20 Create urban gardens.

"Tending a garden nourishes the human desire to give form to mystery." Anita Lange, Parabola, Spring 2001.

Even a high-density residential area can be filled with gardens. Parts of the street corridor that are not used for driving or walking can be used to plant linear "gardens". Individually, these gardens enhance the experience of the community and can demonstrably increase property value. they also provide an environmentally healthy alternative to conventional turf lawns. Together, small gardens throughout the city can enhance urban habitat and contribute to stormwater management. Layering the street with urban gardens that are cared for by community volunteers is both cost-effective and sustainable.

Related Charrette Strategies
E1; F4; G2; G4; H1; K1

Related Guidelines
5; 20; 25; 30.4

20.1 The Traffic Circle and Bulge

Traffic-calming measures, such as traffic bulges and traffic circles, can do more than slow cars. Filled with trees and other plants rather than paved with concrete, these small areas can contribute greatly to the ecology and the appeal of the urban landscape.
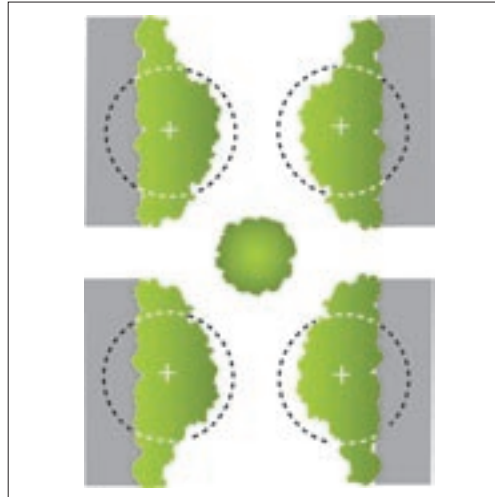
APPROPRIATE PLANTING

"In order to create and maintain the ideal lawn at its desired color, texture, and height we have brought the full weight of modern sicence to the task. Chemicals encourage or inhibit growth, water is redistributed and polluted, terrain is denuded, and machines mow incessantly" (Girling, Helphand, 1994, 217).

- *Low maintenance shrubs, perennial grasses and trees planted within public areas can replace conventional turfed areas. In doing so, these areas can fulfill water quality and stormwater management functions by absorbing moisture and sequestering pollutants in their rootmass.*

- *Choosing native, low maintenance vegetation also lessens the amount of pesticides and chemicals entering the soil.*

- *Deep mulch perennial plants in infiltration swales are best for infiltration and bioremediation of stormwater pollutants.*

- *To better direct the flow of water from the roadway, design plated areas to be slightly lower than the surface of the road.*

20.2 The Boulevards

Trees are a crucial element of urban street boulevards. Every street should contain street trees with a mature height of over 20 metres, planted no more than 10 metres apart. A mature urban forest is a major component of an urban stormwater management and habitat enhancement strategy. In many parts of our province, residents have taken over the urban boulevards in front of their homes and planted them with gardens. Putting low-maintenance perennials under the trees lining central and side boulevards is a good idea as they can require less care than grass, are more attractive, and provide additional urban wildlife habitat.
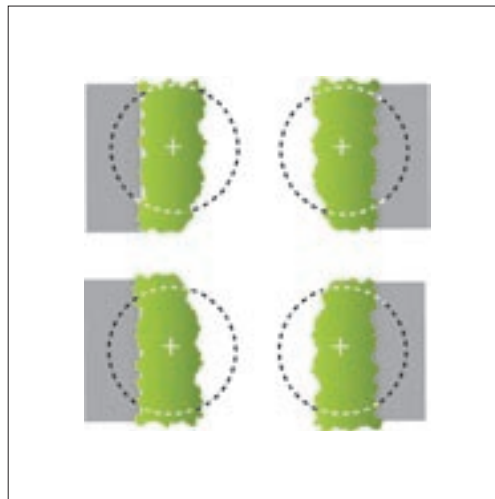
20.3 The Island or Median

