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Introduction

Sustainable Transportation is a term that may not be familiar to all people, but it is a concept that is vitally important to our communities and to our nation. The Institute of Transportation Engineers (ITE) defines Sustainable Transportation as walking, cycling and transit\(^1\), to which can be added all non-motorized transportation, such as wheelchairs and rollerblades. But even this is not the whole picture – Sustainable Transportation also needs to allow for the safe and efficient use of the private automobile alongside all the forms of non-motorized transportation. Although provision for private automobile use is necessary, the idea is to encourage transit and non-motorized transport to be the modes of choice as much as possible.

Transit is a fundamental part of Sustainable Transportation. An efficient transit system that is well integrated into a neighbourhood gives residents an option that is economical, convenient, as well as environmentally and socially sustainable when compared with driving. Winnipeg Transit is seeking an opportunity to work with developers as they build new neighbourhoods and revamp older ones. This guide will aid anyone involved in the planning, design and construction of projects in Winnipeg to promote Sustainable Transportation, with a particular focus on transit. The benefits to developers, residents and the city are numerous, and we all have an opportunity to make Winnipeg a livelier, safer, cleaner, more efficient and more accessible place to live.

Whatever project you’re working on, use this guide right from the start. Starting early on with the principles of design for Sustainable Transportation (as early as the concept phase) is easier and less costly than trying to squeeze them in at the end of a project. Residents can tell if their well-being and sense of community is a priority, or if it is merely an afterthought.

To get the most out of this guide, always think of yourself as a pedestrian first and foremost. Whether we walk nearly everywhere, or just from the bus stop, car or bike rack to a building, we are all pedestrians. Any place in this design guide, when you see the word “pedestrian”, take this to mean someone who is walking, cycling or in a wheelchair. Ask yourself if your design makes it easy and safe to get around on foot or in a wheelchair. It’s only when we think of ourselves first and foremost as pedestrians, and really look at how our designs can make it more inviting to walk, that we can truly promote Sustainable Transportation.

Why Design for Sustainable Transportation?

Everyone benefits from an increase in Sustainable Transportation. Although the purpose of this manual is to provide guidance for building a neighbourhood that is transit-friendly, and that will allow for the provision of an integrated transit system, the focus is on transport as a whole. Each form of sustainable transportation depends on the others. You cannot have an efficient and useful transit system if a neighbourhood does not provide an environment that allows people to be pedestrians, cyclists and transit users with equal ease. The elderly, as well as the mobility-and-sensory impaired are key users of the network, and the design must be accessible to them as well. When transit use, walking and cycling are all linked together and actively promoted through proper design, all sorts of benefits can be realized by the community.
why design for sustainable transportation?

The Environment

It is now widely accepted that the increasing use of the private automobile is causing damage to the environment in many different forms. From pristine land used to build new roads, to pollutants emitted by such a large number of vehicles, the increase in private automobile use cannot be sustained without increasingly damaging the environment. “In one year alone, a typical automobile driven 17,000 km emits more than four tonnes of greenhouse gases, necessitates as many as eight spaces for parking at home, work, stores and other locations, and contributes to nearly 3,000 motor vehicle related fatalities in Canada.”

Low-technology solutions brought about by smart planning and design, such as the promotion of sustainable transportation, offer the most cost-efficient and effective solution to many problems.

High-tech solutions like fuel-cell technology, hybrid gas-electric engines and other increases in fuel efficiency for private automobiles only address the environmental concerns of the emission of greenhouse gasses and other pollutants of each individual vehicle, and also the economic consideration of dwindling fossil-fuel supplies. However, there is a danger that reducing driving costs through increased fuel economy could increase private automobile use, which would eliminate any environmental gains. Encouraging people to walk, cycle and use transit will reduce congestion, which in turn will reduce greenhouse gas emissions as much as the high technology solutions for automobiles.

The promotion of sustainable transportation coupled with the improvements in fuel technologies, offers the best solution for reducing vehicle pollution.

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why design for sustainable transportation?

Another important factor to consider is the land used for expansion of the road network. As cities expand, they overtake farmland, wetlands and other environmentally sensitive areas. A reduction in private automobile usage realised through an increase in sustainable transportation means that less land is paved over for new roads. The Canadian Transportation Act Review Panel states that investment in transit contributes to “major reductions in what would otherwise be needed by way of urban arterials and expressways, with their associated infrastructure costs, congestion and environmental impact”\(^3\). Significantly for Winnipeg, an increase in impervious paved areas means an increase in storm runoff, which is a great danger to a city such as Winnipeg, which frequently experiences flooding, sewer overflows and storm water backups.

why design for sustainable transportation?

Quality of Life

Quality of Life can mean many things to many people. Health, Safety, Accessibility and Community Life all contribute to the quality of life in a community. Sustainable Transportation contributes to all aspects of quality of life, and a properly designed community with an integrated transit system will make a vast difference to people living there.

