



## Chapter 5

# *Tall City Transportation*



### **CONTENTS**

- » Issues and Opportunities
- » Transportation Plan
- » Goals
- » Initiatives and Policies



# Tall City Transportation

## INTRODUCTION

Transportation is critical to Midland's ability to serve the present and future needs of the city. Mobility and access help form the city, advance public safety, expand the economy, and enhance the quality of life that Midland offers its citizens, businesses, and visitors. For that reason, a comprehensive plan for growth must be built around a transportation framework that accommodates private motor vehicles (cars and heavy transport vehicles), bicycles, pedestrians, and transit. This chapter presents a plan for a future system that supports growth and meets the needs of a wide variety of users.

## TRANSPORTATION ISSUES AND OPPORTUNITIES

Growth creates both opportunities and challenges for a community. For Midland, the transportation system has experienced its share of challenges in the last five years. Increasing traffic volumes have created congestion issues at key bottlenecks and additional wear and tear on the streets. At the same time, federal and state dollars to expand the system have not always kept pace with growth. Many communities and states have resigned themselves to the fact that these dollars cannot be relied upon to address future needs.

Since World War II, transportation has focused on the car and truck, but in recent years transportation preferences are undergoing change both locally and nationally. Nationally, the share of trips made on foot or bicycle and by transit is increasing. Communities are finding that their transportation systems must respond to meet these changes in the market, especially since more options benefit the street system as well as residents' physical wellbeing. Midland's transportation opportunities and challenges cross all modes of transportation and must be planned for to ensure stable economic growth and a high quality of life.

## Streets & Thoroughfares

Midland's street system is its largest public capital investment and its maintenance and ability to move people and goods is fundamental to the city's quality of life. In the coming years key issues will be:

- » Maintaining and improving connectivity in growing areas of the city. The city's system of arterial, collector, and local streets provide a good network of connected streets within Loop 250. This pattern should be maintained and continued in growth areas and these should connect to those within Loop 250.
- » System maintenance is a challenge for the city, especially a growing city, where dollars for expansion often compete with maintenance dollars. Street maintenance is important throughout the city, but especially in

targeted neighborhoods where reinvestment is being encouraged. A good, quality street tells residents, visitors, and investors that community quality is important to Midland.

- » Multi-modal streets are not a new concept to Midland. Bike routes have already been identified within Loop 250 and should be expanded to new developing areas. High speed arterial streets, like Andrews Highway, may not be appropriate for this system, but the city has a very good system of local and collector streets that are appropriate for bicyclists and pedestrians. The system should also be expanded in developing areas along a parkway system that connects neighborhoods, parks, and schools.
- » Managing access points along collector and arterial corridors improves not only capacity and traffic flow, but also safety while offering more opportunities for landscaping.
- » Connecting land use and street capacity to avoid over, or under, building streets. Understanding the land uses and the traffic volumes that those uses will generate is important to understanding the street design, but it is also important to understanding the pedestrian environment that must be created. Widening streets is an expensive proposition and overbuilding streets can create speed and safety issues. The neighborhood centers identified in the land use plan must connect to a street system that is moving people in vehicles, on two wheels, and on foot.

## Bicycle Facilities

Bicycle transportation is not for everyone, but riding a bicycle for short trips can be an efficient option for most people and an important source of freedom for youth and those without cars. Challenges to any bicycle infrastructure include:

- » Continuity; connecting major destinations without interruption
- » Diversity; having facilities appropriate to land use and/or street context
- » Comfort; because most routes depend on streets, having good street connectivity will allow users to pick the level of street they feel most comfortable using

## Sidewalks

Sidewalks are the foundation of the city's pedestrian system and serve different roles. These include routes for recreational walking or running, safe route to schools, or trips to destinations from parking or bus stops. There are several issues with the sidewalk system:

- » Coverage can be sporadic and not consistent across the city. Sidewalks are now required in all new developments, and more thought is being given to placement by both the city and developers. However, before this requirement sidewalks were often an afterthought, especially in some commercial developments, where pedestrians are placed in environments that are uncomfortable.





## Context Sensitive Design

Context Sensitive Design takes a more holistic approach to transportation planning, where street network design involves deeper consideration of community planning issues such as adjacent land uses, intensity of development, and multiple modes of travel. The desired goal is to design street sections that accommodate expected traffic volumes at speeds that reduce barriers for pedestrians, cyclists, and transit users. Features of this approach include:

- » “Streets as places”, making community identity a key component in street corridor design.
- » The surrounding community influencing the design of a given roadway, instead of having a standard cross-section for a roadway that is applied everywhere.
- » Accommodate all modes of travel and making walking, transit, and bicycling more enjoyable and practical.
- » Design features that enhance safety by controlling speed and access.
- » A street design that may change as it passes through different “context zones” or land uses within the community.
- » Capacity being provided through a network of streets, rather than focusing on widening a single corridor to accommodate more vehicular traffic.
- » Longer distance trips being concentrated along limited access routes.
- » Focusing transit where land uses can support it.
- » Measuring network performance by more diverse standards than just level of service for automobiles.

*\* The information in this section is adapted from the Institute of Transportation Engineers proposed recommended practices manual: “Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities” which is available at [www.ite.org](http://www.ite.org).*

- » Condition, especially in older neighborhoods, can be an issue. Tripping hazards and ADA accessibility are challenges for most communities. Just getting a handle on the location of problem areas can make it difficult to understand the scope and cost of repairs.
- » Funding for maintenance or gap filling is often a challenge. Sidewalks in new developments are often factored into the cost of the development and ultimately the purchase price of a home. In older areas, the cost of maintenance or construction of connecting sections falls either to the homeowners, city, or a combination of the two.
- » Comfort level can be a major factor in how or if a sidewalk is used. Not all sidewalks are equal, and those that place pedestrians close to high speed traffic can leave the pedestrian feeling uncomfortable, and can place children in danger. Separation between traffic and the sidewalk offers a buffer and an opportunity to create a more pleasing environment for both the driver and pedestrian.



