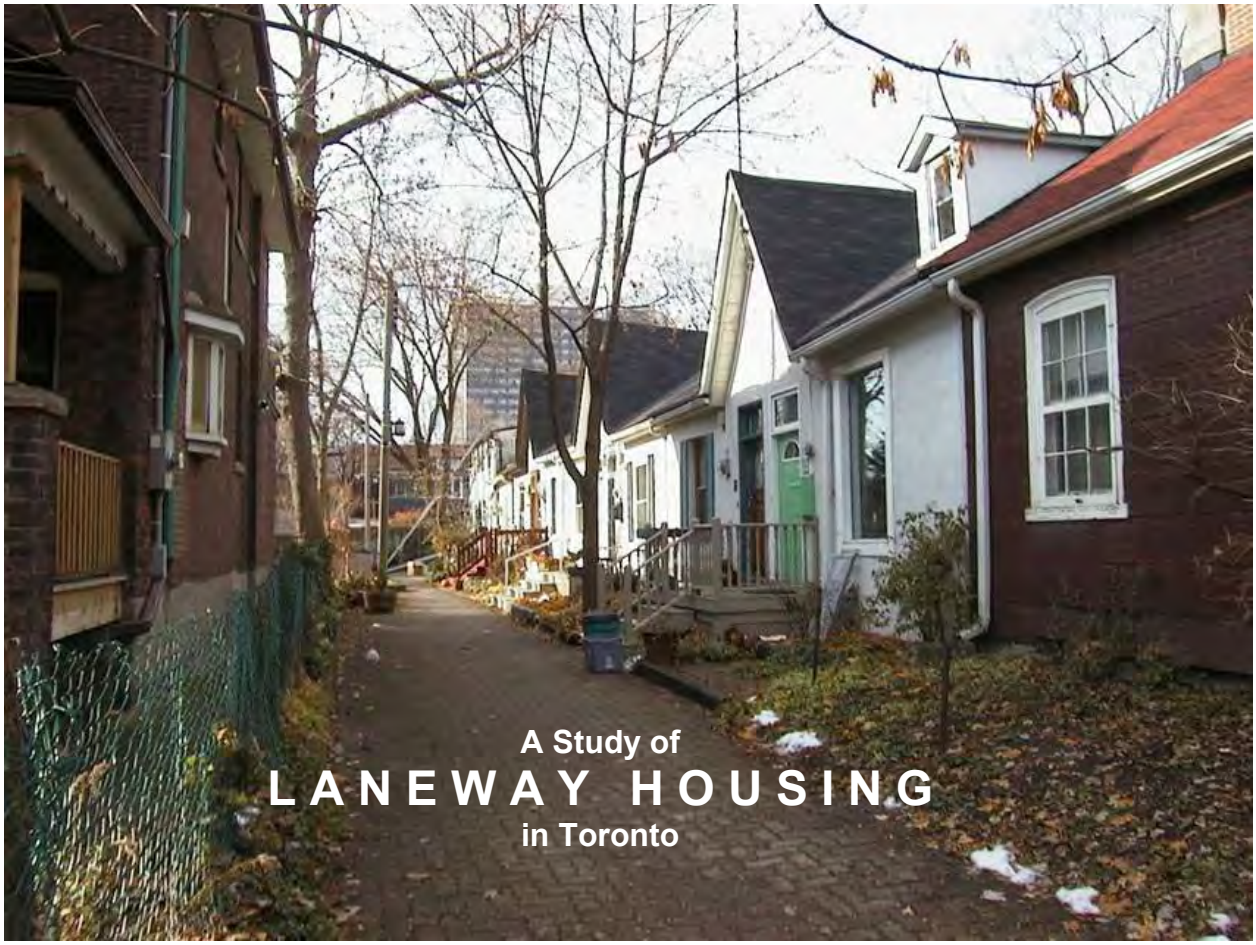
Feb 2003



A Study of

LANEWAY HOUSING

in Toronto

conducted by:

Jeffery Stinson Architect
Terence Van Elslander Architect
73 Mackenzie Cr.
Toronto, Ont. M6J 1T2

PREFACE

The project documented in this report received a grant under the Affordability and Choice Today (ACT) Program, a regulatory reform initiative sponsored by Canada Mortgage and Housing Corporation (CMHC) and jointly managed with the Canadian Home Builders' Association (CHBA), the Canadian Housing and Renewal Association (CHRA) and the Federation of Canadian Municipalities (FCM). ACT seeks to stimulate changes to planning and building regulations and residential development approval procedures to improve housing affordability, choice and quality. The United Nations Centre for Human Settlements recognized the ACT Program in 1998 as one of the top global best practices for improving the living environment.

Through ACT, grants have been awarded to municipalities, private and non-profit builders and developers, industry associations, educational institutions, planners and architects across Canada to undertake regulatory reform initiatives. ACT grants have been awarded under three categories: Demonstration projects, Approval Process projects and Promotion projects. A wide range of projects across Canada have received assistance.

All completed ACT projects are documented in short project overviews or solution sheets, and a number of longer case studies have been produced as well, to share the benefits of regulatory reform with others. These documents are available to help builders, local building and planning officials, and others recognize and seize opportunities to improve housing affordability, choice and quality through regulatory reform in their communities.

For more information on ACT and ACT projects (both completed and in progress), visit the ACT Web site at www.actprogram.com, or contact:

ACT Administration
c/o The Federation of Canadian Municipalities
24 Clarence Street
Ottawa, Ontario
K1N 5P3
Phone: (613) 241-5221 ext. 242
Fax: (613) 241-1515
E-mail: info@actprogram.com

Contents

P h a s e T w o

Preface

Appraisal of Vernacular Dwellings

- Material
- Access and Orientation
- Open Space
- Windows
- Construction

Design Considerations

- Sustainability
- Social Issues
- Planning Issues
- Construction
  - Lot Constraints
  - Materials
  - Mechanical Systems
  - Servicing
  - Minimum Separation between Services

Prototype Designs

- Design Approach
  - Programme
  - Energy Use
  - Construction
- Corner Lot
- Island Lot
- Key Lot
- Slot Lot
  - each prototype includes:
  - Description
  - Design Influences
  - Programme
  - Construction and Design
  - Estimated Cost of Construction
  - Design Drawings

Summary

The proposition behind this study is that in Toronto and other cities there is an untapped resource of city property, which could be developed for much needed low cost housing, effectively using the existing infrastructure.

We have experience of finding such property on laneways in Toronto and of building satisfactory housing there. We also observed that the difficulties confronting anyone attempting this task are such that very few are built and only a small group of citizens - almost all architects - are able to benefit from this opportunity.

The objective of this study is to make it easier to build housing in laneways so that more people can take advantage of the possibilities of these sites. The study is based on central Toronto but its relevance is to similar urban situations in cities everywhere.

We have found that Laneway housing is part and parcel of the Toronto urban fabric. The use of laneways, for commerce as well as housing is as old as the City itself and is particularly characteristic of Toronto. The laneway has helped to give Toronto a density and humane scale, which contribute to the liveability of the city. Laneways were and are practical resources of land and encourage small scale and economical development. We have researched the experiences of relatively recent laneway development, and have surveyed a portion of the city to document existing vernacular laneway dwellings. We have also documented existing empty laneway lots in our study area and have analysed the potential for new laneway development. Laneway development could increase the number of dwellings in Toronto by 5 to 10%. This is a significant number of dwellings and represents a substantial addition to the tax base of the city. According to Statistics Canada the historical, pre-amalgamation city holds some 123,000 owned dwelling units. If 5% of these were candidates for laneway development a potential increase of 6,150 homes could be added to the city. At a modest tax rate of $1,800 per home the increase in annual municipal revenue would be $11,070,000.00 without substantial infrastructural changes. As well the city would receive some $30,750,000.00 in development charges

The major impediment to developing the laneway resource is the length, complication and somewhat idiosyncratic nature of the approvals process. It is unlikely that the city will revise its Official Plan in the near future, or rationalize its Zoning By-laws to allow Laneway housing to proceed without individual planning approval. There are good reasons for this: laneway housing must be carefully done. Issues of scale, access, privacy, and quality become heightened with laneway housing. However, from our interviews with those who have built lane way housing, the approvals process seems to be unevenly rigorous, and often depends on the City Planner's, familiarity with the type. The recent municipal amalgamation seems to have exacerbated the problem; planners whose background is in the suburban context seem to have difficulty accepting the concept of laneway housing and are unfamiliar with its history and the large numbers of laneway houses in existence. It is often difficult to anticipate the extent of the approvals process and this makes it difficult for proponents to calculate the feasibility of a potential project.

Three changes are needed to address this issue. One is that the existence, functionality and desirability of laneway housing need to be made manifest. We believe this study accomplishes that task. The second is that the parameters of laneway housing, what makes a particular lot suitable for laneway development, and need to be determined. We believe our study makes a solid contribution to this understanding. The third change is that the municipality needs to explicitly endorse laneway housing and ensure an even approval procedure.

fig.1

Historical Context

Development of laneway system

The laneway system, which characterises Toronto, is a result of 19th century city planning and the particular pattern of land development this city has experienced. In 18th century Toronto, which formed along the waterfront from the Don River to the harbour area, and north to Queen Street, was organized into small square blocks. This type of city plan is typically Georgian and allows for density and porosity. After the American war of independence large estate lots stretching from Queen Street to Bloor Street were granted to certain Empire Loyalist families, later to be known as the Family Compact. These estates had the city at their front and unsettled land at their back.

Toronto's development in the 19th century was rapid but uneven. The landholders differed in their ideas about the nature of Toronto's future and also did not necessarily cooperate when developing their lands. Each estate was developed somewhat independently, with an individual vision and timetable. The estates of the Baldwin and Denison families are an interesting example. These estates were adjacent but developed with very different ideas about the future of Toronto. Baldwin actively sought to improve and raise the value of his holdings as urban land. He laid out a broad avenue from the harbour north to what is now College Street. Placing his own home at the termination of this Avenue he encouraged mercantile development along the Avenue, now called Spadina, and created wide residential lots on east west streets off the Avenue. The Denison's, were by contrast agrarian idealists, reluctant to develop their lands, and sold them piecemeal. Their lands never achieved the coherence and scale of Baldwin's lands, but developed into what is now the exciting and multi layered Kensington Market area. This individuality of development is entirely characteristic of Toronto. Neighbourhoods are coherent and identifiable. Uses are mixed: large and small homes, retail and manufacturing are closely positioned. Streets, especially east to west streets, which cut across the old estate divisions, often jog or change direction which provides interest and occasion in the urban fabric. The urban scale is fully exercised; large and small buildings coexist easily.

In general, the estates were sold off to smaller landholders. Streets were laid out and the lots were divided again into smaller lots. Figure 2 shows a typical example of the city in development. This block extending from Queen Street is a portion of an estate lot. In turn it has been divided into smaller squarish lots and divided again into narrow rectangular lots for row housing. Commercial buildings line Queen Street and a lane way system begins to feed through the block. Note the line of detached buildings along the lane parallel to Queen Street, which likely held stables and secondary commercial uses. Individuals were able to use their lots to generate income by building housing or commercial uses at the back or sides of the property, accessed by lanes.

Figure 1, a photograph of Toronto in the 1890's, illustrates the land use density and the porosity of the block structure. The laneway was instrumental in achieving density, the integration of services and uses, and in maximising land use. The lane allowed the distribution of services and goods, reduced street congestion, accommodated stables and related uses, and provided housing for workers. The efficiency of this system of urban development is apparent, considering the difficulty of transportation and access to energy faced by 19th century society.

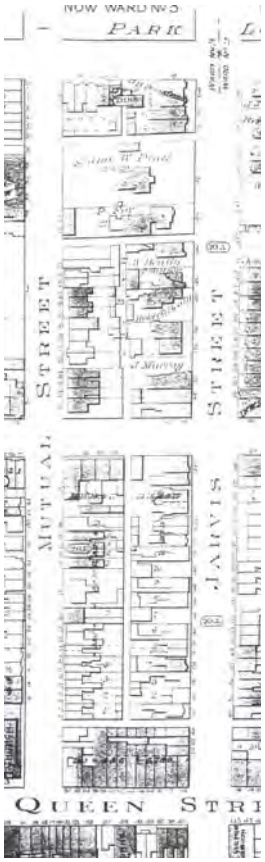


fig. 2

Uses of laneway system

Historically, the commercial and residential use of laneways in Toronto was important in servicing the city. Transportation and storage of goods was accomplished with the laneway system. Some lanes, such as Stonecutter's Lane, are named for the commercial activity which they housed. Services, commerce, and housing were integrated in the 19th century city; not until the advent of zoning regulations and modern transportation systems did the historical city structure begin to disintegrate. Uses became separated. Neighbourhoods became economically segregated.

Toronto, for many reasons, did not completely lose its historical structure. The residential and commercial uses of the laneway have continued to the present day. Builder's yards, bakeries, auto repair shops and similar uses previously occupied many of the laneway lots now open for development. It is still common to see these uses in operation. Many commercial buildings now house artists' studios. Housing in laneways has continued throughout Toronto's development. Many new examples are documented in this study.

A walk through many of Toronto's lanes on a pleasant day will show them to be active and social places. Laneways are also used for recreational purposes, as a relatively a safe place for children to play. They are easily supervised in the lane. Ball hockey, basketball, car washing, barbequing and other activities are all evident. The laneway has a positive association to Torontonians. Many people's childhood memories are positively connected to the laneway.

Survey of Vernacular Laneway Dwellings

In order to establish the existing state and quantity of laneway housing, and to estimate the possible land resource, we undertook an intensive study of an area bounded by Bloor Street, Queen Street, Dufferin Street and Bathurst Street. This area contains 5,112 street lots. Refer to Diagrams 1 through 3.

Within this study area, we documented laneway dwellings of various ages, from the 19th century to the present day. Without a doubt, the laneway dwelling is a common and integral part of Toronto's urban fabric. Up to 50 individual buildings, many of which contain more than one unit, are found along the study area's laneways. Over 40 vacant, severed lane way lots exist within the study area.

The overall potential for laneway development in Toronto is hard to accurately determine. However, it is reasonable to conclude that within the pre-1940 limits of Toronto, the laneway lot resource is about 5 to 10% of the existing housing stock. This represents upwards of 512 housing units within our study area. According to Statistics Canada the historical, pre-amalgamation city holds some 123,000 owned dwelling units. If 5% of these were candidates for laneway development a potential increase of 6,150 homes could be added to the city.

Diagram 1 shows the study area and the laneway pattern. Lanes are of two types: assumed and unassumed. Assumed Lanes are usually named and have some city services. They may have houses and other buildings along them. Unassumed lanes are generally not serviced, are not named and may be private or public. Many buildings are found along unassumed lanes, but are not officially documented.

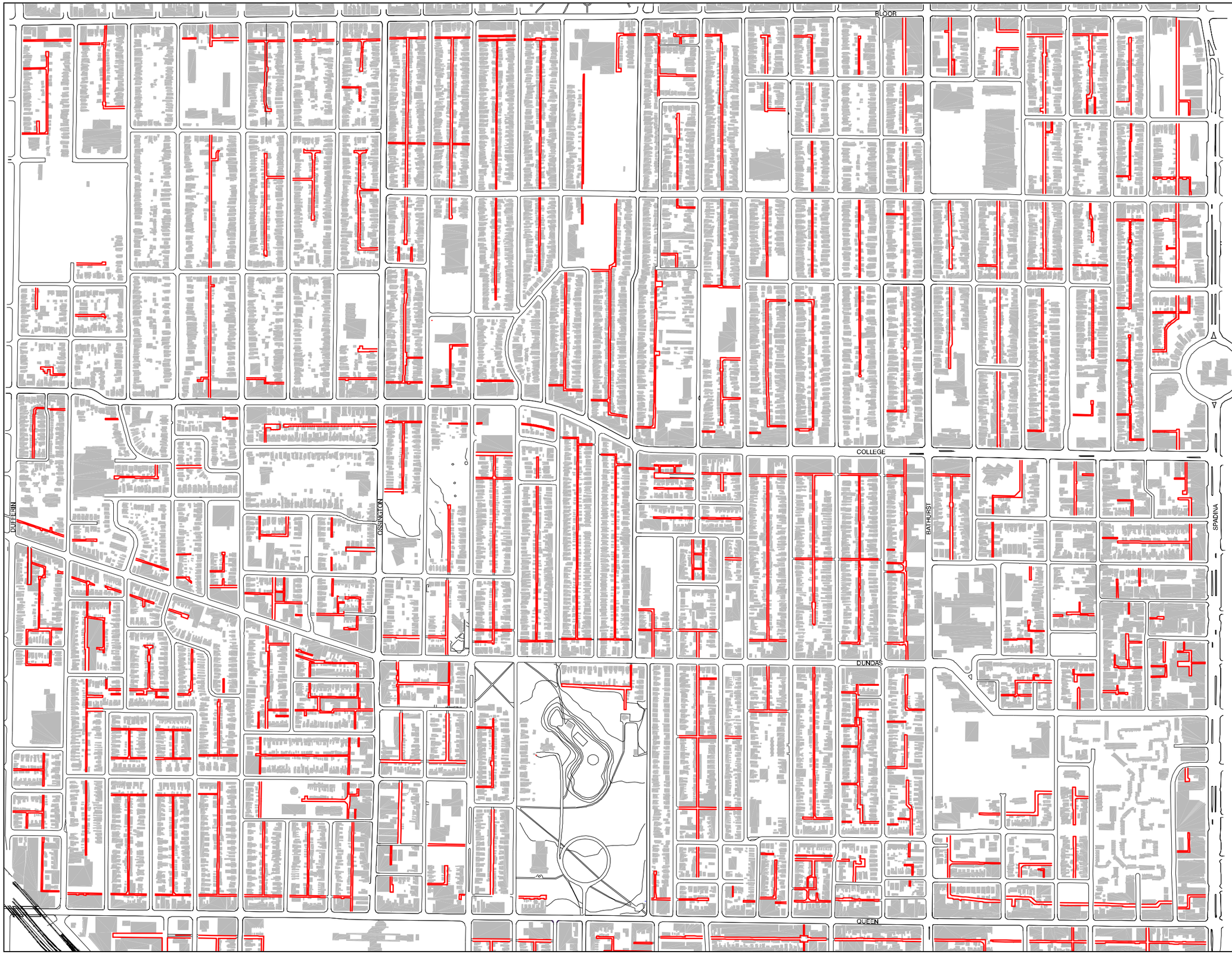
Diagram 2 shows the existing laneway dwellings in the study area, as well as existing laneway lots of non-residential use.

