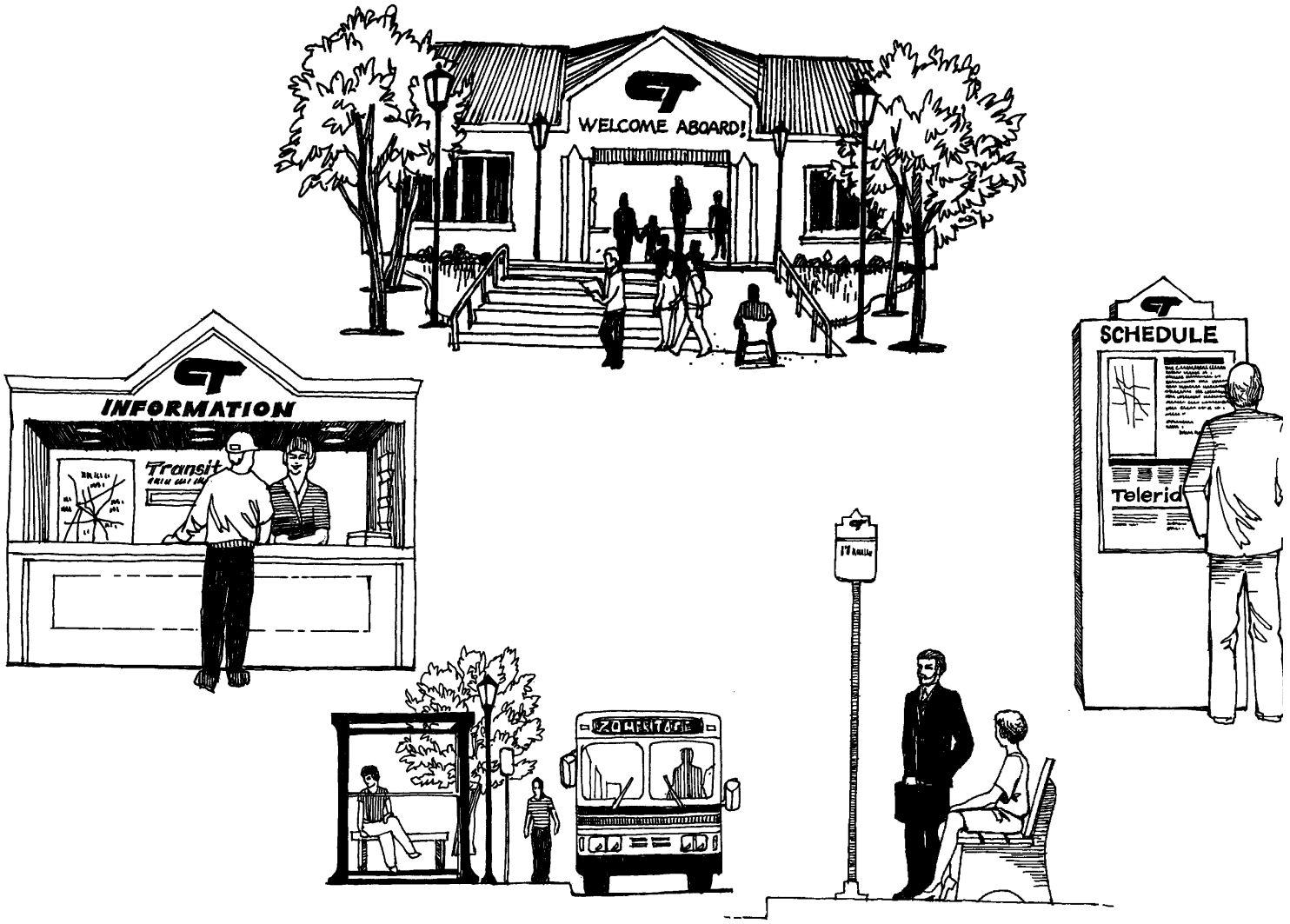
TRANSIT FRIENDLY DESIGN GUIDE



Catch Our Pride!

Approved by
Calgary City Council 1995 December

FORWARD

The Transit Friendly Design Guide flows from the Calgary Transportation Plan 1995 and the Sustainable Suburbs Study. It has been developed with the help of community stakeholders to describe how community design and transit service can be mutually supportive. Application of the principles and policies contained in this guide will create an environment that will help make Calgary Transit's vision a reality.

This is a working document and we hope that over time, our section on Calgary examples of Transit Friendly Design will grow.

If you have questions or comments regarding the information in this manual, please contact Calgary Transit Service Planning and Community Relations.

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CONTENTS

INTRODUCTION

CALGARY — THE VISION 2024

Calgary City Council approved a new, comprehensive, long range transportation plan in 1995 May. The vision statement from this plan has been reproduced because it describes our collective desires for Calgary in the future:

Calgary, in the year 2024 has grown by over 500,000 people, the equivalent of adding eight cities like Red Deer. Population: 1.25 million.

We live closer to where we work, relying less on our cars for the shorter work trip and more on transit, walking and cycling. While the car remains the dominant choice of travel for Calgarians, investment in transit has resulted in a higher level of service and usage: shorter walk times to transit and LRT stops and preferential "transit treatment" make the transit trip more attractive and convenient.

We have slowed the rate of the outward growth of the city, making a conscious effort to intensify our neighbourhoods. Today, new and redeveloped older communities are a more diverse variety of housing mixes with a slightly higher concentration of dwellings per acre. Our downtown as a centre for employment has kept in step with market demand.

We have moved towards a "user pay" system as a significant funding source for our transportation system. Whether we drive our cars or take public transit, we pay more equitably and directly for our choice of travel. In spite of more people moving around the city in more vehicles, efforts to promote efficient use of vehicular travel have helped maintain air quality standards at 1990 levels. We have moved toward "cleaner cars", and carrying more people in our vehicles for the work trip. The trend toward "driving alone" to work each day has reversed. Changes in the way we work such as telecommuting and flex time have had an effect on reducing and spreading out the rush hour.

We have made a deep commitment to protect our river valleys, our environmentally sensitive areas, and the integrity of communities. Wherever the need for new transportation links or river crossings are demonstrated, the trade-offs between the mobility needs of Calgarians, community and environmental impacts, and costs are carefully considered by Council and all Calgarians before decisions are made.

Calgary Transportation Plan, May 1995

Approved as policy by Council 1995 May 29. See Appendix D for more detailed transit information contained in the Calgary Transportation Plan.

PART 1

In recent years, urban planning in general has focused on accommodating auto travel to the extent that many destinations can not be reached easily without an automobile. There are benefits to maintaining a high level of auto mobility, but Calgarians no longer accept the trends of increasing auto related air and noise pollution, energy consumption, urban sprawl and land consumption.

In contrast, there was a time when public transportation was an integral part of Calgary and provided convenient travel to most activities. Citizen concern for the quality of life that will be provided in Calgary has focused attention on the need to rediscover the potential of transit and focus our energies to make this travel option work better. We must develop transit services that encourage Calgarians to act on their desires to avoid the negatives associated with increasing auto dependency.

There is a tendency to take public transit for granted - to believe that buses will just appear and provide an economical and effective service. But, like most businesses, public transit works best when the conditions are right. Putting more emphasis on public transportation will be a wasted effort if we don't plan transit into our communities. Adding transit services at the end of the planning process, after the roads and land uses are in place and without consideration of the customers requirements and desires, generally means providing less effective, more costly transit service.

PART 1

THE TRANSIT FRIENDLY DESIGN GUIDE

This guide describes techniques for improved integration of transit into residential and non-residential areas to achieve the vision described in the Calgary Transportation Plan. It is designed to explain and give examples of the physical requirements necessary for good transit service. The information will be useful to a broad range of stakeholders, including the public, elected officials, planners, communities, developers, the civic administration, engineers and architects.

ABOUT THIS MANUAL

This manual is divided into two major sections. The strategies and techniques that create transit supportive development are presented in the Transit Design Principles section. The Policies section summarizes relevant transit policies that direct development. Through application of these policies, the principles of transit friendly design will be built into our city.

THE ROLE OF TRANSIT

Like all urban transit systems, Calgary Transit is expected to fulfill a broad role encompassing three major goals:

1. **Economic** - to accommodate urban travel demand at reduced financial cost to both the individual and the taxpayer;
2. **Social** - to provide transportation for those who cannot or choose not to transport themselves by private auto;
3. **Environmental** - to reduce the environmental impact of urban travel.

This is a broad mandate and a single bold action is rarely sufficient to improve transit. Rather, the cumulative impact of many smaller, mutually compatible actions is more effective. Each small decision is important.

PART 2

TRANSIT DESIGN PRINCIPLES

What strategies will make the urban environment more transit friendly and better able to attract and sustain transit usage? Most techniques are simple and involve minimal costs. Because it is easier and more efficient to design transit into a community than it is to try and fit it in later, it is very important that the techniques be undertaken as early as possible in the planning and development process. The steps to designing transit friendly communities relate primarily to new areas and projects; however, many can be applied effectively to existing developments too.

Transit friendliness applies in shopping, industrial and office park developments as well as residential areas. There is mutual gain when transit and enterprise support each other. Transit can provide employees and customers easy access to commercial enterprises and business activities. These activities generate trips on transit and help support quality transit options.

In the planning, design and marketing of new projects, resources (financial, land and human) are limited. Budgets and market realities often make investment risks high. Trade-offs and compromise are necessary amongst stakeholders.

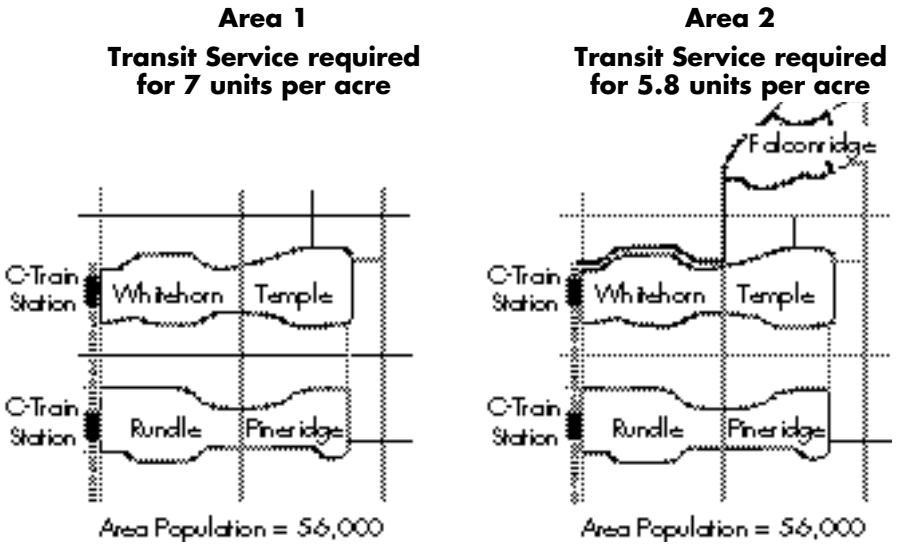
As Calgary expands, communities and developments that are more accessible to a larger population will be more successful and will have created conditions that foster urban vitality and a sense of community. Effective transit service is one of the major components of a successful community.

The following principles summarize techniques that contribute to transit friendly development.

1. **PROVIDE APPROPRIATE COMMUNITY DENSITIES.**
2. **MINIMIZE WALKING DISTANCE.**
3. **PROVIDE MIXED LAND USES.**
4. **ORGANIZE DENSITY, LAND USE AND BUILDINGS TO BENEFIT FROM TRANSIT.**
5. **CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT.**
6. **ROUTE TRANSIT INTO THE COMMUNITY.**
7. **REDUCE TRANSIT TRAVEL TIME.**
8. **BUILD QUALITY, USER FRIENDLY TRANSIT FACILITIES.**

PROVIDE APPROPRIATE COMMUNITY DENSITIES

To be cost-effective, transit must reach a sufficient sized pool of potential riders. Development of population or jobs above minimum levels should be encouraged. Population and employment densities affect the quality (frequency of service), range (service choices) and duration (hours of operation) of transit service that can be provided in an area. Low densities provide an insufficient pool of potential riders and cannot support desirable service options.