## Trails

Midland’s existing trails and multi-use paths are highly popular and an important resource for both pedestrians and bicyclists. The recently completed Hike and Bike Trails Master Plan has put an additional spotlight on the importance and enjoyment residents find in the trail system. The city’s trails can serve basic transportation and recreation needs, but they also present challenges:

- » Continuity is just as important in trails as it is with sidewalks or bicycle facilities. Trails should connect to places, rather than leaving users in dead ends or in areas without comfortable accommodations.
- » Funding for construction and maintenance of trails often competes with scarce parks resources. This is due to the perception that trails are seen as recreational, similar to other park and recreation facilities, rather than a component of the transportation system. In recent years the public health and transportation connections have broadened resources to a small degree.
- » User conflicts can often arise from the variety of users, including walkers (with and without their dog(s)), bicyclists, in-line skaters, and skateboarders. These users all operate at different speeds and can lack consideration of other users. On more heavily-used trails in Midland, signage explaining the “rules of the road” or even separation may be necessary.



## Transit

Unlike many cities, Midland does not have a long history of public transportation. The city grew after the heyday of streetcars, and instead grew up in the post-World War II era of the solo car. This has created a culture not familiar with public transportation and a development pattern that is difficult to serve. This creates specific challenges:



- » Coverage is the challenge in every system. All users would like the transit system to stop on their block (or in front of their house) and take them directly to their destination. However, no system can afford to function in this way. Many parts of the city lack the concentration of population necessary to support transit. However, some areas have potential and new neighborhood centers should be connected to the downtown, schools, and other important destinations.
- » The first and last mile is often how transit planners refer to the pedestrian and/or bicycle connections between the final origin/destination and the location of bus stops. As outlined above, the challenge is to make these connections comfortable and safe.
- » Pedestrian safety builds on the need to make sure sidewalks and bicycle systems are safe and comfortable. In addition to good, connected sidewalks, pedestrians need to feel safe crossing the street to reach their transit stop and their destinations. The crossing of multiple lanes of traffic can be difficult for seniors and the handicapped, making transit more difficult to use.
- » Service hours can be difficult to extend in a community with limited funding, a small fleet, and low rider density. Limited hours can limit the use of the system by those in most need of it – the service workers employed in a wide variety of business across the community.

### Air Service

The Midland International Air & Space Port is located half way between Midland and Odessa. It is the closest airport to Big Bend National Park and many counties in West Texas, making it a regional destination. Originally a World War II air school location, thousands of bombardier pilots were trained in the area. Currently, the runways are home to one of only two commercial spaceports in Texas. With the presence of XCOR and Orbital Outfitters, the new Spaceport Business Park will create a location for additional space related business on the property.

The Midland International Air & Space Port is a significant asset for the city, and has experienced tremendous growth over the past several years in the surrounding land. Much of that has been oil and gas development, but also industrial, commercial and some retail uses have located near the airport. The airport will continue to be an important transportation and economic resource. Maintaining and, if necessary, expanding transportation access to the airport, along with implementation of land use regulations related to the airport, will be essential to supporting this resource. Additional information related to the Airport Master Plan, the Spaceport Business Park, and the other uses near the airport are found in those site specific documents.

## TALL CITY TOMORROW TRANSPORTATION PLAN

Streets and alleys take up over twice as much land as all of Midland's parks, schools, and public and civic buildings combined. For most residents and visitors, their primary contact with the public realm is on streets. Private motor vehicles will continue to be the way most users experience these streets. In 2015 only 2.25% of commuters used public transit, walked, or biked to work in Midland. A factor in this small percentage is related to the design and character of the city's transportation system. The primary goal for the city will continue to be maintenance and expansion of the system into growing areas, but diversifying and visually enhancing the system is also important to residents. To successfully implement the land use and quality of life features that residents identified, the system will need to become more diverse over time.

The following goals, initiatives, and action items are designed to ensure the safe operation of the city's transportation system, accommodate all forms of mobility, and advance the city's overall development goals.

### GOALS

The following goals in the area of transportation have guided the development of this comprehensive plan:

#### 1. Develop a future transportation network that will support desirable patterns of community development.

There is a complex relationship between streets and adjacent land uses. As the city continues to grow, the transportation network must work in conjunction with the land use plan. The city must integrate existing and future land uses with the design of appropriate streets, and vice versa, to achieve residents' desires for a high level of connectivity and neighborhoods that have a sense of place and quality. When context and land use are part of the street design process, it moves the design process from a focus on traffic measurements to a priority on place-making.

#### 2. Provide a transportation system that is safe, convenient, and offers a variety of interconnected modes.

Traffic was a major concern for many participants in the planning process. Concerns ranged from congestion and delays to safety. The design of streets and the level of connectivity those streets have plays a major role in ensuring a safe and convenient system. A truly unified city requires good connections among neighborhoods and destinations centers. Alternative local links also reduce dependence on major arterials like Big Spring Street for local traffic movement. The overall network should also encourage different modes to provide safe and comfortable alternatives to the car for short trips.





### 3. Connect Midland's neighborhoods and community destinations with a trail system that will provide a safe and healthy transportation alternative.