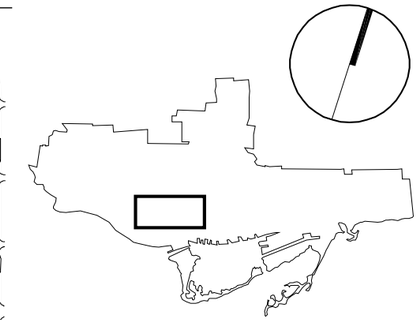
Diagram 3 shows the potential laneway lots in the study area. We found, in a study area of 5,112 street related lots, a possible 515 laneway lots. The criteria for choosing laneway lots included:

Severance: The minimum lot width is 6 metres. Only lots 6 metres or wider were considered. Lots with an existing lot coverage far in excess of 30% were not considered. We deemed the density would be too high without these considerations.

Access to servicing: Lots were chosen based on the ability to reach the street with servicing. Some laneway lots must have a service and access corridor from the street to the dwelling; the corridor also gives the dwelling a street address. The service corridor would require the consent of the street-side property owner. Servicing laneway lots is a major consideration dealt with more fully in Phase 2 of this study.

Fire Fighting: Proximity to fire hydrants and fire fighting access is an important concern. The Ontario Building Code stipulates, in Section 3.2.5.5, that the unobstructed path of travel for a fire-fighter from the fire-fighting vehicle to the principal entrance of the building must not be more than 45 metres. For a building not provided with a fire department connection, a fire department pumper vehicle must be located such that the length of the access route from a hydrant to the vehicle plus the unobstructed path of travel for the fire-fighter from the vehicle to the building is not more than 90 metres.





KEY MAP OF TORONTO CORE

Jeffery Stinson **Architect**
TERENCE VAN ELSLANDER
ARCHITECT
73 MACKENZIE CRESCENT
TORONTO ONTARIO M6J 1T2
4 1 6 - 5 3 3 - 1 1 4 2

Laneway Housing Study
Toronto, Ontario

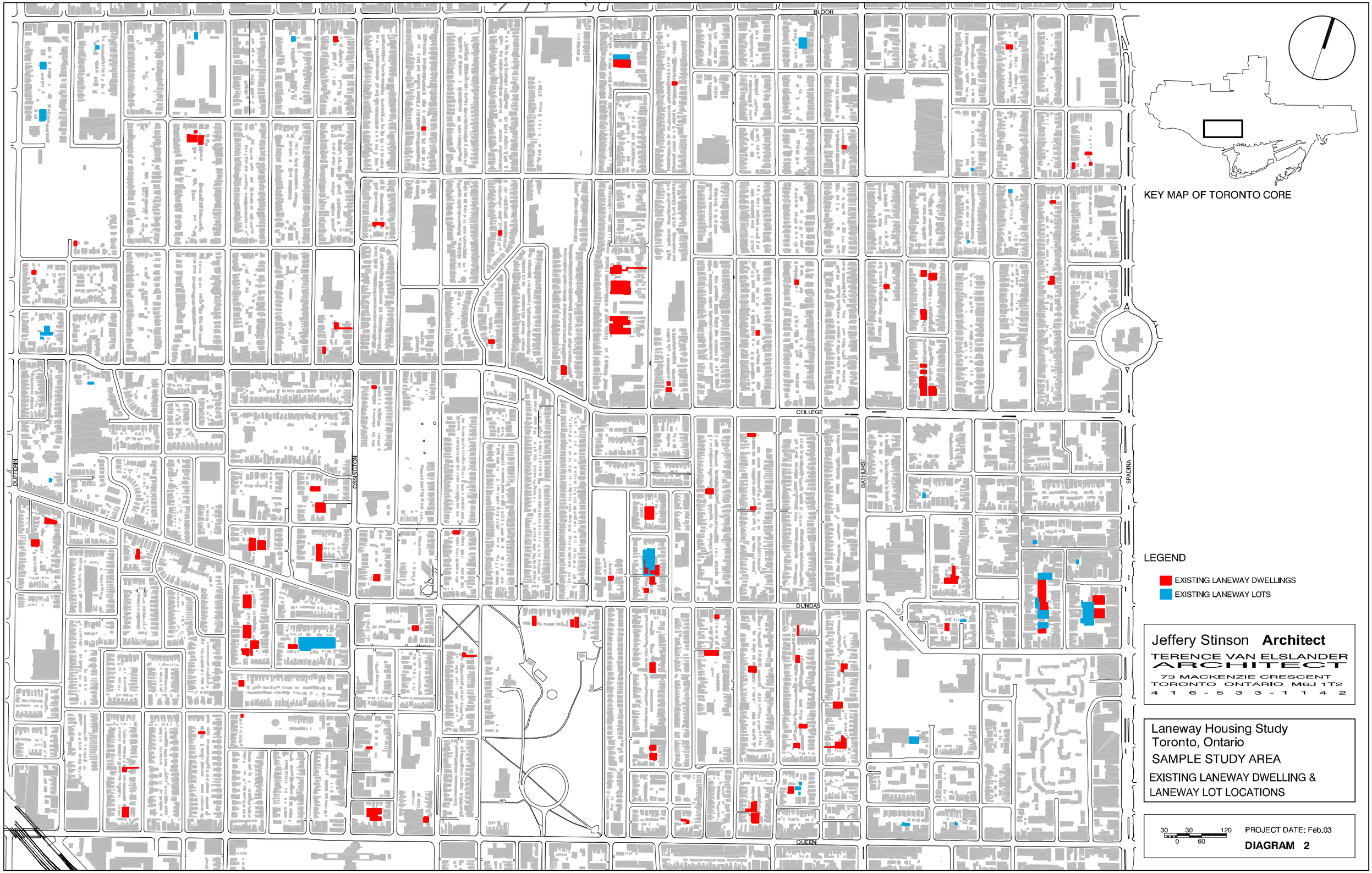
SAMPLE STUDY AREA

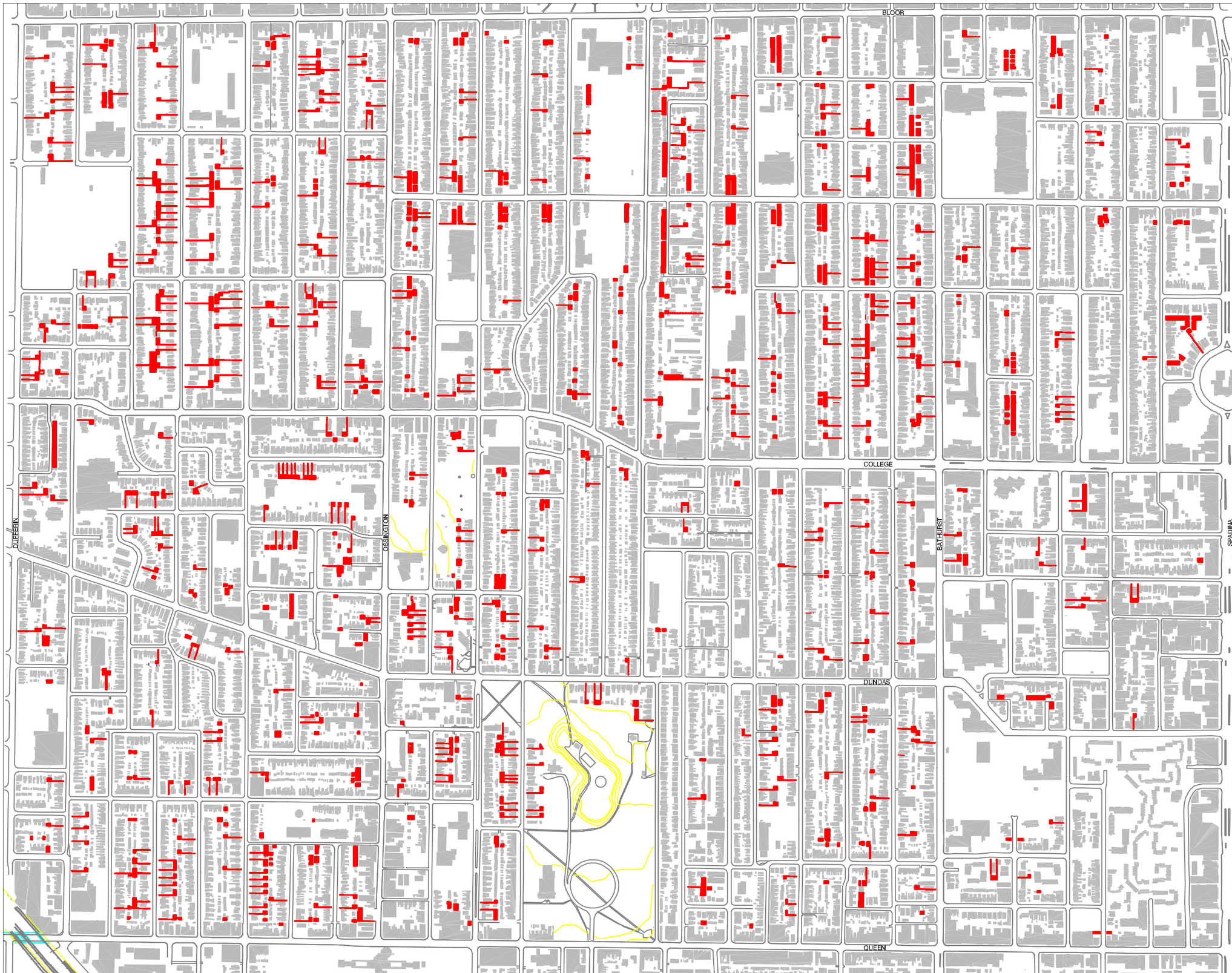
LANEWAY SYSTEM PATTERN

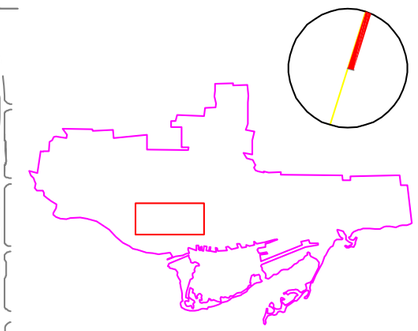
30 30 120
0 60

PROJECT DATE: Feb.03

DIAGRAM 1


BLOOR
COLLEGE
DUNDAS
QUEEN
DUFFERIN
OSSINGTON
BATHURST
SPADINA
KEY MAP OF TORONTO CORE
LEGEND
EXISTING LANEWAY DWELLINGS
EXISTING LANEWAY LOTS
Jeffery Stinson Architect
TERENCE VAN ELSLANDER
ARCHITECT
73 MACKENZIE CRESCENT
TORONTO ONTARIO M6J 1T2
4 1 6 - 5 3 3 - 1 1 4 2
Laneway Housing Study
Toronto, Ontario
SAMPLE STUDY AREA
EXISTING LANEWAY DWELLING &
LANEWAY LOT LOCATIONS
30 30 120
0 60
PROJECT DATE: Feb.03
DIAGRAM 2





KEY MAP OF TORONTO CORE

LEGEND

POTENTIAL LANEWAY LOTS

Jeffery Stinson **Architect**
TERENCE VAN ELSLANDER
ARCHITECT
73 MACKENZIE CRESCENT
TORONTO ONTARIO M6J 1T2
4 1 6 - 5 3 3 - 1 1 4 2

Laneway Housing Study
Toronto, Ontario
SAMPLE STUDY AREA
LANEWAY HOUSING SITES

30 30 120
0 60

PROJECT DATE: Feb.03

DIAGRAM 3

Survey of Existing Laneway Houses

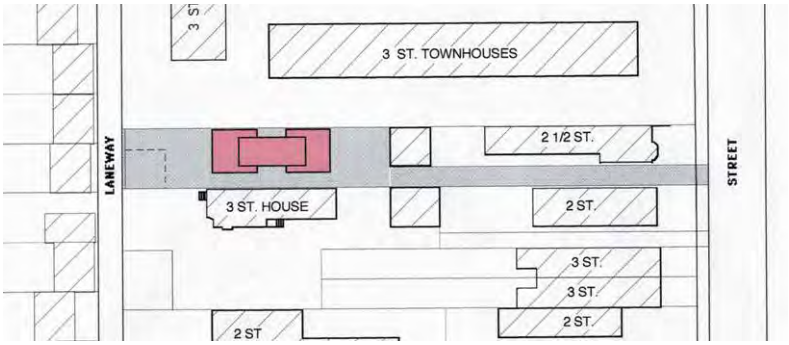
New projects

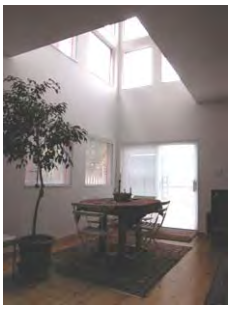
Laneway housing as an opportunity for architecturally distinctive and creatively designed housing is increasing in Toronto. Architects build many of these projects for themselves. There are a number of reasons for this. One is the relative affordability of laneway lots. The other is the general difficulty of the approvals process. Architects have the ability to navigate the approvals process and can absorb the professional fees and design costs, whereas individuals and small developers are less inclined to risk and delay. There are nonetheless architects, developers and builders who pursue laneway housing commercially.

We have interviewed almost all the recent designers of laneway housing, and are able to offer comparisons of the following projects

118R Clinton Street	**Astra Burka Architect**
1 Ways Lane	**A.J. Diamond, Donald Schmitt & Company, Architects**
298B Sackville Street	**Baird Sampson Neuert Architects Inc.**
5 Leonard Place	**Jeffery Stinson Architect**
7 Leslie Garden Lane	**Shim – Sutcliffe Architects**

118R Clinton Street Astra Burka Architect





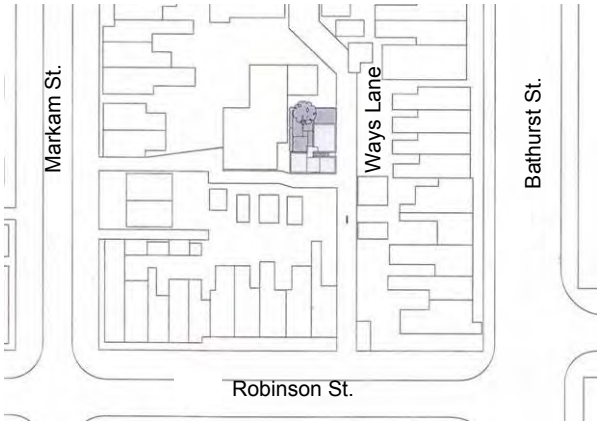
Original Site Conditions
This project is located in a unique area of Toronto. The original lots are very long: 85.35m, fronting on a street and backing on a lane which held a number of small factories, barns and houses continuing to the present. This area has seen a number of lane way developments and innovative lot uses. This lot was severed the 1950's and was used as a storage yard for a drainage contractor. The lot measures 9.5m by 41.1m (390.45m^2) with a 3.35m wide right of way to the street. Zoning is residential.

Approvals Process
The owner went to Preliminary Zoning Bylaw Review and was told the proposed use was non conforming. At the committee of Adjustment, the project was approved. Building Permit Application required some negotiation and assistance. The entire approvals process took one year.

Site Servicing
Site servicing was very difficult. The owner initially tried to service the lot from the street, under the right of way. The other landowner objected to this and prevented servicing in this manner. Interestingly the legal description of the right of way used the specific wording 'right of way over'. Narrowly defined, the owner did not have a right of way under. Water, sewage and gas service was brought down the lane at a distance of 173.7m. This cost $67,000 of which the city subsidised $21,000. Electricity and cable existed along the lane.

Construction
The building is designed very simply to maximise light and privacy. It is carefully placed on its site to respect view and privacy. Construction access and delivery of materials was a difficulty.

1 Ways Lane A.J. Diamond & Donald Schmitt & Company Architects



Original Site Conditions

The site is located on a public, serviced laneway with 5 houses. An abandoned cottage, built in the 1870's, occupied the site. The lot size is 151.1m^2

Approvals Process

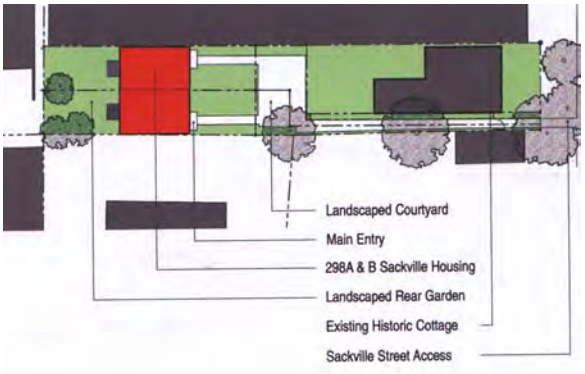
The applicant required a minor variance for a rear yard setback exemption. At the hearing, attended by many neighbours, concerns not related to the application were brought forward. The objections to the proposal centred on two issues. First the neighbours saw the laneway as an undesirable place and not an appropriate place to live. They felt that anyone wanting to live on a lane must be also undesirable. Second, objections were made that the proposal would generate too much traffic, thus blocking the laneway. Though these objections were unrelated to the applied for variance the Committee of Adjustment refused the application.

Rather than appeal to the Ontario Municipal Board, the applicant redesigned the proposal and reapplied to the Committee of Adjustment. The owner orchestrated greater public support, and the committee approved the application

Site Servicing

The site was serviced from the laneway without problem.

298B / C Sackville Street Baird Sampson Neuert Architects Inc.



Original Site Conditions
The building site was created through a severance of the rear yard of an existing Victorian cottage, incorporating a 2 metre right of way from the street. The lane backing the site also serves other developments. The total size of the north lot is 185.68m^2, including the street access; the south lot is 179.4m^2, including the street access.

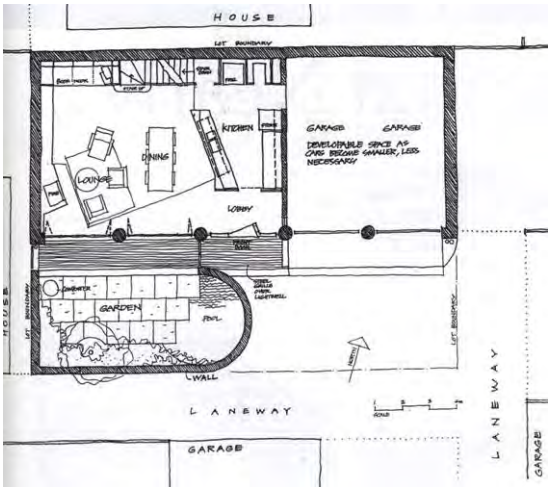
Approvals Process
Committee of Adjustment was required to obtain an exemption for parking. No parking is provided in this development.

Site Servicing
The development is serviced through the right of way from the street. Servicing costs amounted to $62,000.

Construction
As semi detached residential units, these homes were commercially developed for sale. Each dwelling has a private exterior rear yard and a street address. The units have 1,300 square feet of area, organised around a main living space located on the second floor. This space includes a double height living room, dining area, and kitchen and overlooks the private rear garden. The third floor has been planned to permit future modification by infilling the double height space, thereby adding additional square footage.