Islands and medians that direct the flow of traffic need not be paved. A simple, low-growing garden will provide a moment of relief from the stresses of driving while reducing the heat island and storm water impacts.
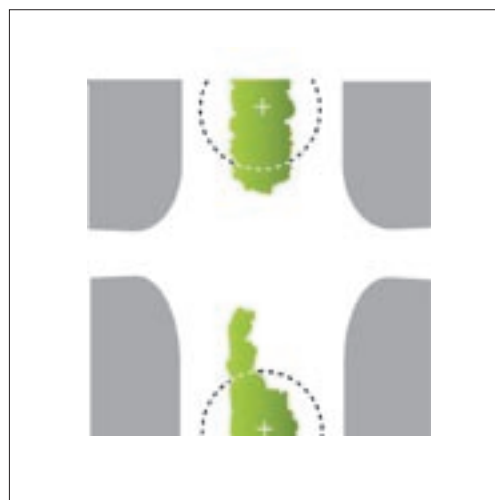
FURTHER RESEARCH

Ferguson, *Introduction to Stormwater.*

MacDonald, "Ecologically Sound Lawn Care for the Pacific Northwest."

Girling and Helphand, *Yard, Street, Park.*

layer the systems

21 Create an urban forest

"You should know that the foliage and trees are a manifestation of the mountain." Milarepa, The Hundred Thousand Songs.

Streets and other corridors are ideal locations for creating a lush urban forest. Street trees provide shade in hot weather and shelter from the rain; they provide bird habitat; with fall colours and spring buds, they also provide visual cues to the passing of seasons. Layer habitat and wonder onto the street by planting street trees that will grow into an urban forest covering at least 60% of the land with shady tree canopy.

COOLING

Extensive tree removal in urban settings results in the "urban heat island" effect, wherein trapped air and pollutants can increase tempurature by as much as 10 degrees Fahrenheit (Moll, 1989).

MITIGATING POLLUTION

Streets lined with trees can measurably reduce the level of particulates in air as well as sequester carbon and polluting chemicals.

STORMWATER MANAGEMENT

Trees facilitate absorption, evapotranspiration, and dissipation of rainfall, while roots trap and filter pollutants. Local rainfall characteristics, soil condition, and native forest species should inform tree selection (Luymes, 2000).

COST SAVINGS

Each urban tree with a 50 year life-span provides almost $275/year (in 1985) reduction in air conditioning, erosion control, stormwater control, air pollution and wildlife shelter (Moll, 1989).

FURTHER RESEARCH

Environmental Protection Agency, Cooling Our Communities: A Guidebook on Tree Planting and Light Colored Surfacing.
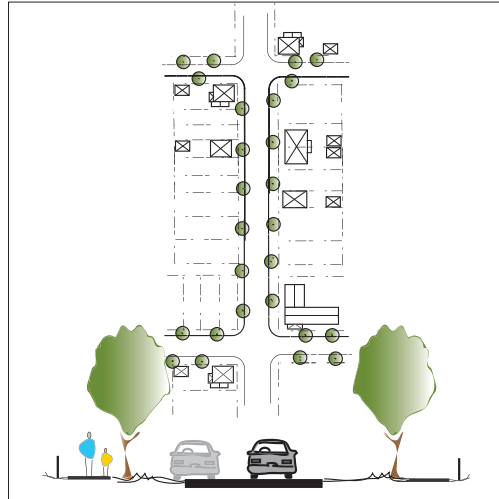
Luymes, "The Hydrological Effects of Urban Forests with Specific Reference to the Pacific Northwest."

Moll and Abenrick, eds., Shading our Cities.