Midland's neighborhoods, activity centers, civic districts, and major open spaces should be linked by a trail system that meets both recreation and transportation needs. An active transportation system increases mobility, helps create a healthy city, and creates a quality of life benefit that many residents expect from a city the size of Midland.

### 4. Ensure that Midland's transportation system is adequate to meet the demands placed upon it.

Midland has continually grown, both in bursts and at a slow pace, and this growth has required a transportation system that meets demand. Different streets in Midland have different demands placed upon them, driven by the surrounding land use and regional context of the street. Connecting surrounding land uses and regional demands with the design and maintenance of the street will ensure that the system functions at a high level and remains safe for all users.

## INITIATIVES AND POLICIES

Midland's transportation system is made up of many parts that should form a comprehensive and balanced system. This section will identify initiatives related to the overall system and then break it down into its component parts.

### Thoroughfare System

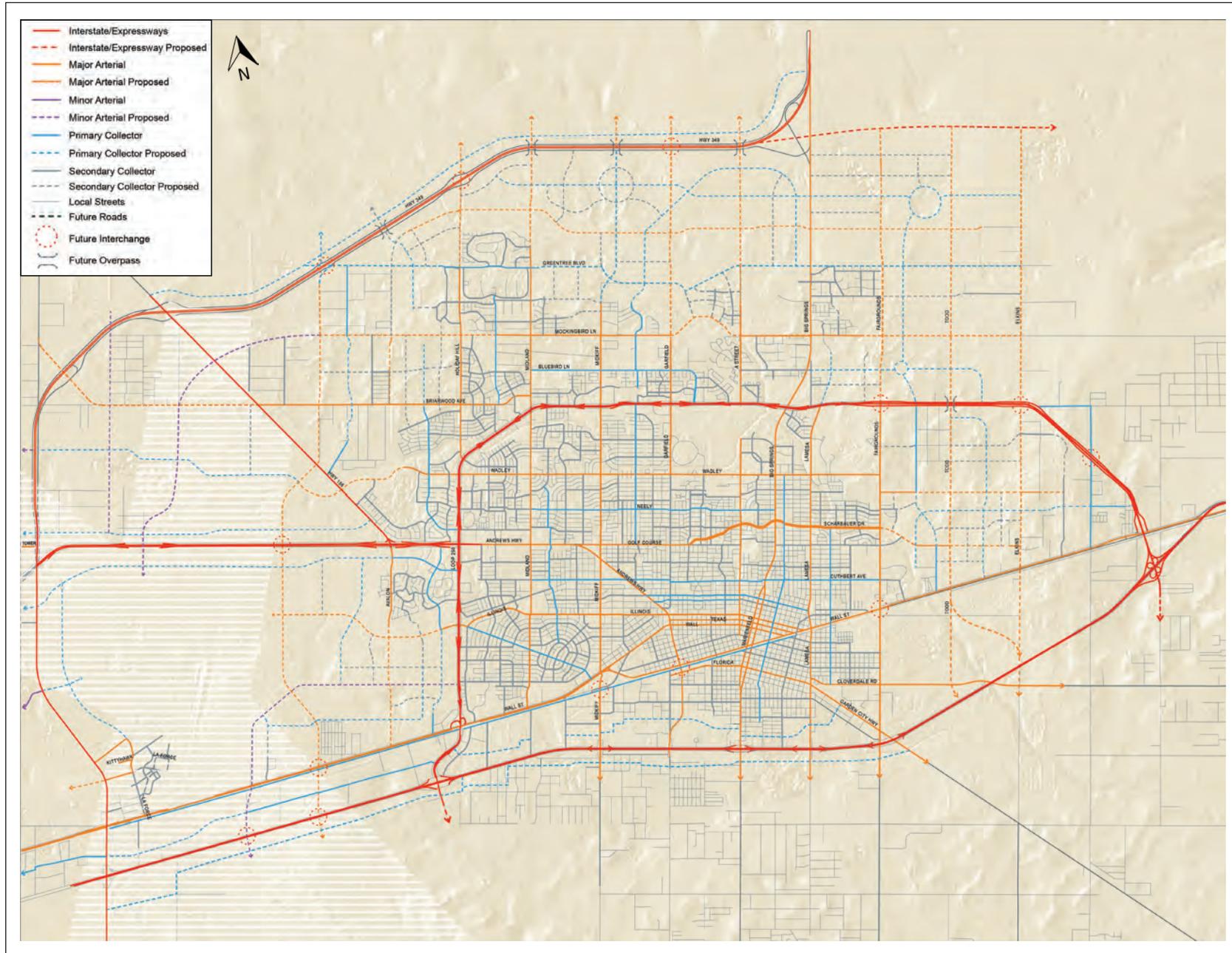
Map 5.1 depicts the proposed thoroughfare system for the City of Midland while Map 5.2 illustrates the bike and trail system. The proposed thoroughfare system is based on the general functional differences between street classifications. Mobility increases as the classification changes from local streets to freeways, while access decreases along the same line. Therefore the primary functions of the roadway types are displayed as a combination of mobility/movement versus property access.

#### 1. Coordinate thoroughfare and land use plans

***Action item: The City of Midland will ensure that street improvements and expansions to the network support the implementation of an intensity-based land use approach***

As the city moves toward a land use approach that is based on the mixing of land uses with similar intensities, and therefore similar traffic demands, coordination between the land use plan and thoroughfare plan will be essential. The thoroughfare plan should reinforce the vision of efficiency through enhancements to existing streets, improvements to areas of congestion and poor operation, and improvements to connectivity.