Costs
Construction cost was $252,000. The total construction cost is approximately $120 a square foot.

5 Leonard Place Jeffery Stinson Architect



Original Site Conditions

The site was an existing severed lot with an industrial use: garages for Perlmutter Bakery. The existing buildings were semi derelict, wood frame and brick. A pair of small semi-detached cottages were the only other buildings on the lane. The property is 14m x 15.25m with a 2.3m laneway access, 30m from the street.

Approvals Process

First level of Approval was committee of adjustment. Change of use from industrial to residential, and a long list of variances (setbacks, landscaped area) were required. The project was not approved at the committee of Adjustment because of the number of variances required and the objection of neighbours. An appeal was made to the Ontario Municipal Board. After a six month wait, the board approved the project with some conditions concerning traffic movement through the laneway.
The Building Permit Application process required 8 months with considerable effort on the part of the applicant.

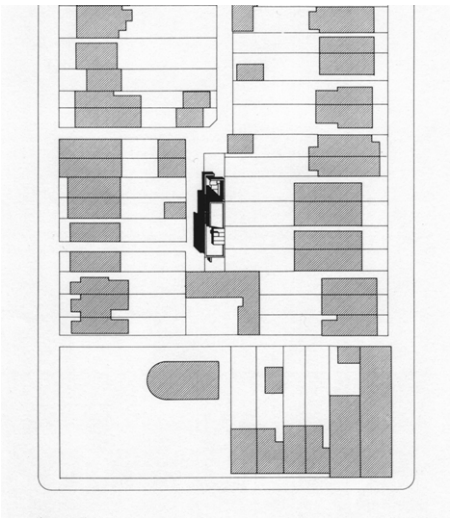
Site Servicing

The existing adjacent cottages were fully serviced. However the City had no record of the servicing and consequently required the applicant to provide new servicing to the site under the laneway. This required the cooperation of seven property owners (representing 4 nationalities). The 3.4m deep trench was difficult to excavate because of the 2.3m width of the lane and the lack of space to store excavated material. Servicing added $35,000 to the cost of construction.
Hydro was brought overhead to a neighbouring property and, by agreement with the owner, tunnelled to the site from that point.

Construction

Typically for lane way construction, materials storage and delivery were difficult.
Existing adjacent footings required offsetting the new footings. Existing topsoil was contaminated and was removed.

7 Leslie Garden Lane Shim - Sutcliffe Architects



Original Site Conditions

The site was assembled from three separate adjacent lots located mid block, on a lane between two existing streets. The assembled site measures 5.18m by 32.3m (167.3m^2), which is a typical Toronto building lot. The land was vacant at the time of acquisition.

Approvals Process

The area planner was initially opposed to the project and wrote a negative letter expressing his concerns. Neighbours were not supportive of the project.

The committee of Adjustment rejected the application.

The applicants appealed to the Ontario Municipal Board, with expert testimony and case studies of existing laneway housing. The Board approved the project.

Site Servicing

Water and Sewage services existed on the lane.

Hydro is supplied overhead from main line feeding neighbouring houses at mid block.

Servicing posed no significant problems.

Construction

Lane way access was too narrow for efficient delivery of material. No materials storage space was available. Hydro hook up was late so construction electrical power was provided by generator.

Vernacular Laneway Dwellings

Laneway Housing – Fully Detached Housing

Type is defined by a single, fully detached unit.
Access and building address are from laneways.
Type increases unit privacy.


slot lot


corner lot


slot lot


slot lot


slot lot


slot lot


slot lot


slot lot

15-A Grove Ave.

- 20 x 9 m corner lot
- stucco cladding on new construction
- set back entry way with landscaped areas and roof deck access
- 2 floors

Laneway Housing – Fully Detached Housing

122A Harrison St.

- 22 x 7m slot lot
- wood construction with asphalt shingle cladding
- front entrance on wide setback with access to storage shed at side and large landscaped front yard
- 2 floors
- original intended use

14A Hickory St.

- 16 x 9m corner lot
- brick veneer
- side entrance on wide setback with access to landscaped yard
- single floor
- original intended use

277½ Brunswick Ave.

- 14 x 10m through lot
- brick construction
- front entrance on setback with access to front yard
- 1½ floors
- former use unknown
- landscape feature: sideyard

Laneway Housing – Semi-Detached Dwelling

Type is defined by connecting 2 dwelling units.
Access and building address are from laneways.
Building often determined by lot configurations and demising walls.


slot lot


slot lot


slot lot


slot lot


slot lot


slot lot


slot lot


slot lot

Laneway Housing – Semi-Detached Dwelling

2 and 4 Plymouth Ave.

- 24 x 5 m corner lot
- metal siding
- dual front access on laneway
- 2 floors with 2 double storey units
- landscaped backyard

1 and 3 Plymouth Ave.

- 17 x 5m corner lot
- brick construction
- dual front access on laneway
- 2 floors with 2 double story units
- original intended use
- landscaped backyard

118A and 120A Harrison St.

- 22 x 8 m + 22 x 6 m slot lot
- wood construction with wood siding
- dual front entrance on wide setback with access to porch and large landscaped front yard
- 2 floors with 2 double storey units
- original intended use

Laneway Housing – Multi-Unit Dwelling - 2 Level Duplex

Type is defined by stacking 2 single story residential units.
Access and building address are from laneways with vertical access for 2nd level units.
Type increases unit density of the lot.


corner lot


slot lot


corner lot


slot lot


corner lot


slot lot


slot lot


slot lot


slot lot

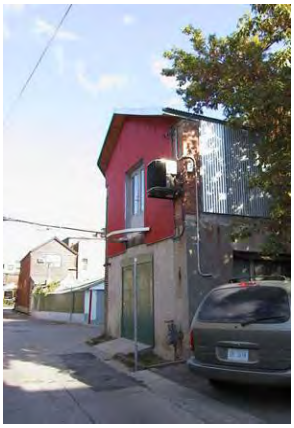

slot lot


corner lot


slot lot

R279 Concord Ave.

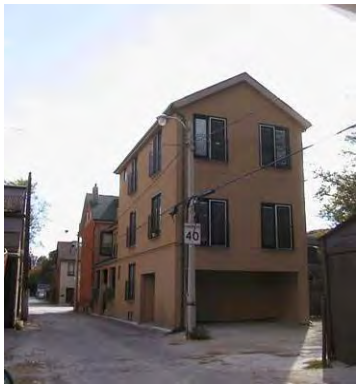
- 12 x 7m corner lot
- brick construction with multiple renovations - wood siding, concrete block and glass block openings
- corner access and garage service entry
- 2 floors
- former storage / light industrial use
- no landscaped open space



Laneway Housing – Multi-Unit Dwelling - 2 Level Duplex

R94 Harbord St.

- 18 x 6 m corner lot
- stucco cladding on new construction
- with sliding door balconies at upper floors
- set back entryway, double car garage and roof deck access
- 3 floors
- landscaping includes potted and hanging plants



16 (14) Skey Lane

- 14 x 13m through lot
- brick structure
- dual entrance on laneway; internal access to 2nd floor with roof deck access and alternate rear laneway access
- 2 floors with 2 single storey units
- former storage or workshop
- landscaped rooftop garden

Dundas & Markham St.

- 7 x 10m corner lot
- brick structure
- dual entrances on side combined with parking access
- 2 floors with 2 single story units
- former storage or light industrial use
- no landscaped open space

686 Bathurst St.

- 8 x 39m slot lot
- concrete block structure
- dual front entrance on laneway
- 2 floors with 2 single story units
- former storage or light industrial use
- no landscaped open space

Laneway Housing – Multi-Unit Dwelling – Row Housing

Type is defined by connected units in a row.
Access and building address are from laneways.
Allowable openings permitted on 2 building faces only.


slot lot


slot lot


slot lot


slot lot


slot lot


slot lot

Laneway Housing – Multi-Unit Dwelling – Row Housing

25 Skey Lane [3 units]

- 18 x 18m lot
- new concrete block construction w/ metal siding
- front entrance, ramped individual garage with access to terraces and landscaped backyards
- 3 floors

8,10,12,14,16 Croft St.

- 6 x 15 m lot
- existing brick [60-100 years] new metal + wood railing elements
- open garage w/ main entrance combined, balconies and rooftop access
- 2 floors + 3rd floor roof deck
- former stable or warehousing use
- landscaping features: rooftop garden and vine covered facade

6,8,10,12,14,16,18,20,22 Trenton Terrace

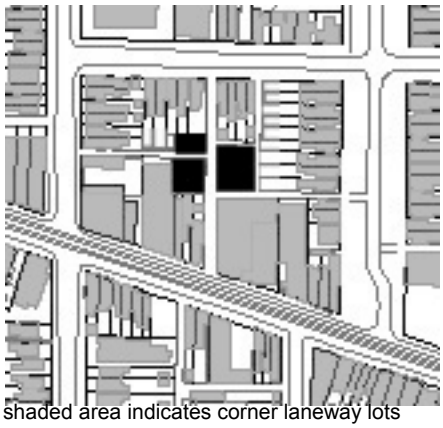
- typical neighbourhood lot with row housing and access laneway
- serviced pedestrian lane of soft paving
- 1 1/2 story Ontario Cottages 1880's brick with wood siding, or stucco
- pedestrian access only
- landscaped open space in front of each house

Typological Analysis

Laneway housing can be divided into two categories of types, namely, Lot Configuration and Lot Use.
Lot configuration deals with size, orientation and access. There are 5 different lot types.
Lot use deals with how the lot is occupied. There are 4 different lot uses.

Typology based on Lot / Site Conditions

Corner Lots


shaded area indicates corner laneway lots

Description: Lot is defined by 2 laneways and 2 lot lines (single or dual neighbouring lot)

Access: Front and side from laneway
Address: Corner of building face on laneway

Advantages: Servicing space and potential for parking and residential combinations. Increased allowable openings – Potential for openings on 3 building faces.
Limitations: Increased building surface area. Laneway subject to widening for vehicular access (turning radiuses).

Key Lots


shaded area indicates key laneway lots

Description: Lot is defined by severance or row providing pedestrian access from the main street.

Access: Front from laneway and from street
Address: On street.

Advantages: Servicing routes can be minimized – provides firefighting access from streets or roads to lots which would otherwise be unserviceable.
Greatest potential number of potential laneway lots.
Limitations: Less building coverage of potential site.

Slot Lot


shaded area indicates slot laneway lots

Description: Lot is defined by neighbouring lot lines and occurs at rear of lot and laneway

Access: Front from laneway.
Address: Main building face on laneway.

Advantages: Increased privacy.
Limitations: Occurs rarely.

Typology based on Lot / Site Conditions

Island Lots

shaded area indicates island laneway lots

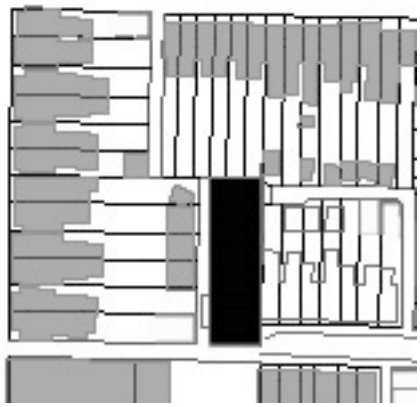
Description: Lot is defined entirely by laneways.

Access: All sides from laneways.
Address: All building faces on laneways.

Advantages: Larger Island lots have a potential to be developed with multi unit developments. This enables opportunities for increased affordability and efficiency in development projects.
Increased privacy.
Issues of excavation are simplified since there are no neighbouring lots.

Limitations: Rare type.

Through Lots



shaded area indicates through laneway

Description: Lot is defined by 2 laneways and 2 lot boundaries.

Access: Front and back from laneway.
Address: Main building face on laneway.

Advantages: Access to two laneways.
Potential for openings on 3 building faces.

Limitations: Very rare.
Lots are atypical in size and configuration.

NOTE:
"Limitations" refers only to the particular characteristics of the lot type. The normal limitations of laneway building – access, storage and services – apply in all cases.

Regulatory Context

Planning

History of Applicable Zoning

During the historical development of Toronto, planning as we know it today, did not exist. After the Second World War, modern planning came into effect. At that time, the conventional wisdom was that cities were too dense and too disordered. Large scale infrastructural changes, in the form of mass demolition, housing projects and highway construction, were the ways in which the city was to be improved. A complex system of zoning regulations, which essentially segregated uses and scales, was created to organise development. Reducing density, incorporating automobile uses and raising housing standards were the immediate goals of post war planning. Much good came from this attitude toward the city; infrastructural improvements were made and substandard housing was reduced. On the other hand, sprawl was encouraged, many neighbourhoods were destroyed, the urban economy was crushed, and cities lost their humane scale. Toronto was not immune to the negative effects of post war planning, but fortunately could not mount the large "urban renewal" projects, which so often devastated many American cities. Urban renewal was slower in Toronto and at a smaller scale. The population also became politically active and demanded a say in the development of the city. This resulted in a public planning process where neighbourhoods and citizens have formal input into the development process.

One zoning regulation, which has a particular impact on laneway housing, is the "house behind a house" by-law from 1952. The civic planning rationale for this by-law is no longer required. It has not been eliminated from the by-laws, though the planning department has allowed many laneway projects to proceed. Prior to 1970, subdivision control did not apply to much of the City of Toronto. People were free to divide land as they wished. There was no control of the shape or configuration of lots, other than the Zoning By-law itself. There is no prohibition in the Zoning By-law about two buildings on one lot. The Zoning By-law enables the Chief Building Official to allocate or determine which portion of a parcel ought to be deemed a lot for a particular building through this historically based loophole. It is unlikely that the Official Plan and Zoning By-laws will be revised to allow laneway housing by right because the current situation allows a case by case scrutiny. The planning department can control the development and the public has an opportunity to comment. This is not necessarily a bad thing, even though it may not be completely efficient.

Allowing laneway housing "by right" will require approval of a new set of housing rules specifically applicable to the laneway situation. This will involve acceptance of the laneway house as a legitimate historically-based part of Toronto's morphology and the development of a detailed set of criteria for assessing privacy, access, overlook, servicing and other factors. This is a lengthy and politically difficult process and it seems prudent to attempt an improvement to the present case-by-case method. And it will of course require a working definition of "laneway".

Planning Issues Affecting Laneway Housing

Proponents of laneway projects should anticipate the planning concerns related to the type of development and organise their applications and design to adequately address the issues.

DensityThe city encourages densification, particularly along its main streets. If the proposed site coverage of a new building exceeds the allowable site coverage of the Zoning By-law, then careful attention must be paid to: scale, form, privacy, and quality. A more progressive form of planning for density would take an overall view of a block's density, rather than looking at a lot in isolation.

Housing Quality Many of the proponents of recent laneway developments report that individual city planners, members of the Committee of Adjustment, and Ontario Municipal Board are unfamiliar with the history and existence of laneway dwellings in Toronto, and express concern over the desirability of laneway housing. There is an assumption that laneway dwellings are substandard. Laneway proponents must make the case for the quality of their proposal.

Scale An important and easily overlooked issue. Scale is not the same as size but relates to proportion, the ratio of solid to void, and to units of construction. Laneway proposals should consider the overall mass of the proposed building in relation to surrounding buildings and open spaces, carefully proportioned facades with adequately sized openings and units of construction which relate the building to the viewer.

Open space Adequate exterior open space must be included in the proposal. Access to sunlight and air positively affects housing quality. In several cases extensive rooftop gardens have been proposed though the city does not accept roof top gardens as amenity space. The city should be encouraged to accept roof top gardens as an alternative to backyard space.

Overlook Privacy and overlook are sensitive issues in Toronto. In all urban settings, when buildings are higher than one storey, overlook is unavoidable. Carefully placed screening of windows and balconies ameliorate the issue. Attention should also be given to organising the building programme such that exterior related rooms face away from neighbours.

Parking In the inner city areas, the standard requirement of one car space per dwelling may be untenable. There may be conditions, such as adjacent parking or open street parking, which make it reasonable to omit a garage or parking space from a dwelling, including laneway dwellings. The location of laneway dwellings in the inner city may encourage less car ownership.

Public Works
Public works deals with the operational infrastructure of the city and the relation of uses and buildings to that infrastructure. The culture of the public works department does not encourage laneway development, so careful consideration must be given to meeting their criteria.

Garbage In most areas of the city garbage is picked up at the curb only. Laneway development must be located on an assumed laneway for garbage pickup or the development must have access to an adjacent street.

Sewage and Water This is probably the single most difficult issue to overcome in laneway development. Often, city records do not always show existing services and, where no service is shown, the city will require a new service. New servicing is potentially expensive because of the restricted nature of laneway development. Feasibility of servicing is an important consideration in laneway lot selection.

Electricity is usually distributed above ground in Toronto. This can make the servicing of laneway lots simple and usually feasible. Where an electrical service does not exist in the laneway, then either making a new connection is costly or an agreement must be made for service support with existing adjacent homeowners.

Natural Gas is distributed below ground along the street. For a new connection, the small pipe may be tunnelled below the laneway or brought through a neighbouring property by agreement with the owner.

Building Department
The building department approves the construction of buildings and administers the Ontario Building Code.

Fire Fighting Access for firefighting is an important issue and is stipulated by the Ontario Building Code. In general, the front entrance to a dwelling must be accessible by firefighters and no more than 45 metres from the pumper truck. The pumper truck may be no more than 45 metres from a hydrant.

Fire Resistance Rating and Restricted Openings Openings are restricted in size if less than perpendicular or parallel to the property line and are not allowed if less than 1.2m, the 'limiting distance', from a property line. Openings may be allowed if they are protected by an automatic closure. Openings would also be restricted on the wall adjacent to the street-facing house and the neighbour's wall across the laneway, since the limiting distance is measured between the exterior faces of buildings. Walls on property lines must have fire ratings and must be built with non-combustible cladding.

Change of Use A few legal, non-conforming sites, as so named by the current zoning controls, are left in older Toronto neighbourhoods. Thus, sites formerly occupied by industrial uses would require soil testing to assure that toxins are not present and soil remediation, if toxins are present.

Existing Approvals Process

The various approvals, which may be required for laneway housing development, are graphically illustrated in the following pages. The type of approval needed depends on the degree of conformity of the proposal with the Zoning By-laws and the Official Plan. All proposals require building permit approval.

Preliminary Zoning By-law Review is a one step process. The applicant submits preliminary drawings of the proposal and a site plan. The city reviews the application and itemizes all the areas of non-conformance with the by-law and the type of approvals process required to accommodate the non-conformance. The applicant may be directed to: Minor Variance Application, Rezoning Application, or Official Plan Amendment.
If these approvals are not successful the proponent has recourse to the Ontario Municipal Board.