21.1 At Planting
Start by planting major street trees that will have a mature height of at least 15 metres and that are spaced no more than 10 metres apart along each street and in parking areas. For parking lots, provide 1 tree per 5 parking stalls. Set trees into permeable areas and, in parking areas, protect them with bollards or tree guards. Choose tree species that are suited to urban locations, and remember that planting different types of trees on different streets can provide individual corridors with a sense of identity and varied habitat.
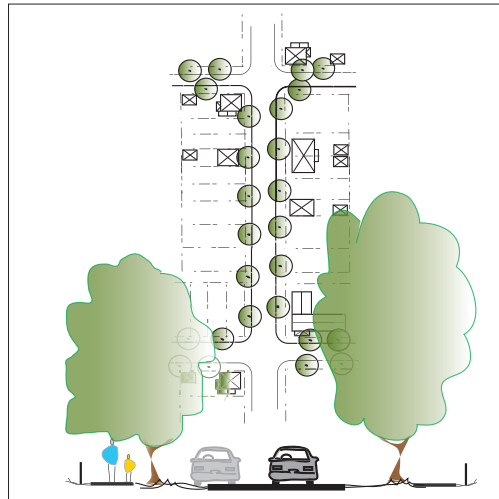
21.2 At 15 Years
As the trees grow, the canopy begins to fill in and provide more shade on the street, sidewalk or parking lot.
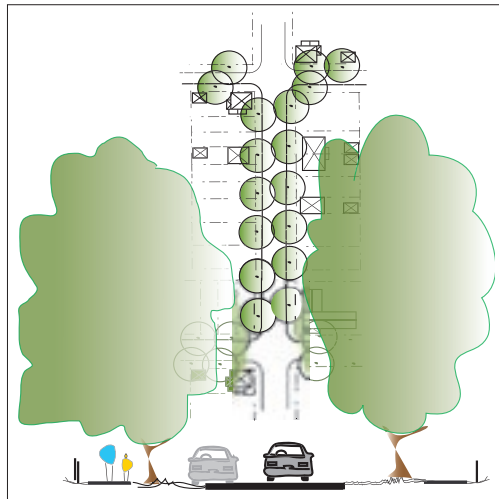
21.3 At 30 Years
By maturity, an urban forest can provide a canopy large enough to cover 60% of the roadway and 50% of a parking area.

Site Design for BC Communities

22 Centre activity on a Main Street

"The street rituals and encounters that seem so casual — the prolonged goodbyes, the 100 percent conversations — these are not at all trivial. They are manifestations of one of the most powerful impulses: the impulse to the center." William H. Whyte, City: Rediscovering the Center, 1988.

The centre of a district can develop in different forms. A public square, civic building, or community park each has the potential to foster community identity and interaction. A linear "centre" can also form when high-density development and commercial uses locate along a prominent street. The more people a Main Street attracts, the more active and lively it becomes. A Main Street will give access to, and complement, activities at the district centre.

Related Charrette Strategies
A3; B3; B4; C2; H4

Related Guidelines
8.2; 8.3; 8.4; 9; 11; 18; 24; 26

22.1 Key Location

The Main Street is located at the centre of the community, and is associated with landmarks. The primary role of the Main Street is to function as a social and service centre for the neighbourhood. It also provides an important service to those passing through. The street has no more than 2 travel lanes in each direction, and is lined on either side with parallel or angled parking. On-street parking provides direct access to shops and buffers the sidewalk from the street. Excessively high parking standards can make it nearly impossible to achieve critical mass in new centres; therefore, use minimum parking standards and provide access to frequent transit. There are many successful commercial districts where parking availabiltiy is only 25% of what is usually required in zoning bylaws.
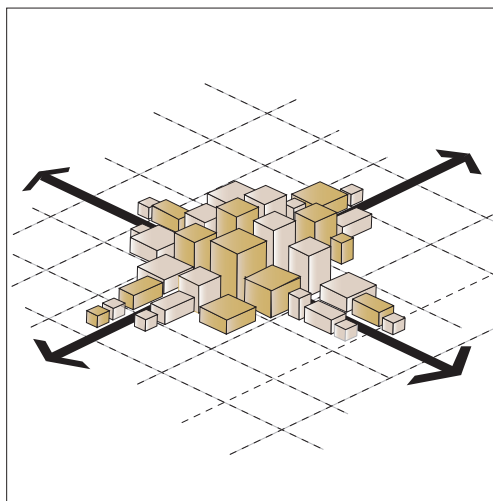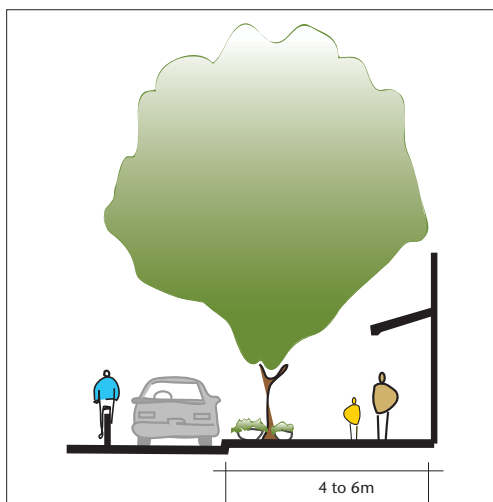