Map 5.1: Transportation





***Action item: A context sensitive approach will be applied to street design***

Much like the above action item, this item stresses the need for collaboration between land use and thoroughfare design. The street network should involve a deeper consideration of issues such as adjacent land uses, intensity of development and multiple modes of travel. New development should be located on streets of appropriate type and capacity, or include measures necessary to supply the required capacity.

***Action item: Require a traffic impact analysis (TIA) for large scale projects***

A TIA is a way to evaluate the impact of large developments on a roadway system, but also on the pedestrian environment. Completing a TIA should be considered for any land use plan amendments to a higher intensity, and required for residential projects that generate more than 2,000 trips a day, or for nonresidential projects that generate more than 2,500 trips a day.

## 2. Establish street connectivity standards

***Action item: The thoroughfare system will provide good street connections that offer a choice of routes and separate local traffic from major arterials***

Street connectivity benefits all parts of the system. Alternative routes for shorter trips indirectly increases the capacity of arterial streets for more regional or cross-city traffic. More options also means better quiet street opportunities for pedestrians and bicyclists and improved delivery of emergency services.

***Action item: The city will establish guidelines for greater street connectivity that includes pedestrian routes***

These guidelines should be built on the idea of improving efficiency of the roadway system by measuring and increasing connectivity. This may include urban design concepts regarding block length, alleys, street widths and simple requirements such as street and sidewalk stubs to adjacent vacant land and future neighborhoods. To improve connectivity between neighborhoods and improve emergency response, the number of entry points should be based on the number of lots, and where available alleys should continue to be used for the trash collection, parking, and access management.



## 3. Create multi-modal corridors

***Action item: All appropriate forms of transportation will be incorporated into the city's transportation system***

Not every street can be a multi-modal corridor or will incorporate all forms of transportation. For example, all of the city's collector streets should accommodate pedestrians and bicycles, but only some may include transit. For arterial streets the pedestrian, bicycle, and transit accommodations may occur along parallel local streets, trails, and some service roads. For the minor arterial system, sidewalks should connect transit users to stops and destinations. Every street improvement project that expands the capacity for motor vehicles on minor arterials and all collectors should include accommodations for transit and active modes (pedestrians and bikes).

**Action item: The future transportation system will include a multi-modal parkway**

In the developing areas of Midland, a parkway system should connect parks, schools, and neighborhood centers. The importance of the corridor should be evident in the additional attention to detail that the street is given. This may go beyond providing multi-modal options, but may include additional landscaping or accent lighting. Visitors should know that this is an important route that will take them to key destinations.

**4. Establish new street standards****Action item: The city will implement design standards that maximize safety and efficiency of arterials through the development and implementation of an access management plan**

The ultimate goal of an access management plan should be to improve safety and efficiency. The implementation of an access management plan should limit driveways on arterials and collector streets and increase connections between uses. Good access management has many benefits including increasing the efficiency of parking, reducing crashes and conflict points, and reducing stress on motorist and pedestrians.

**Action item: Develop and implement new standards for street ROW widths and lane configurations to augment access management, mobility, and cost effectiveness**

New design standards should take into consideration multi-modal accommodations and the best practices in stormwater management. This opportunity should also be used to review existing construction standards for potential cost savings or improvements to high traffic areas.

**Expressways**

Expressways are identified as roadways with a functional classification higher than arterial. These would include interstate highways and other freeways such as State Highway 191 and Loop 250, as well as the Cradick Highway (SH 349), and any future extensions of those highways. Additionally, expressways can include limited access, higher speed city streets, although Midland does not yet have any city-owned street fitting that description.

The purpose of expressways is almost exclusively for the movement of traffic with access limited to designated locations. For freeways, access is restricted to on-off ramps at major intersections, with businesses accessed along frontage roads. Some expressways could have access at intersecting streets through traffic signals, but these would be limited in number and spaced several miles apart. Speed limits could range from 50 to 75 mph for the various roadways, offering high-speed mobility through, around, and in-between major parts of the city.

**POSTED TO TALL CITY TOMORROW DISCUSSION PAGE:**

“Make a interchange from loop 250 to 191 heading west.”

– Danny T.



## 1. Expand and improve the expressway system as needed

### ***Action item: Evaluate the need and promote the development of strategic corridors***

Corridors to evaluate for inclusion in the future expressway system include:

- » State Highway (SH) 158 from SH 191 to SH 349
- » SH 349 freeway (Craddick Hwy) extended from Big Spring Street to I-20, north and east of Midland
- » A future north-south expressway from SH 349 (Craddick Hwy) to BI-20 in the area of Fairgrounds, Todd, or Elkins Roads, serving downtown
- » An east-west expressway from Loop 250 West along Wall and Front Streets to connect to downtown and the potential north-south expressway listed above. Evaluation includes potential movement of railroad facilities from within the city
- » A new south loop, south of Interstate 20. This corridor may be well beyond the life of this plan, but should be evaluated and monitored as the city grows. The Permian Basin MPO, through its South Midland Mobility PEL Study has begun evaluation of possible routes, and the city should stay engaged in any further studies.

