



Policy Title: Pedestrian Policy
Policy Number: TP010
Report Number: LPT2008-36
Approved by: City Council
Effective Date: 2008 July 14
Business Unit: Transportation planning

BACKGROUND

Based on previous Council-approved policies and directions, The City of Calgary is committed to design and operate a city in which walking is a meaningful transportation choice for social and economic interaction. This can be achieved by providing well-designed and operated, direct, convenient, safe and comfortable pedestrian routes and facilities.

The Pedestrian Policy and Needs Report consolidates and aligns with previous Council-approved policies and direction such as imagineCALGARY, [the eleven Sustainability Principles](#) and The Transportation Hierarchy and reflects The City of Calgary's commitment to provide sustainable, non-motorized modes of transportation.

The Pedestrian Policy and Needs Report identifies the basic transportation needs of pedestrians and is based on best practices from North America and Europe.

Council approval of these reports will give Administration the direction to move forward in creating pedestrian design guidelines for Calgary and in revising our current standards to reflect the transportation needs of pedestrians.

PURPOSE

The intent of this policy is to:

- a) *Re-affirm the importance* of walking as a meaningful, non-motorized choice of transportation
- b) Establish broad, city-wide policies that *provide direction and guidance* on how to plan, design, build, operate and maintain a city where walking is a meaningful form of transportation for social and economic activities.



POLICY

The City of Calgary will use the following policies to support walking as a year-round mode of transportation that is connected, convenient and obstruction-free, and accessible regardless of age, gender, income, culture or ability:

1. Plan and build compact, mixed-use communities.
2. Give priority to the planning, design, implementation and operation of pedestrian routes and facilities with all land use and transportation planning and design.
3. Improve existing pedestrian routes and facilities and build missing links.
4. Design facilities, educate the public and enforce laws to increase acceptance and understanding and decrease conflicts among the users of pedestrian facilities.
5. Give priority to pedestrian route in everyday maintenance and facility improvements in yearly programs.
6. Provide pedestrian routes that are of engaging character, safe and feel secure.

Pedestrians' Basic Transportation Needs

1. Connectivity and convenience
2. Space to travel
3. Routes free of obstructions
4. Character and a feeling of safety and security.

[See attached report for further information](#)

PROCEDURE

The above policies and needs will be used in several areas including the development process, capital projects, pedestrian projects, maintenance and replacement activities planning and prioritization.

Administration's next step of creating pedestrian design guidelines, that reflect the basic transportation needs, will clarify procedures.

AMENDMENTS

None. New Policy



PEDESTRIAN POLICY AND NEEDS REPORT

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PEDESTRIAN POLICY AND NEEDS REPORT



Goal

To design and operate a city in which walking is a meaningful transportation choice for social and economic urban interaction. The goal can be achieved by providing well-designed and operated direct, convenient, safe and comfortable pedestrian routes and facilities.

Previous Council direction and Council-approved policies

- 2006-2008 Council Priority 2.1: Encourage alternate forms of transportation
- Sustainability Principles (2007)
- Transit Friendly Design Guidelines (2006)
- Transit Oriented Development Policy Guidelines (2005)
- Municipal Development Plan (1995)
- Calgary Transportation Plan (GoPlan) (1995)
- Sustainable Suburbs (1995)

Guiding Principle: Create walkable environments. Create pedestrian-friendly environments with an interconnected street network to ensure walkable access to commercial and public services and amenities. Streets and arterials are designed for walking, cycling, transit access and cars.

Sustainability Principle 2, Sustainability Principles for the Calgary Integrated Land Use and Mobility Plan, 2007

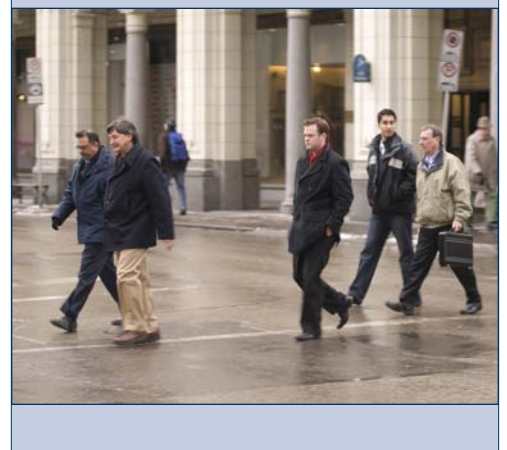
Pedestrian policies

To support walking as a viable year-round mode of transportation that is connected, convenient, obstruction-free and accessible to all regardless of age, gender, culture or ability:

1. Plan and build compact, mixed-use communities.
2. Give priority to the planning, design, implementation and operation of pedestrian routes and facilities with all land use and transportation planning and design.
3. Improve existing pedestrian routes and facilities and build missing links.
4. Design facilities, educate the public and enforce laws to increase acceptance and understanding and decrease conflicts among the users of pedestrian facilities.