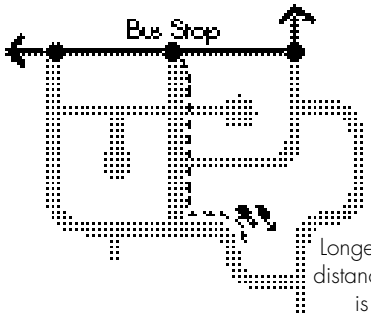
Cost of the additional bus service = $245,000 Annually

1993

Although the above area populations are identical, the design density was not achieved, and therefore the geographic size of the service area grew. Extra service was required to serve the expanded area. The operating cost of the additional bus service is $245,000 (1993 dollars) annually.

MINIMIZE WALKING DISTANCE

Realistically, most people will not walk more than 400 meters to use transit, and as a general rule, all dwellings should be within 400 meters walking distance of a transit stop. Pedestrians are discouraged by a long, indirect walk to transit - especially in inclement weather. They are more likely to use transit services if the beginning and the end of their trip is close to a transit stop or station. Efficient community design that addresses both walking distance and the need to minimize transit travel distance will reduce the costs associated with providing and operating transit service.



Longest walking distance to transit is 400m

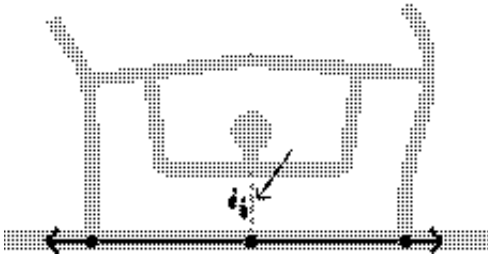
Adapted from: Guide to Transit Considerations, Transportation Association of Canada, 1991

Hills and the type of walking path that must be travelled to reach transit will affect the acceptable walking distance. Every effort should be made to minimize the walking distance to transit service when hills are steep.

MINIMIZE WALKING DISTANCE

If blocks are long, or the pedestrian route to the bus stop is unnecessarily circuitous, short sections of high quality, lighted pedestrian pathway should be used to reduce the walking distance. Where possible, provision of a pathway should avoid creating mid-block street crossings.

Walkway necessitated by poor local street design

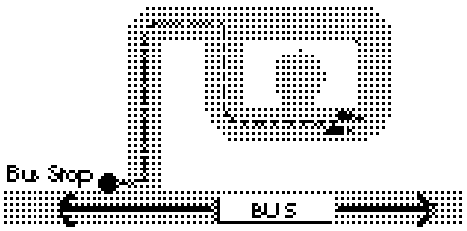


Source: Guide to Transit Considerations in the Subdivision Design and Approval Process, Transportation Association of Canada, 1991

In many cases, careful street design can provide direct pedestrian routes to transit service and reduce the need to provide pedestrian walkways.

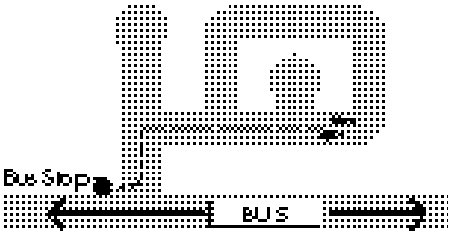
UNDESIRABLE

Layout provides longer, indirect pedestrian access to transit.



DESIRABLE

Layout provides shorter, direct pedestrian access to transit.

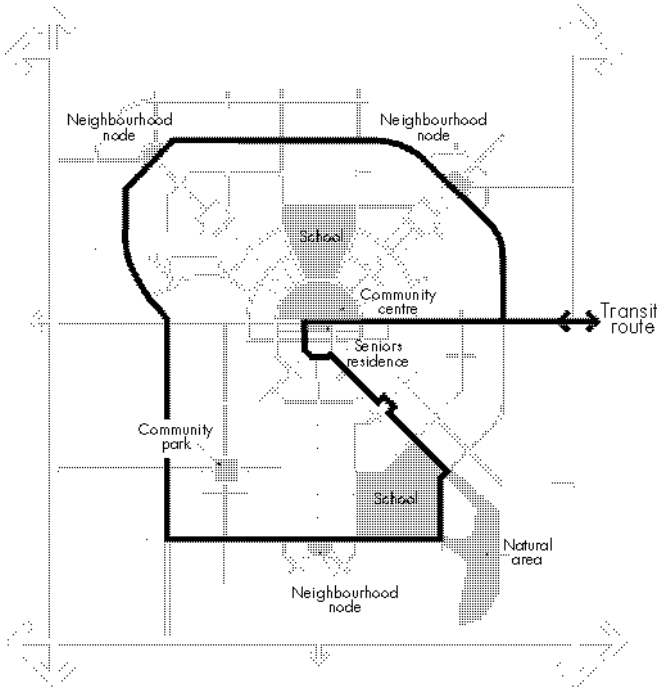


Adapted from: Guide to Transit Considerations in the Subdivision Design and Approval Process, Transportation Association of Canada, 1991

Mixed land uses (or activities) contribute to a robust or healthy transit operation by accommodating a range of travel options or trip purposes. Transit riders gain the ability to undertake multi-purpose trips, like a stop at the daycare or the video store, on the way to or from work. Diverse uses along a street also create activity and a greater sense of personal security for those walking or waiting for transit service.

Commercial and retail activities in communities that support transit include both services like dry cleaners, or convenience stores; and facilities like day care, or libraries, and should be located close to transit stops. Retail facilities like shopping malls can become independent transit destinations if they are located on transit routes.

MIXED LAND USES ARE BEST FOR TRANSIT RIDERSHIP



Adapted from: Sustainable Suburbs Study, City of Calgary Planning and Building Department, 1995.

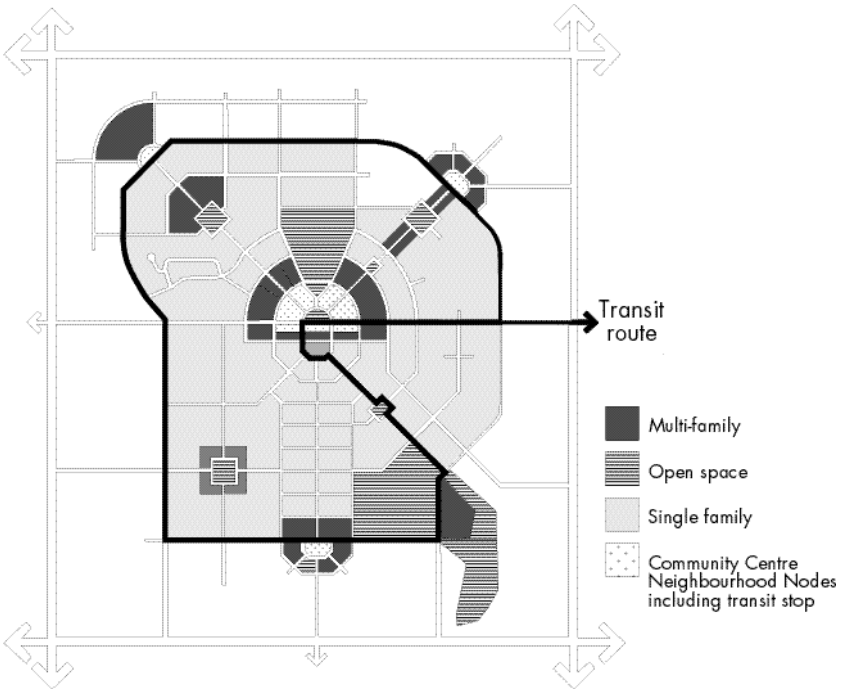
Community centre—includes a mix of public and commercial activities and a transit "hub."
Neighbourhood node—includes a small mix of activities, uses and a transit stop.

Large discount stores tend to be auto oriented and are generally less appropriate next to transit stations and bus stops.

ORGANIZE DENSITY, LAND USE AND BUILDINGS TO BENEFIT FROM TRANSIT

Density should be organized in communities to take advantage of transit services. More people closer to transit provides more community benefit because travel is easier. The highest density uses should be closest to transit service.

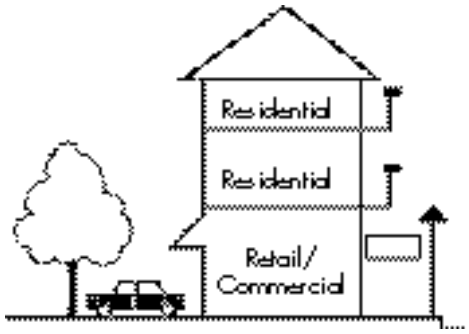
Density should be organized to benefit from transit



Adapted from: Sustainable Suburbs Study, City of Calgary Planning and Building Department, 1995.

Residential units above street level commercial activities contribute to increasing densities along transit corridors and can contribute to reduced rates of personal auto usage.

MIXED-USE DEVELOPMENT



Source: Burnaby Metrotown, Burnaby Planning Department, (June, 1977)

The siting and orientation of buildings also can contribute to the ease of transit use. Too often, buildings are positioned for auto users only.

TRANSIT RELATED DEVELOPMENT

AUTOMOBILE RELATED DEVELOPMENT

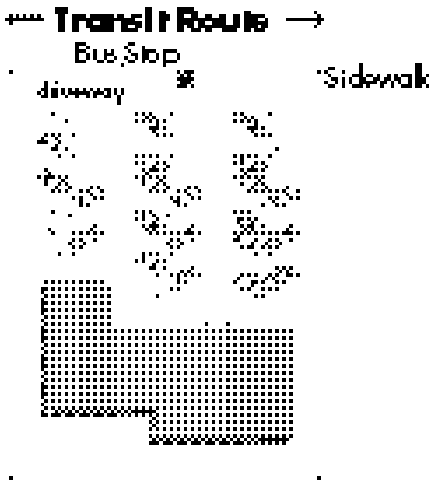
Adapted from: Public Streets for Public Use, Portland's Arterial Street Classification, Dottemer, (1987)

ORGANIZE DENSITY, LAND USE AND BUILDINGS TO BENEFIT FROM TRANSIT

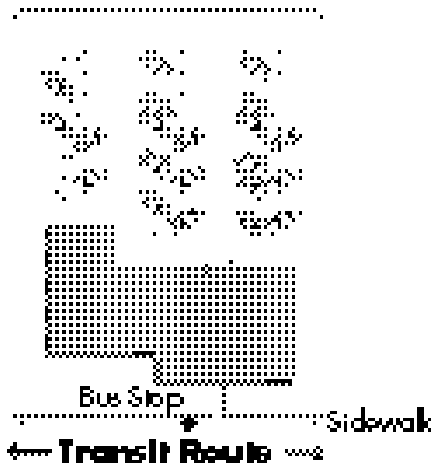
ORGANIZE DENSITY, LAND USE AND BUILDINGS TO BENEFIT FROM TRANSIT

Street orientation and pedestrian entrances are important. Direct, short walking distances between buildings and transit service are preferable.

UNDESIRABLE
Auto Oriented Access

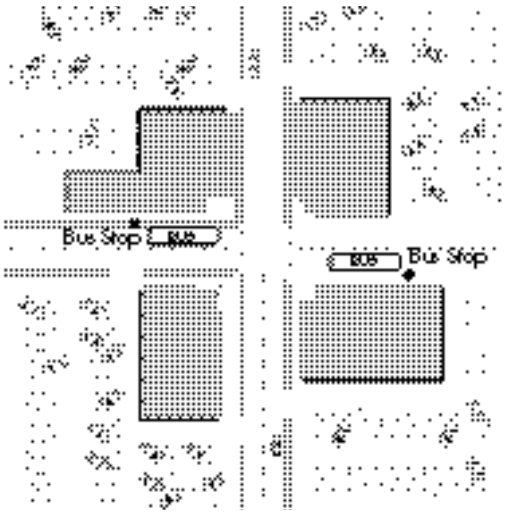


DESIRABLE
Easy Transit Access



Adapted from: Design Guidelines for Bus Facilities, Orange County Transit District, (1987)

In suburban office and industrial parks, consideration should be given to clustering buildings at intersections close to the street to make them convenient to bus stops and to organize street crossing. Developments or single sites that cluster the buildings close to the street should incorporate a street level design that encourages pedestrian activities.

