RESEARCH REPORT

External Research Program

A City of Towns: Alternatives for the Planning and Design of Housing in St. John's, Newfoundland

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By Robert Mellin

September 1995

CMHC Project Officer: Raj Rana

A CITY OF TOWNS

Alternatives for the Planning and Design of Housing in St. John's, Newfoundland

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NOTE: LE RÉSUMÉ EN FRANÇAIS SUIT IMMÉDIATEMENT LE RÉSUMÉ EN ANGLAIS.

A City of Towns

Alternatives for the Planning and Design of Housing in St. John's, Newfoundland

Canada Mortgage and Housing Corporation
External Research Program

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September, 1995

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Abstract

This research focuses on the urban form and houses of the older residential neighbourhoods in St. John's, Newfoundland, Canada. There are three main purposes for this study: first, to document the physical form of the older residential neighbourhoods by formulating a neighbourhood and housing typology (the older residential areas are quickly being eroded by unsympathetic new development); second, to analyse and interpret details of urban and house form that contribute to the character of these neighbourhoods; and third, to demonstrate that nearly all the ingredients that could contribute to sensible planning for new residential areas in St. John's are contained in the older residential areas. Much of the information is presented in graphic format using photographs, drawings, and computer-generated three-dimensional models of houses and neighbourhoods. The intent is to develop a graphic analysis that is detailed enough to provide a historical record of the form of various neighbourhoods, and to place this information in a format that would permit useful comparisons between older and newer residential neighbourhoods, including comparisons of the affordability of different types of neighbourhoods and houses. Another objective is to make the material presented accessible to persons who are not able to understand the three-dimensional implications of planning regulations.

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Contents

Summary	*6*
Introduction	*9*
Residential / Commercial Mixed-Use Buildings	*19*
Downtown Residential Neighbourhoods	*23*
Georgestown	*76*
Circular Road East	*89*
Rabbittown	*100*
Golf Avenue	*109*
Churchill Square	*120*
Housing Typology	*135*
Conclusions	*162*
Appendix One: The Bertaud Model	*185*
Appendix Two: Newfoundland Drive	*189*
Appendix Three: Computer-generated Models	*194*
Bibliography	*217*

Purpose/Objectives:

This research focuses on the urban form and houses of the older residential neighbourhoods in St. John's, Newfoundland, Canada. There are three main purposes for this study: first, to document the physical form of the older residential neighbourhoods by formulating a neighbourhood and housing typology (the older residential areas are quickly being eroded by unsympathetic new development); second, to analyse and interpret details of urban and house form that contribute to the character of these neighbourhoods; and third, to demonstrate that nearly all the ingredients that could contribute to sensible planning for new residential areas in St. John's are contained in the older residential areas. Much of the information is presented in graphic format using computer-generated three-dimensional models of houses and neighbourhoods. The intent is to develop a graphic analysis that is detailed enough to provide a historical record of the form of various neighbourhoods, and to place this information in a format that would permit useful comparisons between older and newer residential neighbourhoods. Another objective is to make the material presented accessible to persons who are not able to understand the three-dimensional implications of planning regulations.

Research Design/ Methods:

Selected residential areas in the older part of the city were analysed with regard to housing density, lot proportions, setbacks, street space, house types, house size, housing costs, development costs (neighbourhood affordability), solar orientation, block lengths, infrastructure lengths, planning regulations (zoning), landscape features (fences, flora, gardens), and other features such as pedestrian paths and alleys. For several residential areas, an overview of their historical development was presented. Contextual information was gathered to supplement the visual analysis of neighbourhood form from the following sources: provincial archives, maps, photographs, insurance atlases, and interviews with long-term residents of neighbourhoods. From the interviews, information was obtained on the history of the neighbourhood, its residents, its identity, and on such aspects as changes over time, the use of open space, and pedestrian access lanes. Houses were selected for the construction of computer-generated models to demonstrate the range of house sizes and house types found in the older residential areas. These models were used to represent the three-dimensional effects of house height, lot width, setbacks, and architectural elements (bay windows, dormer windows, porches, roofs, foundation height) on the appearance of the street.

Data and Analysis Procedures:

Each residential area documented in this report is analysed using the same format: an introductory text with photographs and a graphic analysis. The graphic analysis contains information on existing conditions (density, street area, sidewalk area, and heights of houses), streets and plots (block lengths and widths, street widths, street corner radii, setbacks, sidewalk widths, lane widths, plot area, plot ratio, and building area), houses (the range of house size found in particular neighbourhoods and the proportions of these houses, together with sectional data, axonometrics, perspectives of selected houses, and outbuilding placement), street views (perspectives), street sections (proportions, cone-of-vision studies), and solar studies (shadow casting). An affordability index was generated using the Bertaud Model equations (see Appendix One of the report for further detail) to compare the costs of different residential neighbourhoods. This mathematical model, first published in 1981 for use in large-scale, low-income housing projects in developing countries, was edited and updated for use on this project with a spreadsheet program. In addition to the neighbourhood analysis described above, a housing typology is presented with its own house construction affordability index.

Major Findings:

From the analysis, it became apparent that the major factors influencing housing affordability were plot proportions, block lengths, block widths, and infrastructure lengths. Housing in the older residential areas is more affordable than housing in the newer areas for this reason (higher densities, lower land and infrastructure costs). Without public subsidies for new suburban development (land banking, off-site infrastructure costs), housing in the new, low density residential areas would be prohibitively expensive. These subsidies are often ignored when calculating the true cost of present-day housing in St. John's. Housing in pre-Confederation St. John's (Newfoundland joined Canada in 1949) was developed largely without such subsidies, and this is reflected in housing and neighbourhood form. General principles or alternatives are proposed for new housing development, and these are all based on the best urban aspects of the existing, older residential areas (for example, St. John's was once a city composed of small towns, with courtyards, bridging between dwellings, outbuildings, grid-pattern streets, small houses, lanes and pedestrian paths, and mixed-use zoning).

Significance/ Uses of Results:

The information provided in this report can be used as the basis for a new approach to the planning and design of housing in St. John's and other cities in the region: an approach grounded in an understanding of the meaning and values portrayed by the urban and architectural forms contained in the older residential areas. The approach starts with ethnography in an attempt to understand how houses and neighbourhoods are perceived by the residents themselves. It continues with the synchronic comparison of form, discovering precedents and possibilities, providing the patient observer with solutions to sustainable town planning, affordable house construction, and subsidy-reduced development guidelines. The process concludes with diachronic comparisons that question the ultimate objectives of seemingly neutral design and planning standards, and alternatives are proposed that would recapture the spirit of what was once an exceptional city: a harbour city whose painted wooden houses cluster together for warmth on a crazy-quilt pattern of streets, a city where the identity and wellbeing of the residents was strongly linked to the commerce, industry, buildings, and landmarks of its neighbourhoods and "towns".

UNE VILLE COMPOSÉE DE VILLAGES :
Solutions de rechange en matière de planification et de conception de logements à St. John's (Terre-Neuve)

But/objectifs : Cette recherche porte sur la forme urbaine et les logements des vieux quartiers résidentiels de la ville de St. John's (Terre-Neuve) au Canada. Elle vise trois objectifs : d'abord, documenter la forme matérielle des vieux quartiers résidentiels en établissant une typologie de logement et de quartier (les vieux quartiers résidentiels subissent l'érosion rapide de nouveaux aménagements moins sympathiques); ensuite, analyser et interpréter les particularités des formes urbaines et des formes de logement qui contribuent au cachet de ces quartiers; enfin, montrer que presque tous les ingrédients pouvant contribuer à une bonne planification des nouveaux secteurs résidentiels de St. John's se trouvent dans les vieux quartiers. Une large part de l'information est présentée sous forme graphique à l'aide de modèles informatiques tridimensionnels de maisons et de quartiers, l'idée étant d'élaborer une analyse graphique suffisamment détaillée pour offrir un aperçu historique de la forme de divers quartiers et d'organiser cette information de manière à permettre des comparaisons utiles entre les quartiers résidentiels anciens et nouveaux. La recherche a également pour objectif de rendre la matière présentée accessible aux personnes qui ne sont pas en mesure de comprendre l'incidence tridimensionnelle de la réglementation en matière d'urbanisme.

Plan d'études/ méthodologie : Des zones résidentielles particulières situées dans un vieux secteur de la ville sont analysées en regard d'éléments comme la densité résidentielle, les proportions des terrains, les marges de recul, l'espace de la rue, les logements types, les dimensions des logements, le prix des logements, les frais d'aménagement (abordabilité du quartier), l'orientation par rapport au soleil, la longueur des îlots, la longueur des infrastructures, les règlements d'urbanisme (zonage), les caractéristiques paysagères (clôtures, plantes, jardins) et d'autres particularités comme les voies piétonnières. Un aperçu des antécédents d'aménagement de plusieurs quartiers résidentiels est présenté. On a recueilli de l'information contextuelle pour compléter l'analyse visuelle de la forme de quartier à partir des sources de renseignement suivantes : archives de la province, cartes, photographies, atlas d'assurance et entrevues avec des résidants de longue date de ces quartiers. Les entrevues ont permis d'obtenir de l'information sur l'histoire du quartier, sur sa population , sur son identité et sur des aspects tels que les

changements survenus avec le temps, l'utilisation des terrains non construits et les voies d'accès pour piétons. Des maisons ont été choisies pour l'élaboration de modèles informatiques destinés à illustrer la gamme des dimensions et des types de maisons qu'on trouve dans les vieux quartiers résidentiels. Ces modèles ont servi à représenter les effets tridimensionnels qu'ont la hauteur des maisons, la largeur des terrains, la marge de recul et les éléments architecturaux (fenêtres en saillie, fenêtres de lucarne, porches, toits, hauteur des fondations) sur l'aspect de la rue.

Collecte des données et analyse : Chaque zone résidentielle documentée dans ce rapport est analysée suivant la même formule, à savoir un texte d'introduction accompagné de photographies et d'une analyse graphique. L'analyse graphique donne de l'information sur les conditions actuelles (densité, surface occupée par les rues et trottoirs, hauteur des maisons) , les rues et les lots (longueur et largeur des îlots, largeur des rues, rayon de courbure des angles de rue, marges de recul, largeur des trottoirs, largeur des pistes, surface des lots, coefficient d'occupation des sols , aire des bâtiments), les maisons (dimensions types des maisons qui caractérisent certains quartiers et les proportions de ces maisons ainsi que les données de section, les projections axonométriques, les perspectives de certaines maisons et l'emplacement des dépendances), l'aspect des rues (perspectives), la section des rues (les proportions, les perspectives coniques) et les études d'ensoleillement (production d'ombrage). Un indice d'abordabilité a été produit à l'aide d'équations du modèle de Bertaud (consulter l'Annexe 1 du rapport pour en savoir plus) dans le but de comparer les coûts inhérents aux différents quartiers résidentiels. Publié pour la première fois en 1981 pour être utilisé dans les aménagements résidentiels de grande envergure destinés aux ménages à faible revenu des pays en voie de développement, ce modèle mathématique a été révisé et mis à jour afin d'être employé de concert avec un tableur dans la présente étude. Outre l'analyse de quartier décrite ci-dessus, on présente une typologie de logement dotée de son propre indice d'abordabilité de la construction résidentielle.

Principaux résultats : L'analyse a mis en évidence que les principaux facteurs influant sur l'abordabilité du logement sont les proportions des lots, la longueur des îlots, la largeur des îlots et la longueur des in frastructures. C'est pourquoi les logements des vieux quartiers

résidentiels sont plus abordables que ceux des quartiers plus récents (densité supérieure, coût des terrains et des infrastructures inférieur). Sans l'apport de fonds publics pour les nouveaux aménagements résidentiels de banlieue (réserves foncières, viabilisation), les logements de ces quartiers à faible densité seraient hors de prix. Il arrive souvent que l'on ne tienne pas compte de ces subventions au moment de calculer le coût réel des logements actuels à St. John's. La majorité des logements datant d'avant l'entrée de St. John's dans la Confédération (Terre-Neuve s'est jointe au Canada en 1949) ont été construits sans ce genre de subvention, une situation que reflète le type d'habitations et de quartiers qu'on y trouve. On propose des principes généraux ou des solutions de rechange pour l'aménagement de nouveaux quartiers résidentiels, lesquels reposent tous sur les meilleurs aspects urbains des zones résidentielles actuelles et plus anciennes (par exemple, la ville de St. John's, à une certaine époque, était composée de petits villages où l'on trouvait des cours, des liens entre les habitations, des dépendances, des rues quadrillées, de petites maisons, des pistes, des voies piétonnières et un zonage diversifié).

Importance et emploi des résultats :

L'information fournie dans ce rapport peut être utilisée comme point de départ d'une nouvelle façon de planifier et de concevoir les logements à St. John's et dans d'autres villes de la région : une approche découlant de la compréhension de la signification et des valeurs portées par les formes urbaines et architecturales qui caractérisent les vieux quartiers résidentiels. Cette approche doit d'abord être ethnographique, c'est-à-dire qu'elle doit se fonder sur la compréhension de la manière dont la population elle-même perçoit ses logements et ses quartiers. Ensuite, elle passe par une comparaison synchronique des formes et par la découverte des précédents et des possibilités; s'il est patient, l'observateur en tire des solutions qui favorisent l'urbanisme écologique, la construction de logements abordables et le recours à des pratiques d'aménagement moins axées sur les subventions. Le processus se termine par des comparaisons diachroniques qui remettent en question les objectifs finaux des normes apparemment neutres de conception et d'urbanisme. Il est alors possible de proposer des solutions de rechange susceptibles de redonner à St. John's le cachet exceptionnel qu'elle possédait jadis : une ville portuaire dont les maisons de bois peintes étaient d'autant plus chaleureuses qu'elles étaient regroupées sur une mosaïque de rues; une ville

dont l'identité et le bien-être des habitants étaient fortement liés aux commerces, aux industries, aux bâtiments et aux repères de ses quartiers et de ses «villages».

A queer place ... full of heights and hollows, corners and angles, and not so substantial in its buildings ...a nebulous collection of wooden huts perched higgledy-piggledy upon the stony braes...[1]

The houses presented a rough . . . somber aspect thrown together in irregular clusters without order or arrangement of any kind...[2]

Introduction

Photograph from the collection of Mr. Gordon King

The "New Urbanism"[3] movement in North America has inspired a reconsideration of the fundamental principles of town planning. In recently built towns, the new urbanist's planning priorities have typically been pedestrian scale neighbourhoods, mixed-use zoning, links to mass transportation, land conservation, and town planning and building design with consideration for the vernacular architecture of particular regions. The success of these towns has given architects and planners courage to depart from expedient, "status quo" development standards, especially when considering the planning and design of new, affordable housing.

One of the first tasks undertaken by the planners of such recently built towns as Seaside, Florida,[4] is usually the documentation and analysis of those aspects of local architecture and urban form that contribute to a sense of place. The architectural component of this analysis may include a building typology (housing or other buildings) and studies of architectural elements, building materials, and patterns of use. In the urban design component of this analysis, those elements that contribute to the essence of the character of the towns in a region, such as the form and pattern of streets, the distribution of houses and buildings (public, private, monumental, and background), the size of neighbourhoods, the use of public and private open space, urban growth patterns, and landscaping are considered. To ensure that this character is realized in the process of land and building development, detailed constraints are often provided in the form of a planning code. In the case of the Town of Seaside, this code was highly detailed and prescriptive at various scales: from the scale of appropriate architectural elements for houses to the scale of the layout of the streets.

Not unlike other Canadian cities, St. John's shows remarkable contrasts between the older residential neighbourhoods - these exude history and local character - and the newer suburbs that follow uninspired housing and subdivision development standards. The older residential neighbourhoods contain a variety of successful house and neighbourhood types, and much contextual information can be obtained from these areas that could be used when planning new residential areas or when repairing or enhancing existing residential areas.

View from Queens Road: downtown residential area

Newfoundland Drive

House on Parade Street

House on Parade Street

The purpose of this research is to document and analyse the older residential areas of St. John's in a comparative, visually-oriented study of housing. It is hoped that the process used in this study may provide a conceptual framework for similar studies elsewhere in Canada, possibly toward the compilation of a nationwide housing reference. In St. John's, there is some urgency for this type of study as older residential areas are quickly being eroded by unsympathetic development and by new traffic patterns. Much valuable contextual information has been lost in recent years.

This research began with a survey of the older residential areas in St. John's in an attempt to identify different types of neighbourhoods. From this survey, five areas were selected for analysis: the downtown (East End) residential area, the Circular Road (east) area, Rabbittown (Post World War I residential area), Churchill Square (Post World War II residential area), and the Golf Avenue area in the West End. The downtown residential area was analysed in further detail in the Gower Street (East End), Bulley Street (Central), Georgestown (Bulger's Lane), and Rennie's Mill Road areas. The Circular Road (east) area was included in this study to provide examples of large homes in a 19th century suburban setting. To add the present-day suburban context to the graphic comparison of residential areas in St. John's, the Newfoundland Drive residential area was included.

Following the identification of neighbourhood types, a housing typology was developed based on the houses found in these neighbourhoods. Three-dimensional computer models of these houses were constructed including typology variations. Also included in the computer models was information about the relationship of houses to the street and to each other. This enabled the qualitative comparison of different types of streets in St. John's using computer-generated perspective views, with the possibility of adding solar studies to these views. St. John's residents were interviewed to obtain information about the history of the older residential neighbourhoods and this information was supplemented by archival research using maps, insurance atlases, and photographs. A graphic summary was developed for each neighbourhood type and for the various components of the downtown residential area analysis.

Downtown residential area: Gower Street and Victoria Street

42 Circular Road

Rabbittown

Golf Avenue area: Raleigh Street

Churchill Square area Maple Street

Gower Street (downtown) - every house is individual ...the steps and stairs houses on Flower Hill - tourists go crazy about them, whereas suburbia leaves them cold. You look at the very modern street - there is no vibrancy in the street.[5]

Part of the agenda of the present research is to contribute to the dialogue on affordable housing in St. John's. In addition to considerations of housing typology and house design and construction, innovative site planning is vital for economy (infrastructure and land costs), for the wellbeing of the residents (privacy, access, security) and for the self-esteem of a neighbourhood (individual and collective identity). In order to compare the costs of the residential areas and house types analysed in this report, the Bertaud model[6] equations were used. Originally intended for use in analysing large-scale, low- cost housing developments (for example, site and services projects), this model permits the input of information relating not only to the form and construction cost of houses but to the proportions of building lots, the cost of infrastructure, and the layout of streets.

St. John's can be described as largely suburban in character when considering the total land area of the city. It has a small downtown area containing older housing mixed with offices, stores, light industry, and harbour-related facilities. The suburban areas are similar to those suburbs found in other Canadian cities with land use separated by zoning. The prime means of transportation is the automobile and public transportation is limited to bus service and taxis. St. John's has experienced steady population growth since Confederation. Before Confederation, the residential area was limited mainly to the downtown area around the harbour and this housing consisted mostly of row housing. The Newfoundland government's Commission of Enquiry on Housing and Town Planning in St. John's, appointed in 1942, described pre-Confederation housing conditions:

(a) Poor design of houses, (b) Crowded and disorderly placement of structures, (c) Lack of a Building Code, (d) Low standards, (e) The practice of building without an architect, (f) The practice of aiming at cheapness, (g) Neglect and disregard of surroundings, (h) Cheap, hasty, and inadequate construction after the general conflagration of 1892.[7]

There was truth in that [Jack White acknowledging problems with housing downtown] but it was simply because of grinding poverty ...They need not have pulled down these streets. They could have changed the houses ...There was no where else for people to go.[8]

Downtown residential area (houses on Gower Street)

Georgestown residential area (houses on Barnes Road)

Bulley Street residential area (houses on Henry Street)

Rennie's Mill Road area (houses on Military Road)

The earliest report of the commission, dated May 28, 1942, suggested the possibility of "slum clearance" or rebuilding of "slum areas" (or their conversion into open spaces) and also the possibility of population redistribution by housing construction in suburban areas. However, the commission found that only twenty to twenty-five percent of the residents desired to move to the suburbs. By the time their *Fifth Interim Report* was published in January, 1944, the housing commission had recommended that the St. John's Housing Corporation be established to oversee not only the upgrading of existing residential areas but the establishment of development guidelines for suburban housing.

After Confederation in 1949, many new subdivisions were developed and thousands of new homes were built. The single detached homes in the early subdivisions were similar to the "bungalow" found in outport Newfoundland after the 1940's, although the occasional "Cape Cod" style house was built (a two story house with gable roof and slightly less floor area). In the 1960's, ranch and split level style houses were often built in addition to the bungalow and Cape Cod style houses. However, in 1961 overcrowding and poor housing conditions still existed in the city.

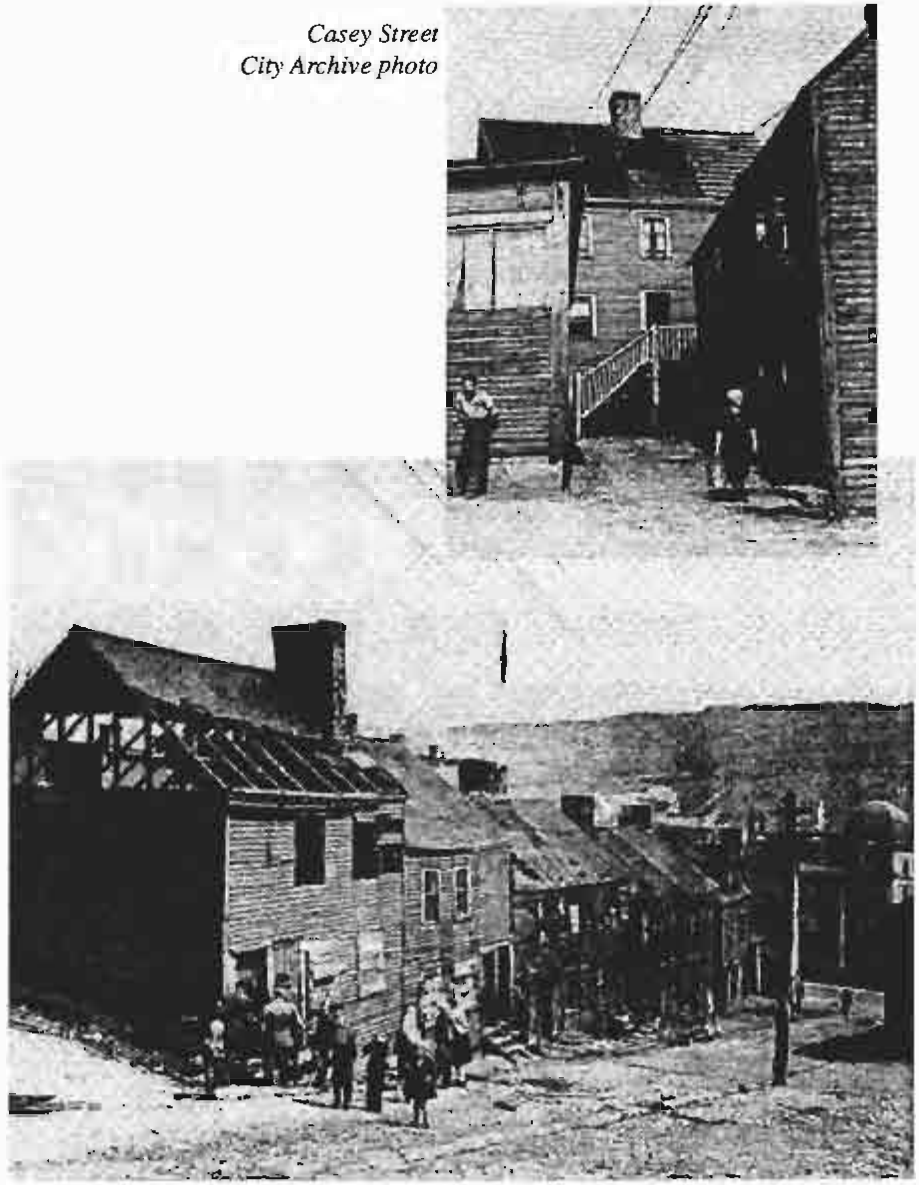
The city had a considerably higher percentage of houses without exclusive use of a flush toilet (23.3%), of houses without hot and cold running water (26.0%), of houses lacking use of bath or shower (29.6%), and last but by no means least, homes not connected to community sewers (28.8%).[9]

The older housing areas of the city were neglected after Confederation and many families moved to the suburbs. The row houses located in the downtown area were perceived by many as "slum" areas, even though many of these houses were well-built. Rowe described the move to the suburbs:

Compounding the inadequate and inferior housing situation was the lack of choice open to people seeking accommodation. There has always been a tendency in St. John's towards the building of single-detached dwellings. Few semidetached, duplex, row, and apartment houses have been built.[10]

In Newfoundland, the purchase price of a single-detached suburban house has greatly increased in recent years and this has influenced the number of new houses being constructed. Costs of serviced land, materials, labour, financing, taxes and services have all increased, putting the single-detached house out of reach for families with low-income. Only those who

Casey Street
City Archive photo



James Street in the 1930's (City Archive photo11-01-101)

are relatively affluent are able to afford a new, single-family detached house in a St. John's subdivision today. Newfoundlanders are hampered in their access to this type of housing by the high cost of living, low incomes, and high unemployment. Land development costs have risen partly due to inflation, to the larger lot sizes needed to accommodate larger house types (for example, the difference in size between the earlier and later bungalow house types), and to the scarcity of reasonably-priced raw land (many subdivisions were built on land that was "banked" years ago when land costs were low).

Prior to Confederation, there was a congenial, small-town atmosphere in the city. The streets were very safe and strangers were treated more like neighbours. Corresponding with this face-to-face, trusting atmosphere was a concern for the visual aspects of town planning: not just for maintenance but more importantly for the general character and appearance of the city. Also present was an awareness of the need for the provision of affordable housing. Both these concerns, for the appearance of the city and for housing for the poor, were high priorities for the Commission of Enquiry on Housing and Town Planning in the 1940's. It is unfortunate that in the decades that followed, the mandate of this commission was not retained. Planning for the appearance of the city was not given high priority (more expedient matters like vehicular traffic patterns took priority) and housing provision was idealized in the form of lower density, land and infrastructure-subsidized single-detached dwellings.

In the Commission of Enquiry's first report, there is mention of "practical schemes for the rehousing of the poor and the low-income classes."[12] The Commission also recommended that a "Poor-Man's Architect" should be appointed to provide design advice: "To advise home builders of small means as to their plans and specifications and to prepare a number of standard plans, elevations and specifications of small houses, copies of which shall be available to all small-home builders ...To maintain in his office an equipment of pictures, plans, models and illustrated books on small house design; and to see that every proposing homebuilder, before getting a permit to build, studies these; and to use his best efforts to persuade the builder to adopt a sound and handsome type of construction."[13] The architect was also to "watch the City from the point of view of appearance and layout, and to submit to the Council reports and suggestions for its improvement."[14] The report continues with detailed suggestions for the hiring of a "city architect" (or a panel of architects): "It is not desirable that the City should bear

Codner's Lane: City Archive Photo 11-02-073

You knew everybody on the street ...There was a feeling of togetherness... There was a general sense of belonging. There was everything on the old streets - there were corner shops, groceries... You knew the postman, the bin man. You knew everyone and there was always someone coming and going. Now (today) you have more space around you, but I don't think you have the warmth around you. You had long relationships... Really fabulous relationships ...People used to drop in all the time. If you are trying to achieve the old feeling of St. John's, what do people remember? They remember old friends, people dropping in, things that today would not mean anything at all ...I'll tell you about those houses down there (downtown) ...there wasn't as much crime as there is now ...A friend of mine could leave St. Clare's Hospital after the midnight shift, walk across a deserted LeMarchant Road and if you happened to see a man he would touch his hat and probably say 'It's a cold night, Miss' and go on.[11]

forever the impress of the ideas of a second-class man... If a man were chosen who turned out to be indifferent or incompetent, the results would be disastrous for the city."[15] Of significance here is the Commission's opinion that it was necessary to hire a "City Architect": a person who would be capable of making recommendations for both the appearance and layout of the city in addition to providing housing design expertise.

The Commission of Enquiry was not sympathetic to the kind of informal development that produced the older residential areas we now characterize as "historic" in St. John's. Its primary recommendations for these areas were "...The clearance and rebuilding of slum areas, or their conversion into open spaces."[16] The Commission thought the city was too congested, citing narrow streets and traffic "bottlenecks," and it was not interested in maintaining certain features that enhanced local or regional character such as paling fences ("...The time will eventually come when, as in most modern American and Canadian cities, fences round the ground between houses and the street will in many cases be abolished."[17]). Although there were certainly great problems with housing and infrastructure in the city, the commission based most of its hopes for housing improvement on developing lower-density, new suburbs rather than on the preservation, restoration, or infill of housing in the older areas. In the Commission's Fifth Interim Report (January, 1944), specific proposals were made for new suburban housing, but not for housing for the poor:

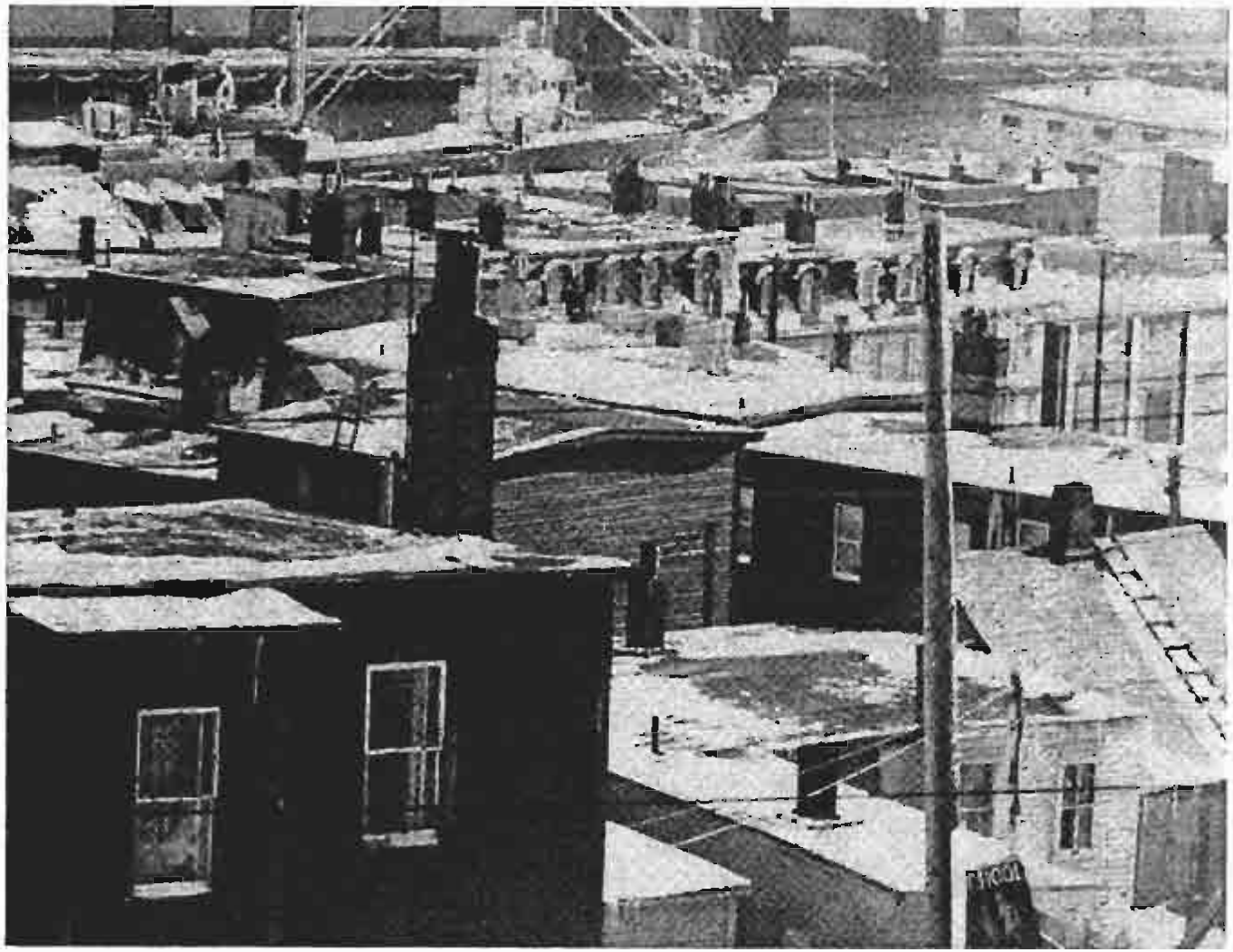
...We can not go extensively into the construction of the minimum cottage for the poorest classes until prices have fallen a good deal... it may be in the best interests of the poorest classes to hold off to a certain extent until land begins to fall vacant in the town area by means of condemnations and otherwise; because it will be best for them if we aim at building for them where they will have less need to pay transportation fares...[18]

Despite the Commission's attempt to stop informal development in residential areas and its promotion of regulations (building and planning code, construction permits), it also tried to ensure that the city was planned visually. This concern, no doubt attributable to the chairman of the Commission, Brian Dunfield,[19] is reminiscent of the attempts of 19th century European planning theorists such as Camillo Sitte. Sitte wrote "The science of the technician will not suffice to accomplish (security and happiness). We need, in addition, the talent of the artist. Thus it was in ancient times, in the Middle Ages, and in the Renaissance, wherever fine arts were held in esteem. It is only in our mathematical century that the construction and extension of cities has become a purely technical matter."[20]

The character of the older downtown residential neighbourhoods derived from informal development guided by common agreement on urban and architectural design forms and details. With regard to the planning of new subdivisions, apart from the Churchill Square residential development promoted by the Commission of Enquiry, there are few post-Confederation residential areas where appearance and land use innovations (including innovative housing form) were a priority.

Casey Street : City Archive Photo 11-02-004

Residential neighbourhoods in old St. John's can not be identified or described easily on the basis of physical limits or boundaries. Some neighbourhoods obtain their identity through place names for general areas, some cluster around institutional premises or parks or important public buildings, and others are dependent on topography. At the larger scale, the designations "East End," "Central," "West End," "The Battery," "Mundy Pond," and "South Side" apply, supplemented by local place names like "Georgestown," "Hoylestown," "The Riverhead," "Rabbittown" or "Monkstown." At one time, St. John's was a collection of small "towns," each boasting of a certain amount of self-sufficiency in terms of commerce and amenities. Today, these areas are physically intertwined and may appear indistinct to outsiders, but they all have strong identities and links with historical events and particular inhabitants. The names of streets, squares and courts are also "place names" of the residents' cognitive map of the city ("Brazil Square" signifies rooming houses; "Waterford Bridge Road," prestige; "Water Street," commerce).



Rooftops: Downtown St. John's

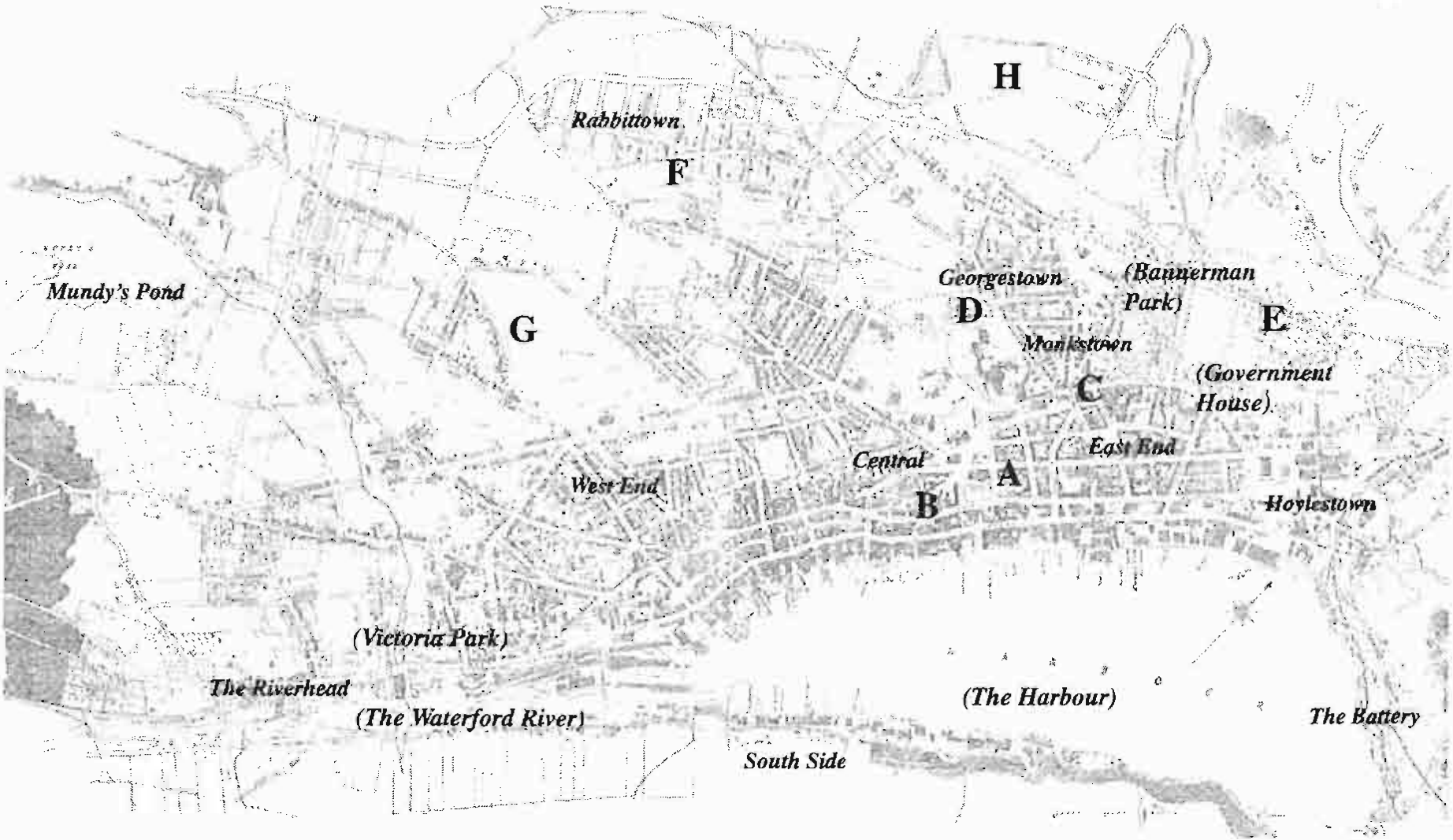
Brazil Square area... It was a place for boarding houses. Lots of railway men lived there. It was not a square at all. There were very few real squares in St. John's, but we apparently used names in a rather odd sort of fashion... like Walsh's Square ...British Square would perhaps qualify more or less as a square. We did use names rather loosely ...[such as] square or a court.[21]

People were very clannish about where they lived. If you were born in the West End, you were very reluctant to move out of it. You might move up in the level of your housing, but you would stay West.[22]

Place names (1932 Ryan map)

Key to Neighbourhood Analysis:

A	*Gower Street*	*E*	*Circular Road East*
B	*Bulley Street*	*F*	*Rabbittown*
C	*Rennie's Mill Road*	*G*	*Golf Avenue*
D	*Georgestown*	*H*	*Churchill Square*



Pre-Confederation St. John's did not have guidelines or regulations in its planning code for open space the way it does today. Although there were two major parks within easy walking distance of the centre of town, Bannerman Park in the East End and Victoria Park in the West End, there was a different attitude towards open space in the city. Other than the occasional memorial, there were no small parks like the present-day infill parks. Other than the parks, the only other open spaces were the institutional grounds (churches, schools) and cemeteries. The contemporary need for a large, private yard or "garden" for play space for small children was not present in old St. John's. Families were not deemed to be underprivileged nor disadvantaged if their property had no garden (which was not uncommon given the geometry of some downtown residential blocks), and children played in the parks (Bannerman Park, Victoria Park) or on the streets.

Hayward Avenue

Leslie Street

[1] David Kennedy Jr., 1872: from J. R. Smallwood, *The Book of Newfoundland II*, 345.
[2] Hon. Thomas Talbot, 1837, Basilica Centenary Book, 210.
[3] See Peter Katz, *The New Urbanism: Toward an Architecture of Community* (New York: McGraw-Hill Inc., 1994).
[4] David Mohoney and Keller Easterling, editors, *Seaside: Making a Town in America* (Princeton: Princeton Architectural Press), 1991.
[5] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[6] Padco, Inc., "The Bertaud Model: A Model for the Analysis of Alternatives for Low-Income Shelter in the Developing World," Urban Development Department, The World Bank, December, 1981.
[7] Commission of Enquiry on Housing and Town Planning, *Fifth Interim Report*, (St. John's, 1944), p. 3.
[8] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[9] W. G. Rowe, *Housing in St. John's Since Confederation* (Memorial University of Newfoundland, May, 1966), P. 6.
[10] Ibid., 6.
[11] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[12] Commission of Enquiry, *First Interim Report*, 4.
[13] Commission of Enquiry, *First Interim Report*, 6.
[14] Commission of Enquiry, *First Interim Report*, 6.
[15] Commission of Enquiry, *First Interim Report*, 8.
[16] Commission of Enquiry, *First Interim Report*, 9.
[17] Commission of Enquiry, *Fourth Interim Report*, 13.
[18] Commission of Enquiry, *Fifth Interim Report*, 32.
[19] Mark Shrimpton and Jane Lewis, "Policy Making in Newfoundland in the 1940's: The Case of the St. John's Housing Corporation," Report for CMHC External Research Program, 1983.
[20] Camillo Sitte, *The Art of Building Cities* (Westport, Connecticut: Hyperion Press, 1979), 1.
[21] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[22] Joe and Louise Doyle, Cyril and Marie Power, interview with the author, 1995, St. John's, Newfoundland.

Residential/Commercial Mixed Use Buildings

...Water Street, the principal business street, presents a very substantial though not handsome appearance, the houses being of stone or brick. Shops, stores, and mercantile counting-houses occupy the ground floors, while the merchants and shopkeepers live in the upper stories...[1]

The first ship to sink after Confederation was the great merchant houses of Water Street. They encapsulated the same feeling you got in a corner store. They knew you..."[2]

Water Street in the 1890's: City Archives Photo

Water Street, St. John's: 1949

1

The main commercial streets following the shoreline of the harbour in St. John's were once lined with buildings that had shops on the ground floor and living quarters on the upper floors. In many of these buildings, the upper floors were the residential quarters of the proprietors of the main floor shops. Some of these buildings still exist on Water Street and Duckworth Street, but this combination of residential and commercial in the same building was not used in post-Confederation suburban development with the exception of the Churchill Square area. In St. John's, a collection of mixed-use, residential/commercial buildings does not constitute a neighbourhood type. Such concentrations of buildings are best described as linear developments that provide a boundary, focus, or destination for neighbourhoods. On Water Street adjacent to the older residential areas of St. John's, these buildings mediated between the row housing of the residential areas and the harbour. Paths, lanes, and streets in the residential neighbourhoods found their way between or under the Water Street buildings to the wharves along the harbour.

Duckworth Street

William's Lane, Water Street

Water Street

Tank Lane / New Gower Street: City Archives Photo

Duckworth Street

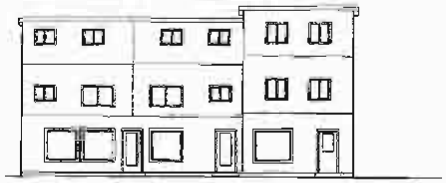
Lane to the Murray Premises from Water Street

Main street residential/commercial buildings were constructed both of wood and brick. Typical of the older (pre-1892 fire), gable roof buildings constructed in wood, the Andrews Range (now demolished) was composed of two storey buildings with attics and dormers. On Duckworth Street and Water Street there are also many examples of later (post-1892 fire) two and three storey residential/commercial buildings with low pitch tar and felt roofs.[3] Bay windows overhanging the sidewalk were common on these newer buildings.

This building type is not unique to St. John's. However, the older, gable-roof main street buildings are trans-Atlantic transfers of architectural form and their presence contributes to the historic character of St. John's.[4] Main street commercial/residential buildings are present in many towns in North America, and they have been used recently in the thoughtful planning of new communities as the defining elements of town squares. Their potential for the creation of identity and focus and for the compatible mixture of residential and commercial occupancies in new residential development in St. John's is obvious.

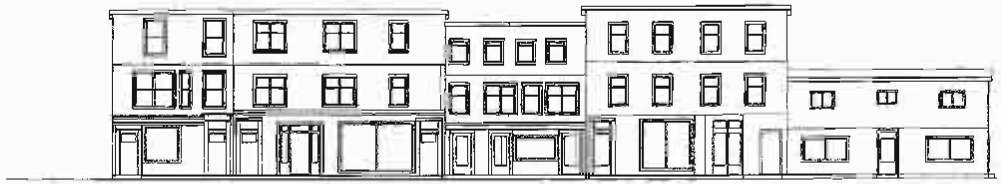
Water Street

154 Hamilton Avenue



604-608 Water Street

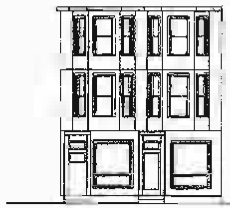
602 Water Street



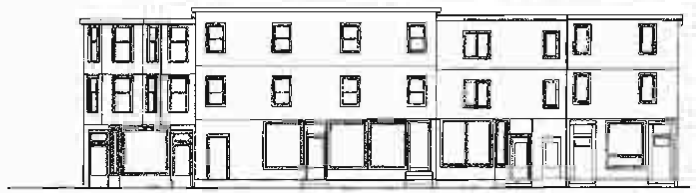
566-586 Water Street

265-267 Duckworth Street

154 Hamilton Avenue



186 Duckworth Street



236-252 Duckworth Street

The potential of this building type for housing for senior citizens is especially attractive, considering that much new housing for seniors constructed in St. John's is poorly considered. For example, Masonic Park, senior's housing constructed in the 1970's as an enclave in the woods well outside the city, isolates the residents and is difficult to access. There are no stores or public amenities within walking distance, and all travel must be by car or by bus. Though conceived as quiet residences in a park, the open space does not offer any privacy for the residents, nor do they have the opportunity to cultivate a garden. There is no sense of hierarchy of building form within the development, no destinations for the pedestrian either within or outside the site, and no sense of public life that would bring people of different ages together.

[1] Rev. Moses Harvey, 1883. In Hatton and Harvey, Newfoundland, 125.
[2] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[3] Two residential/commercial variations ("nineteenth-century mercantile" and "commercial vernacular") are identified in Sheppard, Burt and Associates and Arends and Associates, *St. John's Heritage Conservation Area Study*, (St. John's, Heritage Canada and the Newfoundland Historic Trust), 1976, 48-49.
[4] "The Great Fire of 1846 once more left Water Street in ruins and the reconstructed town took on the appearance of an Irish city of the period"; in Paul A. O'Neill, *A Seaport Legacy: The Story of St. John's, Newfoundland* (Erin, Ontario: Press Porcepic, 1976), 823.

Masonic Park: Senior Citizens Housing

The Andrews Range on New Gower Street prior to demolition: photos courtesy of David Sheppard, Architect, St. John's

Duckworth Street

Downtown Residential Neighbourhoods

1949 air photo of the downtown residential neighbourhoods east of the Anglican Cathedral

2

The older downtown residential neighbourhoods are composed mostly of row houses lining the perimeter of blocks with some larger detached houses, duplex houses, and terrace houses.[1] Until well into the twentieth century, there were no regulations that would prevent buildings from taking up the entire area of the building lot and attached houses were built without fire separations. The houses on the perimeters of the blocks form inner "courtyards" of various sizes with right of ways, lanes, or easements for access. Lanes to the courtyards either went between or under the houses and these often linked with access points to adjacent blocks to form a network of pedestrian paths.

Today, the open space of the courtyards is usually subdivided into fenced private yards with the occasional outbuilding. However, the use of this open space and the use of the buildings in the neighbourhood changed over the years. The St. John's insurance atlases show that at one time there was a dynamic mixture of residential (mostly attached dwellings), commercial (stores), and light industrial (small factories, workshops, fabrication yards, and storage yards) in these downtown neighbourhoods. The construction of outbuildings and workshops was permitted. In this report, the development of two downtown residential areas has been analysed: the Gower Street area east of the Anglican Cathedral and the Bulley Street area. Information from the insurance atlases (and other sources) was obtained for the years 1889, 1907, 1914, 1925, 1946, and 1968.

Between 1889 and the present day, the layout of the streets in the Gower Street area changed little and the main pedestrian paths and vehicular access points through the blocks were maintained (see the graphic analysis at the end of this chapter). The most apparent changes over time were: (1) an increase in the number of stories for the houses and increased house size; (2) a decrease in the number of small general stores on the perimeter of the block; (3) increased building volume for additions to houses, housing infill, public buildings, and commercial buildings; (4) a decline in light manufacturing activity; and (5) an increase in diversity of nonresidential uses for buildings on the perimeters of blocks. It should be noted that the difference in house size between the 1889 map and the 1907 map in the graphic analysis reflects the rebuilding of St. John's after the great fire of 1892.

Access to a courtyard from Prescott Street

View from the courtyard access lane to Prescott Street

Access to a courtyard from Victoria Street: the lane is enclosed by a wide door that includes a smaller door for pedestrians

Access to a courtyard from Bond Street

The open spaces of the courtyards were used for various purposes over the years - from the storage of materials for manufacturing (staves, lumber) to enclosed private gardens. In 1889, most of the commercial use of buildings around the perimeter of the blocks was for small stores selling groceries and other goods. In the same year, small buildings on the interior of the blocks included premises for carpenters, coopers, and blacksmiths. In later years, larger outbuildings were added to the courtyards for garages, carpenters, blacksmiths, and an ornamental iron works. In 1925, more diversity is apparent in the nonresidential uses of the buildings lining the perimeters of the blocks compared to 1889. Some of these nonresidential uses were general store, grocery store, tailor shop, cobbler's shop, business office (type unknown), music shop, doctor's office, printing office, boarding house, barber shop, wholesale store, paint shop, and a "Chinese Laundry."

The development of the Bulley Street area for the same years as the Gower Street area analysis presented above provides a sense of the character of pre-1892 (Great Fire) St. John's (Bulley Street is located in the area known as "Central"). There were major changes to buildings and to the locations and widths of streets and paths. The 1889 map shows a very irregular block geometry, with variations in building setbacks from the street. These setbacks are irregular to the extent that the width and geometry of the street space is constantly varied. For example, along Queen's Road the street is sometimes narrow, sometimes wide, and there is a funnelling or spatial compression effect at the approach to several intersections. Buildings often intrude in the street space, and these would have been landmarks for the users of these streets - marking the entrance to particular areas along the street. As for the Gower Street area, there is a mixture of residential and commercial uses, and similar use was made of the courtyard areas. However, the Bulley Street area had a higher concentration of nonresidential uses.

The 1907 Bulley Street map (see graphic analysis) shows many post-Great Fire changes: the blocks are larger and there are fewer blocks, the houses are larger, the streets are wider, the buildings have uniform setbacks from the street, there is less variation in street width along the length of particular streets, and houses were not replaced on the Queen's Road / Gower Street "island."

Row houses on Gower Street

Gower Street

View of the back of the Gower Street row houses from the courtyard.

View of the courtyard: fences, small parking lots, play house, trees.

Lane to the courtyard from Victoria Street

Lane in the courtyard near the Masonic Terrace houses (these houses are located in the middle of the courtyard).

Although an irregular grid pattern is evident in the Gower Street residential area, analysis of all the older residential areas based solely on the grid would miss the essence of the character of old St. John's. The Bulley Street area in the East End and the Atlantic Avenue area in the West End provide evidence of an earlier, different, and more complex kind of distribution of houses, public buildings, and streets. These areas defy description by a "grid," and they were shaped by paths or lanes that were eventually upgraded to permanent roads, by availability of land (including the subdivision of planter's estates), by topography, by the great fires of the nineteenth century, and by the presence of institutional grounds or monumental buildings (land and buildings owned by government or the churches). Nineteenth century and early twentieth century St. John's resembled European cities in the way the residents thought about landmarks and neighbourhoods and in the way the residents oriented themselves in space. Aldo Rossi describes the European city in terms of urban artifacts and monuments residing in the collective memory of the inhabitants. His analogy relates well to St. John's - a city destroyed more than once by fire:

The analogy of the value of monuments in destroyed cities serves mainly to clarify two points: first, that it is not the context or some illusionistic quality that enables us to understand a monument; and second, that only by comprehending the monument as a singular urban artifact, or by contrasting it with other urban artifacts, can we attain a sense of the architecture of the city.[2]

For those parts of the downtown residential areas that do have a fairly regular grid pattern of streets, the grid is not homogeneous. There is still a sense of hierarchy and difference within the grid, but the grid provides helpful orientation and diffuses traffic. Recent interventions and realignments by the City of St. John's traffic engineers tend to work against the logic of an urban grid. For example, in the West End near City Hall, large, curvilinear streets (more appropriate as feeder roads for new suburban cul de sacs) have recently intruded through older residential areas as expedient collectors for fast-moving vehicular traffic. The traffic moves faster along the street, but also results in more traffic jams because there are fewer intersections. The net result is the destruction of pedestrian scale neighbourhoods, barriers between residential neighbourhoods and the main downtown shopping streets (which contribute to the decline of Water Street), and the unfortunate suburbanization of downtown St. John's.

Bulley Street area (houses on Henry Street)

Bulley Street area (14 Henry Street)

Henry Street: general view looking North

Atlantic Avenue (West End) houses

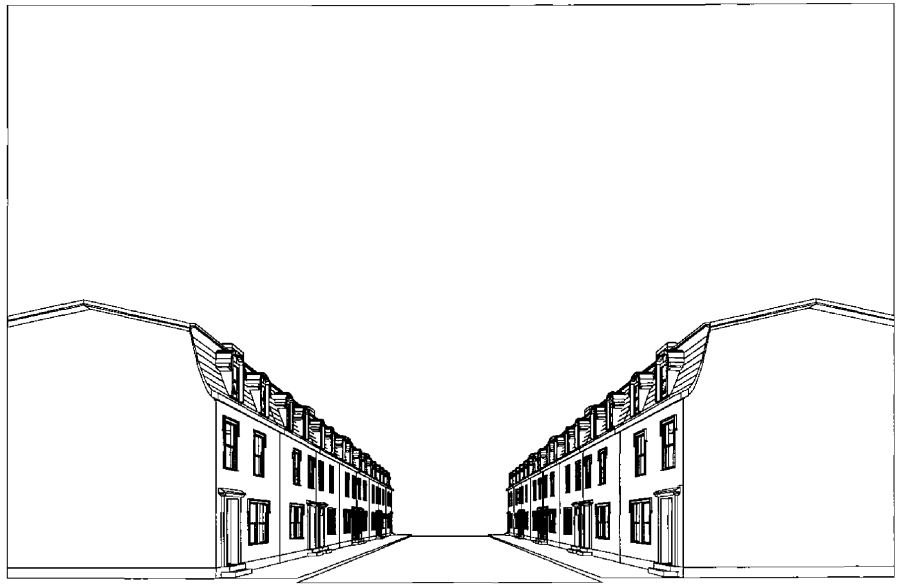
Store on Henry Street

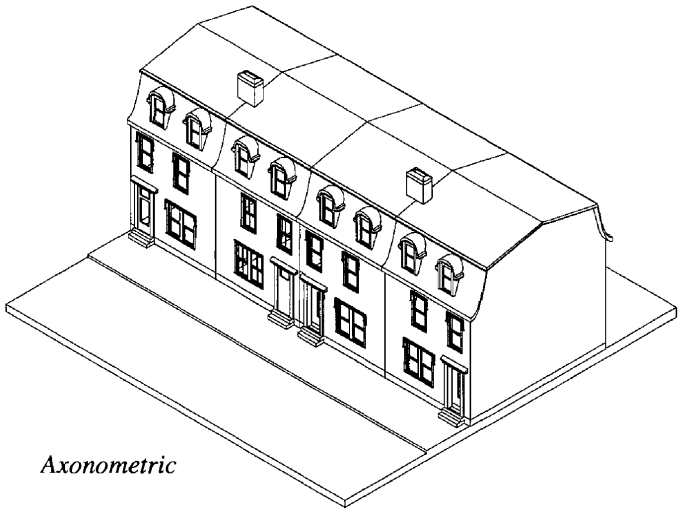
Axonometric

Hypothetical section perspective generated by the duplication of houses along the south side of Atlantic Avenue showing the space of the street

Houses on Atlantic Avenue in the West End of St. John's

Hypothetical section perspective generated by the duplication of houses along the South (East) side of Gower Street showing the space of the street





Axonometric

Houses on Gower Street in the East End of St. John's

The downtown residential grid is also linked with pedestrian traffic. All streets have sidewalks, the streets are not wide, the curb radius is not large, and there are many pedestrian paths that provide short-cuts or alternatives to the use of the main streets. The small curb radius makes it safer to cross the street at intersections. Present-day, on-street parking helps to protect pedestrians from water and slush, and also promotes slower vehicular speeds.[3] The link between the St. John's grid and topography has been studied by architect Joe Carter:

Long 'contour' streets ranged themselves like a giant staircase up the slopes at approximately 15 metre vertical intervals. These roughly parallel 'contour' streets were joined one to another by shorter 'ladder' streets. The attack of the 'ladder' street up the slope was in the optimum location (balanced between time and energy) for foot power to negotiate the 1:12 slope. The irregular quadrangles that irritate modern traffic engineers were not random at all but were the logical outcome of energy-conscious people and animals.[4]

A distinguishing feature of most of the downtown residential area is the lack of any front setback for houses and other buildings. Houses were constructed in common agreement that the building line and block form would be maintained and enhanced. Enhancement took place at the corners, which were acknowledged by the special form of either houses or stores. Houses often had windows on the side wall at corners, or even side-wall bay windows. Stores often had angled corner entrances with upper floors projecting above the corners. There was agreement and purpose that the form of the block should be preserved, which resulted in a consistent character for the space of the street and the space of the courtyard.

On streets where the houses had slight setbacks, these were rarely deeper than the area required to accommodate steps to the main floor or a very small front porch. Larger, attached houses near the old downtown area often had setbacks that would allow a small ornamental front garden in addition to a well-built, formal stair. Examples of these houses are present along Rennie's Mill Road and Military Road in the East End of St. John's. For these houses also, there was common agreement that building lines should be maintained through uniform setbacks, and that fences (wood or

Flavin Street

Holloway Street

Prescott Street / Flavin Street intersection

Access to courtyard from Feaver's Lane

Lane to courtyard from Gower Street

House with garage at the corner of Rennie's Mill Road and Monkstown Road: the garage is distorted in plan to take advantage of the irregular corner lot

Duplex houses on Rennie's Mill Road

Houses with shallow setbacks, trees, and ornamental iron fencing on Military Road (near Rennie's Mill Rd)

House on Rennie's Mill Road with a large outbuilding (originally a stable: curved in plan) at the rear of the lot

Axonometric

Hypothetical section perspective generated by the duplication of houses along the south side of Military Road showing the space of the street

Duplex houses on Military Road, East End

ornamental wrought iron), retaining walls, gates, and trees should be maintained along the sidewalk. These elements, the stairs, fences, and retaining walls, as well as the regular planting of trees, all contributed to the enhancement of the block. Large, single detached homes near downtown residential areas often had large front gardens (even for the largest homes near the downtown, the back yard was usually deeper than the front yard - see the section on the Circular Road area below), but for less expensive homes shallow setbacks prevailed until the 1930's .

The front of the house was the formal, public side - identified by special details and ornament on the house facade and by such architectural elements as porches, bay windows, and dormers. The back of the house was the informal, private side, with little or no architectural ornament and utilitarian windows and doors. The informality of the back of the house is also an expression of the attitude of the builders towards additions. Informal additions of many different sizes and shapes were made to the backs of houses in the downtown residential neighbourhoods. These additions were made to "core" houses which were largely identical in size and plan on particular blocks. Additions could be made to this core house for back kitchens or extra bedroom space as needed.

In the Newfoundland outport prior to Confederation, there was no such thing as a mortgage. A core-house was built first, around which additions were clustered over time depending on the needs of the family. For example, on the North-East coast, most core-houses were either of the hall and parlour type, or centre hall type.[5] Back kitchens, back porches, side porches, pantries, and general stores were eventually added to most houses. The core house was modest in area and could be constructed by the owner in a year or two with part-time work. Most of the labour was done by the owner. Lumber was cut and processed locally or by the house-builder and this helped to reduce the cost. The core house was egalitarian: it strengthened bonds between neighbours because it gave the impression that the residents of the community had basically the same standard of living. Although the core houses were nearly all the same, this did not eliminate individual expression and variety of form. Individual expression was possible through house siting, outbuildings, paint colours, ornament, landscaping (fence and gate construction, for example), and through additions to the house. The Newfoundland outport house provides an excellent model for new, affordable housing design in St. John's. Present in this model are many of the ideas popularized in recent affordable housing design practice. The downtown

Prescott Street / Gower Street intersection

Prescott Street: general view

Queen's Road / Allan Square intersection

Victoria Street

Victoria Street

Additions to a house on Military Road

residential areas of St. John's also had their equivalents of the incrementally constructed outport houses. At present, no housing developments or house designs permit homeowners to enter the housing market at a very modest level (low-cost, affordable, small building area) and establish equity on the same property over a long period of time by gradually making improvements and additions. The only alternative promoted by the present-day marketplace is to buy a house that is complete (with regard to its ultimate floor area).

The courtyards created by attached houses in the downtown residential areas serve as acoustical screens and wind screens. There is a contrast between the resonant sounds of the street and the muted sounds of the courtyards. One of the strongest visual impressions of these neighbourhoods is the contrast between the informal, verdant space of the courtyards behind the houses and the formal space of the street. The trees in the courtyard also contribute to the impression of spatial contrast. The street space appears constrained, but the trees in the courtyards create a sense of spatial depth. Painted wooden picket fences around the yards also contribute to the sense of spatial depth, dividing the open space into a series of "outdoor rooms."[6]

The enclosed gardens at the rear of the houses are private and green. The micro-climate thus formed, with its greatly reduced wind velocity, allows the growth of deciduous trees that are about one storey taller than the three storey wall of houses that surrounds them. From many windows in old St. John's it is possible to look at a plant hardiness zone in the foreground equivalent to southern Ontario, and on to one on the Southside Hills equivalent to the Keewatin.[7]

Most of the houses in the downtown residential area conform to the two-thirds Georgian plan: a front room and back room flanked by a hallway containing a stair. When the town was rebuilt after the great fire of 1892, the low pitch (nearly flat) felt and tar roof became the standard for construction, often enhanced with a mansard roof. House dimensions varied considerably in length, width, and height, based on the means of the owner or the availability or shape of the land. The builders of these houses were willing to make use of irregular lots. This is especially evident at the corners of blocks, where the shape of the house often conformed to the angle of the intersection of the street. Today, in new housing there is reluctance to permit any

Military Road

Military Road

Gower Street / Victoria Street intersection

Prescott Street

British Square

Military Road

distortion of the geometry of the house to conform to the shape of the land. This is partly due to the extra cost and to a dislike of the irregular, but mainly to the present-day absence of concern for the visual considerations that the builders once had in artfully crafting the perimeter of the block.

Acceptance of irregularities was evident in the extensive use of cantilevered second floors. One could speculate on the acceptance in the minds of the builders and city authorities of the concept of "aerial rights": the possibility of building over sidewalks (cantilevered bay windows and projections over corners, over alleys, over lanes, and nearly over property lines. In some cases, the builders simply thought the appearance of a second-floor cantilever enhanced the status of the building.

Cantilevered side bay window on Barnes Road

Houses on Pennywell Road with a common access lane to the back yards

House (former shop adjoining residence) in the Mundy Pond area (West End of St. John's)

The vitality of the downtown area - provided by distorted geometry, the irregular, and even the misbehaved (features that make St. John's a memorable place) - is slowly being eliminated in favour of regularity and efficiency. At one time, the outrageous was permitted, but no longer. Recently an order was approved for the demolition of the Crown Taxi stand on Springdale Street in the West End. This building was a local landmark and a tourist attraction, one of many small taxi stands around the city that spontaneously appeared with the introduction of the automobile. Perhaps the smallest commercial building in St. John's (it had electrical and telephone service), Crown Taxi squatted on the pavement of Springdale Street, clinging for support to a utility pole.

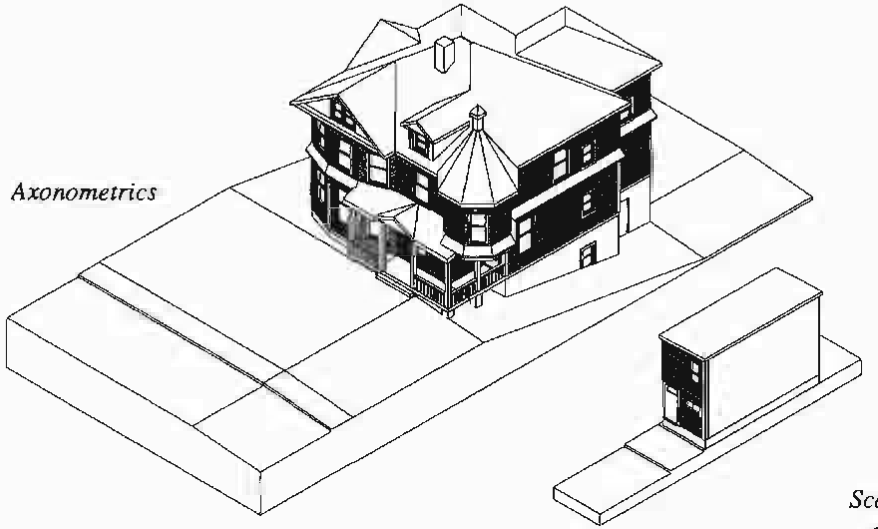
On Cookstown Road there are two small, extremely narrow row houses. These provide historical evidence of the lower limit of house size in downtown residential neighbourhoods. Today, the City of St. John's would not allow houses with these dimensions to be constructed. However, houses such as these fit unobtrusively into the neighbourhood and as background buildings, they do not detract from the quality of the neighbourhood. The block on which these houses are located accommodates houses of various sizes in an egalitarian manner, and the small, narrow-front houses do not seem out of scale with their neighbours. One advantage of row housing is the congenial mixture of residents with different income levels. As in the anonymous front of the oriental courtyard house, the row house façade acts as a screen for the material wealth of the occupants. The presence of the small row houses on Cookstown Road is an indicator that at one time in St. John's the city was more tolerant of low-income families and their housing needs. These houses demonstrate possibilities for exploring new, affordable housing design for young families, low-income families, or senior citizens. Allowing residents to construct small houses and later make additions to these houses permits the residents to establish equity over the long term and to participate as stakeholders in the affairs of the neighbourhood and city.

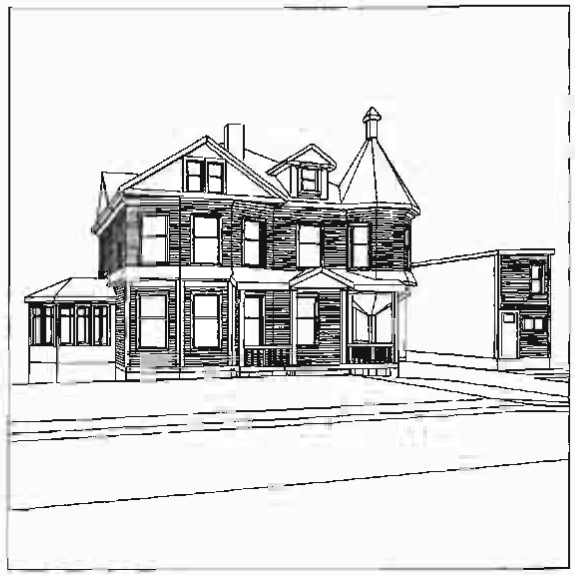
Crown Taxi stand on Springdale Street prior to demolition

Small, narrow gable roof house on Bannerman Street

Narrow row houses on Cookstown Road. The open space adjacent to these houses was once occupied by two row houses with similar dimensions.

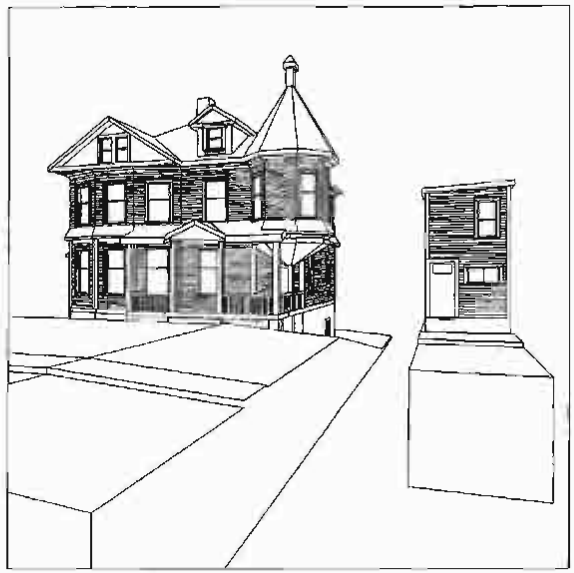
Axonometrics





Scale comparison of a house on Cookstown Road with a house on Circular Road

Hypothetical section perspective generated by the duplication of houses along the north side of Cookstown Road showing the space of the street



Most of the houses in downtown St. John's residential neighbourhoods were constructed prior to the introduction of the automobile. Residents can now apply for on-street permit parking, and this arrangement seems to work fairly well near business areas. Parking in small clusters has been made available in many of the small residential courtyards that have access lanes or right of ways. This type of parking works well and does not consume all the open space of the courtyards. During the early days of the infill housing program, the city unfortunately advocated ground floor parking under the houses. This has detracted from the pedestrian-scale character of the streets on which they were constructed, and carried to an extreme would result in a city raised on Corbusian "pilotis" with greatly reduced contact between neighbours, not to mention less-safe streets with an anonymous, harsh character. Also, ground floor parking under houses provides no real advantage since it eliminates the possibility of an on-street parking space next to the house.