Sidewalk contacts are the small change from which a city's wealth of public life may grow.

Jane Jacobs –
Urban writer and activist

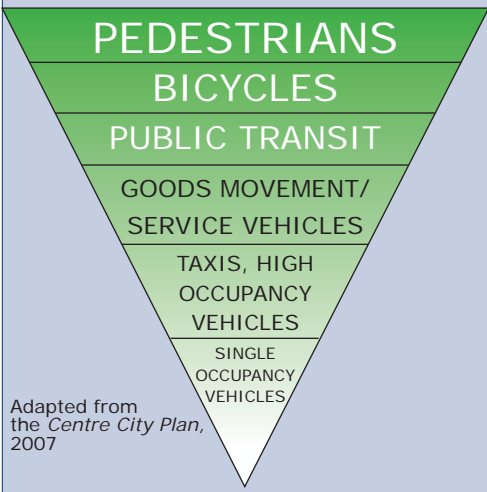




PEDESTRIAN POLICY AND NEEDS REPORT

The Transportation Hierarchy

Regardless of how someone travels, they will at one point be a pedestrian during their trip. This principle is best expressed by The Transportation Hierarchy illustrated below. Pedestrians and cyclists are given the highest priority because of the vitality they add to the public realm and because of their low environmental impact. Further, pedestrians feed into the transit system. Transit is given a high priority because of its ability to move people directly and efficiently with a low environmental impact. Commercial vehicles and trucks, including emergency vehicles, are a higher priority than personal vehicles because of the essential services they provide to the economic life and safety of the city. Single occupant vehicles are placed at the bottom of the hierarchy because of their significant environmental impact and high physical space needs per person served. This hierarchy will be used when reviewing or developing new plans, policies and strategies and when designing the public realm, including streets, sidewalks, open spaces and the +15 system. Further, it will be used when reviewing plans for new buildings and public facilities, ensuring that they support the development of a walkable, “green” and vibrant city.



5. Give priority to pedestrian route and facility improvements in everyday maintenance and yearly programs.
6. Provide pedestrian routes that are of engaging character safe and feel secure.

These policies should be carried out by work done in the following areas:

- Development process
- Capital projects
- Pedestrian projects
- Maintenance and repair work

Definition of a pedestrian

Pedestrians can generally be defined as persons walking or jogging, persons using wheelchairs or mobility aids, people walking their dogs, people with children’s strollers, in-line skaters, and skateboarders.

Pedestrians’ basic transportation needs

High quality pedestrian facilities and routes can meet the design parameters of The City and the needs of pedestrians as follows:

- 1. Connectivity and convenience**
- 2. Space to travel**
- 3. Routes free of obstructions**
- 4. Character and a feeling of security and safety**

1. Connectivity and convenience

A connected pedestrian network offers better access to more places, providing more route choices so that driving isn’t necessary. In residential areas, examples of connected facilities include sidewalks that connect to the community mailboxes and walkways or pathways that connect to pedestrian crossings at intersections.

A walking route should be direct and convenient to the destination. Examples of direct pedestrian routes include sidewalks or pathways on both sides of bridges, walking or cycling short-cuts such as pathway connections between houses to bus stops, shops or



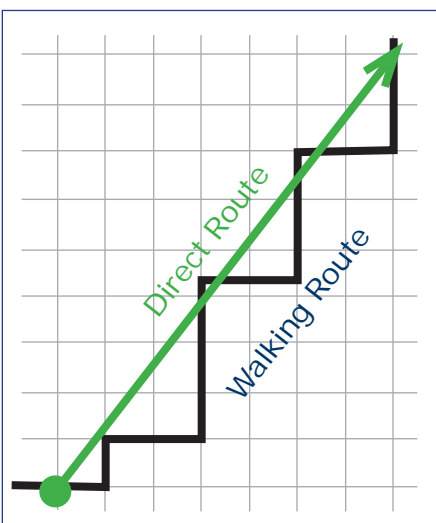
schools, and pedestrian and bicycle-only grade-separated crossings across major barriers such as high-volume roads, rivers and train tracks.