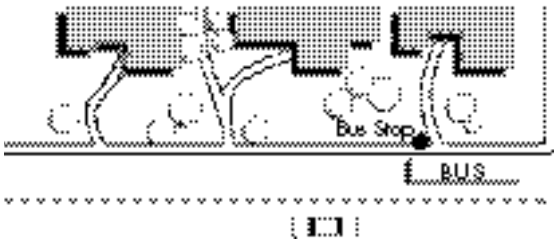


Adapted from: Designing for Transit, Metropolitan Transit Development Board, 1993

Landscaped setbacks should be carefully designed to avoid long walking distances on the part of transit riders and to avoid isolating those waiting for buses. Pedestrian connections linking the building and transit services should be provided. Where the normal sidewalk system is inadequate, dedicated pedestrian walkways can be used to provide access to transit services.

DESIRABLE DESIGN

Pedestrian access to bus stop is direct and convenient

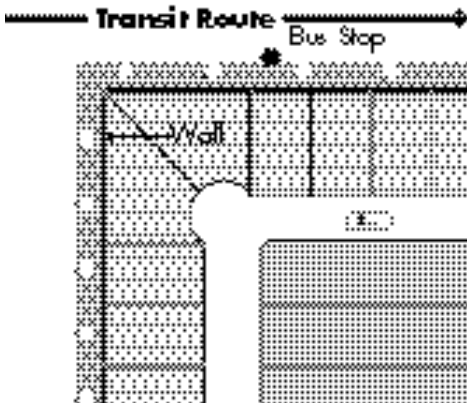


Adapted from: Guide for Including Public Transit in Land Use Planning, Alameda - Contra Costa Transit District, (Oakland, CA)

If walls, berms or steep slopes are unavoidable, provision for pedestrian access to transit facilities should be provided. In selecting locations for pedestrian access routes, the shortest, most direct connection generally helps reduce the costs of providing the pedestrian route. Whenever possible walls, berms or steep slopes that isolate the buildings from transit access should be avoided.

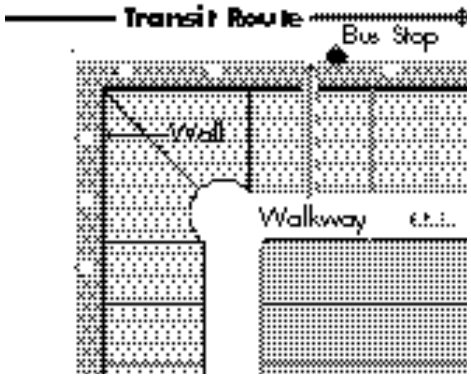
NOT DESIRABLE

Walls, berms, or steep slopes between bus stops and buildings may prohibit transit use



MORE DESIRABLE

Walkways and gates make transit accessible



Adapted from: Design Guidelines for Bus Facilities, Orange County Transit District, (1987)

CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT

We must recognize and support the provision of a high quality, barrier free pedestrian network linking pedestrians with transit services and activity centres throughout the city. Because most transit riders begin and end their journeys as pedestrians, pedestrian facilities are required in virtually all areas of the city, including residential communities, commercial areas and industrial office parks. The pedestrian system should provide for a continuous high quality barrier free walking surface and be directly linked to transit stops or rail stations.

The provision of barrier free sidewalks and pathways to transit service is necessary for both able bodied and less mobile transit customers.

Sidewalks on streets can enhance the personal safety of pedestrians by including them - not isolating them from street activities. Activity levels combined with building orientation toward the street provides increased surveillance and security of the pedestrian environment.

Pathways should be used to supplement the normal street network, not replace it. Extended pathways located at the rear of residences reduce the opportunity for community surveillance. Pathways that provide transit access should be short, direct and lighted. They will have to serve regular transit customers making trips after dark. Every effort should be made to maximize opportunities for community surveillance of the pedestrian network that provides transit access.

CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT

Most people don't feel comfortable walking in an area exposed to high speed traffic movement.

CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT

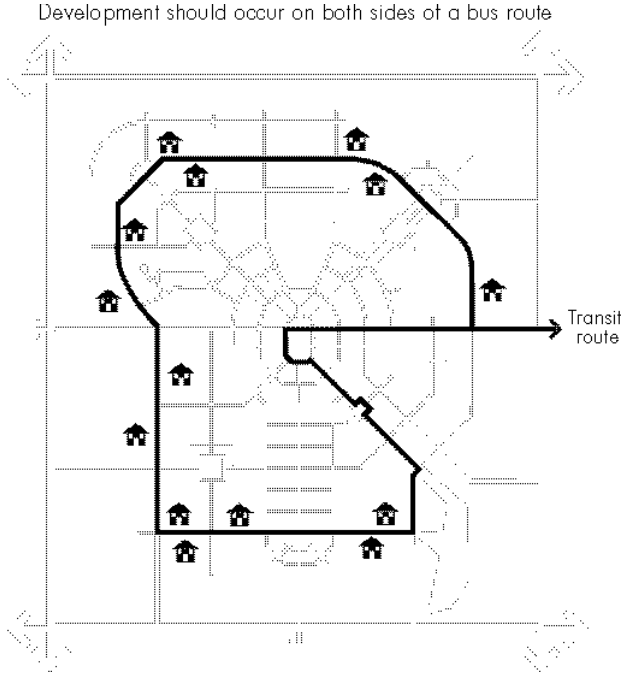
Pedestrians are drawn to areas that provide a sense of security and comfort. Successful pedestrian streetscapes can take many forms but are characterized by buildings located close to and oriented toward the sidewalk, trees, shop windows, street parking, appropriate sidewalk width, a boulevard, good lighting levels, and, where appropriate, street furniture.

Personal security is an issue in our society. The importance of the orientation of buildings to the street to provide added surveillance and the inclusion of good lighting levels should be emphasized. The provision of a secure and pleasant pedestrian environment encourages walking.

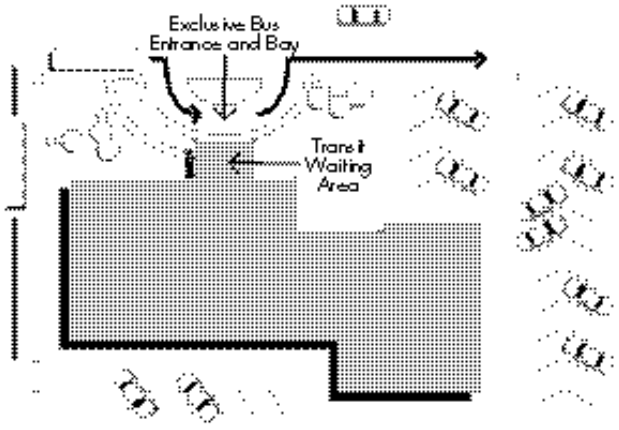
ROUTE TRANSIT INTO THE COMMUNITY

Too often transit has been kept at the edge of activities. It is more desirable to integrate transit services into the heart of a community or a development. Good transit service is an asset to the community. Bus routes should be located with development on both sides of the route to increase the number of people and activities that benefit from the service.

Development should occur on both sides of a bus route



Important activity sites like shopping centres, and educational and medical facilities should be designed to provide convenient on site transit facilities. On site facilities provide reduced walking distances for riders and may promote transit use because they are highly visible to new or occasional riders.

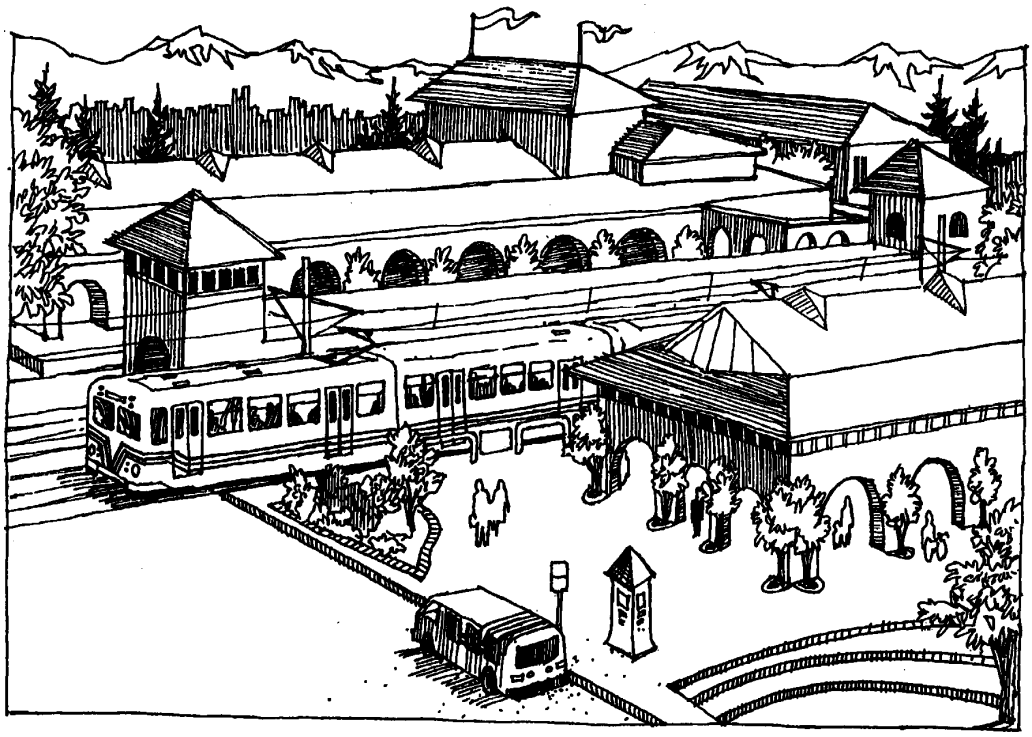


Adapted from: A Guide to Land Use and Public Transportation, Snohomish County Transportation Authority, December 1989.

Small scale projects can also capitalize on transit availability. Transit stops can be combined with shops and services like daycare, convenience stores, or restaurants to create community activity nodes.

Customer facilities at transit stops can take many forms either as part of a building or independent sites directly linked to the surrounding areas.

Light rail stations offer tremendous opportunities to link high quality transit facilities with adjacent land uses for long term mutual gain. Good business access for people creates a mutually supportive relationship. Transit provides business accessibility and the businesses generate transit ridership.



Adapted from: Transformation of Transportation, Office of Approximate Technology, (Sacramento, CA),

Light rail activity centres, integrated transit and activity centres (shopping centres, office development, industrial parks and even central business district projects), should be planned together. In developed areas, it is more difficult to fit transit and these activities together. However, the basic principles of integration should be pursued as far as possible, particularly as projects change over time. Opportunities to introduce activities and personal services for customers into existing light rail stations should be pursued.

There are many activities that can benefit from integration with rail or bus services.

People oriented activities that require good access include options like personal shops and services, medical facilities, libraries and some recreational facilities.

These techniques make transit a more attractive travel choice by making it easier and more convenient for transit riders to combine personal chores into a single trip - for example picking up dry cleaning on the way home from work.

REDUCE TRANSIT TRAVEL TIME

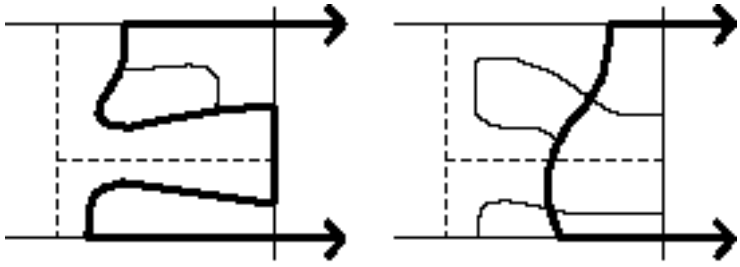
We travel to participate in activities - work, shop, personal appointments. Time spent travelling is highly valued. When travel by transit takes too long, riders seek alternatives. Slow transit services attract fewer riders and are costly to operate.

Travel time for transit riders has several parts — the time spent walking to transit, waiting for the bus or train, and time spent travelling on transit. Community design can help reduce walking and vehicle travel distances. These measures contribute to a shorter and more direct transit trip.

