Contents

Plan Purpose and Intent ................................................................. 1
Chapter summarizing the need for this plan, its intended outcomes, and the planning process undertaken. Discusses critical differences between walking and bicycling to create an understanding of the specific facility recommendations that follow.

Station Access Plans ................................................................. 9
Detailed recommendations for both bicycling and walking within a half-mile planning radius from each of the three Gold Line stations:
  Arvada Ridge Station Access Plan ........................................... p. 10
  Olde Town Station Access Plan .............................................. p. 15
  Sheridan Ridge Station Access Plan ....................................... p. 21

Citywide System Connections .................................................... 25
Map and corridor descriptions showing how the three station plans connect together and link to the City of Arvada Major Bicycle and Trails Corridor Plan in the southeastern part of the community.
  Map of Primary Bicycle Corridors and Missing Links .................. p. 26

Spot Improvements ................................................................. 31
Specific roadway intersection modifications and trail connections that are desired to ensure seamless and convenient travel across the system.

Bicycle/Pedestrian Retrofit Recommendations .......................... 35
Recommended modifications to retrofit current roadway cross-sections to create complete streets that encourage bicycling and walking.

Pedestrian Environments ....................................................... 61
Policies for pedestrian supportive design and recommended modifications to retrofit current roadway cross-sections to create complete streets that encourage walking.

Implementation Details .......................................................... 65
Facility-specific infrastructure details to aid in implementing this plan.

Implementation Priorities ....................................................... 77
A discussion of the top ten priority projects.
**Project Background**

FasTracks is a voter-approved $7.7 billion, 12-year program to expand rail and bus service throughout Denver’s Regional Transportation District (RTD) service area. The FasTracks initiative represents support of a sustainable, forward-thinking approach to regional transportation and land use issues designed to provide improved transportation choices and options, increase transit mode share during peak travel times, and establish a proactive plan that balances transit needs with future regional growth. Scheduled for completion in 2017, the FasTracks system will create six new commuter rail and light rail corridors, extend three existing corridors, add significant additional parking, and expand bus service across the entire District.

One of the six new corridors, the Gold Line, will pass through the City of Arvada as it routes 11.2 miles from Denver Union Station in downtown Denver to the vicinity of Ward Road in Wheat Ridge. Utilizing the existing Burlington Northern Santa Fe (BNSF) rail corridor, the Gold Line will provide commuter rail service with three stations located within Arvada city limits – the Arvada Ridge Station at Kipling Parkway, the Olde Town Station, and the Sheridan Boulevard Station.

The vision for these stations, as established by the community in 2007 through the Arvada Transit Station Framework Planning effort, is to implement seven principles of transit-oriented development (TOD). These include:

- Establishing a defined center,
- Creating an active 18-hour place,
- Providing a diverse mix of land uses,
- Designing walkable neighborhoods,
- Requiring compact development,
- Managing parking supply, and
- Sustaining public leadership to bring about change.

In March 2009, the City of Arvada began this planning effort to further look at access needs within one half mile of each of the station sites. The objectives are to promote walkability, provide intermodal linkages by bicycle, and to minimize parking requirements by increasing use of nonmotorized modes to access transit. This plan intends to address both specific infrastructure needs and broad policy recommendations that merge land use, urban design, traffic, pedestrian and bicycle circulation.
**Why Plan for Alternative Modes?**

According to the Gold Line Environmental Impact Statement (EIS), the Denver metropolitan region is expected to grow from 2.60 million people (2005) to 3.39 million in 2025. If these citizens rely exclusively on automobiles to reach their jobs, schools, shopping and entertainment destinations, existing levels of congestion during peak travel times will worsen and quality of life will erode. Preventing this is a major goal of the regional FasTracks program.

Similarly, the Gold Line study area is forecast to see increases in population (34%), employment (45%), regional person trips (45%), regional vehicle miles traveled (61%), and regional vehicle hours of delay (160%). The Gold Line team estimates that implementing fixed-guideway transit service along the BNSF corridor will yield an average weekday ridership of 20,100 in 2030. Within the City of Arvada, RTD estimates its 2030 parking needs to be 330 spaces at the Arvada Ridge Station, 600 spaces at the Olde Town Station, and 400 spaces at the Sheridan Station. The City desires additional riders to be able to safely and conveniently access the commuter rail stations without having to drive and park an automobile – targeting 30% of trips for non-single occupant vehicle (SOV) modes including arriving by bus, bike and foot.

