduce construction, maintenance and operating costs; and to increase the level of service to the community.

More efficient use of public facilities is required as land becomes more valuable. In addition, as the awareness of the impact of development on the natural environment increases, it is becoming less acceptable to simply pave more and more areas for parking lots when better use of the land is warranted.

The cost to a community to construct and maintain facilities is increasing the tax burden on residents. Opportunities to construct joint use facilities with common requirements for land and parking need to be identified to minimize increasing taxes and municipal budget deficits. Highly utilized, multi-use facilities will have lower construction costs per function than many smaller facilities. In addition, maintenance and operating costs like heating, air conditioning and snow removal from parking lots will be reduced. The following will provide a brief summary of the typical requirements of various facilities and review traditional and non-traditional opportunities which exist for joint use. Finally, several methods to encourage the implementation of joint use facility strategies are discussed.

5.2 REQUIREMENTS OF JOINT USE FACILITIES

In order to best identify opportunities for joint use facilities it is necessary to compare the typical requirements of some specific land uses. The common land uses to be compared include:

- Schools
- Libraries
- Emergency Services
- Places of Worship
- Daycare
- Community Centres (Pools, Ice Rinks)
- Parks
- SWM Facilities
- Flood Plains
- Commercial Centres

The typical characteristics used to compare each land use are:

- Land area
- Building form (i.e. physical space requirements)

- Parking requirements
- Typical ownership and management responsibility
- Days/hours of use
- Maximum use period

A summary of the community infrastructure is illustrated in Table 5.

5.3 TRADITIONAL VS NON-TRADITIONAL GROUPINGS

Traditional

In general, traditional joint use facilities have focused on shared parking lots. One feature which has provided opportunities for joint use of parking lots is the offsetting peak period use of two facilities. A good example of this is the grouping of separate schools and churches. The maximum use period for schools is 9:00 a.m. - 5:00 p.m. Monday to Friday whereas churches are typically busiest in the evenings and on weekends. This offsetting peak use has enabled schools and churches to share, and make better use of parking facilities.

Other traditional joint use facilities include:

- Community Centres and Active Use parks

  The community centre is typically busiest during winter months for hockey games and other indoor activities while the park is in use in the warmer summer months for baseball and soccer. Therefore a shared parking lot is feasible.

TABLE 5 : MAKING MAXIMUM USE OF COMMUNITY INFRASTRUCTURE

LAND USE	LAND AREA	BLDG. SPACE NEEDS	LAND REQ'MTS	PARKING REQ'MTS	FACILITY REQ'MTS	TYPICAL OWNERSHIP	DAYS IN USE	HOURS OF USE	PEAK USE PERIOD
SCHOOLS	LARGE	LARGE SIZE MULTI-USE	PARKING PLAYGROUND	MANY	GYM CAFETERIA LIBRARY	SCHOOL BOARDS	M - F	8am - 4pm	8am - 4pm (M - F)
LIBRARIES	MEDIUM	MEDIUM SIZE SINGLE-USE	PARKING	MODERATE	A/V ROOMS	LOCAL MUNICIPALITY	M - SAT	9am - 9pm	
POLICE/FIRE/ EMERGENCY SERV.	SMALL	MEDIUM SIZE SINGLE-USE	PARKING	LIMITED		REGIONAL MUNICIPALITY	ALL WEEK	ALL	
PLACES OF WORSHIP	MEDIUM	MEDIUM SIZE SINGLE-USE	PARKING	MANY	AUDITORIUM MEETING ROOM	RELIGIOUS GROUPS	ALL WEEK	6pm - 9pm (M - F) 8am - 2pm (SAT/SUN)	8am - 2pm (SAT/SUN)
DAYCARE	SMALL	SMALL	PARKING PLAYGROUND	LIMITED		PRIVATE/ LOCAL OR PROV. GOV'T	M - F	8am - 5pm	8am - 5pm (M - F)
HOMES FOR THE AGED NURSING HOMES	MEDIUM	MEDIUM SIZE SINGLE-USE	PARKING	LIMITED		PRIVATE/ LOCAL OR PROV. GOV'T	ALL WEEK	ALL	
COMMUNITY CENTRES	LARGE	LARGE SIZE MULTI-USE	PARKING	MANY	ICE RINK POOL/FITNESS AREAS	LOCAL MUNICIPALITY	ALL WEEK	ALL	9am - 6pm (SAT) 5pm - 9pm (M - F)
PARKS:PASSIVE USE	MEDIUM	NONE	GRASSED AREA	NONE	NONE	LOCAL MUNICIPALITY	ALL WEEK	ALL	
PARKS:ACTIVE USE	LARGE	SMALL	PARKING PLAYING FIELDS	MODERATE	RESTROOMS CHANGE AREA	LOCAL MUNICIPALITY	ALL WEEK	ALL	5pm-9pm(M-F) 9am-9pm (SAT/SUN)
SWM FACILITIES	LARGE	NONE	GRASSED AREA	NONE	NONE	LOCAL MUNICIPALITY	INFREQUENT	N/A	
COMMERCIAL BUILDINGS	LARGE	LARGE SIZE SINGLE-USE	PARKING	MANY	STORES FOOD COURT RESTAURANTS	PRIVATE	M - SAT SUN(PART.)	9am - 6pm OR 11 pm	9am - 6pm (SAT)

- School adjacent to an active park

  Separate and public elementary schools share use of the park during the day and the school parking lots are utilized in the evening by park users. The park is typically owned and operated by the municipality.

Non Traditional

With growing public awareness of the negative impacts of development on the environment and spiraling costs of building, maintaining and operating community facilities, it is important to explore opportunities for new, innovative joint use facilities. It is no longer feasible to house different uses in separate buildings or on separate sites. Not only will cost savings be realized in terms of construction and maintenance, but the land saved will be available for new housing or other uses. As well, through judicious pairing, additional community use could be encouraged.

Opportunities derived from Table 5 for joint use facilities include:

- Schools and places of worship sharing buildings and parking lots.

- Different religious institutions (especially those with different holy days) sharing buildings and parking lots

  During the Gulf War in the Middle East one such example was highly publicized in the Toronto media. A Jewish synagogue and Muslim mosque in Thornhill continued to share a parking lot to their mutual benefit.

- Schools and Municipal Libraries

  All schools have libraries of some form but by providing the municipal library facilities in the same building, students will have access to a larger selection of reference materials. Public access to the library could be from an exterior entrance rather than through the school if required for security reasons.

- Community Centres, Libraries and Daycare

  Many libraries offer programs (i.e. plays, story reading) for pre-school children that are not available to children who are in daycare centres. By locating them under one roof those two uses could be coordinated. Parents could also go to the library while their children played at the community centre.

- Parks and Stormwater Management Facilities

  Considerable efficiency could be achieved through combining storm water management facilities with parks. A significant portion of the SWM facility is required to attenuate flows from the infrequent high intensity storm. During, and immediately following this event, water is stored and released at a controlled rate. The remainder of the time the facility is empty and serves no useful purpose. Parks, on the other hand, are not used during these major rainfall events and thus the two could be combined with only a very minor and infrequent impact imposed upon the park during a significant rainfall.

  There are many excellent examples available of the successful integration of these two facilities.

5.4 HOW CAN THESE JOINT USES BE ENCOURAGED

The merits of joint use.facilities can easily be sold to receptive audiences. In fact, joint use facilities are becoming more common with time, particularly where one authority (i.e. the municipality) has responsibility for all of the services.

Joint use can be encouraged further through:

- Identifying the need, and making provisions for joint use facilities at the Secondary Plan Stage.

- A central agency (likely the local municipality) collecting data on the requirements of the many organizations having an interest and getting them to work together at an early stage to ensure suitable sites can be established.

- Allowing through planning and zoning standards, some requirements such as parking to be 'overlapped' where the different users will place demands on the system at different times.

- The municipality, in a joint use arrangement, should agree to take on the management of the facility where necessary to address concerns over responsibility. The joint users would still be required to pay their way.

- An agency supportive of this concept should prepare a 'how to' and sales manual which would provide examples and a guide to the successful development and management of joint use facilities.

6.0 RESISTANCE TO CHANGE

In the last couple of years we have witnessed, and increasingly publicized, the Not In My Backyard or NIMBY Syndrome. Other derivations of this such as NIMES (Not in My Ecosystem) are also becoming popular. In many cases the issue is change and resistance to change.

Since it is human nature to fear the unknown and therefore to resist change, we are protective of our communities. Change (residential development or intensification) is viewed as a negative impact in terms of traffic, aesthetics, disruption and a concern over the type of people who will be moving into the community.

As proponents of new development in existing or greenfield locations, we must understand these reactions. We must also understand that, as taxpayers in our democratic planning process, concerns of affected citizens will be heard and will play a part in the decision making process.

How then can projects of the nature discussed in this paper be successfully guided through the public process? There is no easy answer, and no doubt no matter what is done NIMBY reactions will still be present. However, if the right steps are taken, the magnitude of resistance from these groups will be diminished as they understand, accept and to some extent influence the proposed development. Further, it is fully acknowledged that today, experts in planning with consensus, negotiation and conflict resolution, are professionals who facilitate a variety of planning approvals involving urban development and redevelopment, and environmental assessment. This new profession employs a number of sophisticated techniques and procedures in order to manage issues and conflict, and realize objectives.

For best results, action is required at a number of levels. Projects may advance without all of the following steps being completed, however, they have, in combination, been proven to be helpful.

Provincial Governments

Provincial governments can encourage, promote and in fact insist upon the inclusion of efficient designs in new and existing developments.

In Ontario, activities such as the recent policies of the Ministry of Housing insisting upon an affordable component in new developments will help. Well publicized commissions such as the Crombie Royal Commission on the Future of the Toronto Waterfront and the Sewell Commission on Planning and Development Reform will also help by heightening public awareness and hence acceptance. The resulting policy documents or new regulations will also likely promote more efficient and effective development.

Local and Regional Governments

The Official Plan is the most significant document which the local or Regional Government can put in place to support intensification and efficient/effective development. The Official Plan articulates the broad objectives of the municipality with regard to directions for growth, density, etc. and other important issues.

The Official Plan also includes important policies related to such issues as housing on main streets and specifies areas and locations designated for these uses.