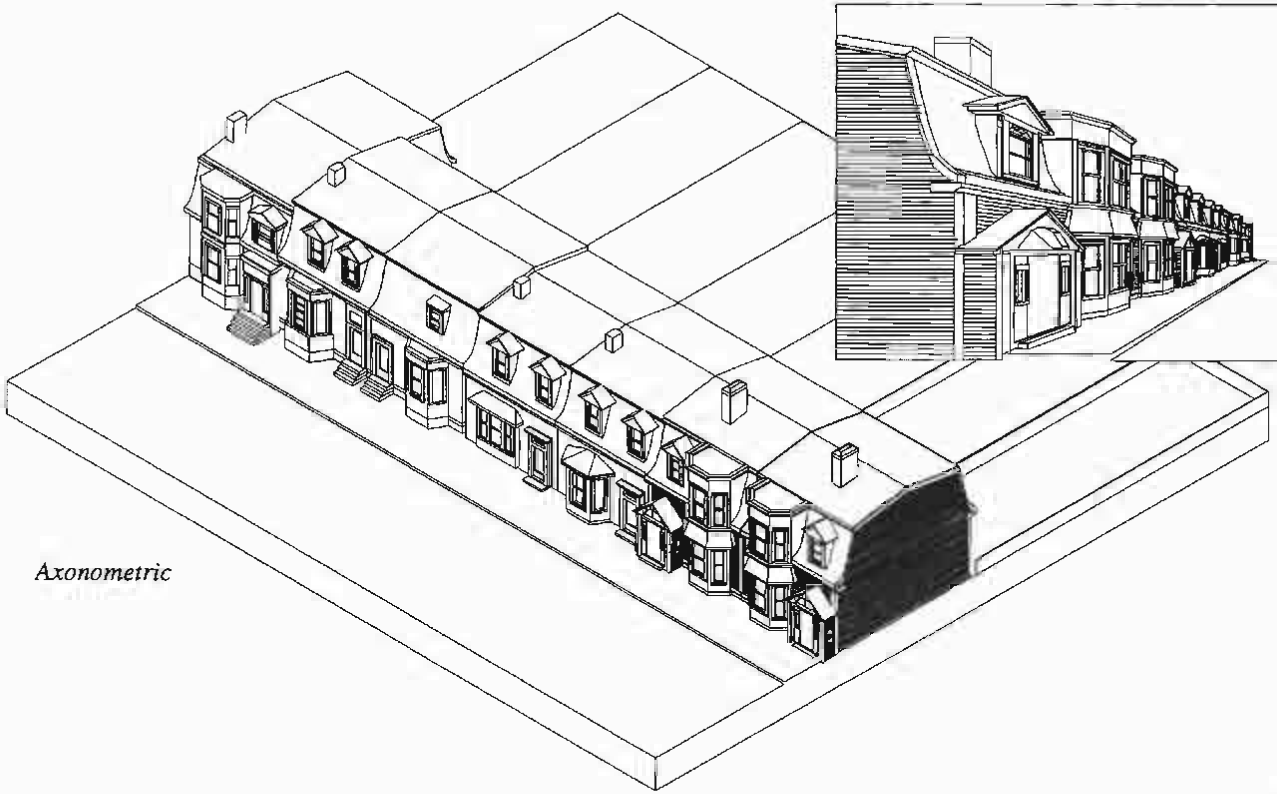
It is the harsh, vacant character of the street with ground-level parking that sadly indicates the collective loss of sensibility to the essence of the downtown residential neighbourhood's character: propinquity. Nearness was once felt when walking down Atlantic Avenue or Power Street, where residents would sit in the bay windows of the ground-floor rooms waiting to see who will walk down the street. Neighbours out for a stroll would occasionally catch a glimpse of the fire in the living room coal grate, the view delicately filtered by sheer curtains. Access to the houses was inviting and direct, with no barriers between the sidewalk and the entrance - especially for those houses where no steps were needed between the sidewalk and the main floor. There was a feeling of intimacy and charm on these streets, reinforced by the elegant proportion of bay windows, porches, windows, doors, and architectural ornament. Unlike renovated houses clad in vinyl siding, houses with their original wood trim and ornament were worth viewing at close range from the sidewalk.

New houses on Hamilton Avenue with first-floor entrances and parking (near Atlantic Avenue)

Infill house with first-floor parking and recessed entrance on Hayward Avenue, Georgestown area

Small scale parking lot in the Masonic Terrace courtyard on Gower Street

Atlantic Avenue houses

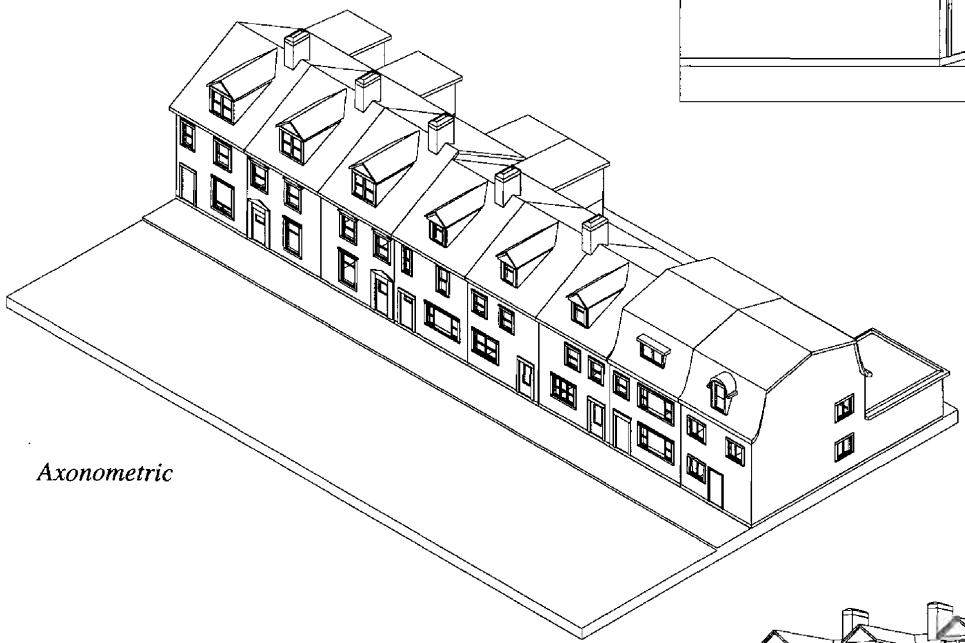


Axonometric

Hypothetical section perspective generated by the duplication of houses along the west side of Circular Road West showing the space of the street

Houses on Circular Road West

Hypothetical section perspective generated by the duplication of houses along the south side of Hamilton Avenue showing the space of the street



Axonometric

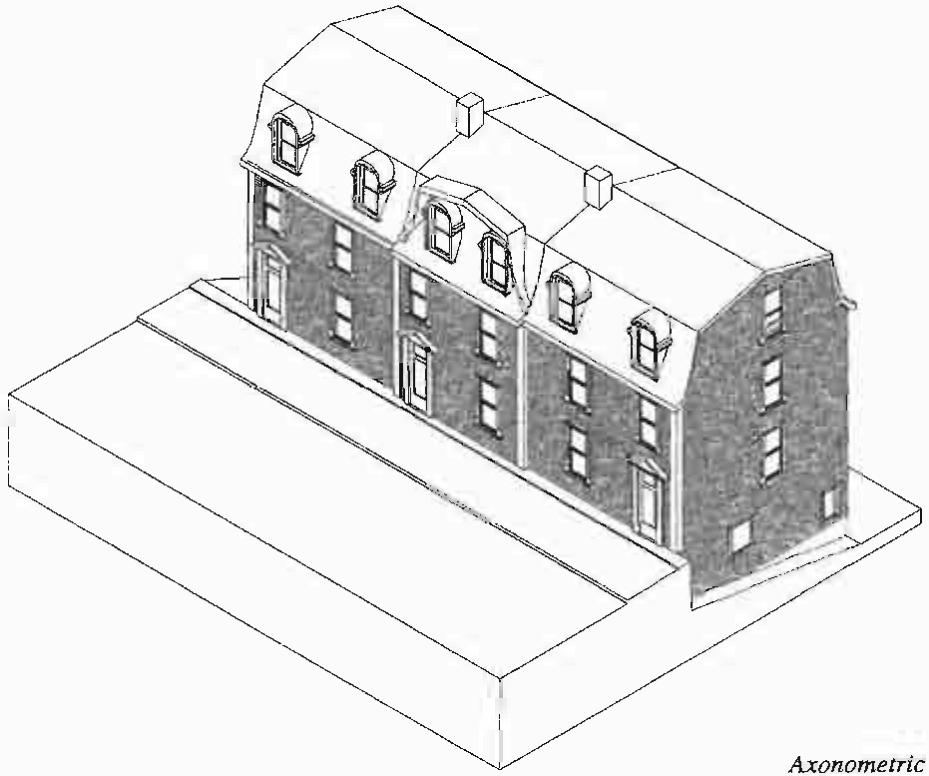
Houses on Hamilton Avenue, West End

Little has been written about the history of houses in the downtown residential area. An inventory based on architectural styles was presented in a report on the heritage conservation area (Sheppard, Burt and Associates, Arends and Associates, 1976).[8] However, to date no extensive study has been done on the construction logic of these houses nor on their dimensions and proportions. The heritage area study identified four residential styles based mainly on exterior features; Victorian mansard (mansard roof with dormer windows, appearing circa 1885), vernacular (plain), Victorian gothic (often semidetached with more elaborate features), and nineteenth-century vernacular (pre-1892 fire with gable roofs and gable windows).

Even though architects may have been responsible for introducing some of these styles (the introduction of the mansard roof is generally attributed to Southcott), they may be considered "vernacular" in the sense that agreement, diversity, and constraints on construction methods were present. Agreement was evident in the use of typical plans, proportions, architectural elements, and architectural detail. Diversity was evident in subtle variations made by the builders to fit particular conditions (corner lots, views, topography). Constraints on construction were apparent in the organization of the building trades and in the standardization of available materials and architectural elements (fenestration, mouldings, hardware). More extensive inventories and research are required on the nineteenth- and twentieth-century duration of construction of the architectural "styles" listed above, and on housing typology (including the pre-1892 city) to determine if there were more fundamental variations of house "types" based on the layout of the plans of the houses and the layout of the streets.

There are several examples of terrace houses in the downtown residential area of St. John's: houses placed together to form a larger composition through façade ornament, architectural elements, or roof lines (for example, Beorchis Terrace on Queen's Road, Maple Terrace on Fleming Street, John Anderson's Row on Merrymeeting Road). Terrace houses created the impression of monumentality. In the downtown residential area, diversity was not constrained by the limits of the individual house, and the builders were obviously concerned with the appearance of the block as a whole. Blank-end walls on houses located at corners were not generally desirable on intersections of two main streets, and an attempt was made to visually terminate the ends of blocks of houses by introducing fenestration and ornament.

Bee Orchis Terrace, Queen's Road



Axonometric

Terrace houses on Patrick Street

Terrace houses on Circular Road West

Terrace houses known as "John Anderson's Row" on Merrymeeting Road

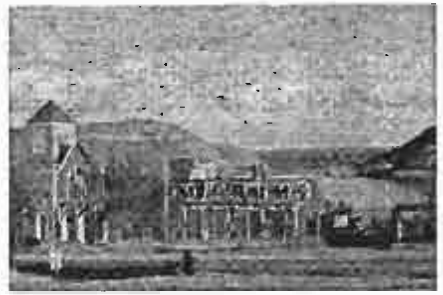
Terrace houses on Rennie's Mill Road

Terrace houses on Patrick Street

Terrace houses once known as "Maple Terrace" on Fleming Street, Georgestown area, East End. The north end wall is visible from the intersection and it has fenestration and ornament.

Maple Terrace, Fleming Street

[1] In this study, several groups of row houses located slightly outside the old downtown area of the city were included for study based on their particular features.
[2] Aldo Rossi,. *The Architecture of the City* (Cambridge: M.I.T. Press, 1983), 124.
[3] In various articles about their town planning ideas, Andres Duany and Elizabeth Plater-Zyberk have advocated on-street parking for safety reasons. In addition to the book on Seaside, see also A. Duany and E. Plater-Zyberk, *Towns and Town-Making Principles* (New York: Rizzoli, 1991).
[4] Joe Carter, Municipal Non-Profit Housing, St. John's, Newfoundland: Analysis of Development Alternatives, 4-5.
[5] Robert Mellin, "Folk Housing in Tilting, Fogo Island, Newfoundland," Ph.D. diss., University of Pennsylvania, 1990.
[6] I am indebted to Norbert Schoenauer for his concept of outdoor rooms: N. Schoenauer (lecture), McGill University, Montreal, 1984.
[7] Carter, Joe. "Municipal Non-Profit Housing," 6.
[8] Sheppard, Burt and Associates and Arends and Associates, *St. John's Heritage Conservation Area Study*, 51-52.



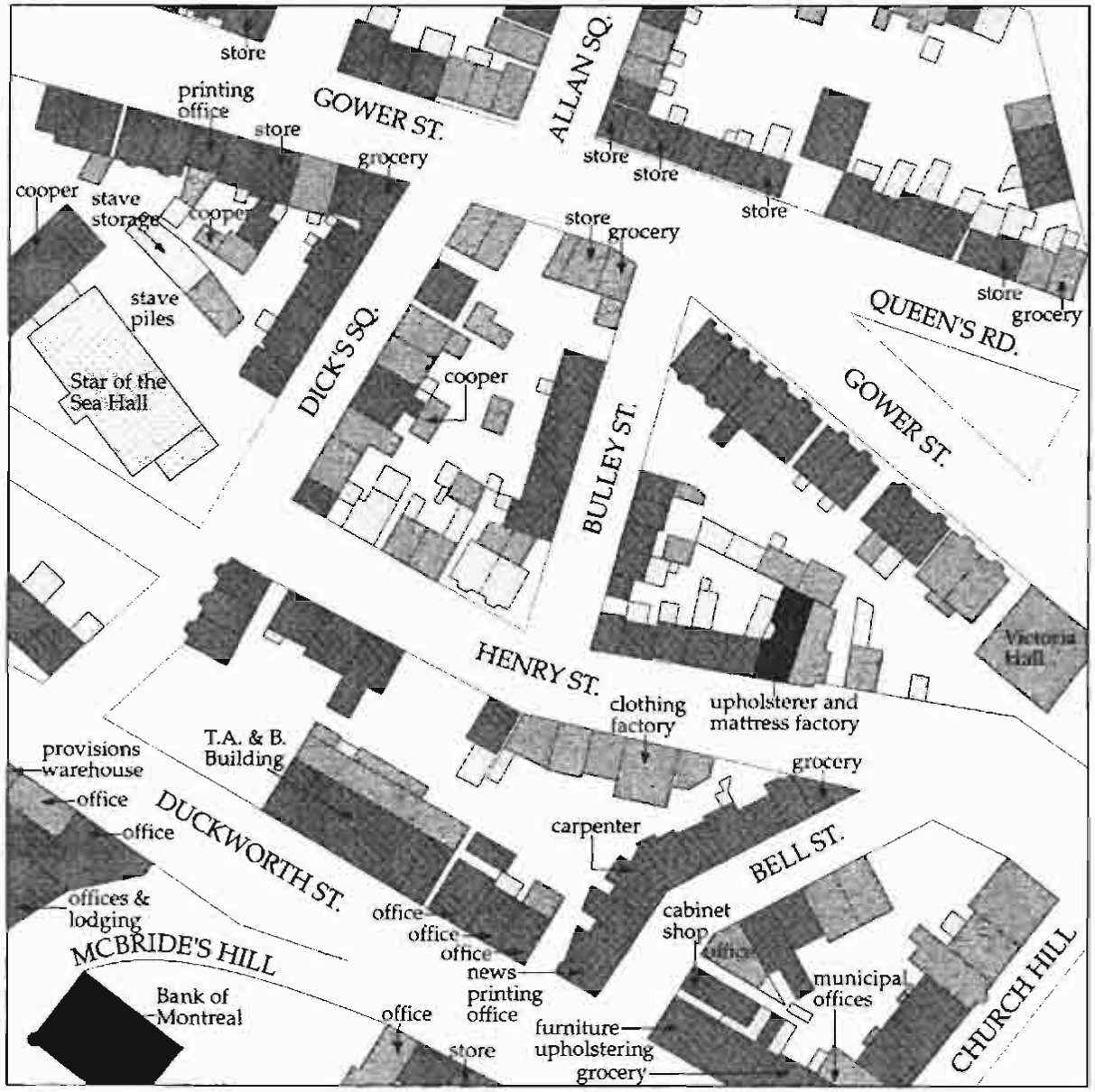
View of The Narrows from the Basilica steps showing the Beorchis Terrace houses

View of The Narrows through the Basilica arch

1	GRAPHIC SUMMARY: BULLEY STREET AREA	1889 INSURANCE ATLAS

2 GRAPHIC SUMMARY: BULLEY STREET AREA

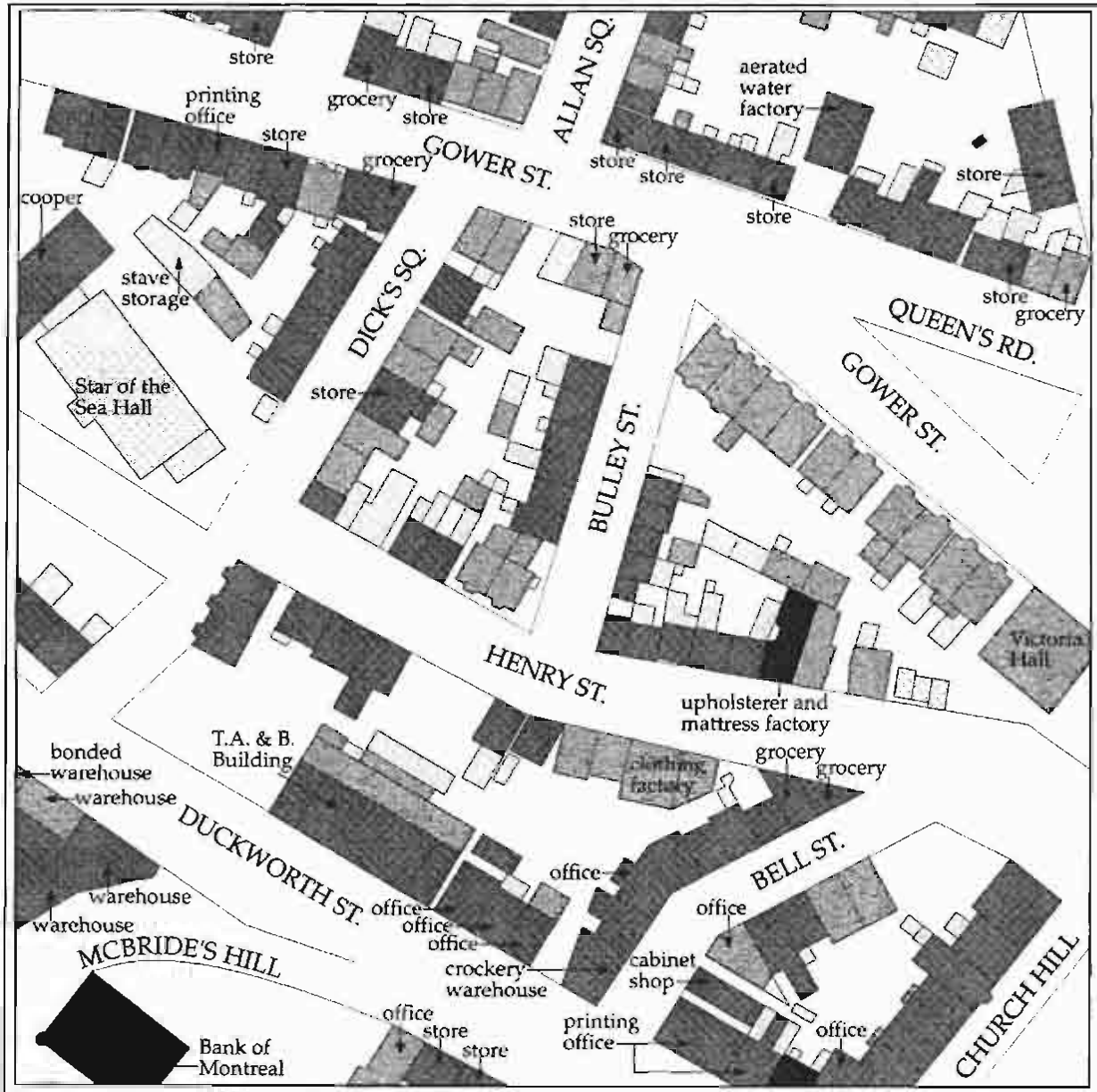
1907 INSURANCE ATLAS



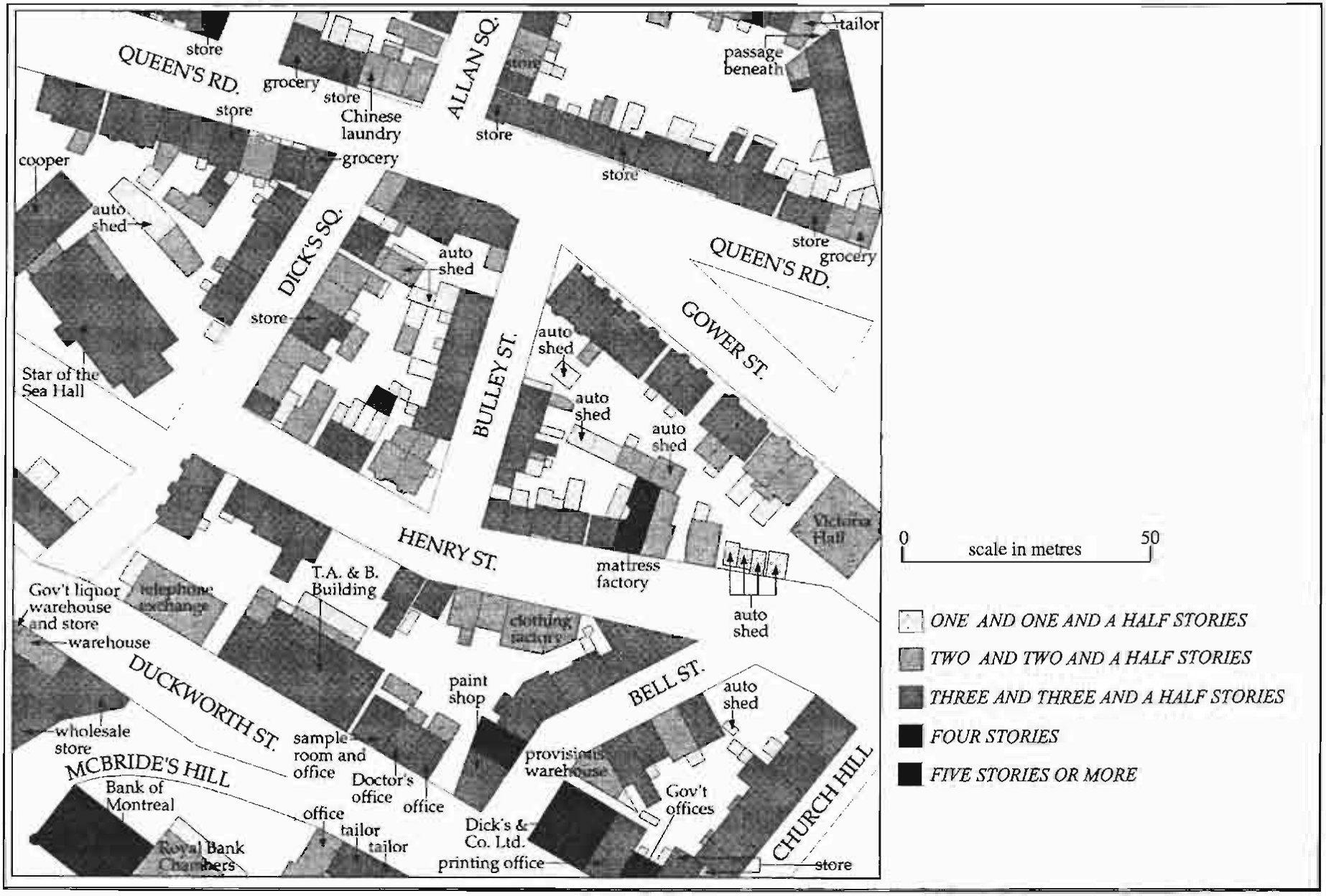
0 scale in metres 50

- *ONE AND ONE AND A HALF STORIES*
- *TWO AND TWO AND A HALF STORIES*
- *THREE AND THREE AND A HALF STORIES*
- *FOUR STORIES*
- *FIVE STORIES OR MORE*

3	GRAPHIC SUMMARY: BULLEY STREET AREA	1914 INSURANCE ATLAS



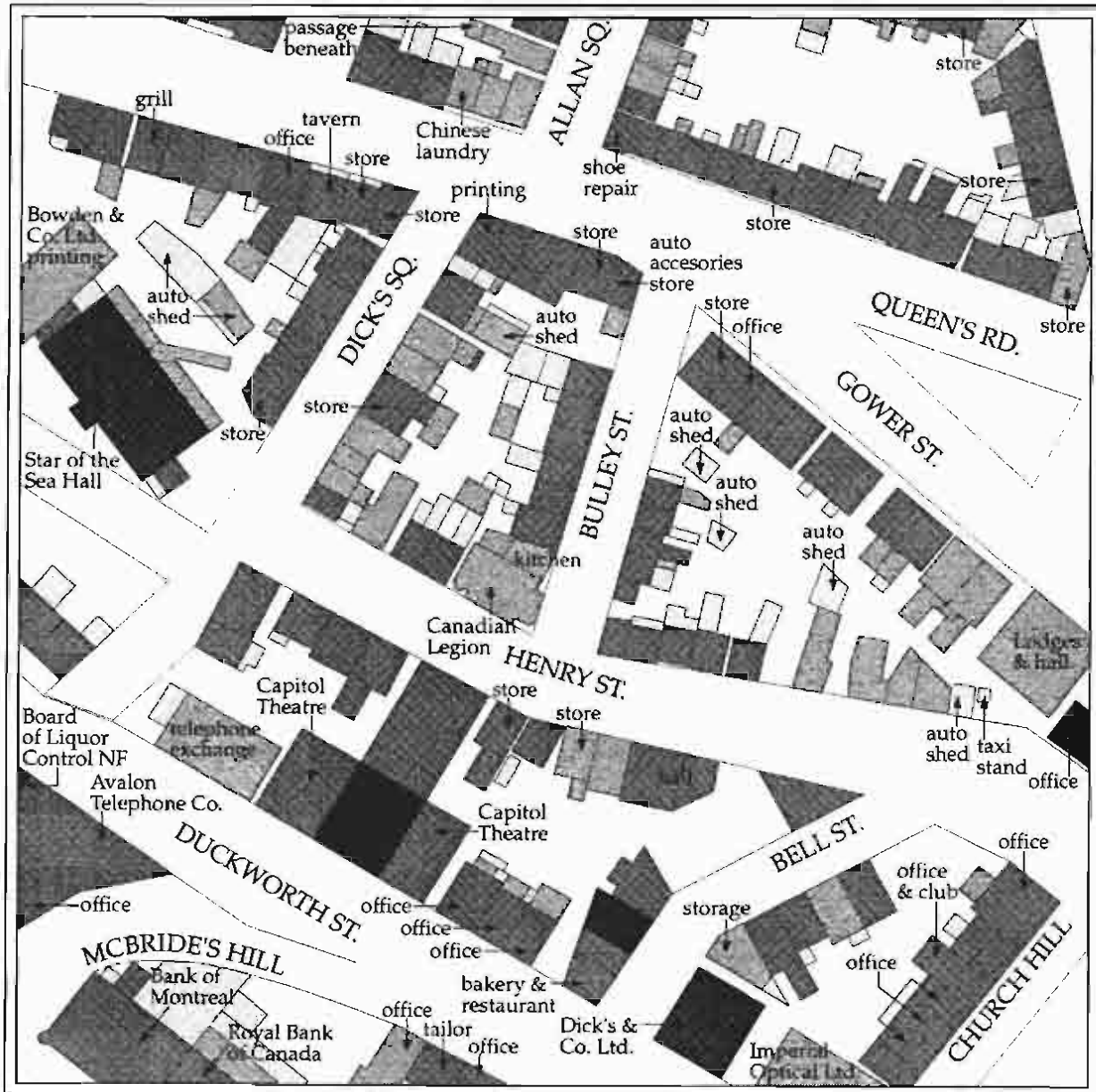
4	GRAPHIC SUMMARY: BULLEY STREET AREA	1925 INSURANCE ATLAS



5	GRAPHIC SUMMARY: BULLEY STREET AREA	1946 INSURANCE ATLAS

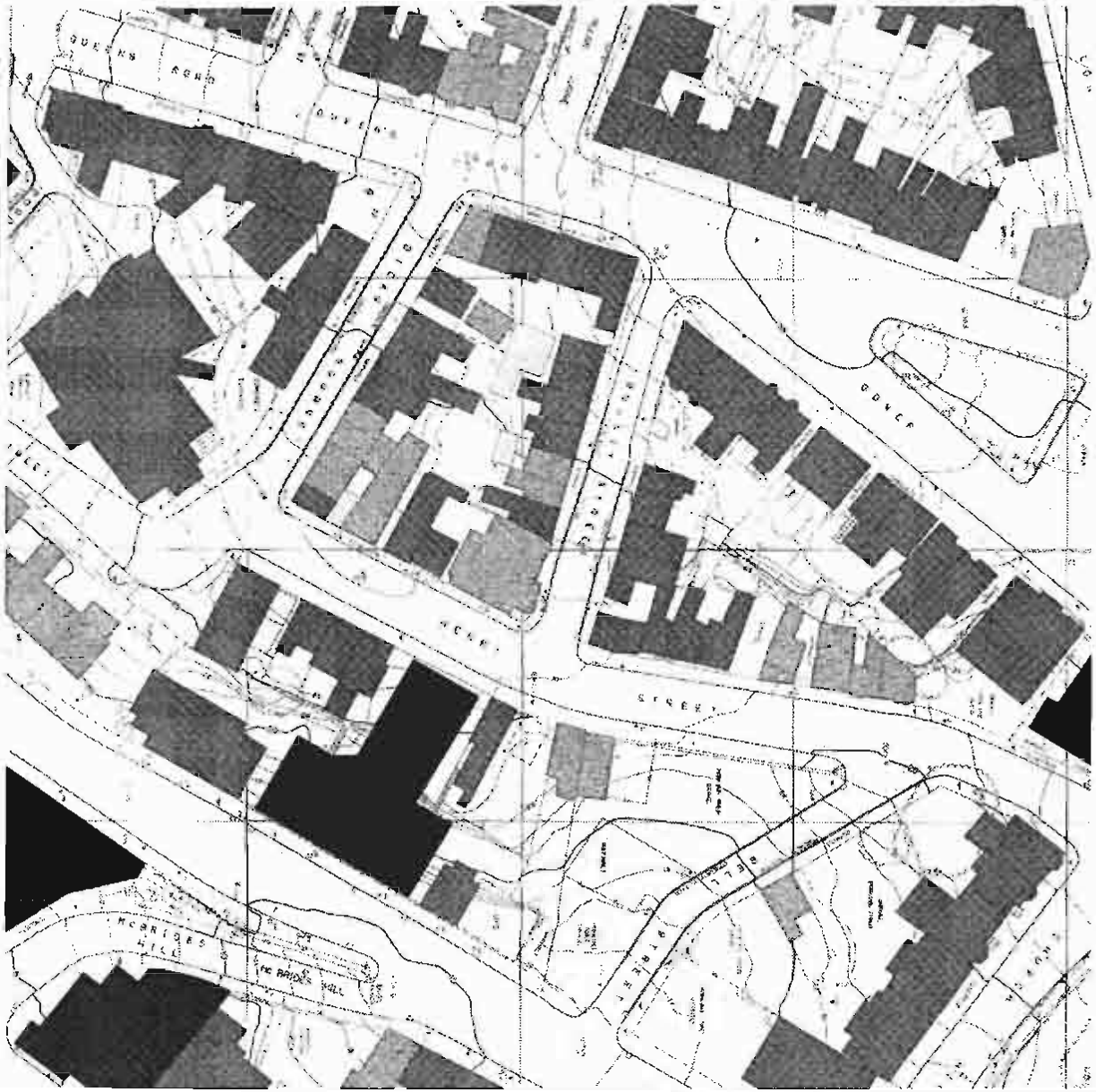
6 GRAPHIC SUMMARY: BULLEY STREET AREA

1968 INSURANCE ATLAS



1 GRAPHIC SUMMARY: BULLEY STREET AREA

EXISTING CONDITIONS



Site analysis for the Bulley Street area in the East End of St. John's. Many of the houses near Duckworth Street have been demolished in recent years (lower right).

Density: 36 dwelling units per hectare
Street area: 1682.1 sq. m. (25.0% of total area)
Sidewalk area: 723.5 sq. m. (10.8% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	**1.0**
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

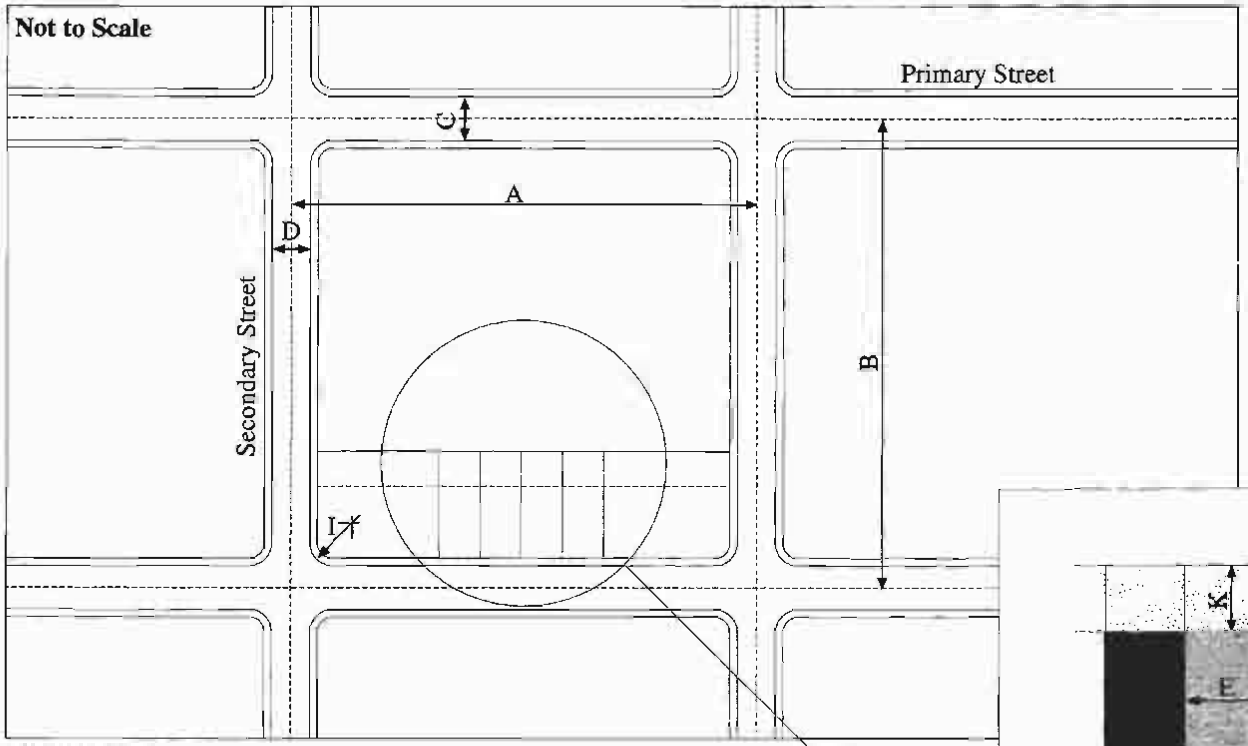
0 scale in metres 50

ONE STOREY
TWO STOREY
THREE STOREY
FOUR STOREY
FIVE STOREY

N

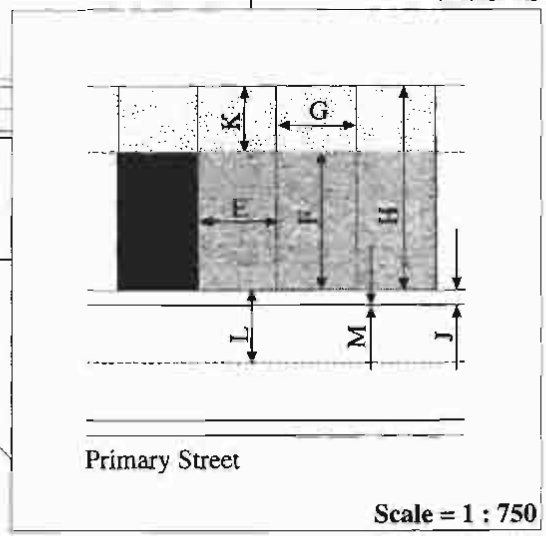
2 GRAPHIC SUMMARY: BULLEY STREET AREA

STREETS AND PLOTS



Plot area = 77.35 sq. meters
Plot ratio (length/frontage)= 2.87
Block area = 6678 sq. meters
Building area = 73.3 sq. meters
Building area % of plot area= 94.76

PLOTS

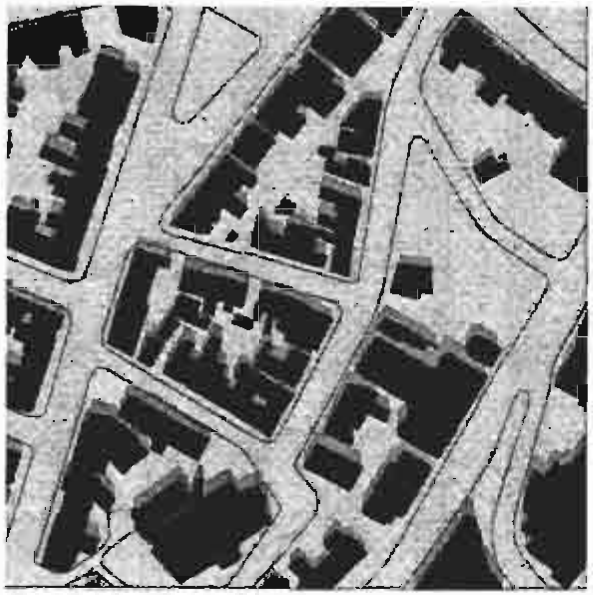


STREETS

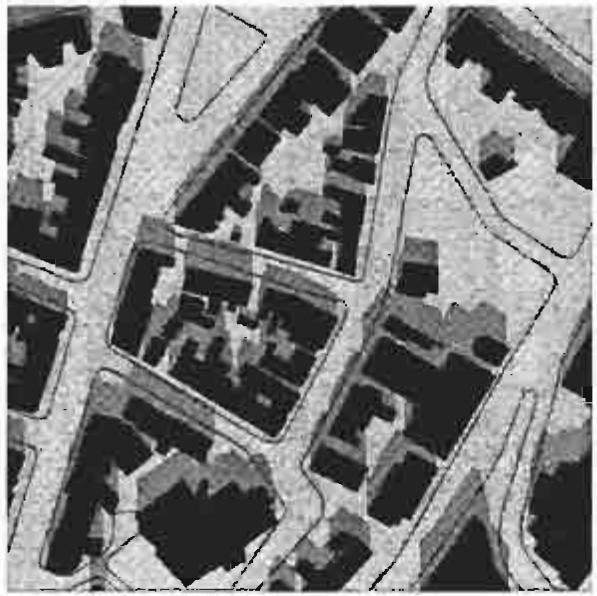
A	Block length = 122.0		Side yard setbacks
B	Block width = 60.5		Left = 0.0
C	Primary street width = 11.4		Right = 0.0
D	Secondary street width = 7.9		Average = 0.0
E	Building width= 7.6		Sidewalk width
F	Building depth = 13.8		Asphalt = n/a
G	Plot width = 7.9	J	Cement = 2.5
H	Plot depth = 20.5		Front setback= 0.4
I	Street corner radii	K	Rear lot line from house = 17.9
	Minimum = 3.0	L	Building to center of street = 8.3
	Maximum = 15.0	M	Curb to sidewalk = 0.0
	Average = 8.4		

3 GRAPHIC SUMMARY: BULLEY STREET AREA

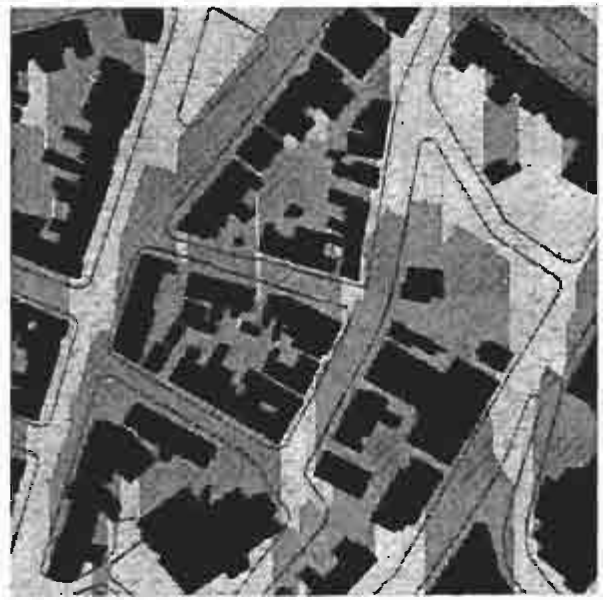
SOLAR STUDIES



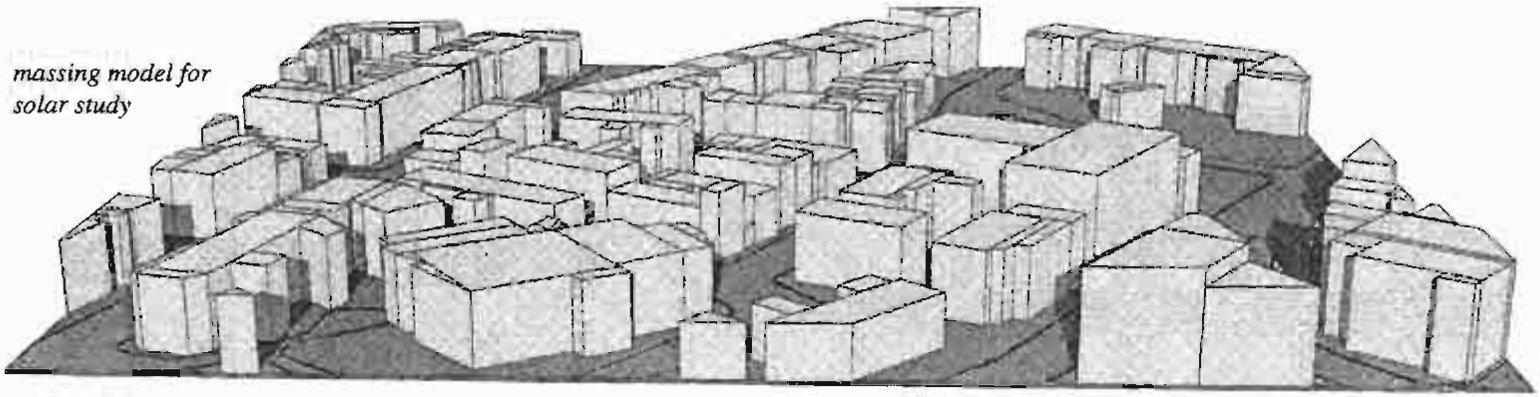
June 21, 12:00 p.m.



September 21, 12:00 p.m.

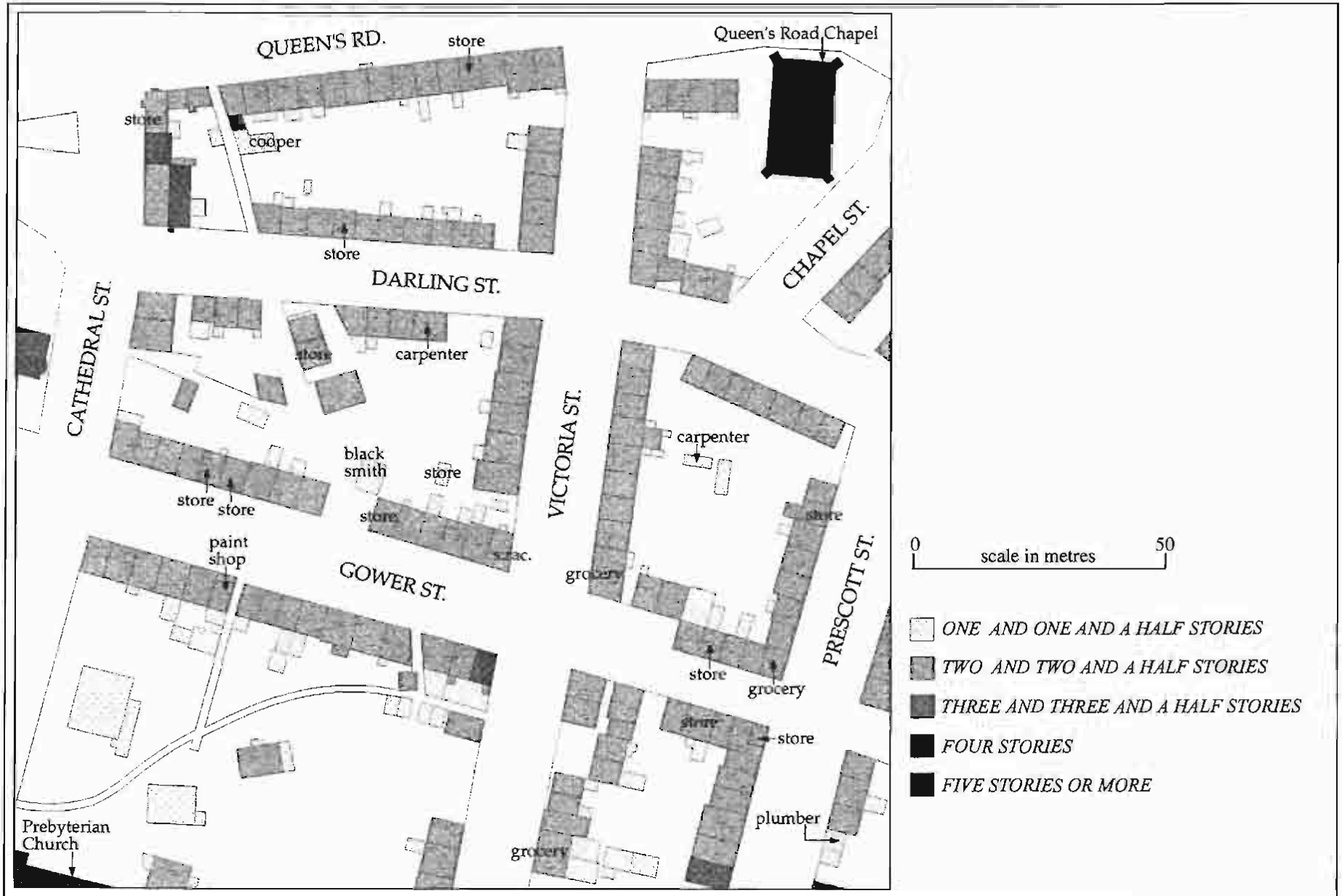


December 21, 12:00 p.m.



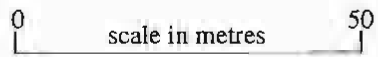
massing model for solar study

1	GRAPHIC SUMMARY: GOWER STREET AREA	1889 INSURANCE ATLAS



2 GRAPHIC SUMMARY: GOWER STREET AREA

1907 INSURANCE ATLAS



ONE AND ONE AND A HALF STORIES

TWO AND TWO AND A HALF STORIES

THREE AND THREE AND A HALF STORIES

FOUR STORIES

FIVE STORIES OR MORE

3	GRAPHIC SUMMARY: GOWER STREET AREA	1914 INSURANCE ATLAS

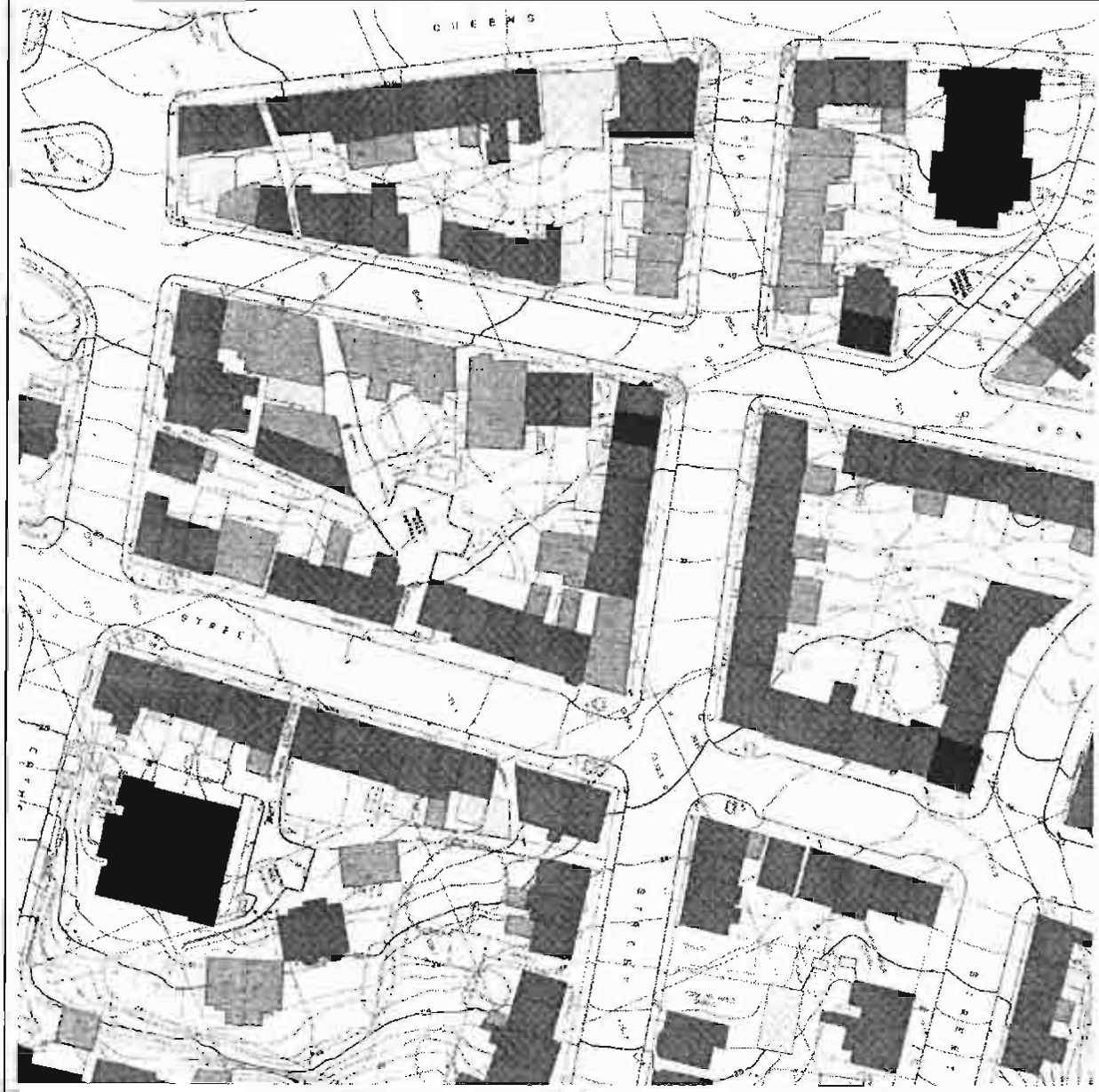
4	GRAPHIC SUMMARY: GOWER STREET AREA	1925 INSURANCE ATLAS

5	GRAPHIC SUMMARY: GOWER STREET AREA	1946 INSURANCE ATLAS

6	GRAPHIC SUMMARY: GOWER STREET AREA	1968 INSURANCE ATLAS

7 GRAPHIC SUMMARY: GOWER STREET AREA

EXISTING CONDITIONS



Site analysis for the Gower Street area in the East End of St. John's. Remnants of the old pedestrian paths that passed through blocks of houses are still present today, but their links with the waterfront no longer exist. The houses in this area form "courtyards": informal areas within blocks sheltered from the wind. The courtyard behind the Masonic Temple (lower left) has houses in the center of the courtyard.

Density:43 dwelling units per hectare
Street area: 2068.9 sq. m. (26.7% of total area)
Sidewalk area: 916 sq. m. (11.2% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	**1.15**
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

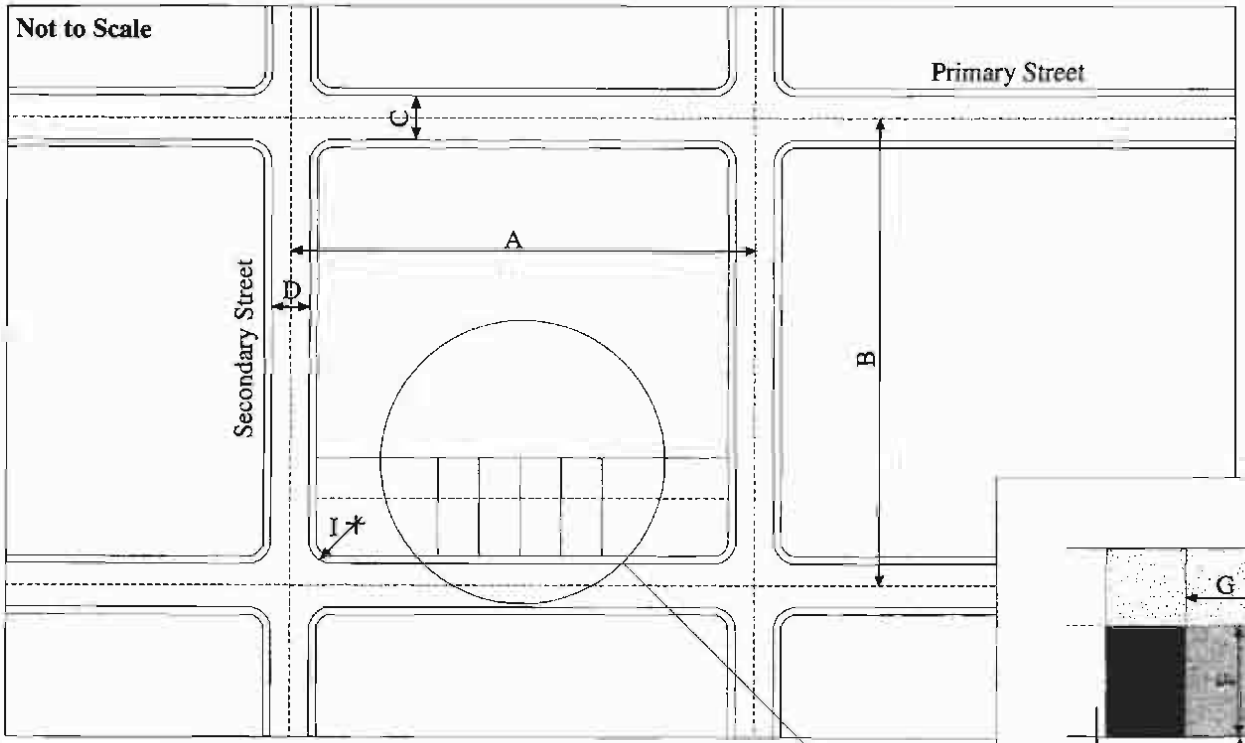
0 scale in metres 50

ONE STOREY
TWO STOREY
THREE STOREY
FOUR STOREY
FIVE STOREY

N

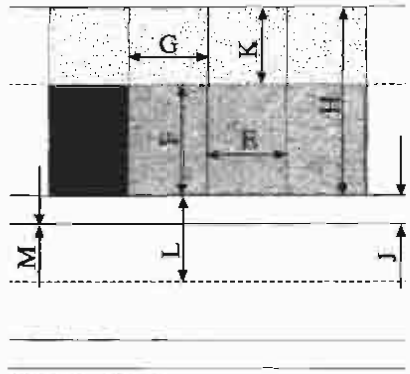
8 GRAPHIC SUMMARY: GOWER STREET AREA

STREETS AND PLOTS



Plot area = 144 sq. metres
Plot ratio (length/frontage)= 2.64
Block area = 7742.25 sq. metres
Building area = 77.5 sq. metres
Building area % of plot area= 57.3

PLOTS



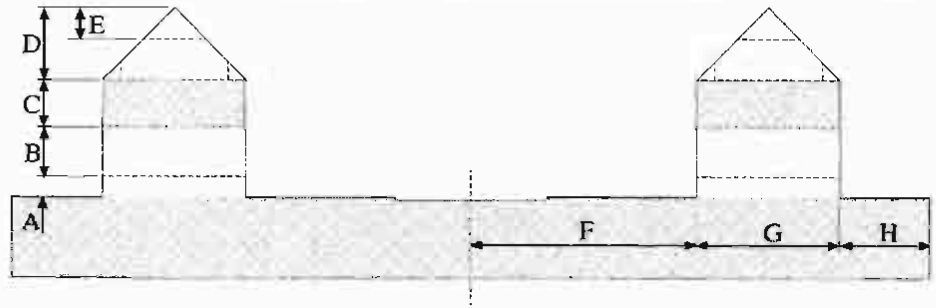
Scale = 1 : 750

STREETS

A	Block length = 111.0		Side yard setbacks
B	Block width = 69.75		Left = 0.0
C	Primary street width = 11.0		Right = 0.0
D	Secondary street width = 8.9		Average = 0.0
E	Building width= 7.89		Sidewalk width
F	Building depth = 11.10		Asphalt = n/a
G	Plot width = 7.89	J	Cement = 2.8
H	Plot depth = 18.9		Front setback= 0.0
I	Street corner radii	K	Rear lot line from house = 7.8
	Minimum = 4.5	L	Building to center of street = 9.0
	Maximum = 12.0	M	Curb to sidewalk = 0.0
	Average = 8.1		

9 GRAPHIC SUMMARY: GOWER STREET AREA

HOUSES



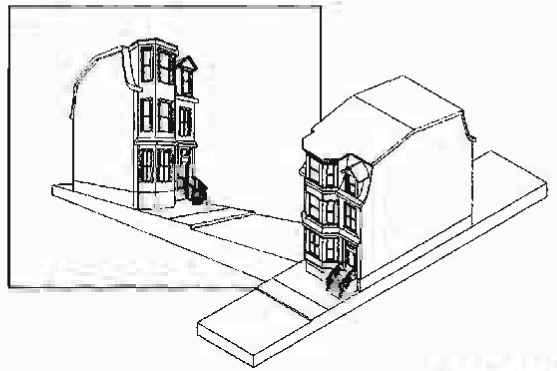
House type : typical 2 1/2 storey with gable roof

A	Foundation height = 1.36m
	Storey height
B	First storey = 3.3m
C	Second storey = 3.15m
D	Third storey = 3.10m
E	Roof height = 4.82m
F	Centre of street to house = 9.87m
G	Depth of house = 10.01m
H	Rear lot line from house = 5.5m
	Area of typical house = 145.48sq.m

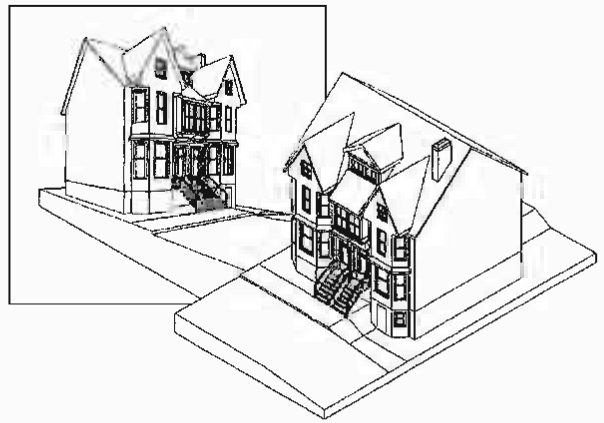
SECTIONAL DATA

There are few typical outbuilding locations in this area: see insurance atlas maps for details

OUTBUILDINGS



5 Victoria Street

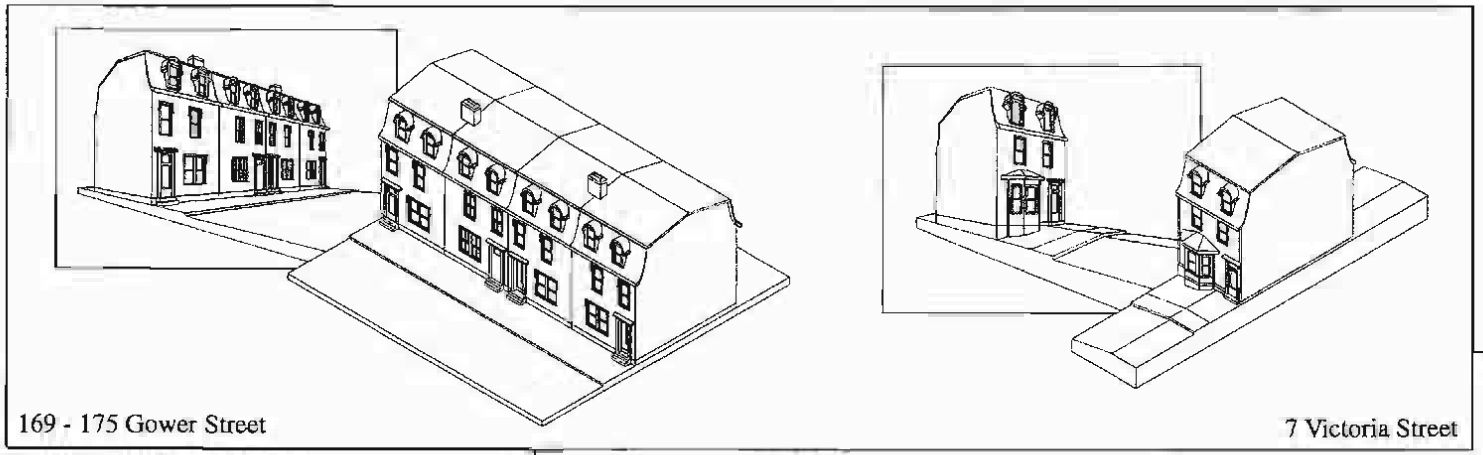


8 - 10 Victoria Street

TYPICAL HOUSES

10 GRAPHIC SUMMARY: GOWER STREET AREA

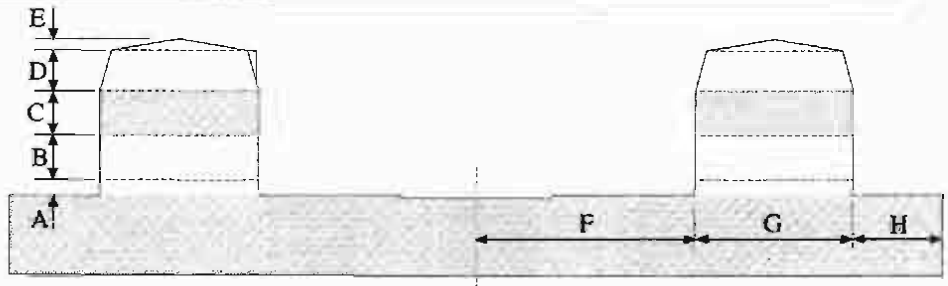
HOUSES



169 - 175 Gower Street

7 Victoria Street

TYPICAL HOUSES



House type : typical 3 storey with mansard roof

A	Foundation height ranges = 0.6 -1.0m
	Storey height
B	First storey ranges = 3.0 - 3.2m
C	Second storey ranges = 2.7 - 3.24m
D	Third storey ranges = 2.47 - 2.7m
E	Roof height ranges = 0.78 - 0.87m
F	Centre of street to house ranges = 8.78 - 10.05m
G	Depth of house ranges = 9.5 - 10.52m
H	Rear lot line from house ranges = 5.04 - 7.05m
	Area of typical house ranges = 150.11 - 171.78sq.m

SECTIONAL DATA

11 GRAPHIC SUMMARY: GOWER STREET AREA

STREET VIEWS

Hypothetical sectional perspective generated by the duplication of 5 & 7 Victoria Street showing the space of the street

Hypothetical sectional perspective generated by the duplication of 8 & 10 Victoria Street showing the space of the street

12 GRAPHIC SUMMARY: GOWER STREET AREA

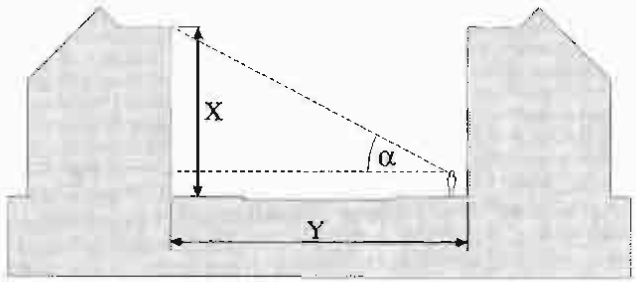
STREET VIEWS

Hypothetical sectional perspective generated by the duplication of 169 to 175 Gower Street showing the space of the street

13 GRAPHIC SUMMARY: GOWER STREET AREA

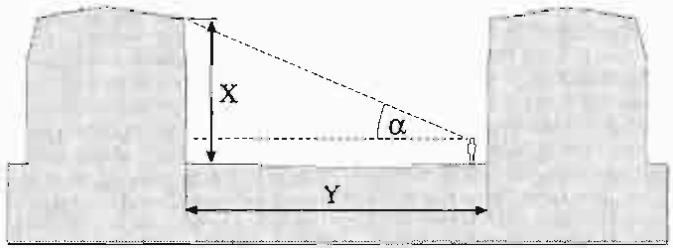
STREET SECTIONS

Hypothetical section based on 8 - 10 Victoria Street



X = 11.34m
Y = 19.74m
Y/X = 1.74
α = 27.7°

Hypothetical section based on 5 Victoria Street

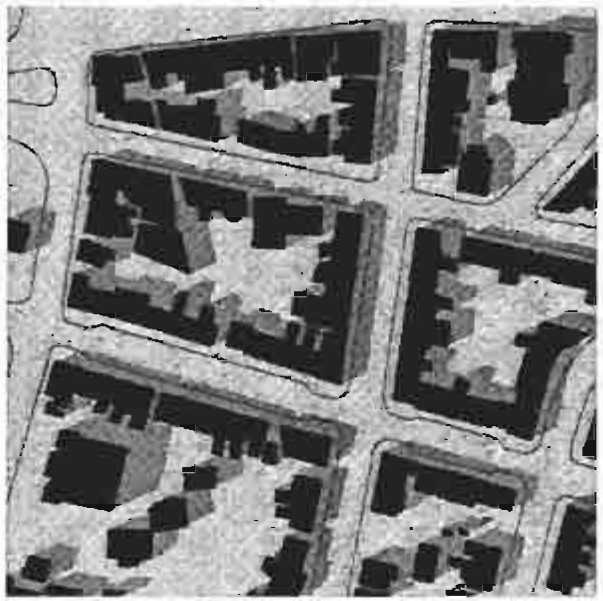


X = 9.69m
Y = 20.00m
Y/X = 2.06
α = 23.0°

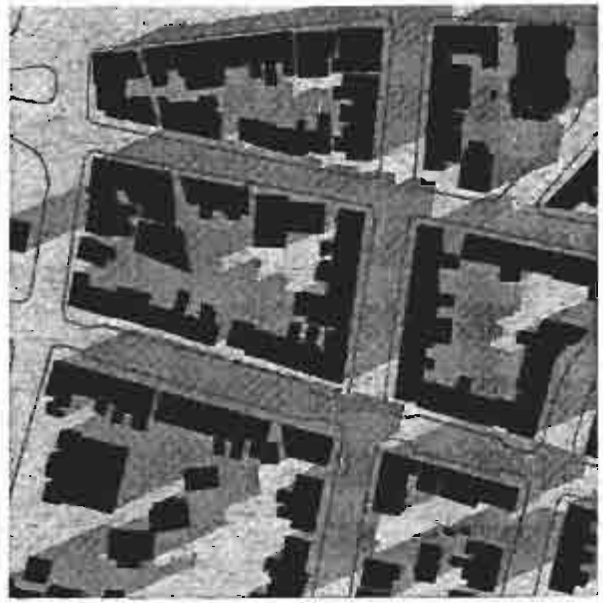
14 GRAPHIC SUMMARY: GOWER STREET AREA

SOLAR STUDIES

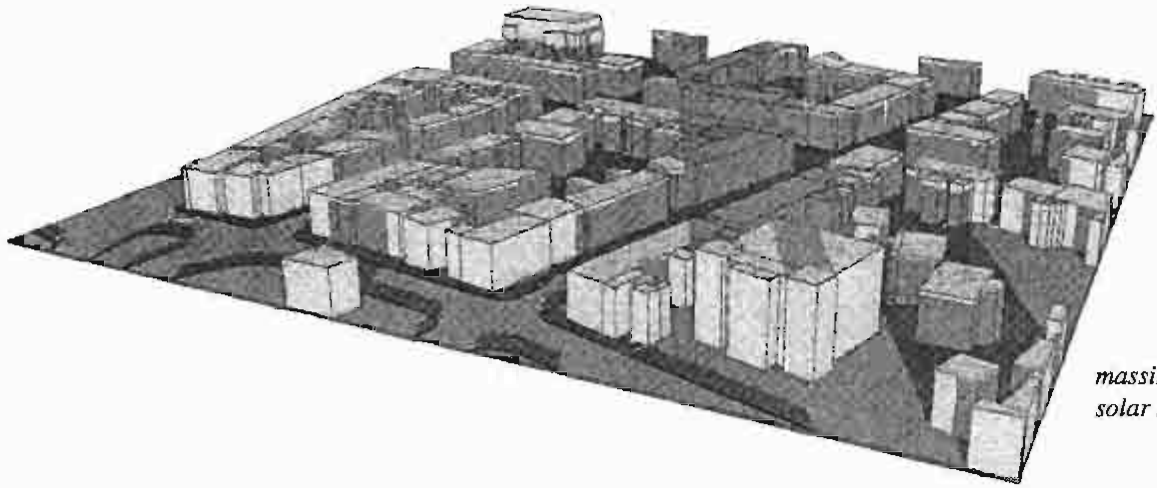
June 21, 12:00 p.m.



September 21, 12:00 p.m.



December 21, 12:00 p.m.



massing model for solar study

1 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

EXISTING CONDITIONS

Site analysis for the Rennie's Mill Road area in the East End of St. John's. Most of the houses in this area are larger detached, duplex, and terrace houses with small front yards.