Although the term Transit Oriented Development (TOD) is relatively new, the concept is not. Think about the old style neighbourhoods that people love so much – the ones where everyone is out walking, and where there can be anywhere from a few are small stores scattered throughout the area, to exciting streets loaded with shops and cafés. Instead of wondering why Europe, Montréal, Vancouver, New York, and Boston have such a vibrant street life with interesting neighbourhoods, we can do something to change Winnipeg. Too many people think that only older neighbourhoods, downtown areas, big cities and even small towns can feel alive. The higher density, mixed-use developments that are a signature of areas with vibrant street life are also the hallmarks of Transit Oriented Development, and this approach to planning a neighbourhood will help encourage lively streets filled with people enjoying a better quality of life.

Quality of life in urban areas is of great concern to people in Winnipeg and the rest of Canada. And according to the Canadian Urban Transit Association, “92 percent of urban Canadians think that public transit makes their community a better place to live, and 73% feel that transit benefits them personally”.

TOD puts the focus back on the people who live in the community, and not on the cars they drive. It even goes far beyond the use of transit. If someone needs to buy a litre of milk, is it good practice to make it convenient for them to drive 10 minutes to the store, walk 3 minutes across the parking lot, spend several minutes buying the milk, and then make the same trip in reverse for a total trip of over 30 minutes? Or is it better to provide a neighbourhood that enable them to walk or even drive to a local store, buy the milk, and be home in less than 20 minutes, while not having to deal with the congestion problems of driving to the nearest big-box centre? While a 10 minute time-savings may not seem like much, it makes a big difference in terms of the feeling of community spirit.

why design for sustainable transportation?

TOD encourages people to “buy local” and support their community. It also gets people out walking and cycling, which improves health and increases community interaction. The reduction in vehicle travel and the provision of more sidewalks, walkways and other paths, as well as shorter distances to amenities, all help to safely accommodate vulnerable road users, including pedestrians, cyclists, the elderly and the disabled. This means that the community will be full of life because everyone can get out and be part of it.

When planning a Transit Oriented Development, the basic concepts to keep in mind are higher density mixed-use development patterns, an integrated transit system, walkable distances, and the safe accommodation of pedestrians, cyclists, the elderly and the disabled. Higher density mixed-use means that people don’t have to travel very far to access the amenities they desire, including shops, cafés and small offices. An integrated transit system means that people won’t necessarily have to resort to driving to work and shopping, where they deal with and contribute to the already intense road congestion. Safe accommodation of all pedestrians and users of non-motorized transportation means that people will feel safe getting around their own local community, and will enjoy living, shopping and even working there.
why design for sustainable transportation?

The Economy

The economic benefits of having a neighbourhood designed for sustainable transportation are simple. According to the Victoria Transportation Policy Institute, “in several case studies, improving walking conditions in a community significantly increased retail sales and property values”\(^1\). Quite simply, it is good business to make sustainable transportation a fundamental part of the design of any new development. If people can walk, take a bus or drive a very short distance to shops, they are more likely to spend their money within their neighbourhood. This has the double effect of increasing residential property values thanks to the convenience of living in the area, and it also serves to make it more attractive to retailers and small professional offices as it increases both the value and accessibility of commercial property.

The economic savings of living in a walkable area with a well-integrated transit system are well established. A recent study shows that “households in automobile-dependent communities devote 50% more to transportation (more than $8,500 annually) than households in communities with more accessible land use and more multi-modal transportation systems (less than $5,500 annually)\(^2\). This economic benefit alone will make a development incorporating sustainable transportation more attractive to prospective residents and businesses.

Individually, these gains are small. But combined neighbourhood-wide, and ultimately city-wide as more and more transit oriented developments are built, they can change the face of a city and strengthen the local economy.

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Design Guidelines

There are many design elements that are common to all forms of development. Even though they look much different in the end, the principles guiding Designing for Sustainable Transportation are the same for Residential, Urban and Light Industrial areas.

According to the NCHRP, the success of a Transit Oriented Development can be measured by several factors. Among these are: increased transit use, reduced traffic congestion, increased local retail sales, improved public perception, increased land use density, reduced distance to transit and other services, improved access to parking (though not necessarily an increase in available parking), and many others. By actively seeking to encourage these results, the success of a new development can be greatly increased.

Winnipeg Transit’s role is to provide quality transit service throughout Winnipeg. The provision of transit service goes far beyond simply scheduling and running buses. **Planning for transit service** is very important to Winnipeg Transit - it’s at the core of what we do - as it allows us to maximize the efficiency of our existing services, and to expand and change our route network to best suit the people of Winnipeg.

**Please call us.** We want to work with you, from the beginning, to ensure that we can provide the best transit service possible for your future residents or tenants.

**Talk to us early.** The earlier Winnipeg Transit gets involved in the conceptualization, design and construction of your project, the easier and cheaper it will be to provide for the convenient, simple and efficient operation of Winnipeg Transit services.