Proponents

Proponents of developments must put together their plans and sell their projects to approval bodies and, equally important, to the public.

The following steps can be helpful in achieving project approval.

- Meet with local politicians and citizen groups to provide as much information as early as possible in the process. Advise them of your plans to gauge their initial reaction. People are more likely to support a project if they have been included in the decision-making process.

- Prepare a plan which, to the extent possible, meets your objectives, the objectives of the citizens and council, but which also addresses site and environmental constraints.

- Sell your project. Tell people how your project addresses their stated objectives. Also sell the project in terms of community benefit. Know your community. For example:

  - The project will effect the cleanup of an old unused (and potentially contaminated) industrial area.

  - The project will bring people to the community. They will spend annually (state an amount) in the local shops thus revitalizing them and keeping them in business (you may state how many have closed down in the last year or two if this is the case).

- Where school closing is a concern, state how many students the project will bring to the community, thus ensuring the future of the school.

- Be available to the citizens and be prepared to provide them with details. Open houses and one-on-one discussions will help in this respect.

- If resistance is strong, some developers and councils have benefited from forming a working committee comprised of council, citizens and the proponent to review issues and seek consensus.

- For new developments, get approvals in advance for higher density blocks. Ensure that prospective home buyers are not mislead on the make-up of the new community so that there can be no misunderstanding at a later date.

The above steps will not guarantee a smooth ride through the approval process; however, if followed they will be helpful.

7.0 IMPLEMENTATION

Much has been written over the last 20 years about increasing affordability through innovative planning and engineering standards. The problem has always been to get the good ideas which have been put forward implemented. There are many reasons why this has not happened.

Today we have a unique opportunity to promote efficient/effective standards as:

- The current provincial government is committed to providing affordable housing, increasing housing density and making better use of public transit.

- Many communities are anxious to promote growth and the affordable house is the product in greatest demand.

- Municipalities are facing more severe budget constraints than they have previously experienced and thus are realizing, or soon will realize, the high cost of maintaining the infrastructure which they have. They may, therefore, be more receptive to the building of less infrastructure in the future and to making better use of existing facilities.

- Proponents of efficient/effective standards (private and public sector) have more time to dedicate 'to the cause' given the current low level of activity in the land development and housing industries.

Each organization involved in the delivery of housing to Canadians is equipped to play a different role in the promotion of these concepts. Activities could include, but should not be limited to the following:

Federal Level (Government, Agencies and Organizations)

- Promote these principles through conferences and publications such as this one.
- Produce promotional materials and reference materials to aid those promoting the cause at a more local level.
- Provide a central registry of the successful application of effective/efficient standards for reference by others.

Provincial Level (Government, Agencies, Commissions)

- Support the federal activities proposed above.
- Issue clear policy statements outlining their objectives to achieve efficient/effective standards.
- Support these policy statements in the approval of official plans and draft plans.
- Promptly address applications promoting these standards.
- Direct the Municipal Board or other appeal agencies to promptly hear appeals on projects where these standards are proposed.
- Promote demonstration projects.

Local Level (Corporations, Individuals and Industry Organizations)

- Develop housing designs to meet their efficient/effective standards and set exact lot sizes/patterns to be promoted.
- Test the marketability of the resultant product.
- Develop a program to sell the concepts at the local/regional level.
- Make representation to Councils and Senior staff asking for a commitment and their assistance.
- Seek 'Champions' at the local government level and work with them providing support as necessary.

Local Level (Government)

- Consider efficient/effective standards when preparing official plans.
- Be open minded and receptive to the representations discussed above.
- Process plans promptly which promote these ideals.
- Be receptive to experimental projects in your municipality.
- Make your support known to the various agencies and utilities operating in your municipality.
- Provide a senior level 'Champion' or 'Champions' to help projects through the process and make required changes to standards, by laws etc.

8.0 CONCLUSIONS

While the benefits of individual changes in land use intensification, innovative planning and engineering standards, or joint use community facilities may not seem significant, the cumulative effect of their implementation will be significant infrastructure cost efficiency and effectiveness. Savings have been demonstrated in this paper, with respect to capital, maintenance and operating costs and land costs, which will in turn provide an opportunity for more affordable housing.

Today, more than ever, there is an opportunity to go beyond the studies and begin to effect changes in the way we develop land. A coordinated effort by all levels of government, proponents and interest groups will ensure that these objectives are achieved.

APPENDIX A

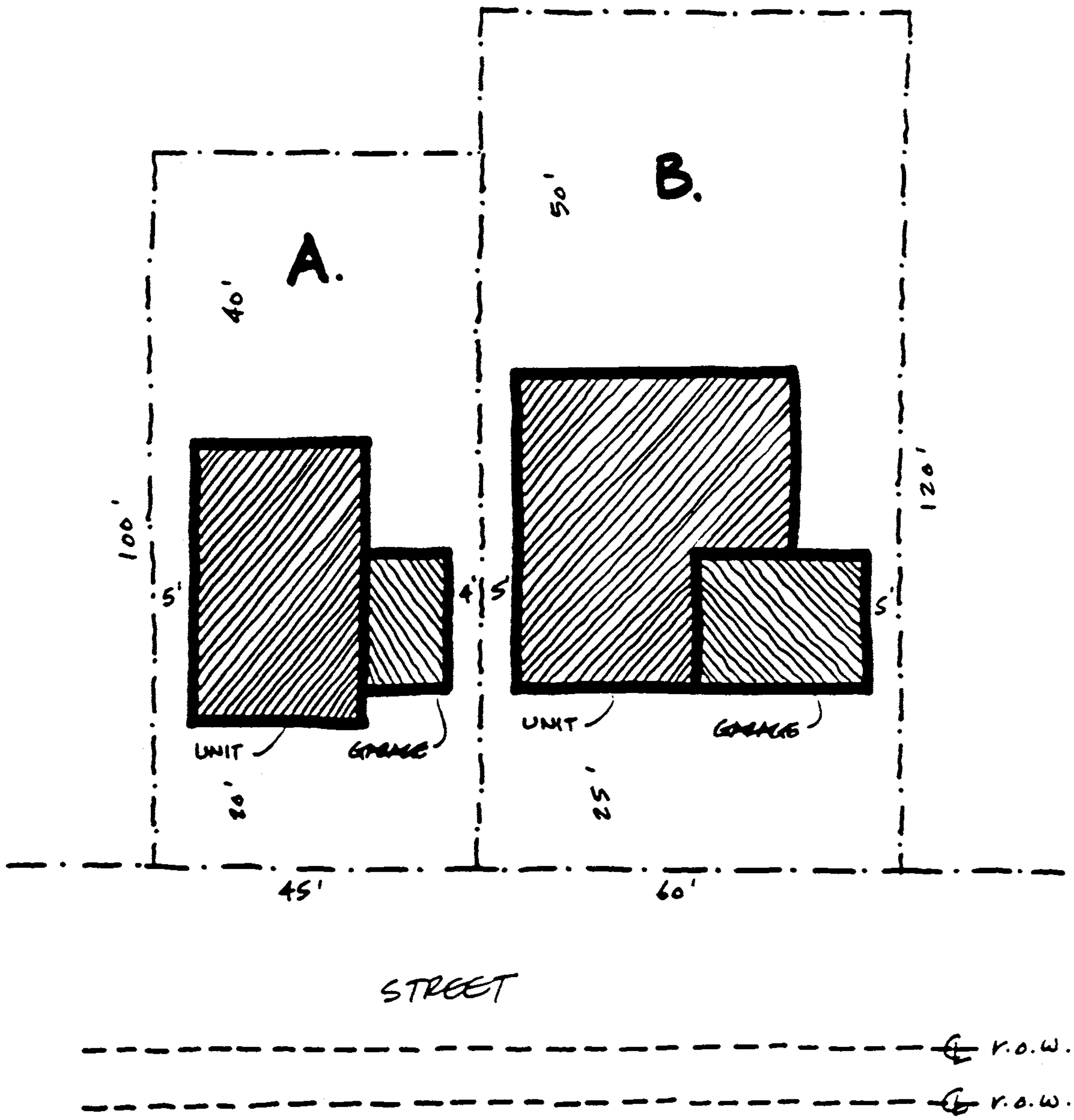
LOTTING SCENARIOS

1. TRADITIONAL SUBURBAN "SINGLE FAMILY" HOUSE

Traditional subdivisions have been characterized by "freehold" lots ranging in size from 418 (4,500) to just over 651 square metres (7,000 square feet) in serviced communities. Lot frontages in the order of 13.6 (45) to 18.2 metres (60 feet) are not uncommon. In some municipalities, reduced lot frontages of 9 metres (30 feet) have been permitted. These result in lower lot areas per detached dwelling and considerable land cost savings have been achieved. It is also interesting to note that in the 1940's, lot frontages of 10.6 metres (35 feet) or so for lots accommodating detached dwellings were acceptable in certain urban areas such as the City of Toronto. In fact, within the inner City, lot frontages as low as 5.5 (18) to 6 metres (20 feet) are common. In addition to the quantitative data provided in the tabular form, the following highlights the features of the traditional suburban lot.

POSITIVE ASPECTS	NEGATIVE ASPECTS
• substantial private open space associated with single dwelling unit; room in backyard for swimming pool	• waste space associated with side yards
• relatively low density development minimizing traffic on local streets	• generally views from sides of house blocked by adjacent sidewalls of houses next door; therefore, outlook limited to front and back of house
• open space areas provide opportunities for significant tree planting if taken advantage of as the development matures	• depending on number of house models, neighbourhoods have a tendency of being visually monotonous
• ample provision for on-site parking with attached garages and generoug front yard setbacks	• attached garages on fronts of houses are considered by many to be visually unattractive

1. TRADITIONAL SUBURBAN "SINGLE FAMILY" HOUSE



Statistics	A		B	
Lot Area	4,500 sq. ft.	418.2 sq. m.	7,200 sq. ft.	669.1 sq. m.
Lot Frontage	45 ft.	13.7 m.	60 ft.	18.3 m.
Unit Size	2,000 sq. ft.	185.9 sq. m.	3,000 sq. ft.	278.8 sq. m.
Lot Coverage	27.5%	27.5%	27.5%	27.5%
Privacy/Landscaped Open Space	1,800 sq. ft.	167.3 sq. m.	3,000 sq. ft.	278.8 sq. m.
Public Access Road Area Attributable to Lot	1,181 sq. ft.1) 1,485 sq. ft.2)	110.4 sq. m.1) 138.0 sq. m.2)	1,575 sq. ft.1) 1,980 sq. ft.2)	147.2 sq. m.1) 184.0 sq. m.2)
Net Density	7.3 U.P.A.	18.0 U.P.Ha	4.7 U.P.A.	11.6 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

2. REAR LANEWAY/REAR PARKING - SINGLE DETACHED UNITS

To minimize front yard setbacks and lot frontages and therefore, lot area, rear laneways have been employed to provide access to rear lot detached garages.