Density:13 dwelling units per hectare
Street area: 2068.9 sq. m. (26.7% of total area)
Sidewalk area: 916 sq. m. (11.2% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	**2.47**
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

0 scale in metres 50

ONE STOREY

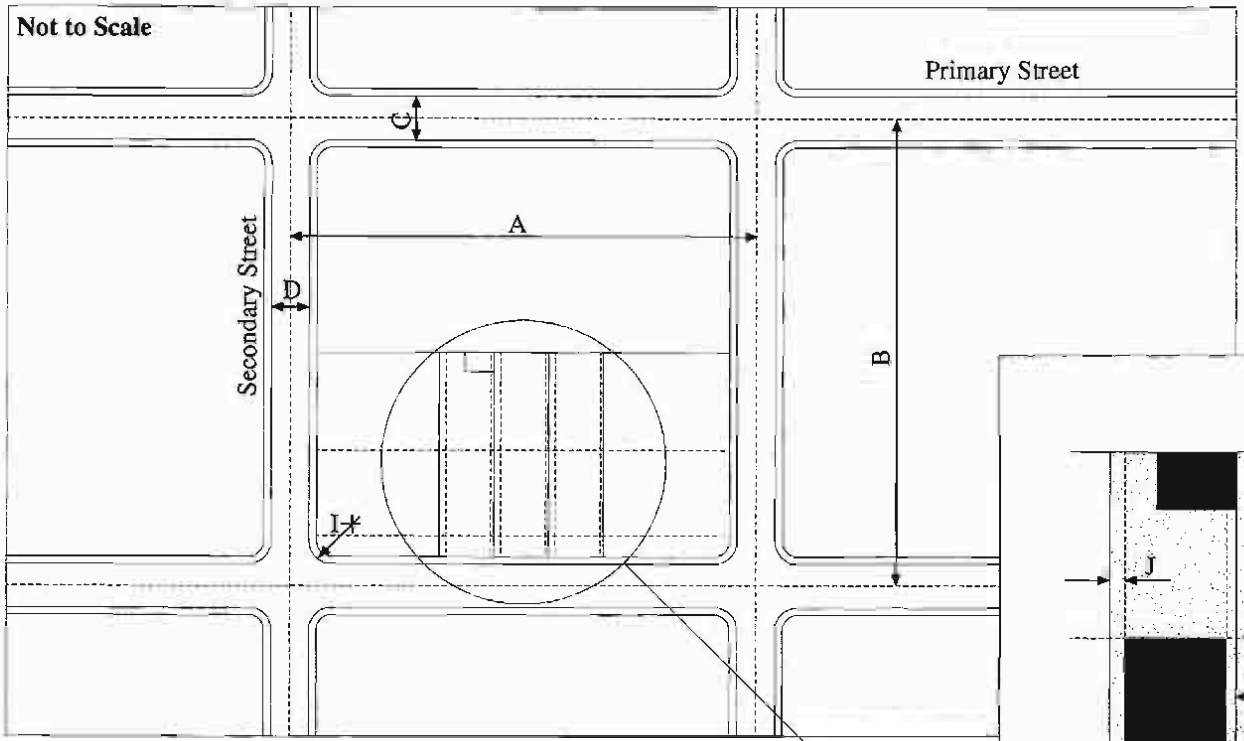
TWO STOREY

THREE STOREY

N

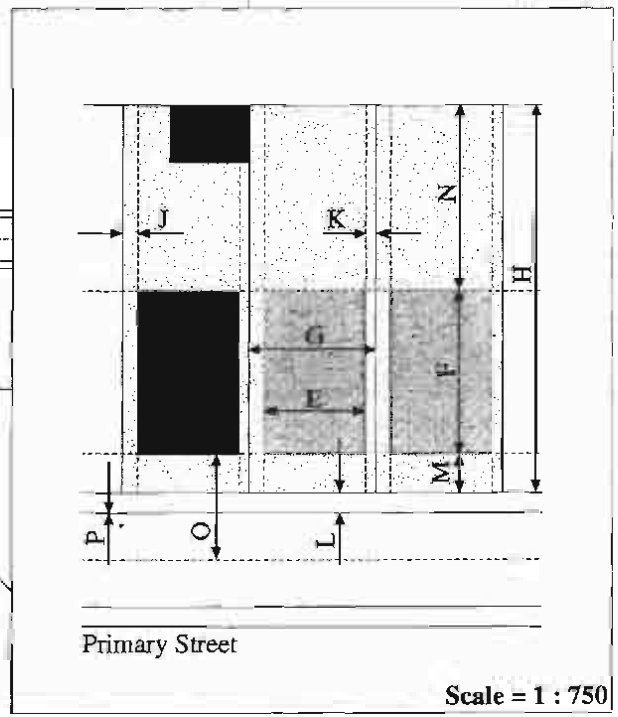
2 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

STREETS AND PLOTS



Plot area = 543.1 sq. metres
Plot ratio (length/frontage)= 3.76
Block area = *7742.25 sq. metres
Building area = 148.51 sq. metres
Building area % of plot area= 36.4
(*based on values found for the Gower St. Area)

PLOTS



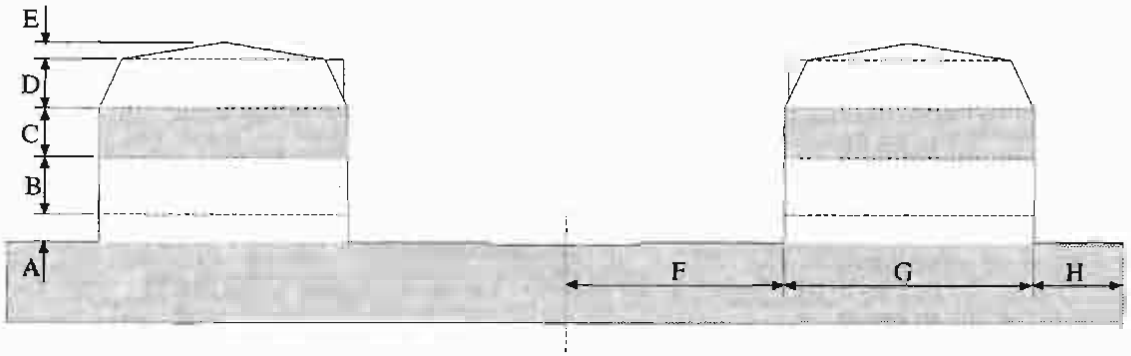
Scale = 1 : 750

STREETS

A	Block length = *111.0		Side yard setbacks
B	Block width = *69.75	J	Left = 1.5
C	Primary street width = 9.58	K	Right = 1.0
D	Secondary street width = 9.0		Average = 1.25
E	Building width= 10.10		Sidewalk width
F	Building depth = 16.3		Asphalt = n/a
G	Plot width = 12.6	L	Cement = 2.0
H	Plot depth = 38.9	M	Front setback= 3.9
I	Street corner radii	N	Rear lot line from house = 18.7
	Minimum = 4.25	O	Building to center of street = 12.1
	Maximum = 15.0	P	Curb to sidewalk = 0.25
	Average = 10.7		(*Based on values found for the Gower Street Area)

3 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

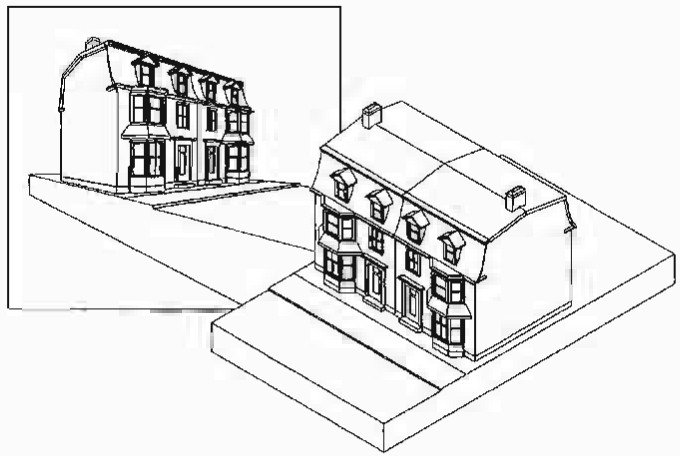
HOUSES



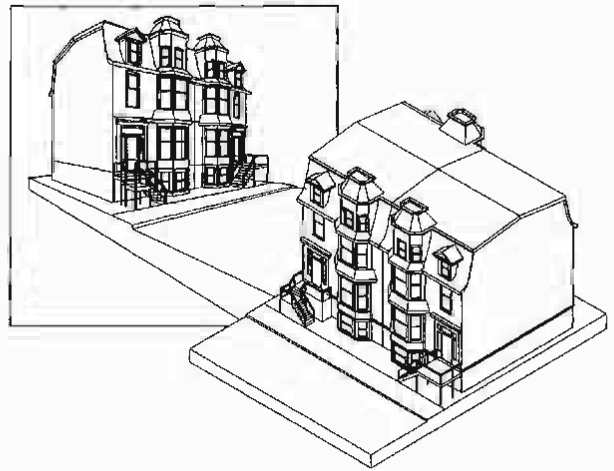
House type : 3 storey with mansard roof

A	Foundation height ranges = 0.4 - 1.8m
	Storey height
B	First storey ranges = 3.1 - 3.8m
C	Second storey ranges = 2.8 - 3.3m
D	Third storey ranges = 2.6 - 3.25m
E	Roof height ranges = 0.0 - 1.13m
F	Centre of street to house ranges = 9.09 - 12.74m
G	Depth of house ranges = 9.0 - 16.5m
H	Rear lot line from house ranges = 2.6 - 20.08m
	Area of typical house ranges = 169.35 - 655.43sq.m

SECTIONAL DATA



17 - 19 Military Road

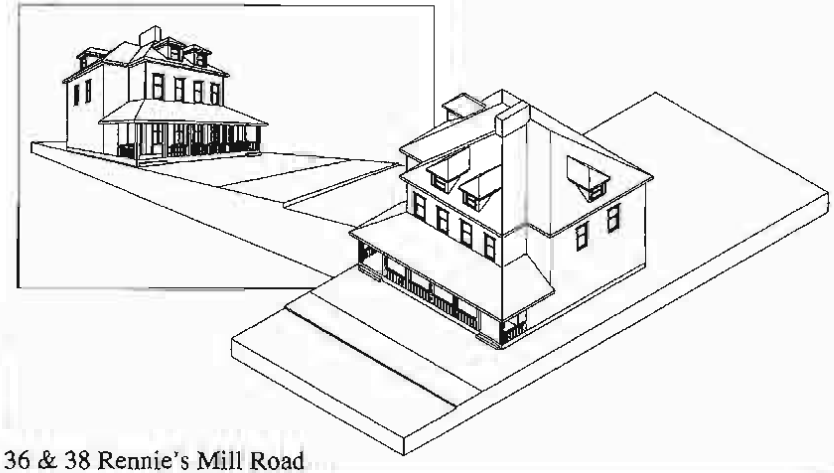


9 - 11 Military Road

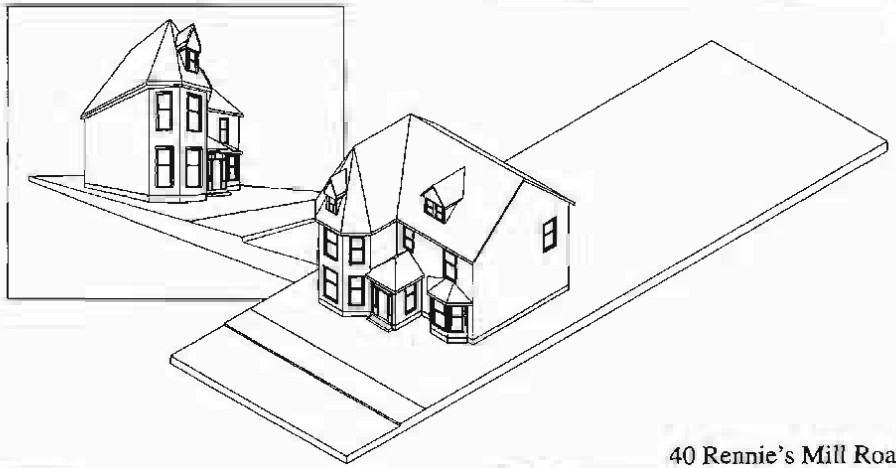
TYPICAL HOUSES

4 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

HOUSES

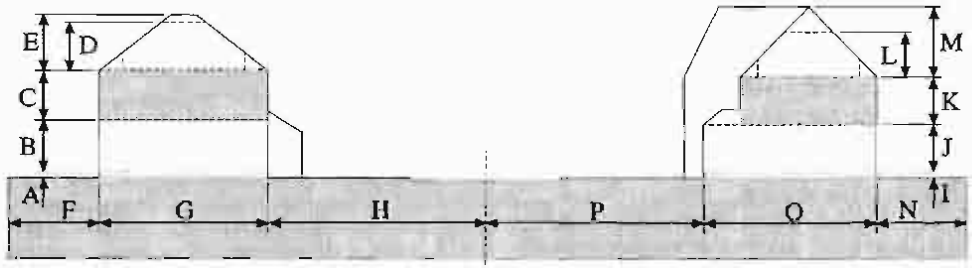


36 & 38 Rennie's Mill Road



40 Rennie's Mill Road

TYPICAL HOUSES



House type : typical 2 1/2 storey with hipped roof

A	Foundation height = 0.4m
	Storey height
B	First storey = 3.5m
C	Second storey = 3.3m
D	Third storey = 3.25m
E	Roof height = 3.75m
F	Rear lot line from house = 18.56m
G	Depth of house = 11.25m
H	Centre of street to house = 15.64m
	Area of typical house = 373.34sq.m

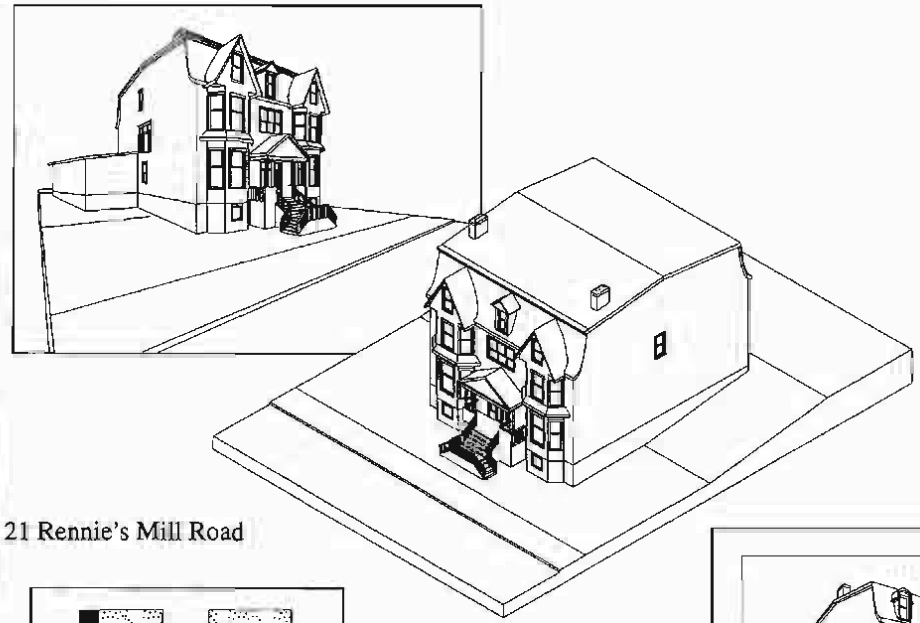
House type : typical 2 1/2 storey with gable roof

I	Foundation height = 0.40m
	Storey height
J	First storey = 3.2m
K	Second storey = 3.2m
L	Third storey = 3.0m
M	Roof height = 4.69m
N	Rear lot line from house = 27.01m
O	Depth of house = 11.5m
P	Centre of street to house = 12.44m
	Area of typical house = 223.63sq.m

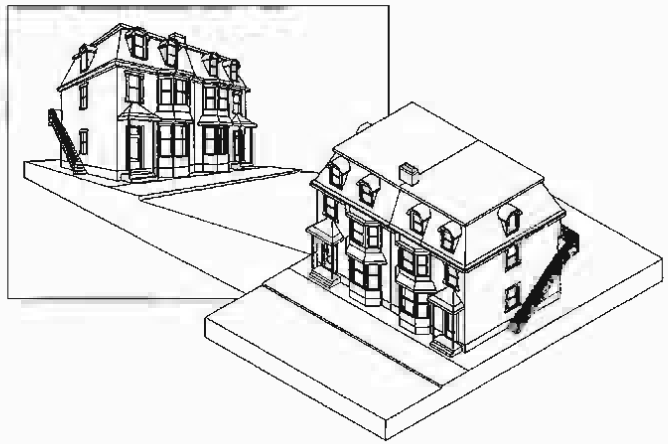
SECTIONAL DATA

5 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

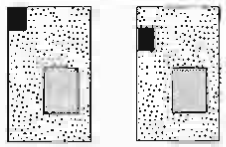
HOUSES



21 Rennie's Mill Road



13 & 15 Military Road



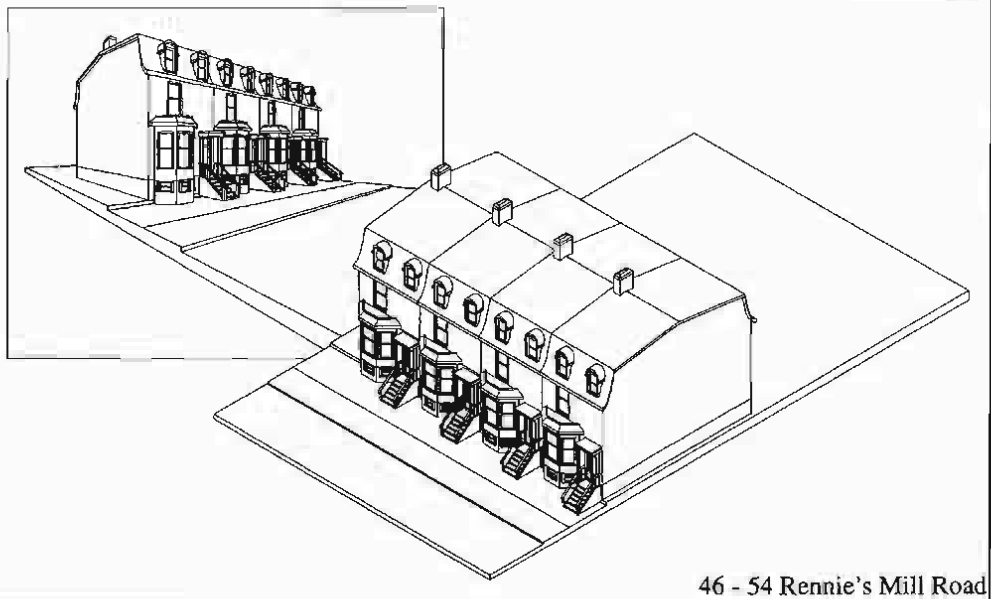
Typical outbuilding placements in this area

Largest = 5.6 x 15.5m
Smallest = 0.75 x 0.75m

Outbuildings in this area :
Gable roof
Mansard roof

OUTBUILDINGS

TYPICAL HOUSES

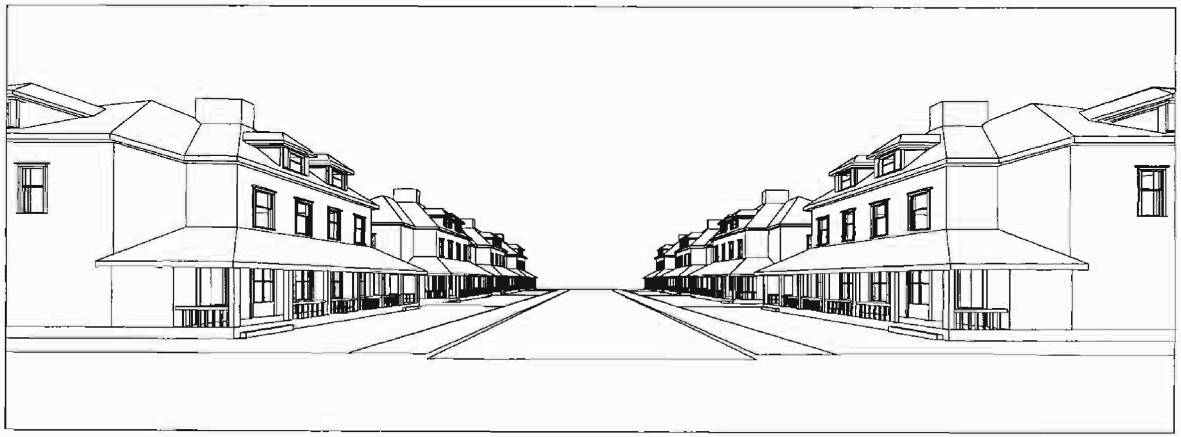


46 - 54 Rennie's Mill Road

6 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

STREET VIEWS

Hypothetical sectional perspective generated by the duplication of 9-11 Military Road showing the space of the street



Hypothetical sectional perspective generated by the duplication of 36-38 Rennie's Mill Road showing the space of the street

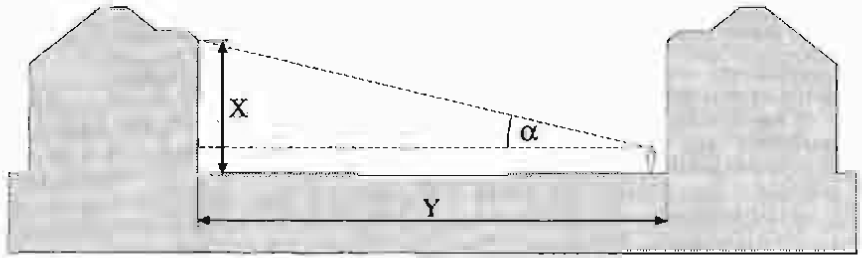
7	GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA	STREET VIEWS

Hypothetical sectional perspective generated by the duplication of 46-54 Rennie's Mill Road showing the space of the street

8 GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA

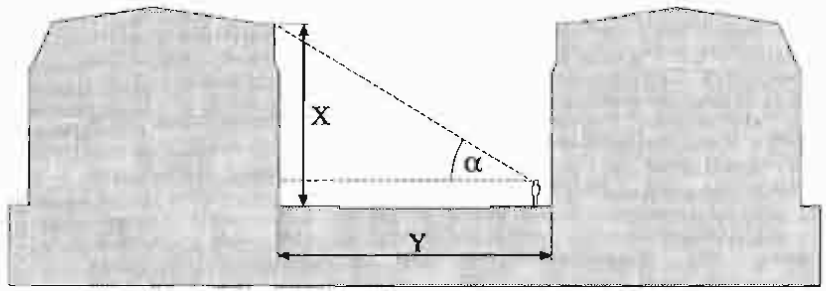
STREET SECTIONS

Hypothetical section based on 36 - 38 Rennie's Mill Road



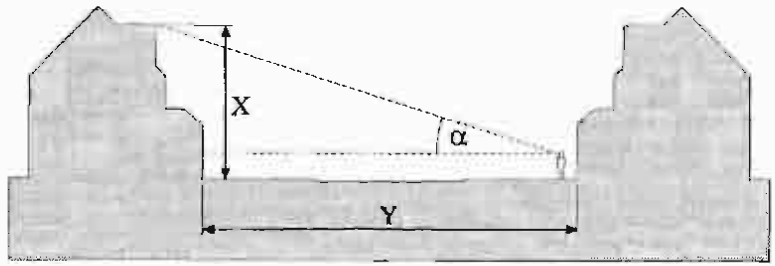
X = 8.80m
Y = 31.28m
Y/X = 3.55
α = 13.3°

Hypothetical section based on 9 - 11 Military Road



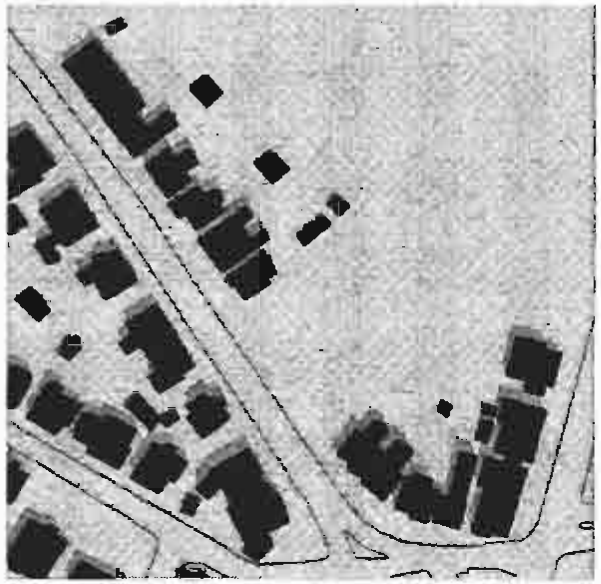
X = 12.15m
Y = 18.18m
Y/X = 1.49
α = 31.4°

Hypothetical section based on 40 Rennie's Mill Road



X = 10.22m
Y = 24.88m
Y/X = 2.43
α = 17.7°

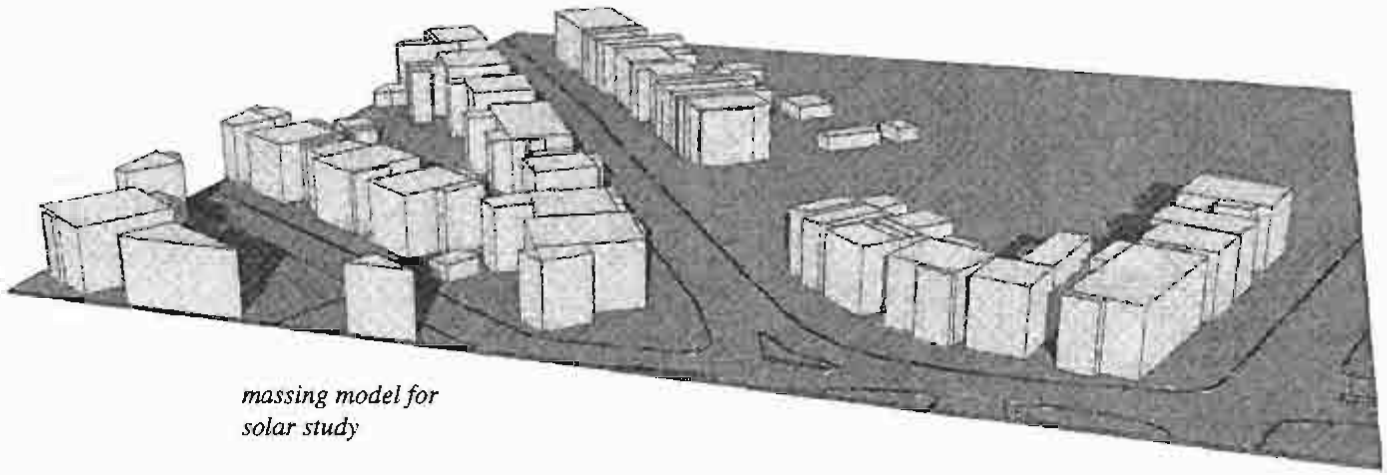
9 | **GRAPHIC SUMMARY : RENNIE'S MILL ROAD AREA** | **SOLAR STUDIES**



June 21, 12:00 p.m.

September 21, 12:00 p.m.

December 21, 12:00 p.m.



massing model for solar study

Georgestown

1949 air photo of the Georgestown residential neighbourhood

The Georgestown residential area can be considered as an extension of the downtown residential area in terms of housing form, density, and the pattern of streets. This area contains row houses, single detached houses, schools, church premises (including cemeteries), commercial buildings, industrial buildings, a pub, workshops, and warehouses. There are several small corner stores in the area, and many of the houses and buildings date from the nineteenth century. As in the downtown residential neighbourhoods described above, the houses hug the perimeter of the blocks with little or no setback and form courtyards. There are small lanes and "short cut ways"[9] that allow public access to some of the courtyards, and in the past few years small infill parks have been placed both in courtyards and on vacant lots.

"Georgestown turned into a self-contained community from the original concept of a small residential village shortly after the great fire of 1846. Tubridstown and Monkstown Meadows rapidly filled up with new home construction, mostly on leased land, over the next fifty years as people moved out of the downtown area. Many shops sprung up and grocery stores were numerous, with many streets having a corner store, but many of the shops were situated along Hayward Avenue. This avenue was the main thoroughfare of Georgestown."[10]

Before the automobile, many horse-drawn cab drivers lived in the Georgestown area. Their stables, courts, and coach houses, accessible by both lanes and streets (The Unnamed Street, Donnelly's Lane, Wheelbarrow Lane), were close to or adjacent to their houses. These lanes were often irregular in form. For example, Wallace Furlong describes Wheelbarrow Lane: "It got its name because it tapered down to about the width of a wheelbarrow halfway through its length. On the end where Gladney entered to get to his stable, the laneway was no more than twelve feet in width."[11] The number of lanes in the area has greatly decreased in recent years. In addition to the lanes named above, there was Davey's Lane, Gorman's Lane, and Coleman's Lane.[12] Because of the presence of the cab drivers and also because of the location of the city stables on Hayward Avenue, there were many forges and blacksmiths in the area. For one of the forges, there was no access from either street or lane. "Downton's Forge was completely enclosed by private properties. The only way into the forge was by entry through the old Downton home, a middle house in a range of houses on Fleming Street."[13]

Courtyard behind Barnes Road and Hayward Avenue

Lane to a courtyard off Hayward Avenue

Lane to a courtyard off Hayward Avenue

Duplex houses on Hayward Avenue

Corner store on Hayward Avenue and McDougall Street

Corner store on Hayward Avenue and Maxse Street

The number and diversity of stores, trades, and businesses has greatly decreased in recent years. It is true, as Furlong contends, that Georgestown was "self-contained" in the 19th century. He identifies many grocery stores and corner stores, and also butchers, shoemakers, forges, stables (horse-drawn cabs), cabinet makers, garages (automobile), small factories, a hospital, a smokehouse, a brewery (still operating), a weather station, taxi stands, bench work shops, and furniture stores. Many of the stores and other businesses persisted well into the 20th century.

"There were half a dozen full size grocery stores in the immediate area [Barnes Road] at one time ...like Sutton's, Parson's, Dunn's... mind you, there were no cars. They (the stores) would deliver... Every Christmas you would get a little bonus... a box... Purity syrup, apples, fancy biscuits."[14]

One block has been selected for analysis in this neighbourhood. It is located between Barnes Road, Hayward Avenue, William Street, and McDougall Street and it is unique in the older residential areas of St. John's. It is part of the irregular grid pattern of Georgestown's streets and has a central lane, locally known as Bulger's Lane. This street pattern, not unique to St. John's, has been the subject of much interest in recent town planning and it is promoted in contemporary studies as an innovative way to accommodate parking, service access, outbuildings, and higher densities. This pattern is similar to proposals made in the 1940's for blocks with alleys or lanes in the Churchill Square suburban development.

The land across from the block containing Bulger's Lane, bounded by Mullock Street, Bonaventure Avenue, Barnes Road, and Howley Avenue was once open space owned by the Catholic Church. This land was subdivided in the 1920's, and larger, single-detached dwellings on large lots were constructed. William Street and Hayward Avenue contains mainly row housing, and Howley Avenue contains both semi-detached and detached dwellings.

Bulger's Lane

Duplex houses at the corner of William Street and Barnes Road (block containing Bulger's Lane)

House on the corner of William Street and Barnes Road

Today, Bulger's Lane permits access to small, private parking areas within the lots as well as access to small garages located next to the alley. The lane is also used for service access for some of the houses (oil deliveries, access to yards). All the yards are fenced, and along the lane some of the fences are high, solid-board type fences for privacy. The lane is often used as a play area by children. A warehouse is located on the northeast corner of the block. Two- and three-storey houses with no setbacks from the street are located on the lane block, and the courtyard created by the houses is spatially well defined. Bulger's lane was widened in the 1970's by approximately six feet (1.8 metres) for fire truck access.[15] Bulger's Forge, demolished in 1975, was located on this lane at the rear of the Bulger residence located on Hayward Avenue.[16]

The Georgestown area contains many examples of small, unobtrusive automobile garages for one car. When most of the houses were built, there were no cars - the garages were added later. Although these detached garages would not be permitted in the present day zoning regulations, the existing garages demonstrate that accessory buildings are an asset to the neighbourhood. Most of the garages are freestanding and they vary in terms of their form and placement. On Barnes Road where some houses are detached on larger lots, the garages are located either at the back of the lot, the front of the lot next to the sidewalk, or on the side of the lot. It is surprising how well the detached garage at the front of the lot can work with suitable landscaping. For example, a detached garage surrounded by trees on Mullock Street is integrated with the landscaping scheme by a paling fence that forms a curved "gateway" in plan. Just outside the Georgestown area near the intersection of Barnes Road and Military Road, a shed-roof type garage (high at the garage door, and low at the back wall opposite the door) is aligned with a high, solid board fence at the rear of the lot. In this configuration, the garage is nearly invisible to the casual observer from the street. In Georgestown there are other examples of the shed-roof garage. The shed-roof garage was economical to build and unobtrusive for the neighbourhood, and it provides interesting possibilities for new residential areas in conjunction with the use of traditional types of fences.

Outbuildings off Hayward Avenue

House and garage on Hayward Avenue

Shed-roof type garage located close to the sidewalk on Barnes Road

Detached single-car garage near the sidewalk on Mullock Street: the landscaping and fencing make this garage a positive element in the neighbourhood

[9] Joe and Louise Doyle, interview with the author, St. John's, 1995.
[10] Wallace Furlong, "A History of Georgestown: Part III," in *The Senior Citizen*, 1980, St. John's, 23-32.
[11] Wallace Furlong, "A History of Georgestown: Part III," in *The Senior Citizen*, 1980, St. John's, 23-32.
[12] Joe and Louise Doyle, interview with the author, St. John's, 1995.
[13] Wallace Furlong, "A History of Georgestown: Part III," in *The Senior Citizen*, 1980, St. John's, 23-32.
[14] Joe and Louise Doyle, interview with the author, St. John's, 1995.
[15] Joe and Louise Doyle, interview with the author, St. John's, 1995.
[16] Wallace Furlong, "A History of Georgestown: Part III," in *The Senior Citizen*, 1980, St. John's, 23-32.

View from Military Road of a shed-roof type garage at the back of a house on Queen's Road (near Georgestown)

View of the shed-roof garage from the rear yard

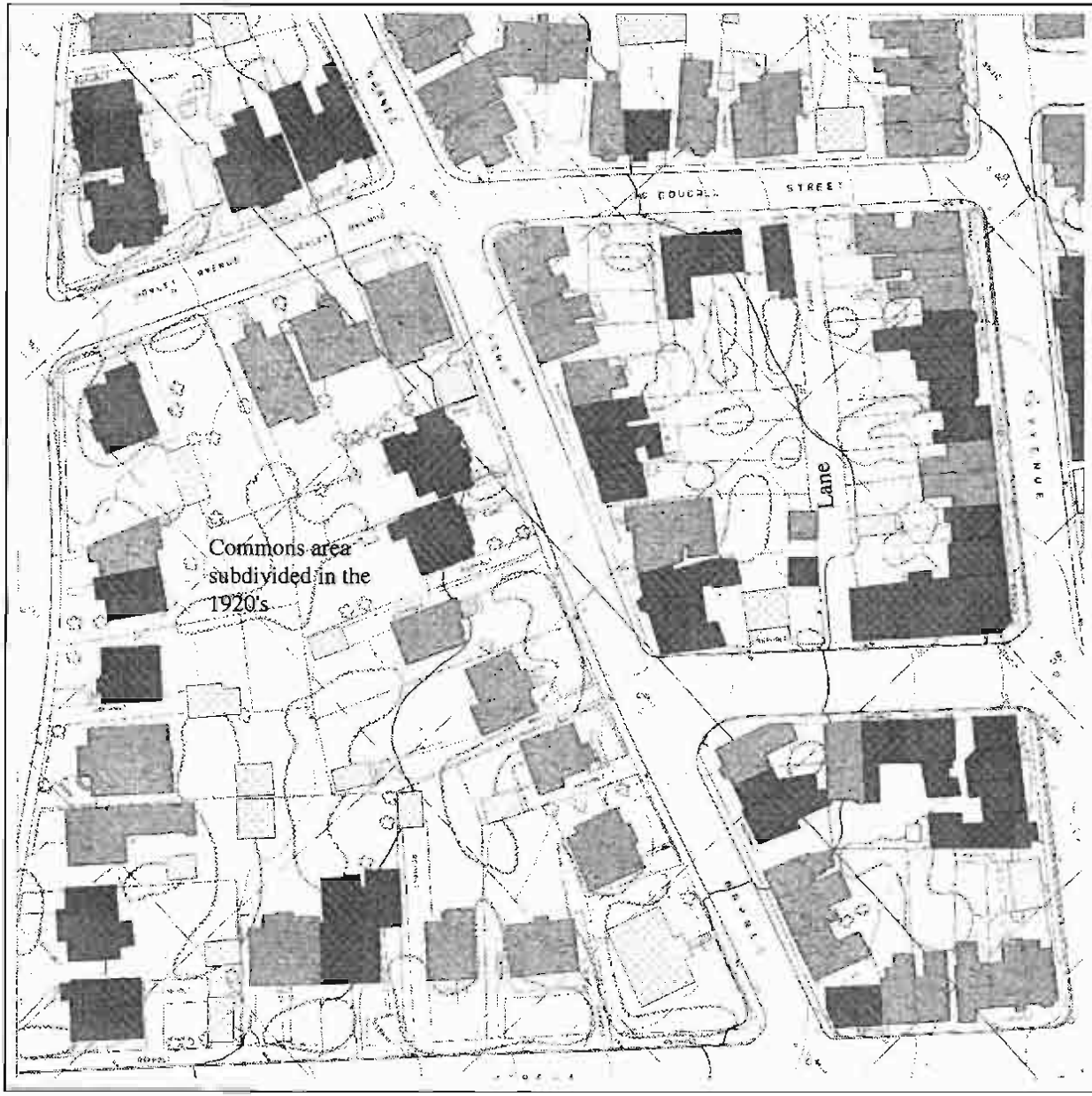
Row houses on Barnes Road

Row houses on Maxse Street near Hayward Avenue

House and former store at the corner of Hayward Avenue and Mullock Street

1 GRAPHIC SUMMARY : GEORGESTOWN

EXISTING CONDITIONS



Site analysis for the Georgestown neighbourhood is based on the block with a lane. The other blocks have mostly attached row houses similar in character to the downtown residential neighbourhoods, except for a large block of open space that was subdivided during the 1920's for single-detached housing.

Density: 33 dwelling units per hectare
Street area: 2230.7 sq. m. (25.7% of total area)
Sidewalk area: 387.75 sq. m. (4.5% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	**1.45**
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

0 scale in metres 50

ONE STOREY

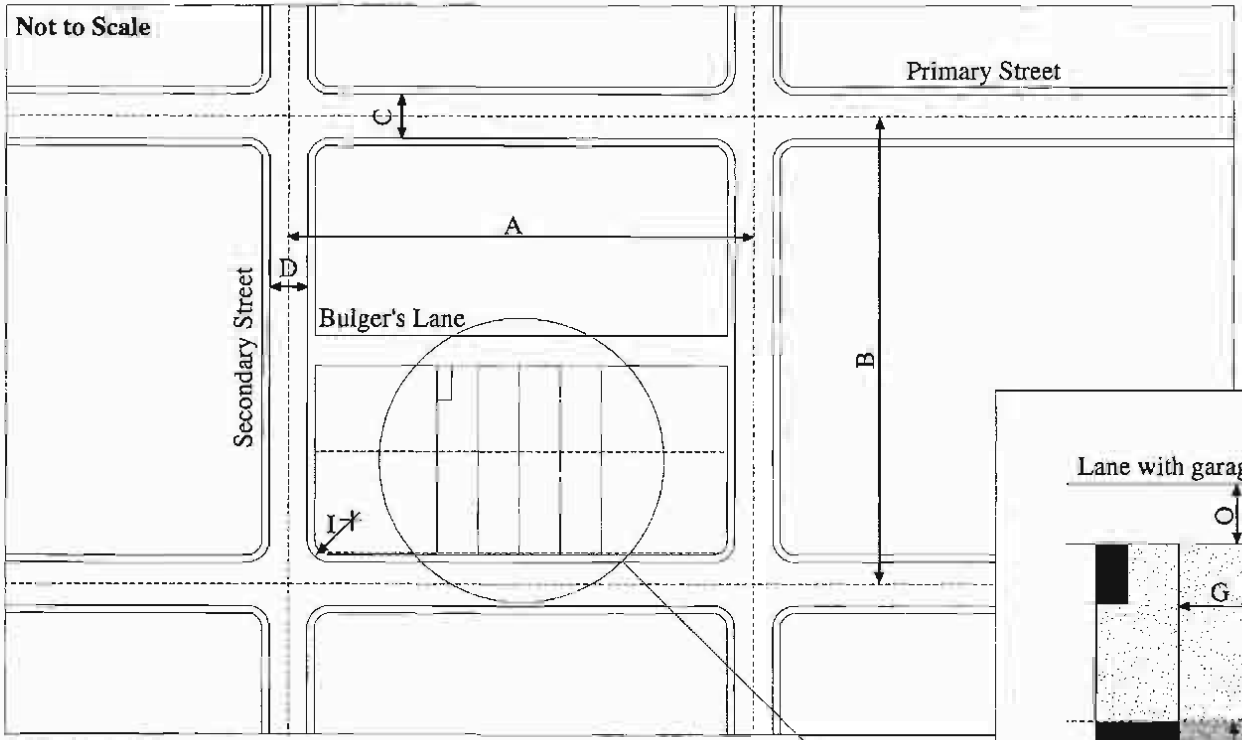
TWO STOREY

THREE STOREY

N

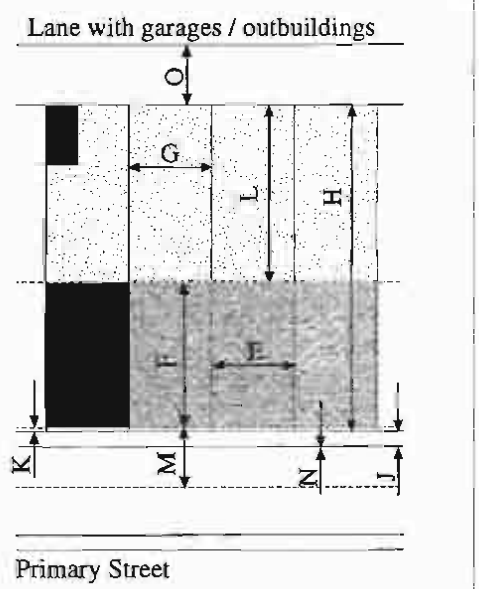
2 GRAPHIC SUMMARY : GEORGESTOWN

STREETS AND PLOTS



Plot area = 278 sq. metres
Plot ratio (length/frontage)= 4.15
Block area = 8686 sq. metres
Building area = 90.7 sq. metres
Building area % of plot area= 32.63

PLOTS



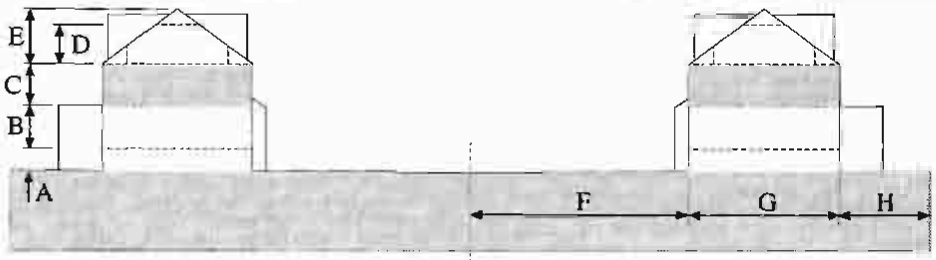
Scale = 1 : 750

STREETS

A	Block length = 92.9		Side yard setbacks
B	Block width = 93.5		Left = 0.0
C	Primary street width = 8.75		Right = 0.0
D	Secondary street width = 7.6		Average = 0.0
E	Building width= 7.15		Sidewalk width
F	Building depth = 14.5		Asphalt = n/a
G	Plot width = 8.25	J	Cement = 1.5
H	Plot depth = 32.8	K	Front setback= 0.4
I	Street corner radii	L	Rear lot line from house = 17.9
	Minimum = 5.0	M	Building to center of street = 8.3
	Maximum = 16.0	N	Curb to sidewalk = 0.0
	Average = 9.10	O	Lane width = 5-6.5 meters

3 GRAPHIC SUMMARY : GEORGESTOWN

HOUSES

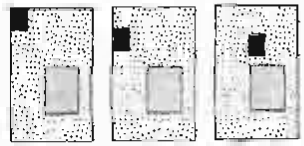


House type : typical 2 1/2 storey with gable roof

A	Foundation height = 1.4m
	Storey height
B	First storey = 2.9m
C	Second storey = 2.75m
D	Third storey = 2.6m
E	Roof height = 3.64m
F	Centre of street to house = 8.05m
G	Depth of house = 10.0m
H	Rear lot line from house = 20.33m
	Area of typical house = 91.09 - 111.19sq.m

SECTIONAL DATA

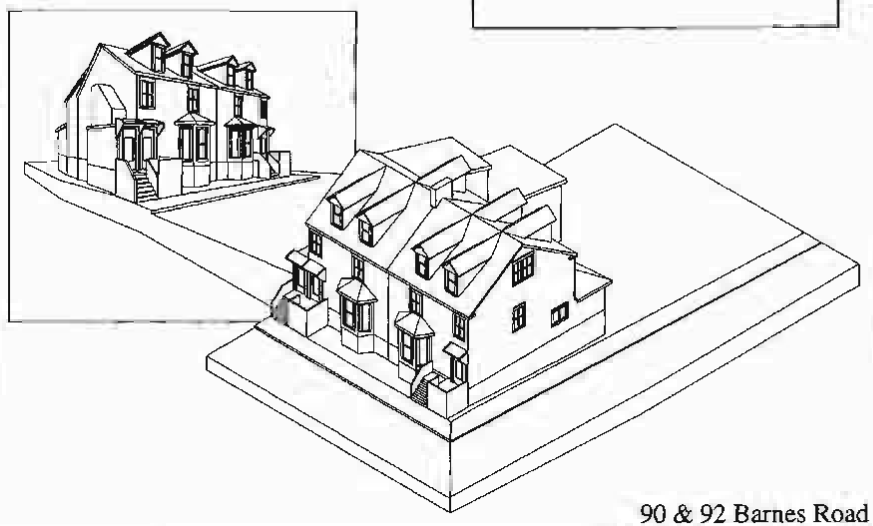
OUTBUILDINGS



Typical outbuilding placements in this area

Largest = 7.5 x 7.0m
Smallest = 1.5 x 2.0m

Outbuildings in this area :
Gable roof
Hipped roof
Flat roof

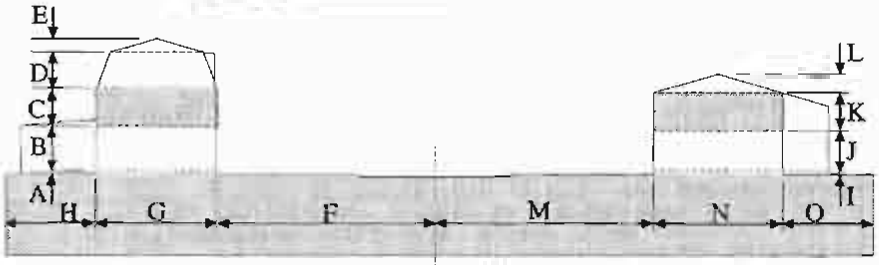


90 & 92 Barnes Road

TYPICAL HOUSES

4 GRAPHIC SUMMARY : GEORGESTOWN

HOUSES



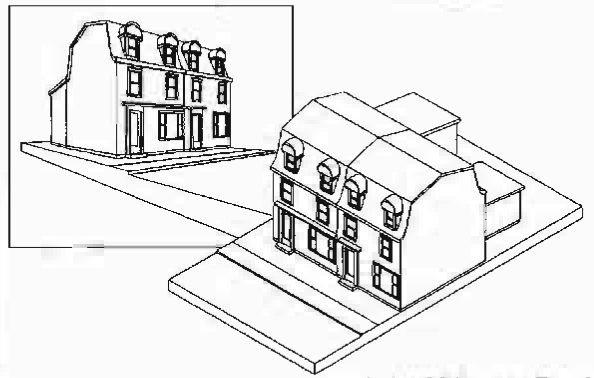
House type : 3 storey with mansard roof

A	Foundation height ranges = 0.2 - 2.02m
	Storey height
B	First storey ranges = 2.6 - 3.2m
C	Second storey ranges = 2.4 - 2.9m
D	Third storey ranges = 2.4 - 2.9m
E	Roof height ranges = 0.93 - 2.0m
F	Centre of street to house ranges = 4.38 - 9.1m
G	Depth of house ranges = 8.0 - 9.5m
H	Rear lot line from house ranges = 7.04 - 18.65m
	Area of typical house ranges = 118.85 - 218.91sq.m

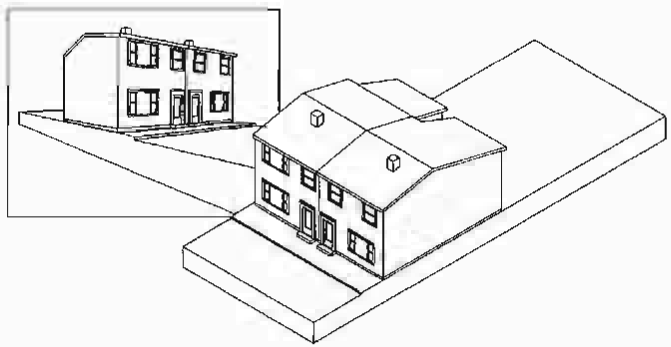
House type : 2 storey with gable roof

I	Foundation height ranges = 0.2 - 1.4m
	Storey height
J	First storey ranges = 2.4 - 3.3m
K	Second storey ranges = 2.4 - 3.0m
L	Roof height ranges = 0.6 - 2.8m
M	Centre of street to house ranges = 6.9 - 10.0m
N	Depth of house ranges = 7.5 - 15.0m
O	Rear lot line from house ranges = 6.0 - 21.88m
	Area of typical house ranges = 60.91 - 276.1sq.m

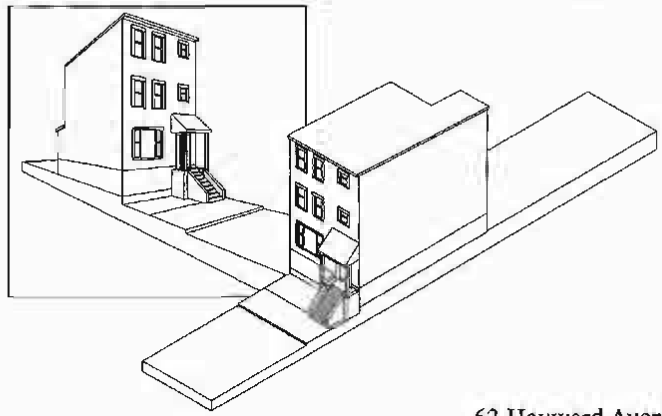
SECTIONAL DATA



98 & 100 Barnes Road



104 & 106 Barnes Road

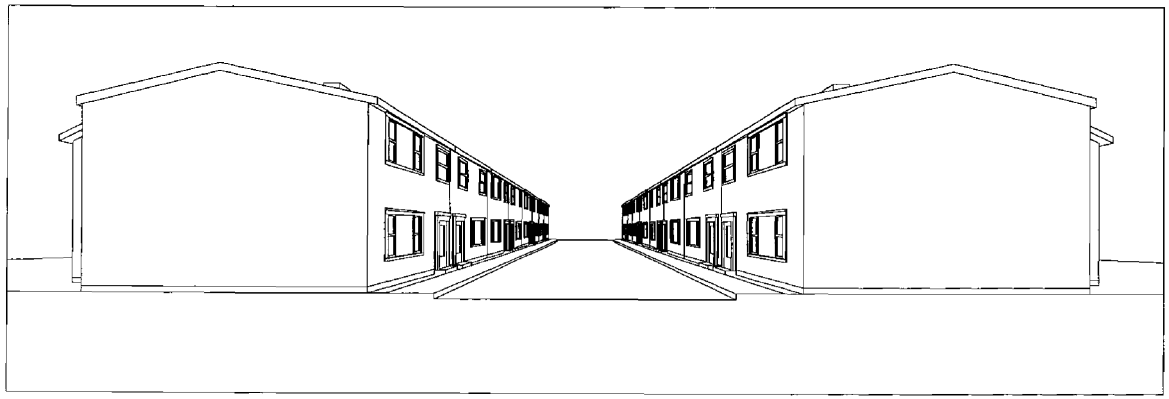


63 Hayward Avenue

TYPICAL HOUSES

5 GRAPHIC SUMMARY : GEORGESTOWN

STREET VIEWS



Hypothetical sectional perspective generated by the duplication of 104-106 Barnes Road showing the space of the street

Hypothetical sectional perspective generated by the duplication of 90-92 Barnes Road showing the space of the street

6 GRAPHIC SUMMARY : GEORGESTOWN

STREET VIEWS

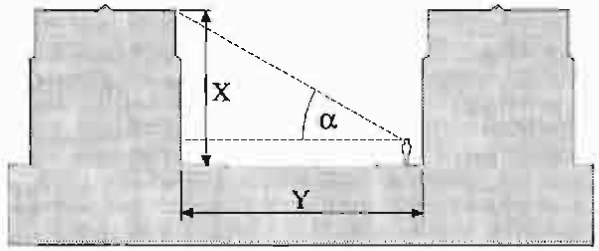
Hypothetical sectional perspective generated by the duplication of 98-100 Barnes Road showing the space of the street

Hypothetical sectional perspective generated by the duplication of 63 Hayward Avenue showing the space of the street

7 GRAPHIC SUMMARY : GEORGESTOWN

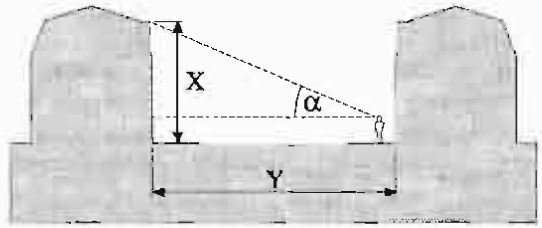
STREET SECTIONS

Hypothetical section based on 90-92 Barnes Road



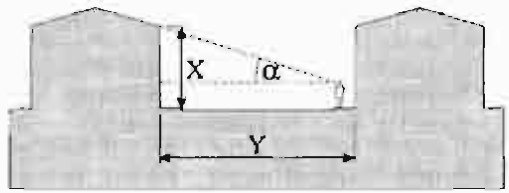
X = 10.26m
Y = 16.10m
Y/X = 1.57
α = 29.6°

Hypothetical section based on 98-100 Barnes Road



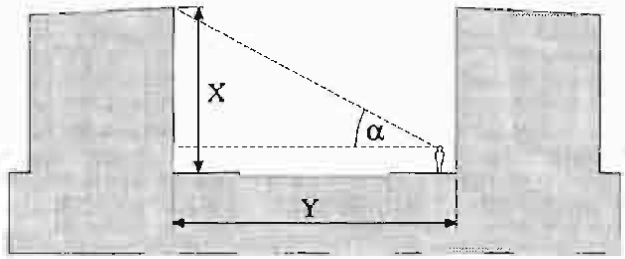
X = 8.00m
Y = 16.18m
Y/X = 2.02
α = 22.8°

Hypothetical section based on 104-106 Barnes Road



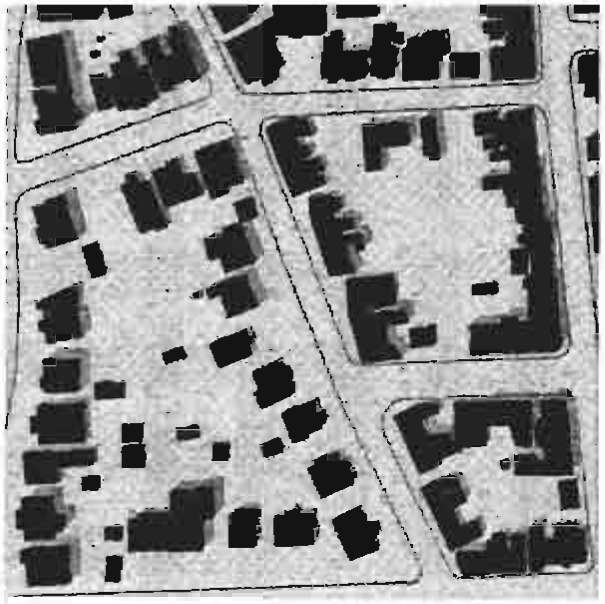
X = 5.42m
Y = 13.04m
Y/X = 2.41
α = 17.6°

Hypothetical section based on 63 Hayward Avenue

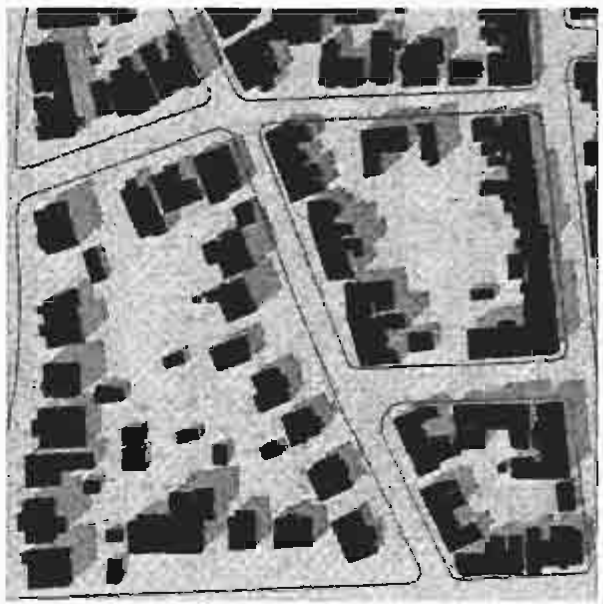


X = 10.96m
Y = 18.76m
Y/X = 1.71
α = 28.0°

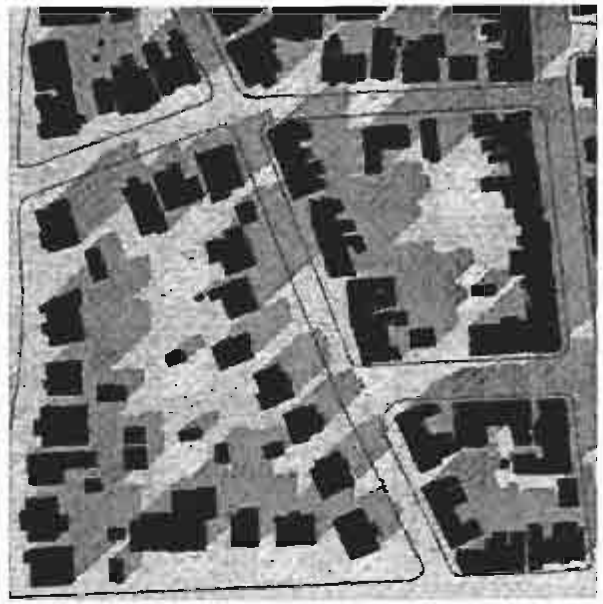
8 | **GRAPHIC SUMMARY : GEORGESTOWN** | **SOLAR STUDIES**



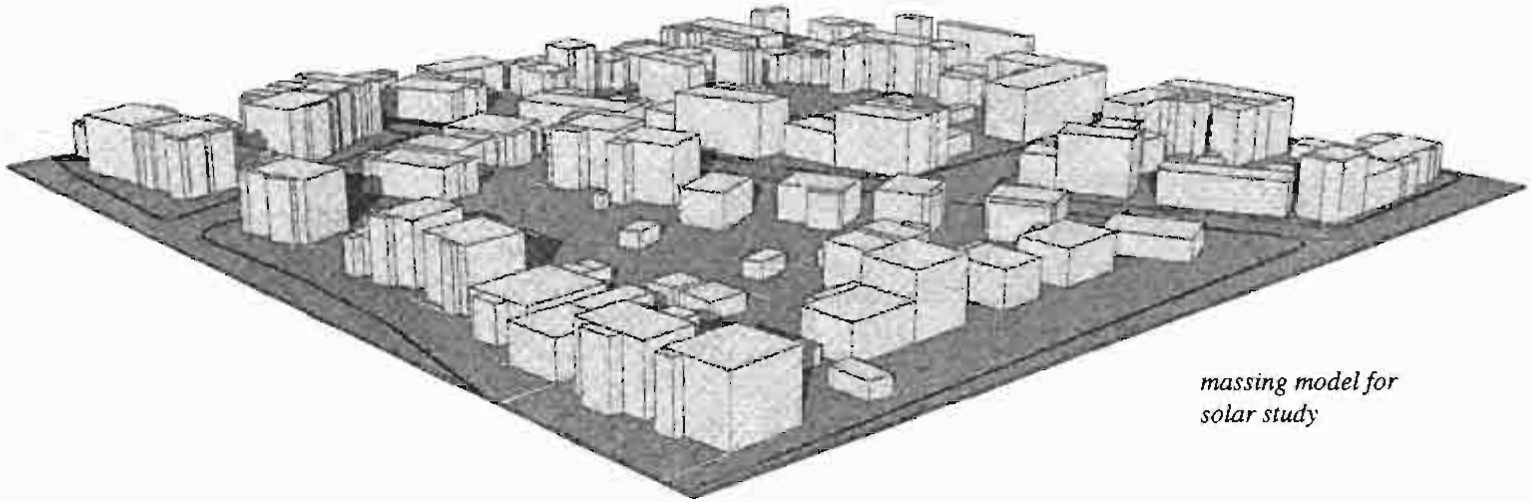
June 21, 12:00 p.m.



September 21, 12:00 p.m.



December 21, 12:00 p.m.



massing model for solar study

Circular Road East

1949 air photo of the Circular Road (east) residential neighbourhood

This part of St. John's consists mainly of detached houses in the Bannerman Park / Government House vicinity of the East End of St. John's. Most of the houses in this area are large and elaborately detailed, and many were designed by architects for wealthy residents. One part of this area along Circular Road has been included for analysis in this report to provide examples of the largest homes in St. John's. As in the other older residential areas documented in this report, the house form, materials, paint colours, lot proportions, setbacks, landscape features, and tree planting all contributed to a consistent image for the neighbourhood. Most of the houses on this street have retained their original detailing and materials. The houses on this street have off-street parking in driveways. Today, most of the houses on this street do not have garages or accessory buildings. The rear yards are typically deeper than the front yards. Many of the houses between Rennie's Mill Road and King's Bridge Road have similar exterior features such as bay windows and mansard roofs, and these give the houses a consistent architectural character.

Detached house on Circular Road

Duplex houses on Circular Road

Gate to "Sunnyside," Circular Road

"Sunnyside"

Large outbuilding on the "Sunnyside" premises

Gate house on the "Sunnyside" premises

Detached house on King's Bridge Road near Circular Road

Outbuilding behind the King's Bridge Road house

"Government House" premises gatehouse

1 GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA

EXISTING CONDITIONS

Site analysis for the Circular Road (east) area. This late 19th-century suburb located behind the Government House grounds contains some of the largest houses in St. John's. Most of the houses in this area are detached.