This plan is intended to enhance bicyclist and pedestrian transit station access by recognizing the functional differences and similarities between the two modes, and the differences and similarities between Arvada’s three TOD sites.

**Understanding Pedestrians**

Pedestrians make transit oriented developments active, vibrant and successful. Within a TOD, pedestrian activity increases when travel distances are short, land uses are mixed, and streets and walkways are inviting, enclosed and interesting. It is important to recognize that people on foot enjoy small details, and relate to buildings and transportation infrastructure that are arranged in a way that creates safe, comfortable and convenient walking environments. Such environments are created not merely by providing sidewalks, but are also influenced by the characteristics of adjacent roadways, buildings, and the spaces in between.

Planning for TODs typically is based on the concept of the 10-minute walk. At an average walking speed of 3.5 feet per second, the pedestrian walk shed around a transit station equals 2,100 feet or a little less than 1/2 mile. Nationally, the average walking trip length is only 1/4 mile (1,320 feet), but studies have shown that people will walk further given comfortable walking environments that include gentle grades, nice climate and, most importantly, built environments that have been enhanced for pedestrian comfort and convenience.
Designing pedestrian-friendly spaces that accommodate walking and encourage 10-minute and longer trips on foot requires an understanding of the different types of walking behavior and walking environments. People walk for various reasons including utilitarian walking (as a mode of travel/to reach a destination), rambling (recreational walking), strolling and lingering (walking with children, people-watching), promenade (walking to see and be seen), and special events (such as a farmers market).

Various types of physical environments will support or discourage these walking activities – all of which are desirable within mixed-use TOD centers. However, not all environments are created equal, and the way buildings and streets relate to each other creates a continuum of pedestrian friendliness with four classifications ranging from pedestrian intolerant environments to pedestrian places. Within a hypothetical 1/2-mile pedestrian shed drawn around a transit station, only a small core area can have the intensity and diversity of uses necessary to create and support a vibrant “pedestrian place.” The rest of the TOD planning area should strive to be pedestrian supportive through a process of eliminating pedestrian intolerant environments within public rights-of-ways and simultaneously building to higher densities that provide a diversity of uses within comfortable walking distance. Major roadways, rivers, railroads, and other barriers to pedestrian travel require frequent crossings within the TOD core to support walking as a travel option, or the detours created to get around these barriers will lengthen trips beyond a comfortable walking distance. Likewise, people will only walk 1/2-mile distances into the TOD center from adjacent neighborhoods if the corridors that serve as transition areas contain pedestrian supportive infrastructure and interesting buildings and land uses.

This plan is not intended to be a comprehensive pedestrian environment inventory. This plan also does not take the approach of mapping and promoting a select network of preferred walking routes, as successful pedestrian networks need to be fine-grained to support multiple travel options. Mixed-use development patterns are intended to disperse trip origins and destinations, and people will desire to walk different routes for different reasons at different times. The best pedestrian networks are therefore formed in areas with small block sizes, which are often further subdivided by alleys, multiuse paths, and mid-block walkways – all of which combine to create a myriad of preferred walking routes.

Instead, the pedestrian element of this plan focuses on identifying key missing links and corridors targeted for future sidewalk widening near each of the stations, and presents policy recommendations for application to all corridors. This approach involves making long-term transportation investments that reflect the multimodal priorities of the City of Arvada. Street components, such as detached walkways, street tree shade canopies, pedestrian furnishings and street crossing improvements, will be included as a routine part of providing and maintaining transportation infrastructure.
Understanding Bicyclists

Similar to pedestrians, individual bicyclists ride for different reasons, to varying destinations, preferring a variety of route options, and possess widely divergent levels of endurance and comfort riding in traffic.

It is generally recognized that there are two types of cyclists – Group A: Advanced Bicyclists, and Group B: Basic Bicyclists. There is also a Group C: children, whose needs are similar to the basic bicyclists and thus the two are often classified together as Group B/C.

- **Group A** – Composed of experienced riders who can operate a bicycle under most traffic conditions. This includes bicycle commuters, bike club riders and other cyclists currently following the rules of the road and riding on area streets and roadways.
- **Group B** – Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but nationally there will always be millions of basic bicyclists who prefer comfortable access to destinations and well-defined separation of bicycles and motor vehicles.
- **Group C** – Pre-teen cyclists who typically ride close to home under close parental supervision.