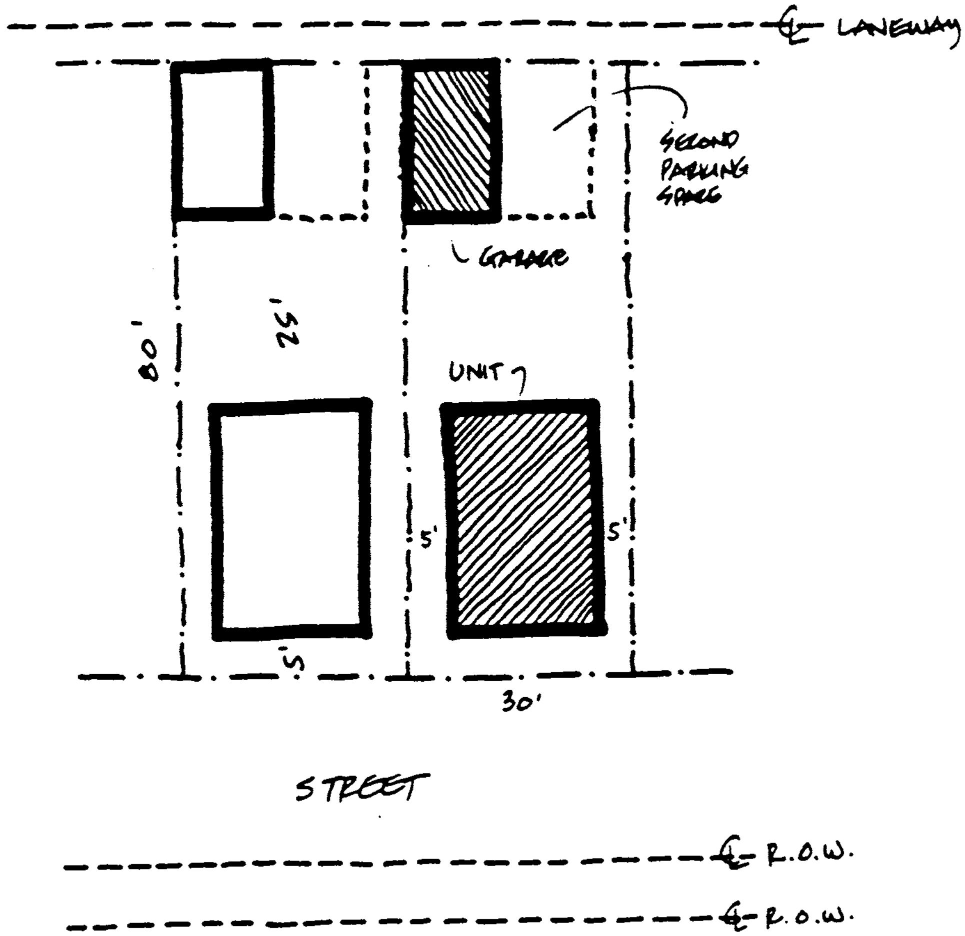
POSITIVE FEATURES

- small, but adequate private open space; backyard not really suitable for accommodating swimming pools
- ample provision for on-site parking in garage and beside garage at rear of lot
- potential to achieve good urban design focused on front elevations of individual houses (without the intrusion of an attached garage); therefore, pleasant streetscapes possible to enhance walking experience
- reduced front yard setback enables overall lot depth to be reduced

NEGATIVE ASPECTS

- maintenance of rear laneways is often cited as a problem by municipalities, considering snow removal and safety
- waste space associated with side yards
- generally views from sides of house blocked by adjacent sidewalls of houses next door; therefore, outlook limited to front and back of house
- with no provision for off-street parking at front of house, on-street parking would likely be required for visitors

2. REAR LANEWAY/REAR PARKING - SINGLE DETACHED UNITS



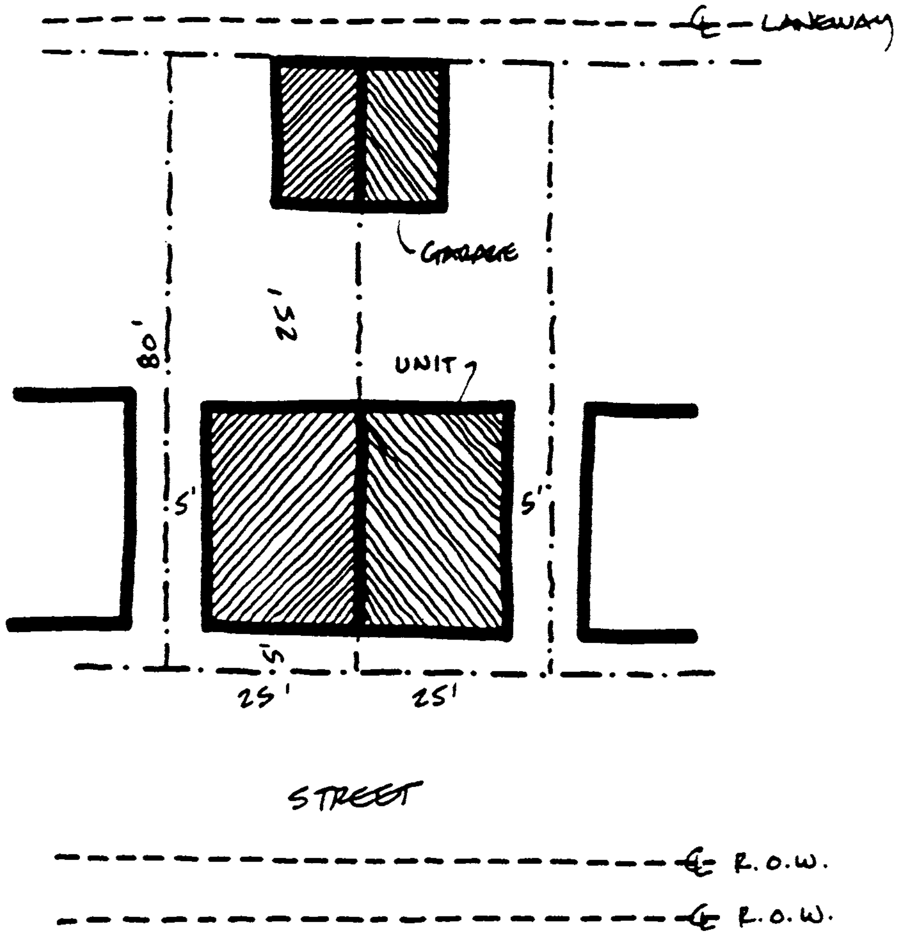
Statistics		
Lot Area	2,400 sq. ft.	223.0 sq. m.
Lot Frontage	30 ft.	9.1 m.
Unit Size	1,200 sq. ft.	111.5 sq. m.
Lot Coverage	35%	35%
Privacy/Landscaped Open Space	750 sq. ft.	69.7 sq. m.
Public Access Road Area Attributable to Lot	788 sq. ft.1) 990 sq. ft.2)	73.6 sq. m.1) 92.0 sq. m.2)
Area of Laneway Attributable to lot	300 sq. ft.	27.9 sq. m.
Net Density	12.5 U.P.A.	30.8 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

3. REAR LANEWAY/REAR PARKING - SEMI-DETACHED UNITS

Compared to the example presented in #2, semi-detached units of the same house size can be accommodated on similar lots with 16.5% less frontage. The same comments pertaining to positive features and negative aspects apply except that the waste space associated with side yards is reduced by 50%.