Density: 8 dwelling units per hectare
Street area: 2298.5 sq. m. (21.4% of total area)
Sidewalk area: 452.25 sq. m. (4.2% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	**3.59**

0 scale in metres 50

ONE STOREY

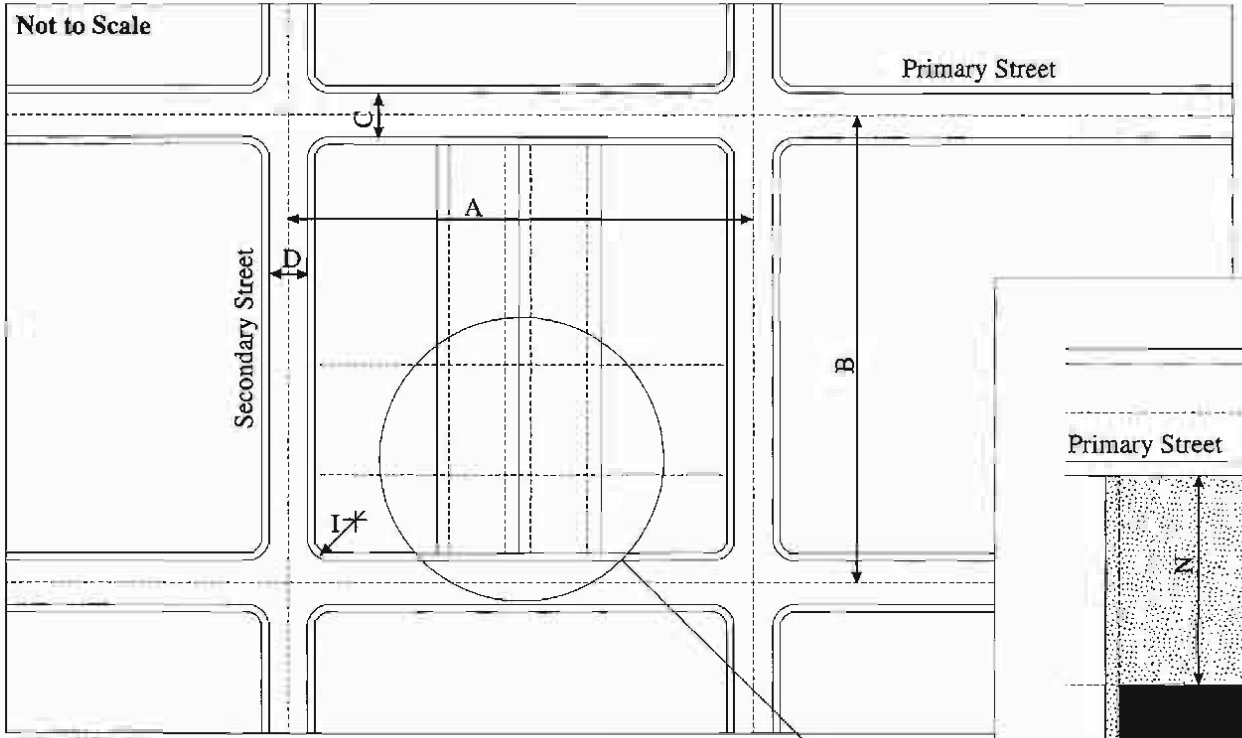
TWO STOREY

THREE STOREY

N

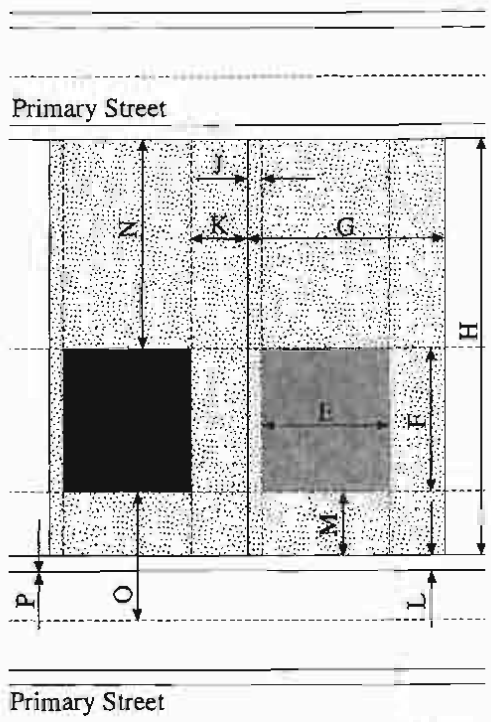
2 GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA

STREETS AND PLOTS



Plot area = 971.25 sq. metres
Plot ratio (length/frontage)= 1.86
Block area = 10763.0 sq. metres
Building area = 206.7 sq. metres
Building area % of plot area= 23.0

PLOTS



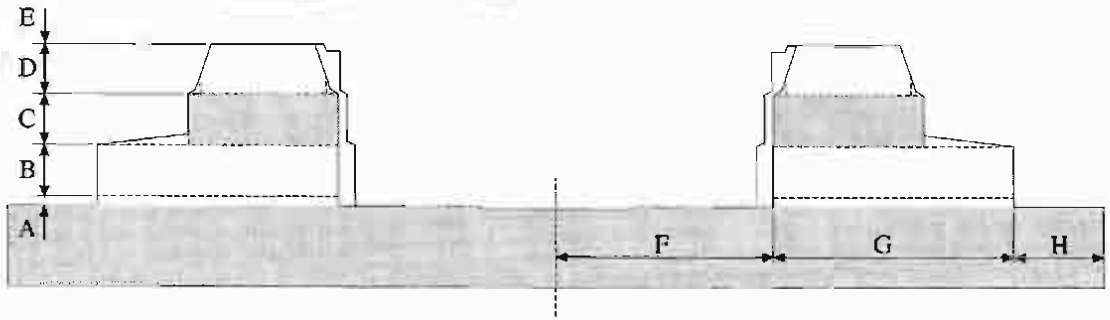
Scale = 1 : 750

STREETS

A	Block length = 169.5		Side yard setbacks
B	Block width = 63.5	J	Left = 1.4
C	Primary street width = 9.75	K	Right = 5.6
D	Secondary street width = 4.25		Average = 3.5
E	Building width= 12.8		Sidewalk width
F	Building depth = 14.35		Asphalt = n/a
G	Plot width = 19.8	L	Cement = 1.5
H	Plot depth = 41.7	M	Front setback= 6.35
I	Street corner radii	N	Rear lot line from house = 21.0
	Minimum = 8.0	O	Building to center of street = 13.35
	Maximum = 22.5	P	Curb to sidewalk = 0.5
	Average = 15.0		

3 GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA

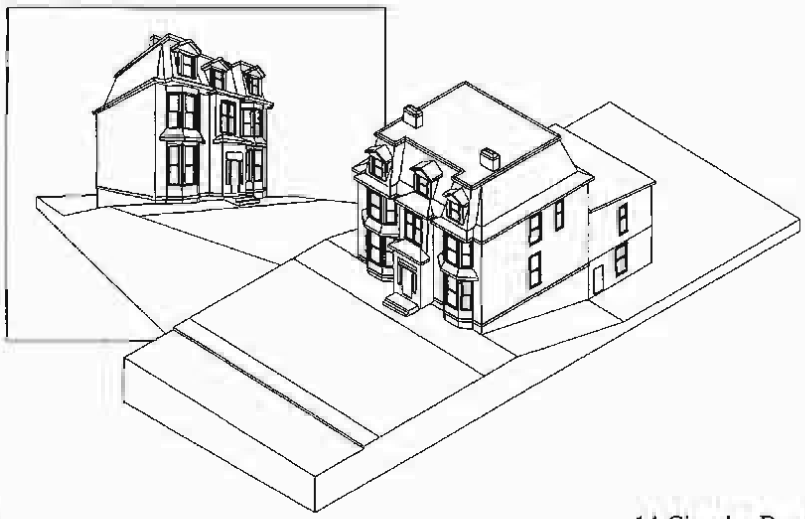
HOUSES



House type : typical 3 storey with gambrel or mansard roof

A	Foundation height ranges = 0.6 - 2.33m
	Storey height
B	First storey ranges = 3.1 - 3.6m
C	Second storey ranges = 3.1 - 3.4m
D	Third storey ranges = 2.85 - 3.3m
E	Roof height ranges = 0.0 - 1.14m
F	Centre of street to house ranges = 14.37 - 25.33m
G	Depth of house ranges = 9.02 - 16.02m
H	Rear lot line from house ranges = 5.75 - 18.65m
	Area of typical house ranges = 311.27 - 578.82sq.m

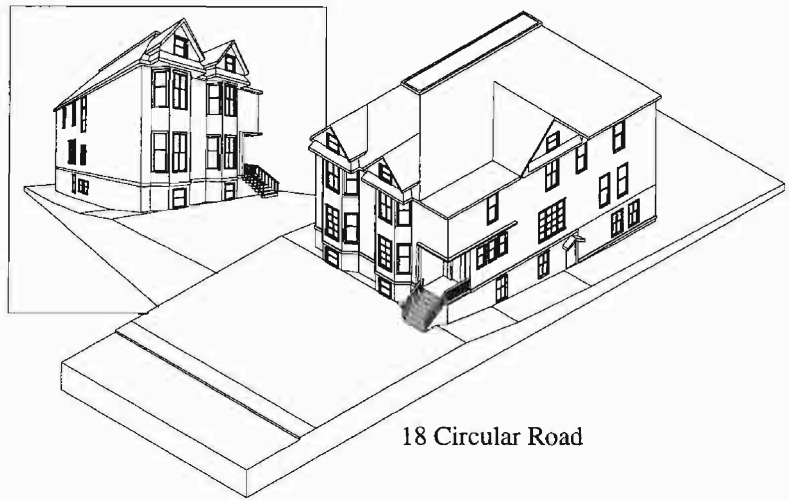
SECTIONAL DATA



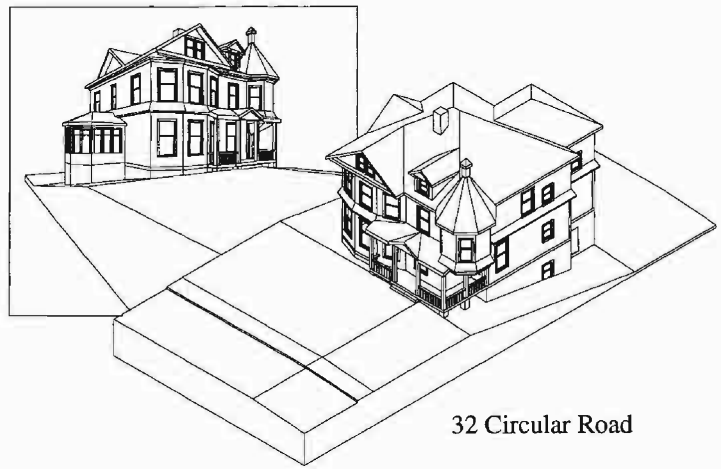
14 Circular Road

TYPICAL HOUSES

4	GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA	HOUSES



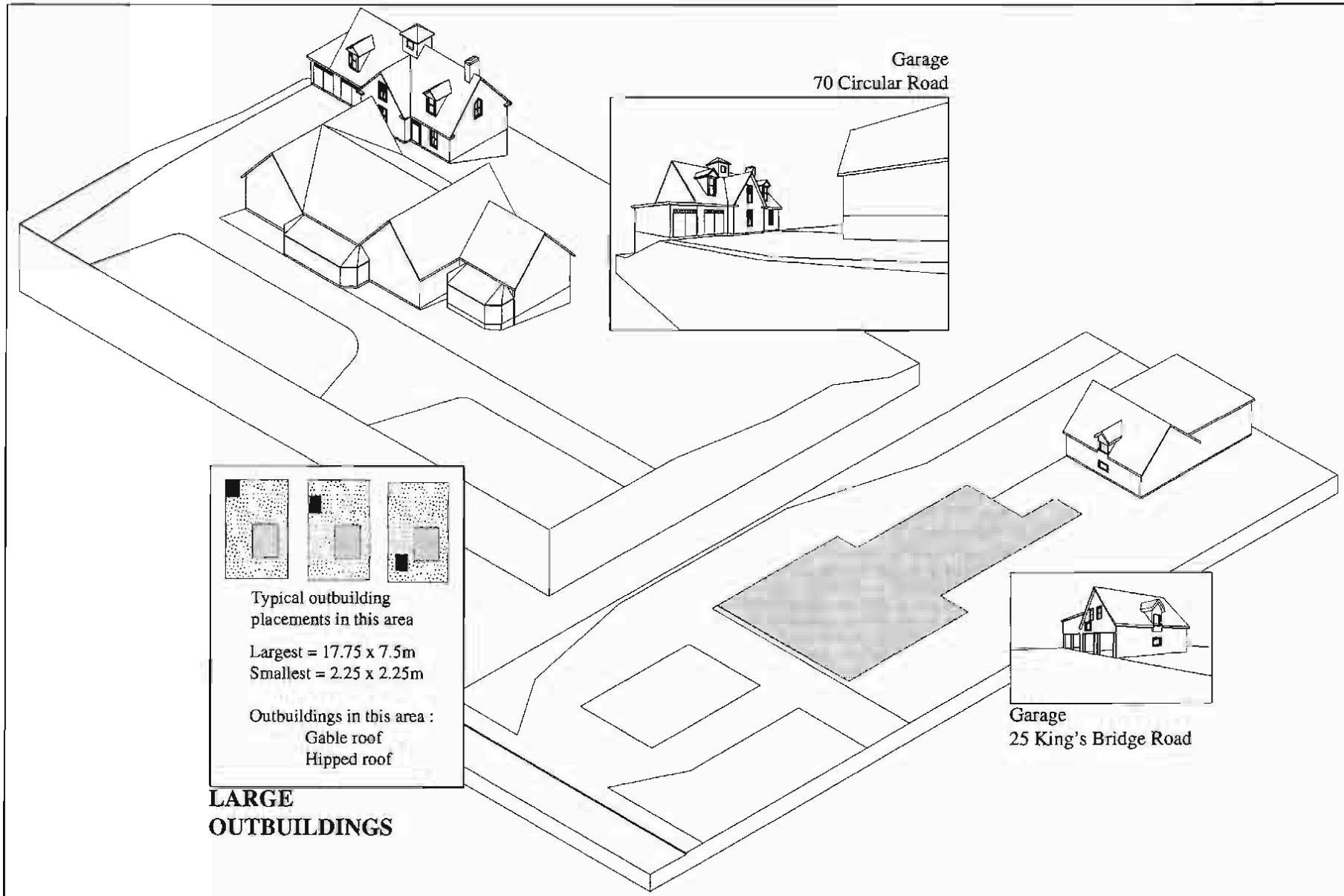
18 Circular Road



32 Circular Road

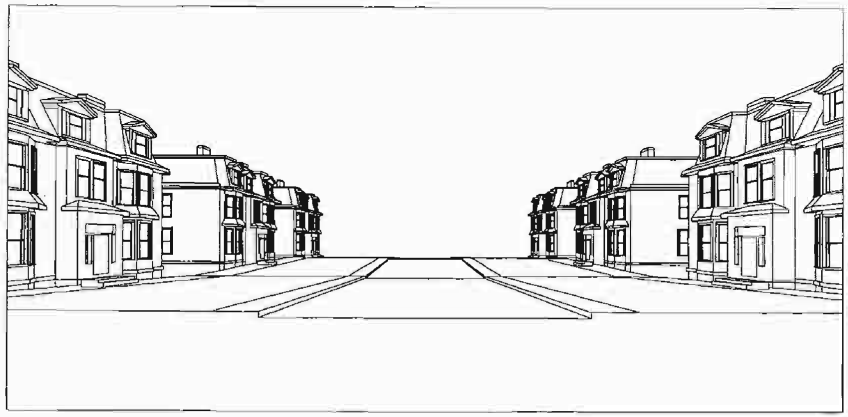
TYPICAL HOUSES

5	GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA	HOUSES

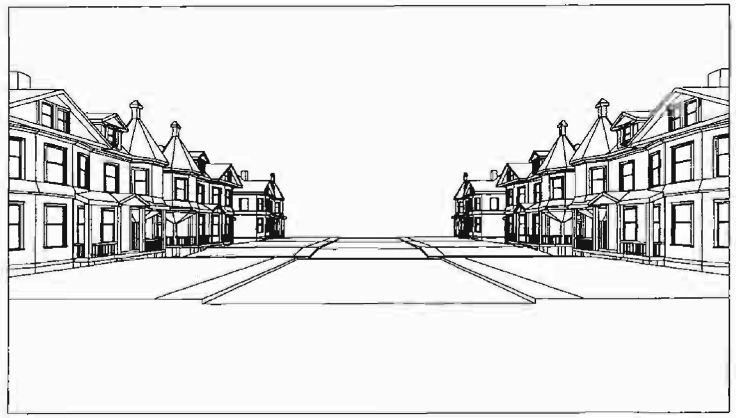


6 GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA

STREET VIEWS



Hypothetical sectional perspective generated by the duplication of 14 Circular Road showing the space of the street

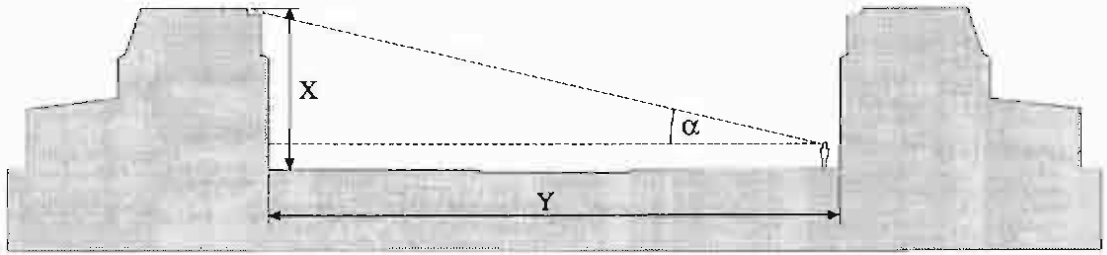


Hypothetical sectional perspective generated by the duplication of 32 Circular Road showing the space of the street

7 GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA

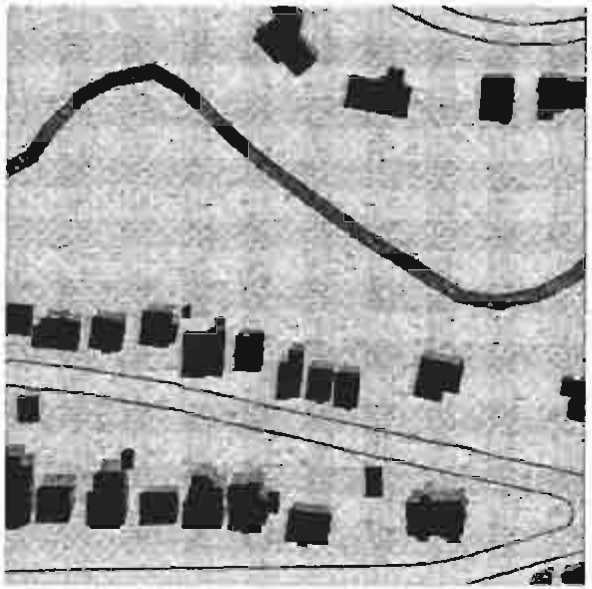
STREET SECTIONS

Hypothetical section based on 14 Circular Road

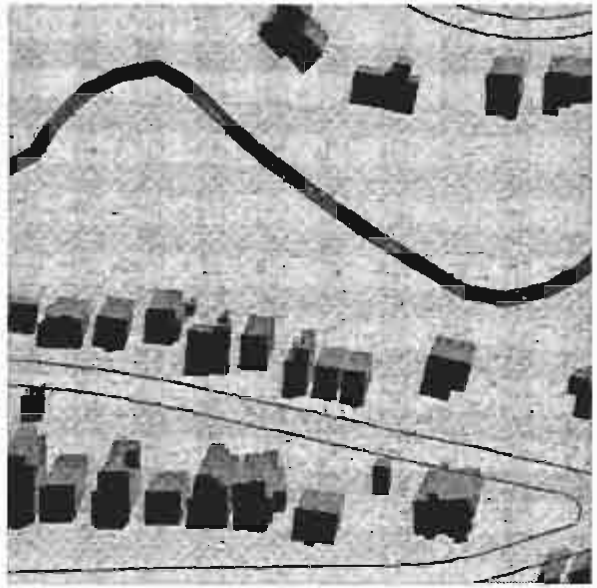


X = 10.70m
Y = 38.06m
Y/X = 3.56
α = 13.2°

8 **GRAPHIC SUMMARY : CIRCULAR ROAD EAST AREA** **SOLAR STUDIES**

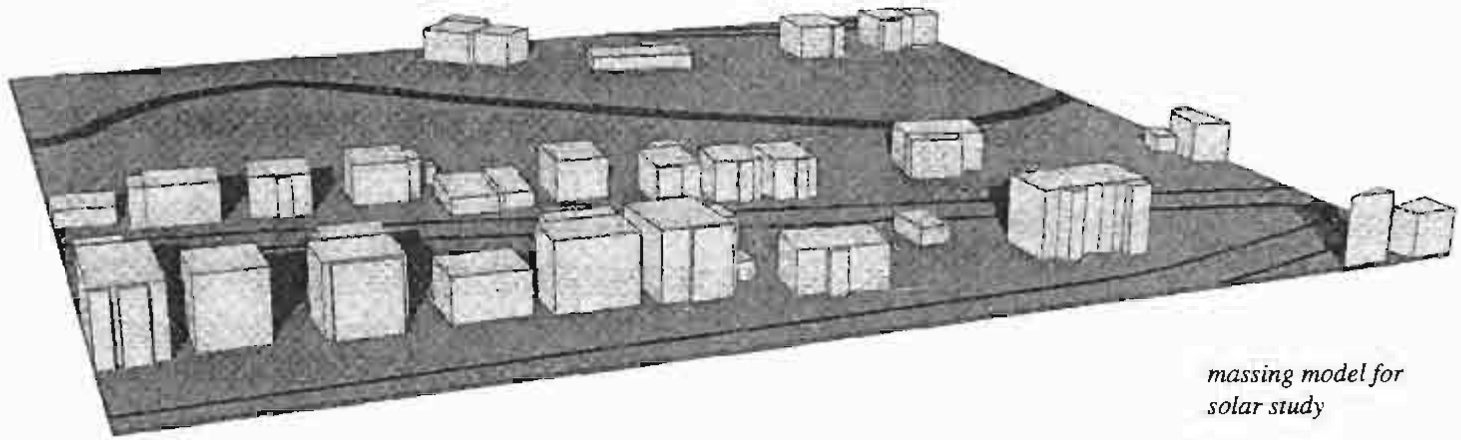


June 21, 12:00 p.m.



September 21, 12:00 p.m.

December 21, 12:00 p.m.



massing model for solar study

Rabbittown

1949 air photos of the Rabbittown residential neighbourhood

5

Located between Merrymeeting Road, Freshwater Road, Mayor Avenue, and Empire Avenue (the "Old Railway Line"), this small, Post-World War I subdivision developed on a grid pattern on the side of a west-facing hillside. The layout of the streets runs opposite to the logic of the street layout in the older residential area of the city next to the harbour as most of the shortest block lengths are found along the streets running parallel to the topographic contours of the hillside. The streets and houses were not developed all at the same time. Many World War I veterans built houses there, and the veterans asked that the streets be named after World War I battles - not after individuals. Most of the houses were owner-built.[17]

Small bungalow on Calver Avenue

Bungalow with small, fenced-in front yard

Paling fences with ornamental gates

Ornamental concrete gate posts

House with detached garage on Mayor Avenue

People started moving up there... it was all barrens with many rabbits. They built up houses on their own... they wanted to be on their own. The area was outside the city boundary when it was first developed. People settled up there. These [street] names came in after the war around 1920. Very low income residents, but not all of them. Rabbittown was a name they [the residents] didn't like. They seem to have developed a sense of community up there. They went there because living was cheaper, and they would walk all the way down [to their places of employment].[18]

House on Mayor Avenue

Block lengths are short compared to other residential areas, with primary street block lengths averaging 116 metres and secondary street block lengths averaging 77 metres. Various house types have been constructed in this area. Most are one-storey bungalows, but there are one-and-a-half, two, and three-storey houses. Many of the yards are fenced, and the streets have concrete sidewalks. Most of the lots have space for off-street parking for at least one car. There are occasional outbuildings (garages and storage buildings). The zoning for this area permits some businesses and small corner stores. When viewed in plan, the layout of the houses appears to define courtyards within the blocks but the sense of enclosure of these courtyards is not as strong as the courtyards in the downtown residential area. This is due to the presence of detached houses rather than row houses, to the low height of the houses, and to variations in the placement of the houses in relation to the street.

[17] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.
[18] Jack White, interview with the author, March 5, 1994, St. John's, Newfoundland.

Corner stores and houses with small additions for stores

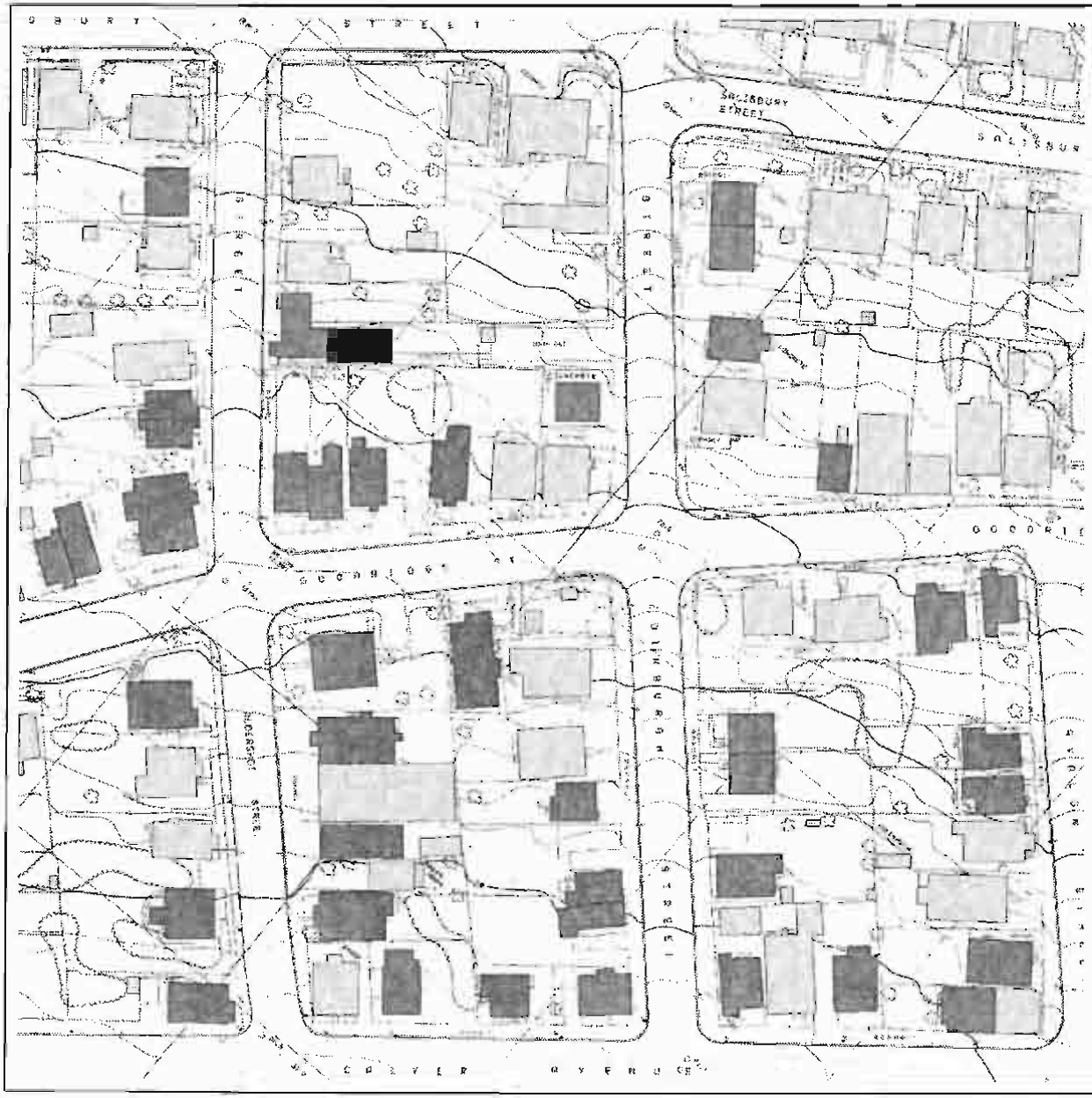
House with a small workshop at the back of the lot

Corner house on Mayor Avenue

Bungalow on Mayor Avenue

1 GRAPHIC SUMMARY : RABBITTOWN

EXISTING CONDITIONS



Site analysis for the Rabbittown residential area. This hillside area was developed after the First World War with streets arranged on a grid pattern (short block lengths). The area contains many small corner stores.

Density: 26 dwelling units per hectare
Street area: 1552.7 sq. m. (17.7% of total area)
Sidewalk area: 1126 sq. m. (12.5% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	**1.43**
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

0 scale in metres 50

ONE STOREY

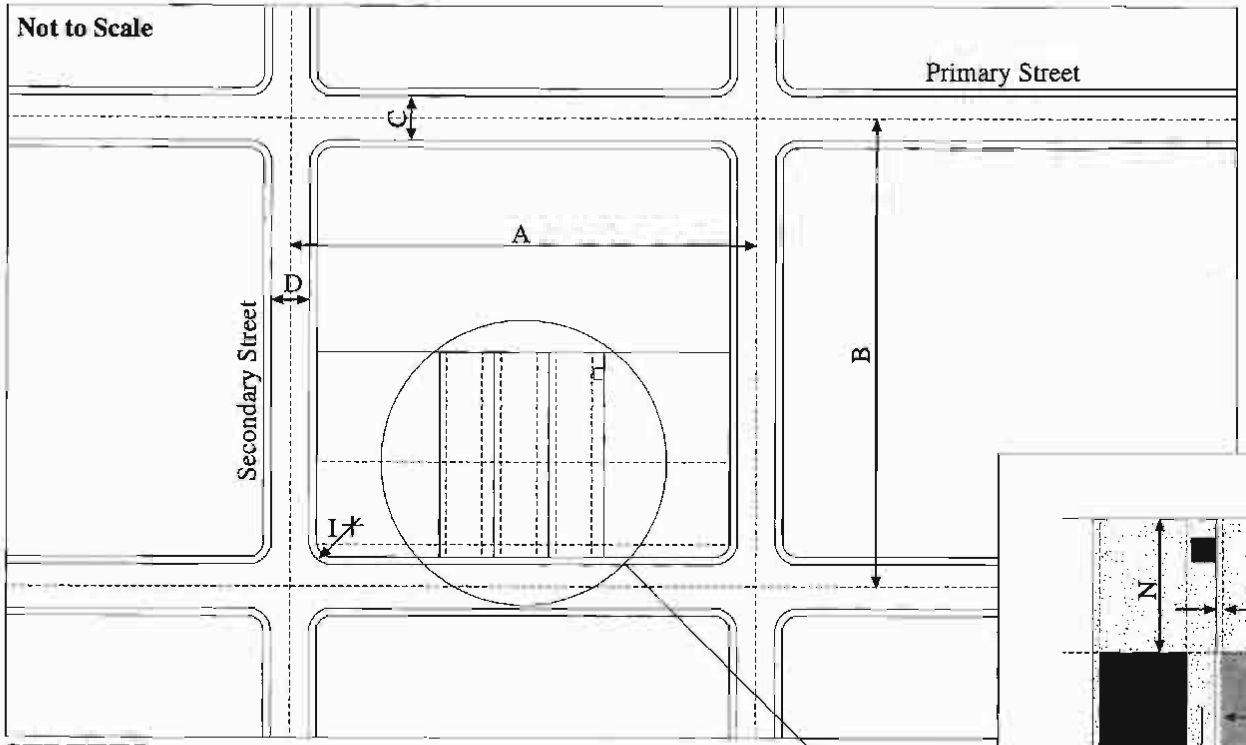
TWO STOREY

THREE STOREY

N

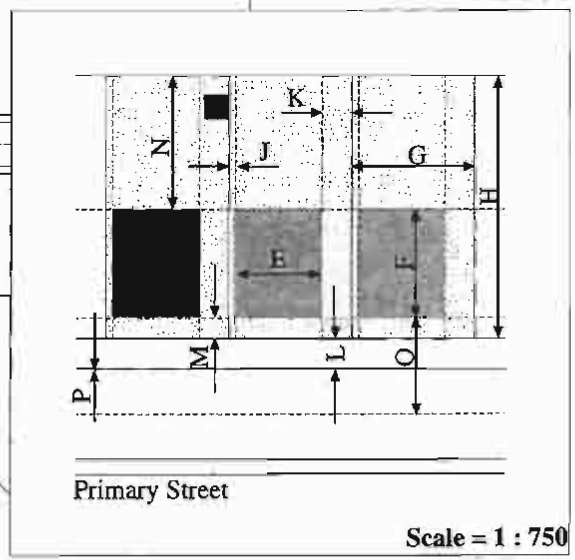
2 GRAPHIC SUMMARY : RABBITTOWN

STREETS AND PLOTS



Plot area = 318.6 sq. metres
Plot ratio (length/frontage)= 2.35
Block area = 8989.75 sq. metres
Building area = 81.9 sq. metres
Building area % of plot area= 26.76

PLOTS

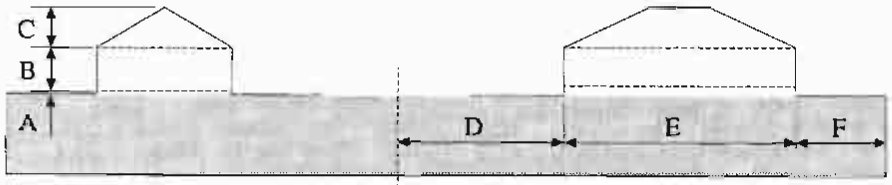


STREETS

A	Block length = 116.75	J	Side yard setbacks Left = 0.65
B	Block width = 77.0	K	Right = 3.0 Average = 1.8
C	Primary street width = 9.25		Sidewalk width
D	Secondary street width = 9.0		Asphalt = 3.0
E	Building width= 8.6		Cement = 1.5
F	Building depth = 10.9	L	Front setback= 2.1
G	Plot width = 12.25	M	Rear lot line from house = 13.35
H	Plot depth = 26.35	N	Building to center of strect = 9.15
I	Street corner radii Minimum = 6.0 Maximum = 15.0 Average = 10.5	O P	Curb to sidewalk = 0.0

3 GRAPHIC SUMMARY : RABBITTOWN

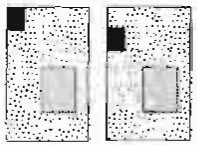
HOUSES



House type : hipped roof bungalow

A	Foundation height ranges = 0.2 - 0.6m
	Storey height
B	First storey ranges= 2.6 - 2.9m
C	Roof height ranges = 1.75 - 2.67m
D	Centre of street to house ranges = 8,48 - 11.06m
E	Depth of house ranges = 9.6 - 15.31
F	Rear lot line from house ranges = 4.68 - 10.08m
	Area of house ranges = 65.8 - 149.4sq.m

SECTIONAL DATA

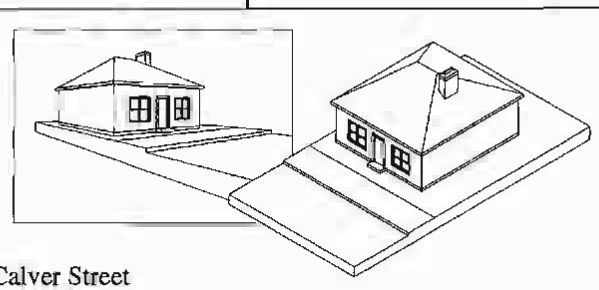


Typical outbuilding placements in this area

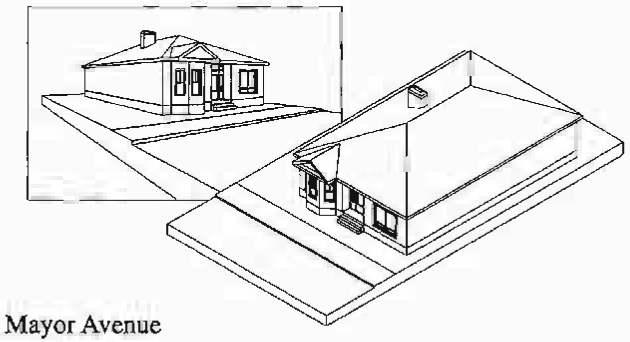
Largest = 3.82 x 1.94m
Smallest = 1.03 x 0.69m

Outbuildings in this area :
- Gable roof
- Hipped roof
- Flat roof

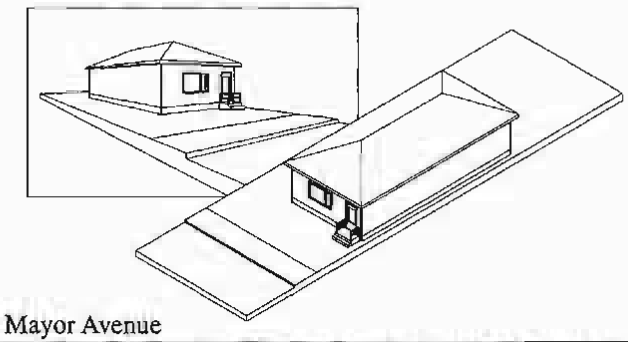
OUTBUILDINGS



58 Calver Street



70 Mayor Avenue

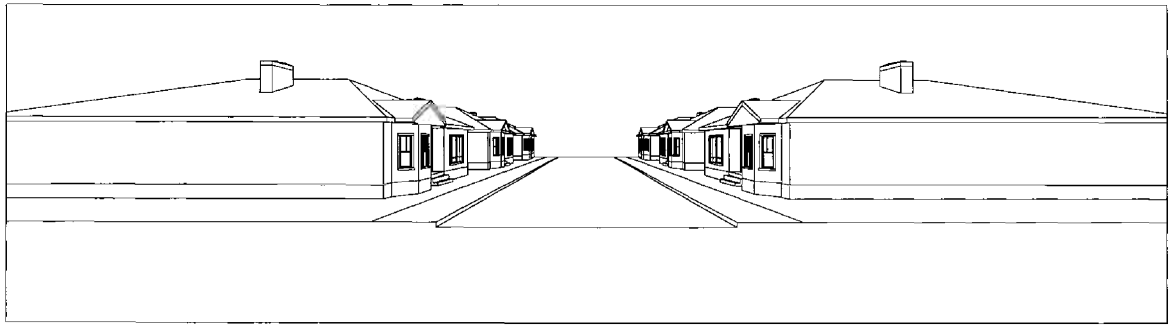


96 Mayor Avenue

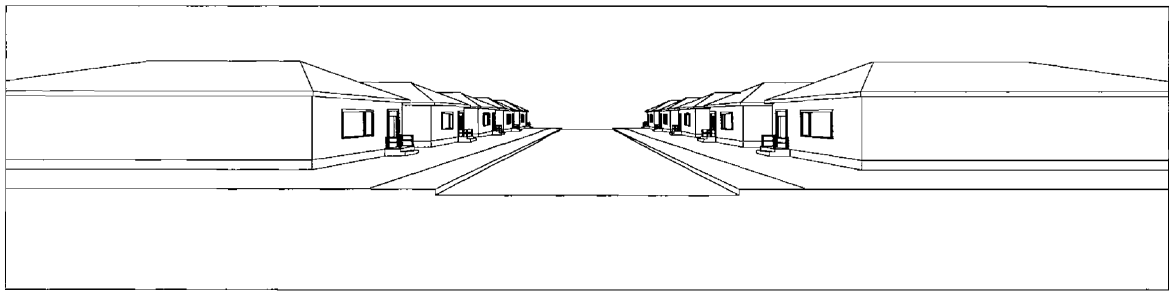
TYPICAL HOUSES

4 GRAPHIC SUMMARY : RABBITTOWN

STREET VIEWS



Hypothetical sectional perspective generated by the duplication of 70 Mayor Avenue showing the space of the street

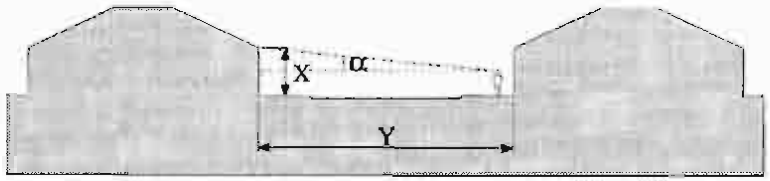


Hypothetical sectional perspective generated by the duplication of 96 Mayor Avenue showing the space of the street

5 GRAPHIC SUMMARY : RABBITTOWN

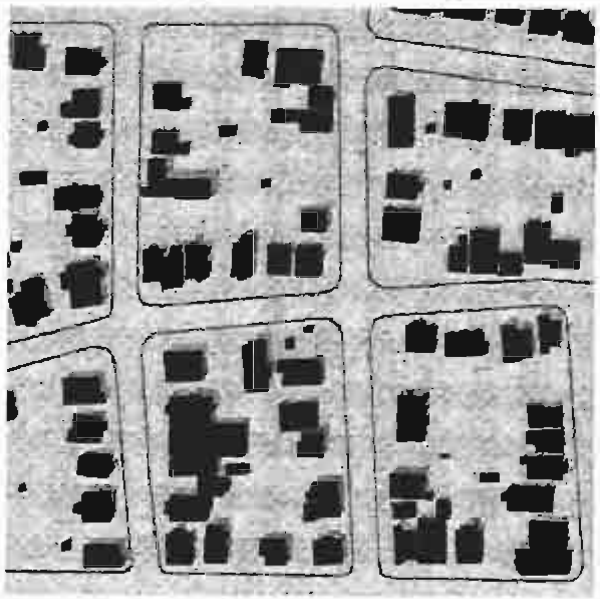
STREET SECTIONS

Hypothetical section based on 70 Mayor Avenue

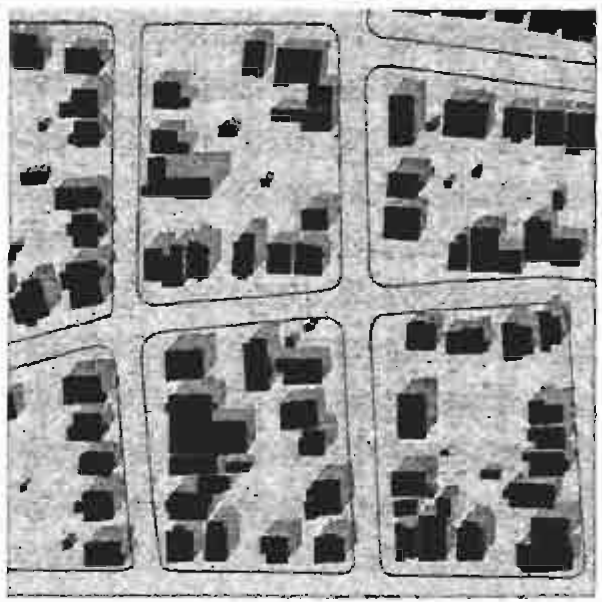


X = 3.20m
Y = 16.96m
Y/X = 5.30
α = 5.5°

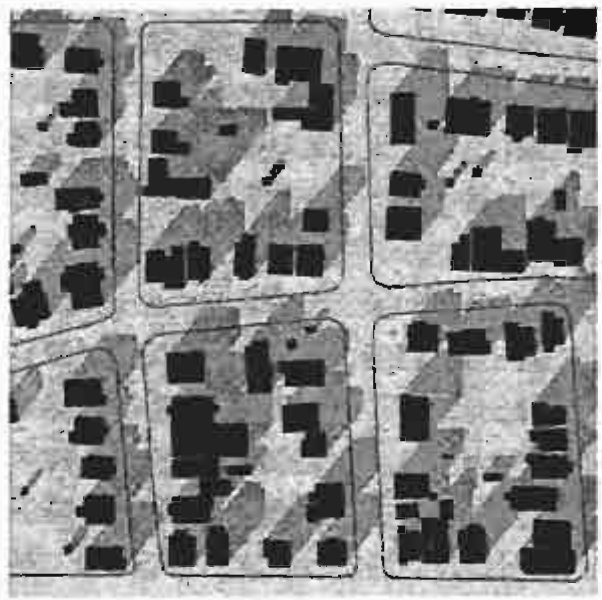
6 **GRAPHIC SUMMARY : RABBITTOWN** | **SOLAR STUDIES**



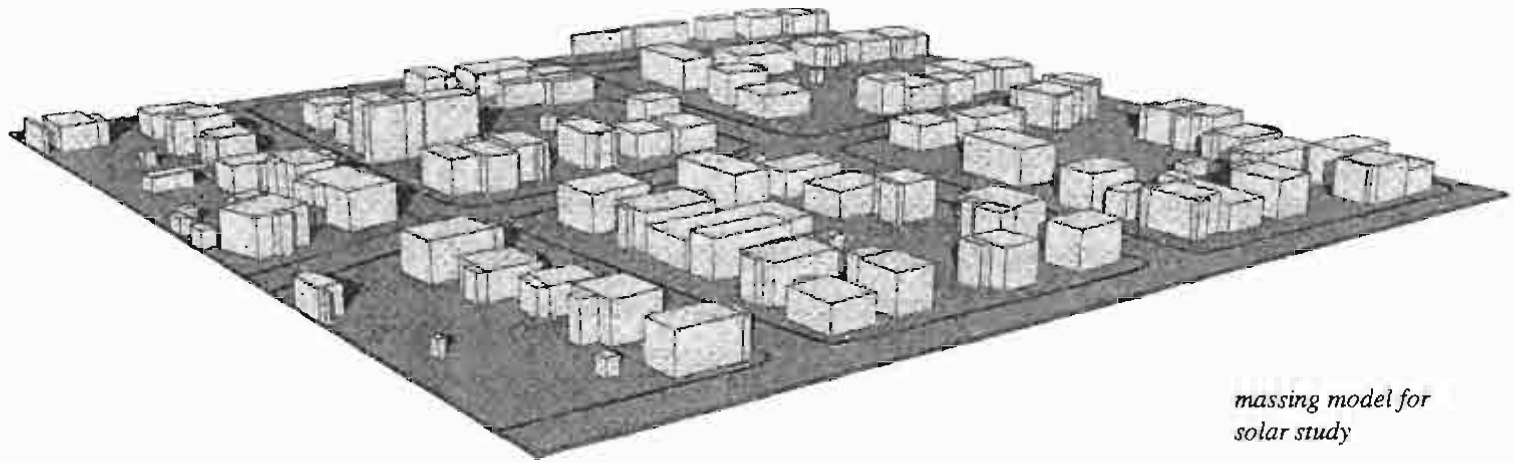
June 21, 12:00 p.m.



September 21, 12:00 p.m.

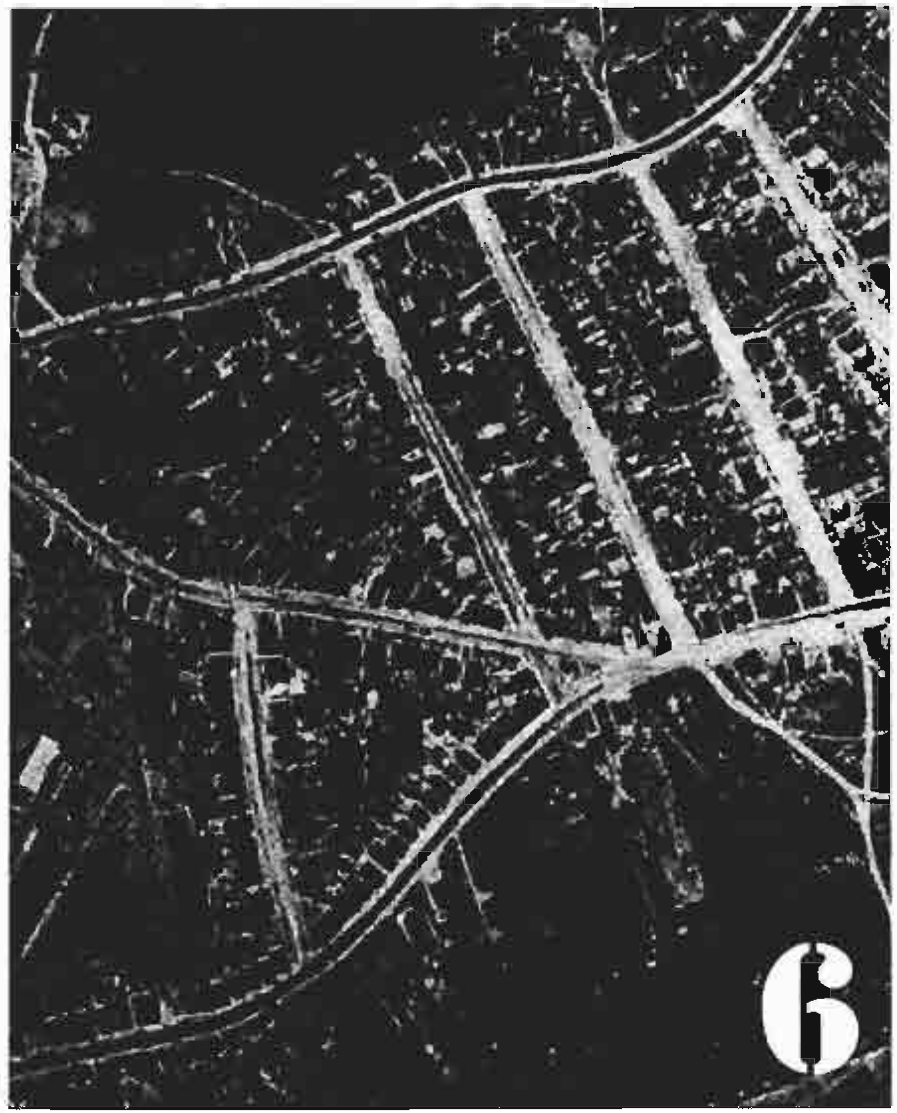


December 21, 12:00 p.m.



massing model for solar study

Golf Avenue



1949 air photo of the Golf Avenue (West End) residential neighbourhood

This part of the city is an older, West End residential suburb. The area was first developed before the Second World War, and consists mostly of detached two-storey houses with "craftsman" style detailing with a few one and three storey houses. Many houses in the area were constructed in the late 1940's when there was great demand for building lots. Many of the houses have front porches, and were built with the same setbacks from the street line (the front yard setbacks allow for a small ornamental area for planting, and this area is usually fenced-in). This, in combination with similarities in the design of fences, gates, and retaining walls along the street, produced a fairly uniform appearance - though not without variety. All the streets have concrete sidewalks. Front yards are less deep than back yards, and side yards are minimal. Parking is either on-street or off-street in small driveways that usually lead to freestanding garages at the back of the lots. In addition to the garages, small storage buildings have been constructed on some of the lots. Most of the yards are fenced (wood paling fences). The zoning permits convenience stores in this area.

Houses on Raleigh Street: many of the houses on this street have small front yards enclosed by paling fences

Corner residential/commercial building on Golf Avenue. The bay window is compressed to fit an unusual side-wall condition

House on Golf Avenue used as a pre-school (Children's Centre)

Houses on Raleigh Street

1 GRAPHIC SUMMARY : GOLF AVENUE AREA

EXISTING CONDITIONS

Site analysis for the Golf Avenue residential area (West End). Most of the houses in this area have small fenced-in front yards, and many have small detached garages located at the back of the yard.

Density: 35 dwelling units per hectare
Street area: 3901.0 sq. m. (15.4% of total area)
Sidewalk area: 992.0 sq. m. (3.9% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	**1.63**
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

0 scale in metres 50

ONE STOREY

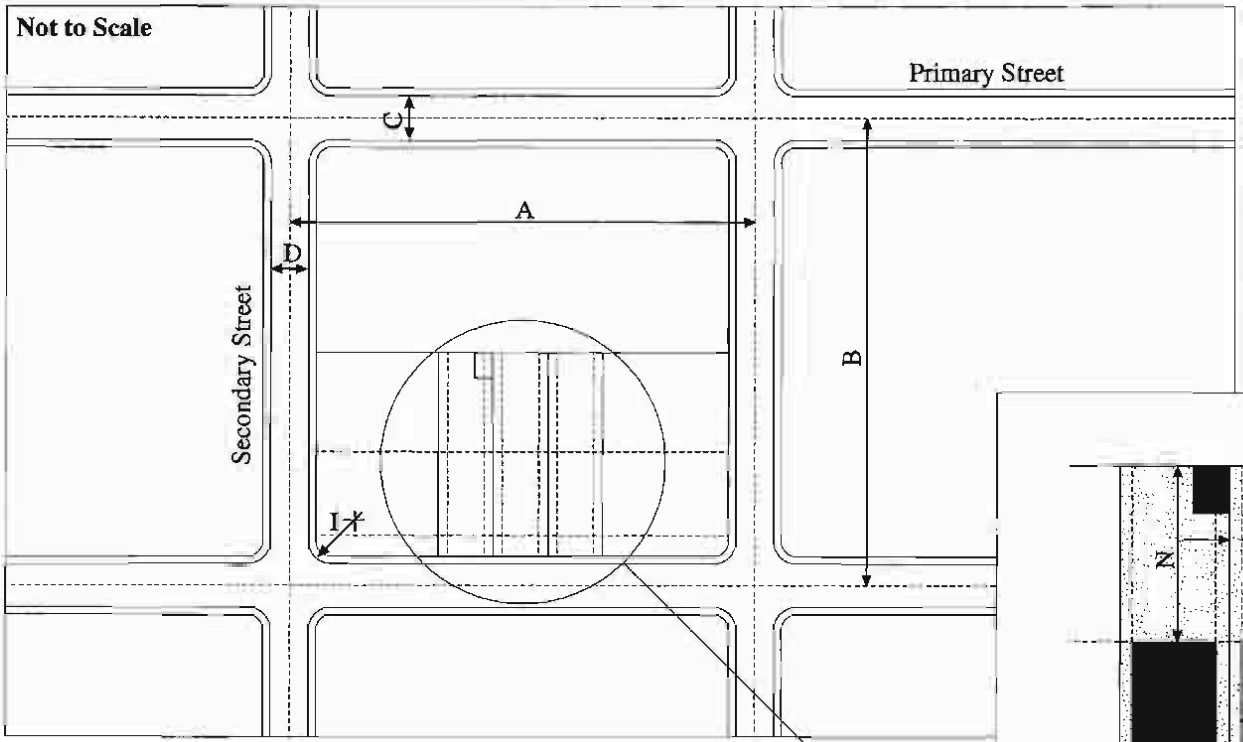
TWO STOREY

THREE STOREY

N

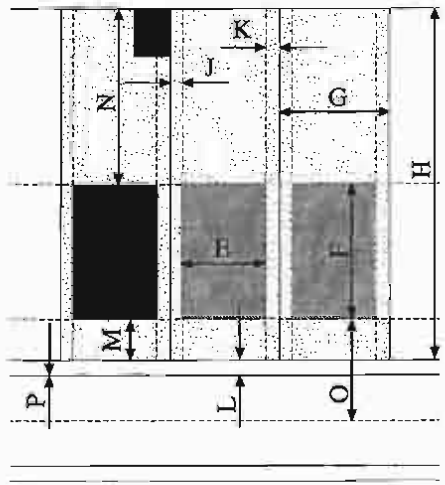
2 GRAPHIC SUMMARY : GOLF AVENUE AREA

STREETS AND PLOTS



Plot area = 391.4 sq. metres
Plot ratio (length/frontage)= 3.24
Block area = 25261.38 sq. metres
Building area = 96.5 sq. metres
Building area % of plot area= 24.7

PLOTS



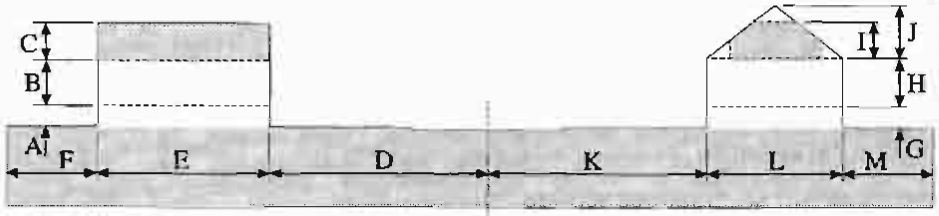
Scale = 1 : 750

STREETS

A	Block length = 282.25		Side yard setbacks
B	Block width = 89.5	J	Left = 1.2
C	Primary street width = 8.75	K	Right = 1.4
D	Seeondary street width = 9.0		Average = 1.3
E	Building width= 8.35		Sidewalk width
F	Building depth = 13.5		Asphalt = n/a
G	Plot width = 10.95	L	Cement = 1.63
H	Plot depth = 35.25	M	Front setback= 4.1
I	Street corner radii	N	Rear lot line from house = 17.65
	Minimum = 3.0	O	Building to center of street = 10.7
	Maximum = 15.0	P	Curb to sidewalk = 0.5
	Average = 10.4		

3 GRAPHIC SUMMARY : GOLF AVENUE AREA

HOUSES



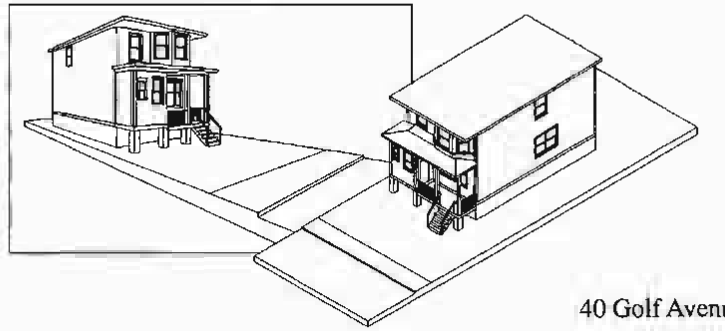
House type : typical 2 storey with flat roof

A	Foundation height = 1.4m
	Storey height
B	First storey = 3.0m
C	Second storey = 2.5m
	Roof height = 0.0m
D	Centre of street to house = 13.14m
E	Depth of house = 11.38m
F	Rear lot line from house = 6.56m
	Area of typical house = 139.86sq.m

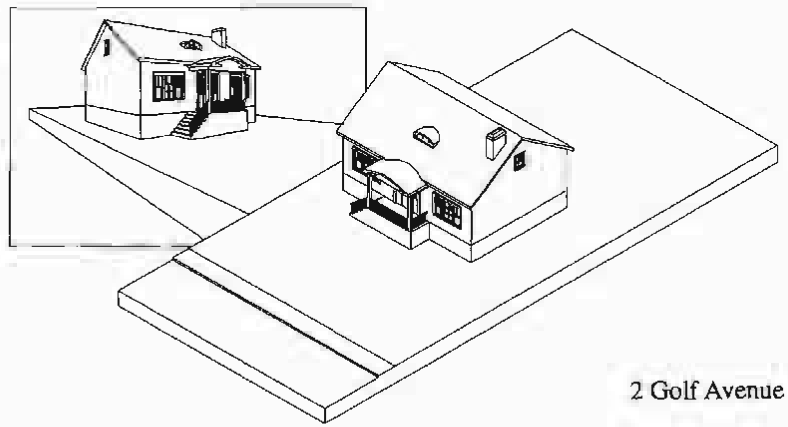
House type : typical 1 1/2 storey with gable roof

G	Foundation height = 1.4m
	Storey height
H	First storey = 3.2m
I	Second storey = 2.4m
J	Roof height = 3.52m
K	Centre of street to house = 18.56m
L	Depth of house = 9.01m
M	Rear lot line from house = 14.83m
	Area of typical house = 170.95sq.m

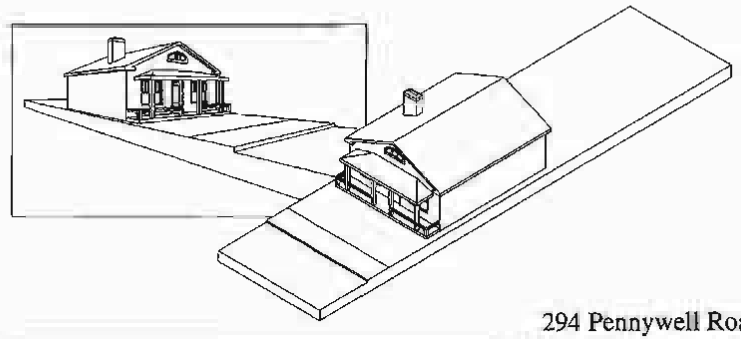
SECTIONAL DATA



40 Golf Avenue



2 Golf Avenue

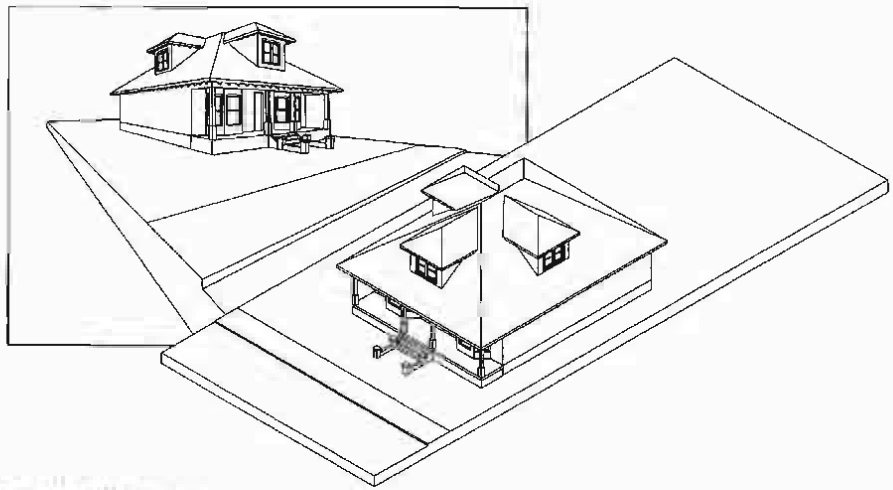


294 Pennywell Road

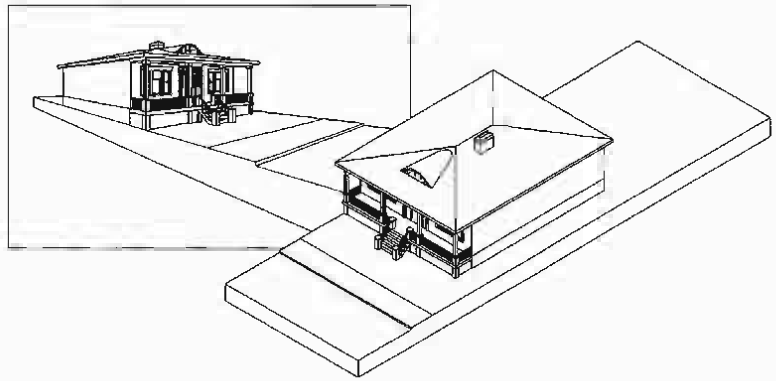
TYPICAL HOUSES

4 GRAPHIC SUMMARY : GOLF AVENUE AREA

HOUSES

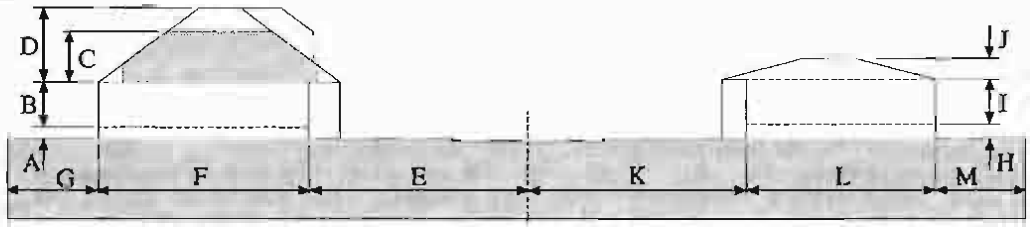


134 Campbell Avenue



83 Golf Avenue

TYPICAL HOUSES



House type : 1 1/2 storey with hipped roof

A	Foundation height ranges = 0.2 - 0.8m
	Storey height
B	First storey ranges = 2.8 - 3.0m
C	Second storey ranges = 2.5 - 3.4m
D	Roof height ranges = 3.9 - 5.29m
E	Centre of street to house ranges = 10.19 - 18.54m
F	Depth of house ranges = 9.5 - 14.0m
G	Rear lot line from house ranges = 15.24 - 20.05m
	Area of typical house ranges = 152.94 - 307.14sq.m

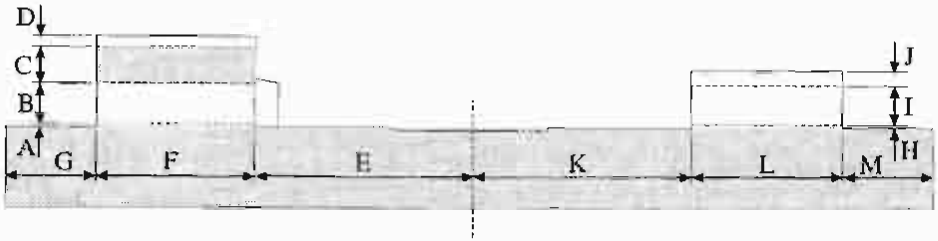
House type : 1 storey with hipped roof

H	Foundation height ranges = 1.0 - 1.2m
	Storey height
I	First storey ranges = 2.8 - 3.0m
J	Roof height ranges = 1.41 - 5.14m
K	Centre of street to house ranges = 11.51 - 13.84m
L	Depth of house ranges = 12.54 - 15.0m
M	Rear lot line from house ranges = 11.98 - 13.71m
	Area of typical house ranges = 122.49 - 140.16sq.m

SECTIONAL DATA

5 GRAPHIC SUMMARY : GOLF AVENUE AREA

HOUSES



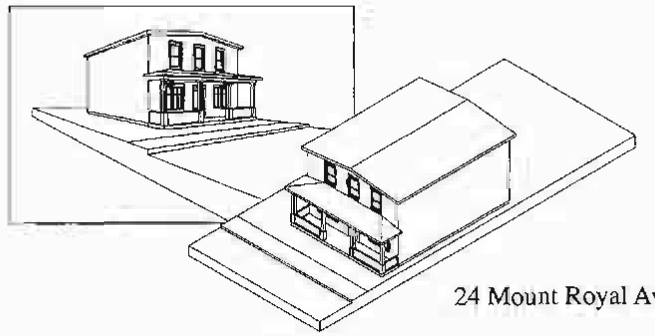
House type typical 2 storey with gable roof

A	Foundation height = 0.2m
	Storey height
B	First storey = 2.7m
C	Second storey = 2.45m
D	Roof height = 0.71m
E	Centre of street to house = 7.91m
F	Depth of house = 10.52m
G	Rear lot line from house = 11.31m
	Area of typical house = 163.74sq.m

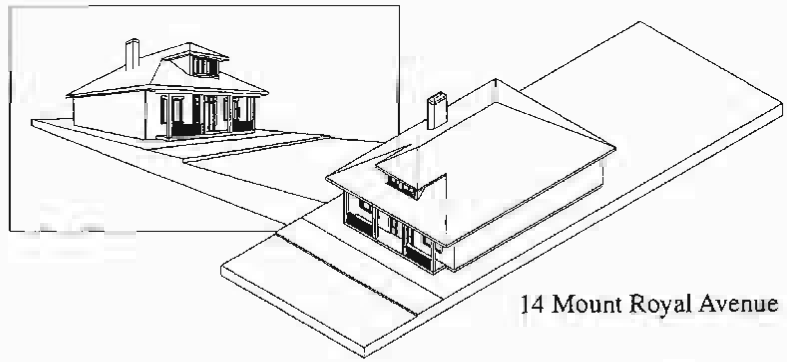
House type . 1 storey with gable roof

H	Foundation height = 0.2m
	Storey height
I	First storey ranges = 2.6 - 2.8m
J	Roof height ranges = 0.98 - 2.12m
K	Centre of street to house ranges = 11.79 - 13.53m
L	Depth of house = 10.0m
M	Rear lot line from house ranges = 16.96 - 19.88m
	Area of typical house ranges = 68.47 - 77.76sq.m

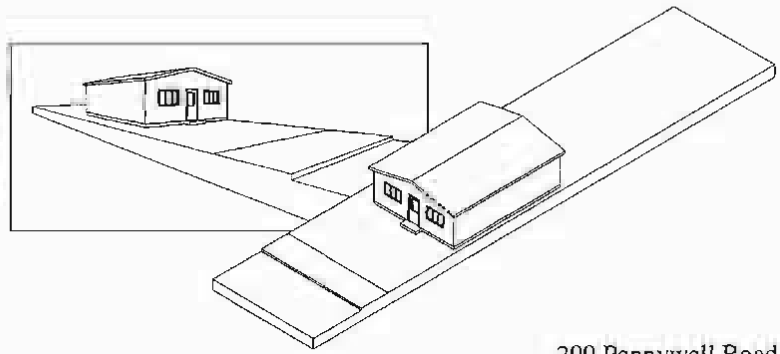
SECTIONAL DATA



24 Mount Royal Avenue



14 Mount Royal Avenue

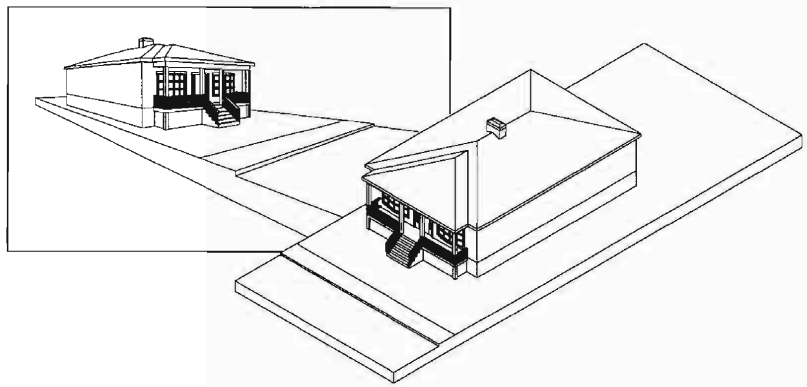


299 Pennywell Road

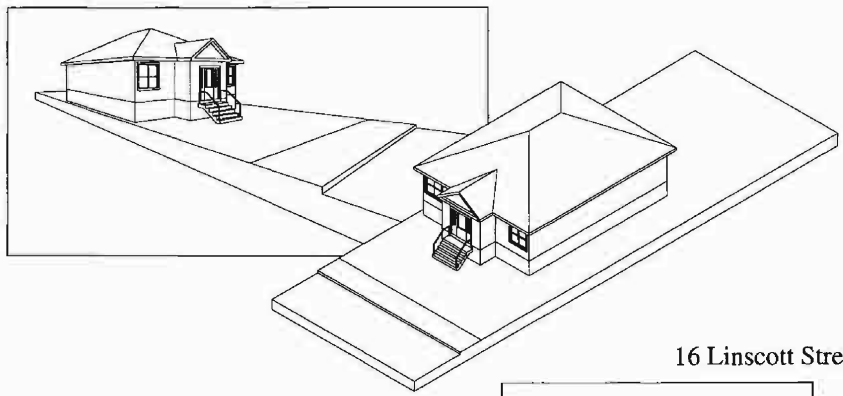
TYPICAL HOUSES

6 GRAPHIC SUMMARY : GOLF AVENUE AREA

HOUSES

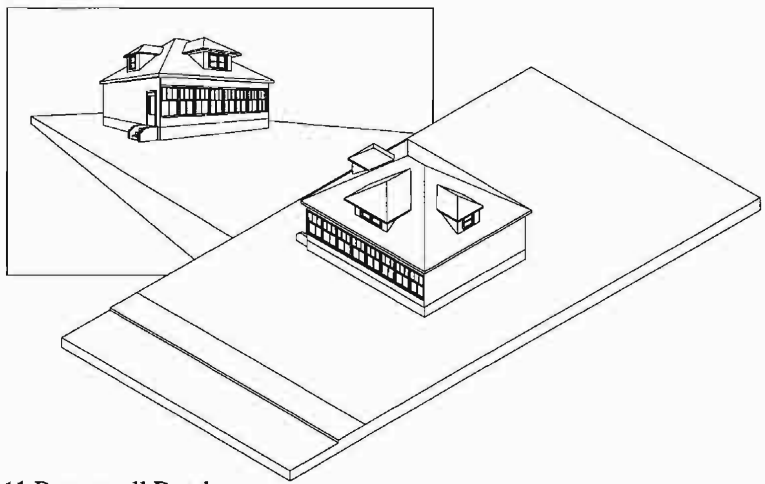


254 Pennywell Road

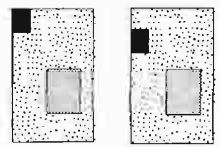


16 Linscott Street

TYPICAL HOUSES



311 Pennywell Road



Typical outbuilding placements in this area

Largest = 3.0 x 4.5m
Smallest = 0.51 x 0.56m

Outbuildings in this area :
Gable roof
Hipped roof
Flat roof

OUTBUILDINGS

7 GRAPHIC SUMMARY : GOLF AVENUE AREA

STREET VIEWS

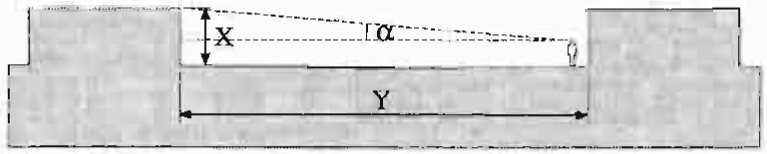
Hypothetical sectional perspective generated by the duplication of 14 Mount Royal Avenue showing the space of the street

Hypothetical sectional perspective generated by the duplication of 24 Mount Royal Avenue showing the space of the street

8 GRAPHIC SUMMARY : GOLF AVENUE AREA

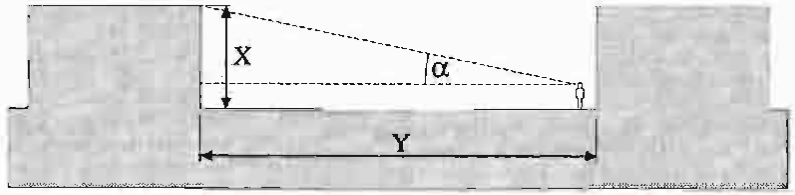
STREET SECTIONS

Hypothetical section based on 299 Pennywell Road



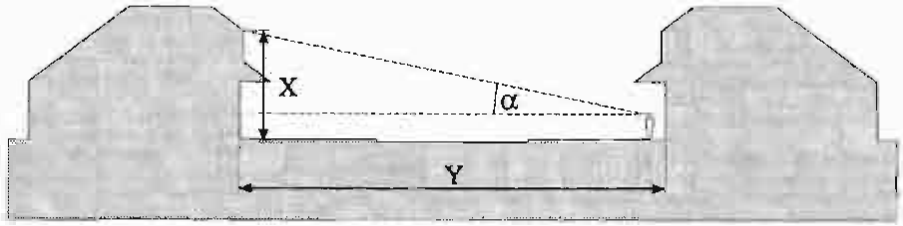
X = 3.78m
Y = 27.06m
Y/X = 7.16
α = 4.6°

Hypothetical section based on 40 Golf Avenue



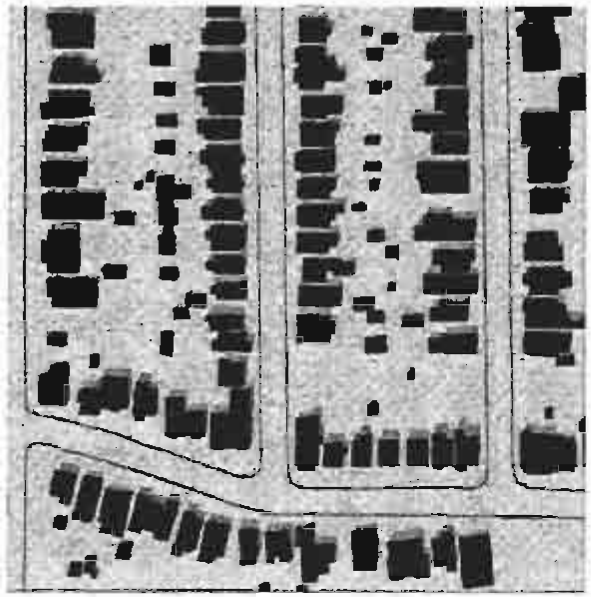
X = 6.90m
Y = 26.28m
Y/X = 3.81
α = 11.8°

Hypothetical section based on 134 Campbell Avenue



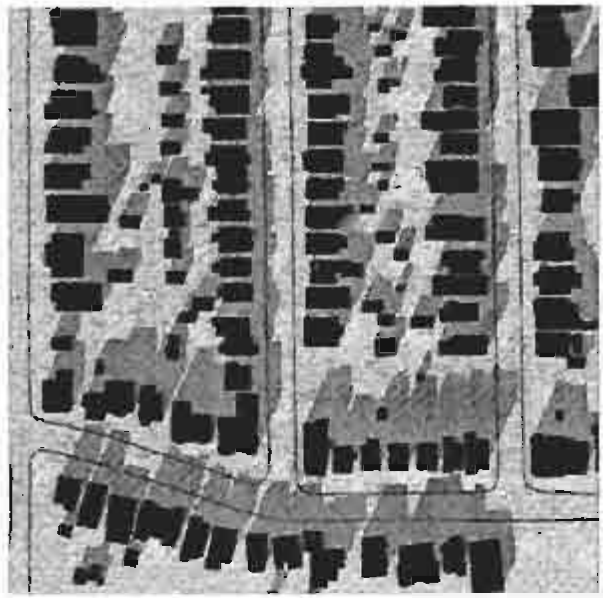
X = 7.20m
Y = 28.2m
Y/X = 3.91
α = 11.7°

9 | **GRAPHIC SUMMARY : GOLF AVENUE AREA** | **SOLAR STUDIES**

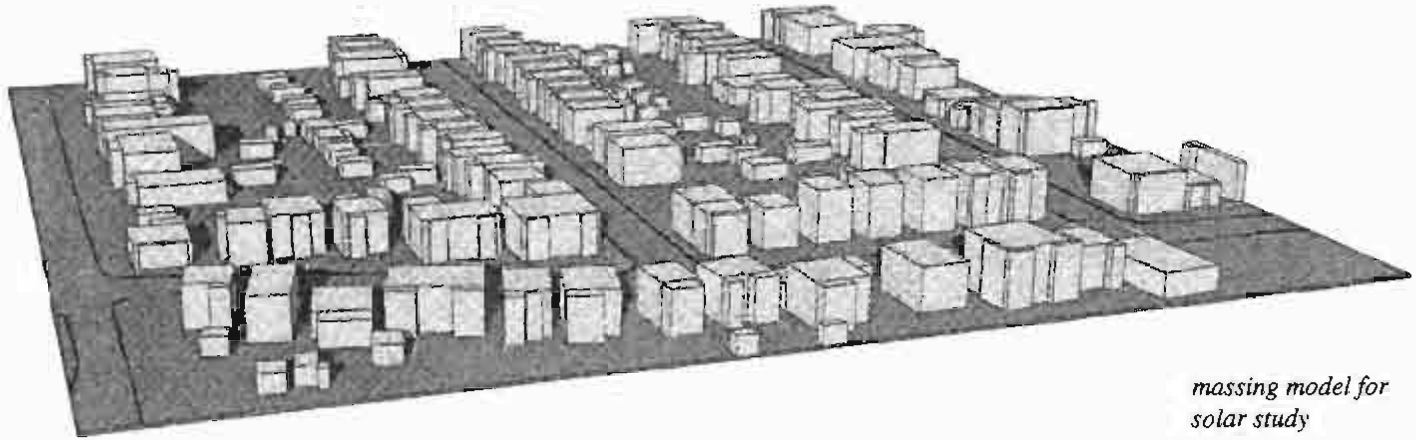


June 21, 12:00 p.m.