The street system within a community must provide for the efficient circulation of transit vehicles in a manner that effectively links the activities and residents. The walking distance guideline of 400 meters should be used to develop an appropriate transit route, and within this guideline, directness of travel should be emphasized.

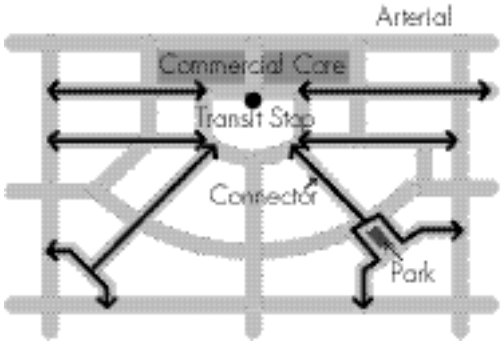
UNDESIRABLE **DESIRABLE**

Providing a direct link creates more efficient transit routing.



Adapted from: Guide to Transit Considerations in the Subdivision Design and Approval Process, Transportation Association of Canada 1991.

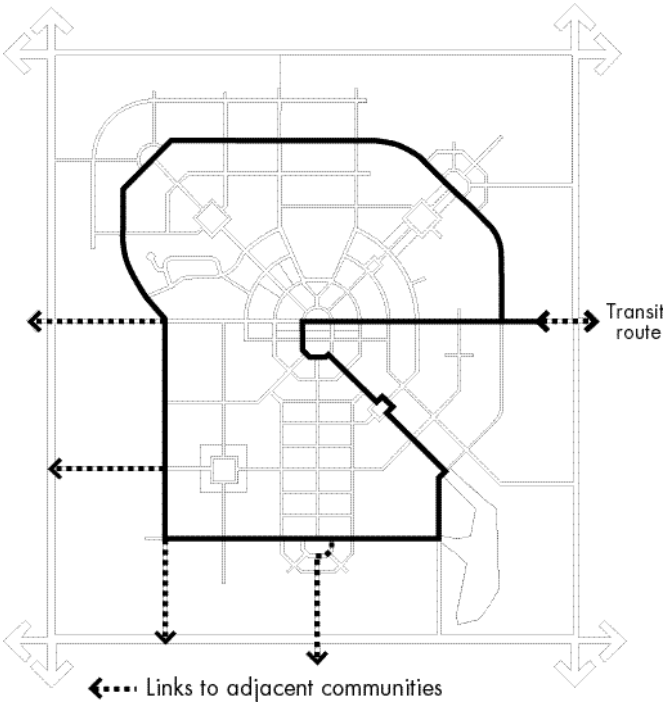
Discontinuous street patterns may make it difficult to walk to transit service even though the lineal or cross country distance may be reasonable. Consideration should be given to a pattern of residential streets or walkways that enhance the sidewalk system to provide multiple access routes for both motorist and pedestrians. Where short-cutting traffic may be a problem, the grid should be modified to discourage vehicle traffic while maintaining efficient pedestrian routes.



Source: The Next American Metropolis, Peter Calthorpe, 1994

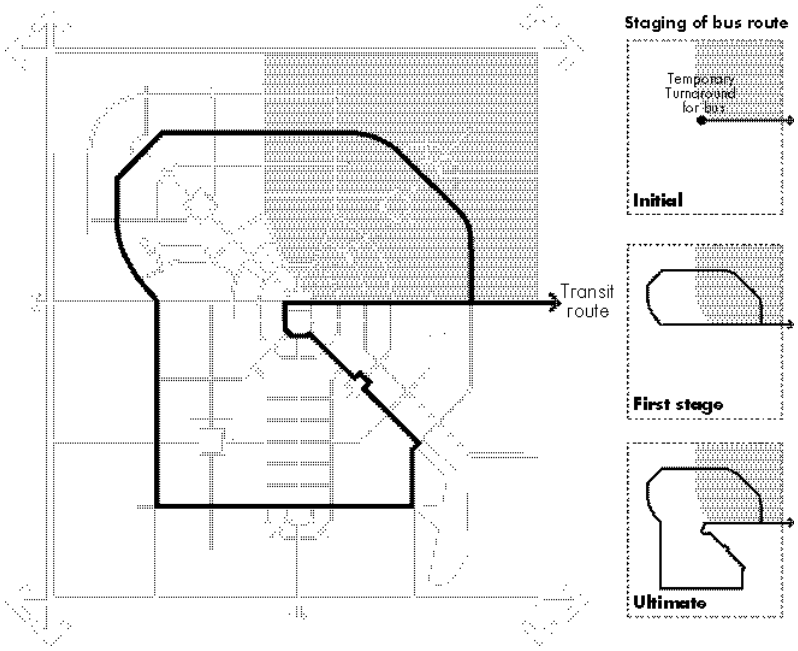
Bus only crossings should be considered only when modification of the street network is inappropriate or ineffective. Bus only crossings are physical devices implanted in the roadway that restrict automobiles but allow bus passage.

Transit link between communities



Single communities are rarely large enough to eliminate the need for travel outside their boundaries. Travel between communities is common, particularly for students travelling to school. The street network must allow continuous transit routes that strategically link communities.

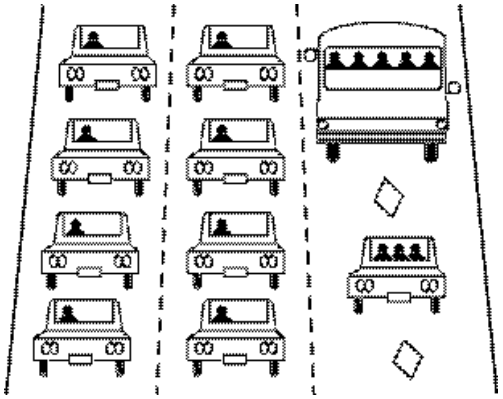
Community expansion phases should provide for the development of efficient transit service. Where community development does not include completion of the transit road network, consideration should be given to provision of interim transit operation. Temporary bus turnaround facilities or short sections of roadway appropriate for transit use are common techniques to provide transit linkage.



Adapted from: Guide to Transit Considerations in the Subdivision and Design Approval Process, Transportation Association of Canada, 1991

The desire to reduce transit travel time should include transit only links to reduce route distance and transit priority measures like signal preemption, queue jumping and bus only lanes to provide travel time advantages to transit vehicles.

Dedicated lanes give transit an advantage



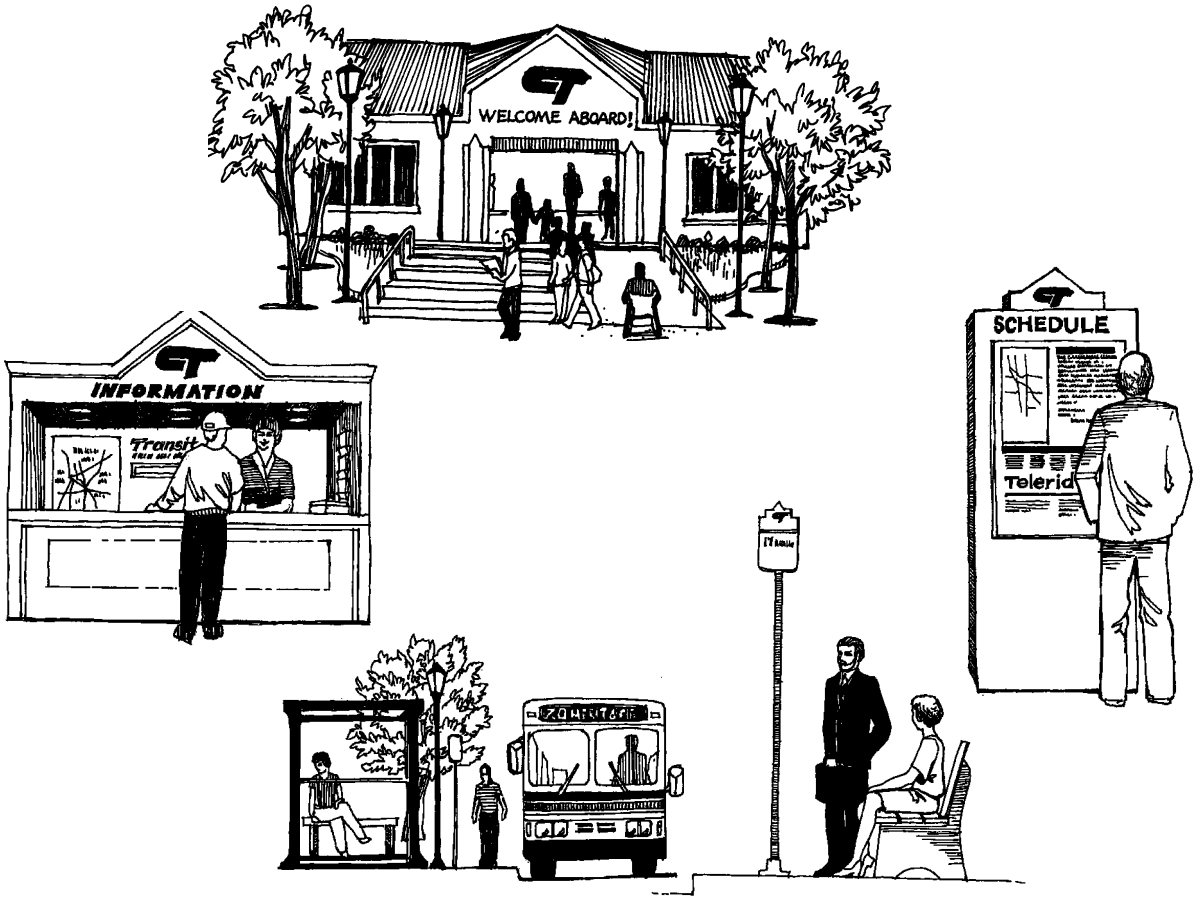
Source: Preliminary Report on High Occupancy Vehicle (HOV) Facilities and Activities, WSDOT, (January, 1989)

BUILD QUALITY, USER FRIENDLY TRANSIT FACILITIES

Transit is in direct competition with the automobile for customers. Transit facilities should be designed to provide a quality environment for transit riders that is planned with the same attention to detail and user convenience as is currently devoted to the auto driver.

The transit facility should be considered a long term project that is designed to accommodate modifications as new circumstances and service options develop. Facilities should be managed to ensure constant effort toward both expanding service/retail activities and enhancing the market and community potential of the site. Ease of maintenance (to ensure that facilities are kept in prime condition) and adaptability are important factors to consider in the initial design.

In short, transit facilities cannot be "second best" or "good enough". They must be designed and maintained with respect for transit customers. Rail stations and bus terminals must overcome traditional negative images and become places where transit riders feel welcome and valued. Facility design and signage must address passenger safety and security, comfort and mobility requirements.



Transit facilities must project an attractive image for their services and provide information for customers to easily find their way through the system.

PART THREE

TRANSIT POLICIES

Policies and guidelines that are used in decision-making are based on The City's vision of the future and help us judge how specific plans and developments will help achieve the vision.

The following policies are used to determine the degree to which proposals fit Calgary's transportation vision. These policies define actions and principles that support the provision of good transit service. Some policies have been drawn from existing documents. In these instances, the source of the policy is noted.