Contact the Transit Planning Section at Winnipeg Transit by calling 986-5777.
Walking Distance, Pedestrians and the Urban Environment

Walking Distance and Pedestrian Environment are the defining factors for making a community liveable. All amenities, i.e. shops, transit, community clubs, schools and seniors housing, need to be within walking distance of homes and one another. It may be an oft-repeated mantra, but high-density mixed-use is the key.

This section of the design guidelines deals with areas where people live. It starts with big picture concepts, and narrows down to small details.
Town Centres are the focal point of neighbourhood life. When designing and building a new neighbourhood, having a town centre aids dramatically in the movement of people. Town Centres generally have a Main Street-style arterial running down the centre that is easily serviced by Transit vehicles. Feeder services from the surrounding neighbourhood connect to the Main arterial street, where people can then transfer to major routes for going to other areas of Winnipeg.

The most important thing for an effective Town Centre is to have a mix of residential and commercial space that allows for condominiums, townhouses and apartments, as well as retail and office use. Small shops, restaurants and cafés should be encouraged by using building designs that promote these uses.
By using a pattern of density gradation, everyone in the community can travel around easier, and have better access to amenities and services. **Transit can service the highest density areas of the neighbourhood with ease and efficiency**, which will draw people to the **town centre** as they arrive in and leave the neighbourhood. This aids the economic development of the local business community, and provides a convenient way of keeping people in touch with their community.

If lower density areas are to be part of the development, the density should decrease as you move away from the town centre. This allows easy access to all areas of the neighbourhood for all residents, as well as a variety of housing types for different people.
All buildings, especially along the Main arterial street should be 2-4 stories. Building set no further back than the edge of the street Right of Way (ROW), except for very large buildings which can have up to a 7 metre setback. Sidewalks are wide enough for café patios or store displays, and cyclists are accommodated on the roadway.

Having the main entrance on the street front (above) makes a big difference for the pedestrian. When the entrance faces the parking lot (below) it tells pedestrians to stay away, and it makes for a long walk from the bus stop.
Neighbourhood Layout
The Fused Grid Pattern

The Canada Mortgage and Housing Corporation has studied the evolution of street patterns in Canada and identified the advantages and disadvantages of each progressive stage.

Incorporating the positive attributes of each stage, CMHC developed the Fused Grid system. It resembles the town plan of Savannah, Georgia from 1733, by structuring neighbourhoods that are composed of quadrants. These, like Savannah, have a central green space that connects to all roads and alternating major and minor arterials between quadrants. The fused grid allows for an intimate connectedness between quadrants for pedestrians and cyclists, easy access to transit services on adjacent arterials, and the simple and efficient movement of vehicles.
sustainable transportation design guidelines

All three of the options shown below allow for the simple and efficient operation of transit buses. However, only the Fused Grid System provides the connectivity within the neighbourhood that is necessary for pedestrians and cyclists to move about freely. Because anyone who isn’t driving can easily cross the grids through the open green areas, transit and other amenities are easily accessed. The grid of minor collectors and arterials allows for the movement of vehicles as easily as in the more common Conventional Loop and Cul-de-Sac and Traditional Grid systems. The Fused Grid System offers the best of all worlds.

Conventional Loop and Cul-de-Sac

- Hierarchical, with arterials, collectors and local streets
- Curvilinear at every level
- Discontinuous for pedestrian and vehicles
- Open space is located beyond walking distance for most residents

Modified Grid System

- A modified grid
- No loops or culs-de-sac
- The grid becomes discontinuous at the edge of each “neighbourhood”
- One collector-type road links site to regional arterials
- Most open space is located at the perimeter of “neighbourhoods”

Fused Grid System

- A continuous, open grid of arterials
- A discontinuous grid of minor collectors and local streets
- A continuous, open network of pedestrian streets, spaces and paths
- No through traffic in residential quadrants
- Corridors of mixed-use zones
- Open space within each quadrant part of the path system

For more information on the Fused Grid System, please contact the CMHC

www.cmhc-schl.ca
Isolated bays and cul-de-sacs make the provision of transit service difficult because bus routes end up being circuitous and indirect. Residents will avoid using transit because it will be too slow, and bus stops will be too far away.

The Fused Grid, or a similar system with an over arching grid pattern, allows buses to easily travel on direct routes through neighbourhoods. Buses should not be required to detour around developments - they should be able to freely travel right through in order to provide an convenient transit service for the residents.
Neighbourhood Layout
Street Standards for Transit

Roads passing through the centre of a neighbourhood are perfect for transit service, and should be built to collector standards. This allows for safe and efficient bus operations, which is very important, especially if residences will be located along the street. Even if no transit service is planned immediately, having a collector street passing through the centre of a neighbourhood allows for easy service expansion into the neighbourhood.

Collector streets should be built early on in the process of building a new community. This allows for the provision of transit service almost as soon as new residents move in. If streets are not immediately built to their final completed length, a temporary turnaround should be added at the temporary dead-end. This turnaround can later be used as a roundabout intersection, or a form of traffic calming once the street is extended.