September 21, 12:00 p.m.



December 21, 12:00 p.m.



massing model for solar study

Churchill Square

1949 air photo showing the early development of the lots near Pine Bud Avenue

The residential neighbourhood known today as "Churchill Square" or "Churchill Park" is a Post-World War II suburban development located between the old downtown area and the Memorial University / Confederation Building area. Conceived in the 1940's, it was one of the first developments to introduce cul-de-sac streets, mixed with some streets that follow an irregular grid pattern. The curved streets and cul-de-sacs of Churchill Square were indicators of the style of planning adopted from the 1950's to the present day in St. John's. When this residential area was first developed, it was held in high esteem by the residents of St. John's as a modern alternative to poor postwar housing conditions. Today, it is one of the most appealing suburban residential areas in the city.

To understand the planning of this older suburb it is essential to be familiar with the proposals of the Commission of Enquiry on Housing and Town Planning in St. John's, appointed in 1942. The Commission produced six remarkable reports from 1942 to 1944. As stated previously, it is unfortunate that housing commissions and planning departments operating in St. John's in the decades following this era did not follow-up on or amplify the innovative proposals of the 1942 commission.[19]

The basic idea for the Churchill Square development had its precedents in the Commission's *Second Interim Report* (February, 1943) when a proposal was made for suburban development around a shopping centre at King's Bridge Road. Although the Kings Bridge development was never realized, the scheme called for "...a fair sized open square or circle at the point of intersection of the (four) roads. If space permits, there should be an island in the centre, with trees therein ...Zoning regulations should also be made permitting the establishment of shops around this square or circle..."[20] In the Commission's *Fourth Interim Report*, recommendations are presented on new suburban street widths (seventy feet minimum from face to face of the houses on both sides of the road, with the possibility of eighty feet minimum for main roads). These streets were to have "...adequate carriageway, two lines of trees, two narrow sidewalks and moderate front lawns...,"[21] and these basic specifications were later used for the Churchill Square development.

House on Poplar Avenue

Corner window: Poplar Avenue

House on Pine Bud Avenue with detached single-car garage: detached garages in this area are no longer permitted by the City of St. John's zoning regulations

Specific plans and recommendations relating to the Churchill Square development were submitted as part of the *Fifth Interim Report* of the Commission of Enquiry (January, 1944). The first plans for streets and services were developed in 1943 by Mr. A. E. Searles, a consulting engineer from San Antonio, Texas, who was also responsible for basic surveying and mapping. Churchill Square was the central part of a larger plan that had three centres or "villages" focused on shopping facilities.[22] These villages were expected to merge as they grew. "The general scheme is, after putting the east-west or circumferential road through, to develop upon it three open spaces, in the nature of squares or crescents, to act as shopping centres and generally as foci of community life."[23] A plan in the Sir Brian Dunfield collection at Memorial University of Newfoundland shows the general street layout and the "centres," all of which were located along Elizabeth Avenue ("circumferential road").[24] Of the three centres, only Churchill Square's buildings were developed as a "square." Today, one of the other two "centres" is indistinguishable as part of Elizabeth Avenue's strip malls. Mr. Searles described the master plan for the general development of the new suburb in his report to the Commission:

This plan is basically divided into three satellite villages, village "A" between Torbay Road and New Cove Road near Mount Cashel, village "B" between Mayor Avenue and Rennie's Mill Road south of the Church of England Orphanage, and village "C" centered roughly on Lamb's Lane between Freshwater Road and Horwood's Road ...The proposed circumferential road passes through each of these villages and provides direct communication between them ...The plan of the different villages has been developed in accordance with modern practice to take advantage of the natural topography and existing roads in each area, to provide for an economic sewerage system and to provide an easy flow of traffic to radial and circumferential roads without encouraging through traffic on streets that will be gravel surfaced. Each village has as its focal point a small green and a shopping centre for the necessary community shops and services ...Each village will be served by tram line direct from the business section...[25]

Residential frontage (fifty feet), rearage (one hundred and fifteen feet), variations in lot areas, and the number of lots were extensively considered in the basic planning in relation to land and development costs (the Newfoundland Government and the City of St. John's were to share the cost of land acquisition).[26] The circumferential street width was to be thirty-five feet, with radial roads leading to this road twenty-six feet wide with concrete

Pine Bud Avenue bungalow

Pine Bud Avenue bungalow front window detail

curbs and sidewalks. Grass strips were to be provided for water and sewer lines. With regard to the recommended provision of tram lines, the tram system that served Water Street was never extended to the suburbs. A uniform line of tree planting was proposed at thirty-six foot intervals ("...no suburb could be considered modern and attractive without them..."[27]), and the tree planting in combination with the alignment of houses was recommended as a wind break. Minor residential streets leading from the primary and secondary streets were to be twenty-six feet wide. One of the most interesting proposals for this residential area was a suggestion for the provision of alleys: "...To leave roughly surfaced alleys within blocks of houses, for access of carts, for carrying light and power poles, and for walkways...," but these were never built.[28] Mr. Searles provided detailed specifications for residential streets, alleys, and passageways:

"The standard arrangement established for the Master Plan is for residential streets fifty-four (54) feet in width to be spaced three hundred (300) feet apart centre-to-centre, and midway between these streets an alley or easement sixteen (16) feet in width is provided, leaving a depth of one hundred and fifteen (115) feet for standard lots ...It is planned that all residential streets, other than the radial streets previously discussed, will be gravel surfaced for a width of twenty-six (26) feet and will be provided with concrete curbs and sidewalks, the sidewalks to be located adjacent to the curbs and to be three and one-half (3 1/2) feet in width, making a total walkway width of four feet including the width of the curb ...In areas where the plan and topography will permit the sixteen foot strip midway between the streets may be treated as a court and the houses built facing the court. This will provide additional safety for children at play and when planting is completed and the courts lined with trees a very attractive setting will be provided. In areas where this plan is pursued the concrete sidewalks may be omitted from the streets and a wider walkway provided in the court, leaving the streets strictly for vehicular traffic and service and planting ...Such an arrangement will encourage the householders to keep both the front and rear of their property in presentable condition and will make for better living conditions ...Since cross streets have been located at fairly long intervals, to avoid excessive street costs and waste of land, passageways for pedestrians have been provided across these long blocks at intervals of from four hundred feet, or closer where the plan required. Gravelled walks will probably be provided in these passageways, and in some instances it will also be necessary to provide storm drainage ditches in these passageways."[29]

Public pedestrian path from Empire Avenue to Poplar Avenue

The commercial/residential building in the main retail "square" as it appears today

The main retail/office building on Churchill Square (recently renovated) showing the clock tower

In this report, that part of the Churchill Square residential area (village "B") with an informal grid pattern has been selected for analysis, bounded by the main streets of Empire Avenue, Elizabeth Avenue, and Bonaventure Avenue.[30] As indicated above, the development of this suburb did not proceed exactly as specified by Mr. Searles in his report to the Commission of Enquiry.

Vehicular traffic flow in this part of Churchill Square works well because the streets tend to diffuse traffic at several access points rather than collect traffic at few access points. There are some pedestrian lanes between houses that give access to public land and shopping facilities, and the pedestrian path network links this residential area with Quidi Vidi, Confederation Building, and recreation space along Empire Avenue. Unlike some of the newer residential areas in St. John's, the main streets have sidewalks.

Whereas the older residential neighbourhoods of St. John's had as their focus or "landmark" public buildings or churches, the unofficial focus and center of the Churchill Square neighbourhood is the shopping area. Unlike the downtown residential area, however, commercial and residential uses do not mix except in or near the shopping area. No small grocery or confectionery stores are permitted in the bulk of the residential area.

Modest size, single-detached houses and low rise apartments were built in this development. The apartments were built in a convenient location adjacent to the northeast corner of the shopping area. They are arranged in freestanding blocks surrounding courtyards. The exterior cladding (painted, narrow-exposure wood clapboards and wide trim boards) and exterior form of the apartments makes for a congenial "fit" with the surrounding single-detached homes. The apartments act as arrival "gateways" for automobiles (access to various parts of the site is by car through passageways under the apartments) signifying the importance of the car in the design concept. This traffic pattern of passageways under the buildings connects with a passageway through the middle of the main commercial/residential building.

Churchill Square houses were typically either one storey bungalows, one and a half-storey gable roof houses (Cape Cod style), or two storey houses. Most of the houses have been renovated and expanded, and these homes are in great demand because of central location, schools, shopping, the university and trade schools, and governments offices. Also, since it was one of the older suburban developments the landscaping has had a chance to mature. Many of the houses in the area were built with the assistance of the

Houses on Maple Street, near Pine Bud Avenue

Maple Street: in this era of suburban development, hedges substitute for paling fences

Newfoundland Government's Division of Cooperatives (part of the Natural Resources Department).

"It was outside the city... People were ready then to build homes... what we call the 'housing' houses now. A lot of the houses that went up first were relatively inexpensive... They were not fancy houses... homosote wall board, they were in a price range that young people could afford with a mortgage. The houses were built 'without trim or trellises'... conservative. Many people who bought homes there were civil servants. They had co-ops: eight or ten families to a group. All the houses were identical... All hands worked on everybody's house. All materials were bought cooperatively. Each man had to put in a certain number of hours (evenings, weekends, vacations). They saved a nickel every way they could. co-ops [cooperatives were organized] wherever they could get a few lots together."[31]

The houses are set back far enough to allow for a front yard, but the front yards are not as deep as the back yards. All the streets have concrete sidewalks. Garages were often small scale for single cars, and they did not dominate the way garages do in present-day St. John's suburbs. Detached garages were permitted, often located next to the house or slightly behind the house. The topography on some streets permitted basement level garages. Retaining walls and fences with gates along the sidewalks are present in the neighbourhood, mainly on the oldest street: Pine Bud Avenue (west end). There was some acknowledgment of special opportunities for house form based on the shape of the block. This is evident in the houses on the corner of Stoneyhouse Street and Maple Street, where the houses are symmetrically placed on the center axis of the block with mirrored house, garage, and driveway layouts.

Most planning in the new era of development in St. John's promoted separations of residential and commercial use through zoning. The combined residential and commercial building in the main shopping area at Churchill Square was very successful despite its severe architectural treatment (a three-storey "U" shaped building lining the north side of the main shopping area parking lot). The apartments above the ground floor commercial area are ideal for senior citizens. Proof that this combined residential / commercial building type has not detracted from property values is the fact that Churchill Square has become the center of upscale, specialized shopping in St. John's. A large new building with the symbolism of a town hall (clock tower) now anchors the square and has become a meeting place for East-end residents. The new building demonstrates that a more intense

Maple Street

Corner houses with attached garages symmetrically arranged to accommodate the corner lot conditions (corner: Maple and Stoneyhouse)

Two-storey house with detached single-car garage on Pine Bud Avenue

Apartment buildings on Pine Bud Avenue near the main retail centre of Churchill Square

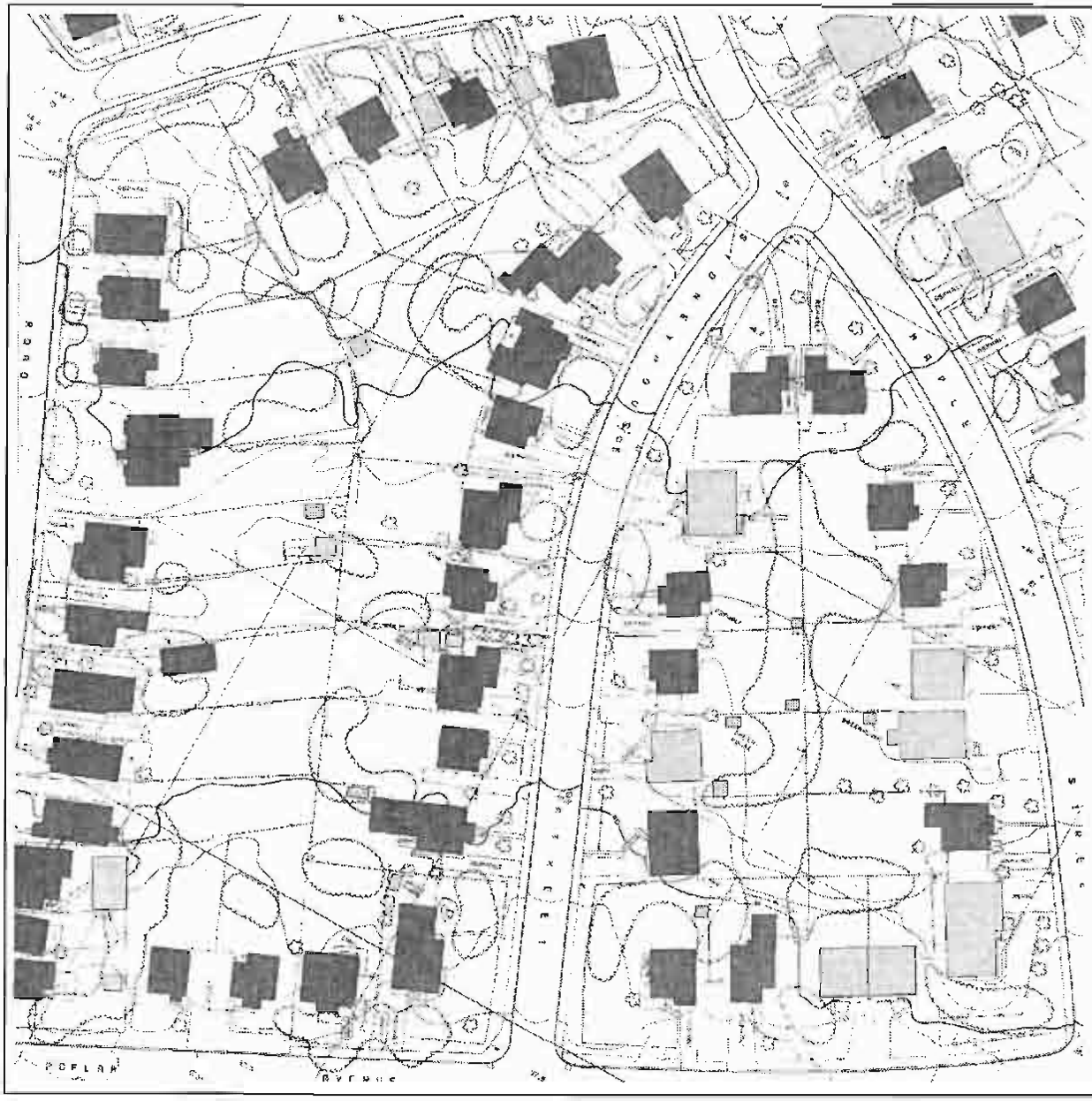
commercial presence had the effect of increasing the desirability of the surrounding residential area. As it is today, the main shopping square still has the potential for increased and more congenial commercial and residential development along the south side of the square. The open space behind the residential / commercial building has an excessively wide parking area, and the exterior open space for this building and also for the freestanding apartments to the Northeast is poorly utilized.

Churchill Square commercial/residential building in the early years of its development: ground level shops with apartments above.

[19] For an in-depth analysis of the Commission of Enquiry and the St. John's Housing Corporation, see Mark Shrimpton and Jane Lewis, "Policy Making in Newfoundland During the 1940's: The Case of the St. John's Housing Corporation," report for CMHC External Research Program, 1983.
[20] Commission of Enquiry, *Second Interim Report*, 11.
[21] Commission of Enquiry, *Fourth Interim Report*, 13, 14.
[22] Commission of Enquiry, *Fifth Interim Report*, 26.
[23] Commission of Enquiry, *Fifth Interim Report*, 26.
[24] Commission of Enquiry, *Fifth Interim Report*, 26.
[25] Commission of Enquiry, *Fifth Interim Report*, 43.
[26] Commission of Enquiry, *Fifth Interim Report*, 26.
[27] Commission of Enquiry, *Fifth Interim Report*, 27.
[28] Commission of Enquiry, *Fifth Interim Report*, 27.
[29] Commission of Enquiry, *Fifth Interim Report*, 46.
[30] This area is presently zoned R2 (Residential 2) permitting 22.2 -55.5 dwelling units per hectare. Those parts of the neighbourhood that have cul-de-sacs are zoned R1 (Residential 1) permitting 18.5-33.3 dwelling units per hectare.
[31] Joe and Louise Doyle, interview with the author, St. John's, 1995.

1 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

EXISTING CONDITIONS



Site analysis for the Churchill Square residential area. This area consits mainly of detached houses, with front yards smaller than back yards.

Density: 19 dwelling units per hectare
Street area: 2249 sq. m. (9.2% of total area)
Sidewalk area: 1135.4 sq. m. (4.7% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	**2.28**
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

0 scale in metres 50

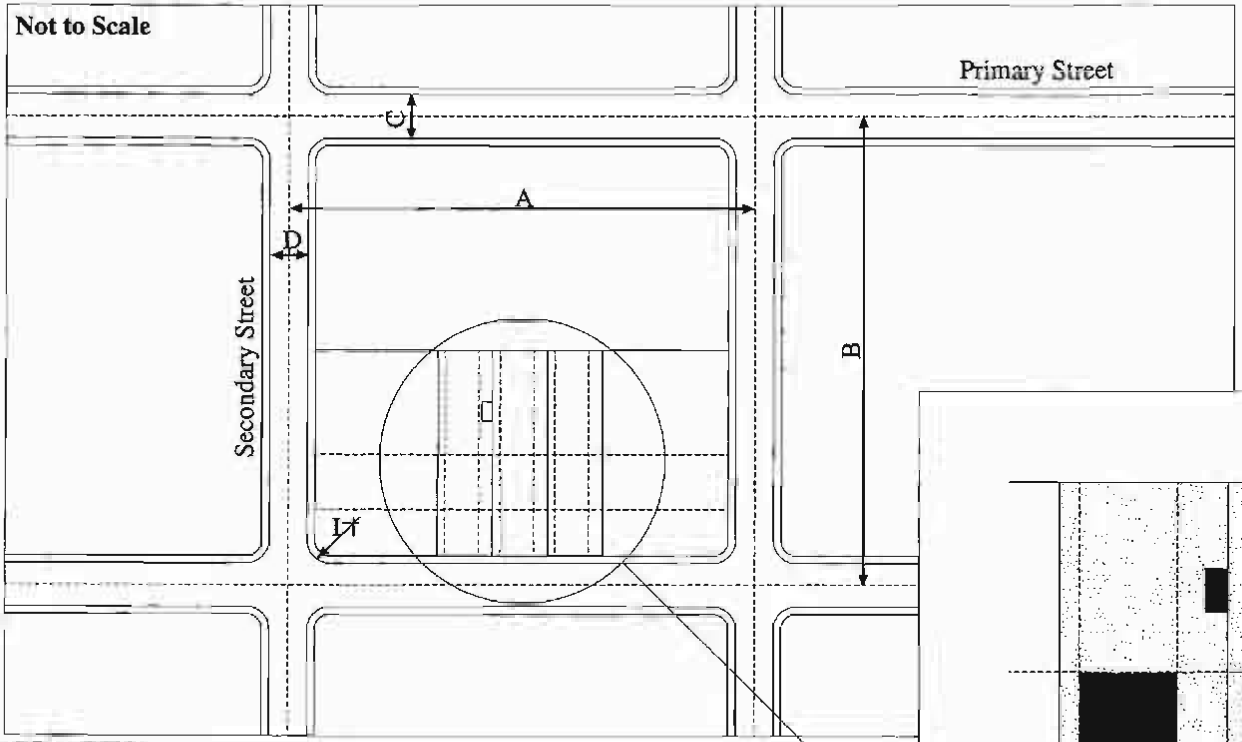
ONE STOREY

TWO STOREY

N

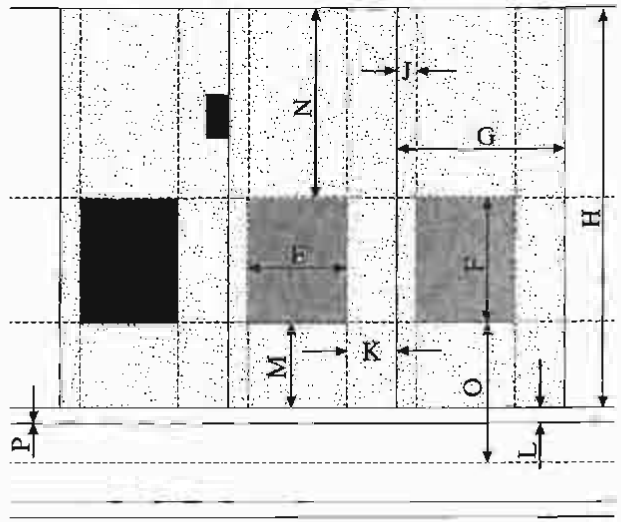
2 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

STREETS AND PLOTS



Plot area = 642.1 sq. metres
Plot ratio (length/frontage)= 2.57
Block area = 24323.2 sq. metres
Building area = 100.1 sq. metres
Building area % of plot area= 15.64

PLOTS



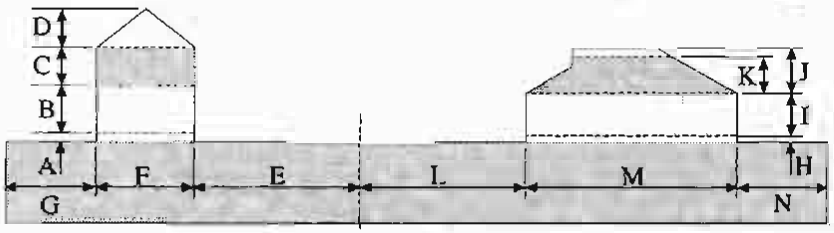
Scale = 1 : 750

STREETS

A	Block length = 196.75		Side yard setbacks
B	Block width = 123.75	J	Left = 2.0
C	Primary street width = 8.38	K	Right = 5.0
D	Secondary street width = 7.83		Average = 3.5
E	Building width= 9.8		Sidewalk width
F	Building depth = 12.4		Asphalt = n/a
G	Plot width = 16.8	L	Cement = 1.5
H	Plot depth = 39.9	M	Front setback= 8.5
I	Street corner radii	N	Rear lot line from house = 19.0
	Minimum = 8.5	O	Building to center of street = 14.9
	Maximum = 15.0	P	Curb to sidewalk = 0.50
	Average = 10.9		

3 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

HOUSES



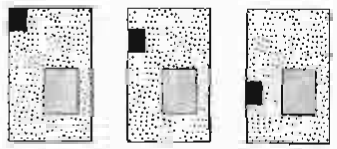
House type : typical 2 storey with gable roof

A	Foundation height = 0.6m
	Storey height
B	First storey = 3.1m
C	Second storey = 2.5m
D	Roof height = 2.54m
E	Centre of street to house = 16.68m
F	Depth of house = 6.52m
G	Rear lot line from house = 12.95m
	Area of typical house = 93.02sq.m

House type : typical 1 1/2 storey with hipped roof

H	Foundation height = 0.42m
	Storey height
I	First storey = 2.8m
J	Second storey = 2.4m
K	Roof height = 2.97m
L	Centre of street to house = 13.31m
M	Depth of house = 14.01m
N	Rear lot line from house = 26.95m
	Area of typical house = 205.37sq.m

SECTIONAL DATA

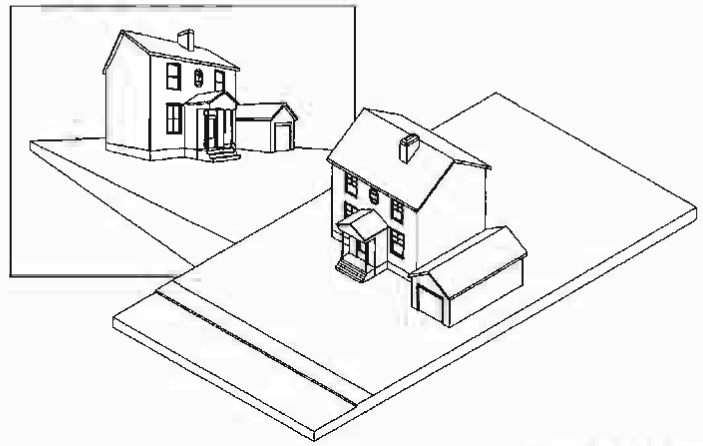


Typical outbuilding placements in this area

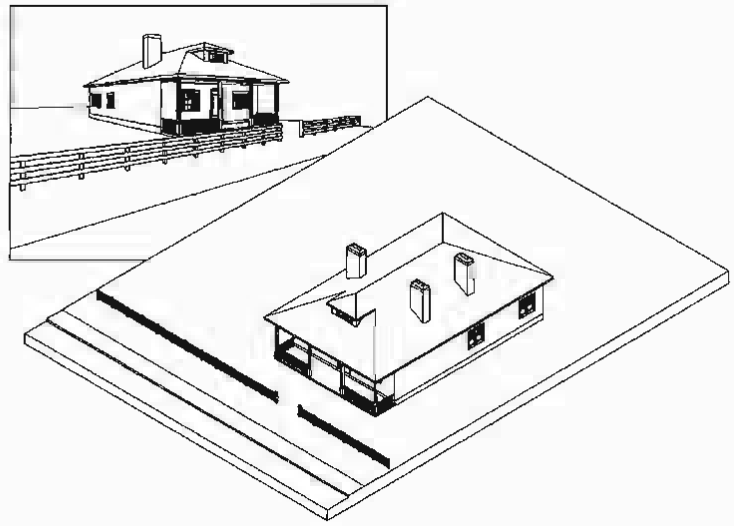
Largest = 3.18 x 3.43m
Smallest = 0.8 x 0.74m

Outbuildings in this area :
- Gable roof
- Hipped roof
- Flat roof
- Barn roof

OUTBUILDINGS



45 Pine Bud Avenue

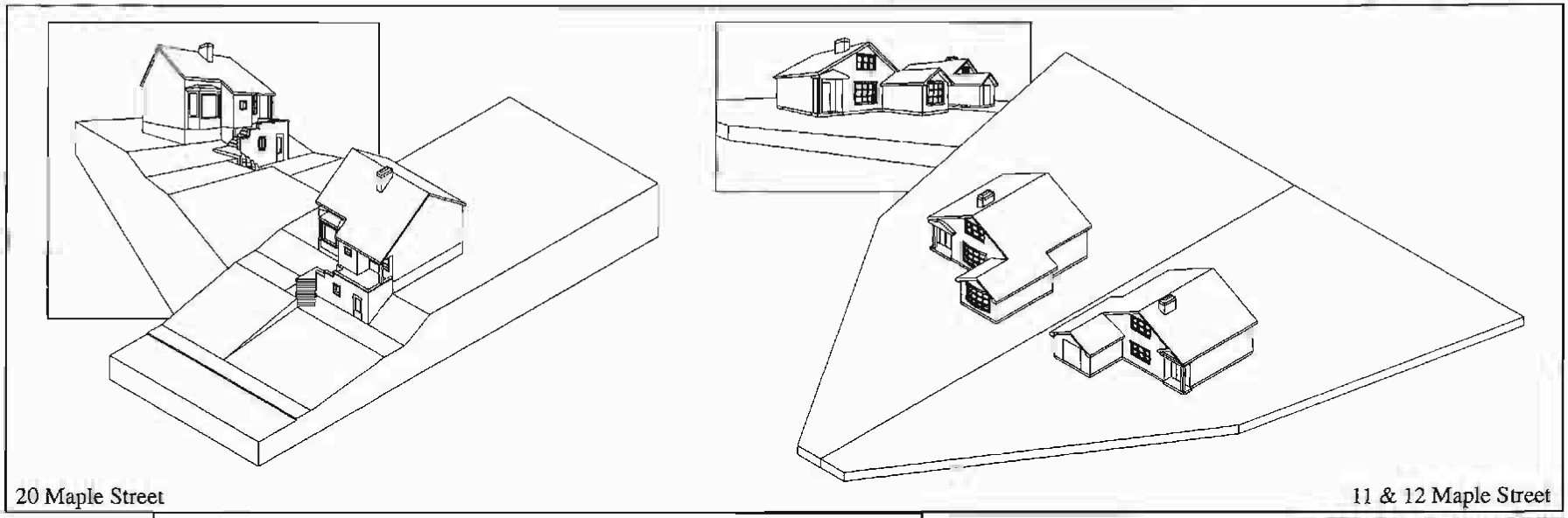


46 Pine Bud Avenue

TYPICAL HOUSES

4 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

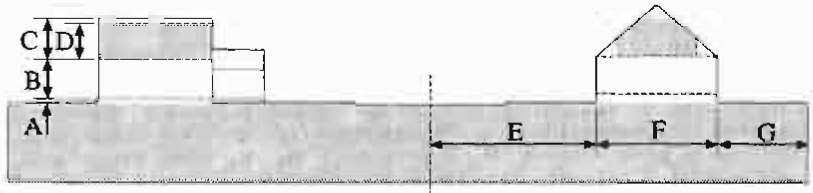
HOUSES



20 Maple Street

11 & 12 Maple Street

TYPICAL HOUSES



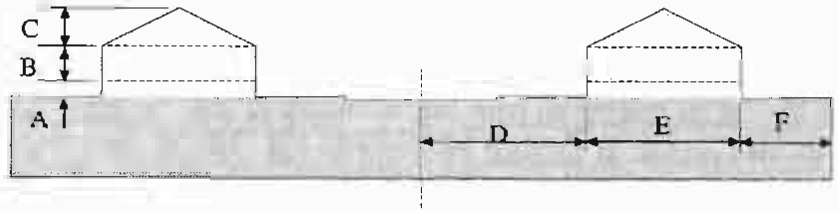
House type : typical 1 1/2 storey with gable roof

A	Foundation height ranges = 0.3 - 1.04m
	Storey height
B	First storey ranges = 2.5 - 3.35m
C	Second storey typically = 2.4m
D	Roof height ranges = 2.74 - 3.47m
E	Centre of street to house ranges = 11.49 - 18.34m
F	Depth of house ranges = 7.51 - 11.0m
G	Rear lot line from house ranges = 16.98 - 23.94m
	Area of average house ranges = 91.09 - 111.19sq.m

SECTIONAL DATA

5 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

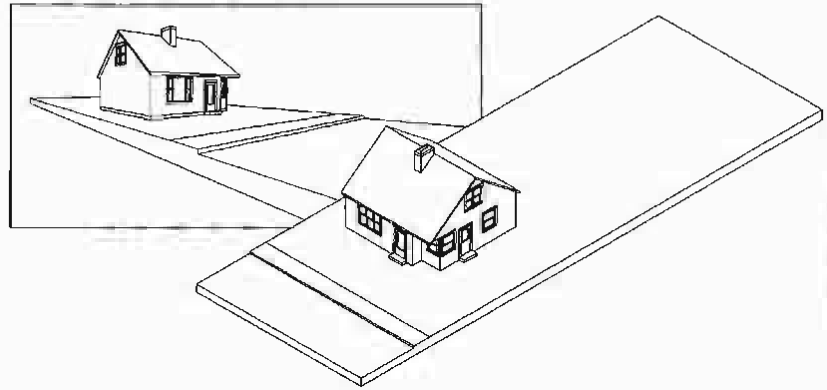
HOUSES



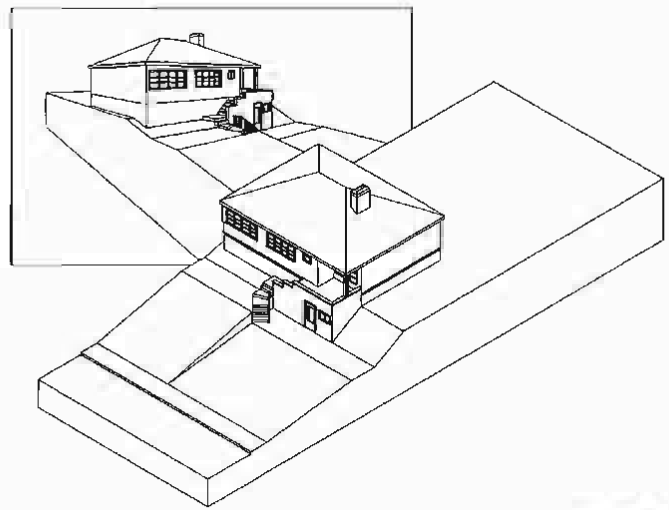
House type : typical 1 storey with hipped roof

A	Foundation height = 1.04m
	Storey height
B	First storey = 2.3m
C	Roof height = 2.55m
D	Centre of street to house = 15.63m
E	Depth of house = 10.22m
F	Rear lot line from house = 16.98m
	Area of typical house = 91.28sq.m

SECTIONAL DATA



118 Empire Avenue



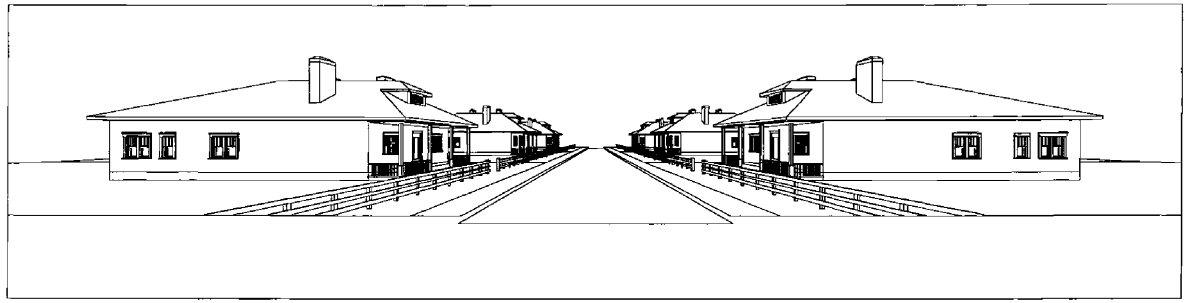
18 Maple Street

TYPICAL HOUSES

6 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

STREET VIEWS

Hypothetical sectional perspective generated by the duplication of 45 Pine Bud Avenue showing the space of the street

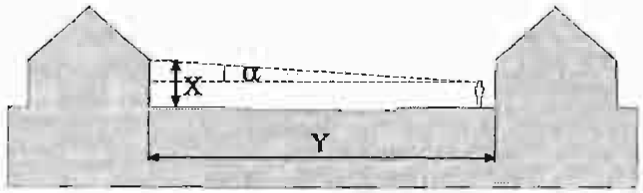


Hypothetical sectional perspective generated by the duplication of 46 Pine Bud Avenue showing the space of the street

7 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

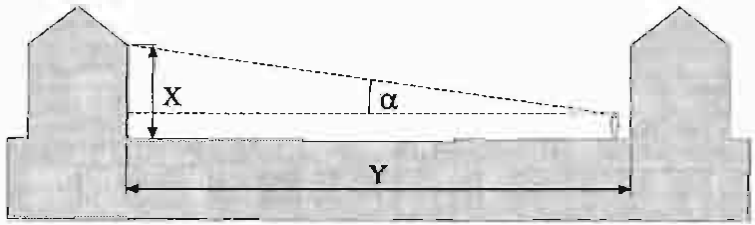
STREET SECTIONS

Hypothetical section based on 118 Empire Avenue



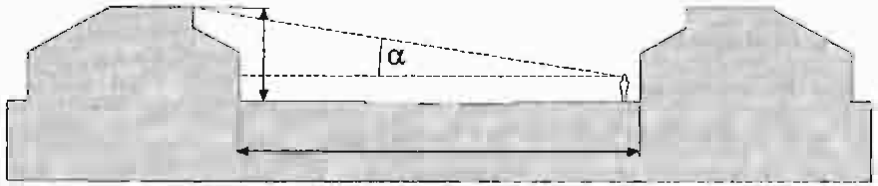
X = 3.10m
Y = 22.98m
Y/X = 7.41
α = 3.7°

Hypothetical section based on 45 Pine Bud Avenue



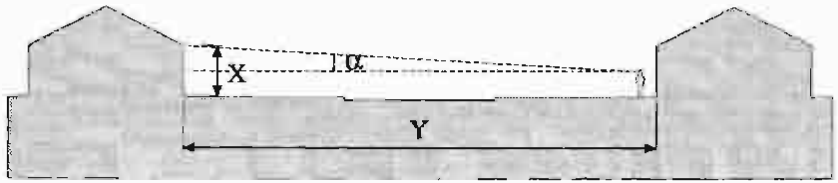
X = 6.20m
Y = 33.36m
Y/X = 5.38
α = 8.0°

Hypothetical section based on 46 Pine Bud Avenue



X = 6.18m
Y = 26.62m
Y/X = 4.31
α = 9.0°

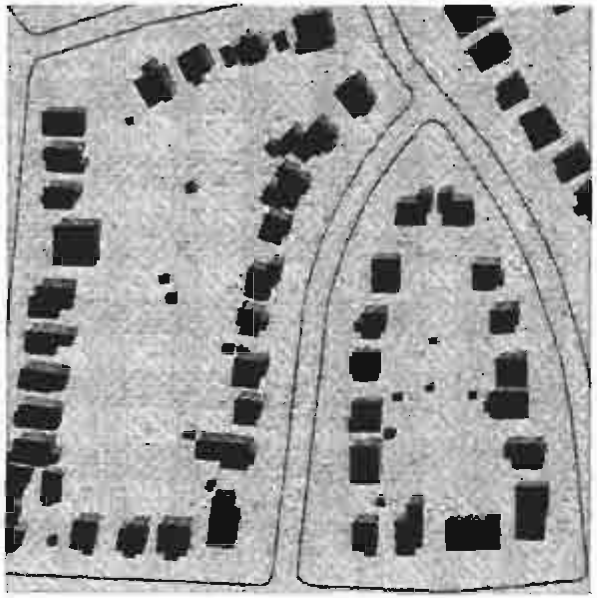
Hypothetical section based on 18 Maple Street



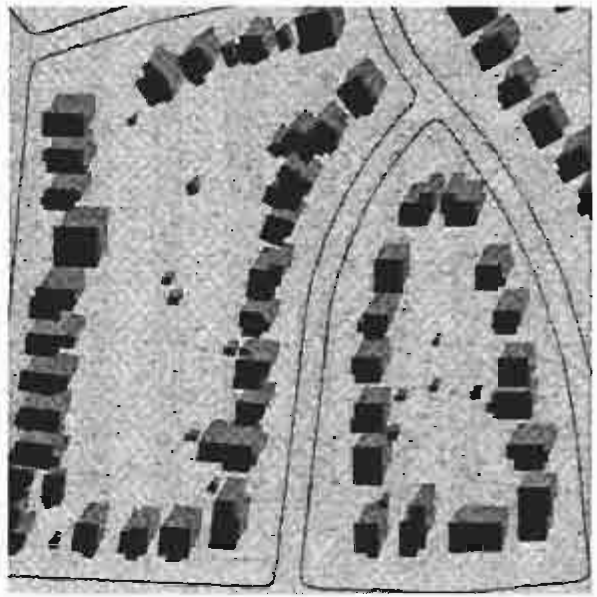
X = 3.34m
Y = 31.26m
Y/X = 9.36
α = 3.1°

8 GRAPHIC SUMMARY : CHURCHILL SQUARE AREA

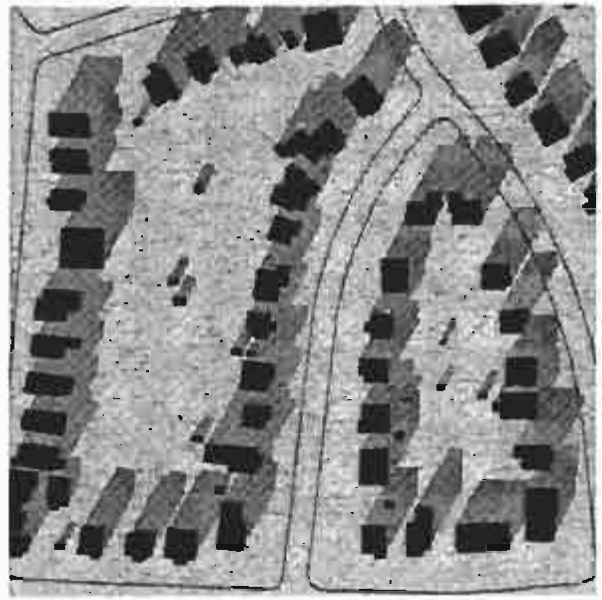
SOLAR STUDIES



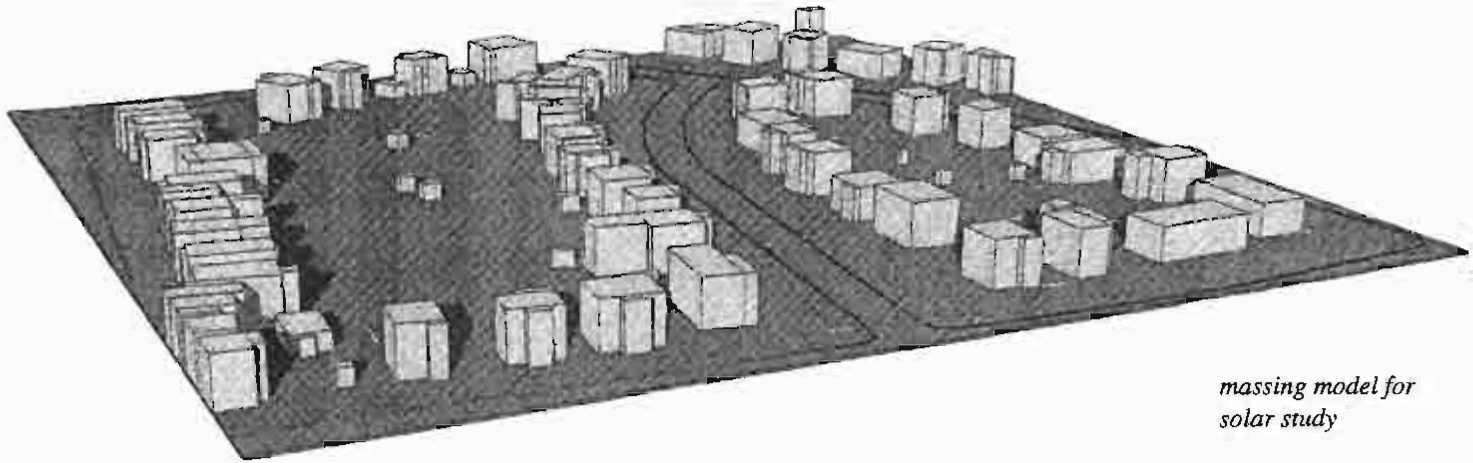
June 21, 12:00 p.m.



September 21, 12:00 p.m.

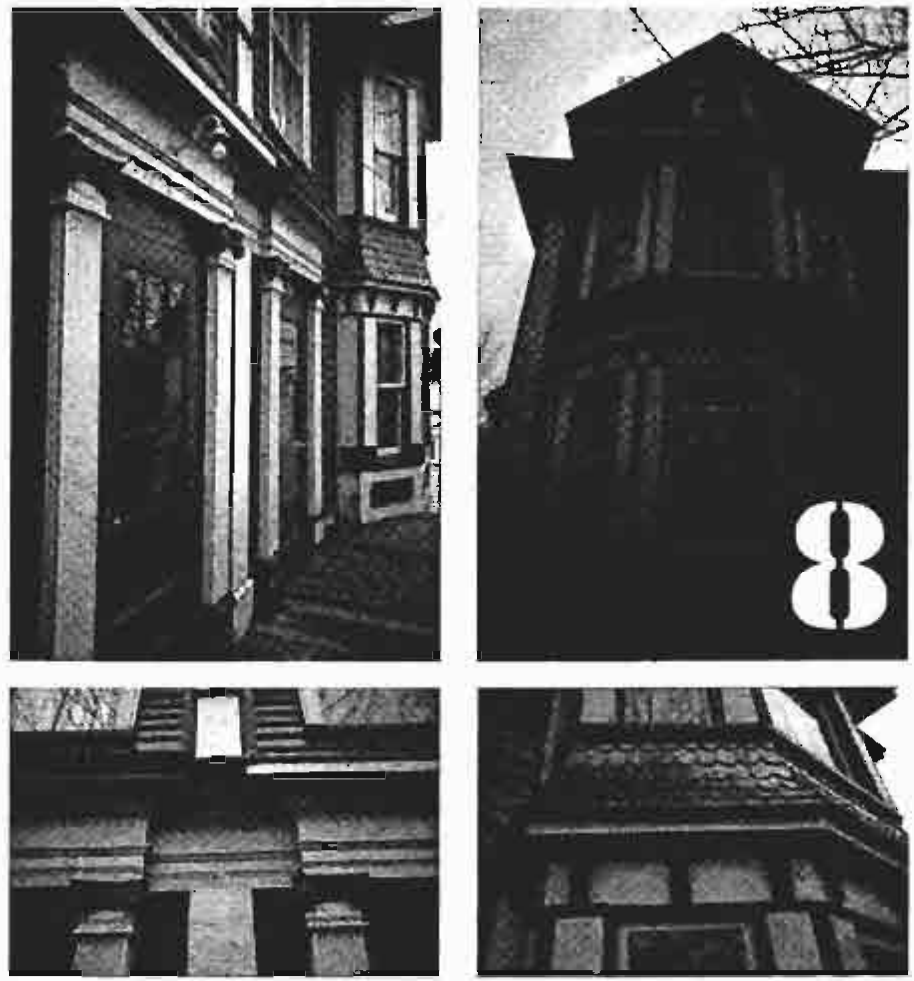


December 21, 12:00 p.m.



massing model for solar study

Housing Typology



Duplex houses on the South Side Road, St. John's

For this research, three-dimensional computer models were made of houses selected to represent St. John's house types and house type variations. Several houses located outside the residential areas documented in this study were included because of their basic form or their architectural features. The houses presented in this brief typology should not be viewed in isolation: in St. John's there is a strong correlation between house form and location. In order to present the houses in their context, scale drawings of plans, elevations, and axonometrics are accompanied by a site plan showing the location of the house and the surrounding area. This information is supplemented by a perspective (view from the street of the front of the house) constructed at eye level. The drawings of basic house types and variations within types are supplemented by summary sheets that permit the comparison of plans, axonometrics, and elevations. Also presented are drawings that compare streets.

Each house included in the typology has been rated according to a construction "affordability" index (based on the cost-per-square meter of construction, but not including the extra cost of replicating historic features such as architectural elements and ornament). Unlike the affordability index calculated for different residential areas using the Bertaud equations, the house construction "affordability" index does not consider site features (plot area) or infrastructure (the Bertaud model takes into account such factors as plot proportions and infrastructure length, but it does not take into account detailed house construction costs - for example, the cost of building a large, Victorian-era home with historic architectural elements compared with the cost of building a new "ranch" house). The construction "affordability" index is based on the most affordable house included in the survey - 24 Cookstown Road - which was given a value of 1. For example, a house with a construction cost index of 2.0 would be twice as expensive to build as 24 Cookstown Road. The index shows that if they were to be built today, the construction cost of many post-World War II suburban houses (18 Maple Street, 45 Pine Bud Avenue, 118 Empire Avenue . . .) would be lower than the construction cost of modest, attached houses located in the older downtown area (for example, 33 Power Street).

The *true* costs of the houses documented in this chapter are highly dependent on site characteristics. The Bertaud equations demonstrate that costs escalate greatly with an increase in the plot width. If the actual plot proportions for the houses included in the typology are used with the Bertaud equations, some small suburban houses would cost more than the

Duplex houses on the South Side Road, St. John's

Bay window: South Side Road

larger, attached houses in the downtown residential area. The Bertaud equations provide a good indicator of the high level of public subsidization that was required in order to make the new, post-World War II St. John's suburbs affordable. Building costs were not high (many houses were built through cooperatives), but land costs would have been too expensive without government assistance.

For the older houses of St. John's, the most common plan was the "two-thirds Georgian". The "full" Georgian plan contains a centre hallway with stair symmetrically flanked by rooms -two deep- on both sides (double-bay, double-pile). In the two-thirds Georgian plan, the front room was typically a room for display of special furniture and family items like pictures. This room was used only occasionally for special visitors or holidays. Behind this room was the dining room.

The large, Victorian-era houses with this plan - both detached and attached houses- often had pocket doors between these two large rooms. In the late 19th-century, it was not uncommon for the kitchens in these large houses to be located in the basement (separate area for servants). Most of the large, detached late 19th-century houses in the East End of St. John's are symmetrical in appearance resulting from the full Georgian plan, but there are asymmetrical exceptions (for example, 23 King's Bridge Road). The houses in this era had high ceilings, elaborate ornamental plaster details, and elaborate ornamental woodwork (exterior and interior).

Houses with the 2/3 Georgian plan type were built until the 1920's and 1930's but late versions had smaller rooms, lower ceilings, first floor kitchens (usually behind the dining room or behind the hallway) and plain interior detailing. Small 19th and early 20th-century houses with this plan could be either detached, semidetached (duplex), formed into larger compositions (terrace houses), or randomly attached. Most were two and three storey houses with either gable roofs with dormers, Mansard roofs, or low-pitch roofs. Except for houses that had rooms with pocket doors, the house layout had a "closed" plan (rooms with separations of use).

St. John's was not isolated from influences elsewhere in house design and construction technology. The same movement from the large Victorian home to the smaller craftsman-style bungalow to the ranch and Cape Cod house that occurred elsewhere in America is evident in St. John's. In St. John's there are a few "craftsman" era bungalows that rival the substance of their mainland counterparts (for example, the bungalows built by Saunders and Howell on Waterford Bridge Road), but there are many local interpretations of the "bungalow" that were modified and reduced to the bare essentials. The house at 46 Pine Bud Avenue is a good example, reduced to the basic bungalow elements of a large hip roof (with dormer window) overhanging the open, front porch but without the rustic detail evident in popular, published descriptions of the bungalow type.[1] Technical innovations developed elsewhere were also used by local builders when they became available, such as concrete blocks (early 20th-century), and "Homosote" wall board (1920's).

[1] Clifford Edward Clark, Jr., *The American Family Home, 1800-1960* (Chapel Hill: The University of North Carolina Press, 1986).

Bungalow on Waterford Bridge Road constructed by Saunders and Howell

House at Mundy Pond, West End

"Parkside," Victoria Park, West End

*Construction cost affordability index summary:**

24-26 Cookstown Road	***1.00***
18 Alexander Street	*1.25*
96 Mayor Avenue	*1.78*
18 Maple Street	*1.95*
45 Pine Bud Avenue	*1.98*
118 Empire Avenue	*2.07*
16 Maple Street	*2.73*
33 Power Street	*2.93*
40 Golf Avenue	*2.99*
7 Victoria Street	*3.21*
5 Victoria Street	*3.67*
43 Sudbury Street	*3.79*
46 Pine Bud Avenue	*4.39*
18 Leslie Street	*4.44*
9-11 Military Road	*4.58*
154 Hamilton Avenue	*6.61*
36-38 Rennie's Mill Road	*7.98*
23 King's Bridge Road	*8.11*

**The construction cost index compares only the building construction cost: site features (plot area, proportions, infrastructure length) were not compared.*

Duplex houses on Atlantic Avenue

33 Power Street

Split storm door, Leslie Street

Leslie Street

Row Houses

These small, attached, low-pitch roof row houses are two examples of narrow houses in the city (62 Bannerman Street is similar in width but with a gable roof with the ridge parallel to the street: see also the comparison of scale of these houses with a house on Circular Road in Chapter 2: Downtown Residential)

0 5 10 15

scale in metres

House construction cost affordability index: 1.0 (building cost only)

Row Houses

Narrow, two-storey gable roof row house in the West End with a long, narrow rear lot. There is no first-floor hallway.

0 5 10 15

scale in metres

House construction cost affordability index: 1.25 (building cost only)

Row Houses

Narrow front, 2/3 Georgian plan, three-storey house with Mansard roof. This house has a three-storey bay window and a small dormer window on the third floor.

0 5 10 15

scale in metres

House construction cost affordability index: 3.21 (building cost only)

Row Houses

Three-storey, Mansard roof house with greater width than 7 Victoria Street with a first-floor bay window and third-floor dormer windows. There is no first-floor hallway, but there is a small foyer.

0 5 10 15

scale in metres

House construction cost affordability index: 3.67 (building cost only)

Row Houses

Two-storey, 2/3 Georgian plan house with low-pitch roof and bay windows in the West End. The first-floor plan follows the usual layout of formal "room" (living room) at the front, followed by a dining room and kitchen (rear). The second floor contains four bedrooms and a bathroom. There is a full basement and a small back yard.

0 5 10 15

scale in metres

House construction cost affordability index: 2.93 (building cost only)

Duplex Houses

Large, three-storey duplex houses in the East End with 2/3 Georgian plan, three-storey bay windows, Mansard roofs, and small third-floor dormer windows. The first-floor rooms are large, formal rooms, indicating the kitchen was probably located at the basement level as was the case in many of the larger houses in this area.

0 5 10 15

scale in metres

House construction cost affordability index: 4.58 (building cost only)

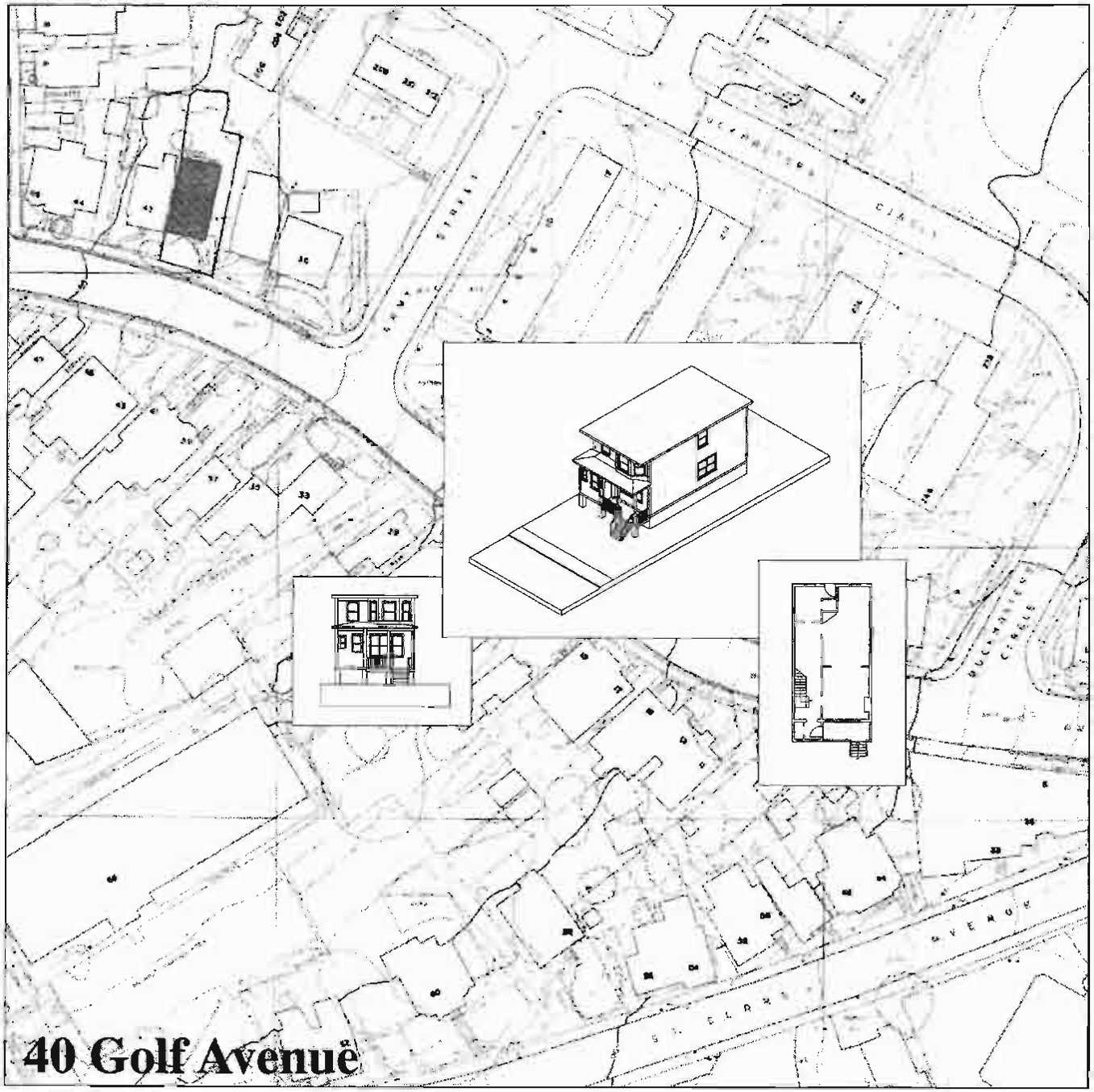
Duplex Houses

Large, two-storey gable roof duplex with central stair and open front porch (house located in the East End near Military Road).

0 5 10 15

scale in metres

House construction cost affordability index: 7.98 (building cost only)



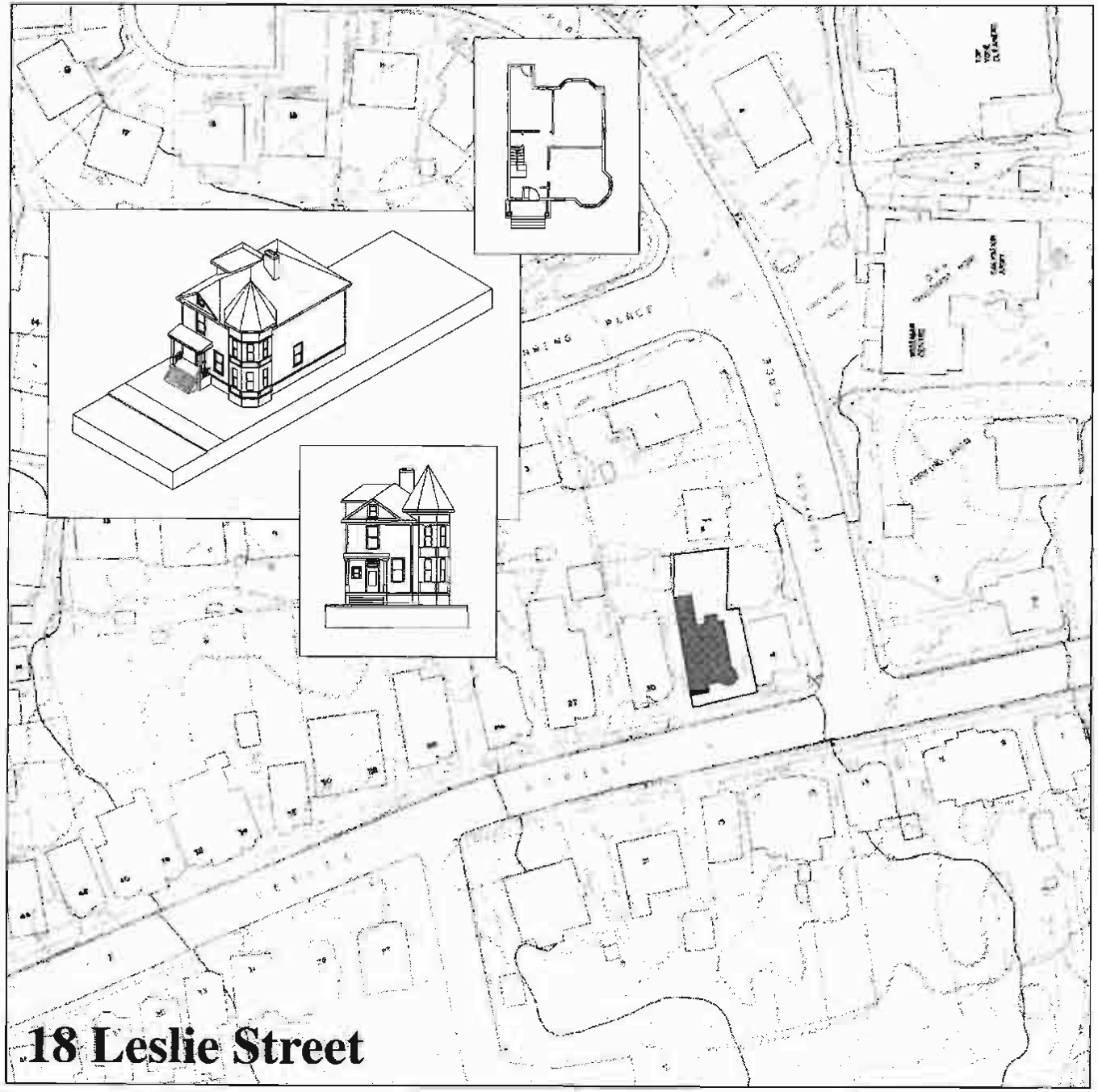
Detached Houses

Pre-World War II detached house with a 2/3 Georgian plan, small kitchen behind the first-floor hallway, open front porch, and a second-floor bay window. This house is typical of many of the houses in the Golf Avenue area. Most of these houses have small front yards enclosed by fences and larger back yards. Although the plan of this house follows the 19th-century 2/3 Georgian layout, there are "bungalow" and "craftsman" influences (porch and interior details). These influences are also apparent in other houses in the neighbourhood.

0 5 10 15

scale in metres

House construction cost affordability index: 2.99 (building cost only)



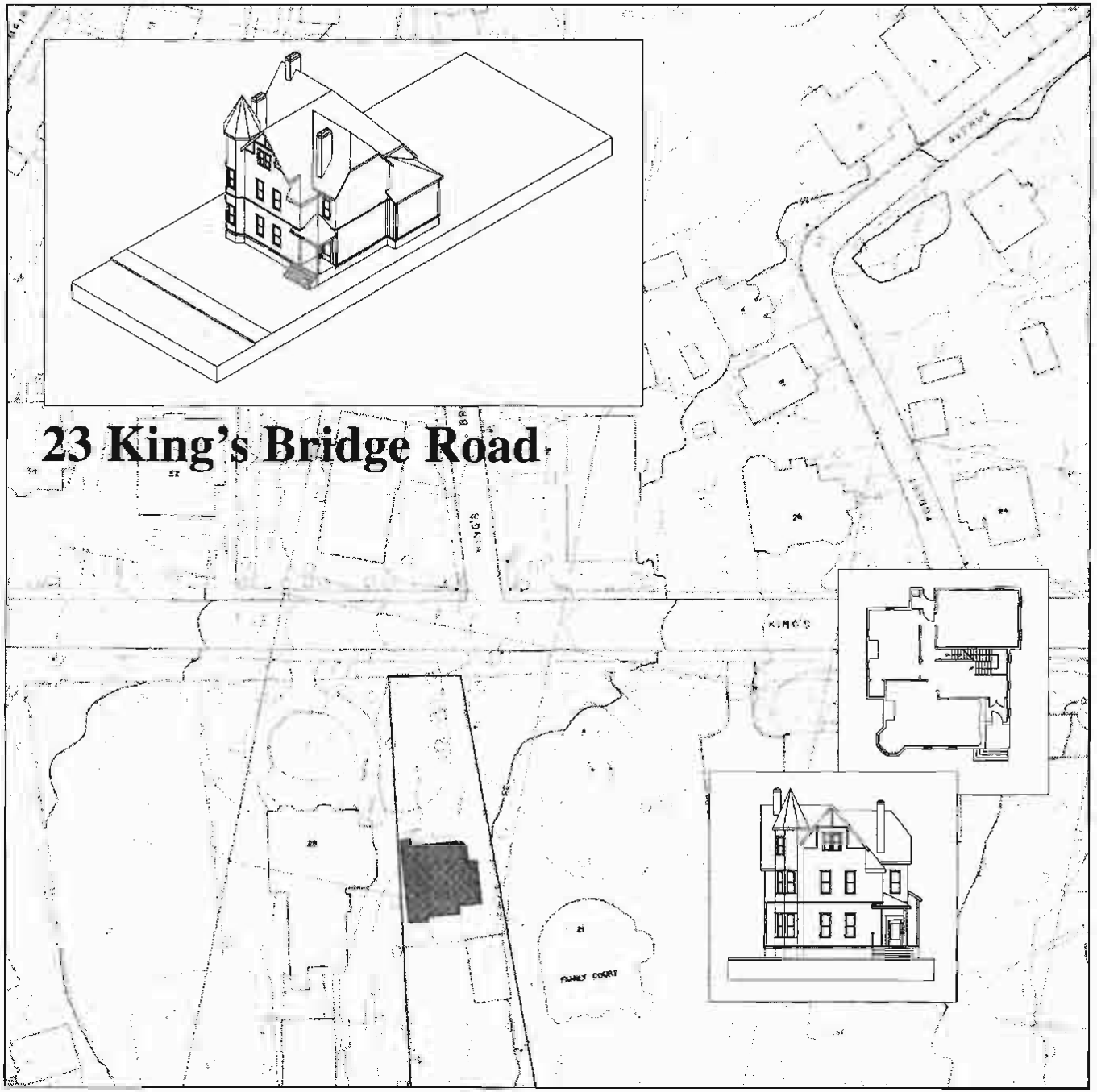
Detached Houses

Intermediate-size detached house in the West End with a corner bay window and gable roof.

0 5 10 15

scale in metres

House construction cost affordability index: 4.44 (building cost only)



Detached Houses

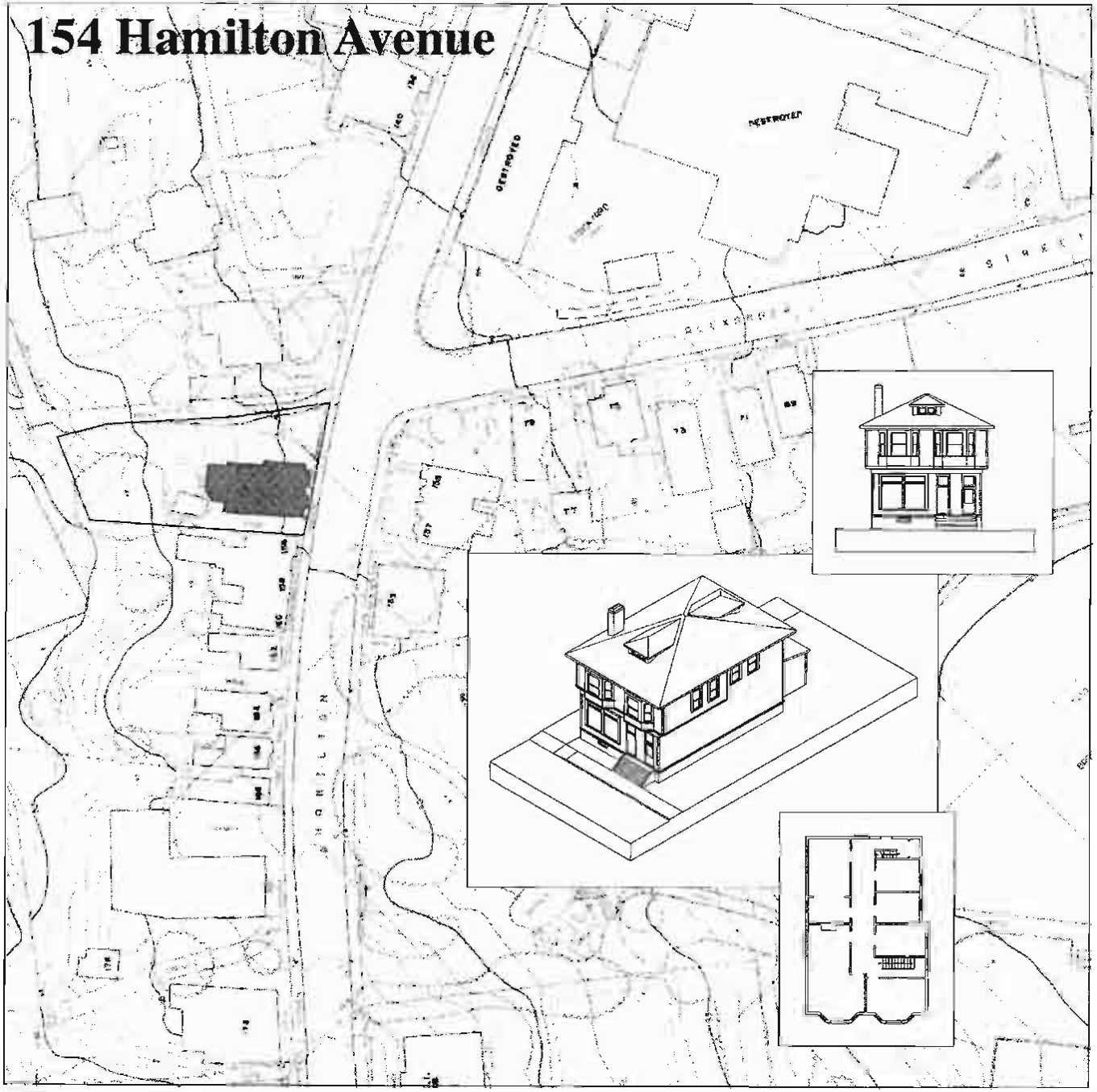
Large, late 19th-century detached house with a corner bay window (removed in a later renovation), gable roof, and "centrifugal" plan. The affordability index for this house is typical of all large houses in this area, including houses on Circular Road (east), but this index value is by no means the highest index in the area.