3. REAR LANEWAY/REAR PARKING - SEMI-DETACHED UNITS



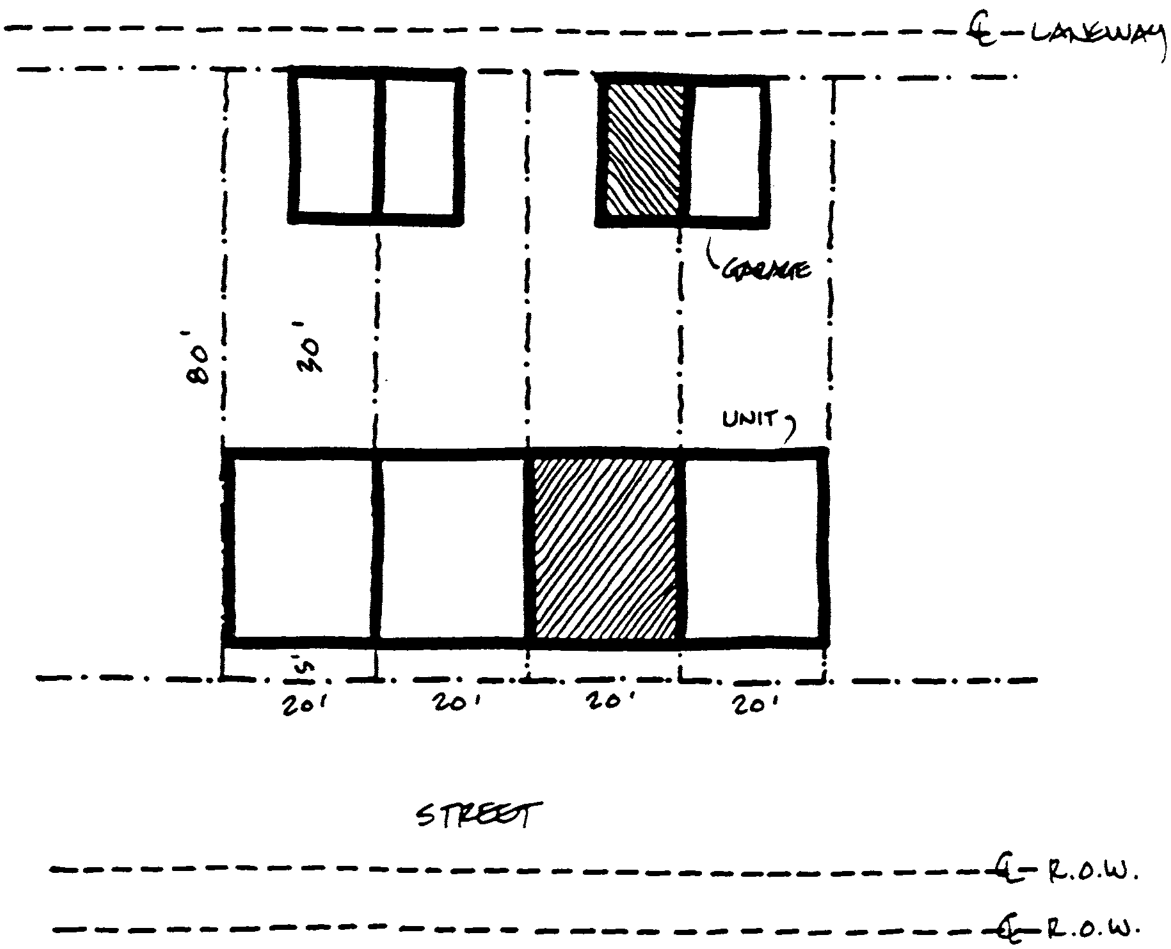
Statistics		
Lot Area	2,000 sq. ft.	185.9 sq. m.
Lot Frontage	25 ft.	7.6 m.
Unit Size	1,200 sq. ft.	111.5 sq. m.
Lot Coverage	42%	42%
Privacy/Landscaped Open Space	625 sq. ft.	58.1 sq. m.
Public Access Road Area Attributable to Lot	656 sq. ft.1) 825 sq. ft.2)	61.3 sq. m.1) 76.7 sq. m.2)
Area of Laneway Attributable to lot	250 sq. ft.	23.2 sq. m.
Net Density	15.0 U.P.A.	37.0 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

4. REAR LANEWAY/REAR PARKING - TOWNHOUSE UNITS

Compared to the examples presented in #2 and #3, townhouse units of almost the same house size can be accommodated on similar lots with 33% and 20% less frontage, respectively. The same comments pertaining to positive features and negative aspects apply except that there is no waste space associated with side yards (within the townhouse blocks).

4. REAR LANEWAY/REAR PARKING - TOWNHOUSE UNITS



Statistics		
Lot Area	1,600 sq. ft.	148.7 sq. m.
Lot Frontage	20 ft.	6.1 m.
Unit Size	1,000 sq. ft.	92.9 sq. m.
Lot Coverage	46%	46%
Privacy/Landscaped Open Space	600 sq. ft.	55.8 sq. m.
Public Access Road Area Attributable to Lot	525 sq. ft.1) 660 sq. ft.2)	49.1 sq. m.1) 61.3 sq. m.2)
Area of Laneway Attributable to lot	200 sq. ft.	18.6 sq. m.
Net Density	18.7 U.P.A.	46.2 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

5. QUADRUPLEX/DOUBLE DUPLEX UNITS - FRONTAGE ON ONE STREET

In 1976, the Ontario Urban Development Institute undertook the preparation of a report on "Lowering the Cost of New Housing"[1]. This study resulted in the design of a hypothetical development employing techniques which utilize innovative housing designs and more efficient use of land, roads and servicing. Four basic dwelling unit types were used to provide for family accommodation in ground related forms. One was the quadruplex unit. A site area for four attached units is divided into four parcels such that each dwelling has its own lot, with 3 (10) to 4.5 metres (15 feet) of street frontage, parking, access and garden. A system of mutual entrance walks are utilized to access "rear" units.

POSITIVE FEATURES

- very efficient utilization of site area resulting in high density, low rise residential form
- small, but adequate private open space; backyard not really suitable for accommodating swimming pool
- provision for on-site parking in garage but outside parking space in front of garage encroaches on municipal road right of way

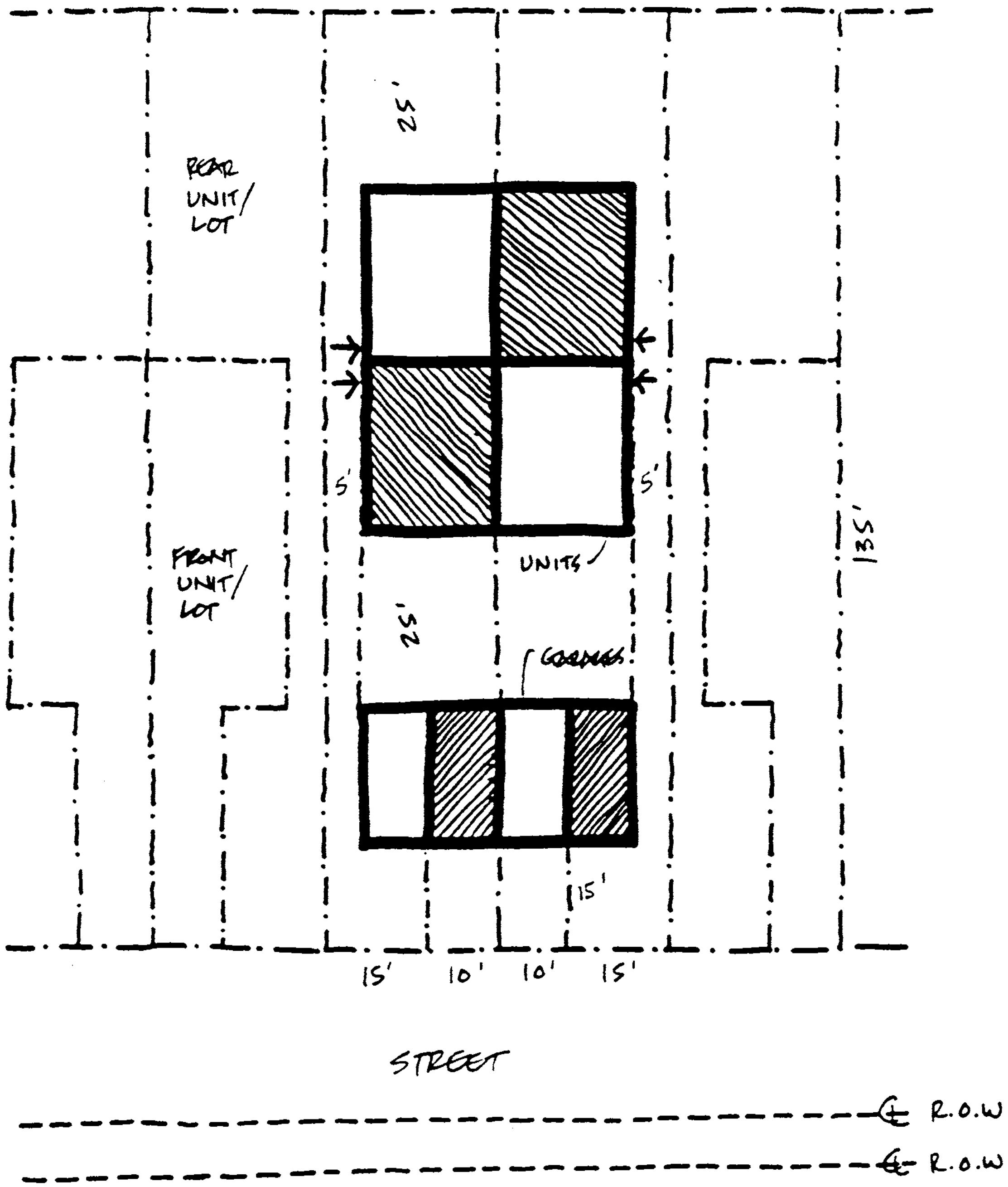
NEGATIVE ASPECTS

- streetscapes on public road rights of way characterized by fronts of garages
- backyards or gardens related to the "front" units have to be screened from the walkways providing access to the "rear" units
- generally views from the sides of the units are blocked by adjacent sidewalls; therefore, outlook is limited to the back of the house

---

1 John Bousefield Associates
Paul Theil Associates Limited

5. QUADRUPLEX/DOUBLE DUPLEX UNITS - FRONTAGE ON ONE STREET



Statistics		
Lot Area	1,688 sq. ft.	156.9 sq. m.
Lot Frontage	12.5 ft.	3.8 m.
Unit Size	1,000 sq. ft.	92.9 sq. m.
Lot Coverage	42%	42%
Privacy/Landscaped Open Space	625 sq. ft.	58.1 sq. m.
Public Access Road Area Attributable to Lot	328 sq. ft. 1) 413 sq. ft. 2)	30.7 sq. m. 1) 38.4 sq. m. 2)
Net Density	21.6 U.P.A.	53.3 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

6. QUADRUPLEX/DOUBLE DUPLEX UNITS - ACCESS FROM TWO STREETS

This design is a derivative of example #5, utilizing access from two streets which results in a somewhat lower density