Only a limited collector street network has been provided in the subdivision shown at right. When transit service is introduced, local controversy arises between those residents who desire better transit access, and those who wish to maintain their quiet residential street.
Access to Winnipeg Transit Services

Walking distances need to be minimized so that transit service is easily accessed by all residents in all types of weather.

400 m is the greatest distance that any pedestrian should have to walk from their home or work to the nearest bus stop. Although 400 m is set out as a maximum distance, it should be noted that distances of less than 400 m are a better option whenever possible.

By adopting the Fused Grid or a similar system, the distance to transit service can be minimized. This goes beyond simply getting to the bus - it allows people to move about more freely.

Any transit trip actually involves three components:

the walk to the bus stop
the wait at the bus stop
the journey on the bus

Research has shown that a reduction in walking and waiting time is twice as important to transit users as a reduction in travel time on the bus.

Accessibility, Visibility and Safety

Accessibility and mobility are about much more than just providing wheelchair ramps. Making a neighbourhood accessible, with a fully integrated and accessible transit system, means that right from the start, you need to focus on the mobility-impaired. Everyone, from senior citizens to young children, from the disabled to the able-bodied, should be able to move about safely and without any restrictions. Prominent signage and proper design are needed to ensure that people can easily locate transit facilities, that the facilities are safe, and that people can get on and off buses quickly and easily. This is not difficult, but it does require planning and forethought. All images in this section show the basic requirements for accessible design.

This section of the design guide focuses on the following:

- Pedestrian and Bicycle Travel Paths
- Curbs, Intersections and Crosswalks
- Transit Stops and Shelters

When people who are blind, deaf or confined to a wheelchair can get around.....everyone can get around.
In the previous sections, the importance of neighbourhood connectivity was identified. Just as buses shouldn’t be required to detour around neighbourhoods, so should pedestrians be able to walk short, direct routes through their neighbourhood. The Fused Grid or similar layout offers the connectivity that makes an area attractive to sustainable transportation.

Progressive development and sidewalks on both sides of collector streets are necessary. Making a pedestrian cross the road to continue their journey on the other side because there is only one sidewalk may not seem, at first glance, like a problem. But when the pedestrian is handicapped, elderly, or chooses to walk on the road because it is quicker, it creates a grave safety concern.
Travel Paths
Space Requirements and Surface Standards

For comfortable and convenient walking, it is necessary to have wide pathways that can accommodate children on bicycles and parents with strollers, as well as passing wheelchairs. Wheelchairs are an excellent standard - if wheelchairs can pass, everyone can be accommodated.

Sidewalks, paths and walkways need to meet certain minimum standards for safety for accessibility:

• Slopes (other than ramps) should be less than 1:20 (5%) along the travel path, and less than 1:50 (2%) cross-ways
• Concrete or asphalt should be slip-resistant, either by having a brushed finished or a naturally abrasive grain
• All surfaces must be smooth, level and self-draining
• All travel paths must be kept clear of snow, ice and debris
• Accessible travel paths should follow the shortest distance between two points
Clear travel paths are extremely important for accessibility. It is not enough to simply state that obstructions must be placed out of the paths of travel. **Unobstructed paths of travel must be part of the design.** This will ensure that any landscaping, signage, lighting, vending machines and other possible obstructions have a dedicated space, and that they will not encroach on the path of travel.
sustainable transportation design guidelines

Travel Paths Guidance

Where pedestrians must be guided through an area, they should be guided by the landscape. Make the pedestrian/bicycle route visible using obvious pavements/pavement treatments, lighting, signage, landscaping and streetscaping. People will follow the path if it looks like they should be walking along it, and those with a mobility or visual handicap can navigate the area more easily.

High contrast pavements/banding around planters and other obstructions if they are on the sidewalk

Any obstruction mounted on a pedestal must be no more than 27 inches from the ground

In more urban areas, building entrances should be marked with high-contrast pavements
Curbs, Intersections and Crosswalks

Curbs, intersections and crosswalks must all be designed to maintain the continuity of the clear, delineated walking paths presented in the previous section. The idea here is to help people find their way across a roadway safely, to make their choice of path clear to them, all the while providing an unobstructed path.

Painted pavement markings are a highly visible way to show people where to walk. High Contrast Pavements are an aesthetically pleasing way to delineate walking paths along routes and across roadways, if budgets permit.
Curb cuts allow for grade-level changes to be done with ease, especially for the elderly and the physically handicapped. If there is no curb cut, it is a practically impassable mobility barrier to a handicapped person.

**Location**
- Curb cuts should be provided wherever a travel path crosses a curb, and they should be entirely contained within the width of the sidewalk.
- Curb cuts at intersections should be at right angles to the street. Wrap-around cuts and single cuts at 45 degrees should be avoided.