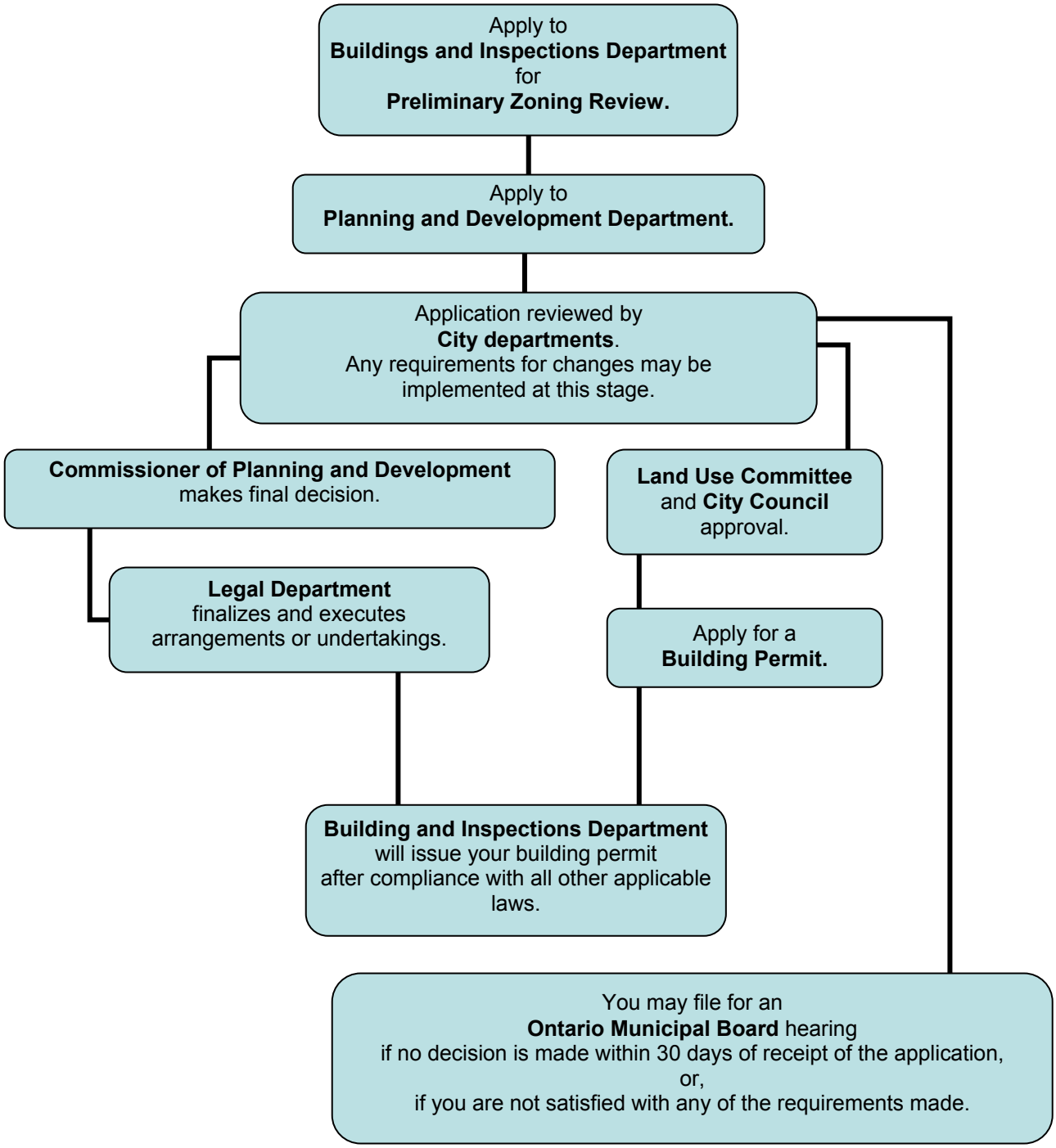
Minor Variance Applications are approved by the Committee of Adjustment. The committee is composed of politicians, and interested citizens. Minor Variances include insufficient parking, less than 10% over allowable gross floor area, less than 10% over allowable height, and insufficient set backs. A project may have a number of minor variances. Planning staff will issue an opinion regarding the variance to the committee before the hearing. Notice of the application is served to the immediate neighbourhood and the public is invited to attend the hearing and express their opinions. The disadvantage of the Committee of Adjustment is its sensitivity to public opinion. They may disallow an application on objections, which are not based in the specifics of the application. The advantage of the Committee of Adjustment is its speed and relative ease of operation.

Rezoning Application and Official Plan Amendment
Rezoning or an Official Plan Amendment may be required if the variances are not minor or if the proposed use is not allowed by the existing zoning by-law. This process will require a Site Plan Approval, at least one public presentation, meetings with city staff, and ultimately approval by City Council. This process is very involved and requires professional contributions from planners, lawyers, and architects. The local alderman will also be involved with the process, particularly in the public presentations. This process takes many months and is expensive.

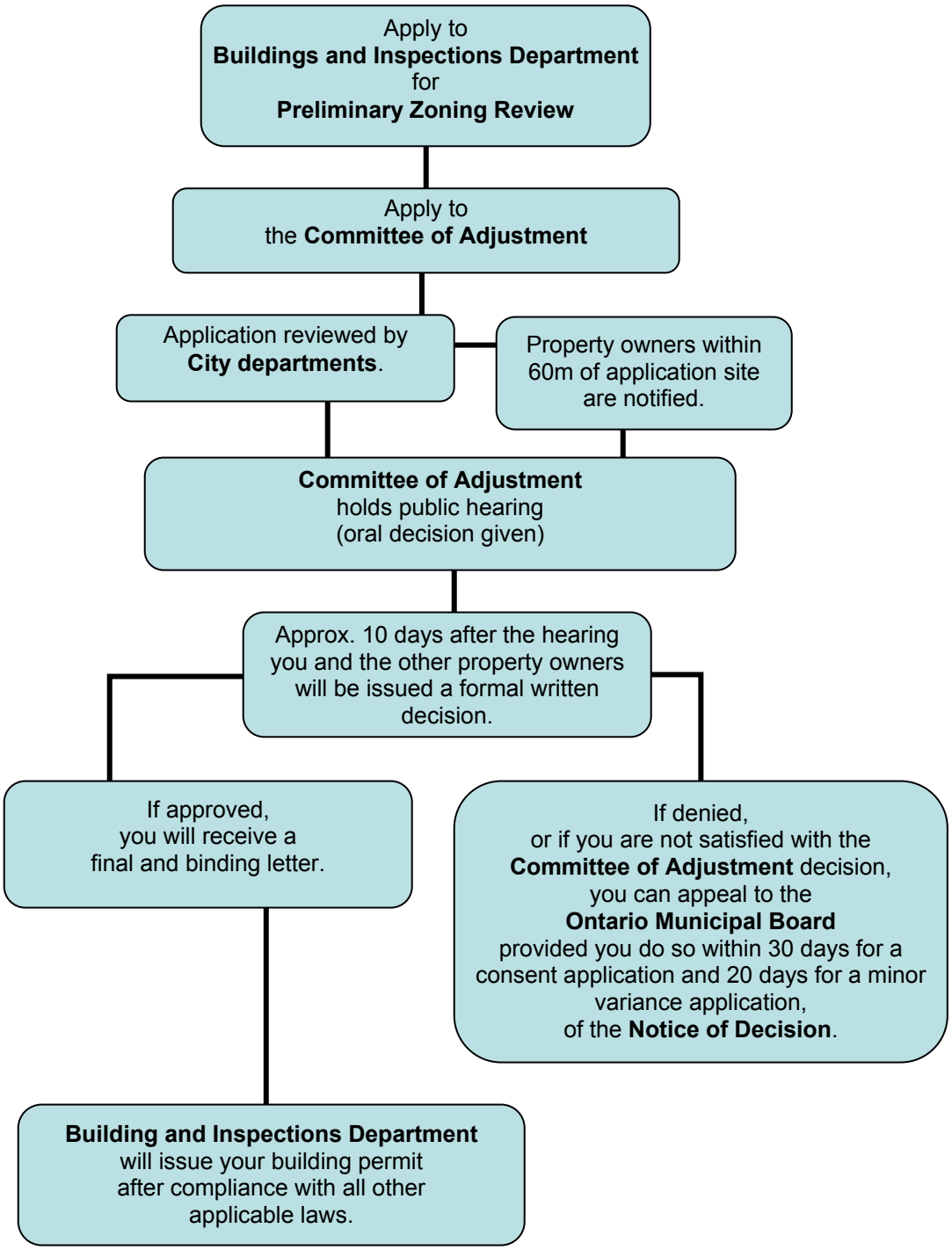
Site Plan Approval is essentially a technical approvals process. The applicant must submit developed drawings of the proposal and site plan. Issues affecting and regulated by this process include: density, massing, setbacks, landscaping, height, shadow, overlook, parking, amenity space, site servicing, firefighting access, and garbage removal. This process requires intensive professional contributions from planners, architects, engineers and lawyers. Various departments in the municipality review and approve the site plan application: planning, zoning, public works, urban design, fire, parks, forestry.

Ontario Municipal Board is a quasi-judicial body, which can override municipal decisions. Both proponents and opponents of a project may bring municipal rulings to the O.M.B. for a final decision. An application to the O.M.B. must be supported with technical expertise to be successful. An O.M.B. application is an expensive and time consuming process. There is no appeal from an OMB decision.

Existing Site Plan Approval Process



Existing Committee of Adjustment Process



Existing Site Plan Approval Process
for
Laneway Developments

The Official Plan contains a list of every lane in the city that is to be widened**.**
If your application is adjacent to one of these lanes,
The Site Plan process will be used to acquire additional land to ensure that the laneway can be widened.

If the site abuts a substandard public lane
(less than 5 metres for residential use)
a site plan approval application
should be made to
the **Planning and Development Department**

Applications are circulated to
the **City of Toronto**
Department of Public Works and the Environment
and if necessary,
the **Metropolitan Planning Department.**

After review by the
Department of Public Works and the Environment
if a conveyance for lane widening purposes is necessary,
the applicant will be required to submit three copies
of a deposited reference plan of survey
which designates by separate PARTS
the lands to be conveyed to the City
and the reminder of the development site.

Changes to the Approvals Process

The existing approvals process has advantages and disadvantages. The advantages accrue to the public interest. Standards of development are upheld, careful consideration is given to the impact of development, and public input is solicited. Small developers and Laneway Housing proponents most keenly feel the disadvantages. The length of time and the expense of the approvals process are onerous and discouraging. Political and neighbourhood sentiment is seldom favourable to laneway development. The current approvals process is somewhat geared to large scale developments. Individuals and laneway proponents do not generally have the resources to support the approvals process. It is telling that much of the recent laneway housing has been done by architects for their own use. They have the technical expertise and can absorb the professional fees.

This study has shown the potential for laneway development and its benefit to the city. The land base and interest exist; what is needed is a tailored approach for approvals. Given the unlikely possibility of revising the official plan and zoning by-laws to allow laneway development as a right, a method must be found to streamline approvals and to allow proponents a clearer overview of the process. A clearer overview will allow laneway proponents to make quicker decisions about the development's viability as a proposal. A method must also be found to promote laneway development and educate the public and city officials.

We suggest the following:

1. The establishment of a Laneway Advocacy Group, composed of laneway homeowners, and interested parties. This group will act to publicize laneway development and existing laneway residences in order to familiarize the public, politicians and city planners with the benefits and unique qualities of laneway living. This group could also provide guidance, expertise and experience for individuals seeking minor variances at Committee of Adjustment. The group could act as a clearing house for information and expertise.
2. The creation of a Laneway Housing Initiative by the city of Toronto. This initiative would be composed of three parts:

a) Public recognition of the benefits of laneway housing and a declaration of intent by the city to encourage this form of development.
b) Publication of a guide to laneway housing, outlining the benefits of this form of development and the specific approvals required.
c) An alternative to the Preliminary Zoning By-law Review specifically for Laneway housing. This review would have three parts. The first would outline the necessary zoning variances, and the most efficient means of obtaining the variances. The second would be a meeting with the area planner to discuss, planning issues affecting the proposal and ways of achieving the best result. The third would outline the public works requirements for the project. This alternative to the review process may work best in a team approach. The city could set up area teams of planners, public works officials and zoning officials, and an advocate architect who would develop an expertise and familiarity with laneway development in their district.

Making this information and assessment available quickly, at the very beginning of the project, will empower an individual or small developer to predict the time and costs involved, and asses the viability of the proposal.

Action by a Laneway Advocacy Group and the establishment of the first two city initiatives described above will erode present ignorance and misinformation about laneway housing and begin the cultural shift necessary for wider acceptance. More published examples of effective laneway housing will encourage homeowners with suitable sites to see the development potential as an asset and local support for first-time proposals will be improved.

Proponents of laneway developments can also act on their own to increase the success of their proposals. Key to this is early and careful public relations. Hearing about a minor variance application from the city, without knowing the details before hand, can elicit concern from neighbours. They should be informed, as soon as possible, and long before the notice comes from the city; their opinions should be solicited and considered and they should be kept in touch with the project's progress.

act

MAY 2003

Preface

Part One of this study identified the history, use and future possibilities of lane way housing. We found that the laneway was an intentional and useful part of the19th century city. It created density and porosity. The laneway provided for the distribution of goods and services, maximized land use, reduced street congestion, and provided housing for workers. Toronto laneways continue their role in the present city. Many examples of vernacular laneway housing exist in the city. A number of distinctive laneway dwellings have been built recently by Toronto architects. There is a large potential for laneway development. Part One of this study found that a 5% to 10% increase in the housing stock is possible through laneway development.

In Part Two of this study, we have designed prototypical laneway housing. A prototype dwelling has been designed to correspond with each type of lot. In the process of designing the laneway dwellings we considered: the lessons learnt from the examples of vernacular dwellings; environmental and social issues; urban planning concerns and appropriate construction materials and techniques.

Appraisal of Vernacular Dwellings

The vernacular laneway dwellings, documented in Phase One, are an interesting study for developing an approach to laneway construction. The existing dwellings were either built before the present approvals process, or they are adaptations of older buildings done without municipal approval. The dwelling's size ranges from those meant for single occupants to multiple single units or suites for small families. Unofficial in nature, they are nonetheless functioning and generally fit quite well into the lane and existing neighbourhood.

Material
The dwellings are often a collage of cladding materials. Generally, this is due to the incremental construction process, adding on as funds become available, and the low cost nature of these dwellings. This relaxed composition of materials gives a play of pattern and a sense of scale to these houses.

Access and Orientation
Most laneway dwellings address the laneway directly. The main entry, the garage door and most windows face the lane – like the typical street-facing home. In the case of key lot type dwellings, access is only available from the street.

Open space
Some form of open space is usually associated with the laneway dwelling. Roof gardens have the effect of reclaiming the open space used by the dwelling. Some garden spaces are as subtle as hanging and climbing plants on the face of the building. Other dwellings have porches or yards, especially some of the older cottages. In the key lot type, the backyard is often shared with the street-facing house.

Windows
In the vernacular dwellings, windows often do not respect the restrictions regarding allowable openings along property lines. Also, these windows tend to be small because they cost less and are easily installed by unskilled workers.

Construction
The dwellings are usually masonry, either clay brick or concrete block, as it is a durable material and can be easily added or removed in later work. Masonry units are also easily lifted and placed during construction. Where wood frame construction is used, the dwelling is more vulnerable to fires, but is easier to build and insulate than masonry.

Design Considerations

Sustainability

According to the Office of Energy Efficiency at Natural Resources Canada, residential buildings account for 17% of energy consumption in this country. Within that percentile, energy consumption is accounted for as follows: space heating at 60%; water heating at 21%; appliances at 14%; and lighting at 5%.

The two measures of sustainability are embodied energy and operating energy.
Operating energy is the energy required to heat, cool, ventilate and light a building. Typically, these energy inputs are in the form of electricity and oil or natural gas. There is also passive heat energy input from the occupants of a building. Alternatively, energy input using solar energy, wind and geothermal sources is becoming more common.
Embodied energy is the amount of energy required to manufacture, deliver and place the parts which make up the building. Embodied energy has two forms: initial and recurring. The initial embodied energy represents the non-renewable energy consumed in the acquisition of raw material, the processing of the raw material, manufacturing, transportation and installation of the component. Recurring embodied energy represents the non-renewable energy required to maintain, repair, renew, restore or repair the component during the life of the building. Materials with low embodied energy include: stone; concrete block; pre-cast and poured-in-place concrete; lumber; and cellulose insulation. Materials with high embodied energy include: aluminium; synthetic carpet; and polystyrene insulation. A balance must be struck between the goal of minimizing the embodied energy and the constraints of construction, cost and the site itself.

As the most energy hungry part of a house, space heating should be achieved by the most efficient and economic means available. Clean burning fuels and electricity generated by non-carbon sources should be considered to minimize the required operating energy. The cooling and shading of the building by using roof overhangs, roof gardens, Green Roof and Green Wall strategies will also help moderate energy consumption. Roof gardens not only clean the air, but help screen the overlook from roof decks and absorb passive solar gain from penetrating the dwelling in the summer. A Green Roof makes use of the unused roof top by planting grasses in a shallow growing medium which helps keep a building cool. Green Roofs can be difficult to maintain and grow because they are susceptible to drying and require non-native, hardy species to thrive. Green Roofs are not used in the prototype designs because of their local specific requirements. A Green Wall has the same moderating effect as a Green Roof, but is more viable in general. By planting climbing vines, the backyard garden seems to continue up the wall of the dwelling.

Passive operating energy sources require careful planning and orientation of the building. Laneway housing is orientation restrictive by nature. In Toronto, the lots are generally oriented east to west. Therefore, because of Building Code restrictions on openings near lot lines, most laneway buildings will open east or west. Laneway lots that can open toward the south are lucky exceptions. West opening buildings are the most difficult since they receive late afternoon summer sun and tend to over heat. Passive solar principals such as maximizing south glazing and minimising north and west glazing, may not be possible and may not be desirable, given privacy concerns. Therefore, windows should be maximized on whichever building face is unrestricted by its proximity to the lot lines.

Social
This study supports affordable housing. Laneway dwellings are well suited to provide an alternative source of affordable housing. Also, laneway lots are not easily assembled into larger pieces of land, so individuals or small developers will build most laneway dwellings. Individual property owners will thus use laneway development as a way to maximize the value of their property. The resultant dwellings will likely be rental units, suitable for singles or small families. There are many advantages to this type of development in the city: neighbourhood continuity; increased personal investment and commitment by property owners; and more rental housing. With this in mind our prototype designs will anticipate the continued use of the original house, both during and after construction of the laneway dwelling.
The negative associations of the “back alley” can be improved by the construction of laneway dwellings.