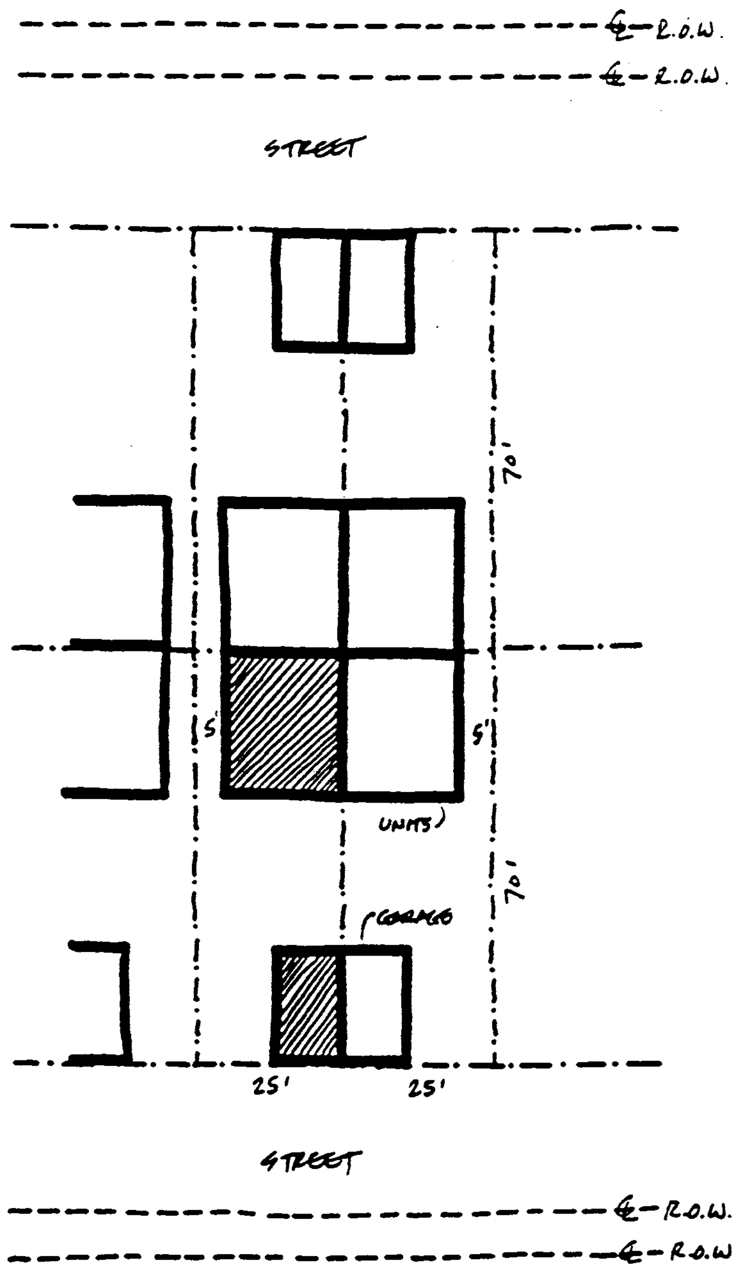
POSITIVE FEATURES

- small, but adequate private open space; backyard not really suitable for accommodating swimming pool

NEGATIVE ASPECTS

- provision **only** for on-site parking in garage or in addition, beside garage in front yard
- garages on front lot line may be visually uninviting in terms of pedestrians walking on the street
- views from the housing units or outlook are limited to the back of the house overlooking the garden

6. QUADRUPLEX/DOUBLE DUPLEX UNITS - ACCESS FROM TWO STREETS



Statistics		
Lot Area	1,750 sq. ft.	162.6 sq. m.
Lot Frontage	25 ft.	7.6 m.
Unit Size	1,000 sq. ft.	92.9 sq. m.
Lot Coverage	42%	42%
Privacy/Landscaped Open Space	625 sq. ft.	58.1 sq. m.
Public Access Road Area Attributable to Lot	656 sq. ft.[1] 825 sq. ft.[2]	61.3 sq. m.[1] 76.7 sq. m.[2]
Net Density	18.1 U.P.A.	44.7 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

7. ZERO LOT LINE - SINGLE DETACHED UNITS

A major example of zero lot line housing is found in the Bramalea Community of the former Township of Chinguacousy, now a part of the City of Brampton. The development of 2,350 dwelling units started in 1971 with units constructed by a variety of builders on lands acquired by the Ontario Housing Corporation under the H.O.M.E. program. Side yards, large front yards and wide streets were eliminated. Regarding the housing units themselves, no windows looked into the house next door. Each dwelling was placed on the lot such that the living area related directly to the exterior patio and yard area of that dwelling. Patios were fenced to provide adequate privacy. Landscaping standards were critical to visual quality.

POSITIVE FEATURES

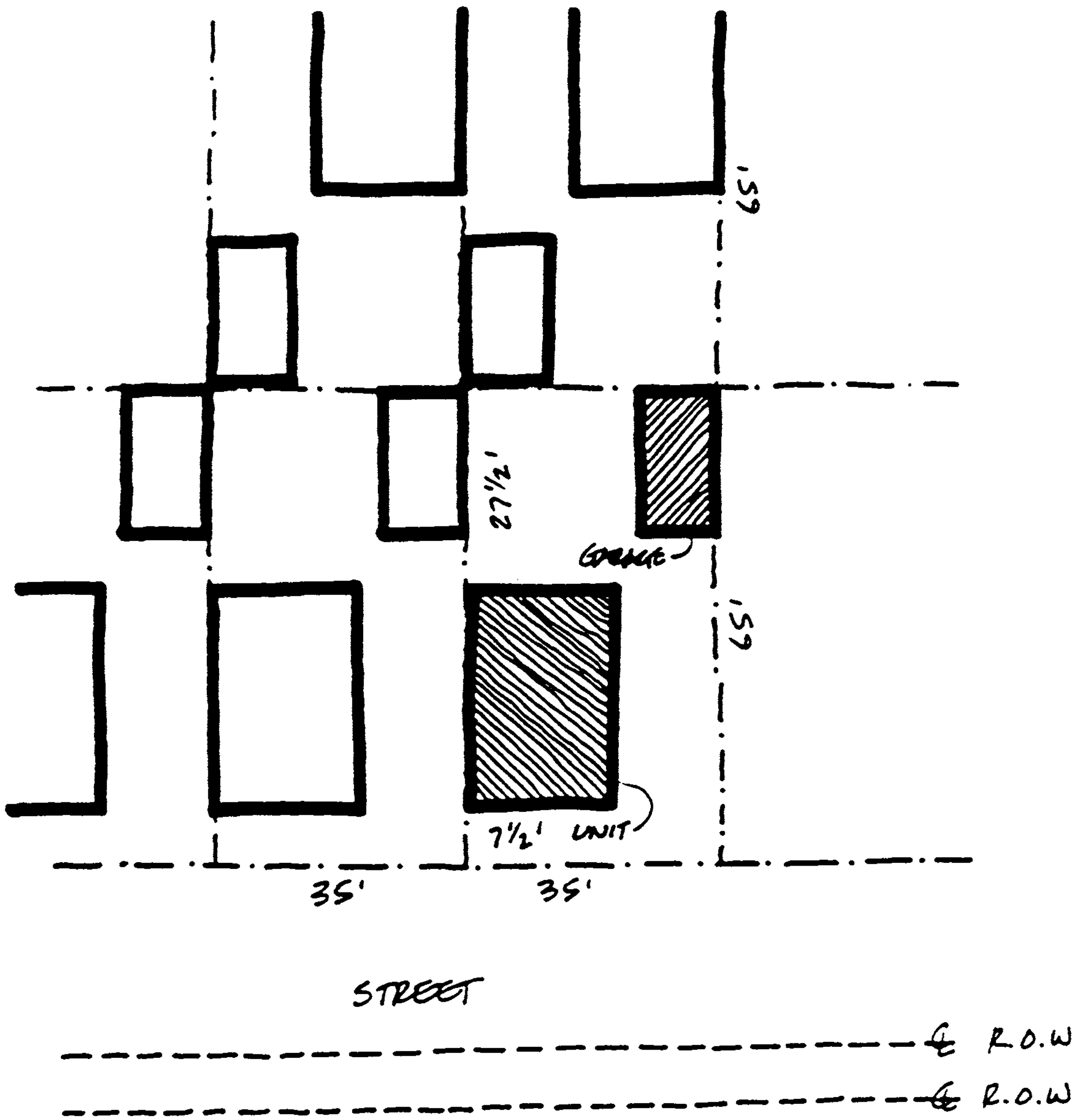
- dwellings sited at various angles to the front lot line can create an interesting streetscape
- small, but adequate private open space; backyard not really suitable for accommodating swimming pool
- no wasted side yard space

NEGATIVE FEATURES

- as in conventional residential areas, the parking or storage of recreational vehicles or the use of utility sheds is handicapped by the small lot areas and narrow lot frontages

Note: While maintaining the same density, this concept can be adapted and evolved into courtyard or court garden housing with attached garages, front, side and rear courtyards for private open space use.

7. ZERO LOT LINE - SINGLE DETACHED UNITS



Statistics		
Lot Area	2,275 sq. ft.	211.4 sq. m.
Lot Frontage	35 ft.	10.7 m.
Unit Size	1,200 sq. ft.	111.5 sq. m.
Lot Coverage	37%	37%
Privacy/Landscaped Open Space	633 sq. ft.	58.8 sq. m.
Public Access Road Area Attributable to Lot	919 sq. ft.[1)] 1,155 sq. ft.[2)]	85.9 sq. m.[1)] 107.3 sq. m.[2)]
Net Density	13.6 U.P.A.	33.6 U.P.Ha.

Note: 1) 52.5 ft./16 m. R.O.W.
2) 66 ft./20 m. R.O.W.