**Dimensions**
- Regular curb cuts should be at least 920 mm wide (excluding flared sides) or at least 1500 mm wide if exposed to snow. Flared sides should be at least 600 mm on either side of the curb cuts.
- Traffic islands should either be cut to the level of the road surface, or have curb cuts on each approach with at least 1200 mm clear space between ramps.

**Surface**
- The surface of curb cuts should be point-free, slip resistant and free-draining in all weather conditions.
- Tactile Pavements, such as the one shown at right, should be used on the surface of the curb cut.
Sustainable transportation design guidelines

Slope
- Slope must be less than 1:8 (12.5%) for cuts less than 75 mm in height, and less than 1:10 for cuts between 75 mm and 150 mm in height.
- The slope of the flared sides should always be less than 1:10.
**sustainable transportation design guidelines**

**Bus Stop Platforms**

Bus Stop Platforms are where people wait for, enter and exit the bus. Winnipeg has a variety of different road and right-of-way conditions, and bus stops must be designed and built to be accessible within the limitations and confines of the available area. In the case of new developments, accessibility can be a part of bus stop locations from the outset through proper planning and design.

Sufficient space is required for people to waiting, entering and exiting. The people who are waiting for a bus must not interfere with the entry/exit process by standing in the way.
General Guidelines for Bus Platform Accessibility

- The sidewalk must be connected to bus platform, and not separated by grass, uneven paving blocks, or any other obstructions.
- If the platform is not a part of the sidewalk pavement or a widened section of the sidewalk, two paved connections with a minimum width of 1.5 m each must be provided.
- If a bus stop is a connection point to major routes, and cyclists are encouraged to cycle to the stop and then use bike racks on buses, adequate waiting areas must be provided for the cyclists. As an alternative, secure bike storage facilities could be provided at the stop so that cyclists would not need to bring their bicycles all the way to work.
- Use tactile pavements at boarding points to aid the vision-impaired to find where to get on the bus.
- At bus loops, textured paving and high-contrast pavement markings are needed to guide the vision impaired out of the loop and towards their destination, similar to the pavement markings recommended for Curbs, Intersections and Crosswalks.
sustainable transportation design guidelines

Bus Stop Platforms

Seating

- Accessible seats should have a seat height of 450 to 550mm and a seat depth of 400 to 500mm
- The front edge of a seat should be at least 600mm from the nearest travel path
- Seating should either face the street or the direction of approaching buses
- If the bus stop is located in an area where there is a possibility of people using the seating for sleeping or loitering, the seat should be divided by an arm rest, planter of other form of divider so that the space is not long enough for someone to lay down on
Bus Stop Platforms
Personal Space

Personal space is a requirement for both comfort and safety. If people waiting at a bus stop are forced to stand close to one another, they may find it uncomfortable and avoid using the bus. Safety is also a concern, because if there is too little room for the number of people waiting for a bus, some people may be forced to stand too close to the curb. The jostle of passing pedestrians, as well passengers getting on and off buses can also force people out into the road and into harm’s way. Therefore adequate personal space is a requirement at all bus stops.

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<td>A</td>
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As a general rule, Winnipeg Transit recommends a Level of Service of no less than C, according to the table at left. This allows for free or restricted circulation in most cases, while still maintaining a personal comfort zone during peak hours and other times of unusually high transit use.
**Bus Stop Platforms**

**Clearance Area for Ramp Deployment**

- The boarding/alighting section of the platform should be a minimum of 2.1m x 8.5m in order to accommodate the lowering of the wheelchair ramp and the movement of a wheelchair.

- The roadside should be built with a 150mm (6”) linear concrete barrier curb with no catch basin indentation in the immediate vicinity.

- The entire platform must be clear of any obstructions, including trees, newspaper boxes, waste and recycling receptacles. The City of Winnipeg By-Law prohibits newspaper boxes in the platform area.
When all elements of bus platforms are amalgamated, the area should be well-ordered, accessible, with a visible travel path for those walking past, a waiting area for passengers which may or may not include a shelter, and zones for boarding and alighting.

Because the available area, neighbourhood characteristics and rider demographics change from area to area, there are a large variety of layouts, and each platform will be unique. The following pages contain examples of typical bus stop platforms for Winnipeg, showing the areas required for buses, travel paths, seating, waiting, embarking and alighting, shelters and other street furniture and amenities.
**Sustainable Transportation Design Guidelines**

**Bus Platform Layout**
**Dense Urban Setting**

Guidelines for bus stops in a dense urban setting, including downtowns, town centres and TOD areas:

- Street furniture and signage, such as posts, benches, newspaper boxes, garbage receptacles should be located out of the travel path of transit passengers, pedestrians and snow cleaning crews.
- Shelter doors should face away from the curb.
- Minimum clearance between the curb and any object on site (shelter, signage, etc...) should be 0.3m (approx. 1')

*Image credit: Province of Alberta*
Guidelines for bus stops along a suburban or arterial boulevard (similar to Henderson Highway or St. Mary Avenue):