### ***Action item: Continue to update the existing expressways***

The City of Midland should promote the development of the following changes/updates to existing expressway locations:

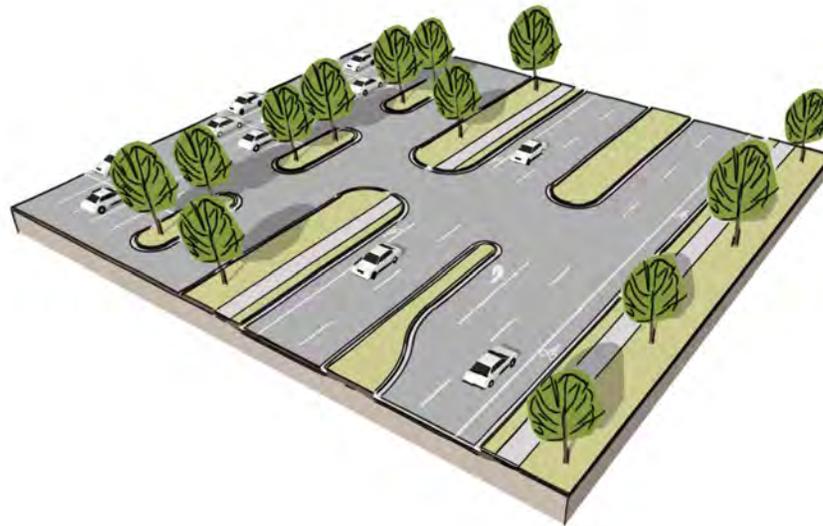
- » Transition to one-way frontage roads along I-20 from Loop 250 East interchange to FM 1788 interchange, including required interchange reconfigurations (see TxDOT's I-20 Corridor Study from 1999 and upcoming re-study)
- » Completion of Loop 250 and construction of interchanges from Fairgrounds to BI-20
- » Completion of SH 349 (Craddick Hwy) and interchanges, including potential underpass locations (no access)
- » Continue to reevaluate and develop the SH 191 corridor in light of the MPO's 2012 Corridor Study/Management Plan and the newer restrictions from the Midland Air & Space Port's launch safety corridors
- » Encourage implementation of the operational and safety improvements to BI-20 identified in TxDOT's 2005 Business 20 Traffic Study

## Arterials

Arterial roadways are the framework of the street system in any city. Intended to carry large volumes of traffic, arterials therefore should have limited access to adjacent properties. Historically in Midland, these streets were located at one mile intervals in a grid pattern. Additionally, they have typically contained a continuous left-turn lane in the center as opposed to raised medians.

Existing arterial streets include Wadley Avenue, Big Spring Street, and Andrews Highway. Each of these would be considered a “major” arterial. Minor arterials are similar in function, but due to their location or adjacent land uses, do not convey as much traffic. Examples of those in Midland are Florida Avenue, “A” Street, and Lamesa Road. Speed limits for arterial streets range from 35–45 mph, and intersections should range from four to eight per mile, with traffic signals at approximately half-mile intervals. Proposed arterial spacing can range from one to one-and-a-half miles apart.

The adjacent diagram illustrate the proper context of arterials to the surrounding land use.



### 1. Acquire ROW for expansion of the arterial system into growth areas

#### ***Action item: Acquire right-of-way for proposed routes ahead of development***

Recent roadway development has been hampered by the need to acquire ROW for new locations. Environmental clearance, ROW acquisition, and utility adjustments should be completed for future arterial locations ahead of development.

### 2. Prioritize construction spending

#### ***Action item: Develop and routinely evaluate and update an arterial roadway capital improvement plan***

This document would be used as a guide for prioritizing ROW acquisition, design services, and ultimately construction spending.

### 3. Identify and dedicate funding sources

#### ***Action item: Provide dedicated funding sources for arterial roadway development***

A reliable and innovative funding program is necessary to meet the ongoing demand of major roadway projects. The city should identify those sources and align them to project priorities identified in the arterial roadway capital improvement plan.

#### 4. Develop and update design criteria

**Action item: Develop new design criteria for arterial streets to include options for medians and alternate pavement sections**

The existing subdivision ordinance is inconsistent with the desire for medians or multi-modal facilities, and may be overly conservative with pavement depths relative to other cities in the region. However, the increasing heavy truck traffic on certain streets has resulted in pavements deteriorating at a faster rate, driving the need to evaluate construction standards.



**Action item: Implement a landscaping program for high profile corridors**

Residents frequently noted the desire to improve the image of high profile corridors. Future arterial streets should include room for adequate landscaping. Aesthetic improvements may also include adjustments to sign ordinance and increased landscaping requirements for parking lots that are visible from arterial streets. Some improvements may also apply to existing corridors, such as those connecting visitors from the airport to the heart of the city. Applying enhancements along these corridors would make it more attractive and demonstrate the significance of the corridor.

#### Collectors

Collector streets are designed to be the local distribution system for a city, collecting and distributing traffic between local and major streets (arterials and expressways). Historically, collectors were located at half-mile intervals in each direction and ran the length of the section. Examples include Bluebird Lane, Neely Avenue, Cuthbert Avenue, Oriole Drive, and Ward Street. Approximately 20-30 years ago, collectors were relegated to distribution of traffic within a section boundary and through traffic was discouraged. This change in philosophy resulted in multiple collector street connections in each arterial mile, and those collectors do not have continuous paths through to the next arterial roadway. Examples of these collectors are Spence Drive, Crowley Boulevard, Heritage Boulevard, and Legends Boulevard.



Moving forward the city will likely continue to have two types of collector streets. "Primary" collectors should connect through neighborhoods, offer continuous routes for several miles, and should offer intersecting arterials, but not end at those arterials. Primary collectors provide desirable multi-modal facilities for bicyclists and pedestrians with reasonable connectivity, but lesser traffic volumes.

They are not as conducive to residential housing that fronts the street, as that number of driveway cuts and on-street parking should be low for higher mobility, but not quite as high as an arterial. Non-residential access is acceptable, but should be controlled with shared driveways where appropriate.