8. KEY LOT - TWO TIER - ZERO LOT LINE - SINGLE DETACHED UNITS

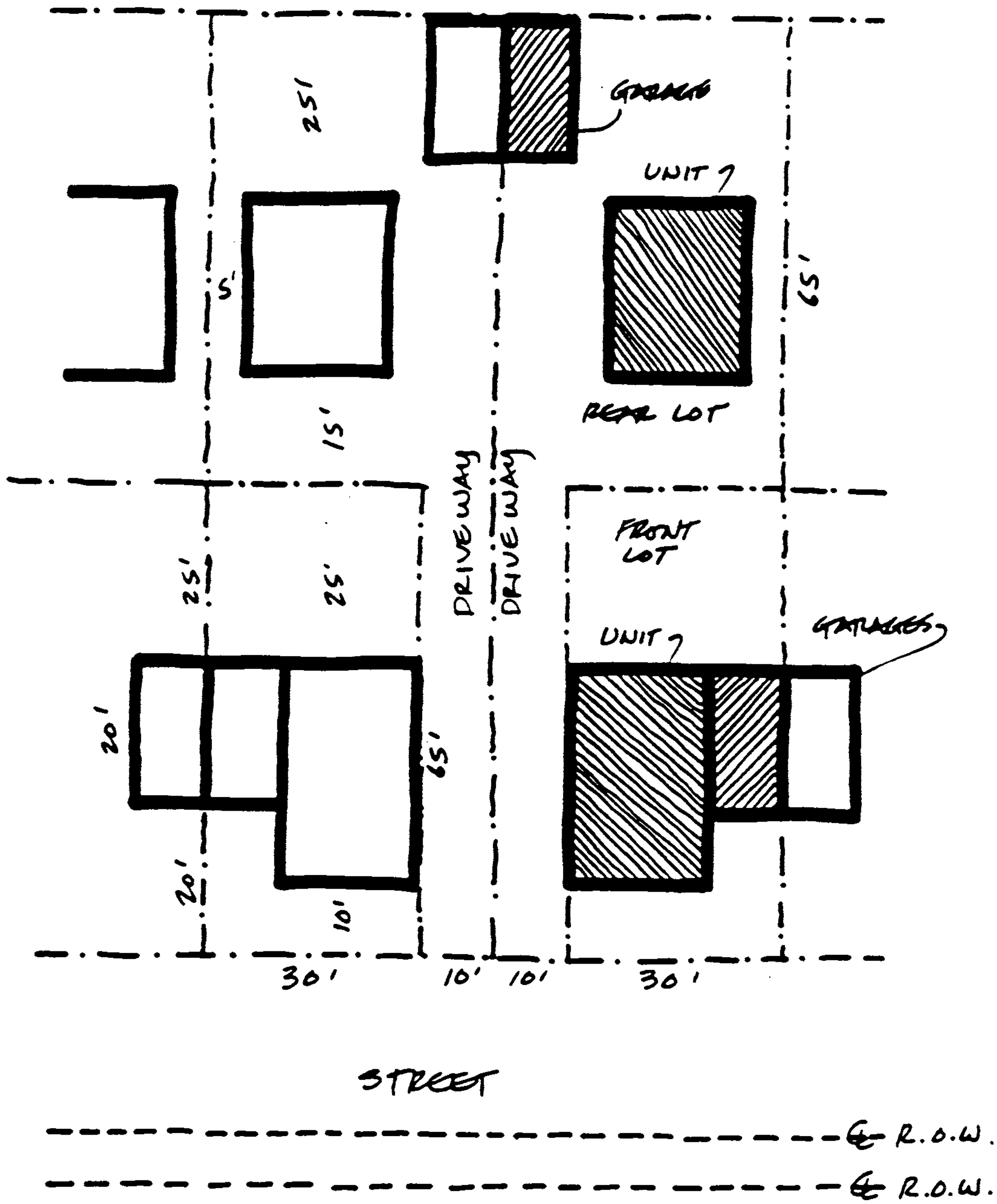
Introducing the "key lot" or "back lot" or "flag lot" combined with the zero lot line concept, offers the opportunity of increasing zero lot line densities. The key lot form simply utilizes a driveway to access a rear lot whose frontage is effectively the width of the driveway. This example reflects single detached units with both attached and detached garages.

Many of the comments associated with other small lot alternatives apply in this case as well; such as, small privacy areas and the ramifications associated with this. However, reasonably interesting streetscapes can be achieved with this form of development. The rear dwelling unit is more insulated from street noise and activity but a lack of front yard or frontage exposure may be considered a negative aspect of this design.

Driveway maintenance (i.e., snow shovelling) associated with the rear dwelling unit could be potentially onerous with long driveways 20 metres (65 feet).

Note: In lieu of private driveways to provide access to rear units, mutual or shared driveways may be employed which could reduce frontages for two units by up to 3 metres (10 feet). Also, comparative density would be increased to 39.8 u.p.ha. (16.1 u.p.a.).

8. KEY LOT - TWO TIER - ZERO LOT LINE - SINGLE DETACHED UNITS



Statistics	Front Lot		Rear Lot		Average	
Lot Area	1950 sq. ft.	181.2 sq. m	3250 sq. ft.	302.0 sq. m	2600 sq. ft.	241.6 sq. m
Lot Frontage	30 ft.	9.1 m	10 ft.	3.0 m	20 ft.	6.1 m
Unit Size	1200 sq. ft.	111.5 sq. m	1000 sq. ft.	92.9 sq. m	1100 sq. ft.	102.2 sq. m
Lot Coverage	43%	43%	23%	23%	33%	33%
Privacy/Landscaped Open Space	750 sq. ft.	69.7 sq. m	1200 sq. ft.	111.5 sq. m	975 sq. ft.	90.6 sq. m
Public Access Road Area Attributable to Lot	788 sq. ft. 1) 990 sq. ft. 2)	73.6 sq. m 1) 92.0 sq. m 2)	263 sq. ft. 1) 330 sq. ft. 2)	24.5 sq. m 1) 30.7 sq. m 2)	526 sq. ft. 1) 660 sq. ft. 2)	49.1 sq. m 1) 61.3 sq. m 2)
Net Density	16.0 U.P.A.	39.2 U.P.Ha	12.4 U.P.A.	30.6 U.P.Ha	13.9 U.P.A.	34.4 U.P.Ha

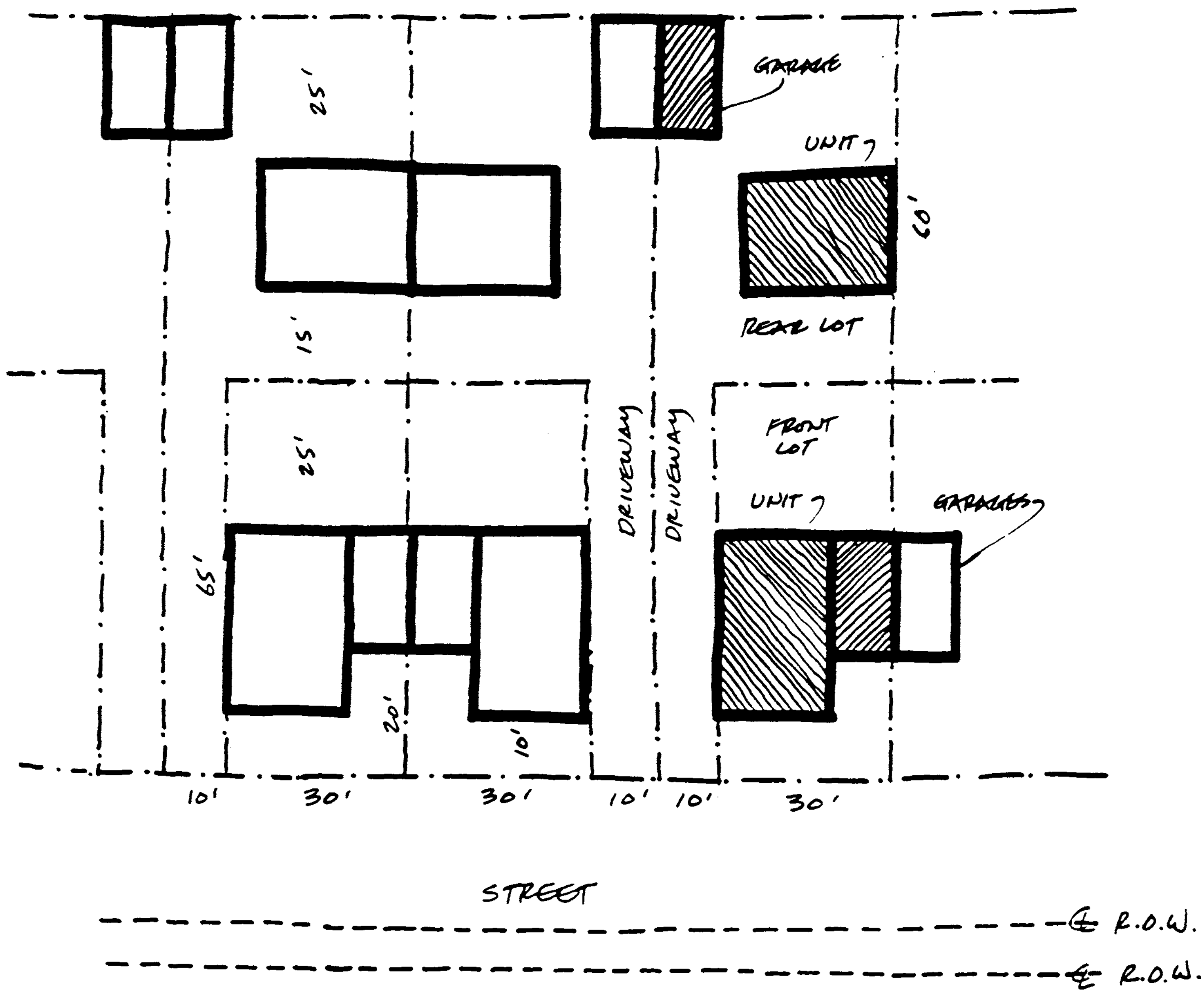
1) 52.5 ft. / 16 m right-of-way
2) 66 ft. / 20 m right-of-way

9. KEY LOT - TWO TIER - ZERO LOT LINE - SINGLE DETACHED AND SEMI-DETACHED UNITS

As a variation of the example illustrated in #8, the rear dwelling units have been joined as semi-detached units, which enables a reduction to be effected in the depth of the rear lot from that in example #8. Also, inefficient side yard space is eliminated.

Note: A second iteration of key lotting combined with the zero lot line concept could further increase density by combining the individual driveways into one mutual driveway serving the two semi-detached units on the rear lots. The resulting average density would be 44 units per hectare (17.8 units per acre) which compares favourably with that of many well designed and highly efficient condominium townhouse projects.