LAND USE AND COMMUNITY DESIGN POLICIES

*1. To increase population densities, development in all communities must achieve a minimum density of 6 –8 units per gross acre. (6)

*2. The transit system must be integrated into the community design and be a key component of the community centre, neighbourhood nodes and other community focal points. (6)

*3. All communities must provide a wide choice of housing types in addition to single family, with compatible architecture styles and finishes, and orientation to the street. (6)

*4. Most multi-family and affordable housing should be located near community centres, neighbourhood nodes, recreational areas, other public amenities, and be close to transit stops. (6)

*5. The street system in a community must provide all residents with direct links between key community focal points (community centre, neighbourhood nodes, schools, open spaces, major entrances). (6)

*6. Community centre and neighbourhood node site designs must encourage pedestrian and bicycle access and transit use. (6)

*7. Joint use sites (elementary and/or junior high school sites and playfields) should be located in proximity to the community centre or neighbourhood nodes, on the transit route and close to daycare and other services. (6)

*8. Opportunities for shared use of sites and/or buildings for public facilities (eg., fire, EMS, library, police, schools, community facilities, social services, Calgary Health Services, etc.) should be pursued. (6)

9. Locate land uses and population densities along major travel corridors which will make maximum use of the public transit portion of the transportation system. (2)

10. Increase the density of residential development adjacent to LRT stations and major bus routes where local conditions warrant. (3)

11. Focus new suburban jobs in mixed use, higher density centres that work well for pedestrians and transit to support other modes of travel. (1)

12. Development in LRT station areas will be of a type, intensity and design that can be integrated with adjacent communities and supportive of the transit system. (3)

new 13. To encourage increased community density close to transit service, every effort must be made to include 70% of the area population (dwelling units) within 300 metres street walking distance of transit service (a bus zone or rail station).

new 14. In recognition of unusual circumstances, up to 5% of the area population (dwelling units) may be located beyond 400 metres street walking distance from transit service (a bus zone or rail station). In site specific conditions this guideline may be exceeded and compromises will be necessary.

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 2-2.2.2C 0f The Calgary Plan.*

15. Community design will minimize pedestrian street walking distance to transit service (a bus zone or LRT station) to 400 metres or less. (1)

new 16. Safe, direct, barrier free walkways will be included in community designs to reduce the pedestrian walking distance to transit service.

new 17. Pedestrian facilities that are safe, direct and barrier free should be provided for all existing, expanded and new developments, regardless of the type of land use or intensity, to provide a continuous pedestrian system.

18. Locate light rail transit stations so as to optimize service to communities and potential transit supportive development. (3)

new 19. To support the utility and vibrancy of LRT stations, actively develop and integrate a full range of compatible land use (residential, employment and commercial activities) at designated sites.

20. Avoid unnecessary speculation and instability in communities abutting LRT stations by providing the public with an early indication of Council's intention with respect to the level of development opportunity through appropriate processes including preparation of station area plans, and/or Area Redevelopment Plans and Area Structure Plans. (3)

21. Consider mobility requirements in the location decisions of housing for seniors or persons with disabilities. (1)

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 6.3 of the Sustainable Suburbs Study.*

MOBILITY

new 1. To support the social, environmental and economic role of transit in the city all development and subdivision proposals must include a transit service statement that demonstrates how the proposal supports transit integration and development.

Note: The transit service statement will describe how the development can be serviced by public transit and should provide information on the location of transit routes, services, the pedestrian access environment and the provision of transit amenities if required. It is intended that the detail in the transit service statement be consistent with the stage of the development or subdivision proposal. This statement should only be required of subdivision applications of greater than three lots and of development applications for new commercial and industrial proposals and for residential proposals for greater than three units.

2. Increase the level of transit service provided to approximately 2.5 transit service hours per capita over the next 30 years with emphasis on specific market segments, corridors and development nodes. (1)

3. Increase the proportion of persons using public transit, relative to the private car, particularly for the journey to work, by implementing traffic and parking measures that provide a speed advantage for transit vehicles relative to private vehicles. (3) Such measures include, but are not restricted to, bus only lanes, signal priority, signal preemption, traffic management and other technological advances.

4. Extend transit service to developing areas as soon as possible, subject to:
   a. the provision of streets adequately located and constructed for transit uses; and
   b. the location of the developing service area contiguous to existing service areas so that service is provided in accordance with approved minimum ridership policies. (4)

5. Increase transit service reliability and connections by ensuring that bus and LRT services and connections will operate within a schedule adherence range of 0 to 3 minutes of the design schedule. Buses or LRT will not depart a scheduled timepoint early. (8)

6. Support the "family of services" approach to providing a range of services including specialized door to door services, accessible taxis, bus service and LRT service. (1)

new 7. Provide accurate, understandable, timely customer information on transit services.

8. To support the transportation corridor concept by determining and acquiring the necessary land or rights-of-way for major transportation facilities in advance of planned construction. (2)

new 9. Maintain transit facilities to a standard that encourages their use by the public and contributes to their integration with adjacent land use.

10. To continue the comprehensive maintenance programs for the roadway, transit, pedestrian, and cycle modes to optimize safety and efficiency in the operation of the transportation system. (2)

11. Ensure the ongoing maintenance and replacement of the infrastructure and protection of investments. (5)

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 6.3 of the Sustainable Suburbs Study.*

INTEGRATION WITH OTHER TRAVEL MODES

new 1. Ensure that long term parking supply downtown and at major institutional employment centres supports the provision of high quality transit service to the area through the implementation of parking demand management strategies.

2. The supply of long-stay parking in the downtown will be managed to match a downtown travel to work modal split objective. (1)

3. The target downtown modal split to transit is 50% by 2024. (1)

4. The supply of long-stay parking will be reduced gradually, e.g., by absorbing peripheral surface lots for development. (1)

new 5. Promote the integration of other transportation modes (non-motorized vehicles, rail, air) with transit services.

new 6. Optimize bicycle access to the transit system.

new 7. Bicycle storage facilities will be provided at all major transit terminals.

8. The Park'n'Ride design guideline will be in the range of 15 - 20% of estimated weekday LRT ridership. (10)

9. Ten percent of the parking stalls at LRT stations will be designated for short-term use. (11)

new 10. Handicapped parking facilities will be provided in all Park'n'Ride facilities at accessible LRT stations.

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 6.3 of the Sustainable Suburbs Study.*

COST/AFFORDABILITY

1. To maintain transit fares at a level which is competitive with alternate modes and which represent good value for the service provided. (2)
2. To explore new sources of financing for public transportation. (3)

new 3. Calgary Transit is responsible for comprehensive strategic planning, design and management of public transit services in The City of Calgary and to this end is empowered to act as a broker within the city and surrounding area.

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 6.3 of the Sustainable Suburbs Study.*

HEALTHY LIVING

new 1. Public transit will be supported as the travel option that maintains the ability of all Calgarians to participate in the social and economic opportunities of the city (mobility equity).

new 2. The use of public transit will be encouraged as an alternative to address resource consumption and emissions of private auto use.

new 3. The use of public transit will be encouraged as a strategy to increase travel safety by reducing private vehicle use.

new 4. The public transit system will support and contribute to maintaining urban safety through its presence throughout the city.

new 5. Calgary Transit will undertake necessary actions to maintain a safe personal environment for the travelling public.

new 6. Calgary Transit will involve citizens in a collaborative planning process in order to reflect community objectives and promote mutual transit/community benefits.

new 7. Calgary Transit will provide and maintain effective communication systems that provide Calgarians with necessary information about the transit system.

City of Calgary source documents referenced by the number following specific policies are referenced in Appendix A.
** Approved by resolution of Council, not by-law. See Section 6.3 of the Sustainable Suburbs Study.*

City of Calgary
Policy Source Documents.

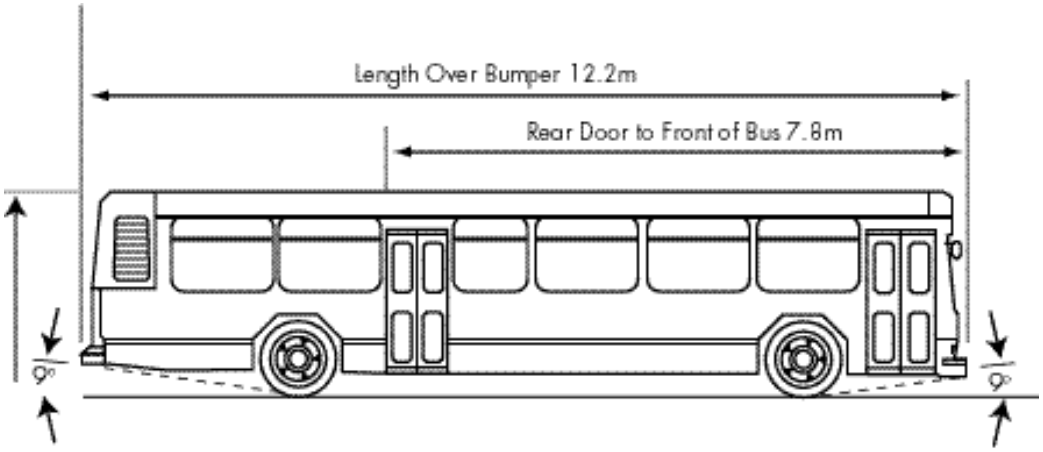
1. *Calgary Transportation Plan, May, 1995*
2. *Summary Report on Transportation Policy in Calgary. CALT 26, June, 1986*
3. *Calgary General Municipal Plan, 1979, and as amended*
4. *Corporate Policy Manual, The City of Calgary*
5. *Corporate Strategic Direction Statement, July, 1988*
6. *Sustainable Suburbs Study, July, 1995*
7. *Financial and Economic Review, City of Calgary, 1990*
8. *Calgary Transit Service Evaluation Guide, TR 90-62, November, 1990*
9. *Calgary Cycle Plan, May 1977*
10. *Park'n'Ride Travel, OD 86-47*
11. *Motion 27-82-11*

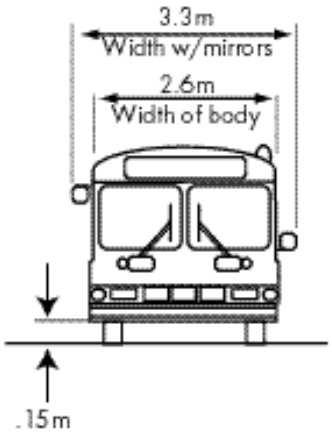
APPENDIX A

THE FOLLOWING DIAGRAMS ILLUSTRATE COMMON TRANSIT DESIGN DIMENSIONS.