Secondary collectors provide the neighborhoods with the distribution of traffic to the perimeter, but without providing the through connection. Residential access would be unrestricted on a secondary collector, speeds would be slower, and widths could be reduced.

The diagrams on the previous page illustrate the proper context of collectors to the surrounding land use.

### 1. Dedicate right-of-way ahead of development

***Action item: Acquire right-of-way for primary collector streets ahead of development***

Due to the incremental nature of development, the dedication of collector streets can often happen in a disjointed way. This is part of the reason that recent roadway development has been slowed or discontinuous. Environmental clearance, ROW acquisition, and utility adjustments should be completed for all known future primary collector locations.

### 2. Provide better distinction between primary and secondary collectors

***Action item: Clarify the use and function of primary and secondary collectors in the Subdivision Ordinance as noted in this document***

Currently, Midland’s city code distinguishes between primary and secondary collectors only in discussions related to ROW width and pavement. Use and function go undefined and have been interpreted in various ways through the years. The city should clarify those distinctions as mentioned in this section.

### 3. Develop and update design criteria

***Action item: Develop new design criteria for collector streets based on roles as primary and secondary designation***

The existing subdivision ordinance is inconsistent with the desire for multi-modal facilities. The city should also develop new access management guidelines/regulations for the new collector street designations.

***Action item: Require all new collector streets to be designed with complete street components.***

The city’s collector system should serve a variety of functions and users. Features of a complete street should include:

- » A pedestrian/bicycle domain set back from the roadway by street landscaping and an adequate greenway setback from curb to walk; or designation of an on-street bike route, along with a continuous sidewalk.



### NEIGHBORHOOD WORKSHOPS - WHAT NEEDS TO BE ADDRESSED IN ORDER TO BEGIN IMPROVING THE QUALITY OF PLACE IN MIDLAND?:

“Better night lighting on major city streets; maintain existing lighting”

- » Special lighting and street graphics to promote a sense of security and well-being.
- » Well-marked pedestrian crossings, sometimes with features such as crossing nodes that reduce the distance pedestrians must travel to cross the street.
- » Street furniture that claims part of the street environment for people who are outside of vehicles. This may not be appropriate for all corridors, but could be very important in proposed neighborhood centers.
- » Attractive landscaping to promote a sense of community.
- » Adequate buffering of draws and stormwater drainage areas to lower the volume and velocity of rain-water and decrease flooding events.

#### 4. Designate a parkway route in developing areas

**Action item:** *Develop a parkway that connects major destinations*

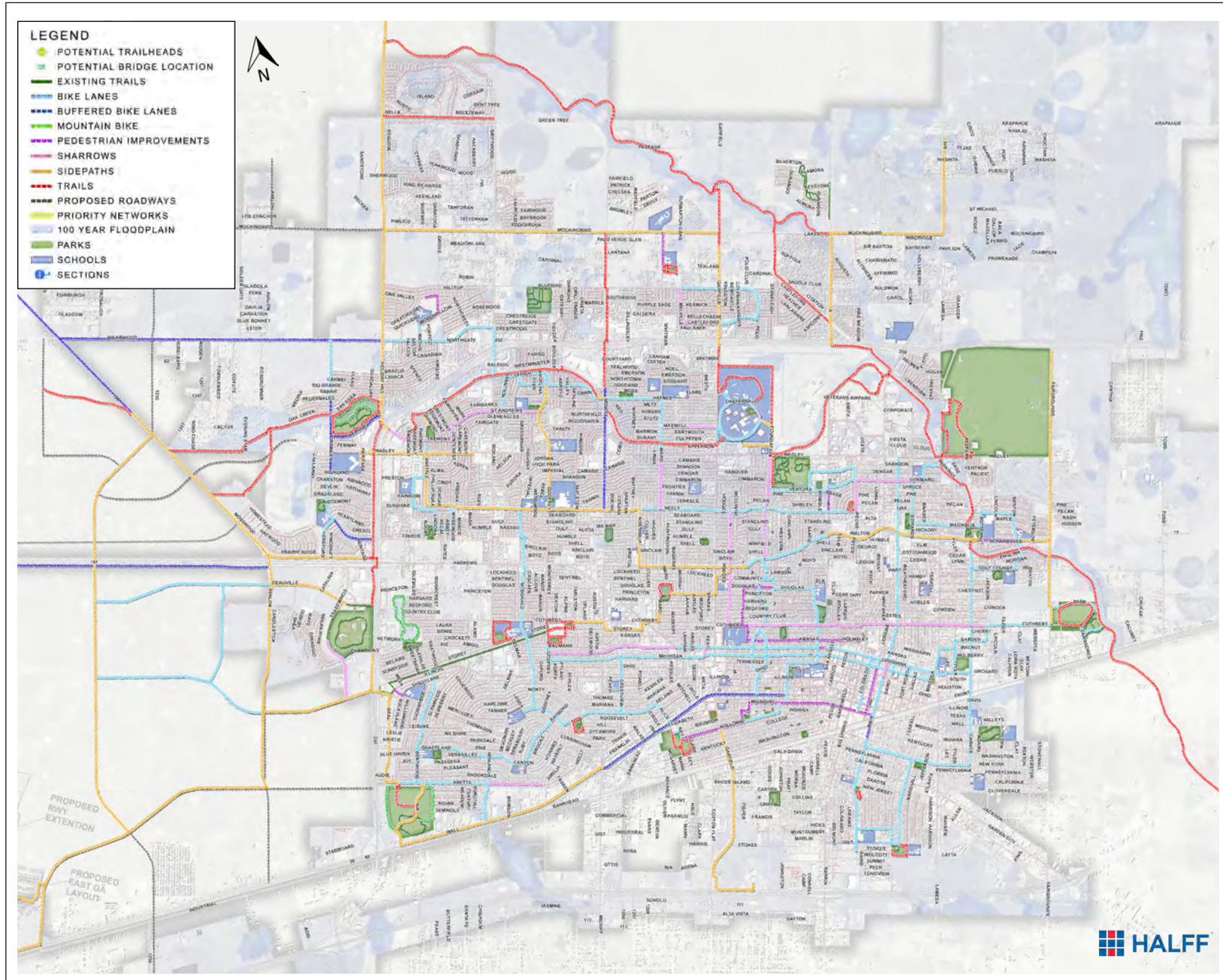
A parkway should connect neighborhoods, parks, and activity centers and project a strong and unified community image. These streets have special characteristics that unify rather than divide neighborhoods; accommodate pedestrian and bicycles as well as vehicular traffic; and encourage adjacent development to be oriented toward, rather than away from, the public right-of-way. The parkway should function as a complete street (see above).