Connectivity is necessary through auto-oriented places such as alleys, parking lots and parkades. Pedestrians need clearly marked and well-lit routes through parking lots and parking structures. The main entrances of buildings should face the pedestrian routes to the bus stop, sidewalk or corner of an intersection.

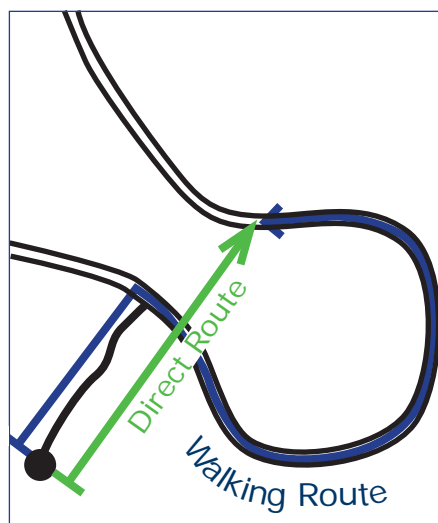
A convenient pedestrian network is the result of actions such as keeping sidewalks open during building construction, or providing clearly marked detour routes if sidewalks must be closed for a minimum duration of time.

At intersections, adjust traffic signal timing, devices and operation to benefit pedestrians, such as pedestrian countdown timers and scramble crossings, to increase convenience and safety for pedestrians by reducing delay times and the likelihood that a pedestrian may choose to cross before it's safe.

In the winter, snow should be removed from the side of the street if there isn't sufficient snow storage space to provide a satisfactory pedestrian clear width on the sidewalk. Snow should be stored on the downhill sides of pathways and sidewalks so that the melted snow will not flow over the pedestrian routes and later freeze.



A walking route that is direct.



A walking route that is not direct.

Benefits of walking

Social

- Improved health (e.g. reduced risk of cancer and heart disease, which are the leading cause of death in Calgary) (1)
- Universal mobility: walking is available to all people, regardless of income, mobility, ability, age or gender
- Energized communities: walking supports and encourages the growth of services within short distances, fosters interaction between people and sustains public transit service.

Environmental

- Decreased greenhouse gas emissions compared to driving
- Decreased energy consumption compared to driving
- More efficient use of land

Economic

- Lower health care costs
- Increased employee productivity due to physical activity and overall wellness (2)
- Increased attraction of new residents, small businesses and tourism
- Reduced personal transportation cost



Pedestrian-oriented or pedestrian-friendly

An environment designed to make travel on foot convenient, attractive and comfortable for various ages and abilities (i.e., welcoming to persons with vision loss, hearing loss, mobility or developmental disability). Considerations include directness of the route, interest along the route, safety, amount of street activity, separation of pedestrian and auto circulation, street furniture, surface material, sidewalk width, prevailing wind direction, lighting, intersection treatment, curb cuts, ramps and landscaping.

Adapted from Calgary Municipal Development Plan, 1996



2. Space to travel

Design envelope

- A person walking occupies 0.9m of width (includes a “no touch zone”); a person in a wheelchair requires 1.2m clear operating space; two people passing each other need 1.8m to 2.4m to pass each other. (3)
- The design envelope for the horizontal clear space is a person in a wheelchair; for the vertical clear space the design envelope is a person with vision impairment.
- Overhanging elements in the pedestrian clear zone should have a vertical clearance of at least 2.4m. (4)

Flow behaviour

- Pedestrians often travel side by side in pairs.
- On sidewalks, pedestrians do not travel in lanes like vehicles do. They move from side to side within the clear width. (5)
- On stairways, pedestrians travel in lanes like vehicles do. (6)

Sidewalk zones

Sidewalk zones can generally be listed as follows: (4)

- Edge: closest to the curb; may contain parking meters, car door swing paths, trees, vegetation and snow storage; bike lanes and parked cars serve as physical and psychological buffers
- Furnishings: may contain streetlights, fire hydrants, signs, trees, newspaper boxes, garbage containers, bike racks, benches, and transit shelters
- Clear or throughway: the space available for pedestrian travel
- Frontage or shy: farthest from the curb; includes the distance to a drop-off or horizontal obstruction; provides space for stopping/window shopping.