0 5 10 15

scale in metres

House construction cost affordability index: 8.11 (building cost only)

154 Hamilton Avenue



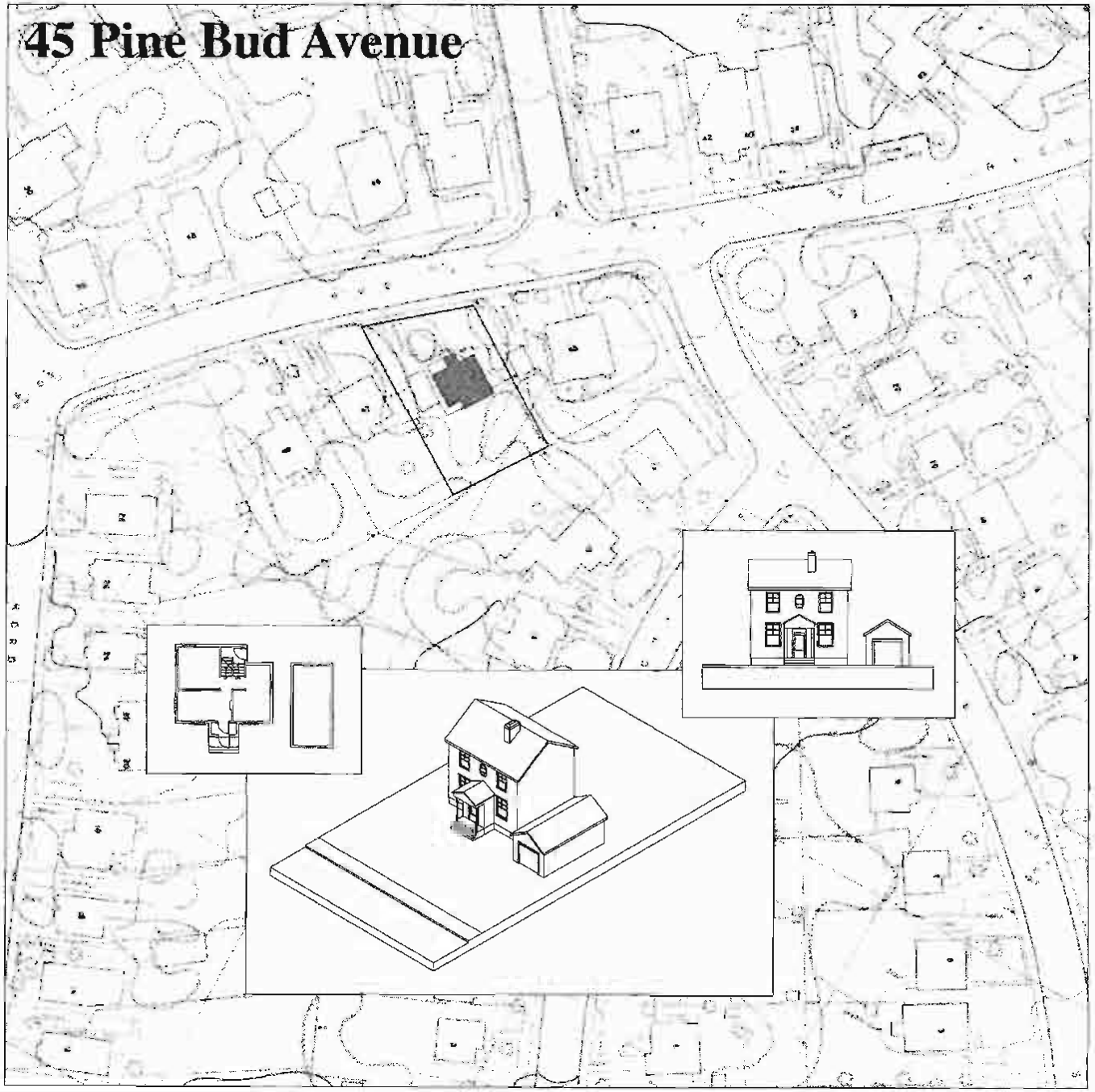
Residential / Commercial (detached)

Detached house with commercial premises on the first floor. The second-floor cantilevers symmetrically over the first floor. Adding to the monumentality of the building, the clapboard on the front is installed on the diagonal.

0 5 10 15

scale in metres

House construction cost affordability index: 6.61 (building cost only)



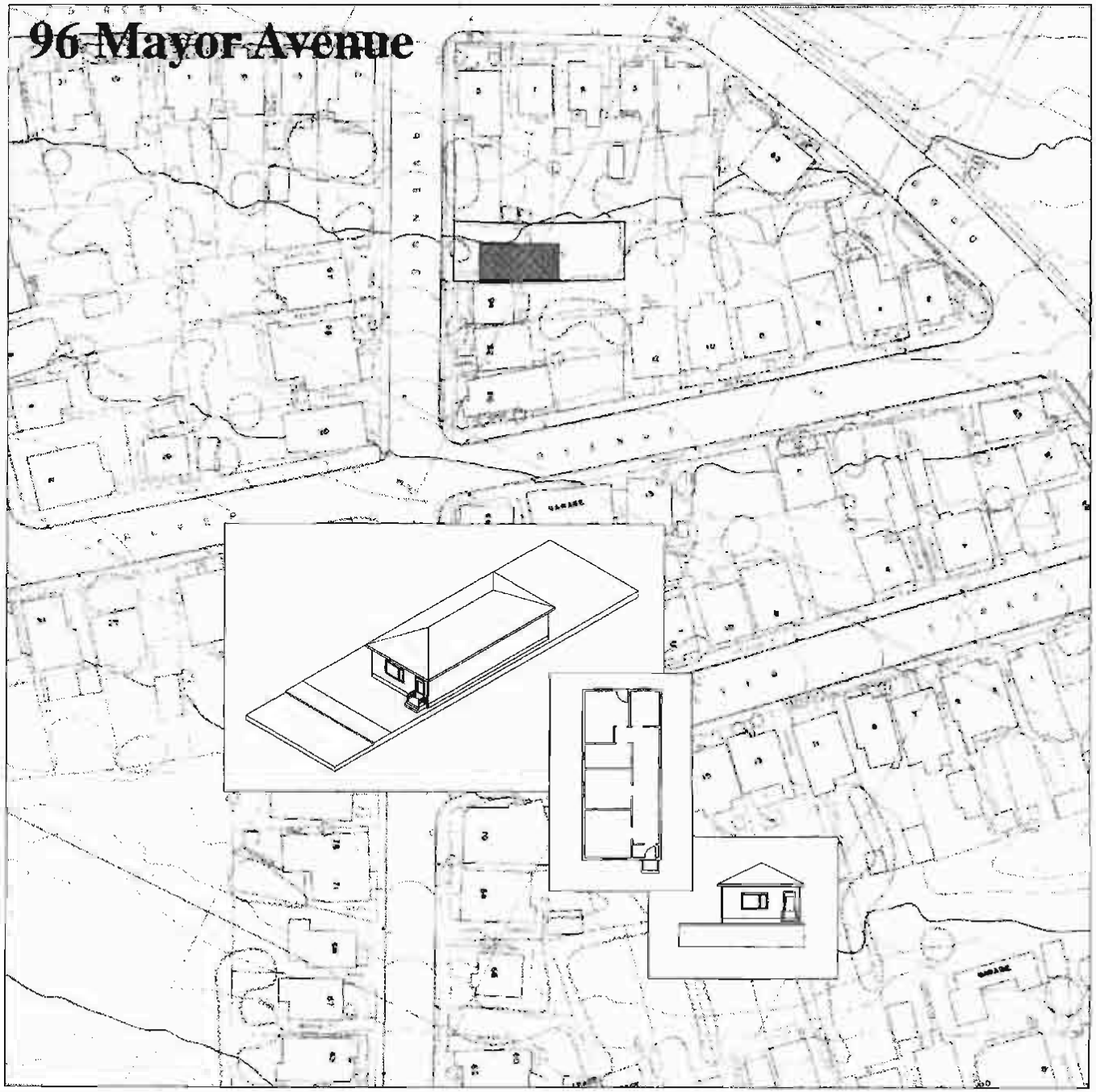
Detached Houses

Post-World War II, two-story house with gable roof and detached single-car garage (house located near the Churchill Square retail area).

0 5 10 15

scale in metres

House construction cost affordability index: 1.98 (building cost only)



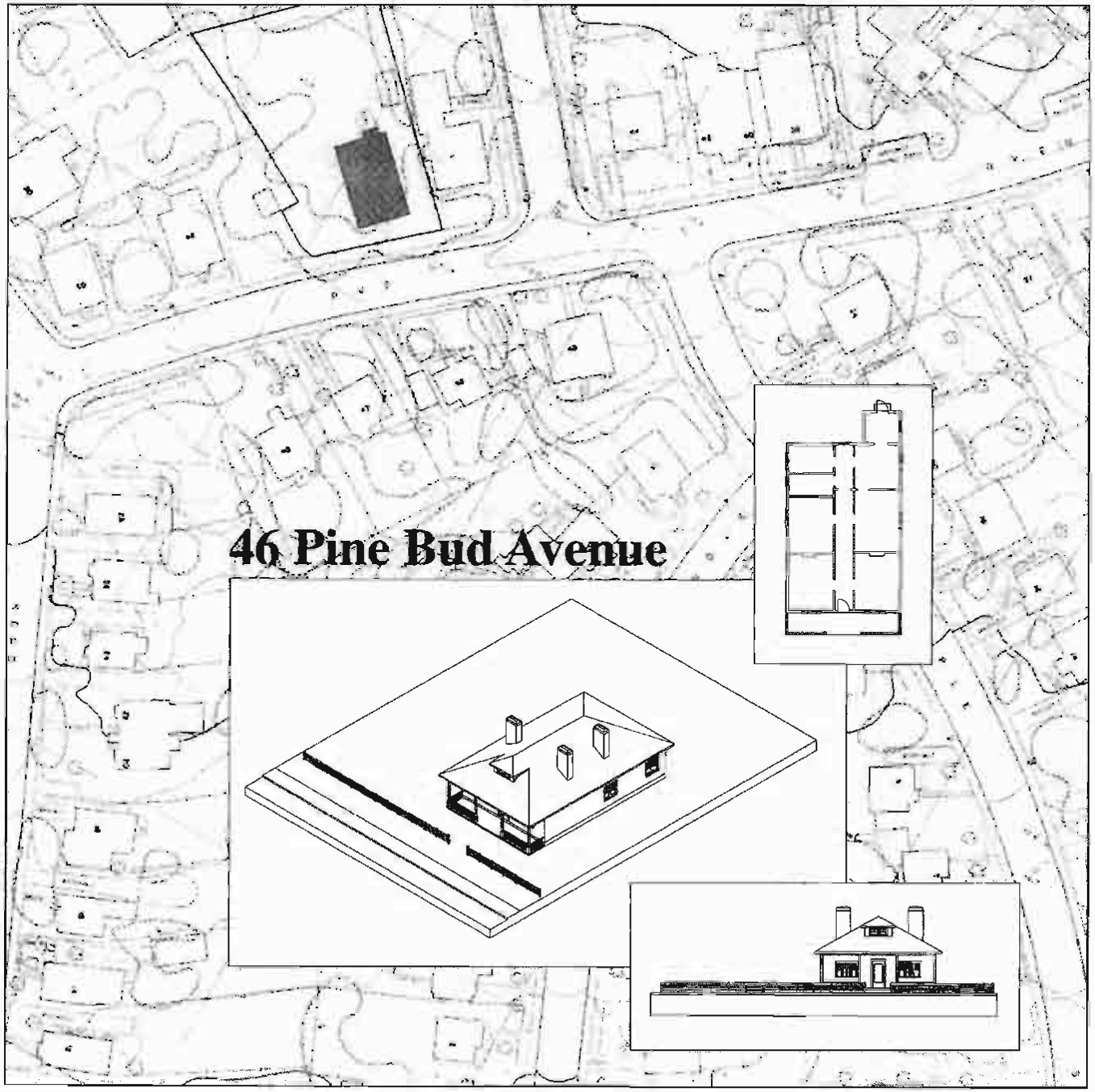
Detached Houses

One-starey bungalow with a hip roof (house located in the Rabbittown area).

0 5 10 15

scale in metres

House construction cost affordability index: 1.78 (building cost only)



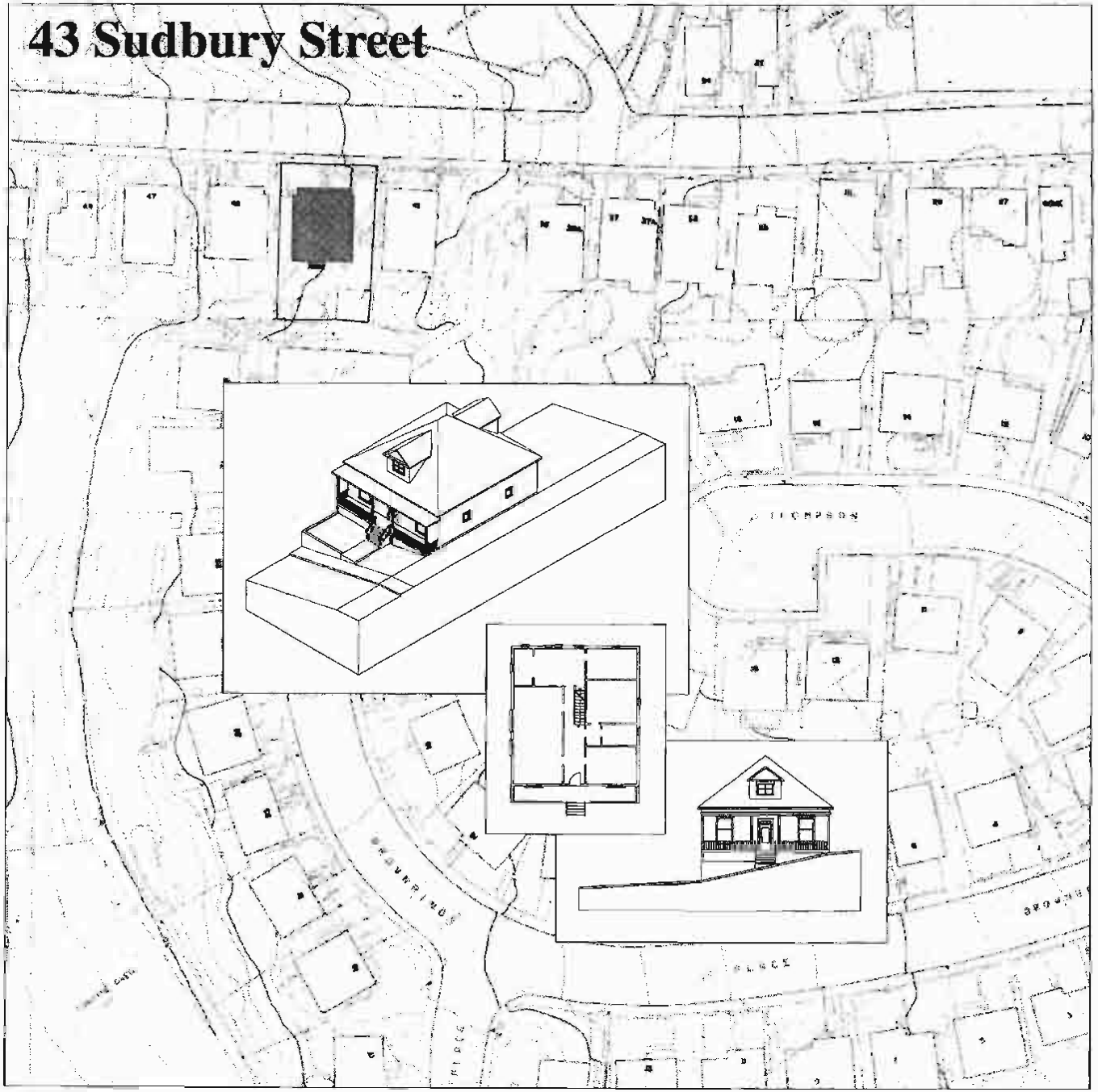
Detached Houses

Center-hall, hip-roof bungalow with an open front porch on a large lot (house located near the Churchill Square retail area).

0 5 10 15

scale in metres

House construction cost affordability index: 4.39 (building cost only)



Detached Houses

Center-hall bungalow with partial use of the second floor, open front porch, and hip roof (house located in the West End near Victoria Park). In Newfoundland today, the term "bungalow" is often loosely applied to several different house types found in suburban areas.

0 5 10 15

scale in metres

House construction cost affordability index: 3.79 (building cost only)

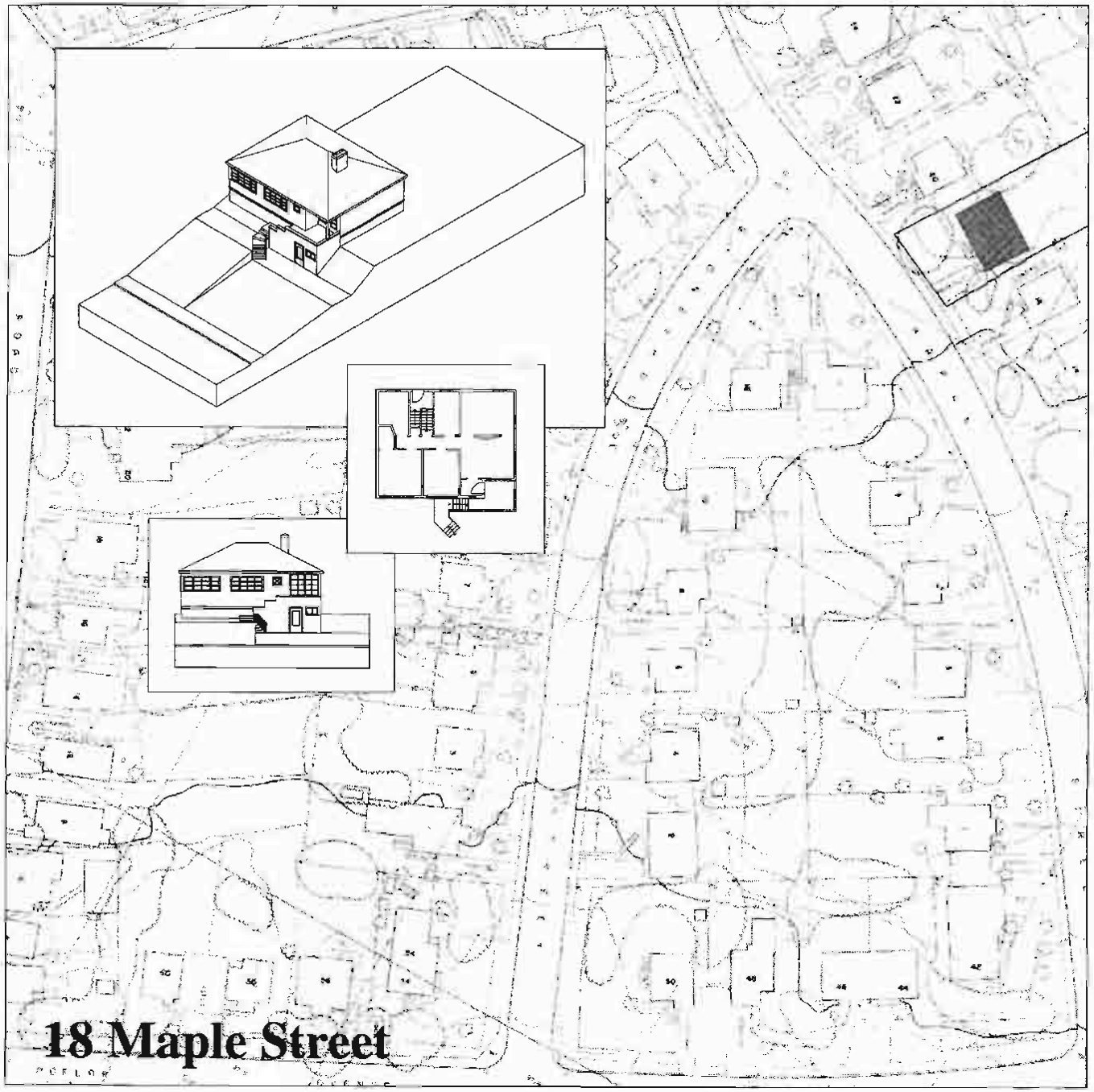
Detached Houses

One and one-half storey house on a hillside site located in the Churchill Square residential area. The exposed basement allows access for a garage or for an apartment. Several houses of this type ("Cape Cod") were constructed in the Churchill Square area in the late 1940's and early 1950's (compare with 118 Empire Avenue).

0 5 10 15

scale in metres

House construction cost affordability index: 2.73 (building cost only)



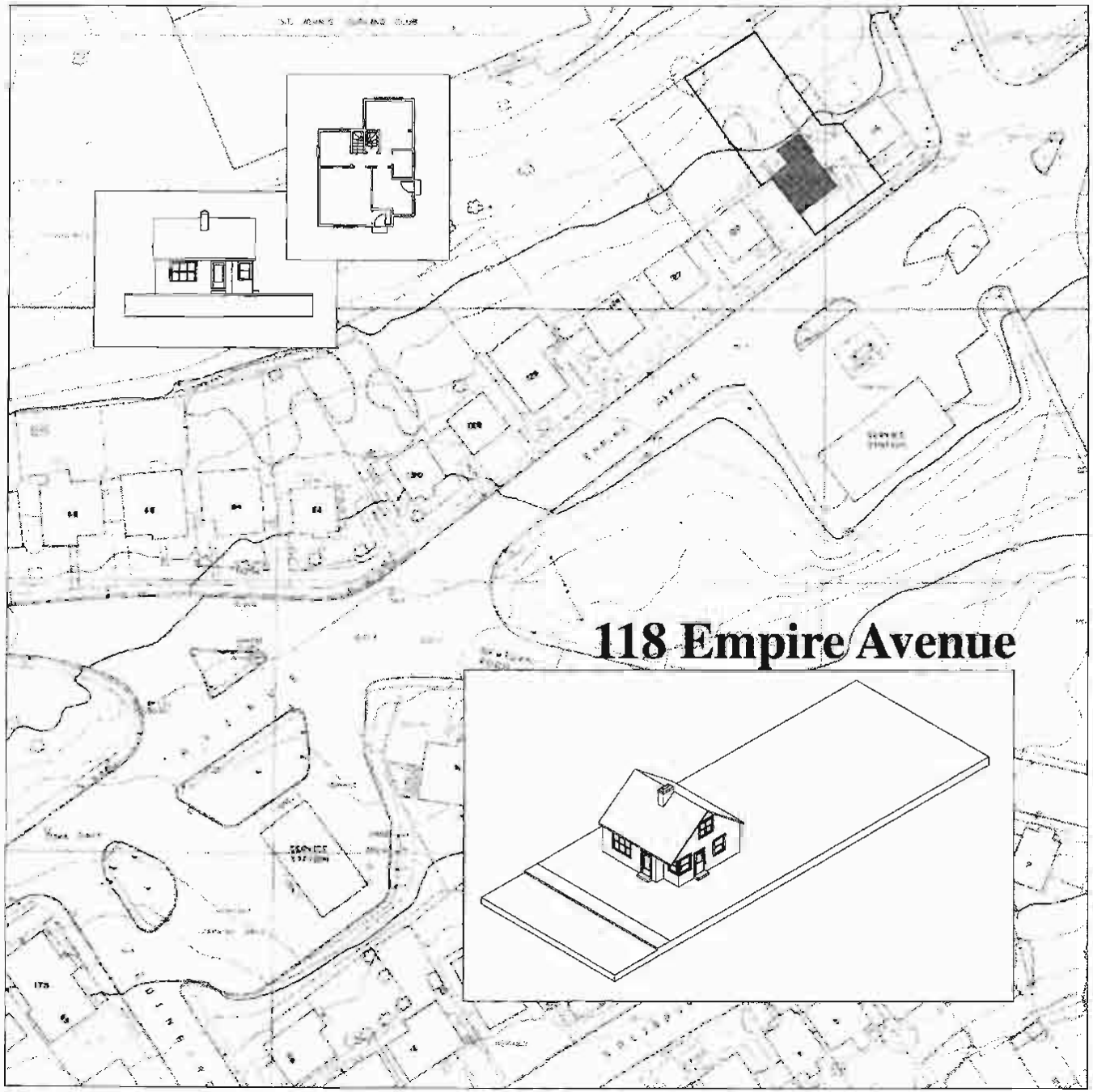
Detached Houses

Late 1940's- early 1950's one-storey "ranch" house with basement garage or apartment access (house located near the Churchill Square retail area).

0 5 10 15

scale in metres

House construction cost affordability index: 1.95 (building cost only)



Detached Houses

A variation on the one and a half-storey house type shown above for 16 Maple Street. Many houses identical to this one were built to the east of the University between the Rabbittown residential area and the Churchill Square residential area in the 1950's. Only part of the second floor can be used for bedrooms because of the gable roof. The form of this house is similar to the standard "Cape Cod" houses constructed in Levittown, Long Island, New York in the early 1950's.

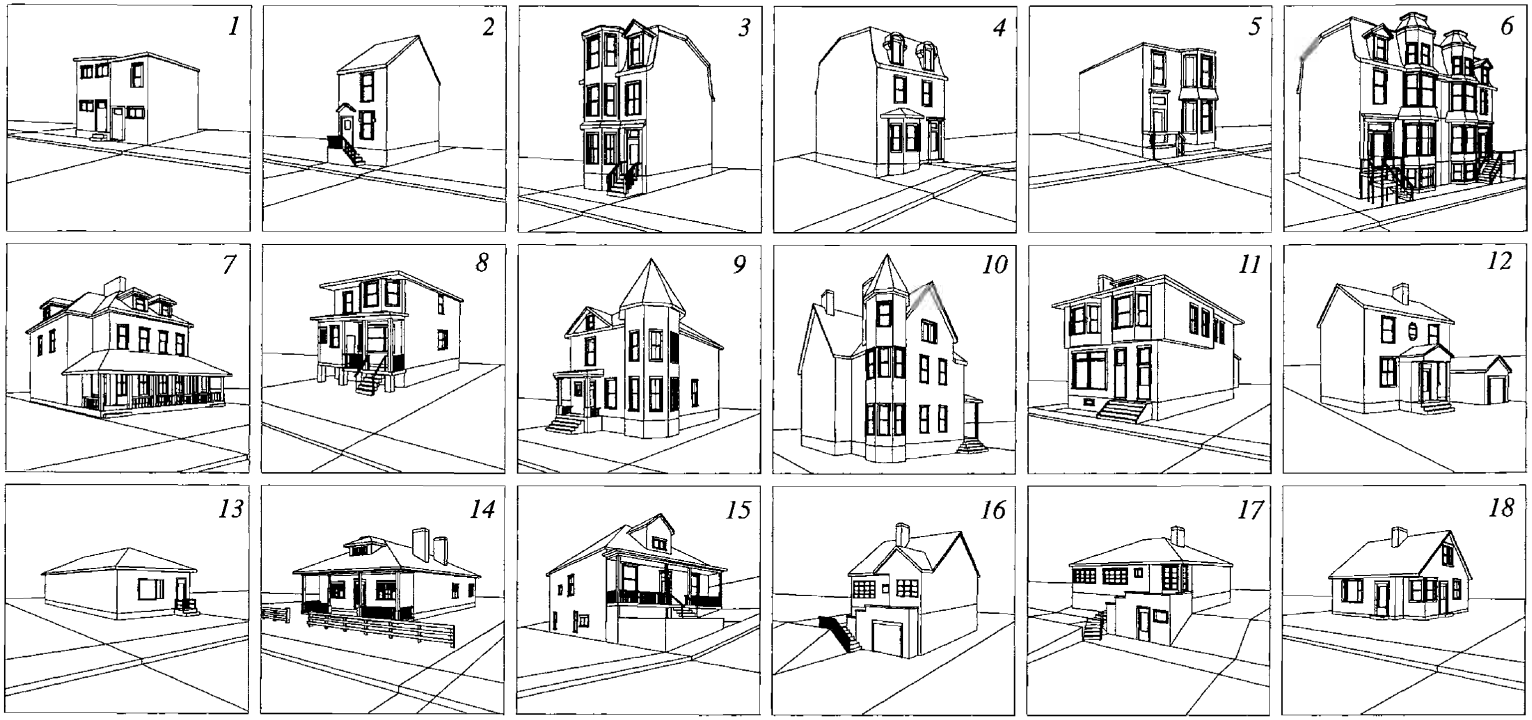
0 5 10 15

scale in metres

House construction cost affordability index: 2.07 (building cost only)

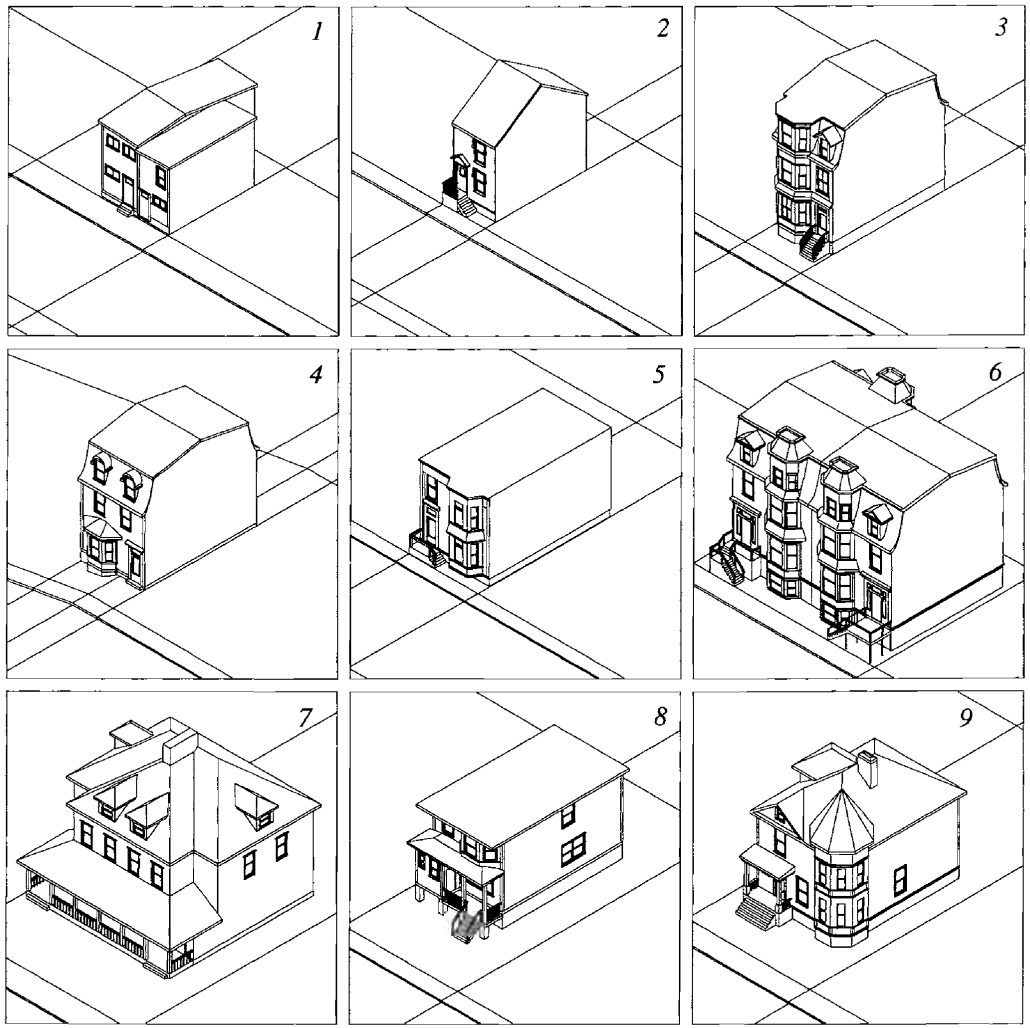
1 *24-26 Cookstown Road*
2 *18 Alexander Street*
3 *7 Victoria Street*
4 *5 Victoria Street*
5 *33 Power Street*
6 *9-11 Military Road*
7 *36-38 Rennie's Mill Road*
8 *40 Golf Avenue*
9 *18 Leslie Street*
10 *23 King's Bridge Road*
11 *154 Hamilton Avenue*
12 *45 Pine Bud Avenue*
13 *96 Mayor Avenue*
14 *46 Pine Bud Avenue*
15 *43 Sudbury Street*
16 *16 Maple Street*
17 *18 Maple Street*
18 *118 Empire Avenue*

Perspectives



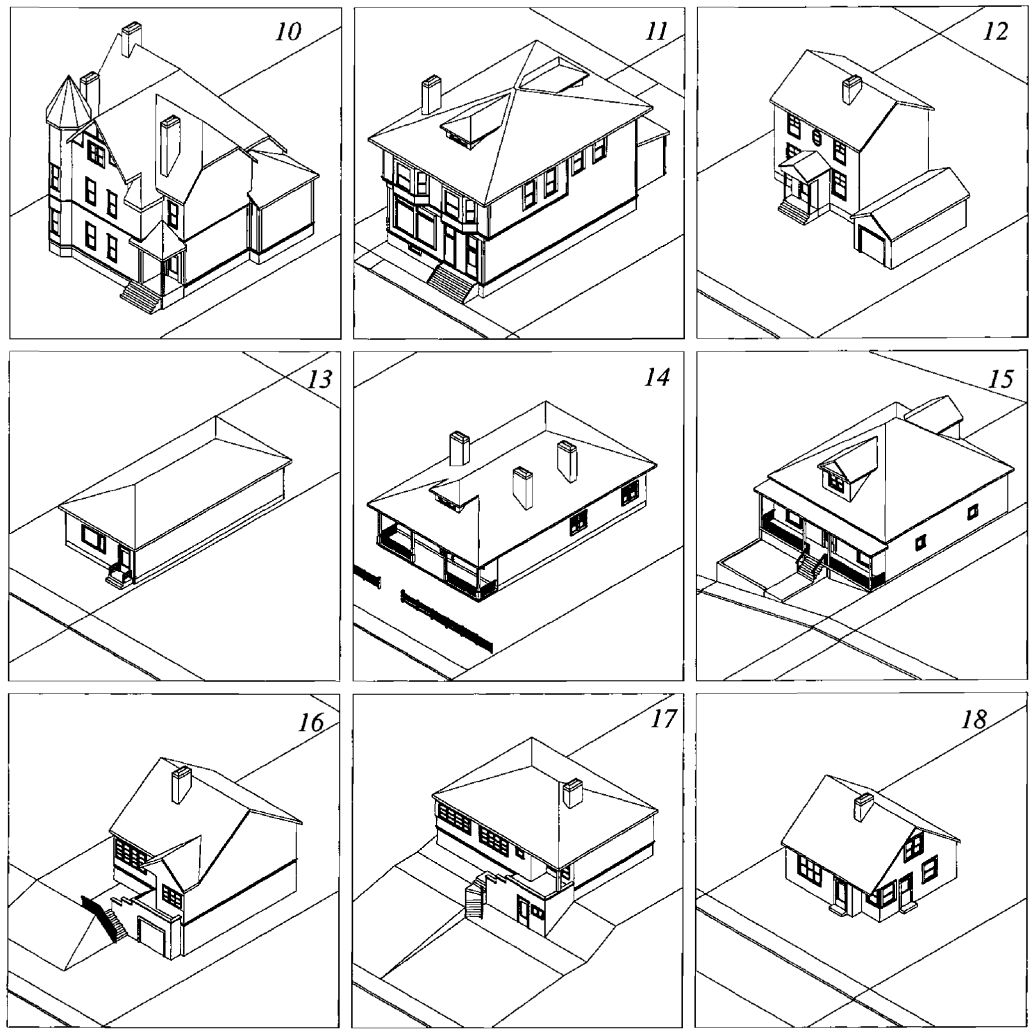
Axonometrics

1 *24-26 Cookstown Road*
2 *18 Alexander Street*
3 *7 Victoria Street*
4 *5 Victoria Street*
5 *33 Power Street*
6 *9-11 Military Road*
7 *36-38 Rennie's Mill Road*
8 *40 Golf Avenue*
9 *18 Leslie Street*

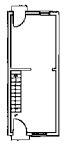


Axonometrics

10 *23 King's Bridge Road*
11 *154 Hamilton Avenue*
12 *45 Pine Bud Avenue*
13 *96 Mayor Avenue*
14 *46 Pine Bud Avenue*
15 *43 Sudbury Street*
16 *16 Maple Street*
17 *18 Maple Street*
18 *118 Empire Avenue*



Row Houses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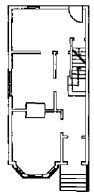
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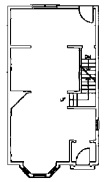
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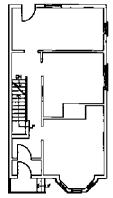
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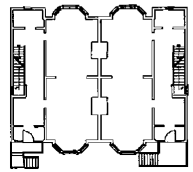
Duplex Houses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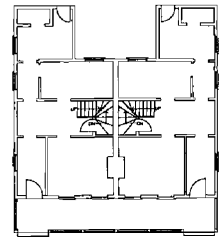
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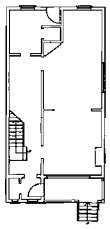
Detached Houses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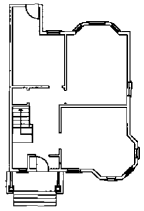
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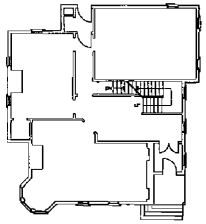
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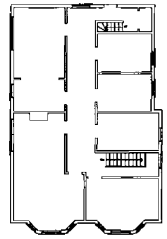
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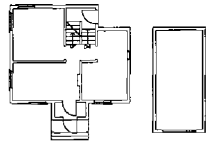
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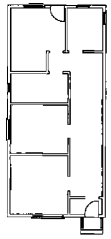
Pre-Confederation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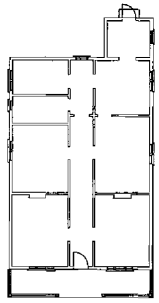
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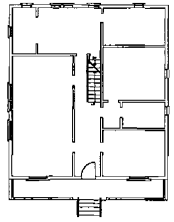
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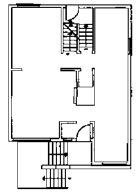
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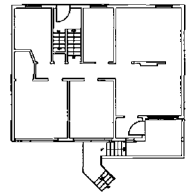
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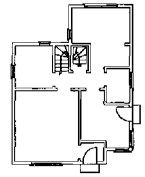
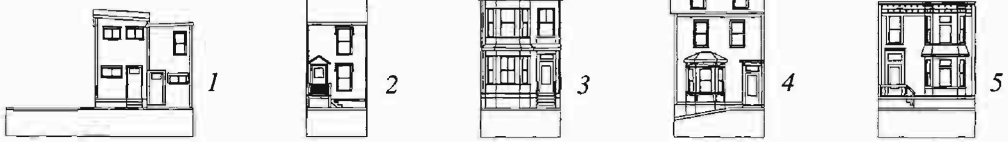

18

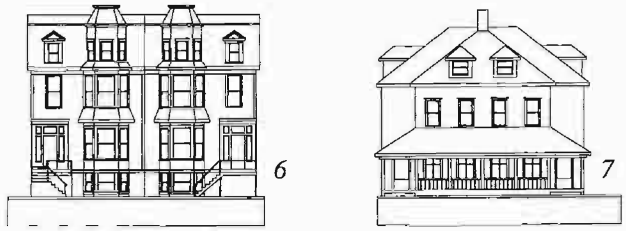
First Floor Plans

0 5 10 15 *metres*

1	*24-26 Cookstown Road*	7	*36-38 Rennie's Mill Road*	13	*96 Mayor Avenue*
2	*18 Alexander Street*	8	*40 Golf Avenue*	14	*46 Pine Bud Avenue*
3	*7 Victoria Street*	9	*18 Leslie Street*	15	*43 Sudbury Street*
4	*5 Victoria Street*	10	*23 King's Bridge Road*	16	*16 Maple Street*
5	*33 Power Street*	11	*154 Hamilton Avenue*	17	*18 Maple Street*
6	*9-11 Military Road*	12	*45 Pine Bud Avenue*	18	*118 Empire Avenue*



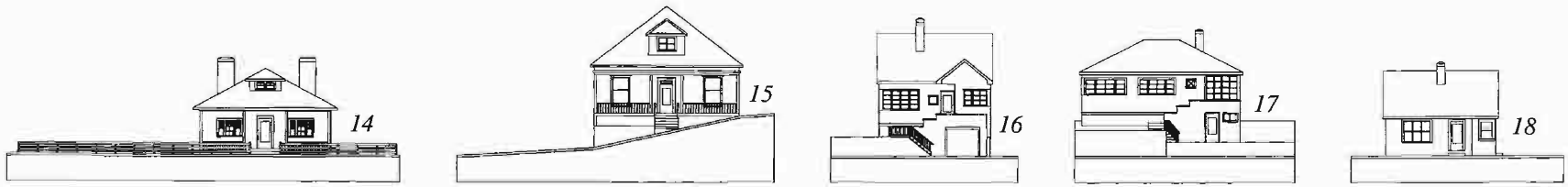
Row Houses



Duplex Houses

Detached Houses

Pre-Confederation



Elevations

0 5 10 15 *metres*

1	*24-26 Cookstown Road*	*7*	*36-38 Rennie's Mill Road*	*13*	*96 Mayor Avenue*
2	*18 Alexander Street*	*8*	*40 Golf Avenue*	*14*	*46 Pine Bud Avenue*
3	*7 Victoria Street*	*9*	*18 Leslie Street*	*15*	*43 Sudbury Street*
4	*5 Victoria Street*	*10*	*23 King's Bridge Road*	*16*	*16 Maple Street*
5	*33 Power Street*	*11*	*154 Hamilton Avenue*	*17*	*18 Maple Street*
6	*9-11 Military Road*	*12*	*45 Pine Bud Avenue*	*18*	*118 Empire Avenue*

Conclusions

View from a Prescott Street courtyard access lane

In St. John's, changes over time in neighbourhood form and house form reflect changing values. The placement of houses in the older residential neighbourhoods reflected a willingness to live in close proximity to neighbours. Cooperation was required in the siting, detailing, and maintenance of houses in order to enhance the appearance of the street. The attached houses in the downtown residential areas were "open" to neighbours and visitors through their site placement and architectural detailing. The houses on Atlantic Avenue in the West End and the houses on Circular Road (west) are good examples of houses that are "open" to the street: there are no barriers between the sidewalk and the entrance, the main floor is at street level, and the bay windows permit a strong visual connection between the exterior (public) and interior (private). However, the interiors of attached houses in the older residential areas were "closed": they contained rooms which reinforced separations between family members and also provided separate domains for males and females, family members and servants.

Postwar suburban areas required little cooperation between neighbours in the siting, detailing, and maintenance of houses. Responsibility for the siting of these houses was delegated to the planning authorities, and the detached houses in these areas were built in the era when informal visiting[1] in St. John's started to decline. Compared to houses downtown, these houses were "closed" to neighbours and visitors - reinforced by separations between houses and the entrance buffer created by the large, ornamental front yard (the large front yard of the early suburban house did not create as much of an entrance buffer as the projecting double-car garage of the present-day suburban house). The development of the early suburban house, although representing a sense of "closure" or withdrawal from neighbours on the exterior, had an "open" interior. There were fewer separations: for example, the combined kitchen/family room, or a dining room open to a living room.

The purpose of this research is not to criticize suburban areas with detached houses. There is a place for different forms of housing development in St. John's. The older suburbs, however, provide examples of what could be achieved with better planning and zoning. The older suburbs generally made use of grid pattern streets (often an irregular grid), block lengths were short, front yards were smaller than back yards, and outbuildings (detached garages, workshops), fences, small corner stores, zero lot lines, and on-street parking were permitted. All these elements contributed to the character of the older suburban areas, enhanced over time by the

Houses on Circular Road (west)

maturing of the landscape. There is also evidence that in the older suburban areas, there was still a concern with the appearance of the block (for example, as in the houses at the intersection of Maple Street and Stoneyhouse Street near Churchill Square, and the houses in the Golf Avenue area with consistent landscape features like front yard fences).

In St. John's, there is strong sentiment that new developments with row housing detract from property values. This is not surprising considering the poor design of existing row housing constructed in new residential areas. Anonymous rows of identical units have been built, often with substandard construction, on unsafe streets that are too wide (nearly the width of main highways), on blocks that are much too long, with zoning that excludes corner stores and outbuildings, with no alternatives to automobile traffic (pedestrian paths), and with little or no consideration of local architectural or urban character, landscaping, wind protection, semiprivate open space, views, or natural landscape features (rivers, topography). The unfortunate condition of these residential areas leads residents and decision-makers to believe that neighbourhood quality is compromised by the use of row housing.

The main advantage of row housing, duplex housing, terrace housing, and detached housing with minimal side yard clearances or zero lot lines is verified by the use of the Bertaud equations. A substantial savings is possible in both land and infrastructure costs with houses situated on narrow plots. The table below shows the "affordability index" for each residential area analysed in this report. The affordability index considers the cost of land, infrastructure, and site-specific parameters like plot widths. It compares the monthly payment required for a typical house in each area. For example, the Bulley Street residential area has been assigned a value of 1 since this was the most affordable residential area included in the survey. A house in the Newfoundland drive residential area would require 2.65 times the monthly payment for a house in the Bulley Street area.[2] The increased monthly payment is due mainly to the cost of land and infrastructure - not to the cost of the house. The comparison of costs presented in the housing typology demonstrates that house construction costs (building cost only) for several houses in postwar suburbs were less than the construction costs for modest row houses downtown. Considering only the cost of the buildings, 5 Victoria Street, a row house in the Gower Street residential area, would cost 46.8% more to build than 18 Maple Street, a detached house in the Churchill Square residential area. When land and infrastructure costs are considered, a

Houses on Hamilton Avenue

Decks built over small back yards in the West End

Houses on Patrick Street in the West End: the first floor is slightly below street level

Enclosed front porch on Monkstown Road

house in the Churchill Square area requires twice the monthly payment of a house in the Gower Street area. In the planning of new residential areas, the Bertaud equations permit experimentation with plot proportions and block lengths. Configurations geared to the use of particular house types and sizes can be optimized for affordability (a copy of the Bertaud model as modified for use in this study is presented in Appendix One).

Residential Area:	*Affordability Index:*
Bulley Street	**1.0**
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

Considering the high level of public subsidy required for the development of residential areas with detached houses on wide plots, the savings achieved by the use of narrow plots could be used to make affordable, attractive neighbourhoods of high quality. Public subsidies are often hidden components of new residential developments. At some point, all taxpayers end up subsidizing wide-lot, affluent suburban development through the increased costs of such things as access and arterial roads, garbage collection, and snow clearing, not to mention the wasteful infringement on land that could be conserved for public benefit (common open space, parks, wilderness reserves, conservation areas). The savings that could be achieved by using narrow lots (row houses, duplex houses, or detached houses with zero lot lines) could be used to enhance landscaping (planting, fences, pergolas), improve or preserve common open space (land conservation), provide pedestrian paths, provide street furniture, and, in the case of low income housing - to provide extra funds for constructing a more substantial exterior for the house (materials and architectural elements).

Except in a few infill housing developments in the older residential

Hamilton Avenue duplex houses

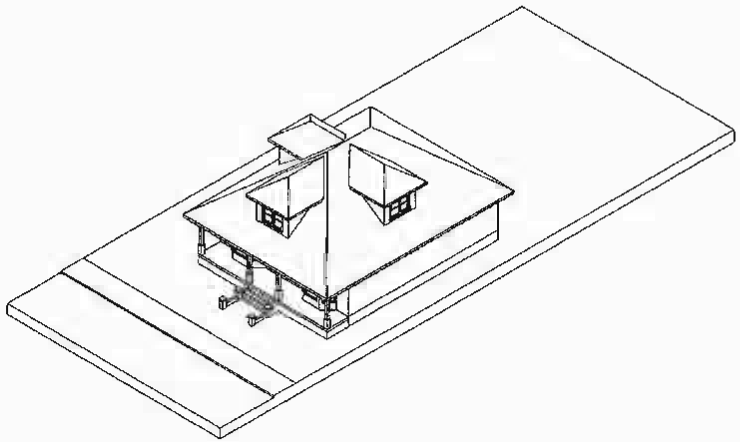
Leslie Street duplex houses

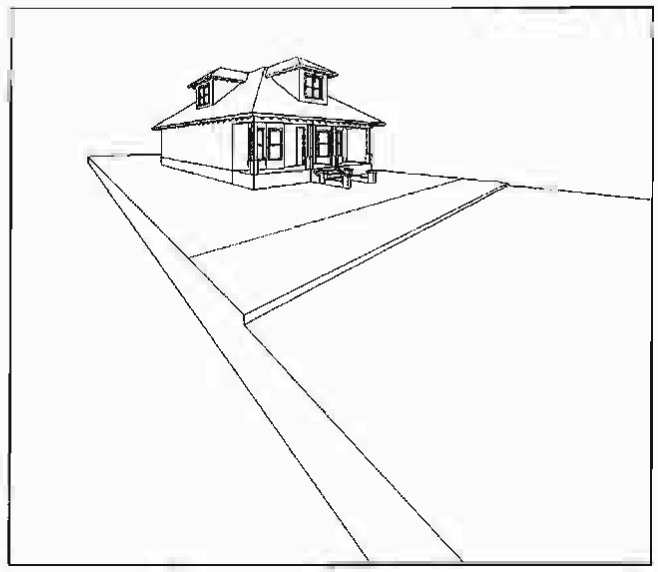
Waterford Bridge Road duplex houses

areas, quality housing developments with affordable house types that take advantage of recent planning theory (subsidy-reduced, sustainable, mixed-use development) have yet to be built in St. John's. All the ingredients required to make such neighbourhoods are present in the older residential areas of St. John's, and these are presented below as concepts or "alternatives" that should be considered when planning new housing developments. Unfortunately, many of these alternatives would be prohibited by present-day city regulations. Although in recent years we have lost the urban design vision and expertise that would enable us to make memorable places for people to live and work, recent town planning efforts elsewhere in North America prove that where there is the will to do so, this planning and design expertise can be re-established. New housing developments need not be less memorable than the older residential areas of St. John's.

We need to question the ultimate objectives of seemingly neutral, present-day design and planning standards. The alternatives proposed here may help to recapture the spirit of what was once an exceptional city: a harbour city on an island nearly halfway across the North Atlantic, whose painted wooden houses clustered together for warmth on a crazy-quilt pattern of streets. A city where the identity and wellbeing of the residents was strongly linked to the commerce, industry, buildings, and landmarks of its neighbourhoods and "towns."

Victoria Street door canopy

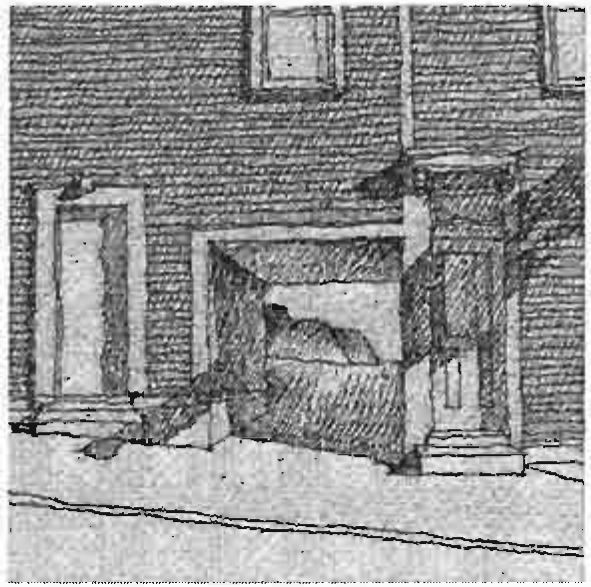




Bungalow on Campbell Avenue

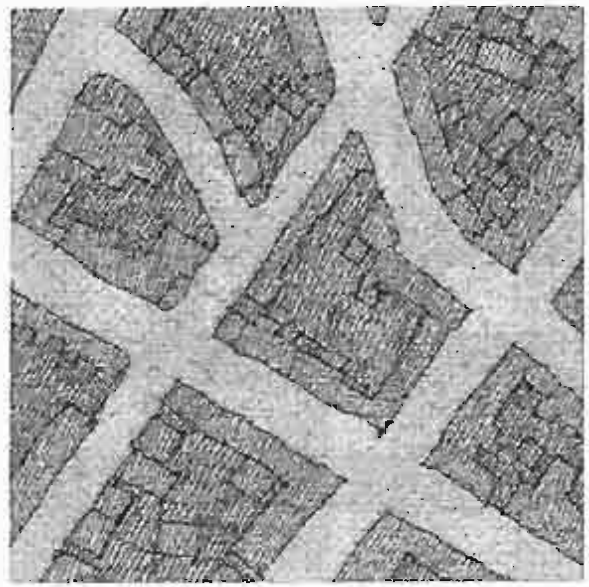
Bridging

In new residential construction utilizing row housing, duplex housing, and terrace housing, thought should be given to promoting connections between buildings through "bridging." One of the most interesting features of the older residential neighbourhoods in St. John's are the common access-ways under houses to courtyards and back yards, and the use of this feature in new housing would promote local architectural character. Where appropriate, consideration should also be given to another feature of many of the older houses in St. John's - the second-floor cantilevered extensions of buildings: cantilevers over corner store entrances, bay window cantilevers over sidewalks and side yards, and cantilevers permitting access to back yards in zero-lot line and irregular plots.



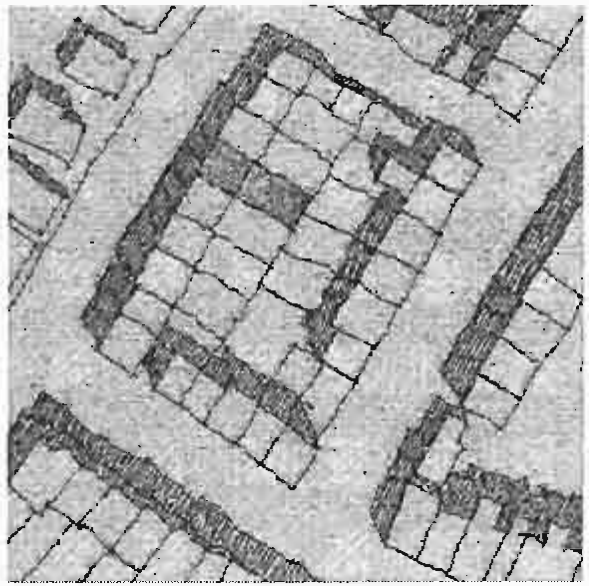
Grid Pattern Streets

The older residential areas of St. John's make use of streets arranged on a grid pattern. Instead of requiring wide cul-de-sac streets with collector roads and arterial roads, grid-pattern streets should be used. Evidence that neighbourhoods with grid pattern streets are desirable is provided by the popularity of the Churchill Square residential area.[3] Houses are in high demand in this area, and the grid that was used is not a rigid, orthogonal grid. The advantage of the grid is that traffic is diffused instead of concentrated, streets can be narrower resulting in increased safety for pedestrians, and visual orientation is improved. Coupled with the implementation of streets arranged on a grid should be an awareness of a reasonable curb radius at intersections. Intersections in the older, grid street residential areas of St. John's are safer for pedestrians than the new cul-de-sac street residential areas because the curb radii are smaller: less distance is required to cross the street from curb to curb, and crosswalks are easier to identify.[4]



Optimize blocks

For ease of orientation, safety, neighbourhood identity, and in support of the concept of "courtyards" (below) block lengths should not be too long. The Bertaud equations can be used to optimize the fit between house types, plot proportions, and street types. Block configurations can be tested to ensure that infrastructure costs are reasonable. In some of the newer residential areas of St. John's, the block lengths are much too long, resulting in potential traffic hazards (drivers tend to speed on these streets).



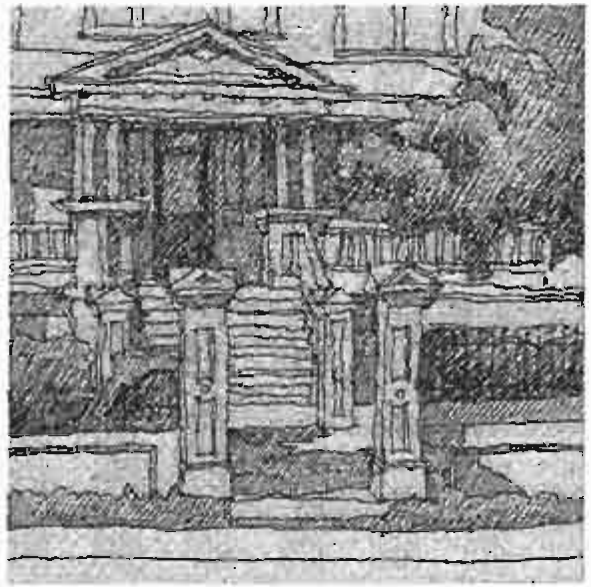
Small houses

In St. John's, there is an appalling lack of good quality affordable housing. Most new suburban housing is planned according to affluent standards that can no longer be maintained in Newfoundland's economic conditions. Homeowners are having difficulty keeping up with mortgage payments, but there are few alternatives in the housing market for less expensive housing. In the past few decades, many suburban homeowners have relied upon planning approval for basement apartments. These help to pay mortgages, but there is evidence that the occupancy rate for these apartments may not be sustainable. Instead of constructing houses with basement apartments (in St. John's, a ubiquitous but poor-quality housing alternative to begin with considering dampness, proximity to furnaces, poor acoustical conditions, safety conditions, and limited day lighting), consideration should be given to the construction of affordable, small row houses on narrower-than-usual lots, as was once done in St. John's on Cookstown Road and Bannerman Street, and as built in demonstration projects elsewhere (the "Grow Home"[5]). These small houses would enable first-time home buyers to establish equity by owning a house instead of renting, and they would also be suitable for senior citizens who would like to own their own house but who can no longer afford to maintain a larger residence.

In planning new residential neighbourhoods, consistent design parameters should be used to enhance neighbourhood identity, such as common setbacks and common landscape features (fences, planting). However, house sizes within neighbourhoods need not be identical - existing row housing on Cookstown Road demonstrates that even with the smallest houses, different house sizes can be accommodated without awkwardness.

Urban landscaping elements

In many older residential areas of St. John's, there are fine examples of landscape elements that greatly enhance neighbourhoods. In the early decades of this century, houses in St. John's with small front yards were often enclosed by ornamental concrete gate posts, retaining walls, and wrought iron fences. There was a consistency in the detailing of these features that contributed to the character of particular streets. In neighbourhoods with modest, small houses, this front-yard treatment greatly enhanced the appearance of the houses themselves: where ornamental concrete gate posts were used, a sense of monumentality was added to the exterior of the house. Even where wood fences were used with less ornamental treatment, the view of the house was "filtered" by these elements, adding a sense of depth, and permitting expression through paint colours and textures. In new, affordable housing developments with small houses, landscaping elements like pergolas, fences, and trellises can make a great difference to the perception of housing design quality.

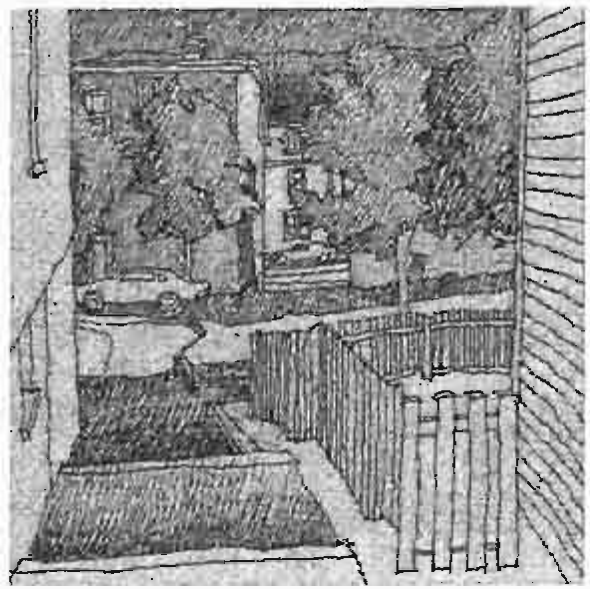


Parking

In the downtown residential area, unobtrusive, small parking lots have been added to some courtyards (for example, Masonic Terrace). In addition to the possibility of courtyard parking, blocks configured with service lanes would also provide access to private parking. Consideration should also be given to promoting on street parking. Contrary to popular wisdom, traffic safety studies have shown that streets are safer with on-street parking: drivers tend to slow down, and the cars provide a safety buffer for pedestrians.[6] Another alternative for on-street parking is to change the street to a one-way direction and allow diagonal parking on one side. This system has been used with success on William Street in Georgestown. Parking under houses should be discouraged, as this prevents the possibility of on-street parking and it also detracts from the appearance and safety of the street (no possibility of ground-level surveillance of the street from the houses).

Lanes and pedestrian paths

In the older residential areas downtown, there was once a network of pedestrian paths. These paths or lanes were short-cuts - alternatives to the main streets, and they also provided access to common work areas within courtyards. The lanes threaded through blocks of houses and courtyards in an irregular manner, as a counterpoint superimposed on quasi-grid-pattern streets. Some of the main paths or lanes terminated at important wharves and markets on the waterfront, after passing under stores and warehouses. In new housing developments, networks of pedestrian paths should be encouraged. These would provide short-cut access to courtyards, stores, and amenities, and they could be linked with main paths outside the neighbourhood that provide access to common open areas (for example, the river path network presently under development in St. John's). As discussed in the section on parking, lanes for vehicular and service access should also be considered in new residential development. Bulley's Lane in Georgestown provides an example of the vehicular lane's potential for parking access, service access, and access to outbuildings like apartments and work-shops at the back of the residential lot. Lanes can be used in both urban and suburban types of development. The early proposals for the development of the Churchill Square suburban residential area included the concept of vehicular access lanes.



Courtyards

Where possible, courtyards should be created by grouping houses close to the perimeter of blocks, with back yards made larger than front yards. In row housing configurations, front yards may be dispensed with or made very small. Courtyards created by row houses make sense for St. John's climate because they afford wind protection. Older neighbourhoods in St. John's with courtyards generally have streets with a strong sense of spatial definition, and there is an interesting contrast between the urban, hard-surface space of the street and the verdant space of the courtyard. Courtyards can contain back yards, common open space, small parking lots, and work areas.

Mixed use zoning

Retail buildings located in or near residential areas should offer a mixture of residential and commercial use, as was once available in the older buildings on Water Street (downtown) and as is presently available in the original buildings constructed in the Churchill Square retail centre. Mixed-use zoning should be encouraged, permitting small retail buildings and light industrial activity in residential areas. Proof that contemporary light industrial activity is compatible with residential areas is provided by the Georgestown area. Although some of the small factories and forges no longer exist, there is still light industrial activity (brewery, glass company, warehouses, auto-body repair shops).

Positive outdoor space

The older residential areas of St. John's with row housing consist mainly of "positive" outdoor space (one of the most successful open spaces downtown with this spatial character is the War Memorial in the East End, shown below). This concept has been articulated by many architects and town planners in connection with urban design principles ("Outdoor spaces which are merely 'left over' between buildings will, in general, not be used.[7]"). This does not mean that all open spaces have to be filled, accounted for, or that all buildings have to be connected. The principle can be used as a general guide, but there is also room for the unexpected and for the unintentional use of open space. Some of the most memorable courtyard spaces downtown were generated by the unintentional effect of additions to commercial buildings and houses.

Street space

Before finalizing planning parameters for houses and streets in new residential areas, the particular character of the street should be tested, either though solar studies, cone of vision studies, or proportion studies. In existing residential areas, there is a correlation between street space and house types that should not be ignored.

Small towns in cities

At one time, St. John's was a collection of small towns or neighbourhoods (Hoylestown, Georgestown, Monkstown), each boasting a certain amount of self-sufficiency in terms of commerce and amenities, and each with a strong identity and reasonable physical scale. Today, these areas are physically intertwined and may appear indistinct to outsiders, but among local residents they have retained their identity. The "small towns" of old St. John's suggest a sensible way to plan new residential development that would retain desirable qualities found in the older residential areas.

Clusters of retail buildings could provide a community focus for residential areas, as in the example of Churchill Square. These clusters should be accessible both by vehicle and by pedestrian paths. A degree of self-sufficiency should be the goal when planning new residential areas with regard to the range of amenities and services offered. In this way, large urban areas can be broken down into smaller areas with the long-term potential for sustainable development.

"To be sustainable, cities must become more resilient. They must live within bioregional limits, repair natural systems that have been stressed to the point of dysfunction and create new forms of habitation that respond joyfully to these limits rather than simply being constrained by them.

...At the scale of land use, places with mixed land uses and pedestrian and transit access are more resilient. They are less dependent on nonrenewable energy resources and they can adapt more easily to changing use of built and open space."[8]

Planning for neighbourhood identity should be focused on achieving a strong sense of place, responding to the memorable urban and architectural form of the older residential areas of St. John's and the landscape of the region. This can be achieved not only with the careful siting of houses and the proportions of lots, but with the sensitive use of architectural elements and materials. Architectural elements like bay windows and dormer windows combined with the strong paint colours typically used in Newfoundland provide clues to the design possibilities. Replication of historical architectural features and styles should not be the end goal of these considerations, but experience in St. John's has shown that materials traditionally used in house construction such as wood clapboard are far more durable than some modern materials.

Outbuildings

The concept of subdividing existing lots should be promoted to permit the above-grade development of small, detached apartments ("coach house" type units) for grandparents, students, and seniors. These would be preferable to basement apartments. Where they exist in large urban areas, these "coach-house" units are in great demand and their architectural design enhances rather than detracts from neighbourhoods. Interesting connections can be made between coach houses and main houses through fences, gates, and pergolas, adding urban character and resulting in small, wind-sheltered, semiprivate open areas within larger courtyards.

Coach houses and similar types of "infill" buildings in cities are in great demand not only for apartments but for artists-studios and small offices. In St. John's, acknowledgment should be made that the place of work is changing: more people now have the opportunity to work at home, and the separation between "living" space and "working" space as presently reinforced by the planning code is antiquated and counterproductive: it discourages innovative private enterprise. For example, in many new housing projects for developing countries, home-based industry and services are a main feature of the planning code and housing design: residents are encouraged to set up small shops on or near their residential premises. Given the present economic conditions in Newfoundland, the situation is not so different. Homeowners should not be prevented from setting up small, detached workshops or buildings for home-based industries and services if they desire to do so. At one time in St. John's, all the downtown residential areas had a mix of light industrial buildings and residential buildings. Rather than detracting from neighbourhoods, the blacksmith's and shoemaker's activity enhanced residential areas. The buildings that houses these activities were memorable places of interest in the neighbourhood.

Summary of Existing Neighbourhood Characteristics:

Residential/Commercial

Advantages:

- mixed-use functions (zoning)
- suitable configuration for senior's housing
- lower infrastructure costs
- heritage/architectural/urban design potential
- land conservation
- work/residence combination
- town-centre/focus
- energy/environmental conservation
- buildings/streets compatible with "courtyard" concept
- pedestrian paths/lanes
- alleys for service
- low-rise compatibility with views
- grid street pattern/safety/traffic flow
- residential use: recent building vacancies

Disadvantages:

- limits on parking availability
- acoustical separations required
- business use: recent downtown decline
- fire separations/noncombustible construction req'd.

Opportunities for improvement:

- encourage the maintenance of pedestrian paths
- encourage infill housing/adaptive reuse of buildings

Downtown Residential/Georgestown

Advantages:

- mixed-use functions: (zoning) corner stores
- lower housing and infrastructure costs
- architectural/urban design potential
- heritage conservation areas
- easy access to public amenities
- land conservation
- energy/environmental conservation
- "courtyard" concept/wind protection
- pedestrian paths/lanes
- service and parking in courtyards/alleys
- low-rise compatibility with views of harbour
- large/small house compatibility
- block (street) form compatible with topography
- grid street pattern/safety/traffic flow
- incremental construction process: affordability
- flexibility for additions to houses
- lower landscape maintenance costs
- neighbourhood identity
- outbuildings

Disadvantages:

- limits on parking availability
- recent expedient traffic patterns: some areas
- recent unsympathetic new development in some areas
- fire/acoustical separations required

Opportunities for improvement:

- permit small detached outbuildings for:
  - home office small apartments (seniors)
  - home workshops
- encourage the maintenance of pedestrian paths
- discourage change in grid street pattern

Summary of Existing Neighbourhood Characteristics:

Circular Road

Advantages:

- park-like setting
- access to parks/Government House grounds
- heritage/architectural/urban design potential
- low-rise compatibility with views
- grid street pattern/safety/traffic flow
- acoustical/fire separations
- outbuildings
- off-street parking

Disadvantages:

- higher infrastructure costs
- higher house construction costs
- house maintenance costs
- high infrastructure costs
- energy efficiency penalty (detached houses)

Opportunities for improvement:

- permit small detached outbuildings for:
  - home office small apartments (seniors)
  - home offices
- encourage landscaping with indigenous planting
  - explore alternatives to lawns and asphalt
- encourage heritage conservation

Rabbittown

Advantages:

- mixed-use functions: corner stores
- low housing and infrastructure costs
- urban design potential
- reasonable infrastructure cost
- land conservation
- energy/environmental conservation
- "courtyard" concept/wind protection
- large/small house compatibility
- small front yards/large back yards
- small outbuildings/workshops
- house form compatible with views/topography
- grid street pattern/safety/traffic flow
- incremental construction process: affordability
- flexibility for additions to houses
- lower landscape maintenance costs
- convenient access to public amenities
- acoustical/fire separations
- off-street parking

Disadvantages:

- energy efficiency penalty (detached houses)

Opportunities for improvement:

- permit small detached outbuildings for:
  - home office small apartments (seniors)
  - home workshops
- encourage the development of pedestrian paths
- encourage landscaping with indigenous planting
  - explore alternatives to lawns and asphalt

Summary of Existing Neighbourhood Characteristics:

Golf Avenue

Advantages:

- mixed-use functions/corner stores
- reasonable infrastructure cost
- architectural/urban design potential
- land conservation
- environmental conservation (land area/services)
- compatible with "courtyard" concept
- low-rise compatibility with views
- grid street pattern/safety/traffic flow
- acoustical/fire separations
- some outbuildings (garages)
- off-street parking

Disadvantages:

- energy efficiency penalty (detached houses)

Opportunities for improvement:

- permit small detached outbuildings for:
  - home office small apartments (seniors)
  - home workshops
- encourage the development of pedestrian paths
- encourage landscaping with indigenous planting
  - explore alternatives to lawns and asphalt

Churchill Square

Advantages:

- access to shopping
- urban design potential
- pedestrian paths/lanes
- low-rise compatibility with views
- grid street pattern in some areas: safety/traffic flow
- reasonable house construction costs
- small front yards, larger back yards
- acoustical/fire separations
- some outbuildings (garages)
- off-street parking

Disadvantages:

- higher infrastructure cost
- energy efficiency penalty (detached houses)

Opportunities for improvement:

- permit on-street parking
- permit small detached outbuildings for:
  - home offices
  - small apartments (seniors)
  - home workshops
- encourage the development of more pedestrian paths
- encourage landscaping with indigenous planting
  - explore alternatives to lawns and asphalt
- enhance the urban design of the shopping centre
  - permanent farmer's market
  - infill to optimize buildings around the square
  - wind protection/sidewalk restaurant seating
  - infill housing/apartments
  - public amenities

Summary of Existing Neighbourhood Characteristics:

Newfoundland Drive

Advantages:

- acoustical/fire separation
- off-street parking

Disadvantages:

- streets too wide: unsafe traffic conditions (speed)
- cul-de-sacs and arterial roads: traffic congestion
- high infrastructure costs
- no sense of hierarchy or difference in street space
- block lengths too long
- no corner stores or mixed-use zoning
- low density: energy and environmental penalty
- natural landscape destroyed (flora, drainage):
  - few provisions for land conservation
- no sense of place within a large suburban area
- environmental conditions ignored (wind protection)

Opportunities for improvement:

- permit on-street parking
- permit small detached outbuildings for:
  - home offices
  - small apartments (seniors)
  - home workshops
- encourage the development of pedestrian paths
- encourage tree planting to define street space
- encourage landscaping with indigenous planting
  - explore alternatives to lawns and asphalt

[1] See excerpts from the interview with Mr. Jack White. Mr. White describes an era of informal visiting in the older residential areas of St. John's.