Planning issues
Housing quality is an important issue for laneway dwellings. The designs must be open, confident and well constructed. Large windows, useable exterior green space, durability and solidity should be part of the design. The laneway dwelling should not appear to be a fortress, or of secondary quality. Scale is another important consideration. Small openings make a building appear more massive. Large glass areas, in proportion to the overall building, create a much better scale and appearance. Open space is desirable in laneway dwellings. The rooftop provides a perfect place for a private garden. It will also provide greenery in the laneway and relieve the severity of the roofline. Overlook is an issue of privacy. The protection of privacy for adjacent homes is best achieved by the judicious orientation of living spaces, and the use of trellises and plantings to buffer the overlook from roof gardens.
Parking is an important issue in Toronto. Planners are increasingly open to parking requirement exemptions in restrictive circumstances, recognising that many people choose to use public transit. The demographics of potential laneway dwellers also suggest that they do not require automobiles. Nevertheless our prototype designs attempt to accommodate parking, at least for the host dwelling.

Case Study House: Ways Lane

Construction

Lot constraints

Construction access and staging is the most challenging aspect of laneway construction. Laneway lots will not have a space near the building to store materials. Construction materials will have to be stored within the building perimeter and incorporated into the building immediately. Materials will have to be placed by hand. Small, light units are preferable to large heavy units, unless the large units are placed immediately from a truck into their final position. To maximize interior space, the exterior walls of laneway dwellings are built right to the lot lines. This makes excavation more difficult, and basements impractical. It also means that the dwelling must be built from the inside. The exterior walls and cladding must be erected and sealed without access from the adjacent lots, except for the building faces that are toward the laneway and the interior of the lot.

The Ontario Building Code regulates the distance between a lot line and an unprotected opening. Unprotected openings are windows and doors without protective, fire-activated shutters or special fire resistant glass and frames. The OBC does not allow any unprotected openings if the building face is within 1.2m of the lot line. In addition, privacy and overlook concerns will restrict window openings. Therefore, laneway dwellings will have two or three faces without openings. This will have a major effect on internal planning. View, openness, and access to light are all important considerations for the inhabitants of laneway dwellings.

The Ontario Building Code also regulates the fire resistance rating of exterior walls in relation to their proximity to lot lines, and the combustible or non-combustible nature of the exterior walls. A wall built within 1.2 m of a lot line requires a fire resistance rating of one hour and a cladding of non-combustible material.

Materials

Regaining popularity is the use of pre-fabricated pieces which assemble to form the whole building. In comparison to on-site construction, there are no delays caused by weather, the quality of construction can be higher and site storage is not a problem. Pre-fabrication can be as simple as the components of the structure, such as pre-cast concrete floors and walls, or be finished components that need only be linked together. The downside of pre-fabrication is the size of the delivery truck – if the laneway in question cannot fit a truck and crane, then on-site construction is required.

The problems with access and on-site storage also extend to construction waste disposal. It is easy to minimize with pre-fabrication, but more difficult with on-site construction. Every effort should be made in the design to minimize the amount of waste produced.

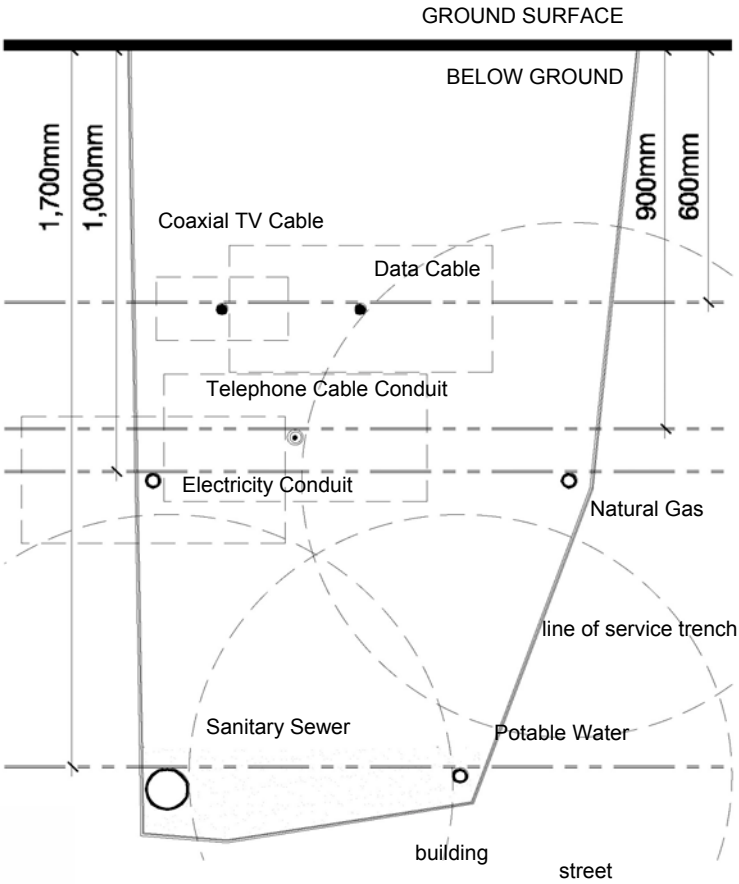
Exterior finishes should be chosen carefully. Exterior doors, railings and roofing ought to be durable, low maintenance and cost effective. The laneway face of the dwelling is more difficult to maintain, since it borders the edge of a public thoroughfare on which hoarding or parking is not allowed.

Mechanical Systems

The choice of mechanical system for the laneway dwelling is no less critical than other components. The dwellings have minimal storage space such that on-site fuel storage is not possible. Propane and fuel oil cannot be used, so electricity and gas are the most widely available alternatives. For long term economy, efficiency and comfort a radiant heating system is preferred, instead of a forced-air system. In comparison to conventional forced-air systems, radiant floor heating can amount to a 20% - 30% energy savings. The initial installation is more expensive and requires forethought for its installation, as it is part of the thermal mass of the building. A radiant heating system is quieter and occupies less space, since there are no ducts and the boiler can be very compact; a domestic hot water heater or on-demand boiler can be used as the hot water source.

Servicing

The laneway dwellings will need heat, services to be able to water light and provide clean the and sewage disposal for occupants. This servicing would, in part, require a trench of approximately 1.0m wide (maximum) by 1.8m deep (minimum). The trench would contain a sewer line, water supply line, and gas supply line. The typical section through a trench, the shown at right, indicates minimum depth and separations between services. Dashed lines indicate the area of minimum clearance. A detailed chart regarding service separations is found on the next page.



One issue that may block some laneway dwelling developments is the elevation of the sewer main. To ensure proper drainage, the sewer must slope toward the drain at a minimum angle of 1 in 50 (refer to figure 1). Sometimes, the sewer is not deep enough to connect to the sewer main in the usual manner (figure 2). The solution to these problems is to pump the sewage up to the level of the main line. In some cases, where the lot to be developed is very long, the sewer from the proposed laneway dwelling would connect at a point lower than the existing main line; pumping the sewage is again the solution (figure 3).

Figure 1

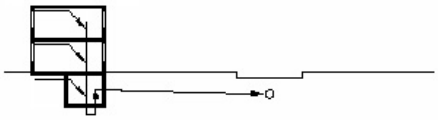


Figure 2

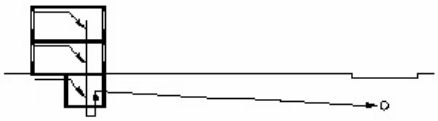


Figure 3

The service trench can be dug below public lanes or, in the case of the Key Lot, dug beside the property line directly from the street. In Toronto, not all services are below grade, thus electricity and telephone lines could be strung overhead to masts or included in the trench and brought into the laneway dwelling.

Minimum Vertical and Horizontal Separations and Depths for Buried Plant March 2002			
All measurements in mm	Minimum Vertical Clearance	Minimum Horizontal Clearance	Minimum Depth of Cover
AT&T Canada	300	600	
Bell Canada			
direct buried cable	300	600	600
buried conduit	300	600	900
Enbridge Consumers Gas			
green field installation	300	300	900
older / existing service	610	610	1,000
Group Telecom	300	600	
Hydro One			1,000
from sewer	300	600	
from water main	300	600	
from water service valve		600	
from gas main <400 dia.	300	600	
from communication cable	300	600	
from gas main >400 dia.	600	600	
from Hydro One	1,000	1,000	
from Enwave steam pipe	1,000	1,000	
Rogers Cable			
from communication cable	150	300	600 (coaxial) 750 (fibre)
from power cable	150	300	
from pipelines	300	300	
Telus	300	600	600
360 Networks	300	600	600
Toronto Hydro			
from sewer	300 above 150 below	600	800
from water main	150	600	
from water service valve		450	
from gas main <400 dia.	300	600	
from communication cable	300	600	
from gas main >400 dia.	600	600	
from Hydro One	1,000	1,000	
from Enwave steam pipe	1,000	1,000	
from chimney for Hydro chamber			600
City of Toronto			
potable water and sanitary sewer	300	600	1,700
sanitary sewer main			2,100
storm sewer main			2,300

data courtesy of Toronto Public Utilities Coordinating Committee

Prototype Designs

Design Approach

Programme

The prototype dwellings are designed for different occupancies. Some are best suited for single occupancy and others for small families. The dwellings are designed within the framework of rental units. Also, the laneway accessed parking available for the existing house is maintained.

Energy Use

Space heating is provided by Hydronic Radiant Floors. Energy demands are moderated by using the Thermal Inertia of the building. Passive cooling is achieved through the use of roof gardens and Green Walls.

Construction

The lot constraints require the dwelling to be built from the inside of the lot. Where possible, prefabrication can be used when there is sufficient access for a truck. The dwellings are also designed to be quick to build from inexpensive materials that are durable.

The dwelling's structure uses concrete block, pre-cast concrete floor slabs and minimal amounts of structural steel to achieve our aims. Concrete block has a low embodied energy, is easy to place by hand and can be delivered and placed the same day. Also, the blocks meet the required fire resistance rating and do not need access to finish the exterior face. Pre-cast concrete floor slabs make for a thinner floor, increasing the available interior floor height. The slabs are delivered and the floor placed in one day. The slabs also add to the thermal inertia of the building, are low in embodied energy, the underside is an acceptable finish and they provide the required fire protection. The roofs are formed differently, depending on the span and interior space it encloses. The Quonset Hut roof is a long span, factory made metal roofing; it is self-supporting and non-combustible. Open web steel joists are efficient for long, flat roof spans and are quick to place and incorporate into concrete block walls. Also, flat roofs can be built using the same pre-cast concrete slabs as the floor.

The windows use commercial aluminium sections for their durability, structural capacity and good thermal performance. Privacy can be achieved by using obscured glass.

Corner Lots

Description Two laneways and two neighbouring lot lines define the Corner Lot. It can be created with a simple severance from the existing lot. This type of lot is serviced from the laneway. The average lot width in our study area is 7m.

Design Influences A Corner Lot laneway development must maintain a usable rear yard for the existing house. Given an average depth of 14.5 meters, and considering the height of the existing house and the laneway dwelling a minimum rear yard would be 6m deep. This will give a floor plate of 40 square metres and a dwelling area of 54 square metres, with a roof garden of 15 square metres.
A parking space for the laneway dwelling or the existing house can be created on the ground floor. Exterior space for the new dwelling is best located on the roof facing toward the existing back yard. This will lower the apparent height of the laneway dwelling from the existing house and will place a green buffer between the two dwellings.
Fire separations without openings must be created on two sides of the new dwelling. The other two sides are unrestricted in the size and manner of openings.

Programme The Corner Lot prototype design is suited to single occupancy or a small family. The laneway dwelling is a rental unit, subsidiary to the existing house.

Construction and Design The Corner Lot prototype has laneways on two sides, and takes advantage of this by using large windows. This provides much desired daylight to the interior. Concrete block is used structurally and as a non-combustible cladding. Metal cladding, used on the upper storeys, is durable and non-combustible, so that it can be applied to an insulated frame construction. The roof garden is screened to moderate its overlook and provide shading to the roof garden.

Estimated Cost of Construction *

Two Storey Prototype:	$ 65,830.00
Three Storey Prototype:	$ 80,470.00

- *refer to prototype drawings and costing for further detail*
  **does not include site servicing allowance*

Corner Lot Prototype
Estimated Cost of Construction

Two Storey Prototype

Building Permit Fee	1010.00
Construction:	
Foundation	
• poured concrete	7,670.00
Walls	
• exterior concrete block walls	3,850.00
• metal siding	250.00
• interior walls – framing, insulation and finish	1,600.00
Floors	
• poured concrete slab (ground floor)	2,150.00
• pre-cast concrete floor, including delivery and placing	12,800.00
• finished flooring – floating wood floor	1,370.00
Roof *	
• flat roof – asphalt membrane and flashing	2,800.00
Vertical Circulation	
• steel stair with wood treads	500.00
House Systems	
• electrical – wiring and switches	3,000.00
• mechanical – hydronic radiant floor heating	7,500.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	5,000.00
• garage door	2,000.00
• interior doors	400.00
• exterior doors	600.00
• balcony guard	400.00
• balcony door	1,200.00
• steel lintels	230.00
Sub-total	**$ 65,830.00**
Site Servicing Allowance	25,000.00
Total estimated cost of construction for the two storey Corner Lot prototype:	**$ 90,730.00**

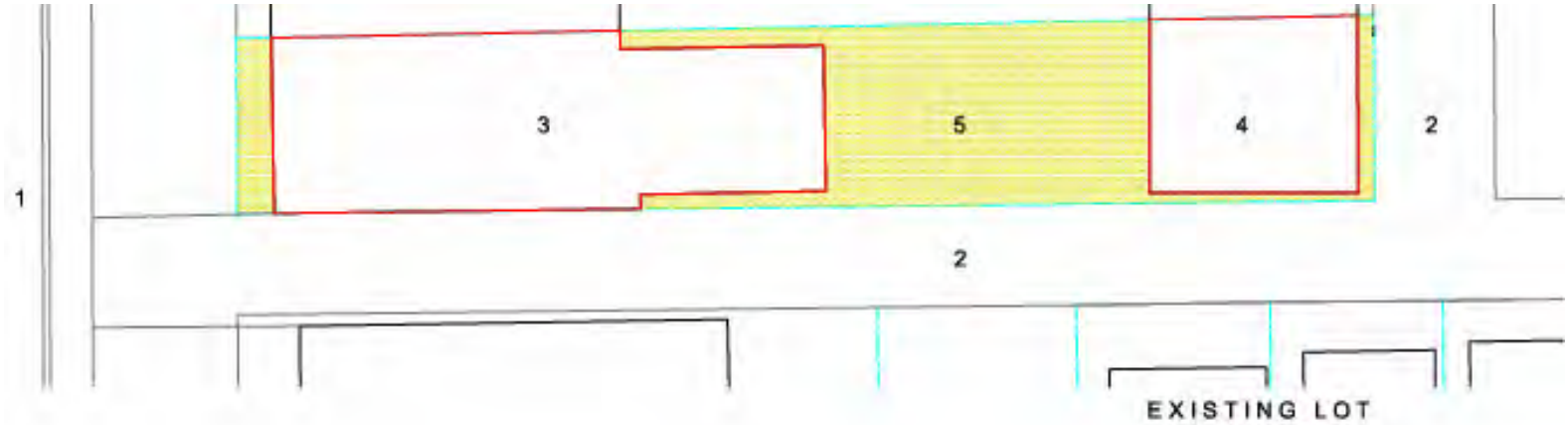
**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*

Corner Lot Prototype
Estimated Cost of Construction

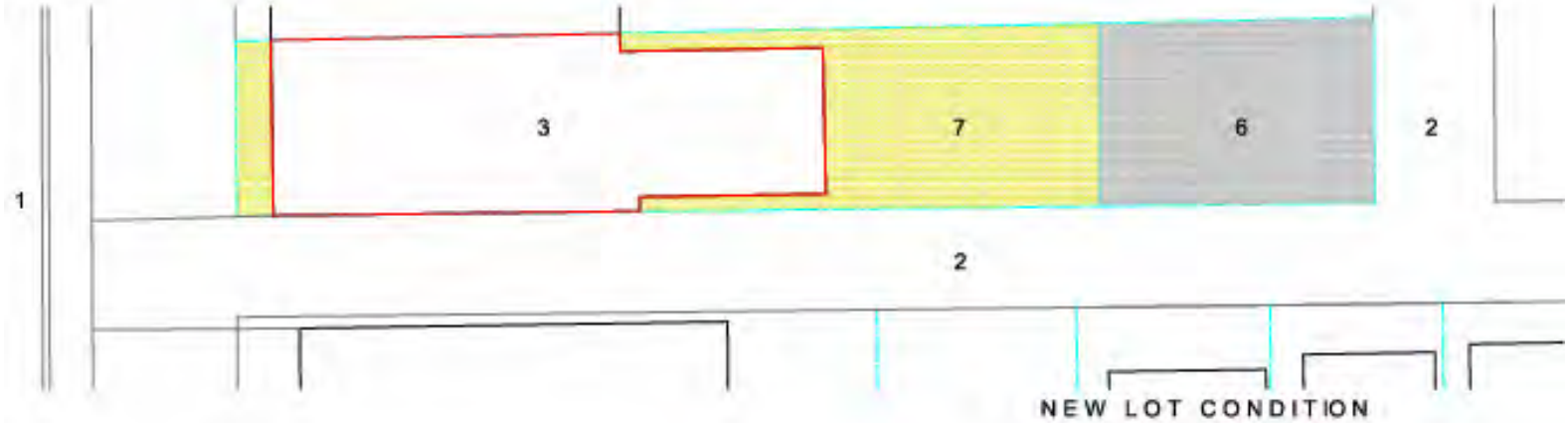
Three Storey Prototype

Building Permit Fee	1,510.00
Construction:	
Foundation	
• poured concrete	7,670.00
Walls	
• exterior concrete block walls	4,470.00
• exterior walls – metal siding	500.00
• interior walls – framing, insulation and finish	3,150.00
Floors	
• poured concrete slab (ground floor)	2,150.00
• pre-cast concrete floor, including delivery and placing	16,640.00
• finished flooring – floating wood floor	2,750.00
Roof *	
• flat roof – asphalt membrane and flashing and paving stones	2,800.00
Vertical Circulation	
• steel stairs with wood treads	1,000.00
House Systems	
• electrical – wiring and switches	4,000.00
• mechanical – hydronic radiant floor heating	15,000.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	10,000.00
• garage door	2,000.00
• interior doors	400.00
• exterior doors	600.00
• sliding glass door	1,200.00
• balcony guard	400.00
• steel lintels	230.00
Sub-total	**$ 80,470.00**
Site Servicing Allowance	25,000.00
Total estimated cost of construction for the three storey Corner Lot prototype:	**$ 105,470.00**