The width required for each zone depends on the land use and pedestrian activity levels. For example, in areas with high pedestrian volumes such as an employment centre, greater throughway widths are needed.

PEDESTRIAN POLICY AND NEEDS REPORT



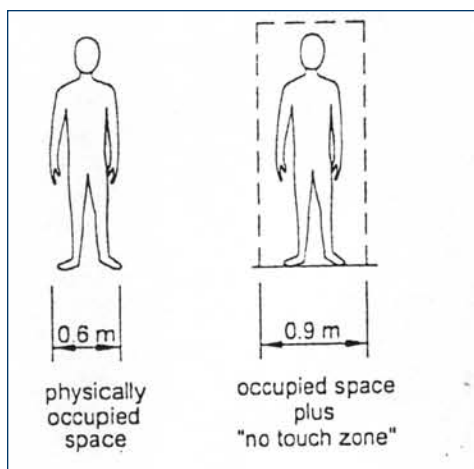
Pedestrian facility width

The recommended sidewalk width depends on the context: a sidewalk of 1.5m may be appropriate in some areas, but a width of more than 2.2m is desirable so that two people using mobility devices or wheelchairs can pass each other.

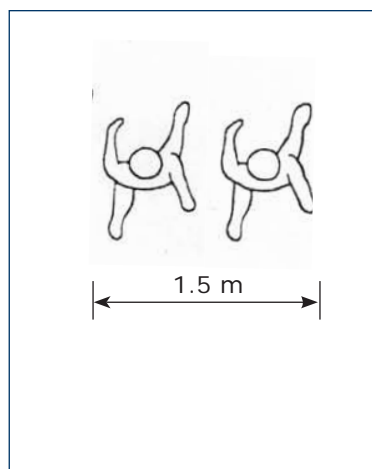
In commercial areas with transit service, a sidewalk that is wider than 3.0m may be required. At transit stops, the sidewalk must be wide enough for transit patrons to wait, board and get off the bus while other pedestrians walk past.

Recommended sidewalk widths by context

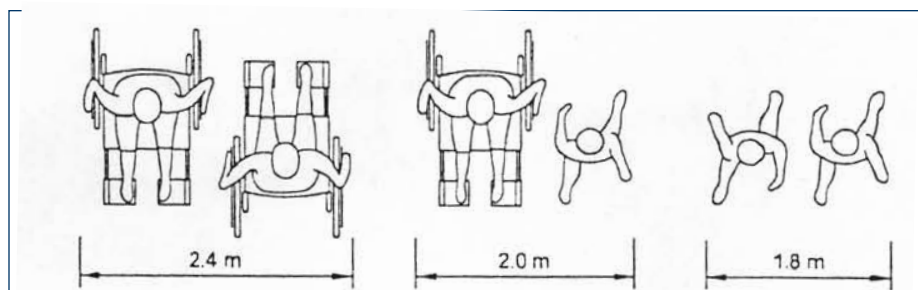
Sidewalk Width (m)	Context
1.5 (not against curb)	Two friends walking side-by-side (3)
2.0 (against curb)	Two friends walking side-by-side (3)
at least 2.4	Commercial areas (3), Hospitals and nursing homes
about 3.0	Transit zone (3)



Space for a person walking (3)



Space for friends walking side by side (3)



Space for persons passing each other while walking and using wheelchairs (3)

ISC: Unrestricted

Pedestrian trip distance and duration

- For residential community planning purposes, a reasonable walk is about five minutes (400m) along a safe, convenient and direct pedestrian route to adjacent residential areas, transit stops and neighborhood activity centres such as schools, parks, commercial and industrial areas and office centres. (7)
- In 2001, 41% of Canadians walked to or from work or school, or to do errands. Those who walked to commute did so for 153 days and walked for 40 minutes a day. (8)