9. KEY LOT - TWO TIER - ZERO LOT LINE - SINGLE DETACHED AND SEMI-DETACHED UNITS



Statistics	Front Lot		Rear Lot		Average	
Lot Area	1950 sq. ft.	181.2 sq. m	3050 sq. ft.	283.5 sq. m	2500 sq. ft.	232.3 sq. m
Lot Frontage	30 ft.	9.1 m	10 ft.	3.0 m	20 ft.	6.1 m
Unit Size	1200 sq. ft.	111.5 sq. m	1000 sq. ft.	92.9 sq. m	1100 sq. ft.	102.2 sq. m
Lot Coverage	43%	43%	24%	24%	34%	34%
Privacy/Landscaped Open Space	750 sq. ft.	69.7 sq. m	1200 sq. ft.	111.5 sq. m	975 sq. ft.	90.6 sq. m
Public Access Road Area Attributable to Lot	788 sq. ft. 1) 990 sq. ft. 2)	73.6 sq m 1) 92.0 sq. m 2)	263 sq. ft 1) 330 sq. ft. 2)	24 5 sq. m 1) 30.6 sq. m 2)	526 sq. ft 1) 660 sq. ft. 2)	49 1 sq. m 1) 61.3 sq. m 2)
Net Density	15.9 U.P.A.	39.2 U.P.Ha	13.1 U.P.A.	32.5 U.P.Ha	14.4 U.P.A.	35.5 U.P.Ha

1) 52 5 ft. / 16 m right-of-way
2) 66 ft. / 20 m right-of-way

10. ZIPPER LOT (THE TRELAWNY CONCEPT)

This innovative residential design concept was developed by the First City Development Corp.[2].

Six options were developed based on this zipper lot concept to reflect a wide range of lot sizes from 811 square metres (8,725 square feet) to 396 square metres (4,256 square feet). Example #13 reflects the mid range which results in a density of 14.6 units per hectare (5.9 units per acre).

POSITIVE FEATURES

- relatively high lot frontage dimensions compared to lot area offering attractive exposure to the public street
- with the angled lotting pattern, no two walls of adjacent dwelling units overlap which provides extensive potential for locating windows and doors

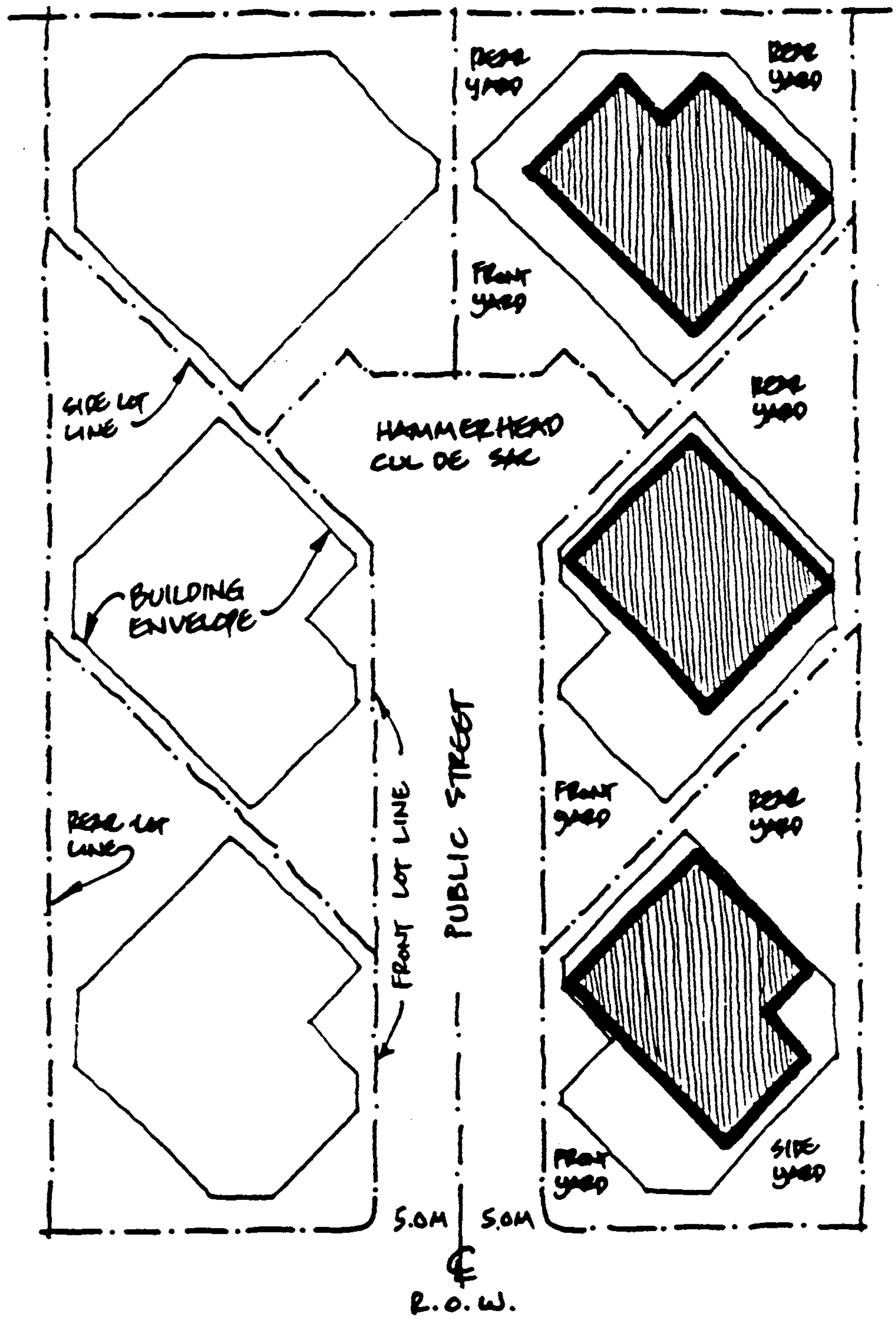
NEGATIVE ASPECTS

- compared to the lot area, individual privacy space (rear yards) are smaller than those associated with traditional single detached lotting
- also, with the staggering of units on angled lots, the potential for overlooking the rear yard next door is maximized

---

[2] Trelawny Team Handbook, December, 1984 (including application in the City of Mississauga)

10. ZIPPER LOT (THE TRELAWNY CONCEPT) (Innovative residential design developed by the First City Development Corp. Ltd.)



Statistics		
Lot Area	6,491 sq. ft.	603.3 sq. m.
Lot Frontage	58 ft.	17.6 m.
Unit Size	3,331 sq. ft.	309.6 sq. m.
Lot Coverage	26%	26%
Privacy/Landscaped Open Space	1,474 sq. ft.	137 sq. m.
Public Access Road Area Attributable to Lot	1,119 sq. ft.[1)]	104 sq. m.[1)]
Net Density	5.9 U.P.A.	14.6 U.P.Ha.

Note: 1) 33 ft. / 10 m R.O.W. (public street with hammerhead cul de sac design)

11. MULTIPLE FAMILY HOUSING ON HAMMERHEAD CUL DE SAC[3]

By introducing the condominium form of ownership to at grade housing, substantially increased densities can be achieved in attractive physical surroundings. This particular O.H.C. design incorporates individual garages with each unit: these are located under the housing unit, one half storey below grade. In addition, parking is provided in front of the units fronting on the public street and on-site within the circulation system providing access to the internal units.

POSITIVE FEATURES

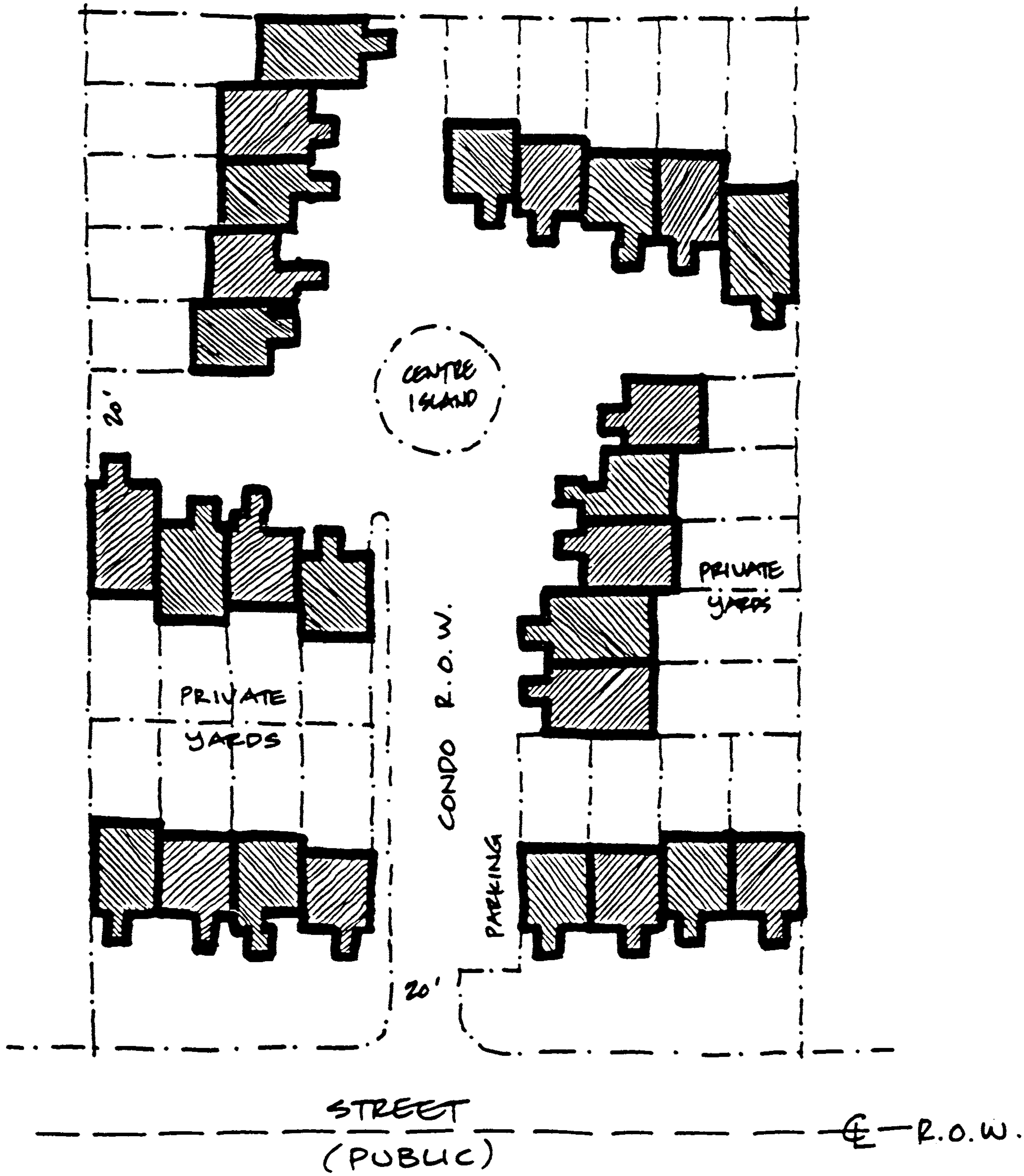
- reasonable unit sizes and privacy spaces can be accommodated in this site plan
- townhouse blocks are pleasantly articulated in continuous rows of from four to a maximum of ten units in length