- Accessible travel paths should follow the shortest distance between two points
- Walkways must be well-maintained (stable, level pavement, well-drained)
- Waiting area for a wheelchair or stroller beside the bench
- Street furniture and signage, such as posts, benches, newspaper boxes, garbage receptacles should be located out of the travel path of transit passengers, pedestrians and snow cleaning crews
- Shelter doors should face away from the curb
- Minimum clearance between the curb and any object on site (shelter, signage, etc...) should be 0.6m (approx. 2')
**sustainable transportation design guidelines**

**Bus Platform Layout**
Wide Suburban or Arterial Boulevard

Guidelines for bus stops along a wide suburban or arterial boulevard (similar to Portage Avenue or Main Street Avenue):

- Accessible travel paths should follow the shortest distance between two points
- Walkways must be well-maintained (stable, level pavement, well-drained)
- Waiting area for a wheelchair or stroller beside the bench
- Street furniture and signage, such as posts, benches, newspaper boxes, garbage receptacles should be located out of the travel path of transit passengers, pedestrians and snow cleaning crews

*Image credit: Province of Alberta*
The front and rear door areas of a bus stop platform must be kept clear of trees, utility poles, fire hydrants, street furniture and other obstructions of pieces of infrastructure. Because of the different types and sizes of buses in use by Winnipeg Transit, all bus stop platforms must be able to accommodate all buses.
Near-side bus stops are located at the intersections where transit volumes are heavy but traffic and parking conditions are not critical. They are generally applicable where there signalized are many intersections and curb lane parking is permitted throughout the day. They are provided where right-turning traffic volumes are not appreciable. Bus operators prefer near-side stops because they make it easier to rejoin the traffic stream.
Far-Side bus stops are preferable where sight distance or signal capacity problems exist and where right or left turn movements by general traffic are heavy. They are also preferable wherever buses turn left, because they allow sufficient maneuvering distance from curb to left lanes and allow buses to stop after clearing the intersection.
Mid-block bus stops are generally applicable in downtown areas, where multiple routes require long loading areas that might extend an entire block. They can also be used where traffic, physical or environmental conditions prohibit near- or far-side stops and where major passenger generators exist.
**Bus Platform Layout**

Typical Bus Stop with Shelter (between bus doors) - Distances and Dimensions

At a bus stop where an advertising shelter with a bench has been placed, an advertising bench will not be installed.

**CLEAR SAFETY ZONE FOR PASSENGERS**

The shaded area represents the critical unobstructed area required by passengers for safely boarding & alighting a transit bus at a bus stop.

**Note:**
This diagram is a general guideline. All final locations of signage, street furniture and bus stops are to be determined by Winnipeg Transit's Operations, Maintenance, Planning & Schedules Division at each individual site.

All dimensions in this drawing are metric.
At a bus stop where an advertising shelter with a bench has been placed, an advertising bench will not be installed.

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CLEAR ZONE
The critical unobstructed area required by passengers for safely boarding & alighting a transit bus.

All dimensions in this drawing are metric.
sustainable transportation design guidelines

Bus Platform Layout
Major Bus Stop - Distances and Dimensions

Note:
This diagram is a general guideline. All final locations of signage, street furniture and bus stops are to be determined by Winnipeg Transit's Operations, Maintenance, Planning & Schedules Division at each individual site.

All dimensions in this drawing are metric.
sustainable transportation design guidelines

Bus Platform Layout
Transit Terminal - Distances and Dimensions

General Dimension Guidelines
A - 1200 mm Minimum
B - 1800 mm Minimum
C - 1200 mm Minimum
D - 900 mm Minimum

All dimensions in this drawing are metric.
Transit Passenger Shelters

Transit passenger shelters are used for the protection of waiting passengers from bad weather, provision of seating for elderly patrons, posting of schedule information materials, and generally, for the convenience of the travelling public. Because transit passenger shelters act as focal points of transit service, often at locations where routes intersect, accessibility, visibility and usability are very important. The shelters act as focal points and information points for transit users, especially those with disabilities. The following criteria are some general considerations for installing a shelter:

- The average number of passengers using the stop must not be lower than 150 passengers per day (24 hour period) or 800 per week.
- The size of a shelter is determined by the acceptable size of the queue of the waiting passengers, calculated at a density of 6.25 sq. ft. per waiting passenger and the total cost of installation.
- Sidewalks with widths less than 3.1 m (10') cannot safely accommodate a transit passenger shelter.
sustainable transportation design guidelines

Transit Passenger Shelters
Shelter Design

Transit passenger shelters vary widely in materials and dimensions. The following dimensions are typical for shelters used in Winnipeg, and can be used for designing bus stop platforms:

- 1.2m x 2.4m (4’ x 8’) non-heated shelter with one opening and no door
- 1.5m x 3.8m (5’ x 11’) non-heated shelter with one opening and no door
- 2.4m x 4.5 (8’ x 15’) up to 2.4m x 12.2m (8’ x 40’) heated shelter with two doors