#### Local Streets

Local streets serve Midland’s neighborhoods and the individual properties within commercial areas. They provide direct, low-speed access for relatively short trips and are often the routes traveled by families out for an evening walk or joggers getting their exercise. On-street parking is permitted and mobility is not the highest priority. Calming elements such as curvilinear streets, cul-de-sacs, offset intersections, raised crosswalks, and other devices can help keep traffic speeds low.

Although proposed local streets are not shown on the Transportation Plan Map, the diagrams on page 127 illustrate the proper context of local streets to the surrounding land use.

Map 5.2: Trail Map



## 1. Review and update design criteria

**Action item: Update design criteria to ensure that local streets are designed for their role in the transportation system**

Midland should allow and encourage street standards that are both functionally appropriate and relate to the role of the street in the city. These standards should:

- » Protect life safety services while not oversizing streets. Overly wide streets encourage higher than appropriate speeds that create safety problems. Parking controls and limitations to one side are tools that can help maintain emergency access and control speeds.
- » Reflect the context and role of the street in the system. The design of streets should reflect desired performance. For local streets this would be slower traffic that creates a comfortable environment for pedestrians or just children playing in a front yard. Wide streets in residential settings tend to increase traffic speeds and development costs as well as increase drainage concerns.
- » Control development costs. One way to control development cost and the base costs for lots is to limit the width of local street and thus the hard costs of a development. Narrower streets may not be appropriate for every neighborhood or buyer, but a narrower street that uses the alley for service access and even resident parking can lower costs while still providing adequate access for life safety services.

**Action item: Require sidewalks on at least one side of all streets in residential subdivisions with densities greater than one unit per acre**

All neighborhoods should provide safe access for pedestrians, whether it is a neighbor out for a run or a family out for an evening stroll. While leaving a neighborhood to experience a unique or special trail is a nice alternative, residents should not have to get in their cars to go for a walk or run. Additionally, sidewalks should connect to schools and other transportation routes, including trails and greenways.



## Bike and Pedestrian System

The city's transportation system should encourage all modes for appropriate trips – short distances that do not require automobile travel, for example. A large majority of trips are within three miles. Therefore, street standards should include reasonable accommodations for all users. The concept of “complete Streets,” multi-modal facilities that serve automobiles, bicycles, and pedestrians in an attractive public environment, should be integrated into the transportation, park, and pathway networks of the city.

From a development perspective, a system that encourages multi-modal transportation includes:

- » Public infrastructure that connects neighborhoods and destinations
- » Elimination of barriers that discourage or obstruct pedestrians, bicyclists, and transit users
- » Project designs that provide safe and pleasant passage from the public to private realm

All of the street section diagrams illustrate how bike and pedestrian facilities should be incorporated. The City's 2014 Hike and Bike Trails Master Plan also illustrates different trail sections that are appropriate for Midland.

### 1. Improve and expand the existing trail network

#### ***Action item: Implement the 2014 Hike and Bike Trails Master Plan***

Midland's Hike and Bike Trails Master Plan outlines an extensive list of potential projects that will connect key destinations. The plan includes priority projects, design standards, funding sources, and responsibilities.

#### ***Action item: Improve trail connections to streets and destinations***

A trail that provides miles but does not connect to its surroundings may provide benefits to people seeking workouts, but it fails in its transportation mission to move people to places. In addition, poor access or visibility to and from surroundings can create public safety problems. Trails should be designed or retrofitted to provide convenient and barrier-free access to adjacent streets and major destinations.

#### ***Action item: Identify a reliable funding source for trail development***

Midland will need to develop a reliable funding source for trail development. The traditional method of trail funding through the Federal Transportation Alternatives program, faces challenges with every reauthorization, and must compete for declining funds with a wider variety of projects. In addition, good trail maintenance is important, and total costs will increase as the system expands. Because trails are both transportation and recreation facilities (and sometimes transportation to recreation), funding from the capital and operating budgets for the Parks and Public Works Departments is both necessary and appropriate. However,



## KEYS TO A SUCCESSFUL PEDESTRIAN AND BICYCLE SYSTEM

**Directness.** The system should provide relatively direct routes to destinations without taking people far out of their way.

**Integrity.** The system should connect to places and provide continuity, rather than leaving users in dead ends or uncomfortable places.