[2] The Bertaud equations do not take into consideration construction costs that would enable the comparison of houses with historic features (for example, Victorian houses with high ceilings and historic architectural elements) with newer house types (ranch houses, bungalows).

[3] Part of the Churchill Square residential area does have a few cul-de-sac streets. In this survey, that part of the Churchill Square residential area that is arranged primarily on a grid pattern was analysed.

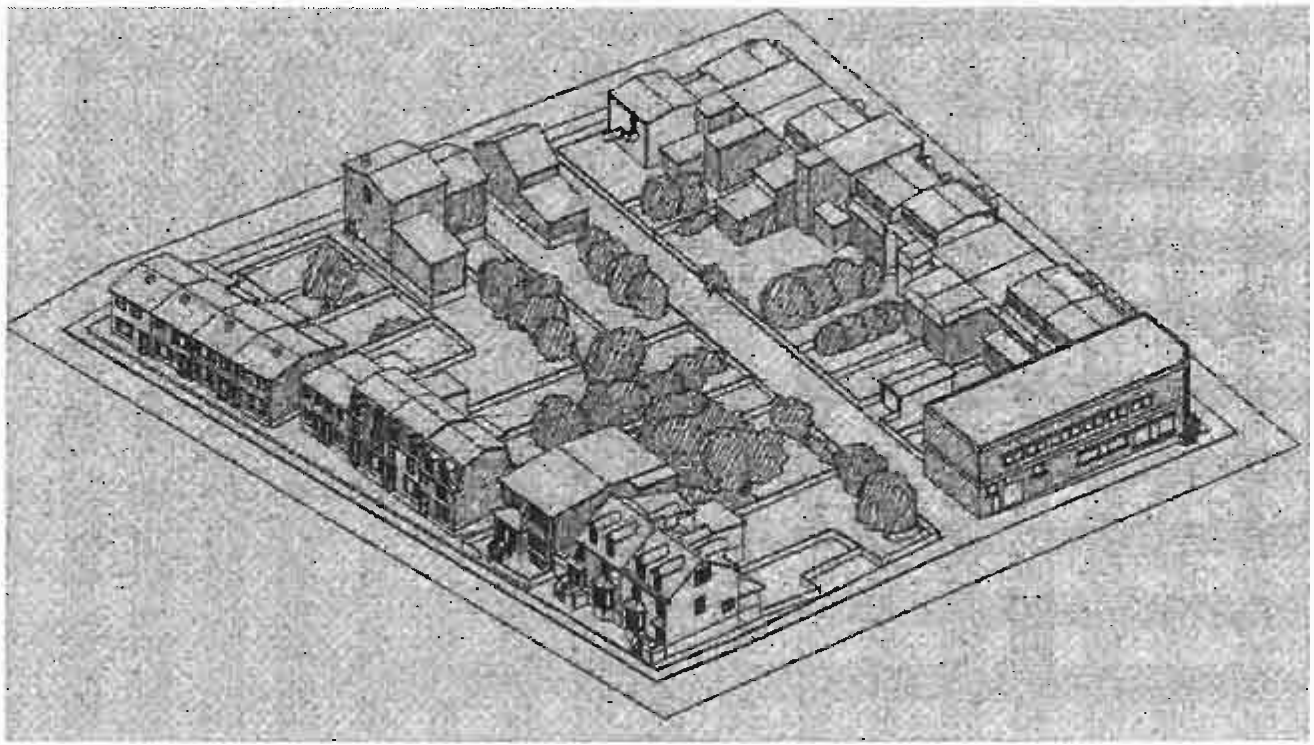
[4] In their books and articles and in their built projects, Duany and Plater-Zyberk (*Towns and Town Making Principles...*) have put forward eloquent arguments in favour of grid pattern streets. They have cast doubt on an era (post-Second World War) of expedient suburban traffic planning that makes cul-de-sacs and arterial roads seem inevitable.

[5] Witold Rybczynski, Avi Friedman, and Susan Ross, "The Grow Home": Project Paper No. 3, Affordable Homes Program, School of Architecture, McGill University, Montreal, May, 1990.

[6] Duany and Plater-Zyberk, *Towns and Town Making Principles...*

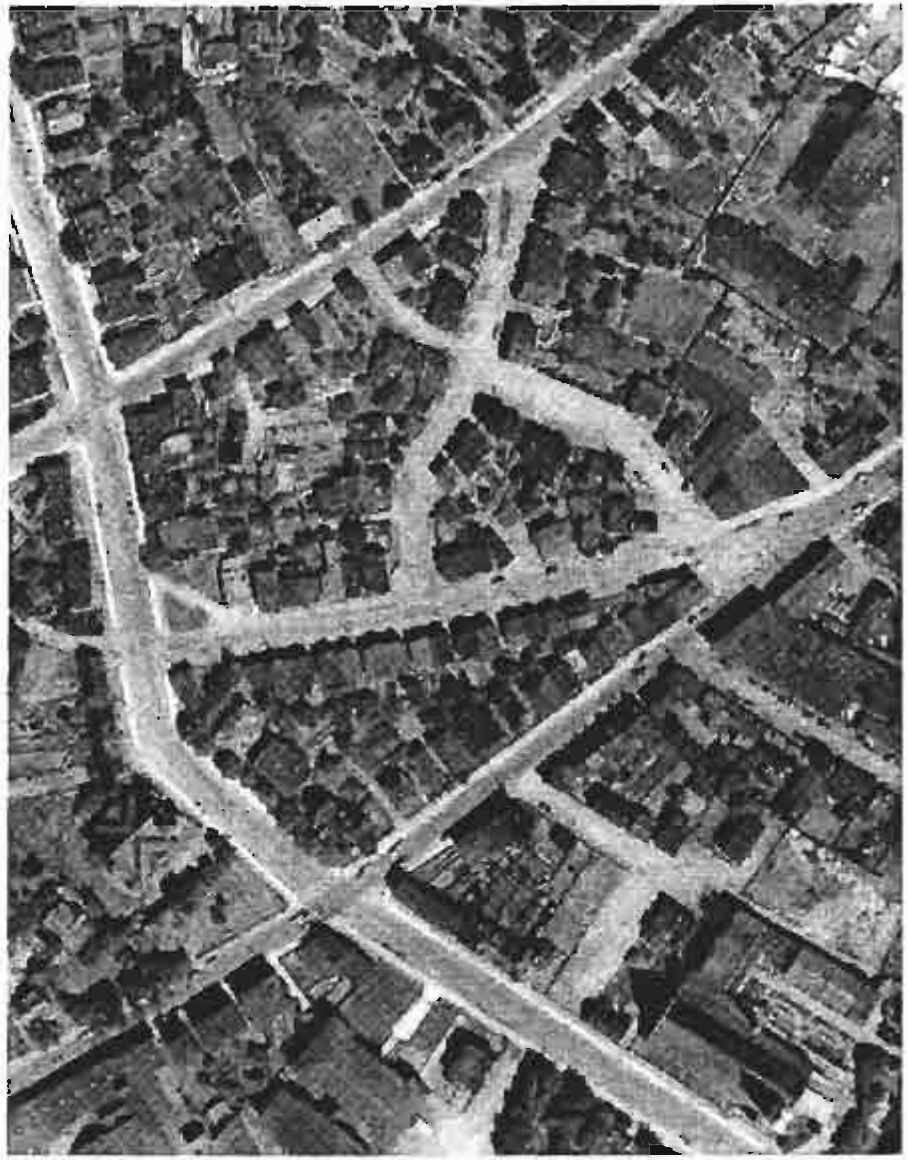
[7] Christopher Alexander, *A Pattern Language: Towns, Buildings, Construction* (New York: Oxford University Press, 1977), 518.

[8] Randolph T. Hester Jr., "Life, Liberty, and the Pursuit of Happiness," in *Places: A Forum of Environmental Design,*" Volume 9.3, (Winter 1995), 10.



Axonometric of the Bulley's Lane block: Georgestown, East End: this block provides an example of what could be achieved in new housing developments in St. John's: higher densities, lower infrastructure costs, off-street parking, service and garage access from a lane, and mixed use (residential / commercial) occupancies.

Appendix One: The Bertaud Model



1949 air photo of the Atlantic Avenue area in the West End

EQUATION 15 : Solving for "f," which is the monthly affordable payment per land plot.

$$f = \frac{\frac{I}{1200}\left(1-\frac{h}{100}\right)}{1-\left(1+\frac{I}{1200}\right)^{-12N}} \left[\frac{100\left[e + c_2 + \frac{\sqrt{jx}+\frac{u-v}{2}+w}{w(2\sqrt{jx}+u)}c_3 + \frac{(wv+2v\sqrt{jx})c_4}{w(2\sqrt{jx}+u)}\right](j+m_2 i)}{100 - m_1 - \frac{(wu+2v\sqrt{jx})100}{w(2\sqrt{jx}+u)}} + a_1 b + a_2 + a_3 + \frac{a_4}{y} \right]$$

Symbols	Parameters	Variables	Units
I	Yearly Interest Rate	9	percent
h	Down Payment	10	percent of total
N	Recovery Period	20	years
e	Land Cost	$69.75	$/sq.m.
c.2	(Off-site Infrstruc. Cost)*	$0.00	$/sq.m.
c.3	(Network Cost)*	$1.00	$/linear m.
c.4	Circulation Cost	$50.00	$/sq.m.
j	Plot Size	144	sq. metre
x	Plot Ratio	2.64	length/width
u	Width of Primary Str.	11	metre
v	Width of Secondary Str.	8.9	metre
w	Block Length	111	metre
m.1	(Parks & Open Space)*	0	percent
m.2	(Community Facilities)*	1	sq.m./person
i	Persons per Plot	3.2	
a.1	Construc. Cost	$800.00	$/sq. m.
b	Core House Size	77.5	sq. metre
a.2	Connection Cost per Plot	$31.69	
a.3	(Special Features Cost)*	$0.00	
a.4	(Community Facilities Cost)*	$0.00	
y	(Households/Community Facility)*	1	

Description	Breakdown of equation	Calculation using variables
numerator of 1st term	(1-C14/100)*(C13/1200)	.007
denominator of 1st term	1-(1+C13/1200)^(-12*C15)	.834
1st term numerator/denominator	H3/H4	0.008
1st part of 2nd term	C16+C17	69.750
2nd part of 2nd term (numerator)	((C20*C21)^0.5)+((C22-C23)/2)+C24	131.548
2nd part of 2nd term (denominator)	C24*((2*(C20*C21)^0.5)+C22)	5549.488
solving for 2nd part of 2nd term	H7/H8	.024
2nd part of 2nd term multiplied by c3	H9*C18	0.024
sum of 1st 2 parts of 2nd term	H6+H10	69.774
numerator of 3rd part of 2nd term	((C24*C23)+((2*C23)*(C20*C21)^0.5))*C19	66747.946
denominator of 3rd part of 2nd term	C24*((2*(C20*C21)^0.5)+C22)	5549.488
complete 3rd part of 2nd term	(H12/H13)	12.028
numerator sum of 2nd term	H6+H10+H14	81.801
4th numerator part of 2nd term	C20+(C26*C27)	147.200
complete numerator 2nd term	100*H15*H16	1204117.664
numerator of denominator 2nd term	((C24*C22)+2*C23*(C20*C21)^0.5)*100	156805.892
denominator of denominator 2nd term	C24*((2*(C20*C21)^0.5)+C22)	5549.488
fraction in denominator 2nd term	H18/H19	28.256
complete denominator 2nd term	100-C25-H20	71.744
complete 2nd term	H17/H21	16783.513
last term	C28*C29+C30+C31+C32/C33	62031.690
complete bracketed 2nd term	H22+H23	78815.203
value for f	H5*H24	$638.21
therefore "f", the monthly affordable payment=	$638.21	
Gower St. analysis of affordability		
* = undetermined variables		

The Bertaud Model is a mathematical model which was originally conceived for the analysis of low-income shelter in developing countries. In this report, the Bertaud Model is used as a method of comparing different neighbourhoods to determine an *affordability scale.*

Equation 15 of the Bertaud Model's *Program One* was the equation used to determine *f*, which is the monthly affordable payment per plot of land. This equation allows for the input of many variables, such as interest rates, plot sizes, widths of streets and construction costs. Some variables were impossible to determine, as the comparison was between existing and new neighbourhoods having different conditions, such as long-term land banking cost savings, no comparable standards for open areas, etc.. In the formula, these undetermined variables have been made either a zero or a one, depending on their placement. These nullified variables include : off-site infrastructure, network cost, parks and open space, community facilities, and households per community facility.

It is therefore important to note that the answers found for Equation 15 are not exact, rather they are each calculated in the same method to give an approximation which can be used for comparison purposes. The example given above is for the Gower Street Area.

Equation 15 is written out above left, with the parameters the symbols stand for listed below, along with the unit in which the variables are reported. To the above right is a term-by-term explanation of Equation 15, and how it may be put into a spreadsheet program to solve for *f*. For example, under the *breakdown of equation* heading, the term C14 refers to the variable under the column C and to the right of row 14 on this page.

Residential Area:	Answer for Eqn. 15:
Bulley Street	$ 556.95
Gower Street	$ 638.21
Rabbittown	$ 795.50
Georgestown	$ 807.37
Golf Avenue	$ 910.49
Churchill Square area	$ 1267.54
Rennies Mill Road area	$ 1377.95
Newfoundland Drive area	$ 1476.95
Circular Road (east) area	$ 2000.51

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	1.15
Rabbittown	1.43
Georgestown	1.45
Golf Avenue	1.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	2.65
Circular Road (east) area	3.59

Equation 15 was used for each of the above listed neighbourhoods to find *f*, the monthly affordable payment per land plot. These answers are given in the table above left. The table above right shows the index which was calculated from the answers to Equation 15. It was assumed that the Bulley Street Area, which has the cheapest payment per plot, be fixed as the basis for the scale, and it was given a value of one. The rest of the answers for the various neighbourhoods were divided by $556.95 to give a proportion based on Bulley Street as one. The results were rounded off to the second decimal place, and show how many times more expensive that neighbourhood is compared to the Bulley Street neighbourhood.

BULLEY STREET		
plot size (sq m)		72.35
Street widths -	primary (m)	11.40
	secondary(m)	7.90
block length (m)		122.00
block width (m)		60.50
block area (sq.m)		6678.00
plot ratio (length/frontage)		2.31
side yard setback -	left (m)	0.30
	right (m)	0.00
	average both (m)	0.15
front setback (m)		0.00
floor area ratio (bldg area/land)		2.22
rear lot line from house (m)		6.70
height of buildings	one storey (m)	n/a
	two storey (m)	n/a
	three storey (m)	10.70
area of buildings	area (sq.m)	73.30
	percentage of plot (%)	87.34
sidewalk width	asphalt (m)	n/a
	cement (m)	2.50
dist. from curb to sidewalk (m)		0.00
dist. from bldg to centre of street (m)		8.50
street corner radii	minimum (m)	3.00
	maximum (m)	15.00
	average (m)	8.40
circulation space	area of street (sq.m)	1682.10
	percent street of whole (%)	25.00
	area of sidewalk (sq.m)	723.50
	percent sidewalk of whole (%)	10.80
density (units/hectare)		36.00

CHURCHILL SQUARE		
plot size (sq m)		642.10
Street widths -	primary (m)	8.38
	secondary(m)	7.83
block length (m)		196.75
block width (m)		123.75
block area (sq.m)		24323.20
plot ratio (length/frontage)		2.57
side yard setback -	left (m)	2.00
	right (m)	5.00
	average both (m)	3.50
front setback (m)		8.50
floor area ratio (bldg area/land)		0.31
rear lot line from house (m)		19.00
height of buildings	one storey (m)	5.80
	two storey (m)	7.55
	three storey (m)	n/a
area of buildings	area (sq.m)	100.10
	percentage of plot (%)	15.64
sidewalk width	asphalt (m)	n/a
	cement (m)	1.50
dist. from curb to sidewalk (m)		0.50
dist. from bldg to centre of street (m)		14.90
street corner radii	minimum (m)	8.50
	maximum (m)	15.00
	average (m)	10.90
circulation space	area of street (sq.m)	2249.00
	percent street of whole (%)	9.20
	area of sidewalk (sq.m)	1135.35
	percent sidewalk of whole (%)	4.70
density (units/hectare)		19.00

GOWER STREET		
plot size (sq m)		144.00
Street widths -	primary (m)	11.00
	secondary(m)	8.90
block length (m)		111.00
block width (m)		69.75
block area (sq.m)		7742.25
plot ratio (length/frontage)		2.64
side yard setback -	left (m)	0.00
	right (m)	0.00
	average both (m)	0.00
front setback (m)		0.00
floor area ratio (bldg area/land)		1.72
rear lot line from house (m)		7.80
height of buildings	one storey (m)	n/a
	two storey (m)	n/a
	three storey (m)	10.70
area of buildings	area (sq.m)	77.50
	percentage of plot (%)	57.30
sidewalk width	asphalt (m)	n/a
	cement (m)	2.80
dist. from curb to sidewalk (m)		0.00
dist. from bldg to centre of street (m)		9.00
street corner radii	minimum (m)	4.50
	maximum (m)	12.00
	average (m)	8.10
circulation space	area of street (sq.m)	2068.90
	percent street of whole (%)	26.70
	area of sidewalk (sq.m)	916.00
	percent sidewalk of whole (%)	11.20
density (units/hectare)		43.00

GEORGESTOWN		
plot size (sq m)		278.00
Street widths -	primary (m)	8.75
	secondary(m)	7.60
block length (m)		92.90
block width (m)		93.50
block area (sq.m)		8686.20
plot ratio (length/frontage)		4.15
side yard setback -	left (m)	0.10
	right (m)	1.00
	average both (m)	0.55
front setback (m)		0.40
floor area ratio (bldg area/land)		0.74
rear lot line from house (m)		17.90
height of buildings	one storey (m)	n/a
	two storey (m)	7.65
	three storey (m)	10.10
area of buildings	area (sq.m)	90.70
	percentage of plot (%)	32.63
sidewalk width	asphalt (m)	n/a
	cement (m)	1.50
dist. from curb to sidewalk (m)		0.00
dist. from bldg to centre of street (m)		8.30
street corner radii	minimum (m)	5.00
	maximum (m)	16.00
	average (m)	9.10
circulation space	area of street (sq.m)	2230.70
	percent street of whole (%)	25.70
	area of sidewalk (sq.m)	387.75
	percent sidewalk of whole (%)	4.50
density (units/hectare)		33.00

CIRCULAR ROAD EAST		
plot size (sq m)		971.25
Street widths -	primary (m)	9.75
	secondary(m)	4.25
block length (m)		169.50
block width (m)		63.50
block area (sq.m)		10763.00
plot ratio (length/frontage)		1.86
side yard setback -	left (m)	1.40
	right (m)	5.60
	average both (m)	3.50
front setback (m)		6.35
floor area ratio (bldg area/land)		0.69
rear lot line from house (m)		21.00
height of buildings	one storey (m)	n/a
	two storey (m)	n/a
	three storey (m)	11.47
area of buildings	area (sq.m)	206.70
	percentage of plot (%)	23.00
sidewalk width	asphalt (m)	n/a
	cement (m)	1.50
dist. from curb to sidewalk (m)		0.50
dist. from bldg to centre of street (m)		13.35
street corner radii	minimum (m)	8.00
	maximum (m)	22.50
	average (m)	15.00
circulation space	area of street (sq.m)	2298.50
	percent street of whole (%)	21.40
	area of sidewalk (sq.m)	452.25
	percent sidewalk of whole (%)	4.20
density (units/hectare)		8.00

NEWFOUNDLAND DRIVE		
plot size (sq m)		623.70
Street widths -	primary (m)	13.38
	secondary(m)	11.50
block length (m)		242.50
block width (m)		81.00
block area (sq.m)		19642.50
plot ratio (length/frontage)		1.75
side yard setback -	left (m)	1.58
	right (m)	2.60
	average both (m)	2.14
front setback (m)		8.15
floor area ratio (bldg area/land)		0.49
rear lot line from house (m)		11.50
height of buildings	one storey (m)	4.5
	two storey (m)	n/a
	three storey (m)	n/a
area of buildings	area (sq.m)	149.70
	percentage of plot (%)	24.20
sidewalk width	asphalt (m)	n/a
	cement (m)	1.50
dist. from curb to sidewalk (m)		0.00
dist. from bldg to centre of street (m)		16.10
street corner radii	minimum (m)	14.50
	maximum (m)	16.00
	average (m)	15.10
circulation space	area of street (sq.m)	3807.00
	percent street of whole (%)	19.40
	area of sidewalk (sq.m)	686.50
	percent sidewalk of whole (%)	4.50
density (units/hectare)		18.00

GOLF AVE.		
plot size (sq m)		391.40
Street widths -	primary (m)	8.75
	secondary(m)	9.00
block length (m)		282.25
block width (m)		89.50
block area (sq.m)		25261.38
plot ratio (length/frontage)		3.24
side yard setback -	left (m)	1.20
	right (m)	1.40
	average both (m)	1.30
front setback (m)		4.10
floor area ratio (bldg area/land)		0.43
rear lot line from house (m)		17.65
height of buildings	one storey (m)	3.80
	two storey (m)	6.70
	three storey (m)	n/a
area of buildings	area (sq.m)	96.50
	percentage of plot (%)	24.70
sidewalk width	asphalt (m)	n/a
	cement (m)	1.63
dist. from curb to sidewalk (m)		0.50
dist. from bldg to centre of street (m)		10.70
street corner radii	minimum (m)	3.00
	maximum (m)	15.00
	average (m)	10.40
circulation space	area of street (sq.m)	3901.00
	percent street of whole (%)	15.40
	area of sidewalk (sq.m)	992.00
	percent sidewalk of whole (%)	3.90
density (units/hectare)		35.00

RABBITTOWN		
plot size (sq m)		318.60
Street widths -	primary (m)	9.25
	secondary(m)	9.00
block length (m)		116.75
block width (m)		77.00
block area (sq.m)		8989.75
plot ratio (length/frontage)		2.35
side yard setback -	left (m)	0.65
	right (m)	3.00
	average both (m)	1.80
front setback (m)		2.10
floor area ratio (bldg area/land)		0.35
rear lot line from house (m)		13.35
height of buildings	one storey (m)	5.50
	two storey (m)	7.30
	three storey (m)	n/a
area of buildings	area (sq.m)	81.90
	percentage of plot (%)	26.76
sidewalk width	asphalt (m)	3.00
	cement (m)	1.50
dist. from curb to sidewalk (m)		0.00
dist. from bldg to centre of street (m)		9.15
street corner radii	minimum (m)	6.00
	maximum (m)	15.00
	average (m)	10.50
circulation space	area of street (sq.m)	1552.70
	percent street of whole (%)	17.70
	area of sidewalk (sq.m)	1126.00
	percent sidewalk of whole (%)	12.50
density (units/hectare)		26.00

RENNIES MILL ROAD		
plot size (sq m)		543.1
Street widths -	primary (m)	9.58
	secondary(m)	9.00
block length (m)		*111.00
block width (m)		*69.75
block area (sq.m)		*7742.25
plot ratio (length/frontage)		3.76
side yard setback -	left (m)	1.50
	right (m)	1.00
	average both (m)	1.25
front setback (m)		3.90
floor area ratio (bldg area/land)		1.09
rear lot line from house (m)		1.87
height of buildings	one storey (m)	n/a
	two storey (m)	n/a
	three storey (m)	11.59
area of buildings	area (sq.m)	148.51
	percentage of plot (%)	36.40
sidewalk width	asphalt (m)	n/a
	cement (m)	2.00
dist. from curb to sidewalk (m)		0.25
dist. from bldg to centre of street (m)		12.10
street corner radii	minimum (m)	4.25
	maximum (m)	15.00
	average (m)	10.70
circulation space	area of street (sq.m)	*2068.90
	percent street of whole (%)	*26.70
	area of sidewalk (sq.m)	*916.00
	percent sidewalk of whole (%)	*11.20
density (units/hectare)		13.00

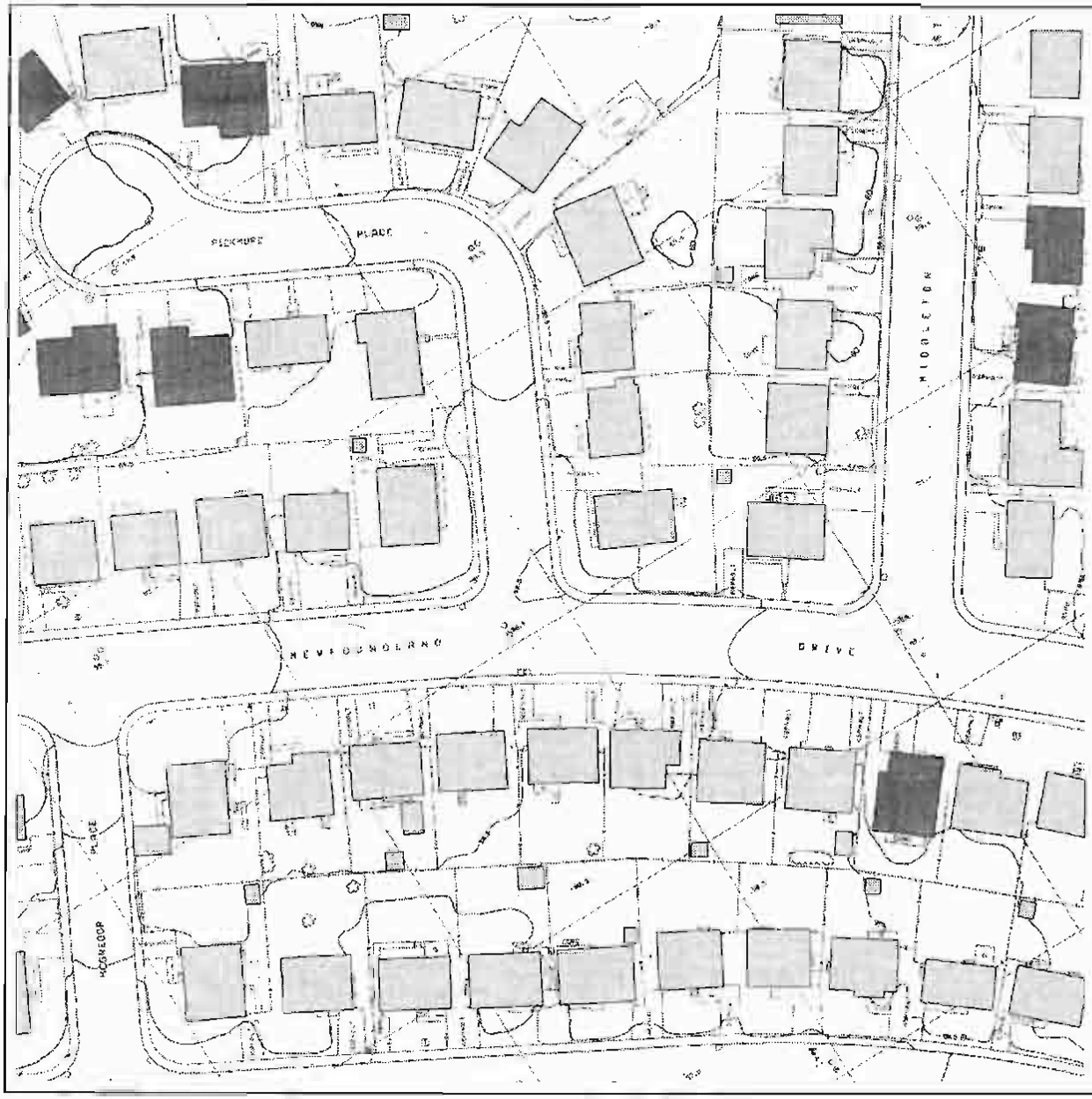
* THESE VALUES FOR RENNIE'S MILL RD. ARE BASED ON THE VALUES FOUND FOR GOWER ST.

Appendix Two: Newfoundland Drive

1994 photograph of Newfoundland Drive (East End)

1 GRAPHIC SUMMARY : NEWFOUNDLAND DRIVE AREA

EXISTING CONDITIONS



Site analysis for new suburban development in the Newfoundland Drive area (East End). Most of the houses in this area are ranch and split-level houses, with the occasional two storey house. There are some small outbuildings (usually metal "baby barns").

Density:18 dwelling units per hectare
Street area: 3807 sq. m. (19.4% of total area)
Sidewalk area: 886.5 sq. m. (4.5% of total area)
Total area shown on map: 4 hectares

Residential Area:	Affordability Index:
Bulley Street	1.0
Gower Street	I.15
Rabbittown	1.43
Georgestown	I.45
Golf Avenue	I.63
Churchill Square area	2.28
Rennie's Mill Road area	2.47
Newfoundland Drive area	**2.65**
Circular Road (east) area	3.59

0 scale in metres 50

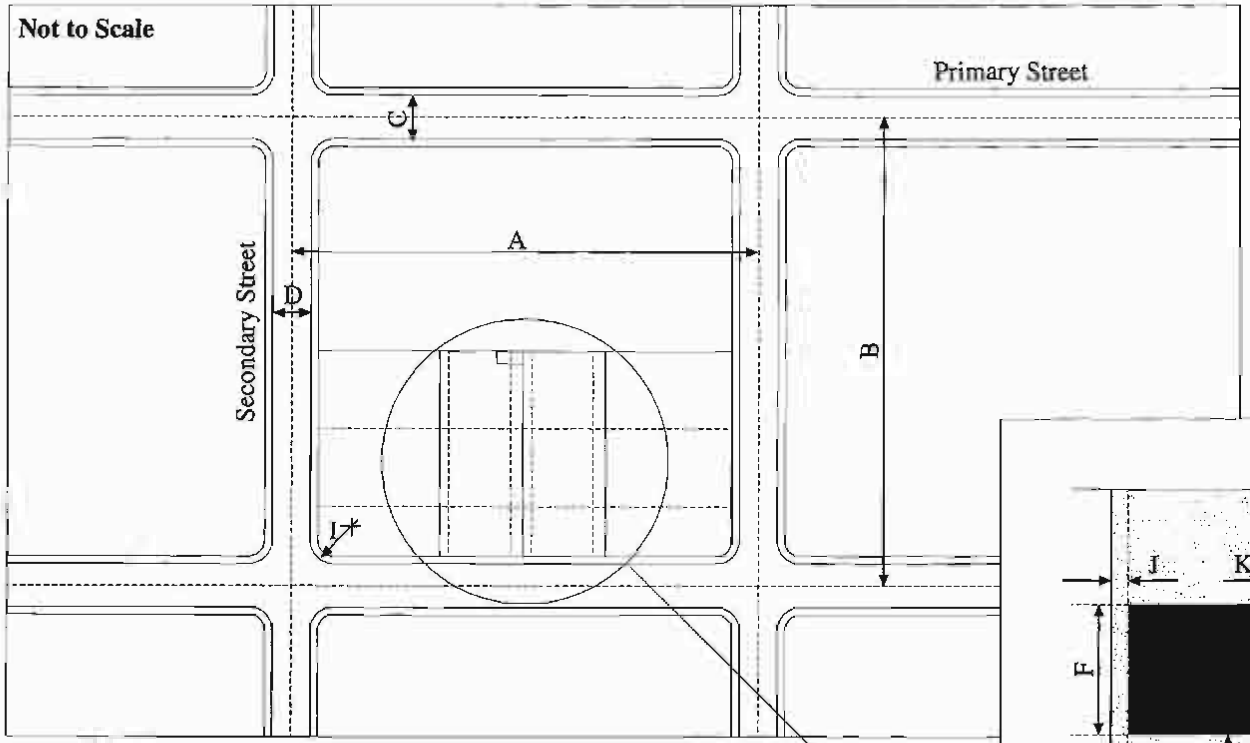
ONE STOREY

TWO STOREY

N

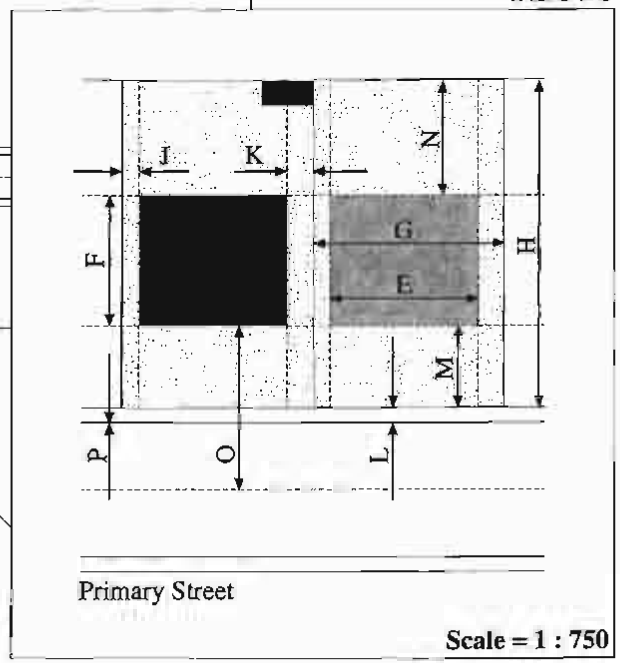
2 GRAPHIC SUMMARY : NEWFOUNDLAND DRIVE AREA

STREETS AND PLOTS



Plot area = 623.7 sq. metres
Plot ratio (length/frontage)= 1.75
Block area = 19642.5 sq. metres
Building area = 149.7 sq. metres
Building area % of plot area= 24.2

PLOTS

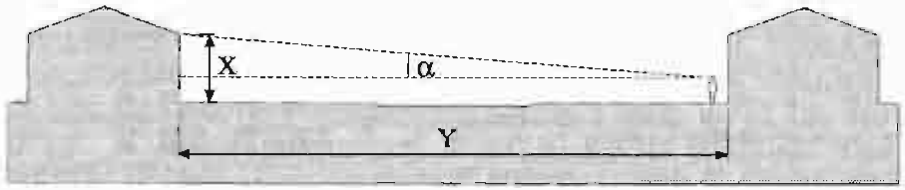


STREETS

A	Block length = 242.5		Side yard setbacks
B	Block width = 81.0	J	Left = 1.68
C	Primary street width = 13.38	K	Right = 2.6
D	Secondary street width = 11.5		Average = 2.14
E	Building width= 14.72		Sidewalk width
F	Building depth = 13.05		Asphalt = n/a
G	Plot width = 19.0	L	Cement = 1.5
H	Plot depth = 32.7	M	Front setback= 8.15
I	Street corner radii	N	Rear lot line from house = 11.5
	Minimum = 14.5	O	Building to center of street = 16.1
	Maximum = 16.0	P	Curb to sidewalk = 0.0
	Average = 15.1		

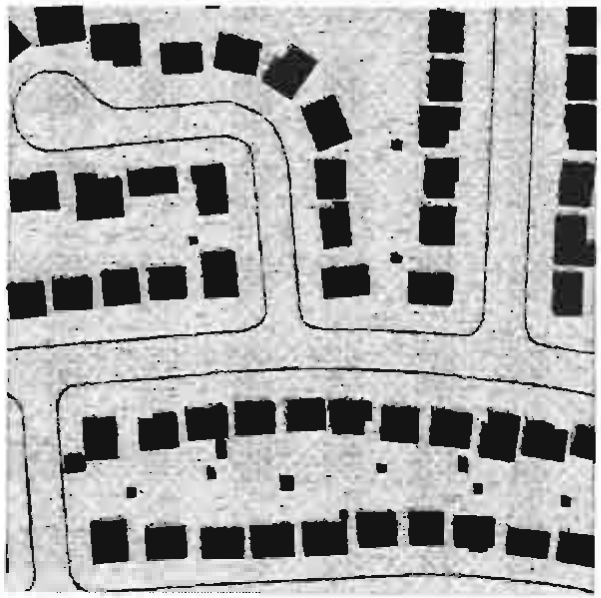
3	GRAPHIC SUMMARY : NEWFOUNDLAND DRIVE AREA	STREET SECTIONS

Hypothetical section based on 293 Newfoundland Drive

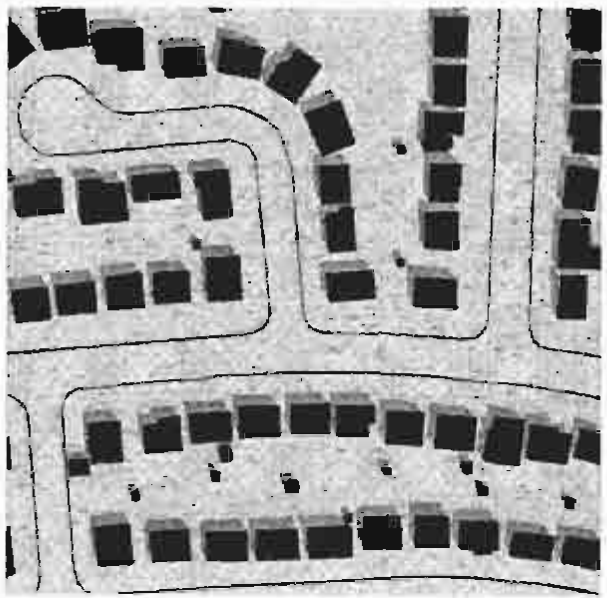


X = 4.50m
Y = 36.50m
Y/X = 8.11
α = 4.6°

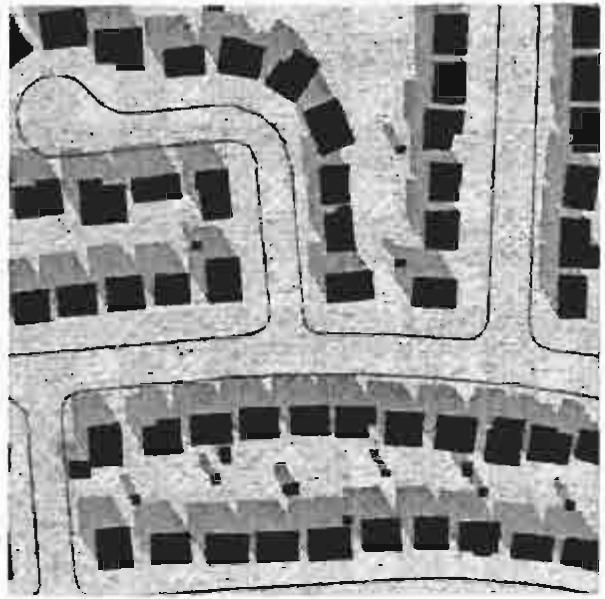
4 **GRAPHIC SUMMARY : NEWFOUNDLAND DRIVE AREA** **SOLAR STUDIES**



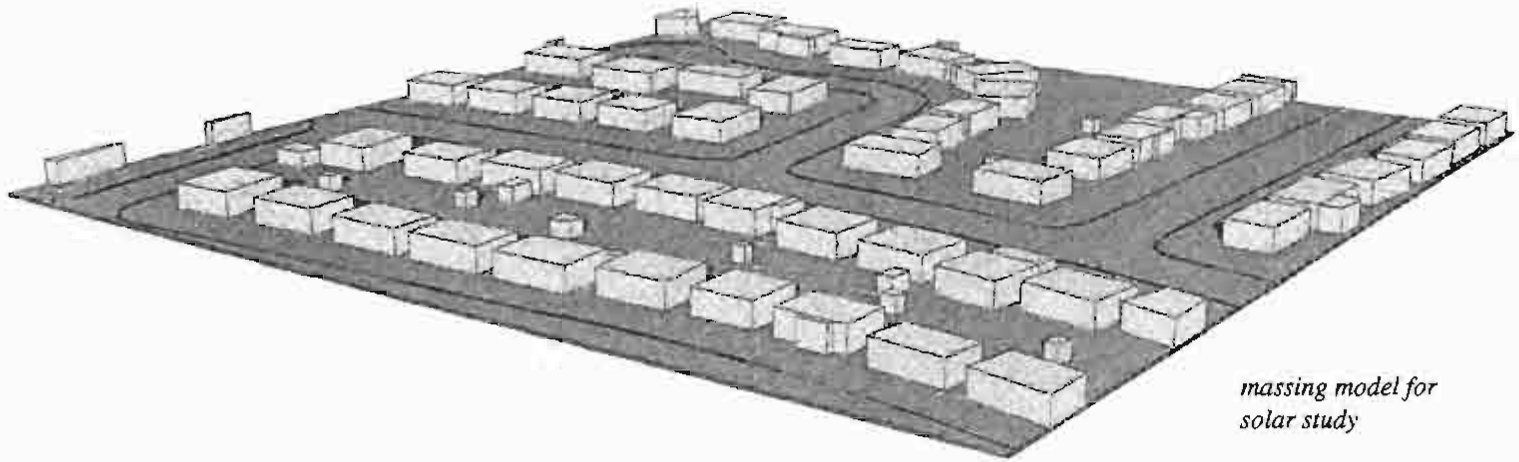
June 21, 12:00 p.m.



September 21, 12:00 p.m.

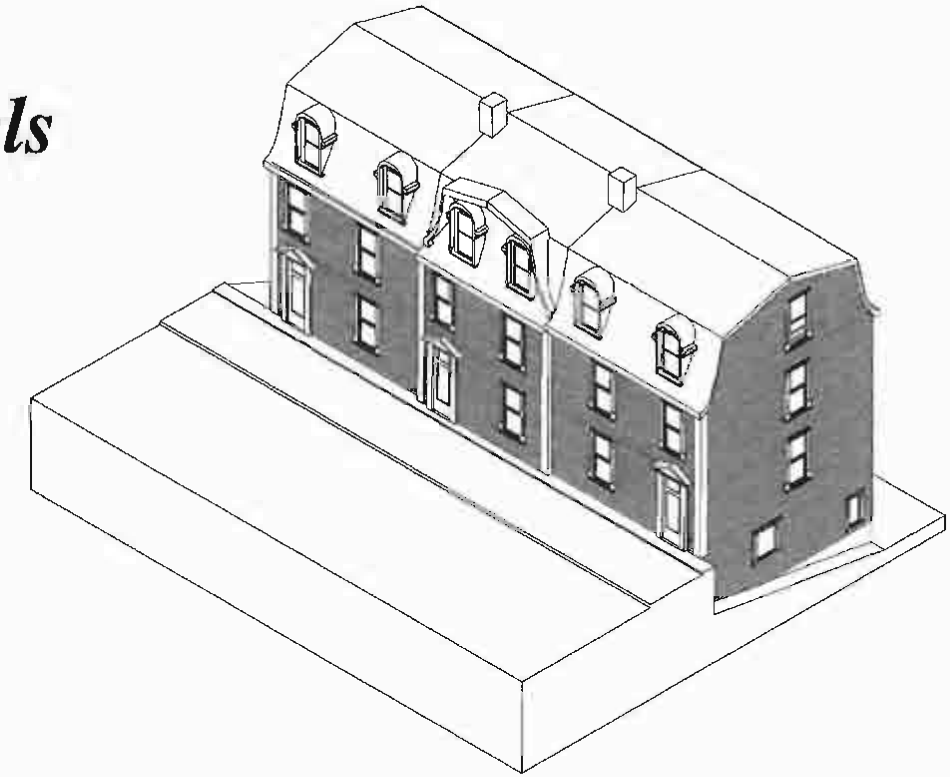


December 21, 12:00 p.m.

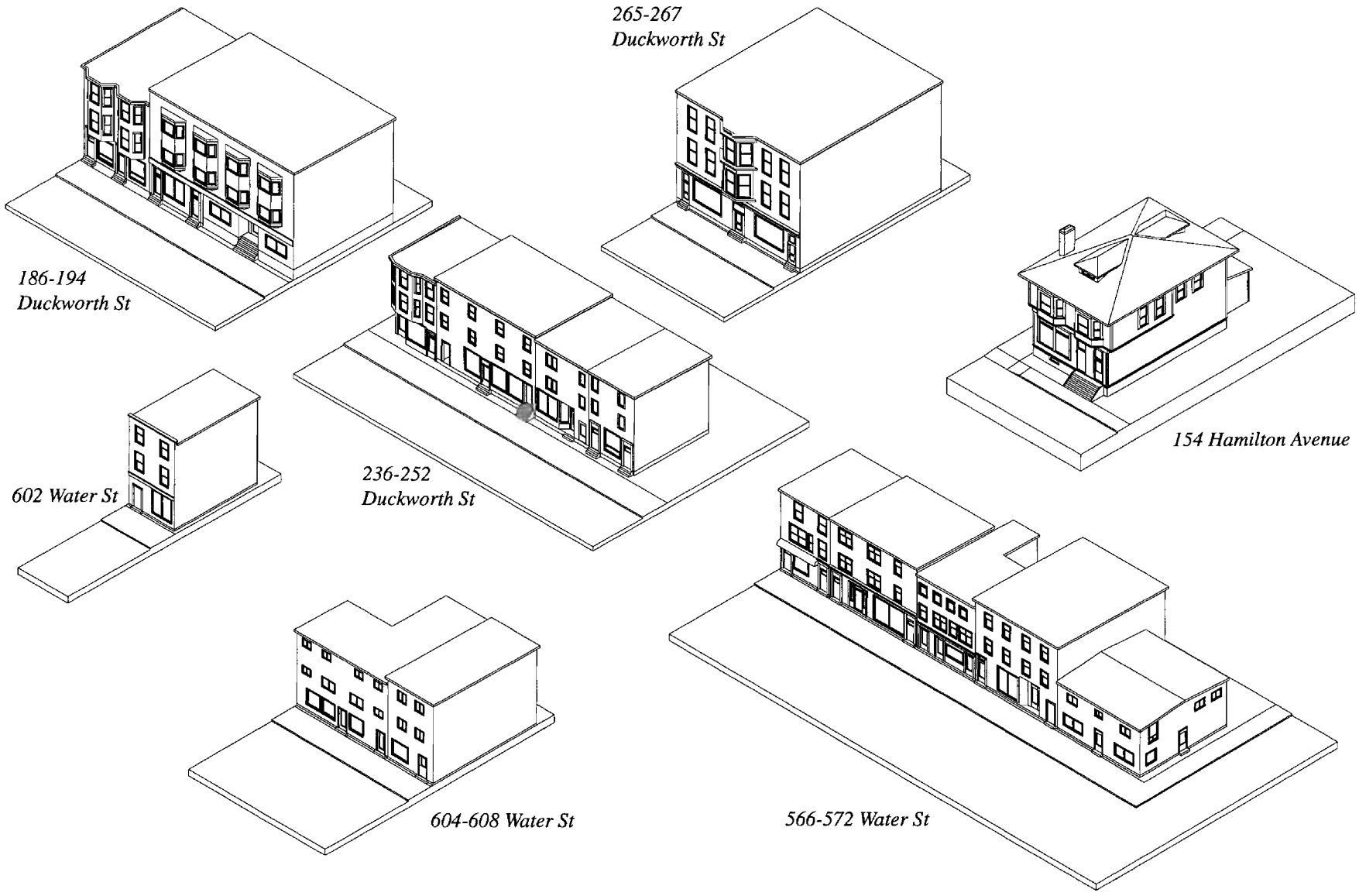


massing model for solar study

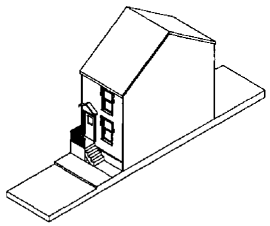
Appendix Three: Computer-generated Models



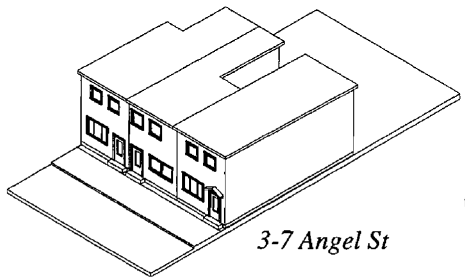
1	COMPUTER-GENERATED MODELS	RESIDENTIAL/COMMERCIAL BLDGS



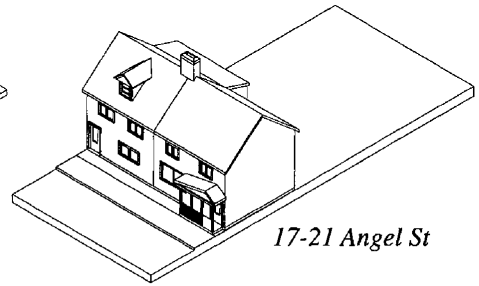
2	COMPUTER-GENERATED MODELS	ROW HOUSES



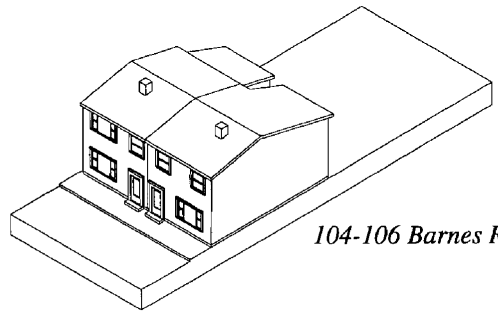
18 Alexander St



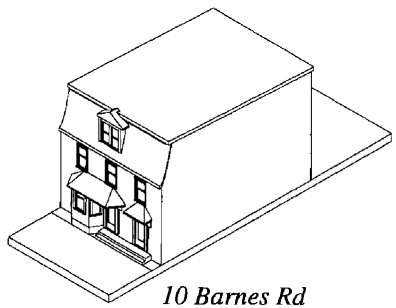
3-7 Angel St



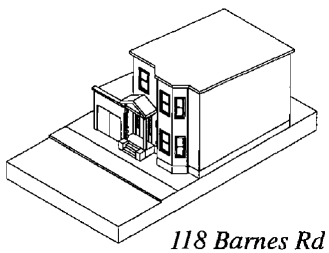
17-21 Angel St



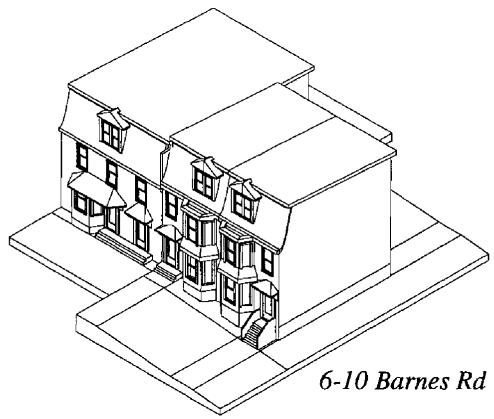
104-106 Barnes Rd



10 Barnes Rd



118 Barnes Rd



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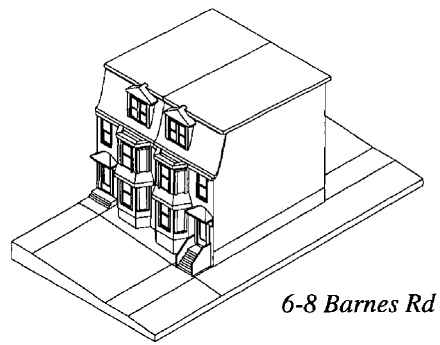
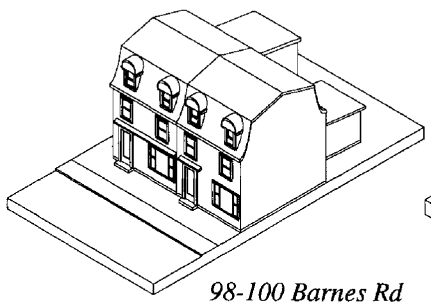
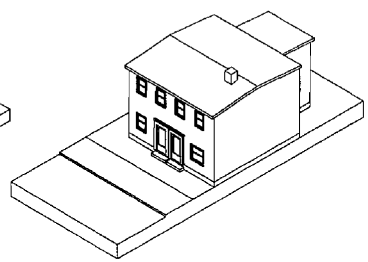


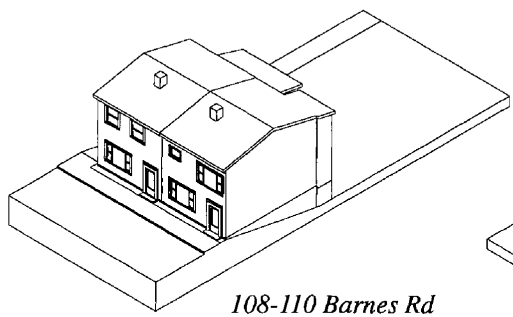
6-8 Barnes Rd



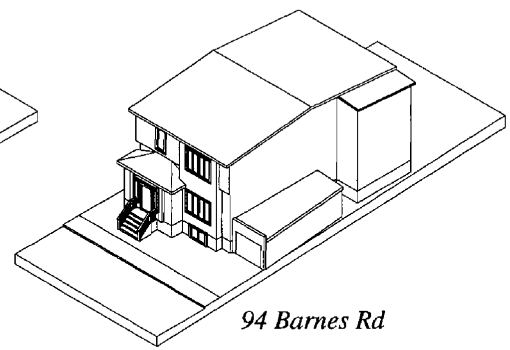
98-100 Barnes Rd



102 Barnes Rd

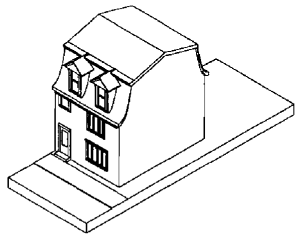


108-110 Barnes Rd

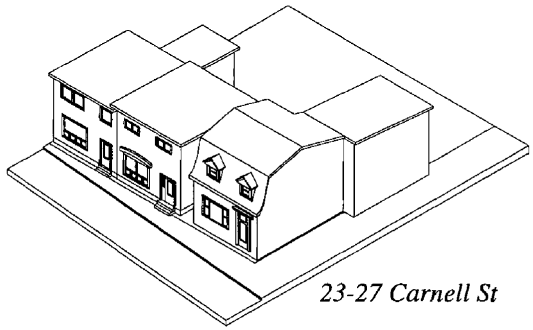


94 Barnes Rd

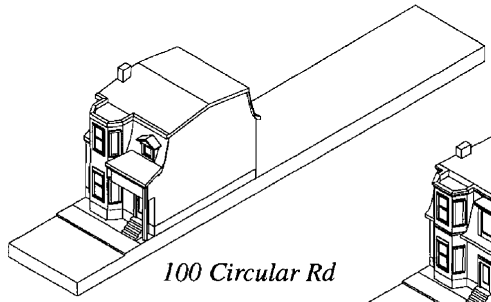
3	COMPUTER-GENERATED MODELS	ROW HOUSES



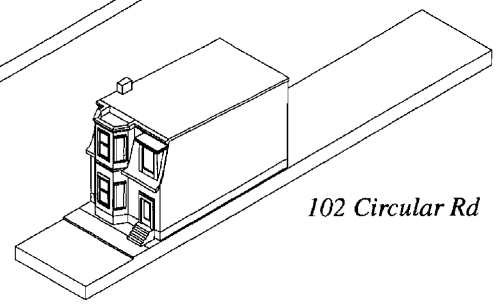
96 Barnes Rd



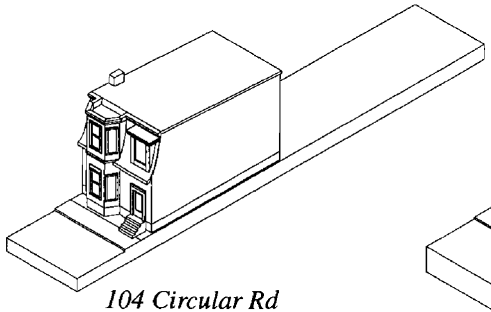
23-27 Carnell St



100 Circular Rd



102 Circular Rd



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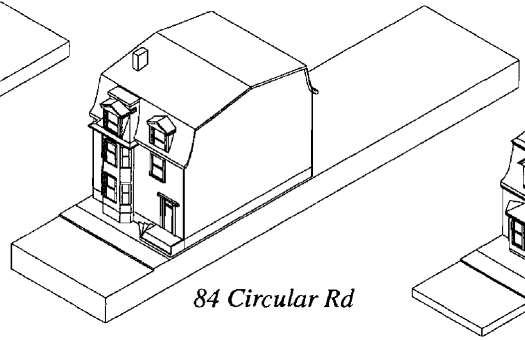

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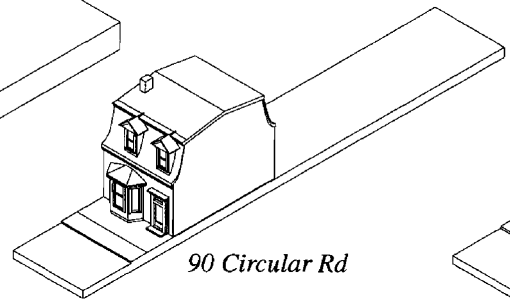

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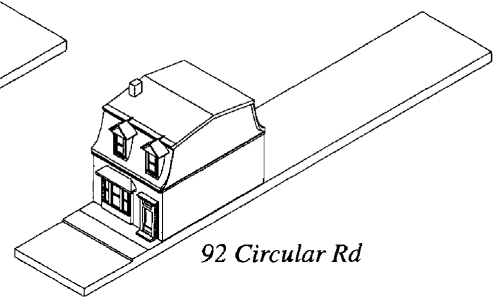

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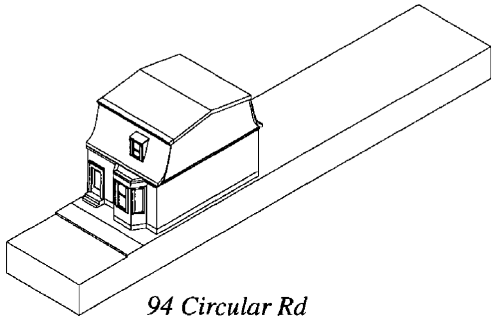

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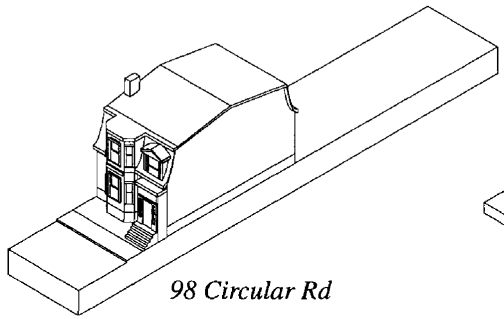

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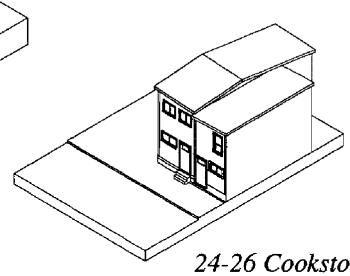
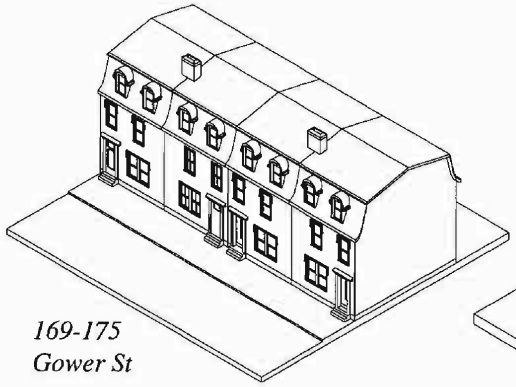
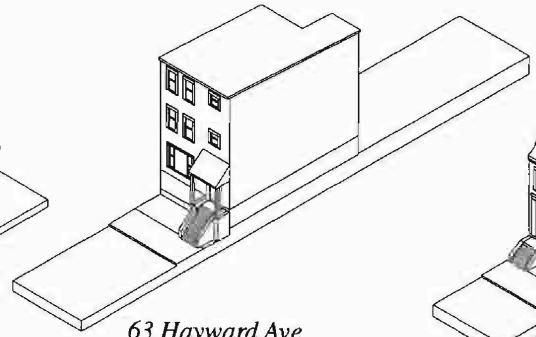


24-26 Cookstown Rd

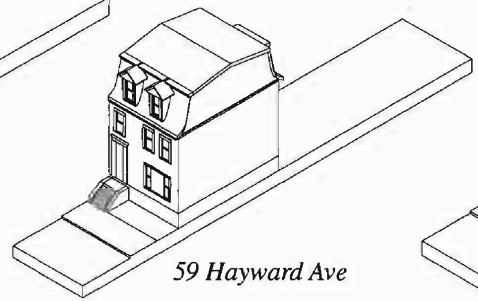
4	COMPUTER-GENERATED MODELS	ROW HOUSES



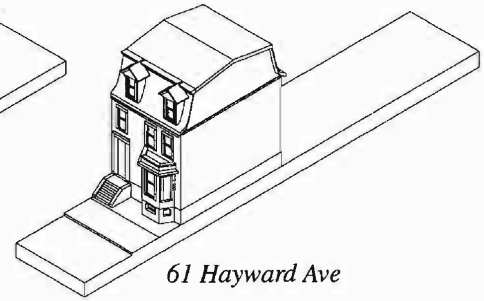
169-175 Gower St



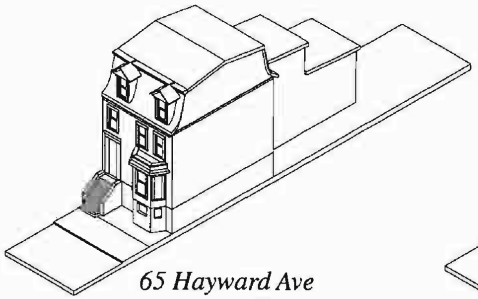
63 Hayward Ave



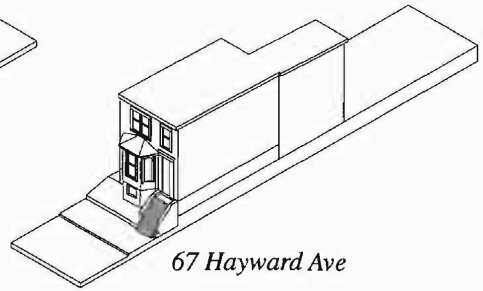
59 Hayward Ave



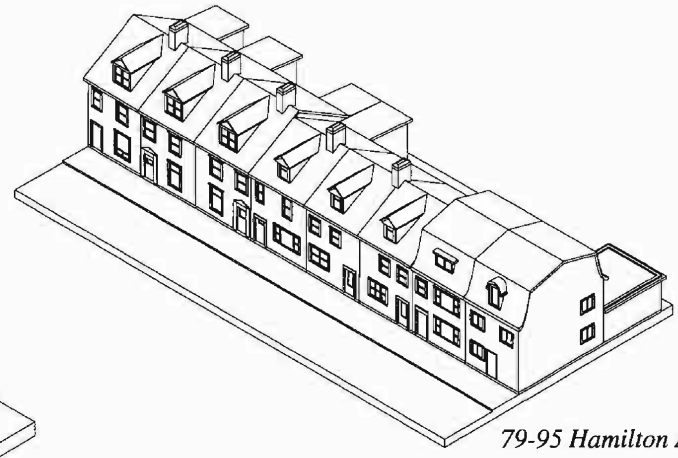
61 Hayward Ave



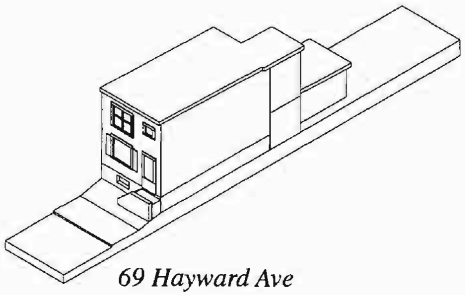
65 Hayward Ave



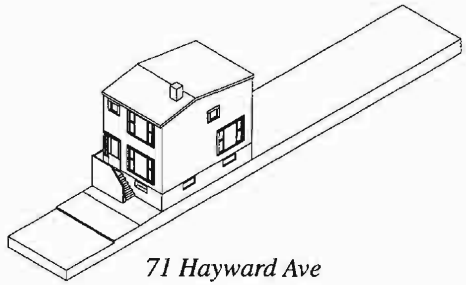
67 Hayward Ave



79-95 Hamilton Ave

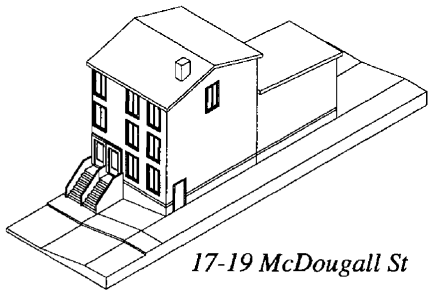


69 Hayward Ave

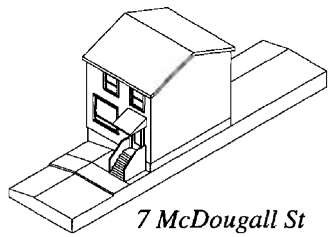


71 Hayward Ave

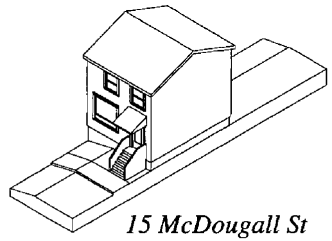
5	COMPUTER-GENERATED MODELS	ROW HOUSES



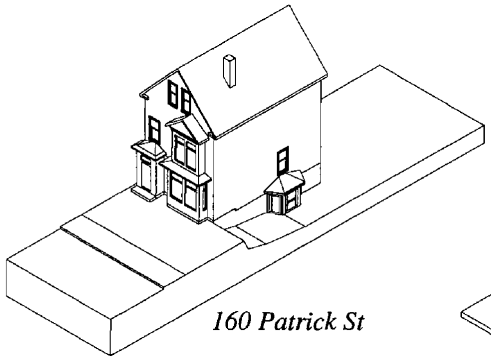
17-19 McDougall St



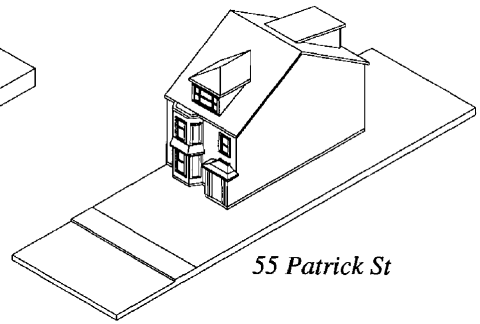
7 McDougall St



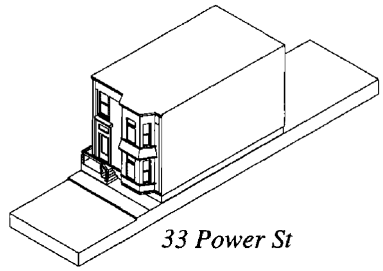
15 McDougall St



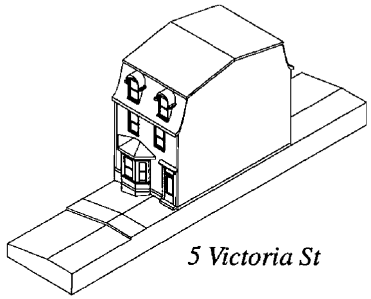
160 Patrick St



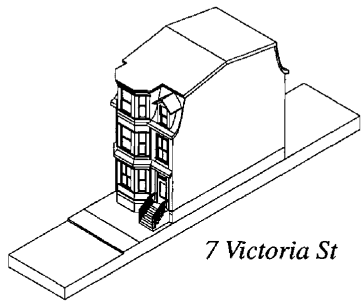
55 Patrick St



33 Power St

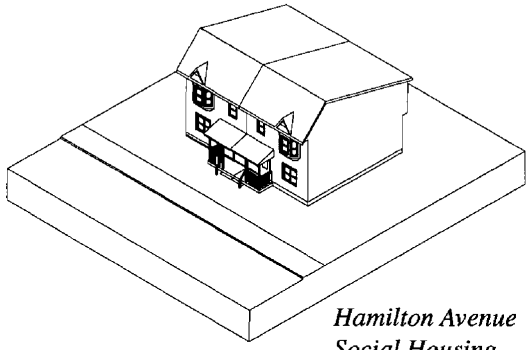


5 Victoria St

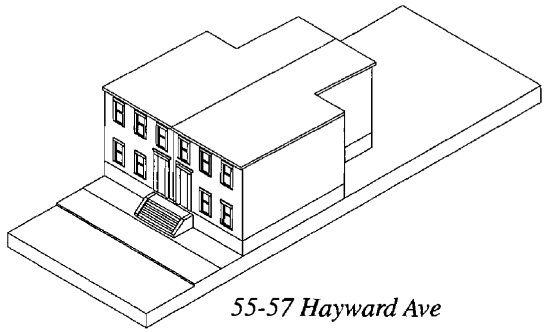


7 Victoria St

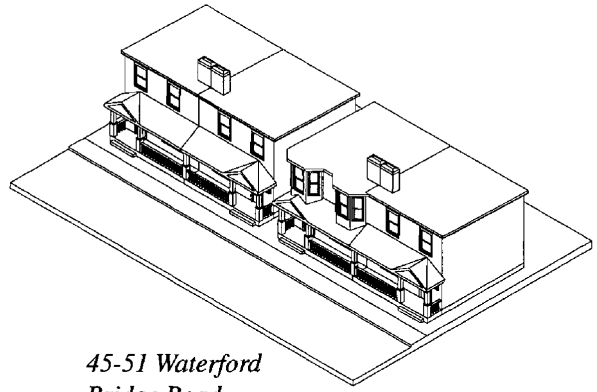
6	COMPUTER-GENERATED MODELS	DUPLEX HOUSES