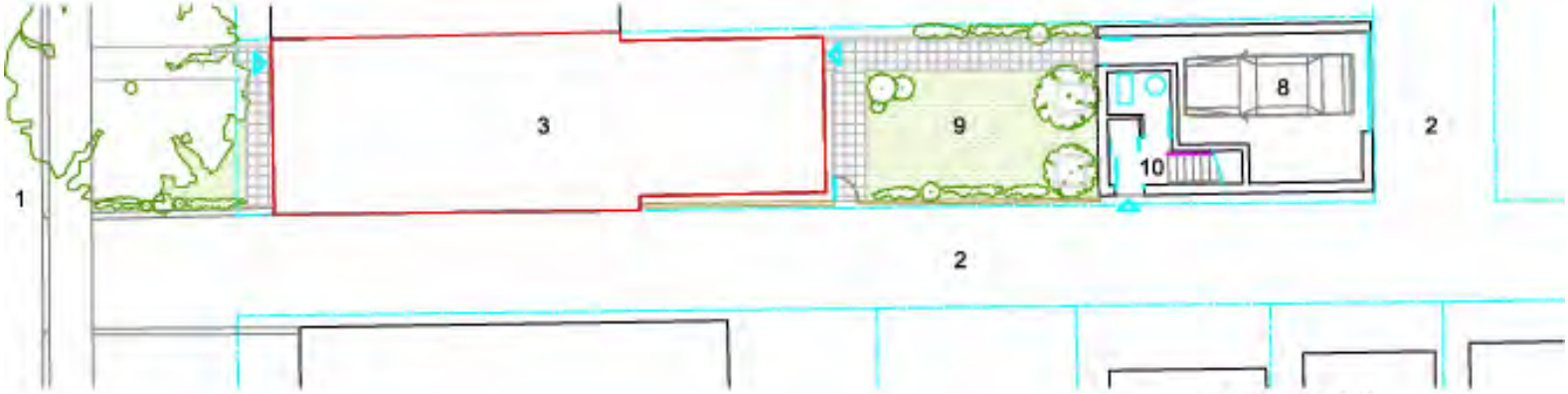
**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*



EXISTING LOT



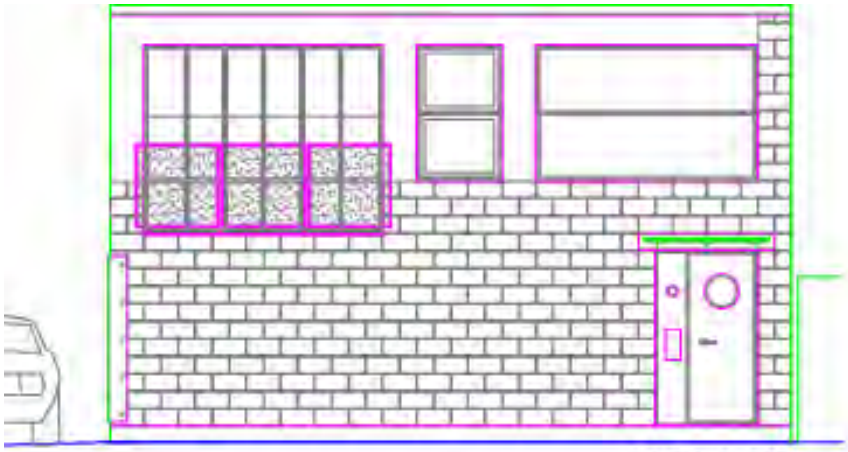
NEW LOT CONDITION



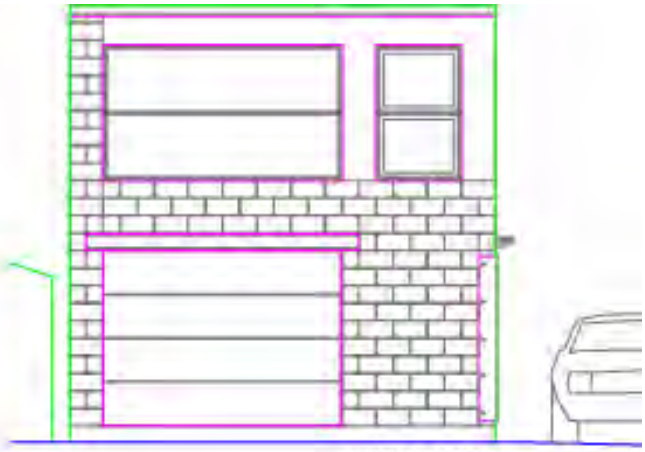
SITE PLAN

1 street
2 laneway
3 existing host house
4 existing garage
5 existing open space
6 laneway dwelling footprint
7 resultant open space
8 host house garage
9 host house garden
10 laneway dwelling entry foyer

CORNER LOT DEVELOPMENT



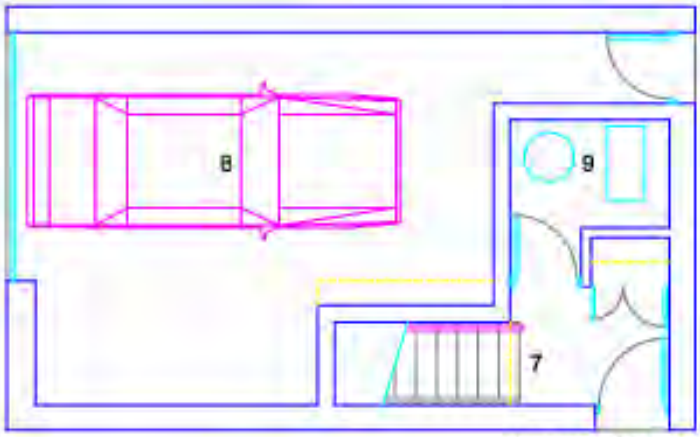
SOUTH ELEVATION



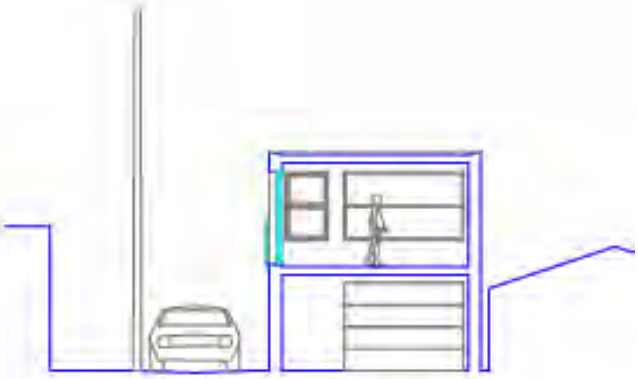
WEST ELEVATION

SECOND FLOOR PLAN

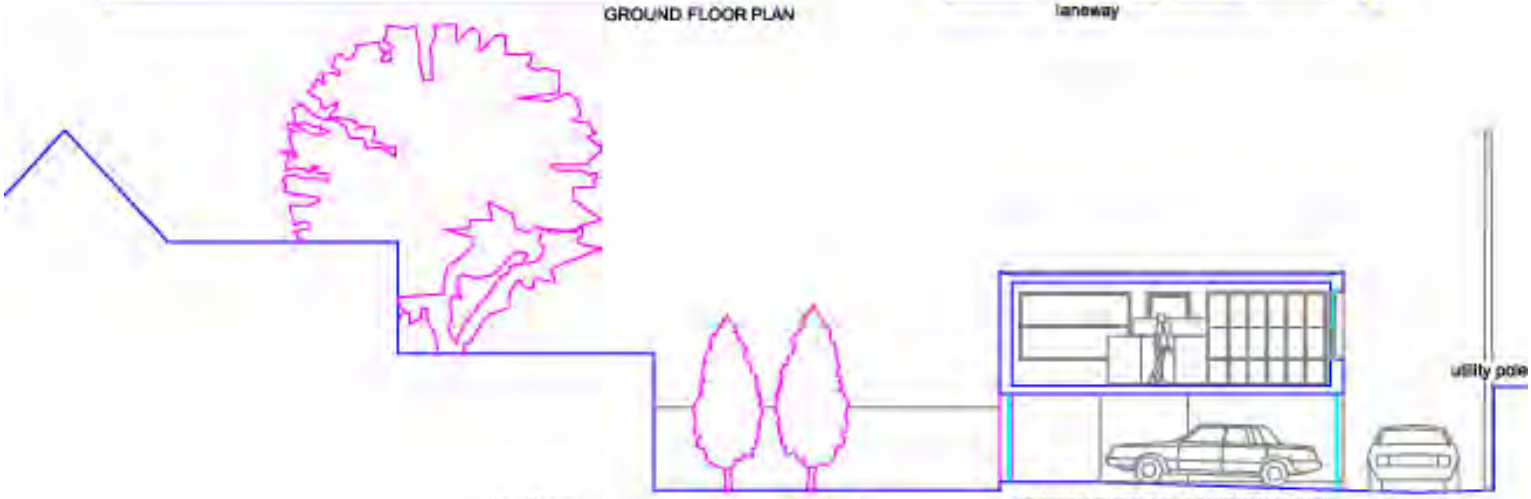
1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 host house garage
7 stair
8 french balcony
9 mechanical room
10 laundry



GROUND FLOOR PLAN

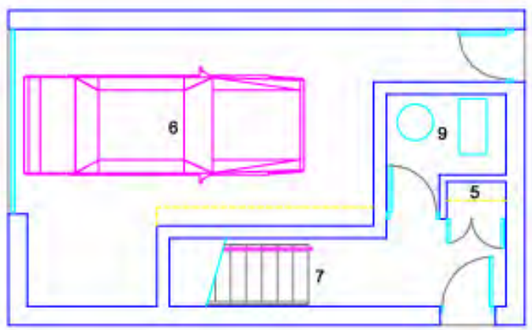


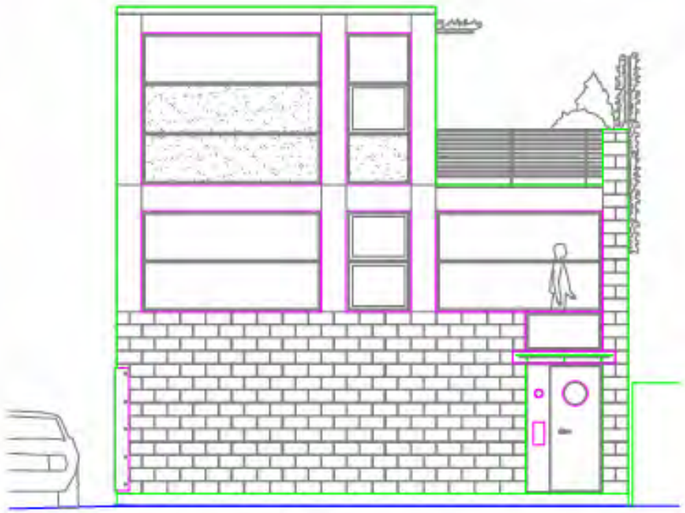
laneway



host house backyard SECTION THROUGH LANEWAY HOUSE laneway

CORNER LOT - PROTOTYPE - 2 STOREY VERSION

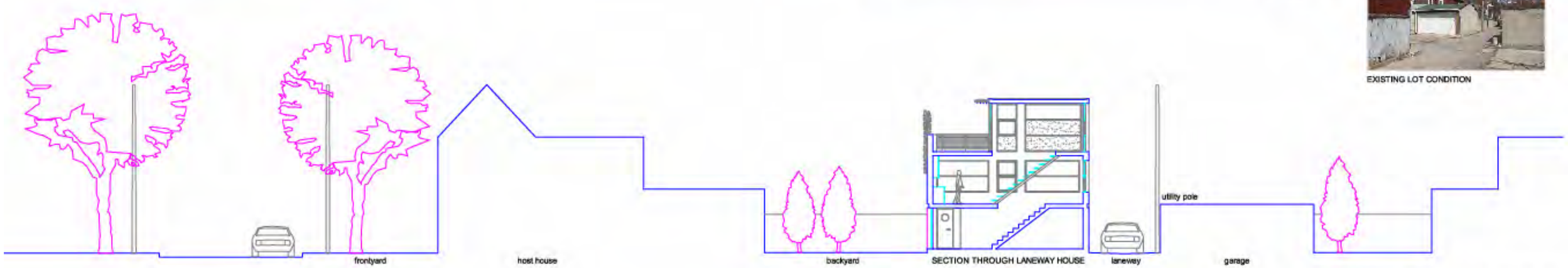




1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 host house garage
7 stair
8 terrace
9 mechanical room
10 laundry

PROPOSED DWELLING

EXISTING LOT CONDITION



CORNER LOT - PROTOTYPE - 3 STOREY VERSION

Island Lots

Description Island Lots are generally existing lots, which require no land assembly or severance. They are defined by a laneway on three or 4 sides. Island Lots have many advantages including: size; ease of access; and light. Island lots are comparatively rare and vary in area and shape.

Design Influences Island Lots allow openings on all sides. They are able to accommodate parking and garden space.

Programme The Island Lot is suitable for single or multiple family development.

Construction and Design The Island Lot prototype has laneways on three sides, but only one face has large windows. This provides privacy to both the neighbours and the laneway residents. Concrete block is used structurally and as a non-combustible cladding. Open-web steel joists are used to give the dwelling a more open interior plan. An enclosed garden provides generous private open space; there is no roof garden. A wood clad exterior wall adds to the garden setting. A double height interior space brings natural light to the back wall. The dwelling has a ground floor of 67.5 square metres and a dwelling area of 103.5 square metres, with a garden space of 49 square metres.

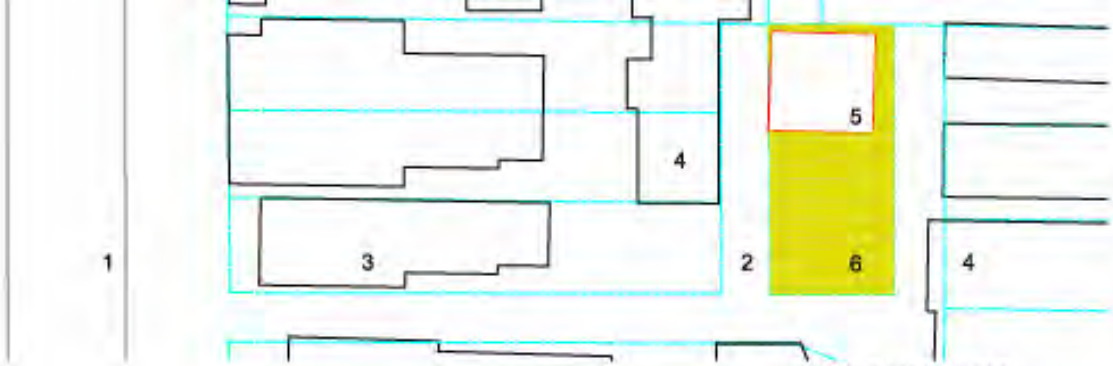
Estimated Cost of Construction * $ 88,410.00

- *refer to prototype drawings and costing for further detail*
  **does not include site servicing allowance*

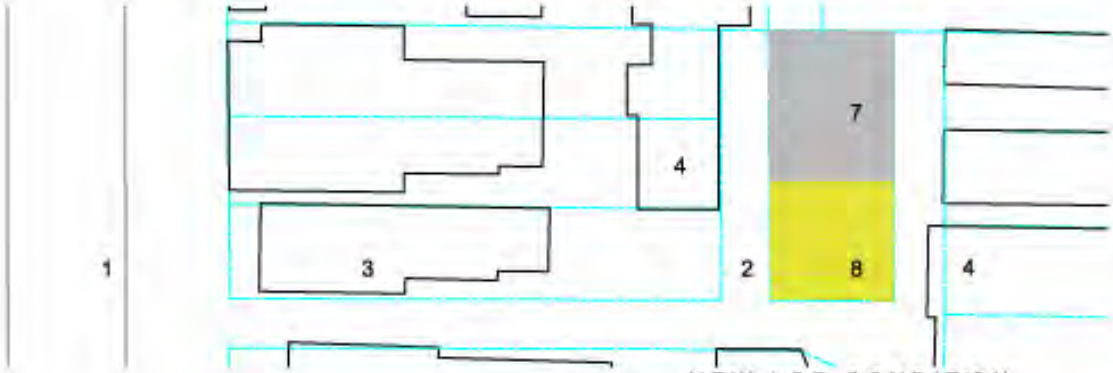
Island Lot Prototype
Estimated Cost of Construction

Building Permit Fee	1,210.00
Construction:	
Foundation	
• poured concrete	13,800.00
Walls	
• exterior concrete block walls	3,850.00
• exterior wood clad wall	2,000.00
• interior walls – framing, insulation and finish	3,350.00
Floors	
• poured concrete slab (ground floor)	6,400.00
• pre-cast concrete floor, including delivery and placing	5,700.00
• finished flooring – floating wood floor	3,250.00
Roof *	
• open-web steel joists and metal decking	7,500.00
• flat roof – asphalt membrane and flashing	5,250.00
Vertical Circulation	
• steel stair with wood treads	500.00
House Systems	
• electrical – wiring and switches	4,000.00
• mechanical – hydronic radiant floor heating	15,000.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	8,250.00
• garage door and garden door	2,200.00
• interior doors	1,200.00
• exterior doors	600.00
• steel beam and garage door rail	350.00
Sub-total	**$ 88,410.00**
Site Servicing Allowance	35,000.00
Total estimated cost of construction for the Island Lot prototype:	**$ 123,410.00**