**Safety.** The system should be physically safe to its users and not present hazardous conditions.

**Comfort.** The system should understand the various capabilities and comfort levels of its users. For example, senior citizens may take a relatively long time to cross a street, and some bicyclists are not comfortable riding in mixed traffic.

these funds are also limited, and other sources should be explored. Private developments should build trails within their boundaries and connect paths to nearby regional trails. Costs may be shared when there is an obvious regional benefit.

### 2. Expand the existing bike system

#### ***Action item: Expand the existing bike system to key destinations beyond Loop 250***

Midland's bike system within Loop 250 offers a system of well-connected streets to key destinations. Outside of the loop, the trail system is not as strong. Extension of the system should connect neighborhoods, shopping areas, schools, and other community destinations. The 2014 Hike and Bike Trail Master Plan identifies corridors and treatments that are appropriate to those areas. In addition to the existing signage, treatments may include dedicated bike lanes or other street markings, such as sharrows, to signal drivers that bicyclists may be in the area.

#### ***Action item: Remove barriers to expanding the bike system***

The greatest challenge to expansion of the bike system in Midland are man-made barriers – especially the Loop 250 corridor, where even cars find it challenging to cross the expressway. Improvements to existing crossings should include bicycle and pedestrian features, and future crossings of any expressway or arterial street should take into consideration the need to move people along with cars. Features may include better defined cross walks, refuges for pedestrians, pedestrian signals, and clearly defined bike lanes.

#### ***Action item: Improve the bicycle-friendliness of Midland***

Midland should work to create an environment that is friendly to both bicyclists and pedestrians. The “4 Es,” education, enforcement, encouragement, and evaluation, which the League of American Bicyclists views as the measure of a bicycle friendly community, should be adopted in Midland. This system recognizes that engineering alone does not create a successful bicycle culture. The components of the 4 Es include:

- » Education: making cyclists and motorists aware of the rules and practices of safety and etiquette and their mutual rights and responsibilities as road users
- » Enforcement: helping to ensure safety by enforcing rules that pertain to all users
- » Encouragement: executing events and programs that promote bicycling and its many benefits
- » Evaluation: establishing benchmarks and measurements to gauge the effectiveness of bicycle initiatives

### 3. Develop a pedestrian system plan

**Action item: Identify high priority sidewalk segments per an established sidewalk plan or safe routes to school plan**

Midland needs to develop and implement a strategic plan for the city’s pedestrian network. The plan needs to address key challenges including:

- » Expanding neighborhood sidewalks on local streets that provide access to destinations such as schools and transit stops
- » Addressing barriers to pedestrian travel such as major intersections, long arterial street crossings, and signal timing
- » Connecting the sidewalks to the trail, bike, and transit systems

To address these issues the plan will need to:

- » Identify a complete street network and the pedestrian corridors that should be developed and funded as part of the city’s thoroughfare plan
- » Establish clear standards for local sidewalks that include well-maintained sidewalks within a half mile walking radius of elementary and middle schools and neighborhood parks
- » Identify key pedestrian barriers that obstruct access for important user groups, including children and adults
- » Relate other active modes or facilities to the sidewalk network
- » Develop a phased implementation program

**Action item: Include sidewalks in all updated street design standards.**

As the city reviews and updates street design standards, sidewalks must be included in all street types exclusive of expressways. This should include proper crossings and signalization and coordination with utilities.

**Action item: Establish a dedicated funding source to address gaps and maintenance of the sidewalk system**

Maintenance and filling the gaps within an existing sidewalk system can be one of the most challenging priorities in a pedestrian system. For new areas, the city can work with the developers to ensure that quality of life amenities like sidewalks are included in the final design. During street maintenance and reconstruc-



**POSTED TO TALL CITY TOMORROW DISCUSSION PAGE:**

“Improve and build sidewalks. I cannot walk to our neighborhood park without walking in the road.”

– Sarah O.



tion some improvements are made for ADA compliance. However, funding to fill the remaining gaps often falls solely to the city, although some communities have done shared funding approaches with property owners. To maintain the system and fill the gaps, the city will have to look at a variety of funding sources that include local support from civically minded residents and organizations.

## Transit System

Midland's transit system, run by EZ-Rider, provides a system that covers some of the major destinations in the city, radiating out from the downtown. The city has a small role in the transit system and funding for expansion of these services is very limited. In the future, the city will need to continue to work with the transit authority to ensure that development can ultimately be accessed by transit and that residents have safe routes to get to transit stops.

### 1. Ensure that future projects are transit friendly

***Action item: Incorporate transit access into street design standards and projects on appropriate corridors***

As streets along existing transit routes are improved or modified, transit friendly features should be included. Amenities should include enhanced pedestrian access and street crossings at transit stops; signal cycles that give pedestrians time to cross; space for shelters; and signal controls. As the city is revising and updating existing street standards all of these features should be included.

***Action item: Implement standards that provide good transit access between major projects and transit routes.***

A successful transit system needs to provide clear and consistent service, but the experience that the rider has getting to the bus stop and waiting at the stop is also important. The connections between that stop and the entrance to a major destination are also important. For example, examine whether there is a clear and safe path or a large parking lot with no defined pedestrian route. Unsafe paths or waiting in uncomfortable settings can deter residents from using the service. All major projects and smaller projects along existing routes should consider the length and nature of the path between their front door and the transit stop.

### 2. Connect transit to other modes of travel

***Action item: Connect the hike and bike system with the transit system***

Most individuals are comfortable walking a quarter- to half-mile to a bus stop, but the experience needs to feel safe and comfortable. This distance can be expanded with the use of a bike. The existing bike racks on buses make it easy to connect the "first mile" and "last mile" of a multi-modal trip. However, like the pedestrian, the bike routes to and from bus stops must be safe and comfortable.