22.2 Storefronts

Ideally, the buildings on the Main Street are mixed-use, with storefronts on the ground floor and office and/or residential units above. Depending on the urban context, buildings are no less than 2 storeys and no more than 7 storeys. Lot coverage of up to 90% and a shallow building setback ensures near continuous street frontage. Only interrupt the street frontage where there is a public square, landmark, or view. Each shop has a front door on the street. Internal shopping areas (such as malls) are discouraged. A separate entry gives people access to residential units located above shops. Wherever appropriate, cafes and restaurants spill out onto the street. Buildings on corner lots include architectural details that address both streets. When economic realities preclude multi-story development, single-story commercial development may provide a valuable "holding" function for the site until economic circumstances change.

22.3 Shopping Sidewalk

The sidewalk is no less than 3 metres wide, and up to 6 metres wide in areas of high pedestrian activity. Sidewalks are lined with lights, bicycle parking facilities, planters, and street trees (spaced as closely together as appropriate). Sidewalks serve shoppers, walkers, and watchers, and incorporate street furniture. Each shop has an awning and a sign that is designed and oriented to pedestrians. Some buildings have a well lit 1.5 metre arcade to offer additional protection.

4 to 6m

an economy of means

23 Make streets cheaper

"You reach Diomira, a city with sixty silver domes, bronze statues of all the gods, streets paved with lead, a crystal theater, a golden cock that crows each morning on a tower." Italo Calvino, Invisible Cities, 1972.

Quality, connectivity, and comfort do not have to be sacrificed in order to reduce the costs of building streets. Make cheaper streets simply by narrowing street widths, eliminating costly and often environmentally damaging curb and gutters and paving only where necessary. Cheaper streets mean less cost to every resident and lower future taxes.

Related Charrette Strategies
F1; F2; F4; G2; G4; I2;

Related Guidelines
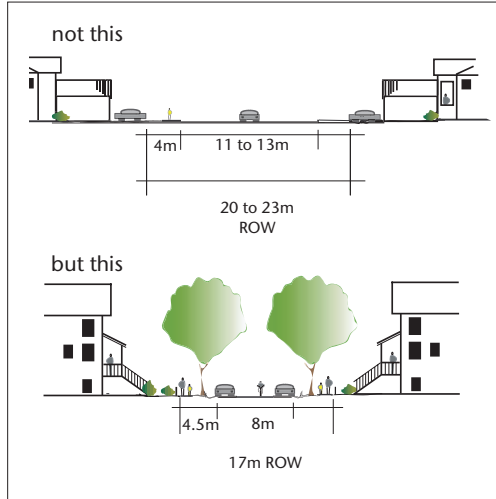**15; 19; 23; 25**

REDUCED WIDTHS

Many communities are now discovering that narrowing street widths need not affect functional performance.

Both Eugene, and Portland, Oregon, have adopted "skinny street" ordinances in which local street standards have been narrowed to as little as 6 to 8 metres, depending upon parking requirements (Metro, 2000).

not this

4m | 11 to 13m

20 to 23m
ROW

but this

4.5m | 8m

17m ROW

23.1 Narrow Streets
Narrow streets cost less to build and maintain than wide streets. Minimized paved surface area also results in lower material and labour costs. Reduced street widths mean less stormwater runoff and a decrease in the environmental and economic costs of stormwater management. Narrow streets also make more land available for housing, parks, and natural areas. Local streets should be queuing streets, with parking on both sides and one travel lane. Studies show that this type of street is 4 times safer for children than wide streets. Another benefit of narrow streets is that they are easier to shade with street trees.
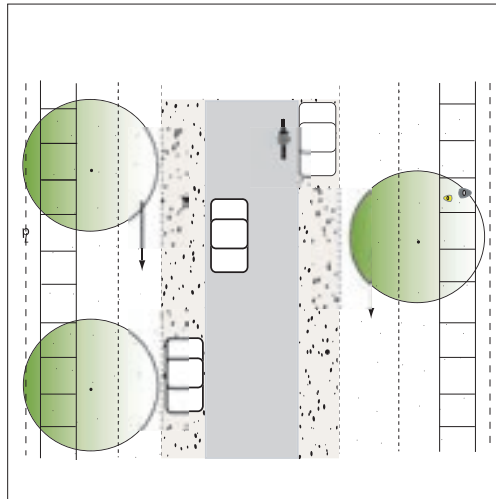
23.2 Cheaper Material
Some materials are less expensive and more environmentally friendly than others. In order to decrease material costs, edge narrow streets with a crushed stone parking verge or grassy boulevard rather than with a curb and gutter. Grass swales and gravel verges allow rainwater infiltration and decrease the environmental and economic costs of stormwater management.