There are certain minimum requirements necessary in order to ensure safety and accessibility. The following are given as basic requirement for shelter designs:

- Shelter opening should have a minimum width of 800mm (approx. 2.75’)
- All doorways in transit shelters must be designed to the standard specifications in the Manitoba Building Code
- A highly visible 75mm (3”) wide blue Safety Strip running horizontally approximately 140-160 mm (55-65”) from the ground must be placed on any transparent shelter panels
- If an advertisement panel is used in place of a transparent panel, it must not block the view of approaching buses for those in the shelter
- Seating should be provided if possible, with sufficient space for passenger movement, and should face oncoming buses
- Shelters with doors should have handles instead of pushplates on doors

Transit shelter with blue Safety Strip and advertising panel
sustainable transportation design guidelines

Transit Passenger Shelters
Criteria for Installation

Generally, requests for Transit Passenger Shelters are received from the public and transit users in general. On occasion, bus operators or other Transit staff initiate a request. No matter the origin of the request, the location, route and ridership characteristics are evaluated against some general requirements.

Placement Evaluation

To ensure fairness in the placement of new transit passenger shelters throughout the City of Winnipeg, all requests for new shelters are evaluated according to the following criteria as adopted by the Committee of Public Works and Operations on August 27, 1963.

Winnipeg Transit policy states that priority is given to the following locations:

1. Common transfer points where waiting for a connecting bus is necessary
2. Major transit passenger generators, such as hospitals, parks, educational establishments, major shopping centres, and commercial areas
3. Intermediate points of routes where a considerable number of residents have walking distances substantially greater than the minimum recommended 400m
4. Bus stops nearest to Senior Citizens’ Housing and Seniors’ Centres
5. Open areas affected by the elements, i.e. wind, rain, etc...

Based on the above criteria, each requested location is assigned a score which represents either a “high” or “low” priority, and then either placed on a priority list or filed for future review.
sustainable transportation design guidelines

On Site Inspections

A “high” priority shelter request will be placed on a waiting list and will be fulfilled in order of priority, subject to there being no operational or safety impediments to installing a shelter at a given location. The Chief Inspector and Operations Planner from Winnipeg Transit conduct on-site inspections of every bus stop that is on the priority waiting list to check for operational suitability before a shelter can be recommended for placement.

The operational criteria used are as follows:

1. Is there protection against prevailing winds given the possible shelter orientation?
2. Is there clearance for the passage of pedestrians, i.e. is there adequate sidewalk and/or boulevard space to place a shelter?
3. Is there adequate clearance for the passage of a snow plow in the winter?
4. Are the lighting conditions sufficient, i.e. can the passengers see and be seen?
5. Will motorists, bus operators and pedestrians still have clear sight lines, or will the shelter obstruct their view?

Although some locations may make the priority waiting list, they may never receive a shelter because of some type of operational or safety constraint, or a lack of physical space for the placement of the shelter.
Parking and Intermodal Connections

Access to parking is vitally important for any development, but “access to parking” doesn’t mean “lots of parking”. It is a fact of life that most households, whether they contain transit users, cyclists or avid walkers, have cars. Planning needs to be approached from the perspective of accommodating car-owning households, but not designing the neighbourhood only for their cars.

The quickest way to make a development intimidating and inconvenient for pedestrians is to place oceans of parking between the street and the building. When buildings are oriented close to the street, on-street parking can be utilized, and the size of parking lots can be kept down.

An intermodal connection is where someone changes from one mode of transportation to another. Parking is always an intermodal connection because it is there that a driver becomes a pedestrian. We need to expand our thinking beyond this, because there is much more potential. Parking areas can be used as Park & Rides or Cycle & Rides.
**Parking and Intermodal Connections**

**Park & Ride**

Park & Ride facilities can help to decrease road congestion, increase transit ridership and promote economic development. A strategically placed Park & Ride facility can attract customers to a commercial area and provide local businesses with increased opportunities.

Traditionally, Park & Ride facilities have been shared-use parking lots at large retail centres. An alternative is to consider smaller scale facilities called Community-based Park & Rides. There generally have only 6-12 parking spaces, and are located near concentrations of local businesses, such as a TOD town centre.

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This diagram is a general guideline. All final locations of Signage, Street Furniture and Bus stops are to be determined by Winnipeg Transit’s Operations and Planning & Schedules Divisions at each individual site.
Parking & Intermodal Connections
Bicycle Connections

The promotion of cycling is a simple way to help get people out of their cars. Cycling is a fundamental part of sustainable transportation, and when bicycle facilities are an integral part of a communities infrastructure, more people will cycle. Cyclists are generally more open to walking and using transit as well, so catering to them helps to promote all forms of sustainable transportation.