PEDESTRIAN POLICY AND NEEDS REPORT



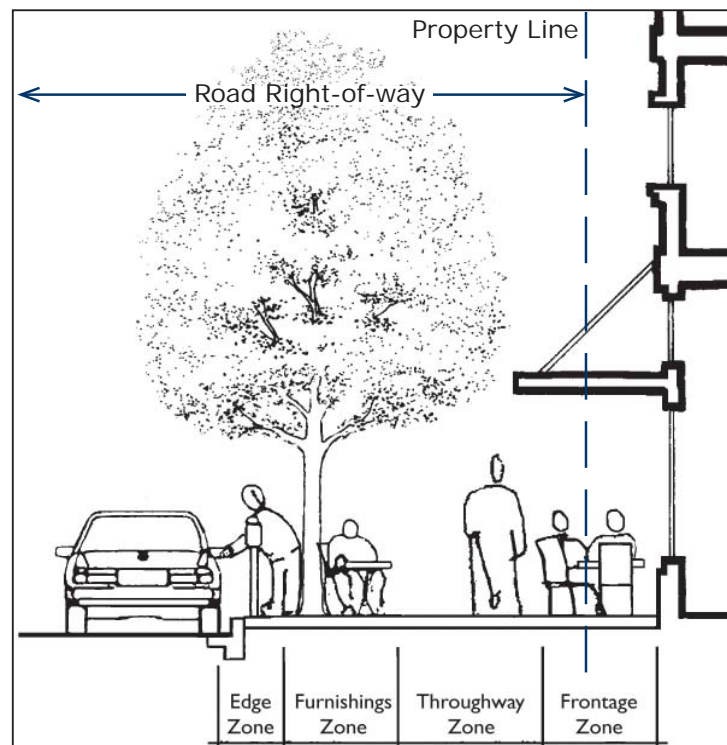
Pedestrian clear widths must be respected on all types of pedestrian infrastructure, including pedestrian/bicycle overpasses, vehicle bridges, multi-use pathways, and walkways. Additional clear width may be required if a pedestrian overpass also provides bicycle access.

New vehicle traffic bridges should include pedestrian routes on both sides. Existing pedestrian/bicycle overpasses and vehicle bridges should be upgraded to provide adequate pedestrian clear widths whenever possible.

3. Routes free of obstructions

Physical obstructions for pedestrians include signage, traffic control equipment, utility elements, landscaping, street furniture, gates and fences if they are located within the pedestrian clear space.

An uneven walking surface can present a tripping hazard: tree grates, parkade grates or interlocking pavers should be placed outside of the pedestrian clear space. Smooth surfaces are critical for the comfort of people in mobility devices.



Sidewalk zones

Example: Predominantly commercial ground floor use with on-street parallel parking. (4)

PEDESTRIAN POLICY AND NEEDS REPORT



Changes in elevation should be designed with smooth ramps incorporating gentle curves instead of narrow, abrupt switchback turns. Missing pedestrian curb ramps at intersections and pedestrian crossings are obstructions for people using mobility devices, wheeled carts or strollers. If changes in elevation are too steep or too long, they become obstacles for people with disabilities. Slopes between 4% and 5% are recommended. (9) The normal cross-slope of pedestrian routes should be 2% for pedestrian safety and surface drainage. (3)

Materials on the surface of the pedestrian route, such as water, ice, snow, gravel or debris should be removed promptly to ensure accessibility for all pedestrians.

During construction, pedestrian routes must offer a smooth, dry walking surface with smooth vertical transitions and freedom from obstructions and materials that interfere with pedestrian mobility on the route.

The usable pedestrian width is reduced by 0.4 to 4.0m on either side of a sidewalk at physical obstructions:

Reduction in usable pedestrian width

Physical Condition	Reduction in Usable Pedestrian Width (m)
Curb, short wall or fence	0.4 (3)
Building face	0.6 (3)
Building face with window display	0.9 (3)
Light pole	0.8-1.1 (5)
Traffic signal poles and boxes	0.9-1.2 (5)
Benches	1.5 (5)
Planter boxes	1.5 (5)
Newsstands	1.2-4.0 (5)

Comfort

Space for pedestrians must provide barrier-free comfort for travelling and waiting. Comfort is affected by physical obstructions, the pedestrian's separation from traffic, shade (in summer), sunlight (in winter), route illumination, and informal "eyes on the street" provided by round-the-clock pedestrian activity and urban design that focuses on windows, doors and high-quality edges on the pedestrian route.