4m
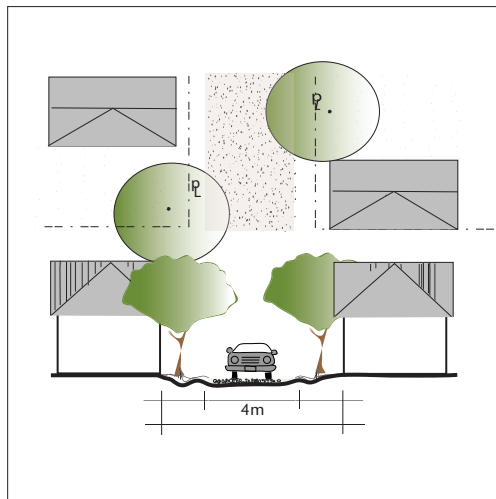
23.3 Unpaved Lanes
Lanes need not be paved with impervious material. Use 20 centimetre deep crushed stone pavement for increased stormwater infiltration. This type of construction has been used successfully for over 80 years on Vancouver lands.

24 Provide parking wisely

"If the house is a machine for living, then the garage might reasonably be called a living room for a machine." Akiko Busch, *Geography of Home*, 1999.

Cars make streets both accessible and active. However, few things eliminate street-life more quickly than a street-front parking lot. Every Main Street should include on-street parking. Overflow parking should be located in underground lots or on surface lots situated at the rear of buildings. Centre activity on the Main Street by locating parking wisely.

Related Charrette Strategies
B1; E2; H3; N1; P2

Related Guidelines
1; 25; 34; 36.1

24.1 Street Parking
A good Main Street will provide plenty of parking without threatening the quality of the street experience. On-street parallel or angled parking in both directions gives direct access to storefronts and creates a buffer between pedestrians and the busy travel lanes. On-street parking also calms traffic. Recent research has verified these assertions, and recent projects utilizing these features have proven both safe and marketable.
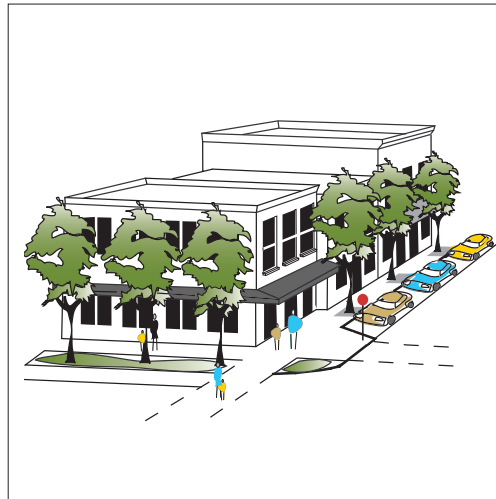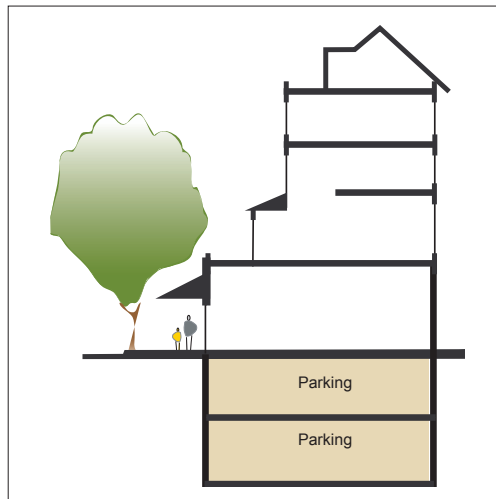
PARKING

Parking for cars consumes a lot of land. Parking facilities require approximately 28 square metres per car, and can cost up to $21,000 per stall to construct. The money saved from reduced parking requirements can be used to improve public transit and pedestrian/bike facilities. One of the components of the Downtown Transportation Plan for Vancouver is to develop residential and commercial parking requirements in ways that are consistent with the objectives of promoting walking, cycling, transit, and ride-sharing as alternatives to the single-occupant vehicle.