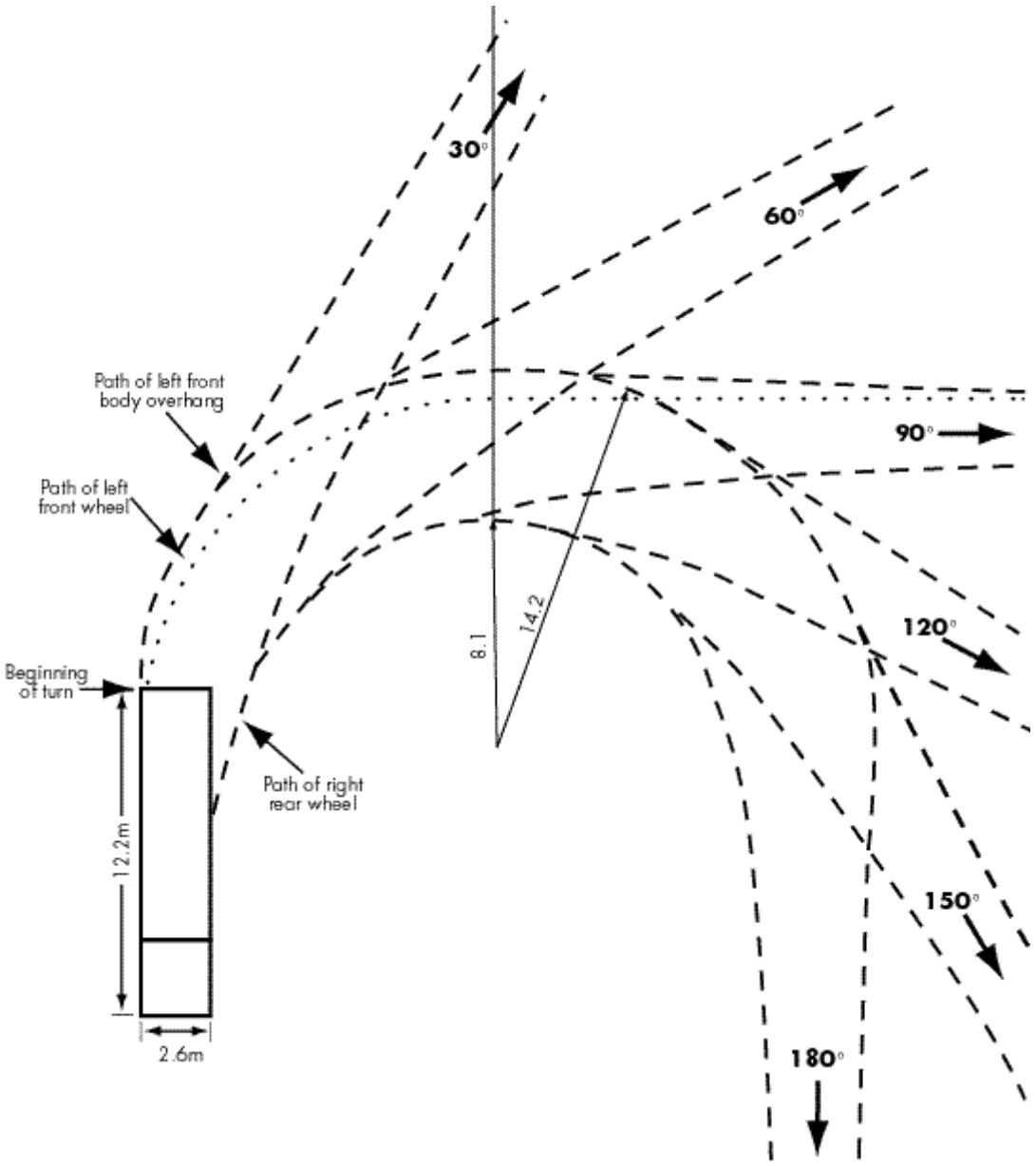
BUS VEHICLE DIMENSIONS

Standard Bus





BUS TURNING TEMPLATE

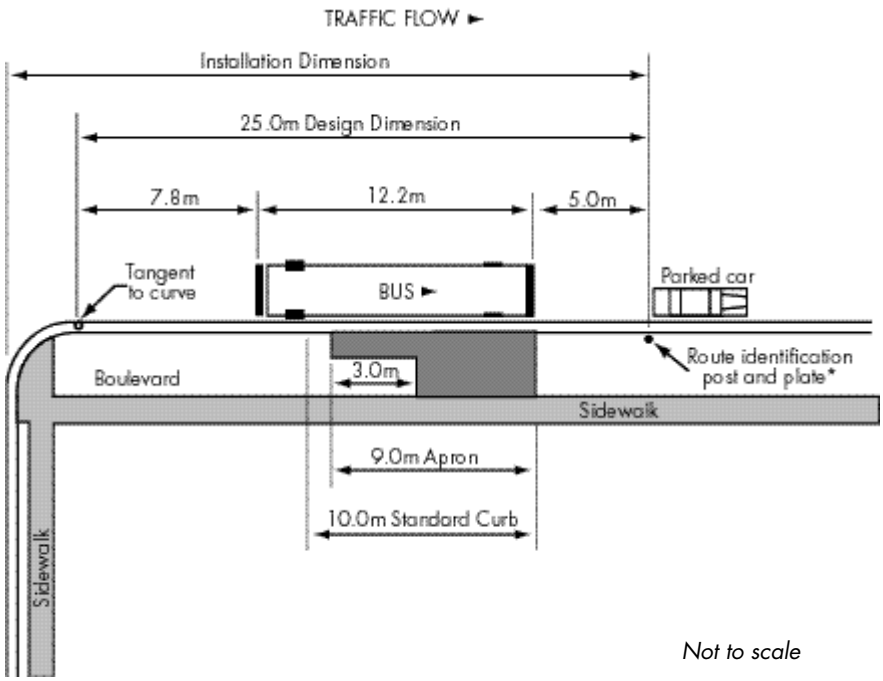


TAC, 1991 Transportation Association of Canada Developed in cooperation with National Research Council Canada.

Note: The minimum turning radius is 13.1m for a standard bus. Radi: 1 of 15.25m (outside) and 7.5m (inside) are recommended for pavement edges or obstructions.

STANDARD BUS ZONE DIMENSIONS

Far-Side Zone



Not to scale

**Post must be a minimum of 0.5m from face of curb.*

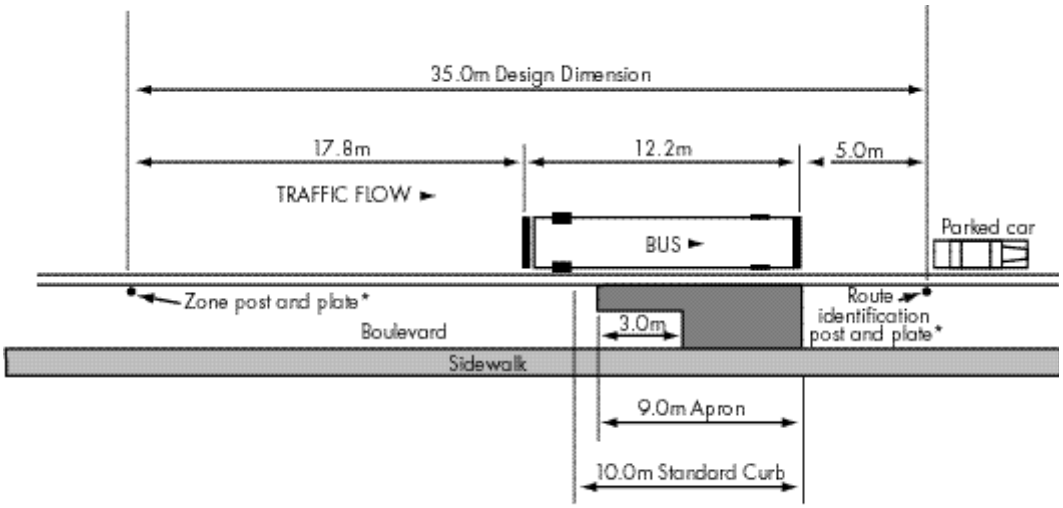
All zones are sized for wheelchair accessibility.

A person in a wheelchair occupies a space 760mm x 1220mm and can turn within a 1500mm diameter circle.

Note: For more information on bus zones, refer to Bus Zone Location and Design, City of Calgary Transportation Department, 1992.

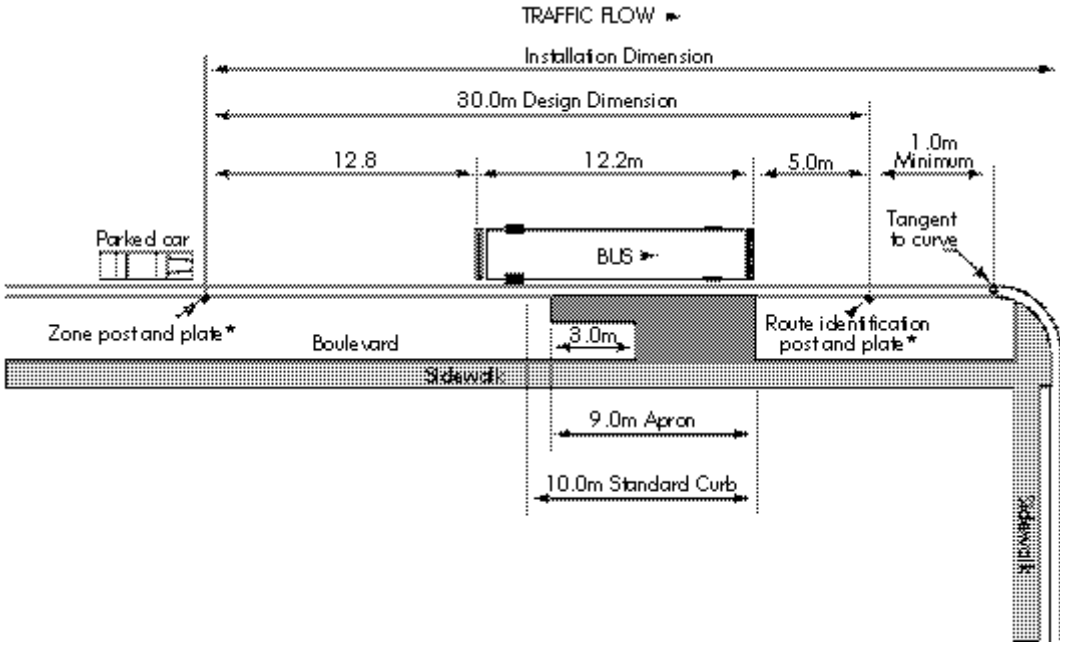
APPENDIX B

Mid-Block Zone



Not to scale

Near-Side Zone



Not to scale

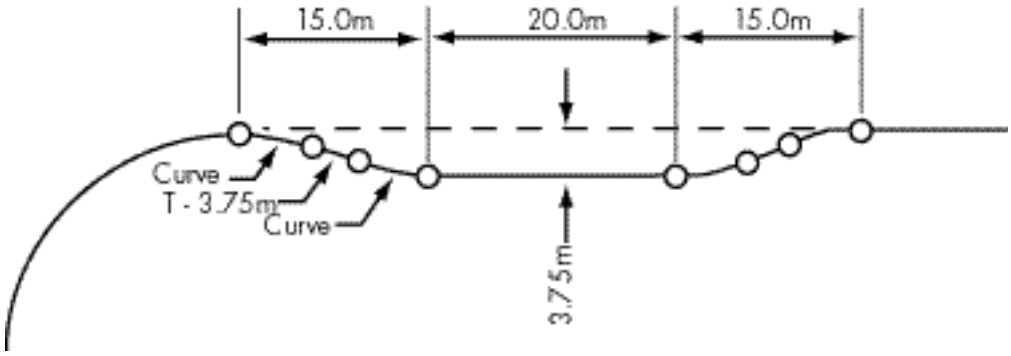
**Post must be a minimum of 0.5m from face of curb.*

All zones are sized for wheelchair accessibility.

A person in a wheelchair occupies a space 760mm x 1220mm and can turn within a 1500mm diameter circle.

Note: For more information on bus zones, refer to Bus Zone Location and Design, City of Calgary Transportation Department, 1992.

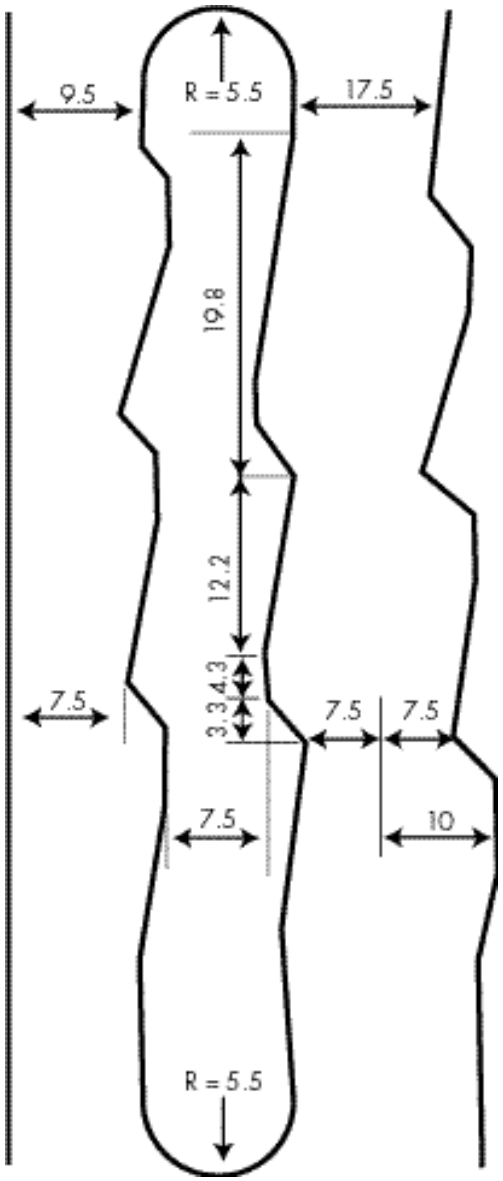
STANDARD DESIGN FOR A TRANSIT BUS BAY (50KM/HR ROADWAY)



Note: Curve data:
Radius is 15m
Length of Arc is 5.74m
Add 17m for each additional standard bus bay expected to use the turnout at the same time.