NEGATIVE ASPECTS

- condominium ownership versus "freehold"
- limited semi-private space except for circulation and on-site parking
- very urban hard surface character, although relieved by ample private gardens

[3] Ontario Housing Corporation Design Competition 1972, award winning concept by Marshall Macklin Monaghan Limited

11. MULTIPLE FAMILY HOUSING ON HAMMERHEAD CUL DE SAC



Statistics		
Lot Area	1,755 sq. ft.	163.1 sq. m.
Lot Frontage	21 ft.	6.4 m.
Unit Size	1,160 sq. ft.	107.8 sq. m.
Lot Coverage	33%	33%
Privacy/Landscaped Open Space	727 sq. ft.	67.6 sq. m.
Public Access Road Area Attributable to Lot	204 sq. ft.1) 255 sq. ft.2)	19 sq. m.1) 23.7 sq. m.2)
Net Density	18.5 U.P.A.	45.8 U.P.Ha.

Note: 1) 52.5 ft. / 16 m R.O.W.

2) 66 ft. / 20 m R.O.W.

12. TOWNHOUSE CLUSTERS

This second example of condominium townhousing is considerably reduced in density but provides for residential living in a parklike setting with continuous walkways and substantial semi-private open space areas. The potential of the cluster form inherently provides for the staggering of units and limits the number of units in a row from two to five in this particular design. Also, pedestrian circulation and the use of bicycles is encouraged.

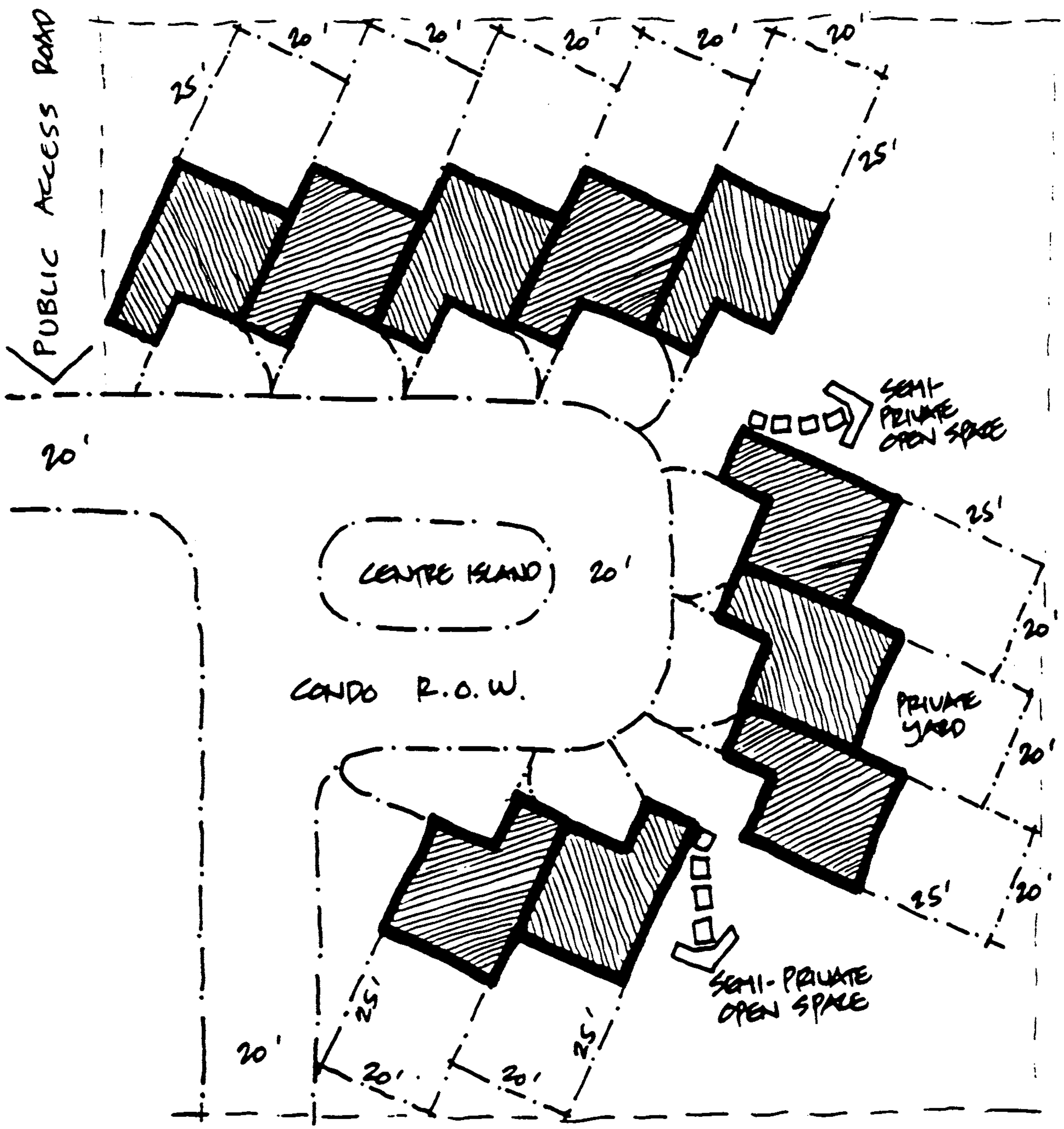
POSITIVE FEATURES

- potential for very high visual quality to be achieved
- 200% parking provided with each unit - one space in an underground garage below the unit and partially below grade and one space in front of the unit
- private gardens linked to semi-private open space system

NEGATIVE ASPECTS

- densities achieved are comparable to single detached "freehold" subdivision design. Higher or increased densities reduce the parklike setting with the continuous walkway system linking semi-private open spaces

12. TOWNHOUSE CLUSTERS (Condominium housing)



Statistics		
Lot Area	1,221 sq. ft.	113.5 sq. m.
Lot Frontage	20 ft.	6.1 m.
Unit Size	962 sq. ft.	89.4 sq. m.
Lot Coverage	39%	39%
Privacy/Landscaped Open Space	500 sq. ft.	46.5 sq. m.
Public Access Road Area Attributable to Lot	231 sq. ft.[1)] 290 sq. ft.[2)]	21.8 sq. m.[1)] 27.0 sq. m.[2)]
Net Density	6.5 U.P.A.	16.0 U.P.Ha

Note: 1) 52.5 ft. / 16 m R.O.W.

2) 66 ft. / 20 m R.O.W.

APPENDIX B

OTTAWA-CARLETON REGIONAL WORKING COMMITTEE ON ALTERNATIVE URBAN DEVELOPMENT STANDARDS

1. **Terms of Reference**
2. **Conclusions and Recommendations**

Terms of Reference Regional Working Committee on Alternative Urban Development Standards

Purpose

Explore the feasibility of using alternative urban development standards to reduce housing costs and municipal engineering costs.

Work Elements

- Review studies undertaken in Ontario of alternative engineering and planning standards
- Identify standards which could be considered for modification in Ottawa-Carleton
- Evaluate the impacts of possible modifications to engineering standards
- Recommend modifications, if appropriate, to existing engineering and planning standards

Composition of the Committee

Chair: RMOC Planning representatives

Representatives from among the municipalities of Nepean, Cumberland, Ottawa, Gloucester, Kanata and Goulbourn;representatives of public utility companies the Builder's Council and RMOC Environmental Services.

Report

The Working Committee will report it's findings and recommendations to local municipalities and will seek input from municipal planners through the Committee on the Implementation of the Policy Statement on Land Use Planning for Housing.

Time Frame

This committee is to meet approximately every two weeks starting in January and complete its work by June 30, 1991.

6.0 Conclusion and Recommendations

The findings of the Working Committee demonstrate that the use of alternative engineering and development standards can generate important cost savings in the provision of new housing.

Compact development and a more efficient use of land are key factors in reducing the cost of housing. Opportunities lie in reduced ROW widths, reduced lot sizes and setbacks, the use of common service trenches and the elimination of curbs. These modified standards can lower costs by reducing the amount of land required per housing units, by distributing the cost among a greater number of units and by reducing the servicing costs.

The purpose of this report is to make area municipalities, utility companies and the development industry aware of ways to modify residential development standards to make housing more affordable. The alternative standards proposed here can be adapted by municipalities and developers to accommodate market and design requirements. It is meant to offer guidance to municipalities who wish to lower housing costs. The use of modified standards will provide more flexibility for the building industry to bring on the market more affordable housing. Therefore, the Working Committee suggests that area municipalities, utility companies and the development industry consider the following recommendations

1. **Reduce ROW width to 16 metres on local streets in areas identified as suitable by municipalities.**

2. **Revise zoning by-laws to permit smaller lots for single family-dwellings and townhouses and to reduce parking requirements.**

3. **Eliminate the requirement for double service trenching and allow for common service trenching for every two units.**

4. **Permit the elimination of curbs and sidewalks in areas identified as suitable by municipalities.**

The Working Committee also recommends that :

5. **A demstration project be undertaken to prove the cost saving and marketability of modified standards.**

6. **The Ottawa Regional Society of Architects be invited to participate in a subsequent phase of this project, namely to explore design alternatives for small lot development, and the innovative siting and design of small houses.**

7. **The RMOC undertake to examine the issue of stormwater management in the context of the environmental policy review of the regional official plan.**

8. **The Ottawa-Carleton Home Builders' Association cooperate with municipalities in the introduction of alternative development standards in Ottawa-Carleton (see letter of support in ANNEX F).**

9. **The Ministry of Housing complete their study on alternative standards and demonstrate leadership in implementing alternative development standards in Ontario.**