24.2 Lot Parking
Parking lots should be located underground wherever economic circumstances and ecological constraints allow. Garage entries should be accessed by a rear lane or side street and should be structurally integrated into the building without becoming intrusive.

24.3 Parking at the Rear
When necessary, surface parking lots should be located behind buildings and accessed via a lane. Shops may have an additional rear entrance for customer or resident access. Surface parking lots should include large trees to reduce glare, absorb pollution, and help heal the spatial holes that these lots create in the urban fabric. Shade trees should be planted at a density of approximately 1 tree per 5 stalls and have a minimum mature height of at least 15 metres to ensure that, eventually, a minimum of 50% of the parking surface will be covered by tree canopy. Use permeable pavement or other strategies to reduce stormwater runoff. Where a mix of uses staggers parking needs, use shared parking areas to reduce the amount of land dedicated to surface parking.
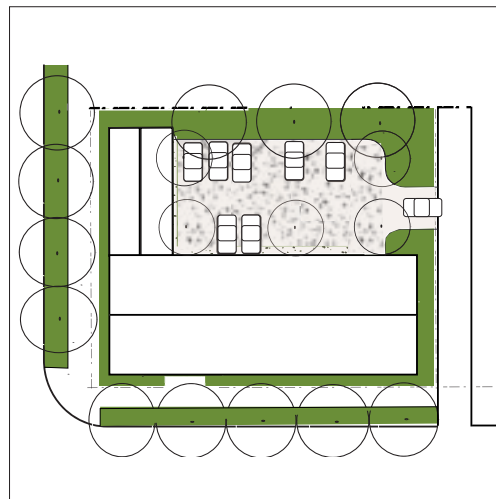
FURTHER RESEARCH

Childs, *Parking Spaces: A Design, Implementation, and Use Manual for Architects, Planners, and Engineers.*

City of Vancouver, *Downtown Transportation Plan.*

Cole et al., *City of Santa Monica Green Building Design and Construction Guidelines.*

make it home

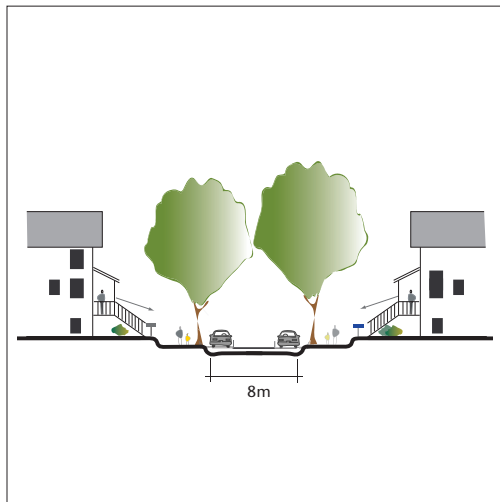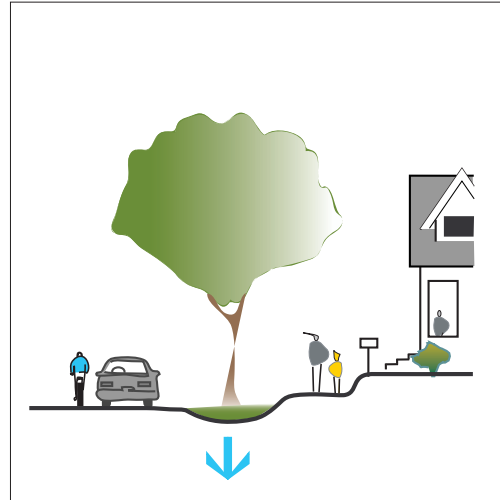**Related Charrette Strategies**
E2; E3; F2; F3; H3; I1; I3; J2; L2;
N2; O1

Related Guidelines
16.3; 17; 22.3; 24; 25; 26; 27;
28; 39

25 Create safe and comfortable streets

"The street was too empty; its emptiness had gotten bored and pulled my steps out from under my feet and clattered around in them, all over the street, as if they were wooden clogs." Rainer Maria Rilke, "Faces" in The Selected Poetry of Rainer Maria Rilke, 1982.