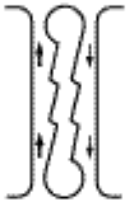
APPENDIX B

SAMPLE OFF-STREET BUS STATIONS



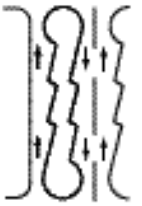
Single Side Platform

Island Platform



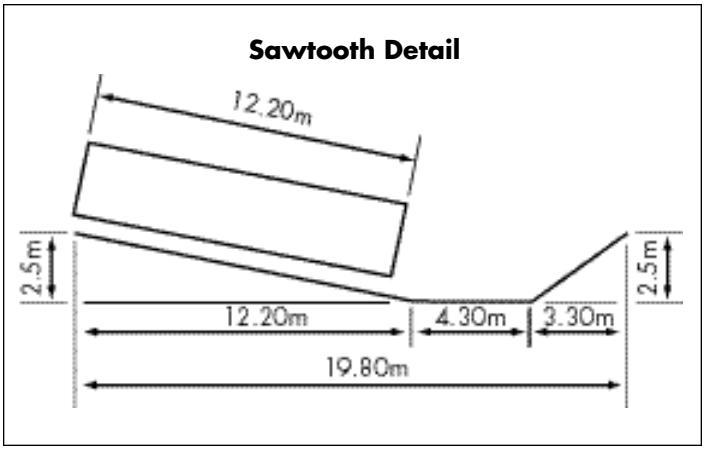
Two Side Platform

Island and One Side Platform



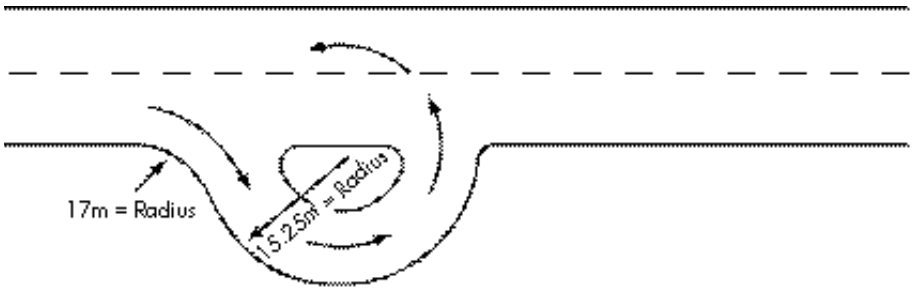
Island and Two Side Platform

Sawtooth Detail

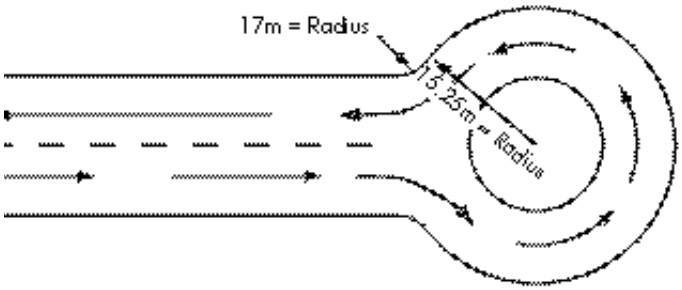


BUS TURNAROUNDS

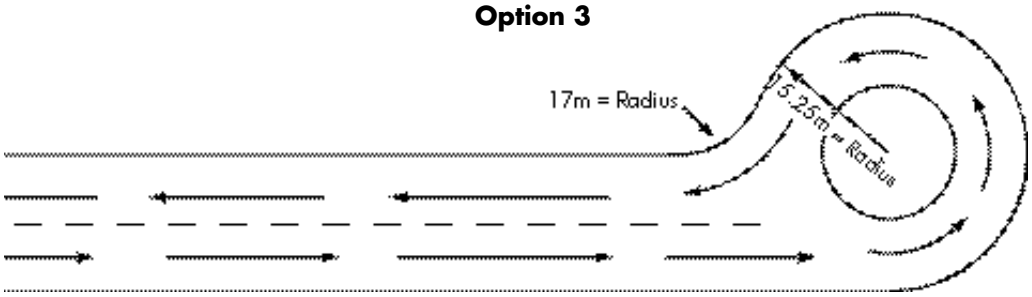
Option 1



Option 2



Option 3

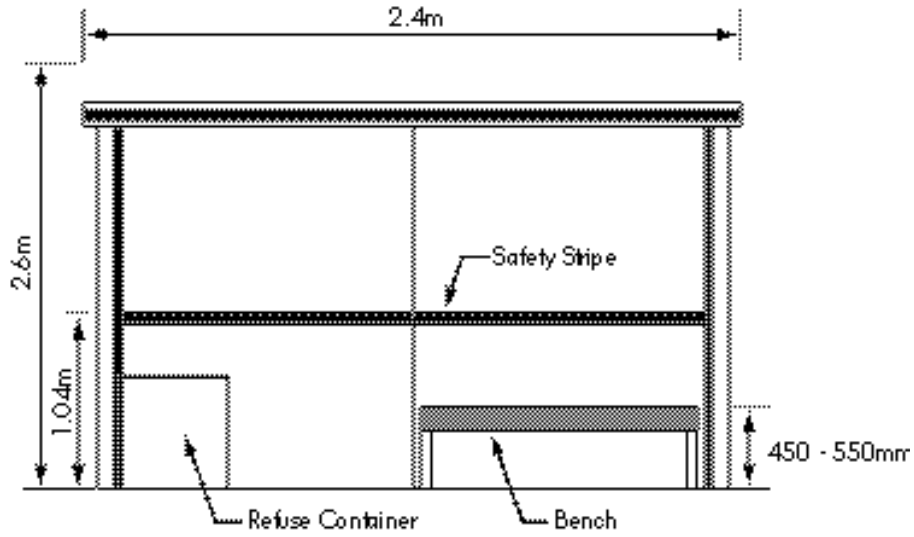


Note: To maintain sight distance, only low plantings are used in island areas

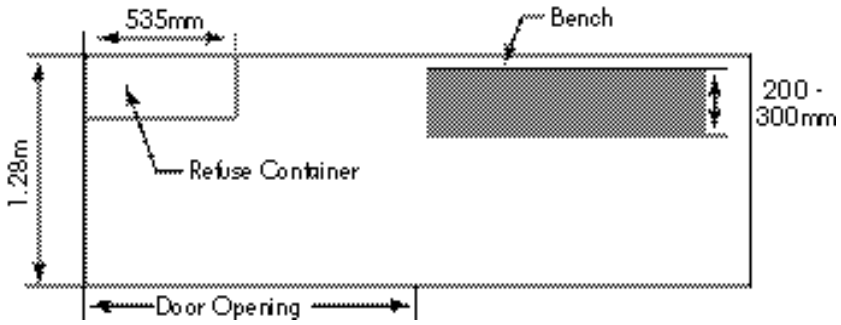
APPENDIX B

BUS PASSENGER SHELTER

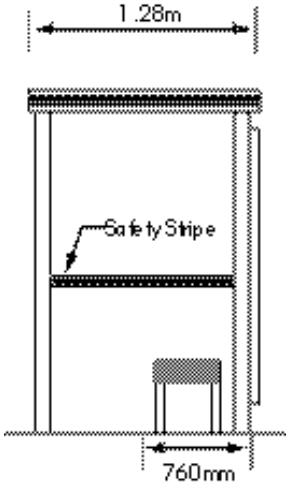
Standard Shelter
Front Elevation



Plan View

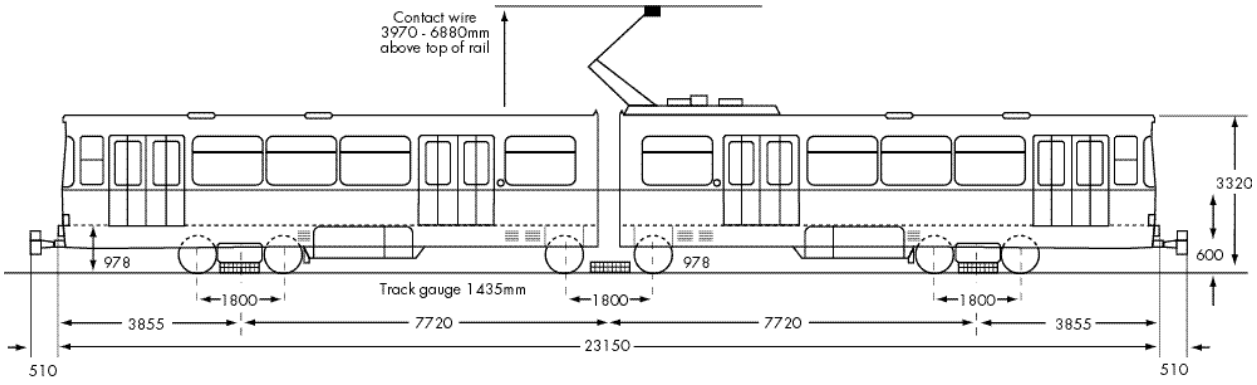


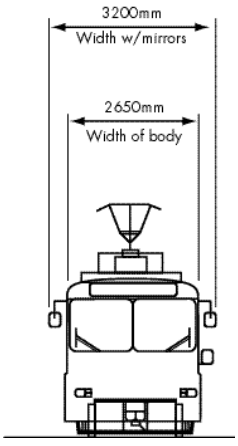
Right Side Elevation



Note: Minimum door opening is 800mm

LIGHT RAIL VEHICLE DIMENSION





APPENDIX B

EXAMPLES OF TRANSIT FRIENDLY DESIGN IN CALGARY

Adjacent to Alberta Treasury Branch Building, 2 Street and 8 Avenue S.W.

Adjacent to old City Hall, Macleod Trail and 7 Avenue S.E.

CALGARY TRANSPORTATION PLAN–APPROVED BY COUNCIL 1995 MAY
PUBLIC TRANSIT SECTION

PUBLIC TRANSIT

Public transit plays an important social, environmental and economic role. It provides basic mobility and allows Calgarians to participate in the social and economic life of the community. Efficient, high-quality public transportation can reduce the environmental impact of high auto use and provide a lower cost travel option to individuals and the community.

PUBLIC TRANSIT SYSTEM

Public transit plays a key role in the Calgary Transportation Plan. As with the other areas of the Plan, the transit network is closely linked with land use and changes to travel behaviour.

Effective land use planning and design is critical to making transit work well for citizens. Transit riders begin and end their trips as pedestrians, therefore both the origin and destination must be pedestrian-friendly. Land use planning can help make transit an attractive option by:

- providing sufficient scale of activity and employment at transit destinations to support the delivery of efficient transit services;
- designing new suburbs where bus stops are within an easy walk (400 metres or less);
- providing secure, well-lit pedestrian facilities.

In addition, placing the growth of new jobs closer to residential areas, or in locations well served by transit, will help to reduce overall travel distances and make transit use more viable and competitive with the automobile. Today's downtown has a divergent mix of activities and is an example of a successful transit destination. Likewise, concentrating residential and jobs in future suburban employment nodes or town centres will work well for transit in the future.

Implementing strategies like automobile "user pay," reducing downtown commuter parking supply and increasing parking costs will also work in transit's favour. There must be incentives to encourage people to take transit such as:

- providing a higher level of transit service than the early 1990s;
- using appropriate fare strategies;
- reducing walk time to transit stops;

KEY POLICY

The transit system will offer Calgarians a reasonable alternative to auto travel by:

- *Providing a level of service competitive with auto travel, the target amount of service rising to about 2.5 hours/capita per year by 2024;*
- *Using a range of transit service types, e.g. LRT, express buses, cross-town routes, feeder routes, etc.;*
- *Minimizing transit travel times by providing transit vehicle priority in traffic and optimizing route design;*
- *Minimizing transit travel delays caused by the need for transfers;*
- *Ensuring the fare system is simple and equitable;*
- *Providing accurate, timely and complete transit information to customers;*
- *Providing a comfortable and safe environment in vehicles, stations, and shelters;*
- *Facilitating access to transit for seniors and persons with disabilities;*
- *Integrating transit with other modes of travel.*

- coordinating connections;
- decreasing transit travel time by providing preferential treatment to transit by traffic control;
- improving connections through route and schedule design and improved waiting environment at bus zones;
- intermodal improvements, such as cycle/transit and park & ride facilities.