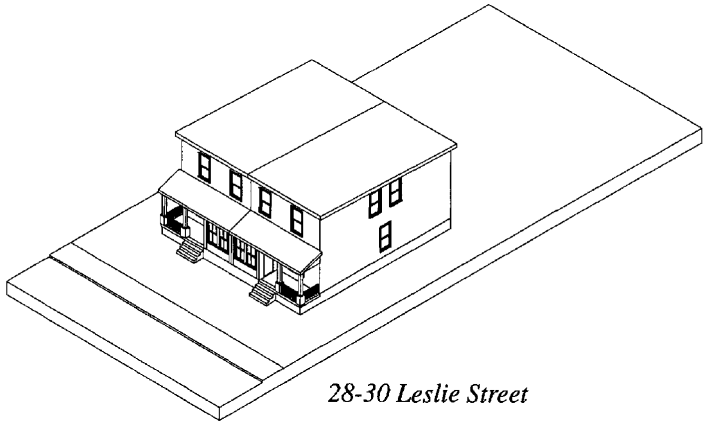
Hamilton Avenue
Social Housing



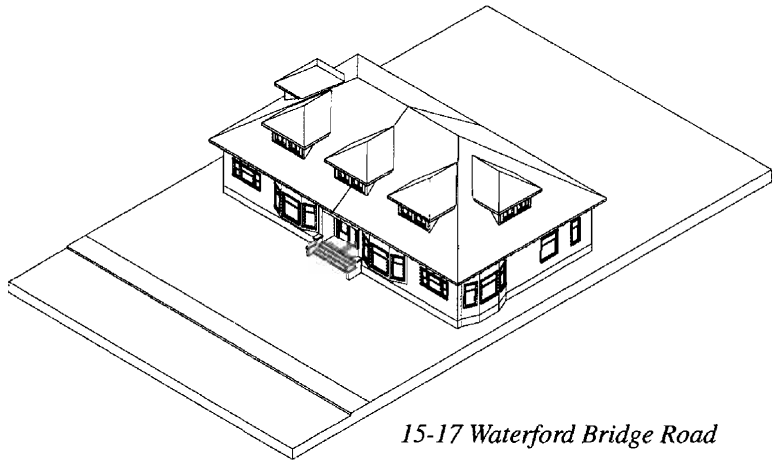
55-57 Hayward Ave



45-51 Waterford
Bridge Road

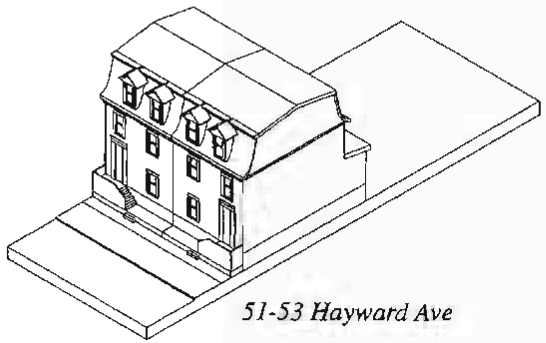


28-30 Leslie Street

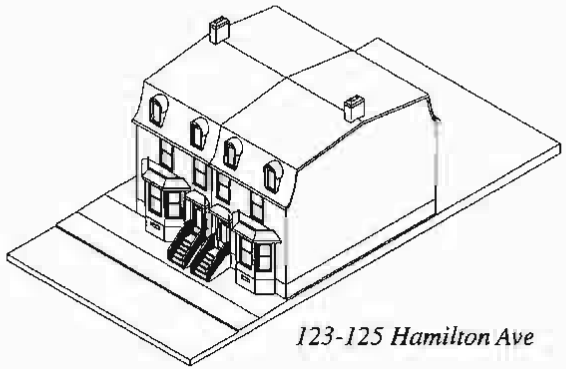


15-17 Waterford Bridge Road

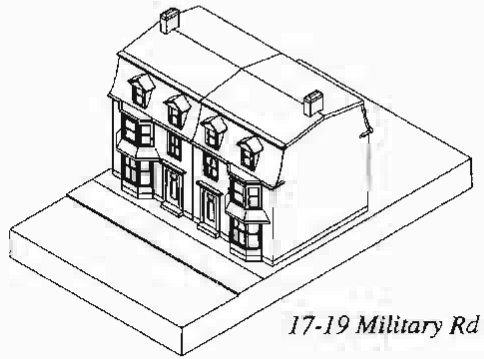
7 | **COMPUTER-GENERATED MODELS** | **DUPLEX HOUSES**



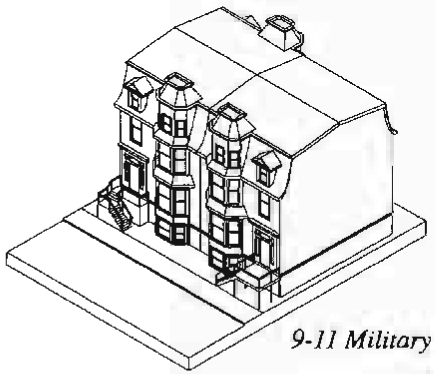
51-53 Hayward Ave



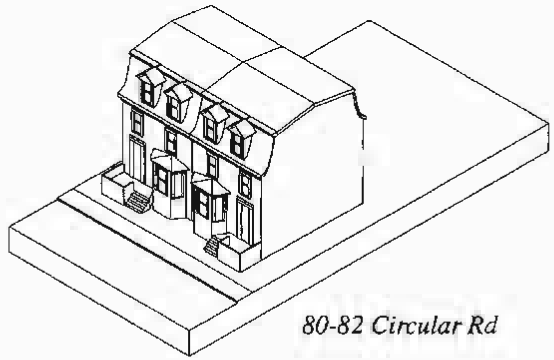
123-125 Hamilton Ave



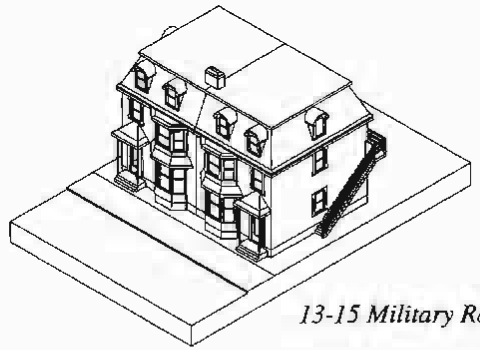
17-19 Military Rd



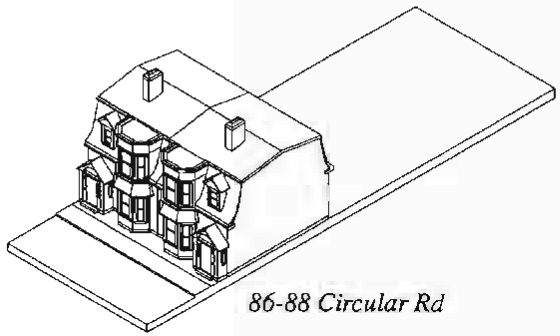
9-11 Military Rd



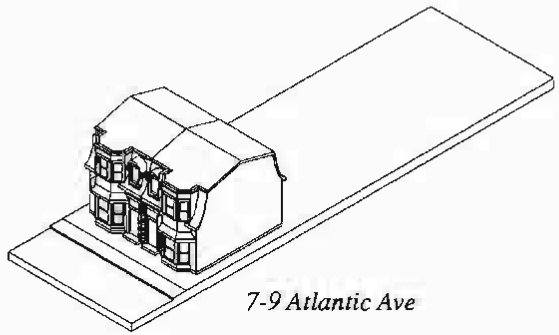
80-82 Circular Rd



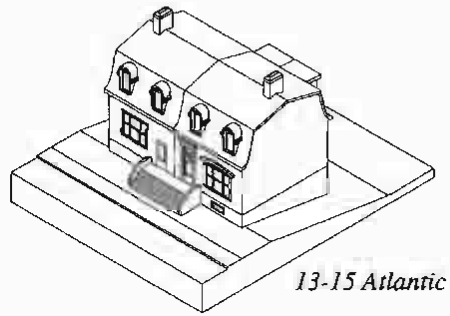
13-15 Military Rd



86-88 Circular Rd

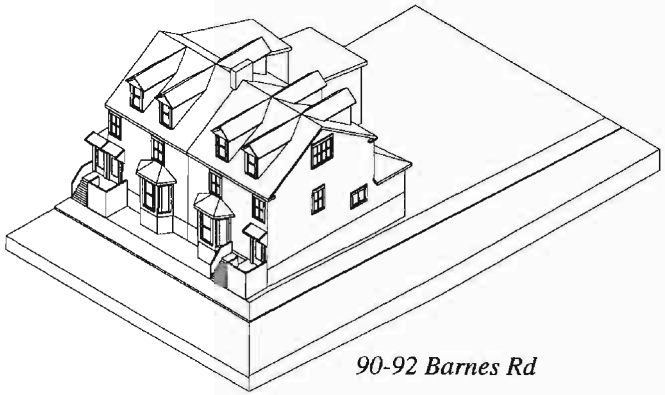


7-9 Atlantic Ave

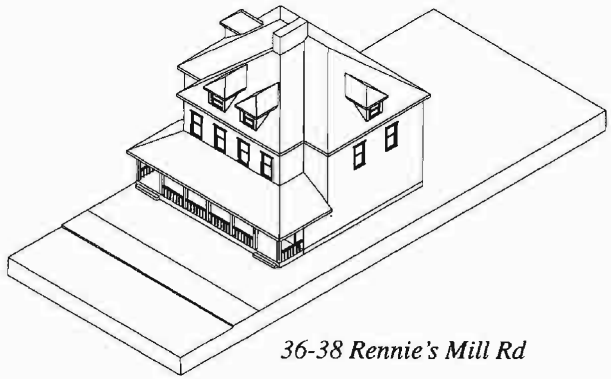


13-15 Atlantic Ave

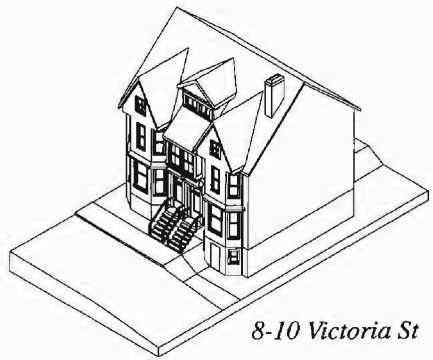
8	COMPUTER-GENERATED MODELS	DUPLEX HOUSES



90-92 Barnes Rd

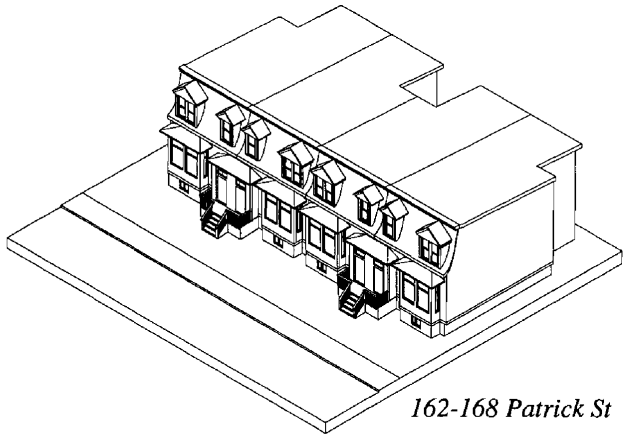


36-38 Rennie's Mill Rd

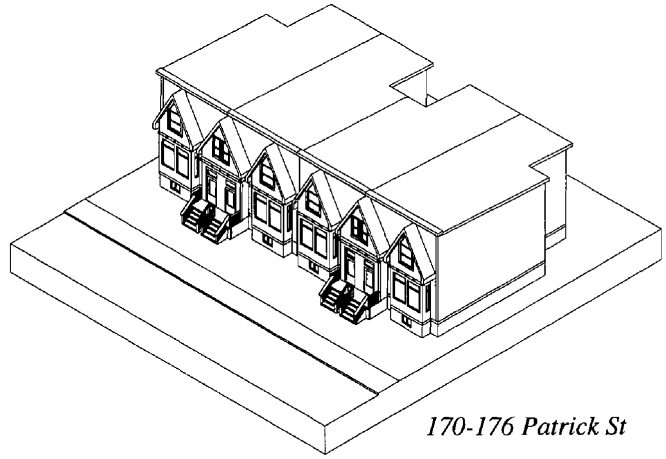


8-10 Victoria St

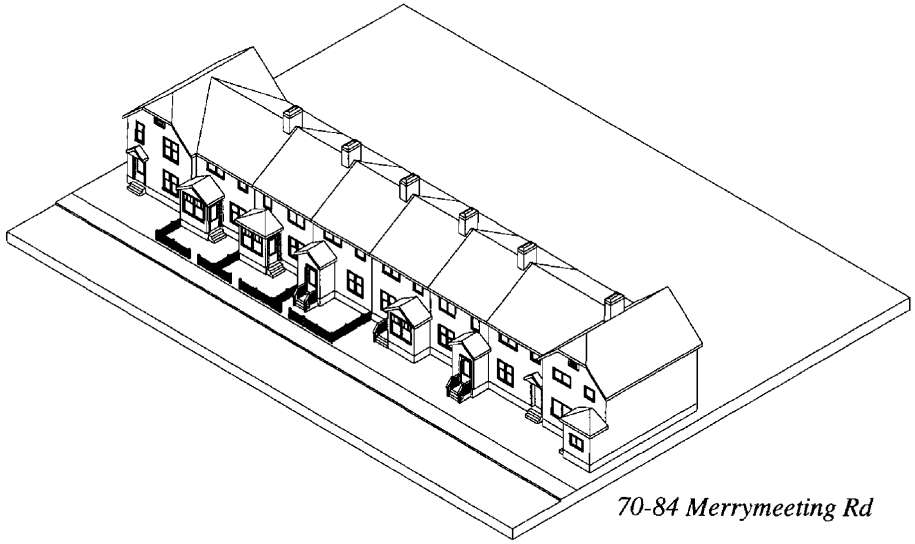
9	COMPUTER-GENERATED MODELS	TERRACE HOUSES



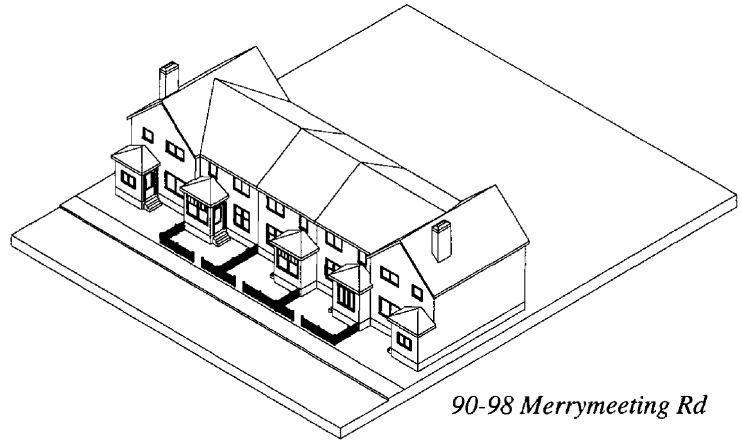
162-168 Patrick St



170-176 Patrick St

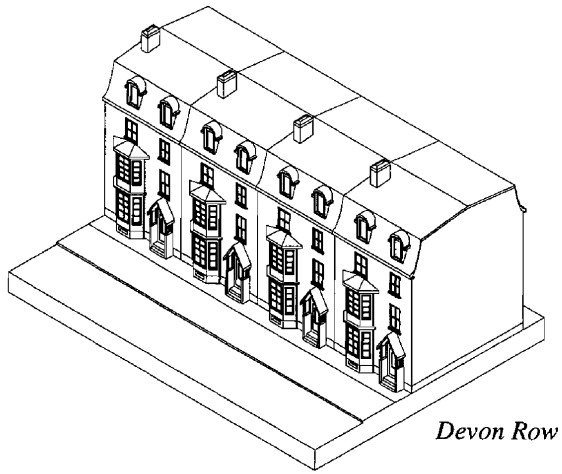


70-84 Merrymeeting Rd

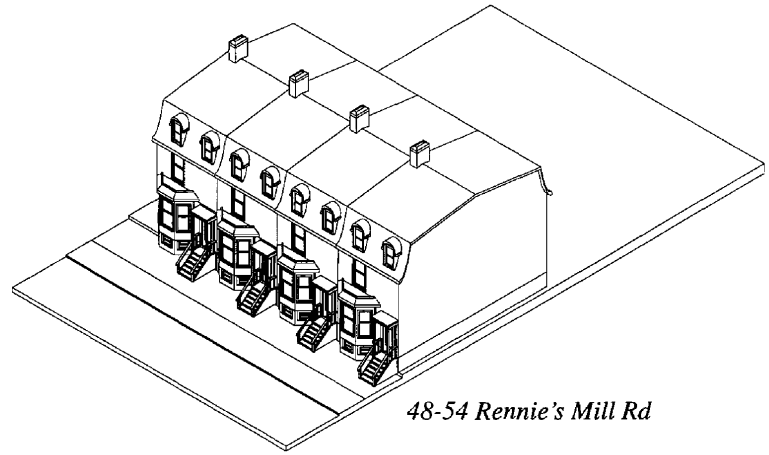


90-98 Merrymeeting Rd

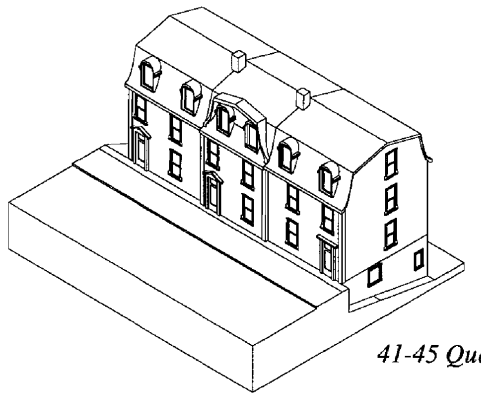
10	COMPUTER-GENERATED MODELS	TERRACE HOUSES



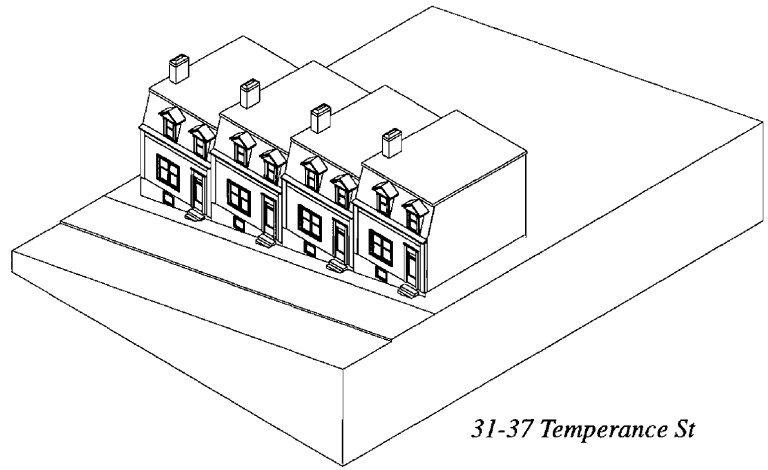
Devon Row



48-54 Rennie's Mill Rd

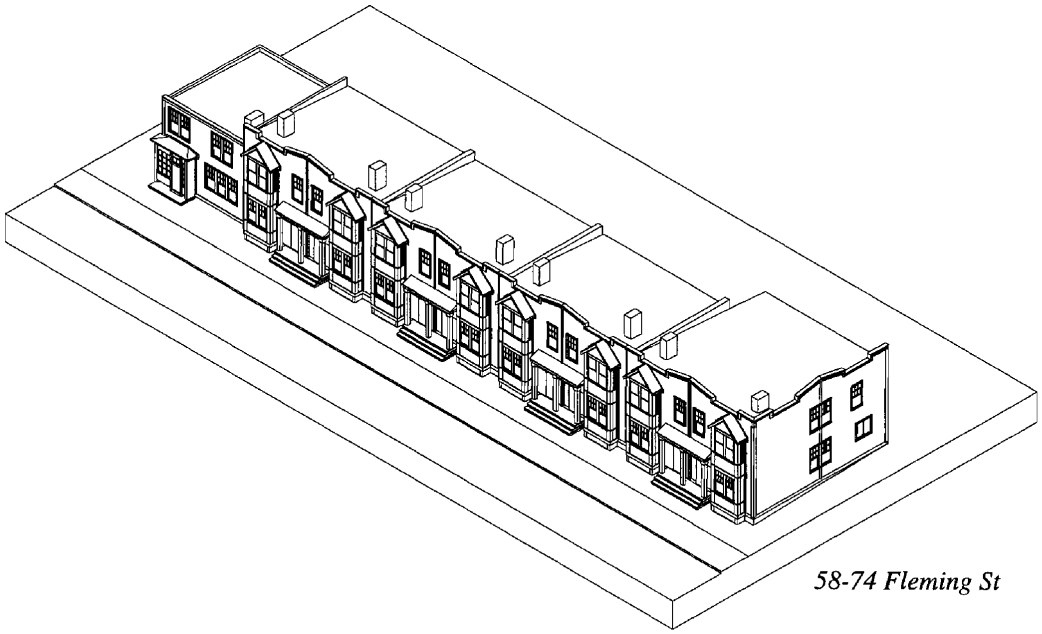


41-45 Queen's Rd

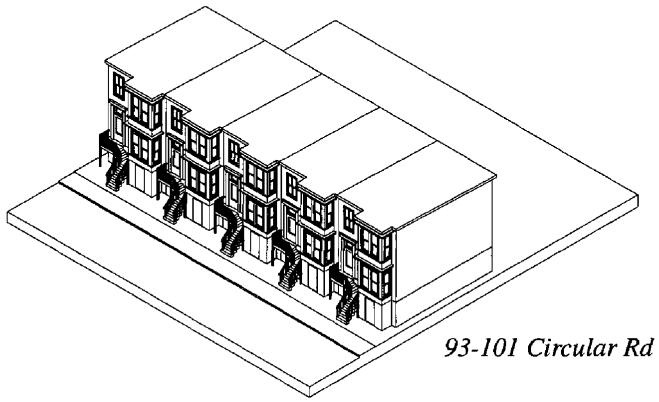


31-37 Temperance St

11	COMPUTER-GENERATED MODELS	TERRACE HOUSES

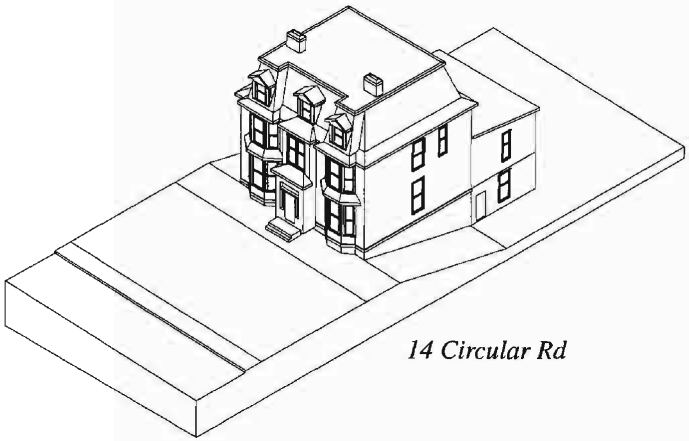


58-74 Fleming St

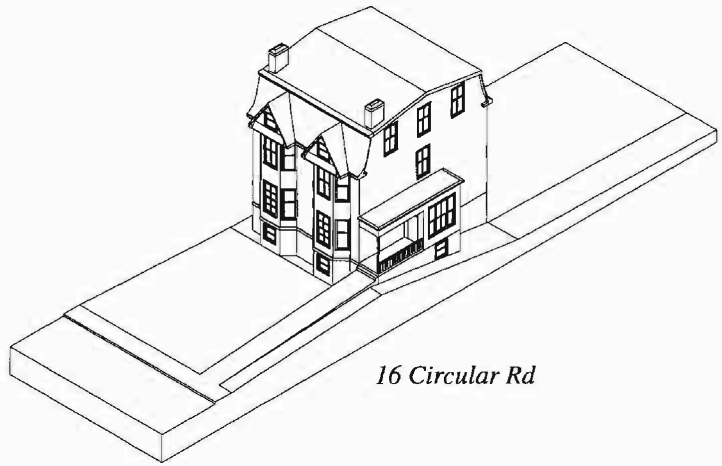


93-101 Circular Rd

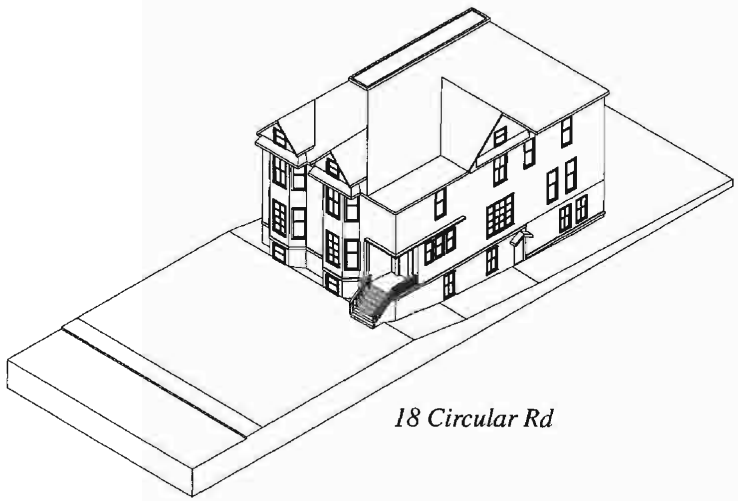
12	COMPUTER-GENERATED MODELS	CIRCULAR ROAD EAST



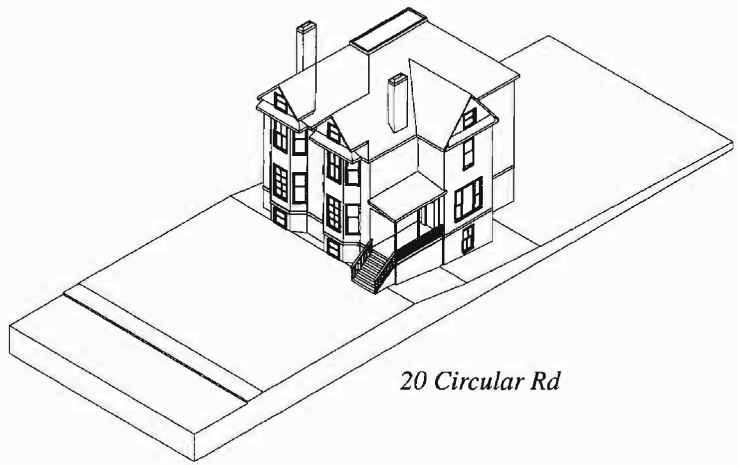
14 Circular Rd



16 Circular Rd

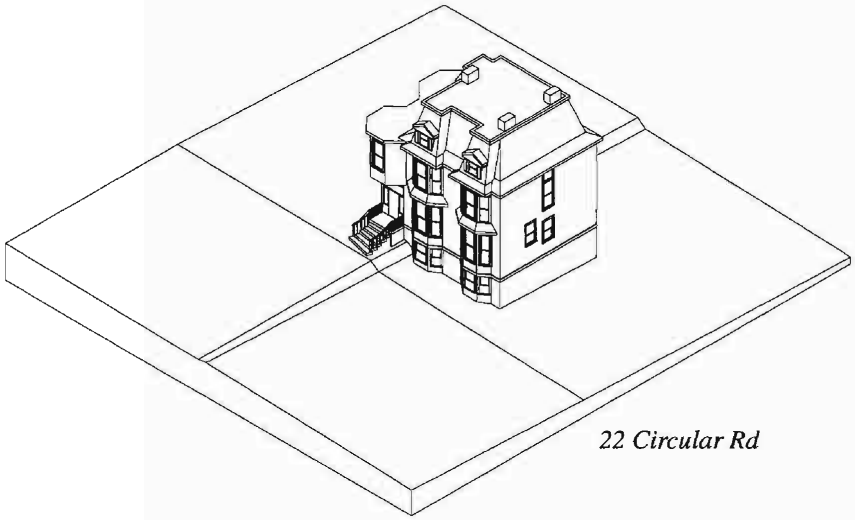


18 Circular Rd

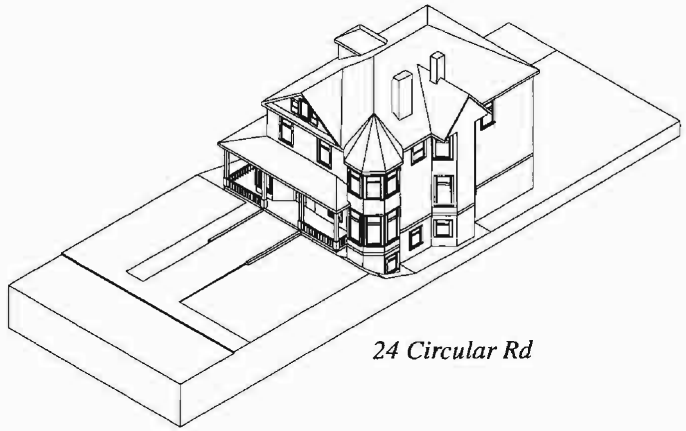


20 Circular Rd

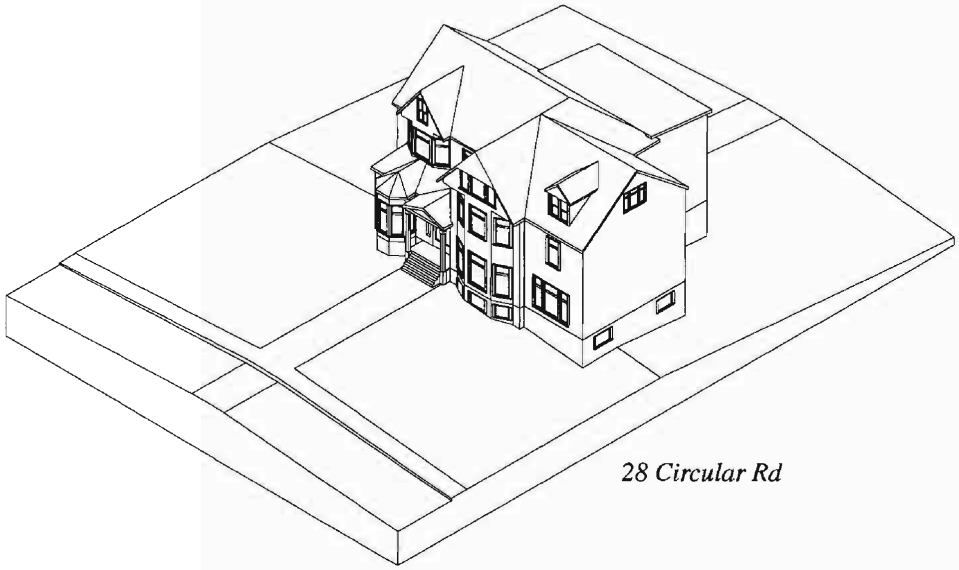
13	COMPUTER-GENERATED MODELS	CIRCULAR ROAD EAST



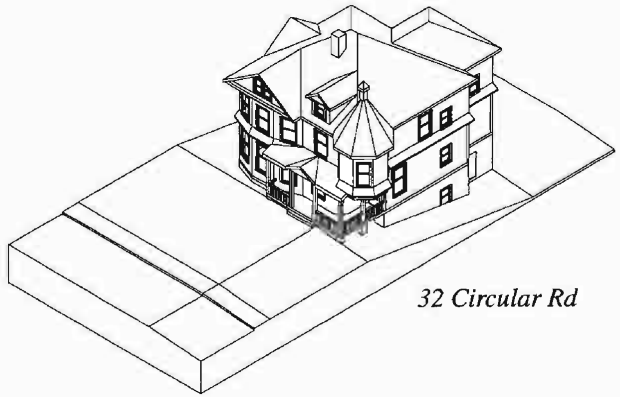
22 Circular Rd



24 Circular Rd

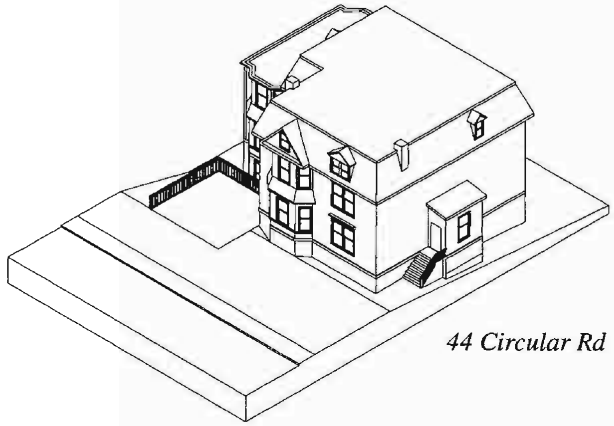


28 Circular Rd

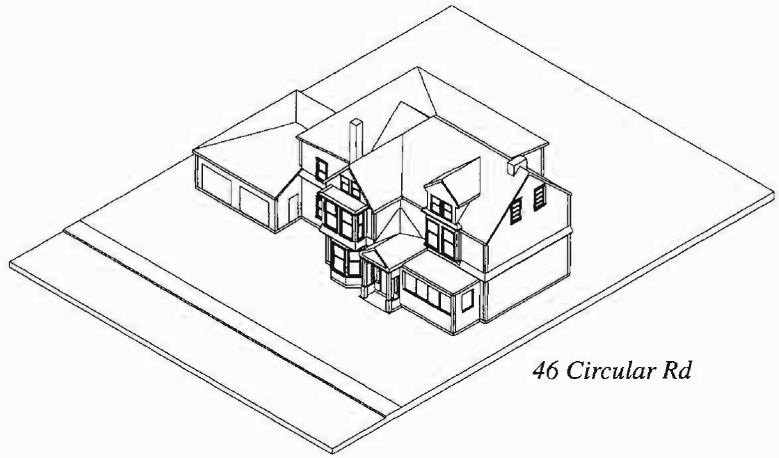


32 Circular Rd

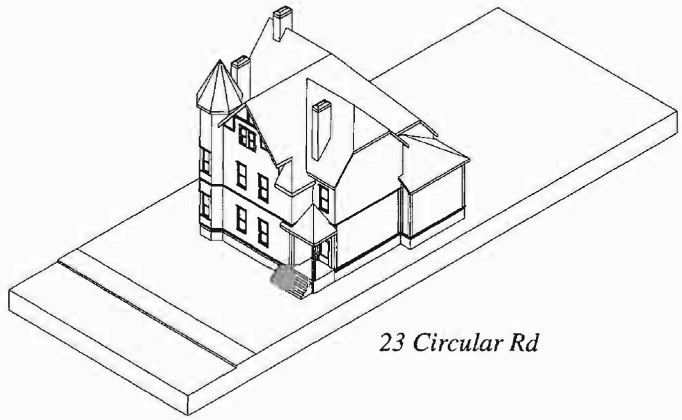
14	COMPUTER-GENERATED MODELS	CIRCULAR ROAD EAST



44 Circular Rd

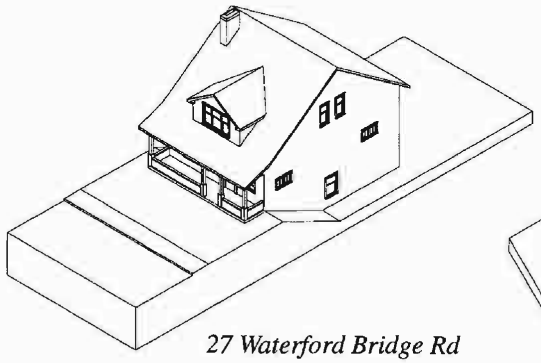


46 Circular Rd

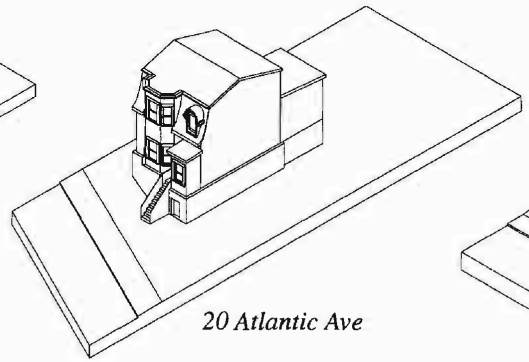


23 Circular Rd

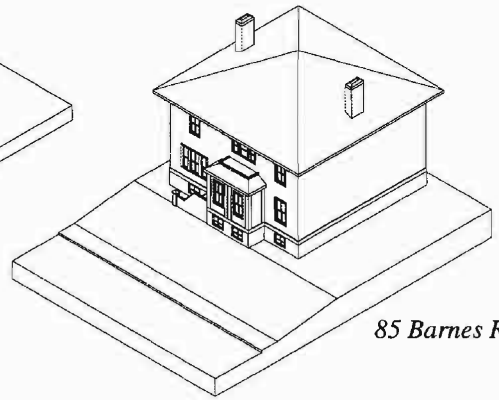
15	COMPUTER-GENERATED MODELS	DETACHED HOUSES



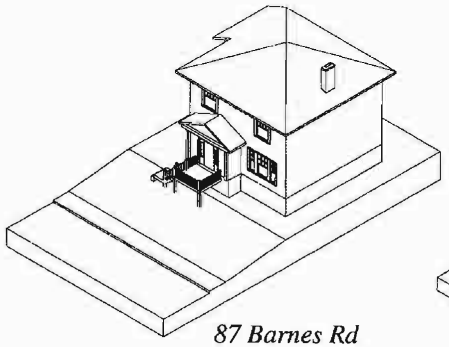
27 Waterford Bridge Rd



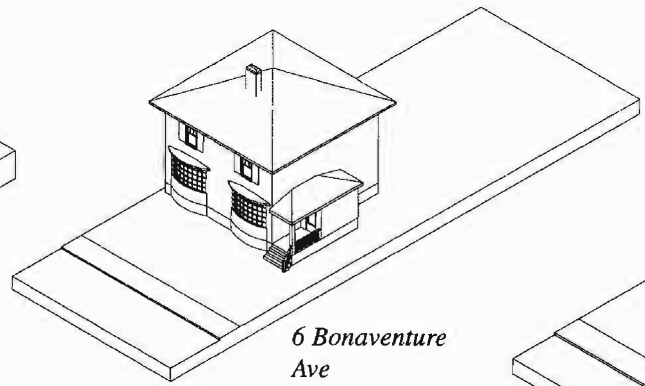
20 Atlantic Ave



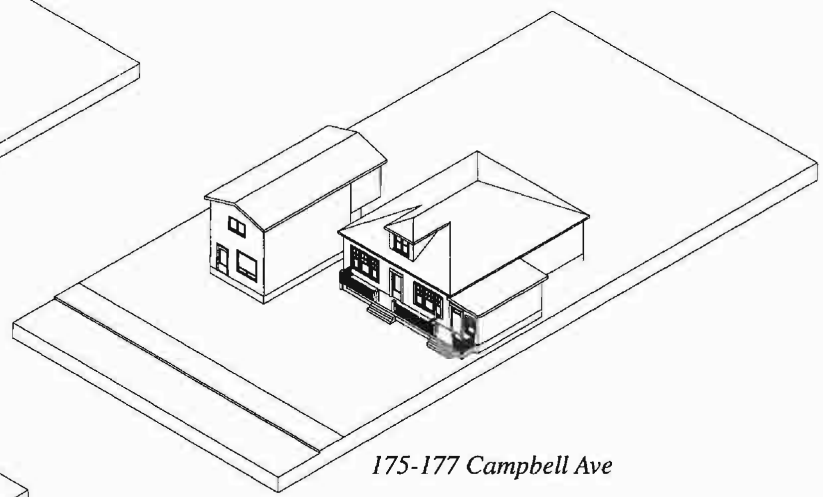
85 Barnes Rd



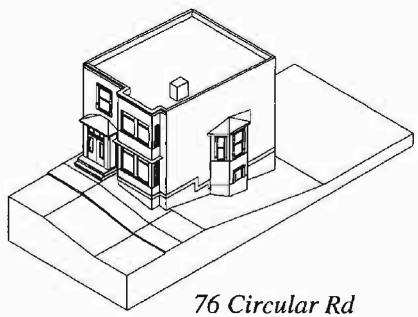
87 Barnes Rd



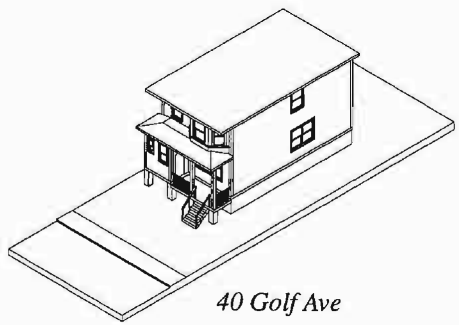
6 Bonaventure Ave



175-177 Campbell Ave

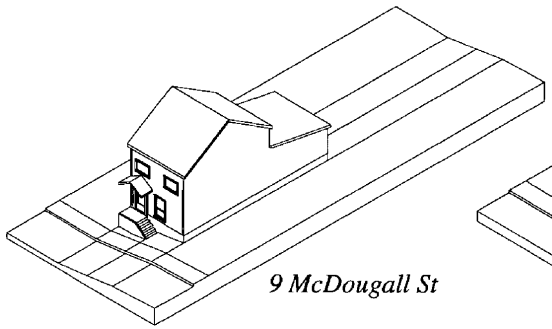


76 Circular Rd

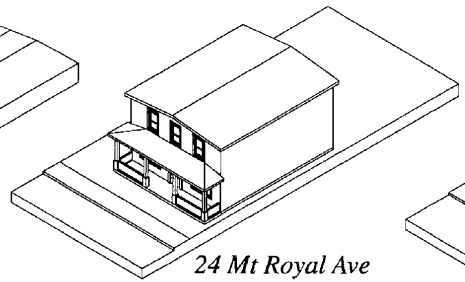


40 Golf Ave

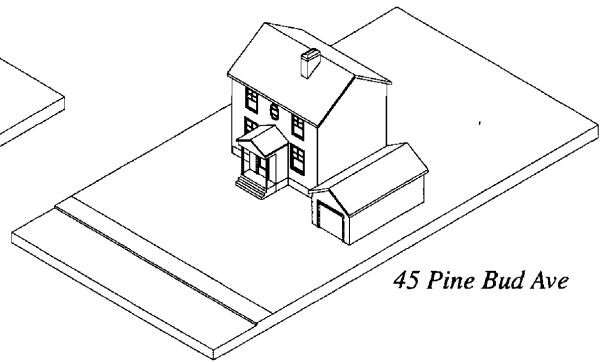
16	COMPUTER-GENERATED MODELS	DETACHED HOUSES



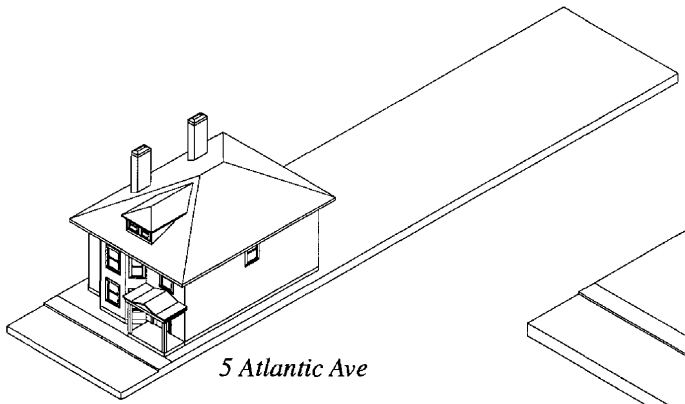
9 McDougall St



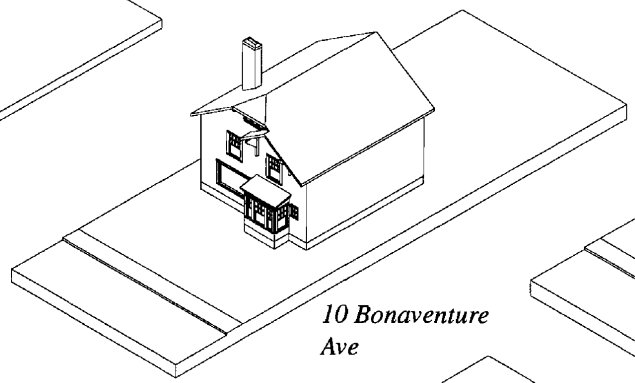
24 Mt Royal Ave



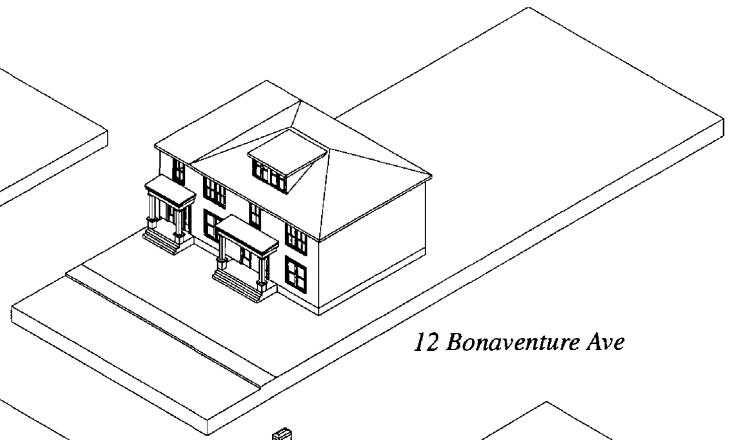
45 Pine Bud Ave



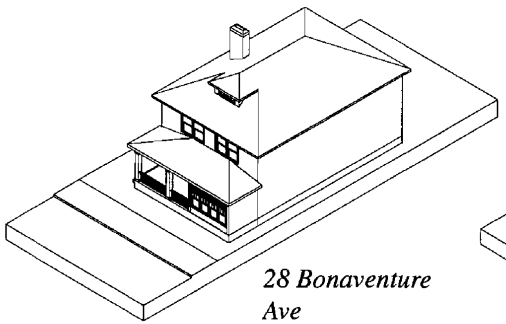
5 Atlantic Ave



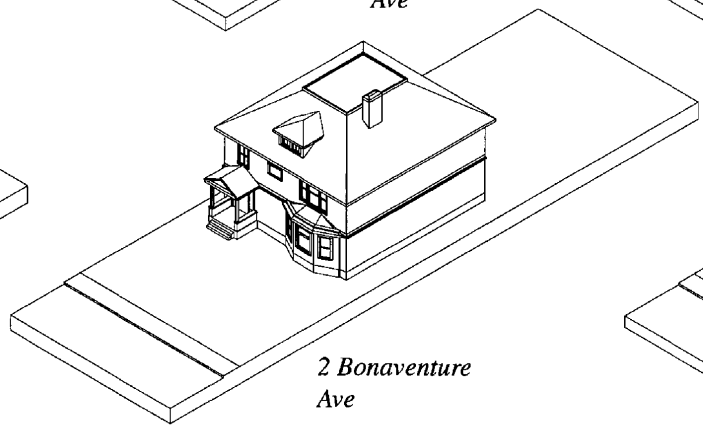
10 Bonaventure Ave



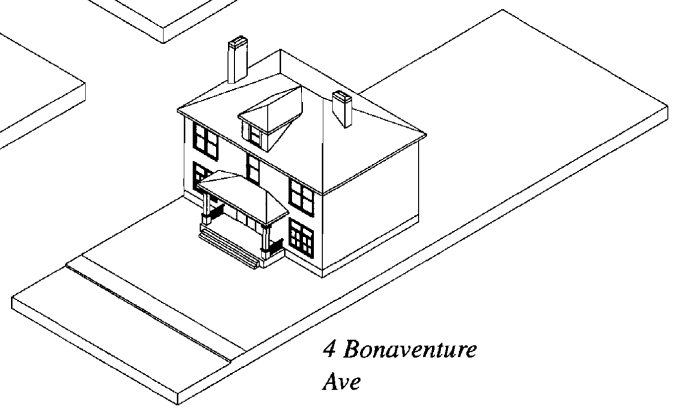
12 Bonaventure Ave



28 Bonaventure Ave

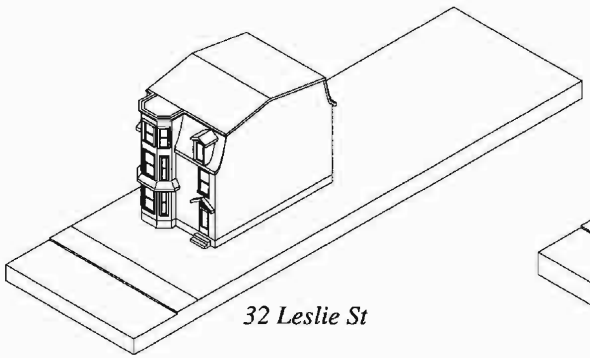


2 Bonaventure Ave

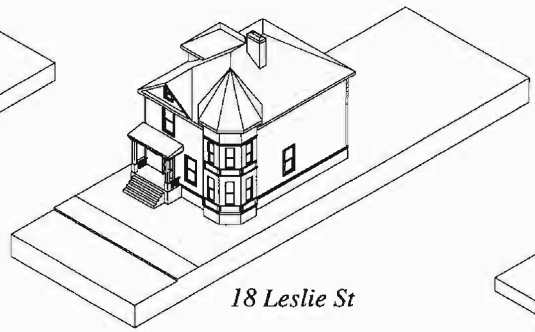


4 Bonaventure Ave

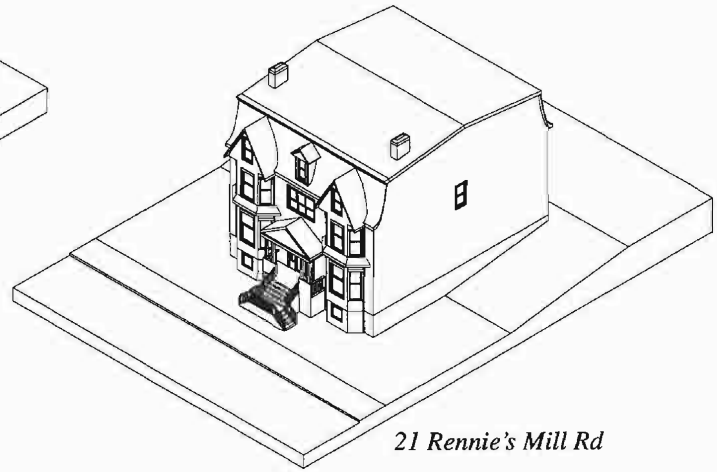
17 | **COMPUTER-GENERATED MODELS** | **DETACHED HOUSES**



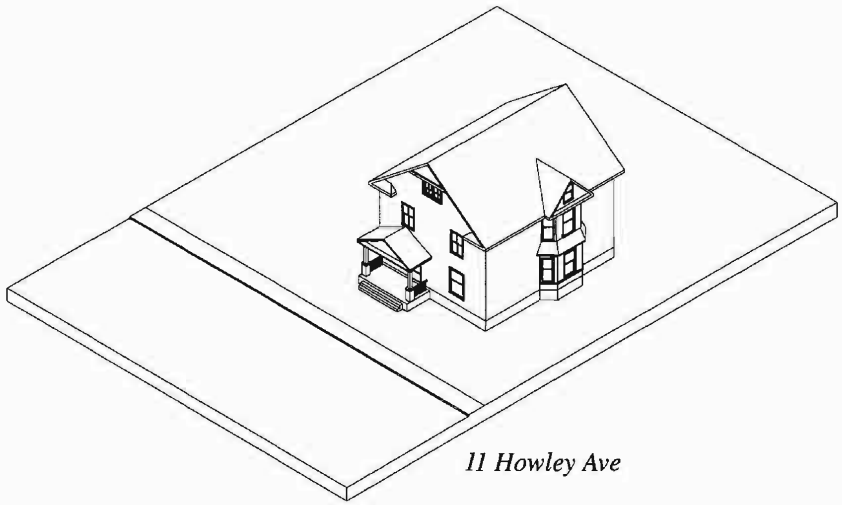
32 Leslie St



18 Leslie St



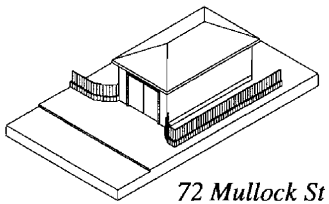
21 Rennie's Mill Rd



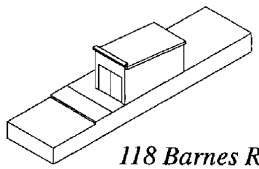
11 Howley Ave

40 Rennie's Mill Rd

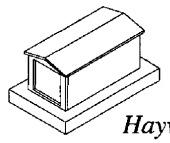
18 **COMPUTER-GENERATED MODELS** | **OUTBUILDINGS**



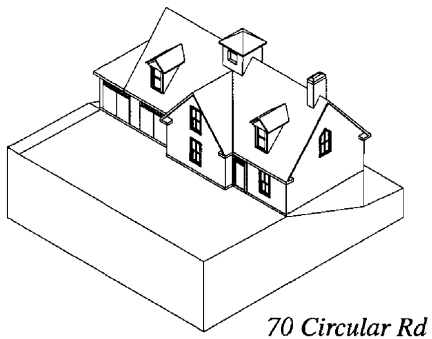
72 Mullock St



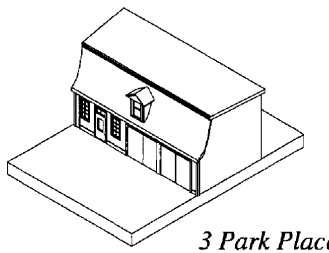
118 Barnes Rd



Hayward Ave



70 Circular Rd



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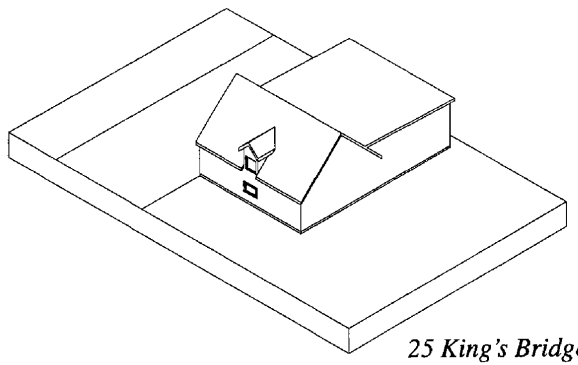
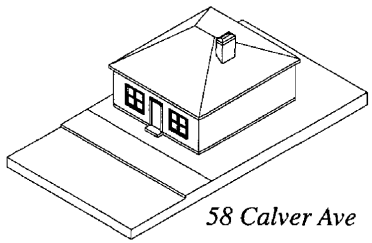
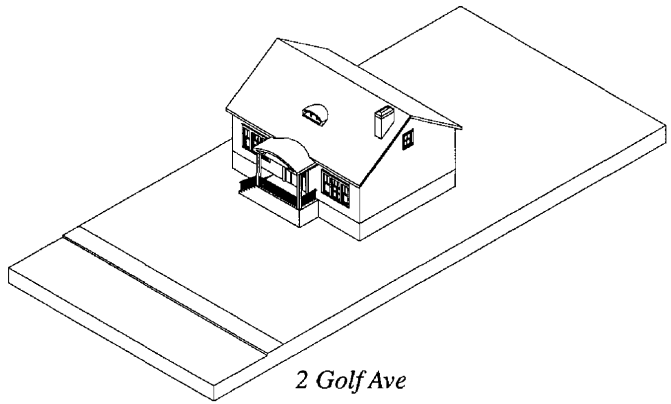


25 King's Bridge Rd

19	COMPUTER-GENERATED MODELS	BUNGALOWS



58 Calver Ave



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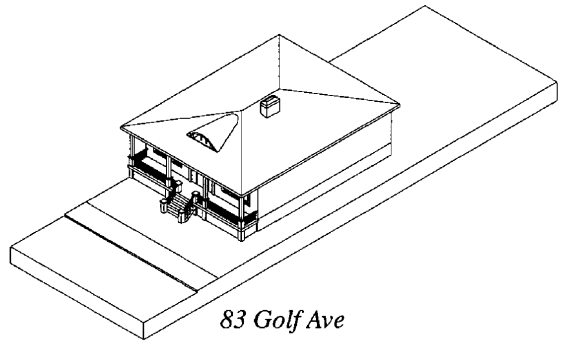

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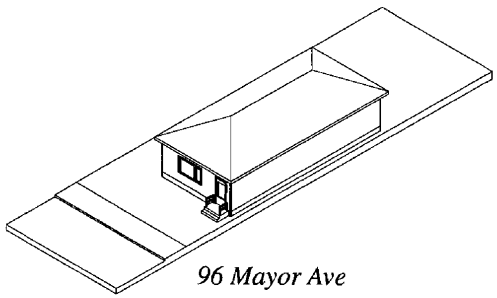
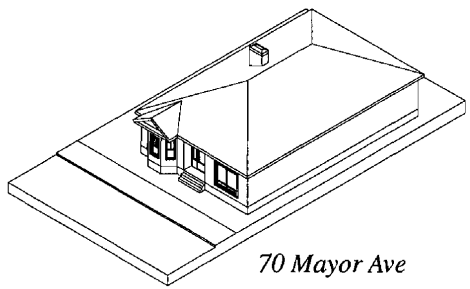
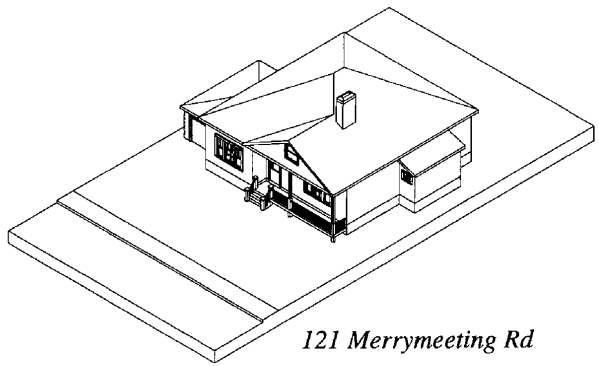


96 Mayor Ave

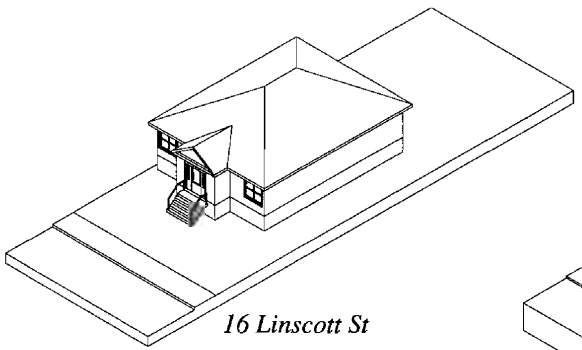


70 Mayor Ave

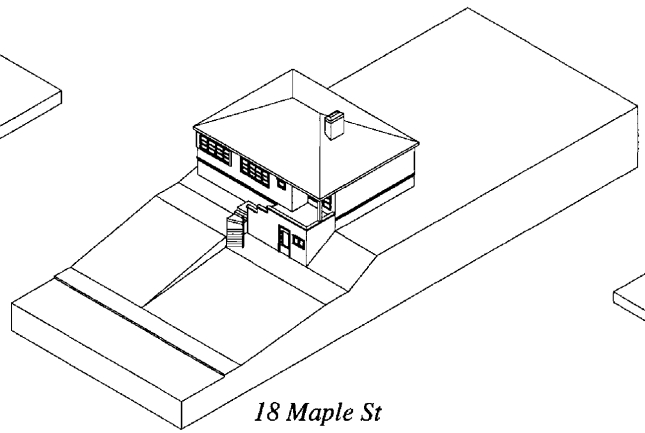


121 Merrymeeting Rd

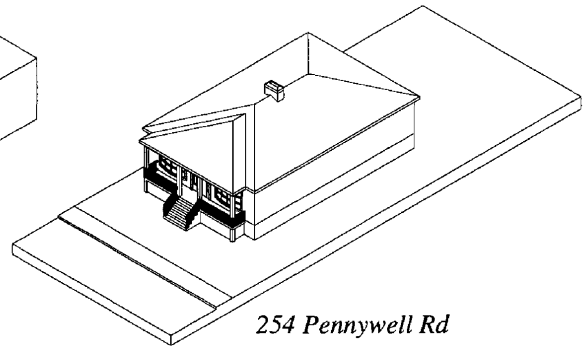
20 | **COMPUTER-GENERATED MODELS** | **BUNGALOWS**



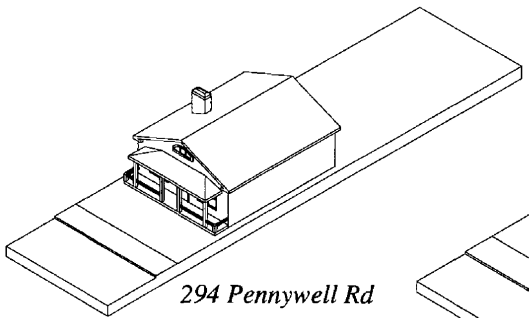
16 Linscott St



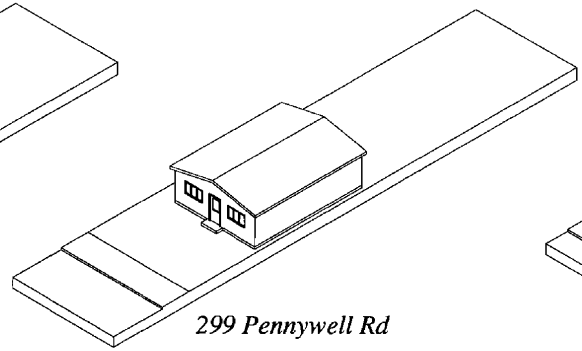
18 Maple St



254 Pennywell Rd



294 Pennywell Rd



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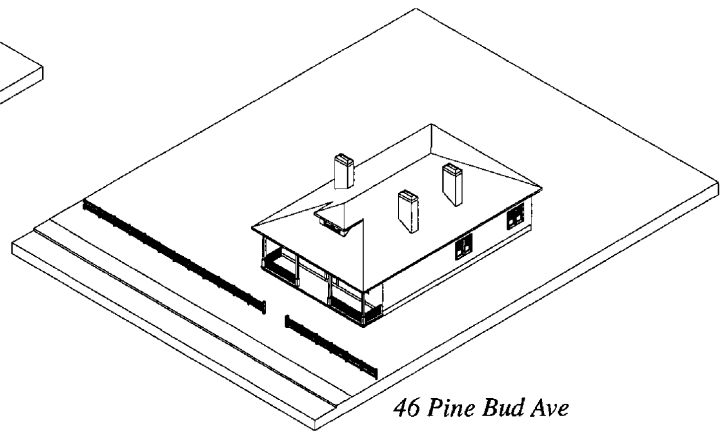
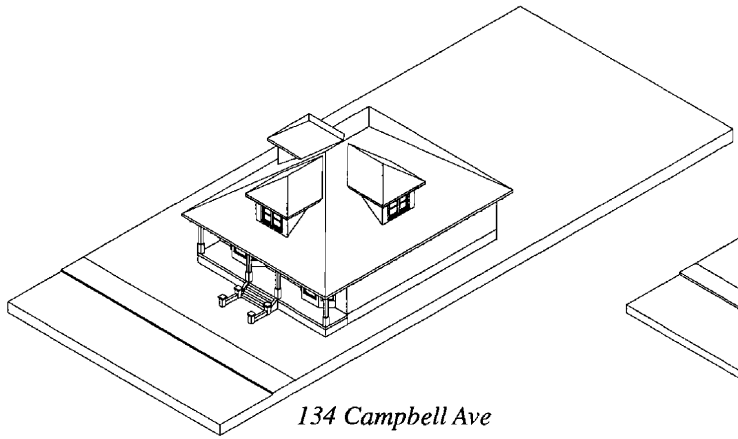


46 Pine Bud Ave

21	COMPUTER-GENERATED MODELS	BUNGALOWS



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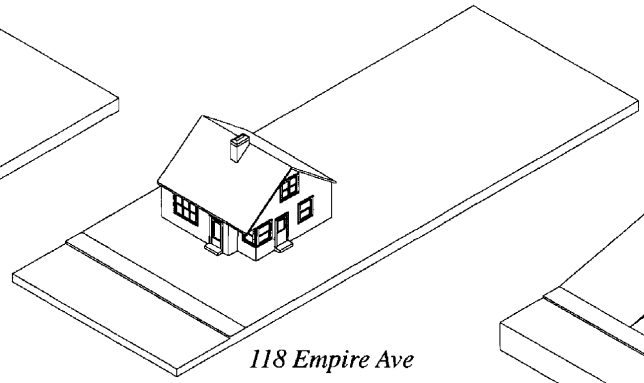

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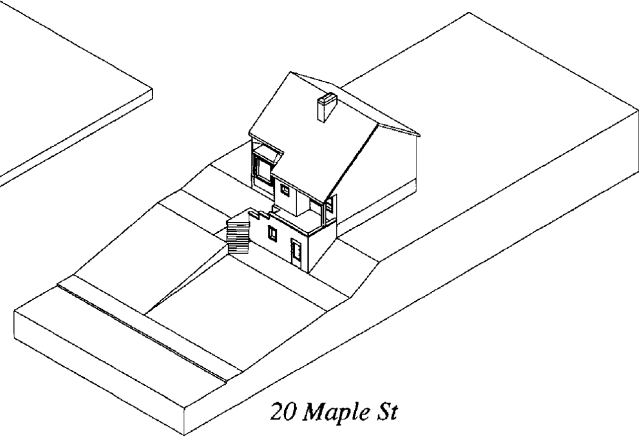

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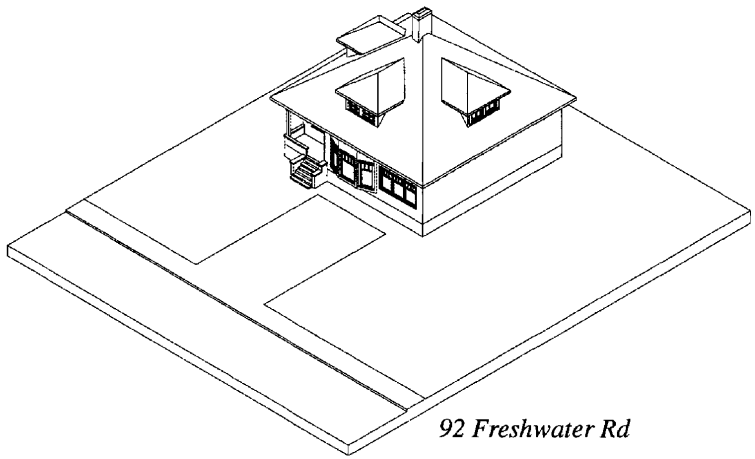

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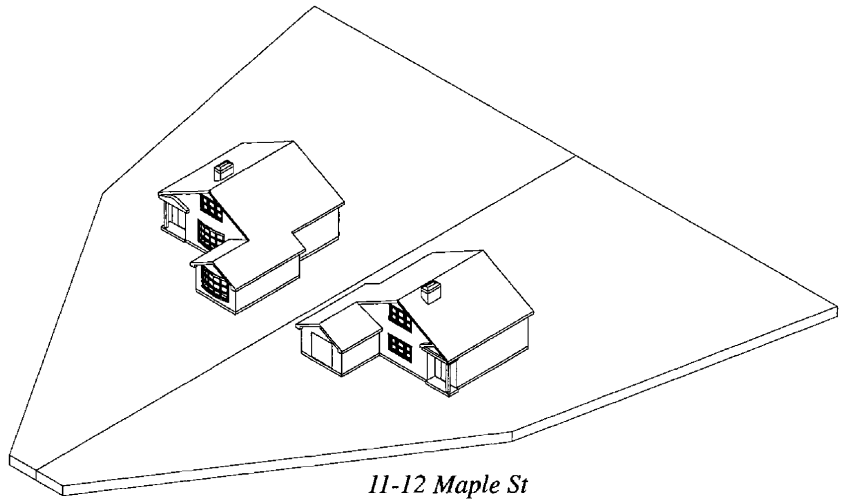
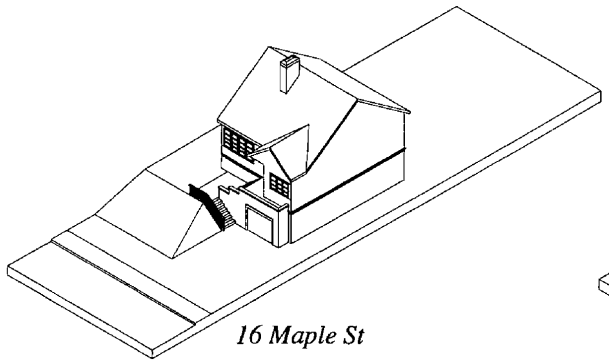


11-12 Maple St

22	COMPUTER-GENERATED MODELS	BUNGALOWS



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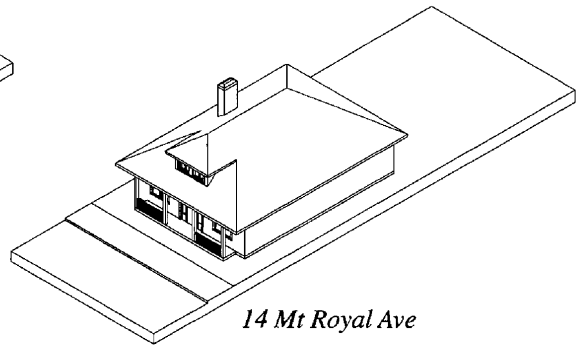
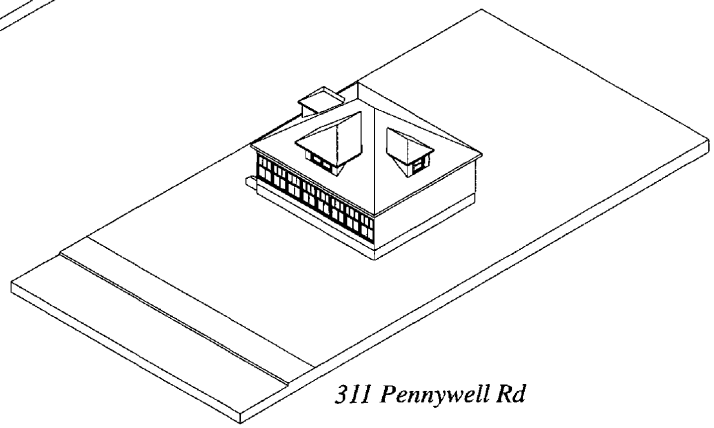


14 Mt Royal Ave



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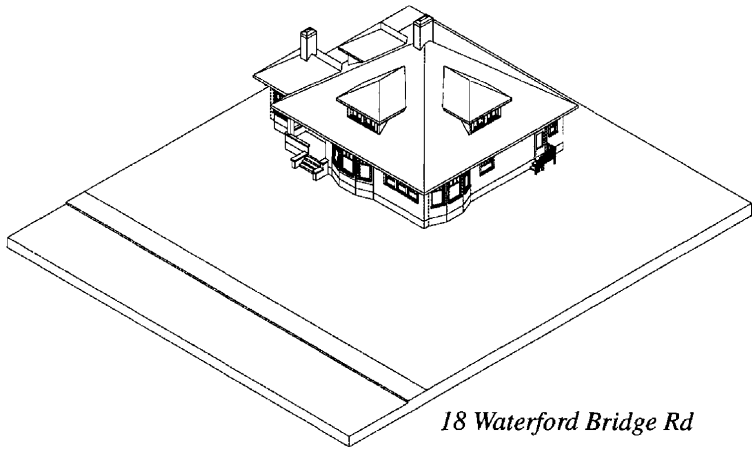
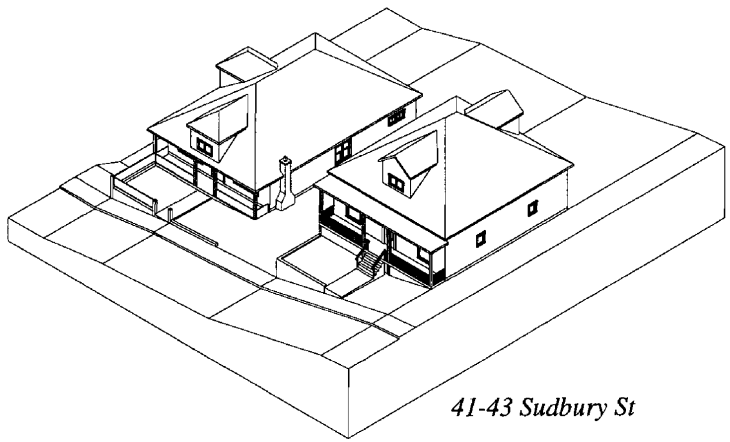


18 Waterford Bridge Rd



41-43 Sudbury St

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