Streets are for public use and should be shared by all forms of transportation, including pedestrians, bicycles, wheelchairs, transit, and cars. On local streets, people walk and talk and sometimes play; on busier streets, people prefer to be separated from moving traffic. More people will use streets that are safe and comfortable, and more people means a more social, "neighbourhly" street life.

TRAFFIC CALMING

Traffic calming produces safer streets. Curb extensions, bulges and street narrowing reduced crashes in Vancouver by almost 75% (ICBC, 1996).

As streets get wider, pedestrian accidents increase. The safest residential streets are those no wider than 8 metres (ITE, 1997).

Parking on both sides of a local street provides "side friction" for passing motorists, effectively keeping travel speeds low (approximately 25 to 30 kph). Narrow streets become "queuing streets" where cars pull into spaces between parked cars to give the right-of-way to approaching vehicles (Burden, 1999).

25.1 Buffer
Busy streets are more comfortable for pedestrians if there is something to separate them from moving vehicles. Buffering can be as simple as creating wide sidewalks edged by boulevard infiltration parking strips, or as grand as building an arcade over the sidewalk. Street furniture, trees, bike racks, mailboxes, and newspaper boxes also provide a buffer between pedestrians and cars.

8m

25.2 Narrow
A narrow street is more comfortable for walking than a wide street. Narrow the street by decreasing the width and/or number of driving lanes (as in queing "take-your-turn" streets), and by reducing the front-yard setback of buildings. Street trees easily shade narrow streets and provide a protective ceiling over people walking, playing, or talking below.

FURTHER RESEARCH

Karen Swirsky et al. 1999. *Main Street…When a Highway Runs Through it: A Handbook for Oregon Communities.*

Burden, *Streets and Sidewalks, People and Cars: The Citizens' Guide to Traffic Calming.*

Institute of Transportation Engineers, *Traditional Neighbourhood Development: Street Design Guidelines.*

Insurance Corporation of British Columbia, *Safety Benefits of Traffic Calming.*

Swift, *Residential Street Typology and Injury Accident Frequency.*

26 Create a sense of enclosure

"We raise to heaven that which is valuable to us: emblems of faith, enlightenment or government. But this vision must also be supported by small-scale buildings which reflect our intimate lives." HRH the Prince of Wales, Parabola, Winter 1993.

Vertical elements like trees and buildings create ceilings and walls for the space of the street. This helps to create a more pedestrian scale on the street and encourages drivers to slow down. A height-to-width-ratio of between 1: 2 and 1:3 provides an appealing sense of enclosure. Measure the width between building fronts or trees, and the height from the sidewalk to the building cornice. Trees are very effective at enclosing streets when it is not viable to construct multiple-storey mixed-use commercial buildings.

Related Charrette Strategies
E2; E3; F3; G2; H3; M2; O2

Related Guidelines
16.3; 22; 24; 25; 39

26.1 The Main Street
Ideally, a Main Street with a 25 to 35 metre wide right-of-way would have a continuous 2 to 3 storeys (around 10.5 metres) facade located at the sidewalk edge to create a "street wall." Buildings may include a range of heights within the 1:2 to 1:3 ratio spread. Street trees help enclose the space by providing a leafy "ceiling" over sidewalks and street.
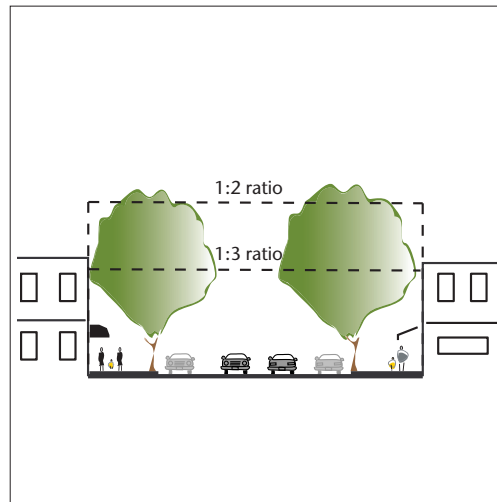
26.2 The Residential Street
Street trees and houses can provide a pleasureable sense of enclosure for -residential streets. Use street trees that, at maturity, will form a canopy over at least 60% of the street. This will create a leafy ceiling that will provide partial shelter from rain as well as shade for those strolling below. Set houses close to the street, where they will provide a "friendly face on the street", making a safer street where it is possible to get to know your nieghbours.