EXPANDING THE TRANSIT SYSTEM

The transit map located on Figure 4 generally indicates the intensity and location of transit services for the 1.25 million population mark. Specific route design and implementation will depend on growth, annual budgets and detailed planning. However, it is important to note that implicit in the Transportation Plan is that Public Transit will be emphasized to attract ridership. Future transit service includes the following:

- To serve the expanding pattern of the city, the LRT would be extended past Crowfoot in the northwest, Saddleridge in the northeast, and south of Marquis of Lorne Trail in the south. Other legs of the LRT are not anticipated until beyond the 1.25 million population level. The acquisition of the west, north and south east LRT rights-of-way, and planning for their integration into future communities will continue. Also to be considered in future studies is the feasibility of connecting the current N.E. line to the airport and the north employment centre.
- Priority would be given to transit on all main routes into the downtown.
- Where the LRT is unavailable, express buses would reduce travel times. Future express bus routes would serve new growth areas in Calgary's North and Southeast.
- Service frequency would be increased by about 40% on buses and LRT. To do this and accommodate a 70% increase in population growth, the transit fleet would increase by about 85%.
- Cross-town routes would be developed that emphasize improving connections and minimizing the number of transfers.
- Direct service would be provided to new employment areas to minimize the need to transfer.
- Bus-only lanes and bus/carpool lanes would be used to give buses a travel speed advantage over automobiles, particularly within the inner city area.
- Transit-only links could be provided at strategic locations in the network, such as the South Downtown Bypass.
- All buses will be accessible to the elderly and persons with disabilities.
- Transit will be integrated with other modes of travel (vehicle, rail, air and cycle).

SOCIAL CONSIDERATIONS

It is estimated that seven percent of adult Calgarians (approximately 42,000) are considered disabled with regard to transportation. This segment is defined as those Calgarians unable to use transportation, or use such services with more difficulty than the general population due to health or condition.

Calgary's population is aging. By 2021 approximately 15% of our projected 1.2 million population will be over 65 years of age compared to 7.8% of the 708,000 Calgarians in 1991. An increase in the proportion of seniors will result in an increase in the transportation disabled population. This, in turn, will increase the demand for specialized services.

The Calgary Transportation Plan recognizes that access to the community is a necessity for all citizens to assume a full and active role in society. The importance of specialized transportation services and accessible transit services is recognized as a means to achieve social integration and gain access to community services.

The primary mode of travel of the transportation disabled is by car as a driver or passenger, similar to Calgarians in general. The transportation disabled use public transit less than the general population and use taxis more. Many of those using conventional buses have difficulty with getting on and/or off, getting to the stop, standing in a moving vehicle, or waiting at a stop. Therefore, a wide range of transportation services is provided for seniors and persons with disabilities. These include: the Senior Citizen's Transit Pass, Handi-Bus, Special Needs Taxi Service, low floor Calgary Transit buses and accessible taxis. This "family of services" provided by Calgary Transit, City Social Services Department and Handi bus will continue to be needed to meet the varying transportation needs of seniors and persons with disabilities.

Affordability is an issue for many seniors, persons with disabilities and other people with low incomes. The City has chosen to subsidize some customers and endeavours to keep transit fares as low as possible for other low income persons. As user pay can affect both private vehicle travel and public transportation, these systems can have a significant impact on persons with low incomes. Any user pay system undertaken as part of the Transportation Plan, must recognize this constraint and only be implemented after full consultation with affected groups.

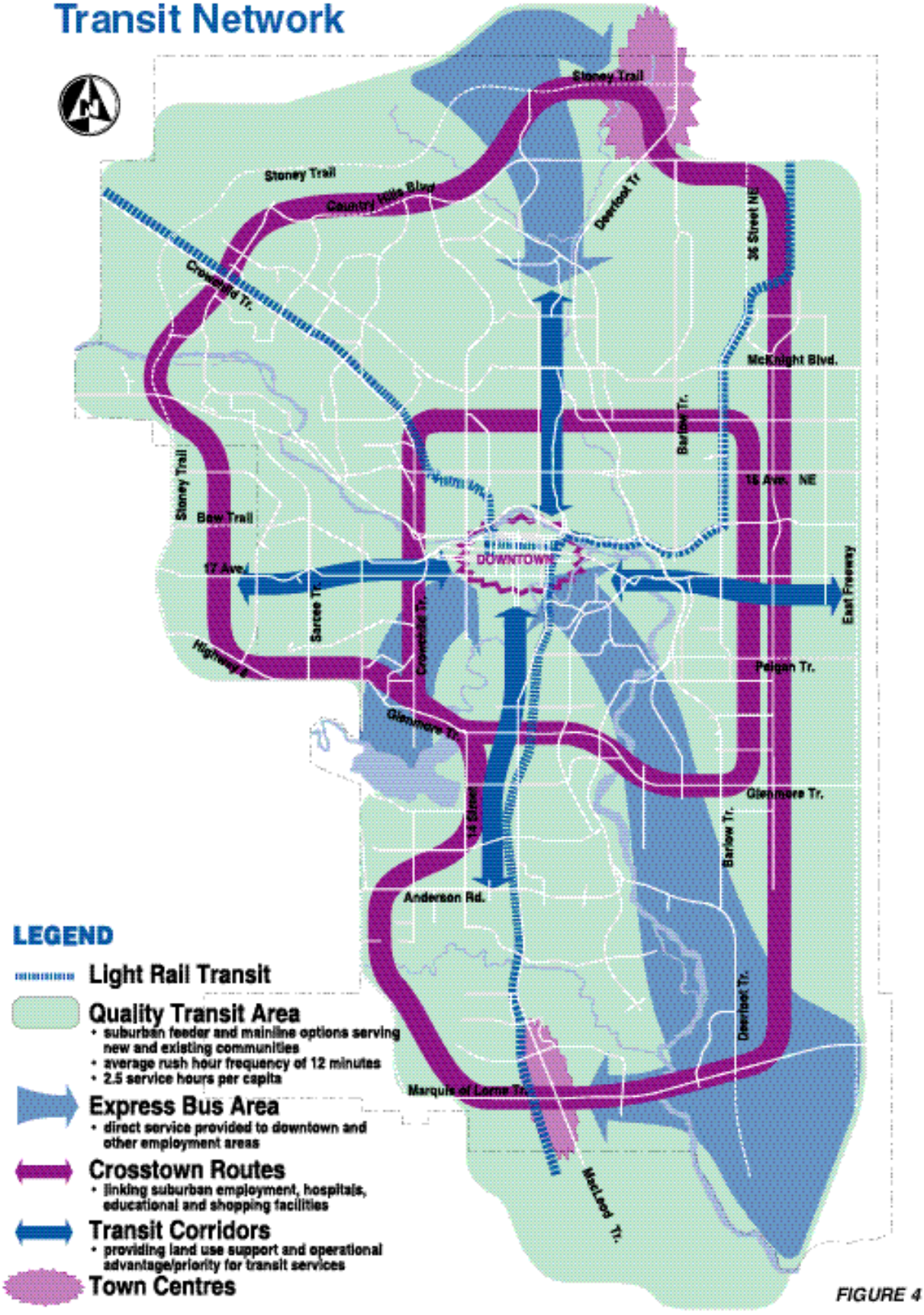
KEY POLICIES

The City of Calgary will facilitate mobility for the transportation disabled and low income persons by:

- *Providing affordable access to transportation to Calgarians regardless of their special needs or income;*
- *Providing mobility choices to those unable to transport themselves;*
- *Supporting the "family of services" approach for providing a range of services including specialized door-to-door services, accessible taxis, bus service and LRT services;*
- *Continuing to improve the pedestrian environment accessibility to transit service, public facilities and community services;*
- *Considering mobility requirements in the location decisions of housing for seniors or persons with disabilities;*
- *Providing education on conventional bus and LRT service available to seniors and persons with disabilities.*

Calgary Transportation Plan

Transit Network



LEGEND

- **Light Rail Transit**
- **Quality Transit Area**
  - suburban feeder and mainline options serving new and existing communities
  - average rush hour frequency of 12 minutes
  - 2.5 service hours per capita
- **Express Bus Area**
  - direct service provided to downtown and other employment areas
- **Crosstown Routes**
  - linking suburban employment, hospitals, educational and shopping facilities
- **Transit Corridors**
  - providing land use support and operational advantage/priority for transit services
- **Town Centres**

FIGURE 4

**TRANSPORTATION DEPARTMENT REPORT TO
THE S.P.C. ON TRANSPORTATION, TRANSIT AND PARKING**

1995 NOVEMBER 21

TTP95-66 TRANSIT FRIENDLY DESIGN GUIDE

ISSUE:

Approval of the Transit Friendly Design Guide.

RECOMMENDATIONS:

The S.P.C. on Transportation, Transit and Parking recommends that Council:

1. approve the transit design principles and policies presented in the Transit Friendly Design Guide;
2. direct that the Administration apply the transit design principles and policies contained in the Transit Friendly Design Guide in evaluating and approving plans for new development;
3. direct the Administration to include the policies and principles contained in the Transit Friendly Design Guide in future revisions of the Calgary Municipal Plan, the Calgary Land Use Bylaw and other relevant transportation and planning studies as appropriate (e.g., ARP's, ASP's, Urban Development Institute Standard Development Agreement, Design Guidelines for Subdivisions).

COMMISSIONER'S COMMENTS:

Commissioner Holmes concurs with this report.

UPDATE:

At its 1995 September 19 meeting, the Transportation, Transit and Parking Committee tabled TTP95-54 Transit Friendly Design Guide to allow extra time for consultation with the Urban Development Institute (UDI). Several meetings of Calgary Transit and UDI have been held and the Transit Friendly Design Guide has been revised to reflect these discussions.

BACKGROUND:

Calgary has a solid history of providing public transit as an alternative to private automobile travel. However, there is a need to improve the integration of land use/community design and transit service. Without attention to the design details that foster close land use/transit links, the benefits of providing quality transit options are not fully realized and potential ridership is lost.

RECENT DEVELOPMENTS:

Council approval of the Calgary Transportation Plan has placed increased emphasis on the role of public transit. Significant increases in modal split are necessary to achieve the Transportation Plan vision. In response to the Calgary Transportation Plan, the Sustainable Suburbs Study introduced a model for new suburban communities that will be designed and developed to reduce the need to drive.

The Transit Friendly Design Manual was written to explain and illustrate design techniques that foster transit and community integration. It addresses how to achieve the goals of increased transit ridership and reduced auto dependence. Increasing transit service without actively pursuing complementary community design elements risks falling short of achieving the desired modal shift to transit.

The Transit Friendly Design Guide was circulated to the Sustainable Suburbs Study Round Table Working Group and Outside Advisors and included many of their comments. Recent meetings with the Urban Development Institute have also produced revisions to the Transit Friendly Design Guide.

The Transit Friendly Design Guide

The Transit Friendly Design Guide (Attachment 1) is divided into two major sections:

a) Transit Design Principles and Techniques

The key principles that have been identified as contributing to transit supportive development are:

1. Provide appropriate community densities.
2. Minimize walking distance.
3. Provide mixed land uses.
4. Organize density, land use and buildings to benefit from transit.
5. Create pedestrian friendly environment.
6. Route transit into the community.
7. Reduce transit travel time.
8. Build quality, user friendly transit facilities.

b) Transit Policies

The policy section summarizes relevant transit policies that are used to evaluate and direct development. Through application of these policies, the principles of transit friendly design will be built into our city. Many of the policies contained in this section have been reviewed and approved by Council over the past years, and are contained in many other documents. These policies have been presented to provide a comprehensive compilation of transit policy in one document.

ENVIRONMENTAL IMPACT:

The application of the principles and policies in the Transit Friendly Design Guide will foster increases in modal split with less dependency on the private auto and its related environmental impacts.

FINANCIAL IMPACT:

Successful transit/community integration will result in increases in both transit system efficiency and effectiveness. Transit service will provide better value for the input costs.

CONCLUSION:

The Transit Friendly Design Guide was developed to provide mechanisms to achieve the modal shift goals contained within the new Calgary Transportation Plan and the Sustainable Suburbs Study. Successful achievement of greater transit/community integration through the application of the policies and principles in this guide is a critical element in meeting the transit goals contained in these documents.

ATTACHMENT:

The Transit Friendly Design Guide

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