The idea with bicycle connections is to make it simple, safe and convenient for cyclists to ride their bicycles. The following are some guidelines to strengthen bicycle links with transit service, and to make any new or existing development friendlier towards cyclists.

- provide paved or gravel bicycle paths through parks and other greenspaces - they can be either dedicated bicycle paths or shared-use bicycle-pedestrian paths
- make sure bicycle paths through green spaces connect to streets with transit service
- on collector streets, provide an extra 0.5 m of lane width to accommodate cyclists
- on arterial routes, Winnipeg Transit supports the shared use of Diamond Lanes for both buses and cyclists

Winnipeg Transit is committed to the shared use of Diamond Lanes between cyclists and buses.
If cyclists are to feel comfortable leaving their bicycles locked up, either to get on a bus or after taking the bicycle on the bus to their destination, there must be a secure way to lock their bikes up. Therefore, bicycle racks and enclosures should be provided at major bus stops. In areas of employment, or in commercial areas, adequate cycle lock-up facilities should be provided in a visible high-traffic area. Don’t tuck bicycle parking out of the way, as this promotes theft and vandalism.

With buses an several Transit routes having bicycle racks on them, it is important that there be enough waiting room at the stops for people with bicycles. By following the guidelines described in the earlier sections on Bus Platform design, sufficient space will be provided for cyclists who wish to use the bus bike racks.
Sustainable Transportation

Design Checklist

This design guide had presented many ideas for the promotion of Sustainable Transportation. From the reasons why it is vital and necessary, to how to design for it, support it and promote it, the guidelines given are intended to help you make Sustainable Transportation an integral part of your development.

The following pages contain a checklist for you to use at each stage of the design of your project. After a development of construction phase is planned, go through this checklist and answer each question with a simple “yes” or “no” based on the design at your current stage. If you answer no to any of the questions, you can use the previous sections of this design guide to help you modify your design to be more friendly to Sustainable Transportation. At this point, it is recommended that you contact the Transit Planning Section at Winnipeg Transit at 986-5777.
Sustainable Transportation Design Checklist

This design guide had presented many ideas for the promotion of Sustainable Transportation. From the reasons why it is vital and necessary, to how to design for it, support it and promote it, the guidelines given are intended to help you make Sustainable Transportation an integral part of your development.

1. Does the development support a mix of uses that helps people to shop, walk and relax in their own neighbourhood, without having to use a car? □ Yes □ No

2. Is the a density gradation, from highest density at the Town Centre to lowest density at the periphery? □ Yes □ No

3. Are all residences and businesses in the development within 400m of the nearest collector street? □ Yes □ No

4. Does the street layout pattern allow for direct, convenient access to collector streets? □ Yes □ No

5. Are there pedestrian walkways, paths, parks or other greenspaces linking different parts of the neighbourhood for pedestrians and cyclists? □ Yes □ No

6. Are the walkways designed in a way that they can be travelled in a wheelchair at night and in the winter? □ Yes □ No
Sustainable Transportation Design Checklist

7. Are sidewalks and walking paths wide enough to allow for passing wheelchairs or strollers?
   □ Yes □ No

8. Are travel paths free of obstructions and unnecessary detours, i.e. are the paths simple, free and clear?
   □ Yes □ No

9. Is proper bus stop infrastructure (shelter, seating, waiting platform) provided at all bus stops?
   □ Yes □ No

10. Do bus stop locations conform to the minimum Winnipeg Transit standards for accessibility and serviceability?
    □ Yes □ No

11. Does the development support a mix of uses that helps people to shop, walk and relax in their own neighbourhood, without having to use a car?
    □ Yes □ No

12. Are storefronts and other buildings situated close to the street right-of-way so as to be more inviting to pedestrians?
    □ Yes □ No

13. Are higher density land uses (35+ dwellings or businesses/hectare) located adjacent to arterial or collector streets?
    □ Yes □ No
Sustainable Transportation Design Checklist

14. Does the design have sidewalks on at least one side (preferably both sides) of all collector and arterial streets? □ Yes □ No

15. Does the street network layout provide for direct routes for Transit service, without duplication or double-backing? □ Yes □ No

16. Are all streets in the development intended for Transit operations built to collector standards? □ Yes □ No

17. Does the development plan provide for the construction of temporary bus turnarounds and the extension of existing Transit services? □ Yes □ No

18. Has space for a community-based Park & Ride been provided at the edge of the development along Transit routes? □ Yes □ No

19. Does the promotional plan for the development include awareness of the environmental and social benefits of a Transit Oriented Development? □ Yes □ No

20. Have you looked over your design, thinking of yourself travelling through it as a pedestrian, cyclist, handicapped person and a driver? □ Yes □ No
Designing for Sustainable Transportation and Transit in Winnipeg

References

The following sources were consulted for the production of the booklet:

BC Transit, Design Guidelines for Accessible Bus Stops


sustainable transportation


Province of Alberta, Transportation & Utilities, Design Guidelines for Accessible Bus Stops


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