**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*



EXISTING LOT

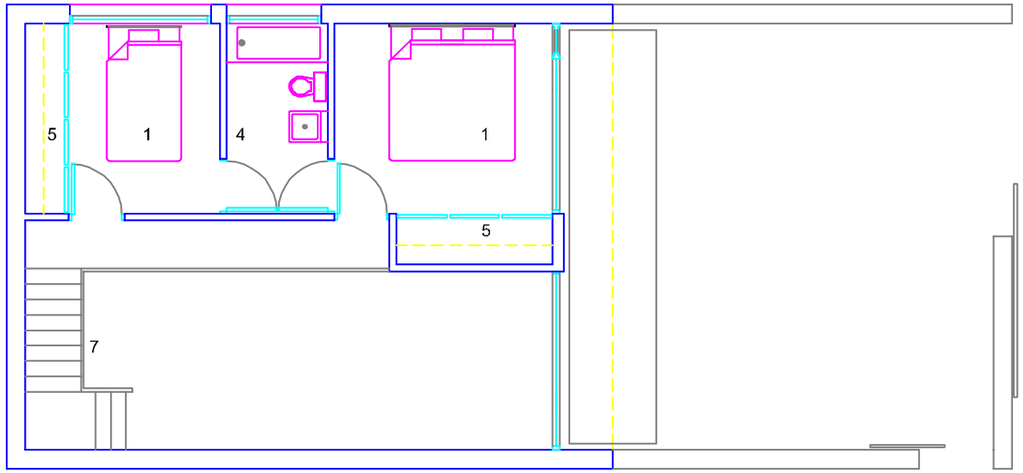


NEW LOT CONDITION

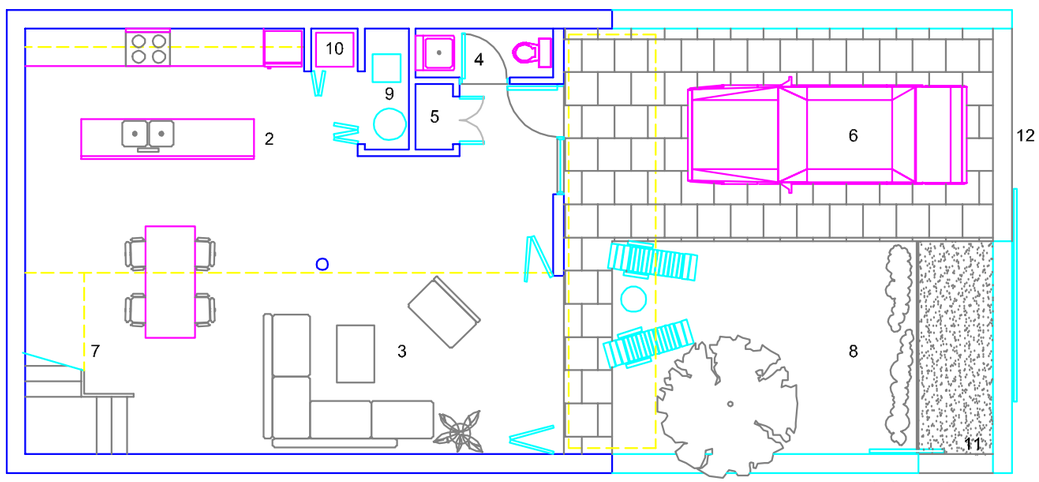
SITE PLAN

1 street
2 laneway
3 neighbouring house
4 neighbouring garage
5 existing garage
6 existing open space
7 laneway dwelling footprint
8 laneway dwelling open space
9 laneway dwelling garden
10 laneway dwelling parking

ISLAND LOT DEVELOPMENT



SECOND FLOOR PLAN

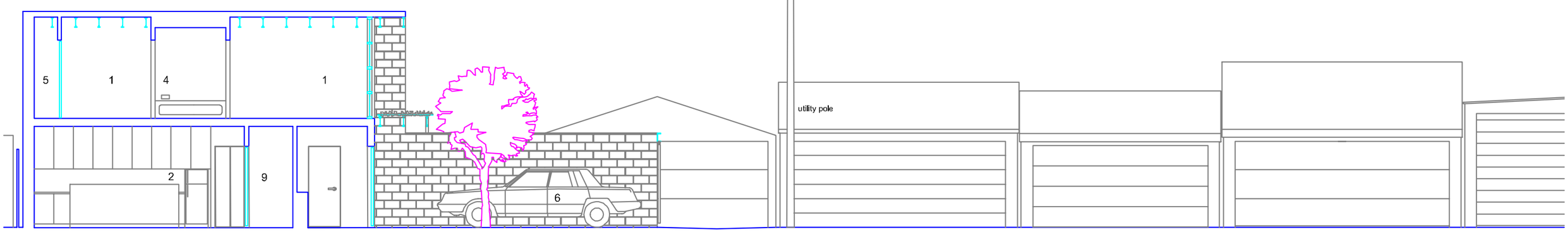


GROUND FLOOR PLAN

1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 parking
7 stair
8 garden
9 mechanical room
10 laundry
11 garden gate
12 car access

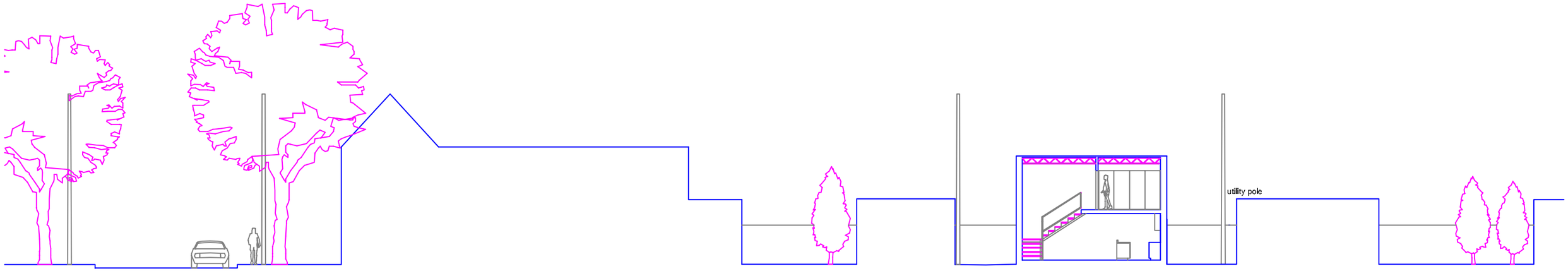
PROPOSED DWELLING

EXISTING LOT CONDITION

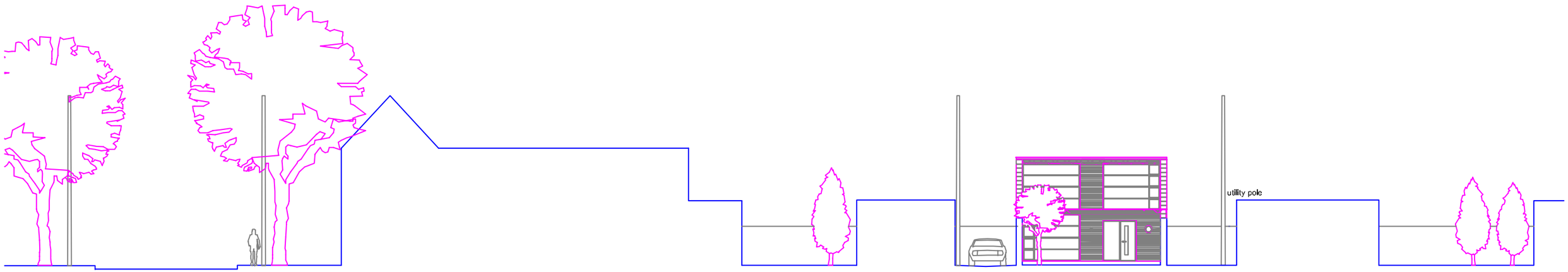


SECTION THROUGH LANEWAY DWELLING

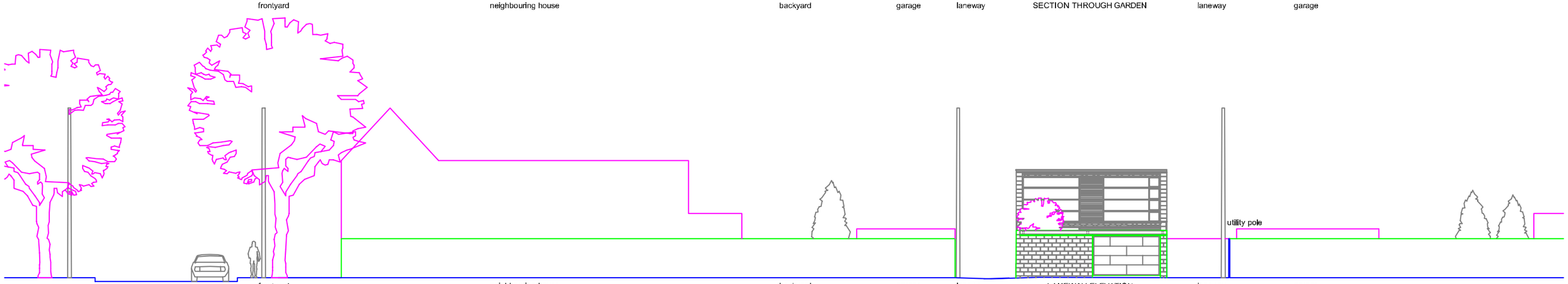
ISLAND LOT - PROTOTYPE



frontyard neighbouring house backyard garage laneway SECTION THROUGH LANEWAY DWELLING laneway garage



frontyard neighbouring house backyard garage laneway SECTION THROUGH GARDEN laneway garage



frontyard neighbouring house backyard garage laneway LANEWAY ELEVATION laneway garage

ISLAND LOT - PROTOTYPE

Key Lots

Description Key lots are the most numerous potential laneway lots. The Key Lot is created by severing an existing street lot in such a way as to provide a sufficient building area on the lane with an access and service corridor along the side leading to the street. The access corridor allows a specific address to be given to the dwelling; servicing is tunnelled along this corridor. The average width of potential key lots in our study area is 7m and the existing rear yard is 14 m.

Design Influences A Key Lot laneway development must maintain a usable rear yard for the existing house. Given an average depth of 14.5 meters and considering the height of the existing house and the laneway dwelling a minimum rear yard would be 6m deep. This will give a floor plate of 59.5 square metres and a dwelling area of 75.6 square metres, with a roof garden of 24.5 square metres. Because of the width of Key Lots and the pedestrian access from the street it is possible to provide a parking space for the laneway dwelling and the existing house. Privacy along the pedestrian access for the existing house can be achieved with fencing and planting. Exterior space for the new dwelling is best located on the roof facing the laneway.
Fire separations without openings must be created on the sides of the new dwelling. The wall facing the existing house will also be restricted in openings. Openings could be made in the sidewalls by the use of fire shutters. As well, openings facing the existing house, which allow light and view without overlook, are also possible. These measures are related to individual circumstance and are not relied on in our prototype design.

Program The Key Lot prototype design is well suited to single occupancy or a small family. This dwelling is a stand alone building with a pedestrian street access and postal address.

Construction and Design The Key Lot prototype is quite wide, allowing large windows to run across the façade. This provides lots of daylight to the interior. Concrete block is used structurally and as a non-combustible cladding. The metal roofing – a Quonset Hut - is durable, non-combustible and structural; it sets directly on top of the concrete block walls. The wall facing the existing house is made as a Green Wall.

Estimated Cost of Construction *

Two Storey Prototype:	$ 57,950.00
Three Storey Prototype:	$ 88,810.00

- refer to prototype drawings and costing for further detail
**does not include site servicing allowance*

Key Lot Prototype
Estimated Cost of Construction

Two Storey Prototype

Building Permit Fee	1,410.00
Construction:	
Foundation	
• poured concrete	9,150.00
Walls	
• exterior concrete block walls	5,000.00
• interior walls – framing, insulation and finish	2,700.00
Floors	
• poured concrete slab (ground floor)	3,100.00
• pre-cast concrete floor, including delivery and placing	8,060.00
• finished flooring – floating wood floor	1,300.00
Roof *	
• flat roof – asphalt membrane and flashing	3,920.00
Vertical Circulation	
• steel stair with wood treads	500.00
House Systems	
• electrical – wiring and switches	3,000.00
• mechanical – hydronic radiant floor heating	7,500.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	2,600.00
• garage doors	2,000.00
• interior doors	500.00
• exterior doors	900.00
• balcony door	1,200.00
• balcony guard	400.00
• steel lintels	710.00
Sub-total	**$ 57,950.00**
Site Servicing Allowance	25,000.00
Total estimated cost of construction for the two storey Key Lot prototype:	**$ 82,950.00**

**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*

Key Lot Prototype
Estimated Cost of Construction

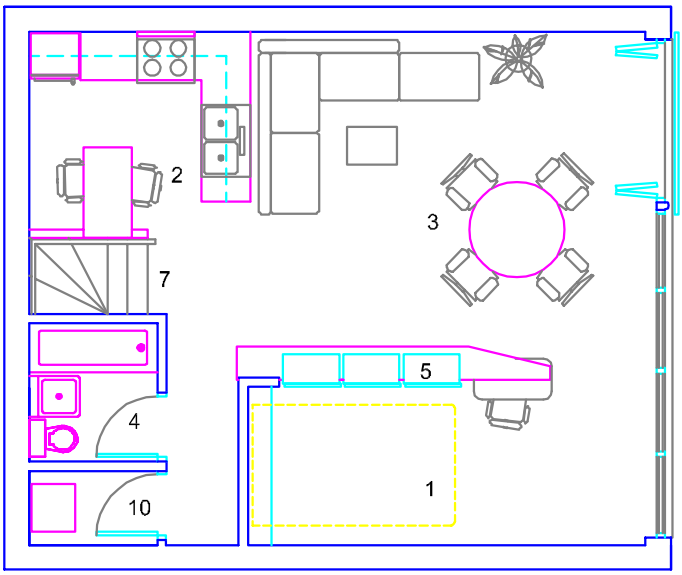
Three Storey Prototype

Building Permit Fee	950.00
Construction:	
Foundation	
• poured concrete	3,100.00
Walls	
• exterior concrete block walls	5,580.00
• interior walls – framing, insulation and finish	5,400.00
Floors	
• poured concrete slab (ground floor)	9,150.00
• pre-cast concrete floor, including delivery and placing	12,100.00
• finished flooring – floating wood floor	2,600.00
Roof *	
• Quonset Hut	12,000.00
• flat roof – asphalt membrane, flashing and paving stones	1710.00
Vertical Circulation	
• steel stairs with wood treads	1,000.00
House Systems	
• electrical – wiring and switches	4,000.00
• mechanical – hydronic radiant floor heating	15,000.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	5,250.00
• garage doors	4,000.00
• interior doors	400.00
• exterior doors	900.00
• balcony guard	960.00
• steel lintels	710.00
Sub-total	**$ 88,810.00**
Site Servicing Allowance	25,000.00
Total estimated cost of construction for the three storey Key Lot prototype:	**$ 113,810.00**

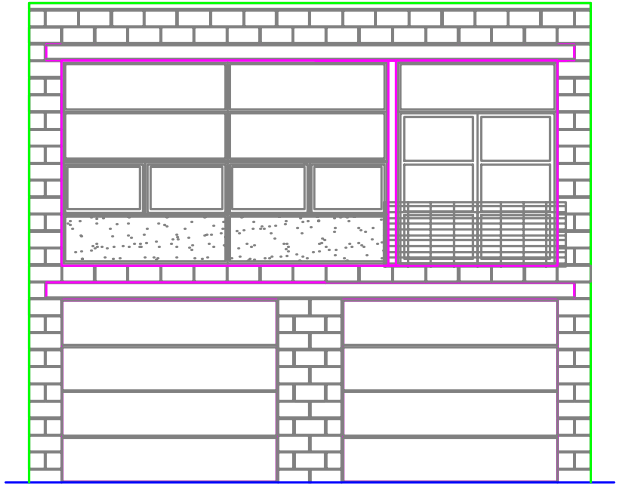
**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*

1 street
2 laneway
3 existing host house
4 existing garage
5 existing open space
6 laneway dwelling footprint
7 resultant open space
8 host house garage
9 host house garden
10 laneway dwelling entry foyer
11 laneway dwelling garage
12 street access

KEY LOT DEVELOPMENT

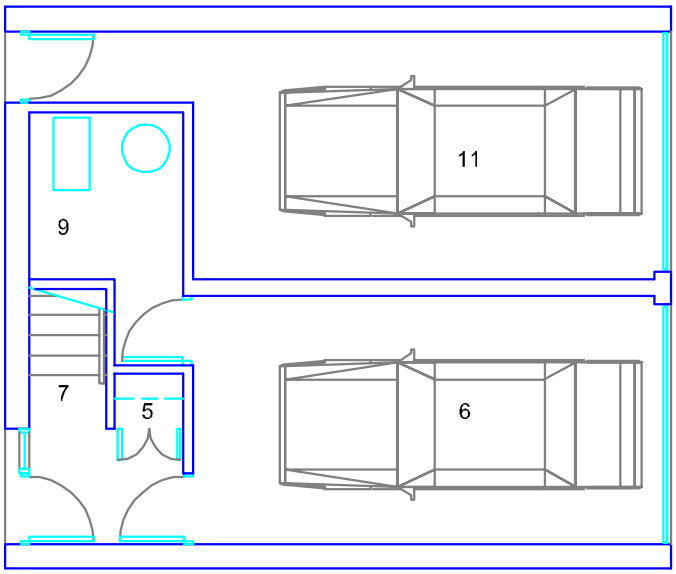


SECOND FLOOR PLAN

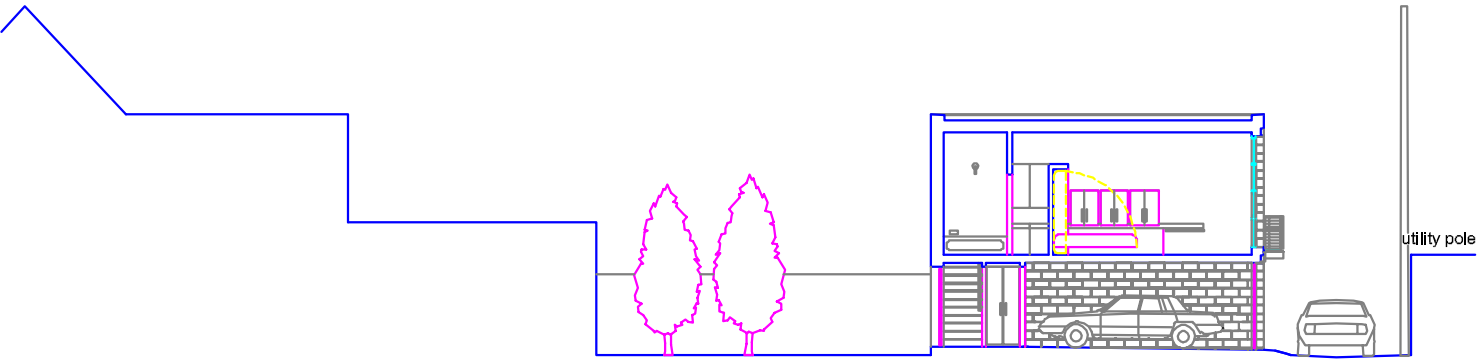


LANEWAY ELEVATION

1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 garage
7 stair
8 terrace
9 mechanical room
10 laundry
11 host house garage