Design speed

- On a sidewalk, the typical pedestrian walking speed is 1.5m/s (the same as 5.4km/h or 900m in 10 minutes). (5)
- At traffic signals, recent research recommends a walking speed of 1.1m/s for the general population and 0.9 m/s where 20% or more of the pedestrians are elderly or have disabilities. (10)





Transportation choice

- In Canada, 6% of commuting trips are made by walking. In Calgary, walking makes up 5% of commuting trips - and almost a third of all commuting trips are shorter than 5km (11), a distance that can be walked in under an hour.
- In Calgary, walking makes up 13% (465,000) of all personal trips every day. Most of these daily walking trips are made by adults while away from home. In contrast, the majority (85%) of the daily walking trips made by seniors start or end at home. (12)
- In Calgary, every weekday, over 7,000 pedestrians enter the downtown between 7 and 9 am and then leave between 4 and 6 pm. (13)
- About 250,000 passenger boardings onto a bus or LRT train happen every day in Calgary. These trips, like all transit trips, begin and end as walking trips. (14)



Usable pedestrian space (3)



3. Character and a feeling of security and safety

Particular attention needs to be given to the design of pedestrian environments to facilitate and encourage the establishment of safe and lively urban spaces. (Calgary Municipal Development Plan 1996)

Thoughtfully designed streetscapes, buildings and sites can create inviting places in which pedestrians want to walk while feeling secure and safe. Concerns for pedestrian safety include the risk of injury by tripping, slipping, falling or being in a collision with traffic.

Safety should be inherent to the design of pedestrian facilities: for example, by providing smooth surfaces; pedestrian ramps; clearly marked pedestrian crossings; signal timing, devices and operation for the convenience of pedestrians; and illumination onto pedestrian routes and crossings.

Security concerns for pedestrians include the risk of injury caused by another person. To mitigate security concerns, the principles of Crime Prevention through Environmental Design must be applied to the design and retrofit of public spaces.

PEDESTRIAN POLICY AND NEEDS REPORT



Pedestrian routes should offer many opportunities for directional change so that a pedestrian does not feel isolated on a route. Pedestrian routes should also offer open views to the sides of a route and out of the ends of tunnels or ramps.

Appropriate land uses and activity along a route offer passive surveillance. The urban environment can appeal to pedestrians and encourage social interaction by offering different views, ambiance, public art, appropriate lighting and spaces for rest and play.

Conclusion

Walking is a meaningful transportation choice for social and economic urban interaction in a city with well-designed and operated, direct, convenient, safe and comfortable pedestrian routes and facilities.

Excellence in design of pedestrian facilities will increase the choice of walking as a preferred travel mode for all Calgarians.

Pedestrian-oriented design documents

- *Promoting Sustainable Transportation through Site Design*, Institute of Transportation Engineers (ITE) Proposed Recommended Practice, 2004
- *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, ITE Proposed Recommended Practice, 2006
- *Geometric Design Guide for Canadian Roads*, Transportation Association of Canada (TAC), 1999
- *Smart Growth Transportation Guidelines*, ITE Proposed Recommended Practice, 2003
- *Highway Capacity Manual*, Transportation Research Board, 2000
- *Transit-Friendly Design Guidelines*, City of Calgary, 2006
- *Access Design Guidelines*, Advisory Committee on Accessibility, City of Calgary, 2002





References

- (1) *Health Status Report*, Calgary Region, 2000.
- (2) Katzmarzyk, Peter T. and Janssen, Ian. "The Economic Costs Associated with Physical Inactivity and Obesity in Canada: An Update." *Canadian Journal of Applied Physiology* 29 (2004): 90-115.
- (3) Geometric Design Guide for Canadian Roads. Transportation Association of Canada, 1999
- (4) *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, Institute of Transportation Engineers Proposed Recommended Practice, 2006
- (5) *Highway Capacity Manual*, Transportation Research Board, 2000.
- (6) *Transit Capacity and Quality of Service Manual*, Transit Cooperative Research Program Report 100, 2003.
- (7) *Course on Bicycle and Pedestrian Transportation*, Federal Highways Administration, 2001.
- (8) Results of the 2001 Physical Activity Monitor random telephone survey as reported in C. Cameron, C. Craig, T. Stephens and T. A. Ready, *Increasing Physical Activity: Supporting an Active Workforce*, Canadian Fitness and Lifestyle Research Institute, 2002.
- (9) *Access Design Guidelines*, Advisory Committee on Accessibility, City of Calgary, 2002
- (10) *Improving Pedestrian Safety at Unsignalized Crossings*, National Cooperative Highway Research Program Report 562/Transit Cooperative Research Program Report 112, Transportation Research Board, 2006.
- (11) *Commuting Patterns and Places of Work of Canadians, 2006 Census*. Statistics Canada, 2008.
- (12) Calgary Regional Transportation Model, 2005.
- (13) Calgary Central Business District Screenline Data, 2006.
- (14) Calgary Regional Transportation Model, 2006.