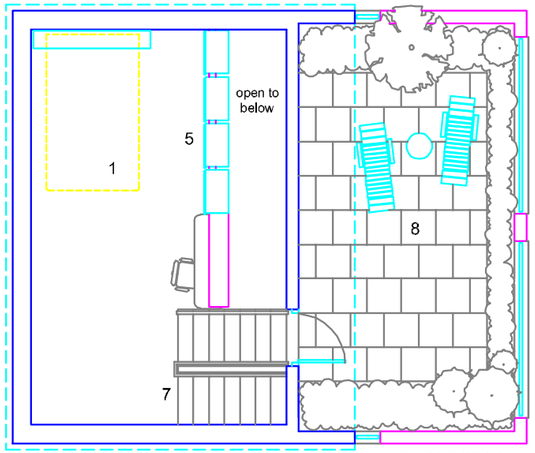


GROUND FLOOR PLAN

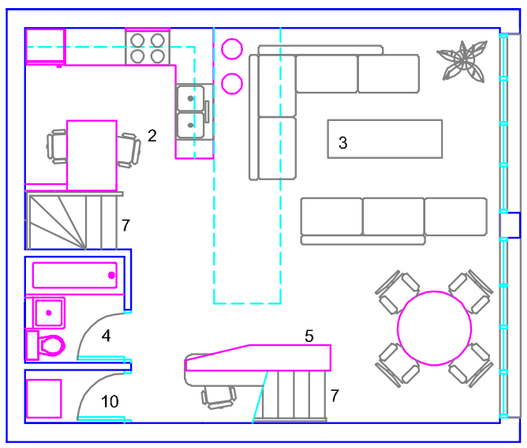


SECTION THROUGH LANEWAY HOUSE

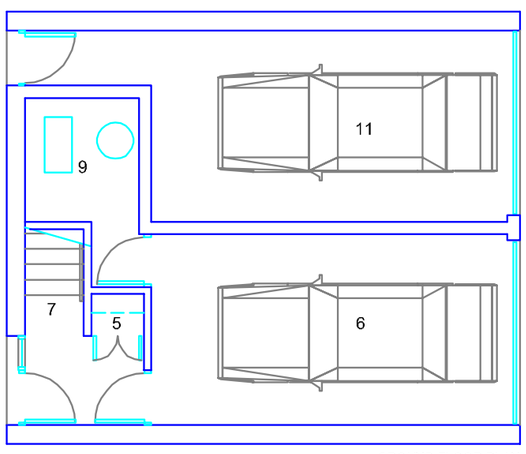
KEY LOT - PROTOTYPE - 2 STOREY VERSION



THIRD FLOOR PLAN



SECOND FLOOR PLAN



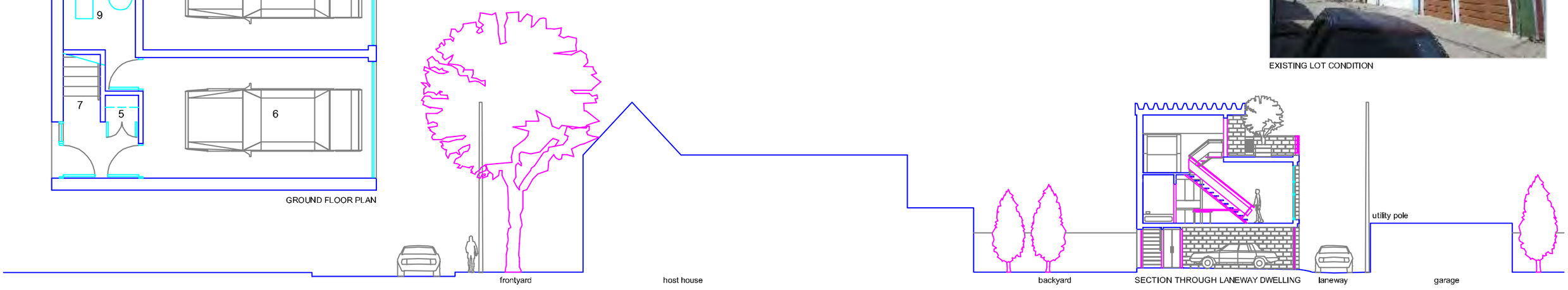
GROUND FLOOR PLAN

LANEWAY ELEVATION

1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 garage
7 stair
8 terrace
9 mechanical room
10 laundry
11 host house garage

PROPOSED DWELLING

EXISTING LOT CONDITION



KEY LOT - PROTOTYPE - 3 STOREY VERSION

Slot Lots

Description Slot Lots often occur behind row houses. The Slot Lot is bound by neighbouring lot lines. It is accessible from the lane only and often small. The average width in our study area is 5m, with an average existing rear yard of 14.5 m. Slot Lots are hard to service. It is best if they are located near the end of a laneway, close to a serviced street. The closer to a street, the easier the Slot Lot can receive deliveries.

Design Influences Viable Slot Lot laneway development should maintain a usable rear yard for the existing house. Given an average depth of 14.5 meters and considering the height of the existing house and the laneway dwelling, a minimum rear yard would be 6m deep. This will give a floor plate of 35 square metres and a dwelling area of 57.5 square metres, with a roof garden of 12.5 square metres.
Our goal is to maintain parking for the existing house. The ground floor of the laneway dwelling must be shared with the existing house. At the same time, privacy for both dwellings must be created. Exterior space for the new dwelling is best located on the roof facing the laneway.
Fire separations without openings must be created on the sides of the new dwelling. The wall facing the existing house will also be restricted in openings. Openings may be created in the sidewalls by incorporating fire shutters. As well, openings facing the existing house, which allow light and view without overlook, are also possible. These measures are related to individual circumstance and are not relied on in our prototype designs. Additionally these measures are costly and are therefore not included in our designs.
Access is available from the lane.

Programme The Slot Lot supports a small dwelling. An area of 57.5 square metres, which is comparable to an average one bedroom apartment in Toronto. Slot Lot dwellings are best suited for one or two person occupancy. The laneway dwelling is a rental unit, subsidiary to the existing house.

Construction and Design The Slot Lot prototype makes the most of its width by spreading a large window across the façade. This brings natural light to the back wall. Concrete block is used structurally and as a non-combustible cladding. The metal roofing – a Quonset Hut - is durable, non-combustible and structural; it sets directly on top of the concrete block walls. The wall facing the existing house is made as a Green Wall.

Estimated Cost of Construction * $ 83,365.00

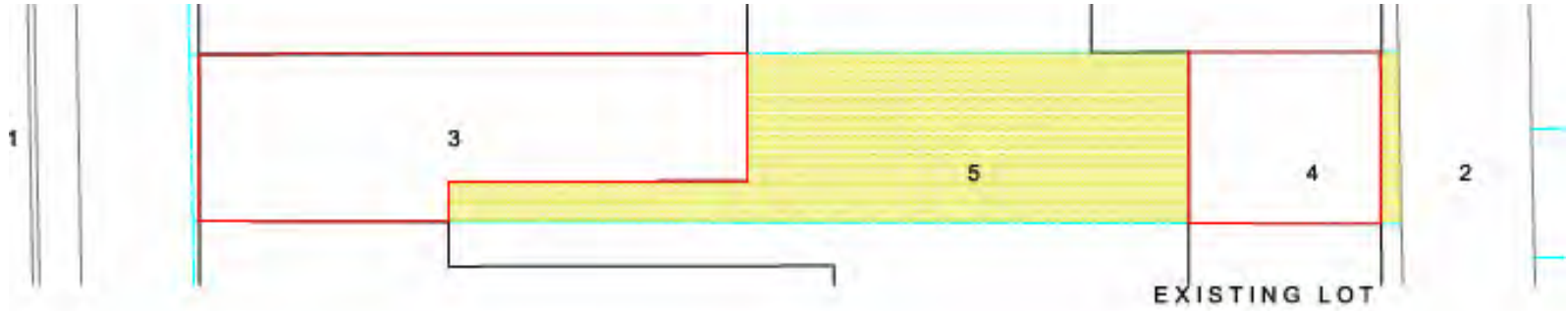
- refer to prototype drawings and costing for further detail

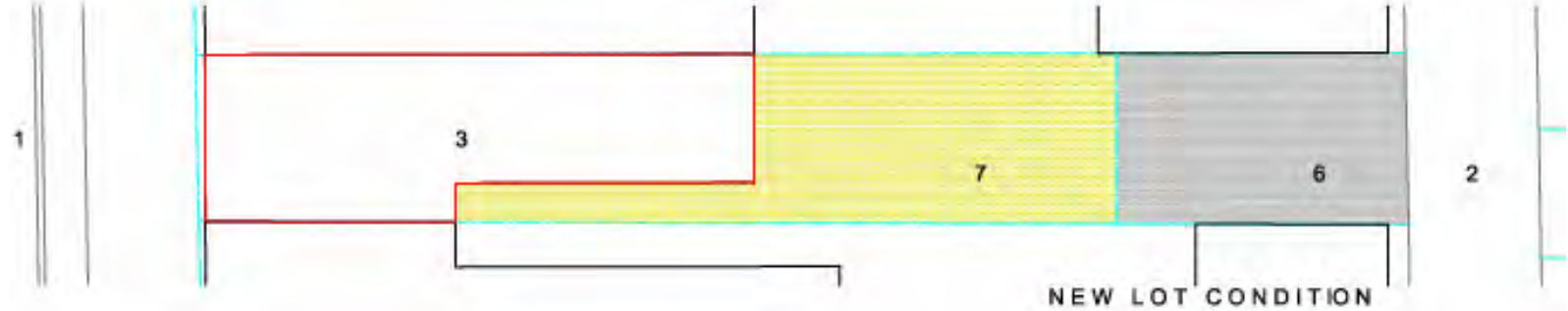
**does not include site servicing allowance*

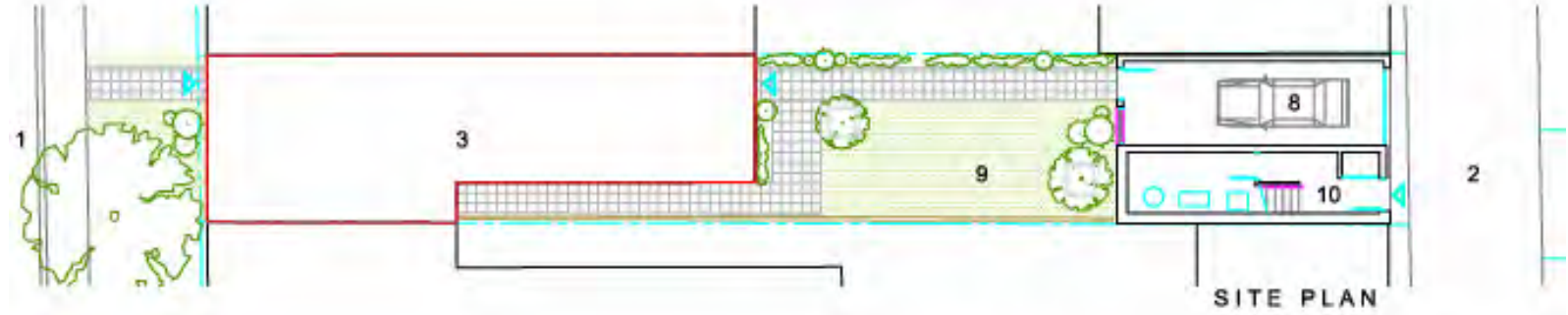
Slot Lot Prototype
Estimated Cost of Construction

Building Permit Fee	1,325.00
Construction:	
Foundation	
• poured concrete	8,200.00
Walls	
• exterior concrete block walls	5,000.00
• interior walls – framing, insulation and finish	5,300.00
Floors	
• poured concrete slab (ground floor)	2,500.00
• pre-cast concrete floor, including delivery and placing	11,200.00
• finished flooring – floating wood floor	2,400.00
Roof *	
• Quonset Hut	12,000.00
• flat roof – asphalt membrane, flashing and paving stones	900.00
Vertical Circulation	
• steel stair with wood treads	1,000.00
House Systems	
• electrical – wiring and switches	4,000.00
• mechanical – hydronic radiant floor heating	15,000.00
• plumbing – drains and water supply to fixtures	4,000.00
Wall Openings	
• windows – aluminium frame; clear, double-glazing	6,000.00
• garage door	2,000.00
• interior doors	300.00
• exterior doors	900.00
• balcony guard	720.00
• steel lintels	620.00
Sub-total	**$ 83,365.00**
Site Servicing Allowance	25,000.00 to 40,000.00
Total estimated cost of construction for the Slot Lot prototype:	from **$ 108,365.00** to **$ 123,365.00**

**does not include the cost of making a Green Roof*
***no allowance is made for the cost of landscaping, appliances, fixtures or cabinetry*

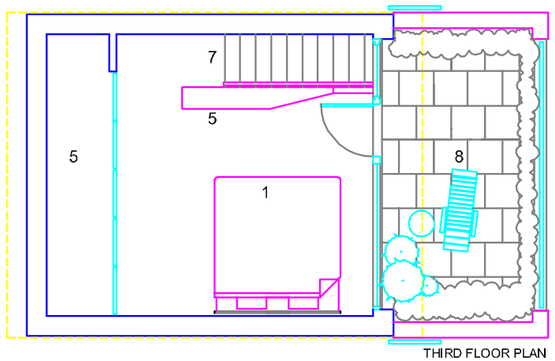




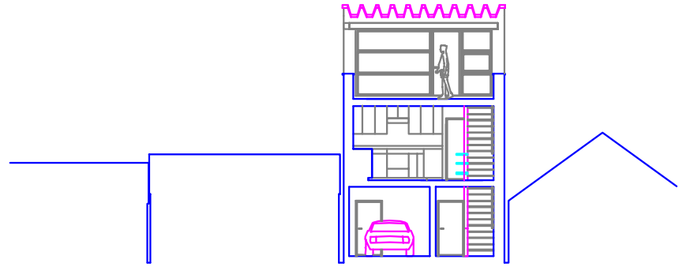


1 street
2 laneway
3 existing host house
4 existing garage
5 existing open space
6 laneway dwelling footprint
7 resultant open space
8 host house garage
9 host house garden
10 laneway dwelling entry foyer

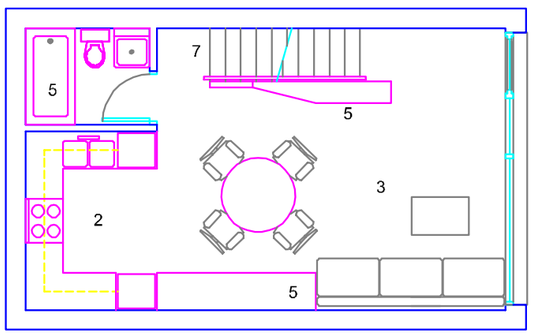
SLOT LOT DEVELOPMENT



THIRD FLOOR PLAN

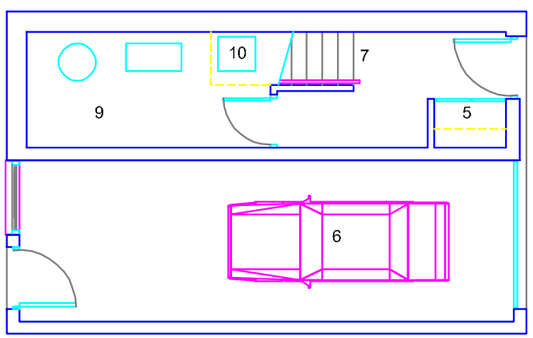


CROSS SECTION

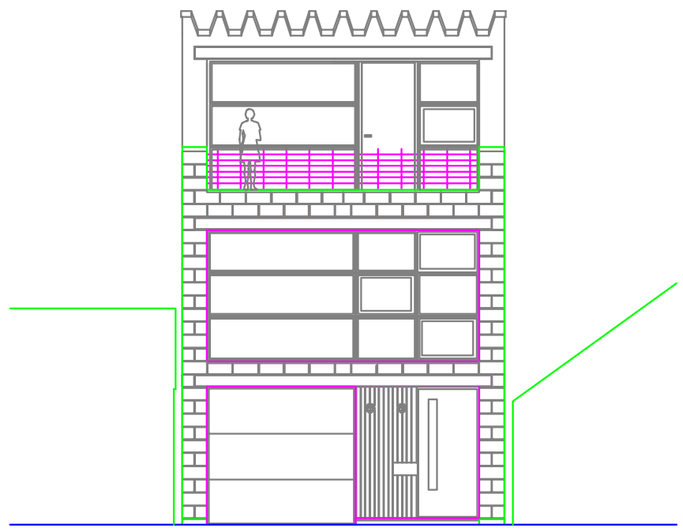


SECOND FLOOR PLAN

1 bedroom
2 kitchen
3 living space
4 bathroom
5 storage
6 host house garage
7 stair
8 terrace
9 mechanical room
10 laundry



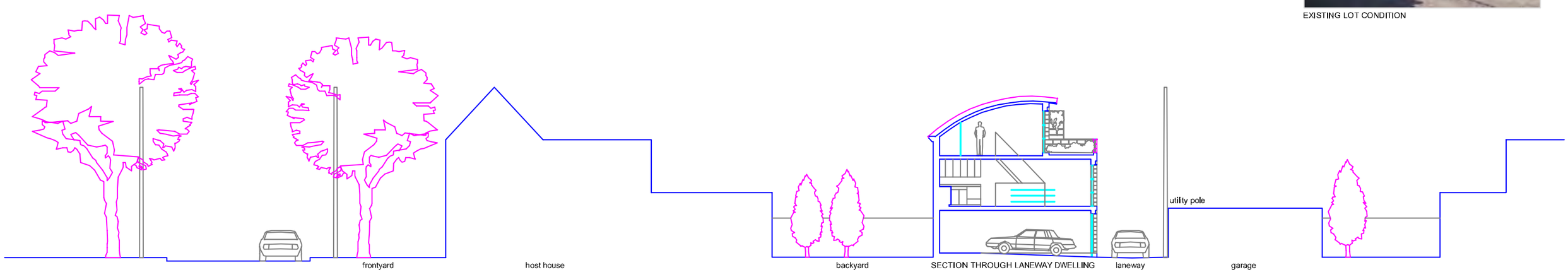
GROUND FLOOR PLAN



LANEWAY ELEVATION

PROPOSED DWELLING

EXISTING LOT CONDITION



SLOT LOT - PROTOTYPE - 3 STOREY VERSION

Acknowledgements

Russell, Peter. Part One: The Relevance of Embodied Energy in an Indefinite Future. Canadian Housing and Mortgage Corporation. Ottawa, Canada. November 1996.

Russell, Peter. Part Two: Embodied Energy Initiatives in Canada. Canadian Housing and Mortgage Corporation. Ottawa, Canada. November 1996.

Sustainable Communities Research Group McMaster University (January 2000). *A Brief Analysis of Various Building Materials*. Retrieved April 17, 2003 from the World Wide Web: http://www.eng.mcmaster.ca/civil/research/sustain/building/building.html

Toronto Public Utilities Coordinating Committee (March 2002). *Minimum Vertical and Horizontal Separations and Depths for Buried Plant*. Retrieved June 4, 2003 from Toronto Public Utilities Coordinating Committee on the World Wide Web: http://www.tpucc.com/pages/archives_misc_documents.php