Bicycle planning generally promotes a “design cyclist” concept that recognizes and accommodates the needs of both Group A and Group B/C bicyclists. Group A cyclists will be best served by making every street bicycle-friendly by removing hazards and maintaining smooth pavement surfaces. Group B/C riders will be best served in key travel corridors where designated bicycle facilities are provided in the form of signed and striped bicycle lanes on selected roadways, and off-street trails following waterways and other linear open space corridors.

This study’s approach was therefore to assess bicycle system functionality and make recommendations to prioritize and complete difficult missing links that work for both types of bicyclists. Bicycle connectivity is assessed within a 2.5-mile radius of the Sheridan, Olde Town and Arvada Ridge stations – a distance which corresponds to the national average length of a bicycle trip. Providing complete bicycling corridors with seamless transitions between facility types is critical to create connections between stations and link to the regional system, including the Van Bibber Creek Trail, Ralston Creek Trail, Clear Creek Trail and bicycle facilities proposed in adjacent jurisdictions.

The map opposite shows current bicycle facilities within the City of Arvada, highlighting the need for improvements in the vicinity of the TOD planning areas.
existing citywide bicycle system, City of Arvada
The bicycle system recommendations contained within this TOD Access Plan address how to complete these gaps primarily by reallocating right-of-way to better serve bicyclists, pedestrians and motorists and to create vibrant public street spaces. The resulting system of primary bicycling corridors is intended to accommodate Type A, B and C bicyclists. The plan does not differentiate routes for Type A vs. B/C riders, as all will use a variety of facility types based on individual preferences. Many Type A riders who are comfortable operating in traffic will use additional streets beyond those mapped in this plan.

In a few instances where adjacent land uses allow, sidewalk facilities currently exist and may be additionally developed parallel to arterial roadways. This plan considers bicycles to be vehicles and proper users of the street and roadway system. Including sidewalks as bicycle facilities is discouraged by state and national guidelines and is not promoted within this plan. Also, it is important to recognize that sidewalks are pedestrian spaces, and their presence is not meant to provide a substitute for bicyclists’ use of local streets and roadways.

**Understanding Needs of a Changing Population**

Our population is growing older. As the Baby Boomers age, 70 million Americans will be over age 65 by 2030 – twice the number from 2000. At that point, older Americans will comprise 20% of the U.S. population, representing one in every five persons. A recent poll conducted for the AARP found that 40% of adults age 50 and older reported inadequate sidewalks in their neighborhoods, and nearly 50% reported they cannot cross main roads close to their home safely. Half of those who reported such problems said they would walk, bicycle, or take the bus more if these options were available.

Similar problems plague non-drivers at the other end of the spectrum. Today, more than ever, there is a need to provide options that enhance mobility and allow children to walk and bicycle to schools and activities safely. Further, children are engaging in less physical activity, which contributes to the growing epidemic of obesity.

Recommendations of this plan to create mixed-use developments close to public transportation that are served by complete streets will further the goals of assisting the City’s population to age in place while maintaining their independence without reliance on an automobile. Connectivity benefits to be realized by completing missing links in the citywide bicycle system, whether to access the train stations or other destinations, are intended to benefit the personal mobility and quality of life of young and old alike. Employing principles of universal design will ensure that the widest range of potential users – from persons aged 8 to 80, and all ages and abilities in between – have real options for safe, comfortable and convenient personal transportation choices.
Planning Process Overview
This project was managed by the Urban Design Division of the City of Arvada in coordination with the Planning, Traffic and Transportation, and Utilities Divisions. Early in the planning process, members of Bike JeffCo, Bike Arvada and other community stakeholders were consulted to provide input on existing routes, problem spots within the community, regional connections, and recommendations on desired types of facilities.

Consultants met with the RTD Gold Line Planning Team to coordinate the planning of FasTracks infrastructure with the TOD Access Plan. Written comments on the Gold Line Corridor 30% Engineering Submittal were submitted separately to RTD to highlight areas where additional bicycle and pedestrian improvements are desired to accommodate non-motorized movement across the railroad right-of-way and to enhance access to the three FasTracks stations located within the City of Arvada.

Feedback on a draft of this TOD Access Plan was received through comments on materials posted to the City’s website and through meetings with the general public and Parks Advisory Committee. In addition, the Traffic and Transportation Division thoroughly reviewed the subject plan and worked with the consultants to arrive at a set of final street cross-sections that reflect existing land uses, community make-up, parking needs, and traffic operations within each corridor.

Community Priorities
As a result of the public input and review process, this plan reflects the larger vision of the Arvada community for reinvestment of public infrastructure and private development around the FasTracks stations. In general, key priorities of the plan may be summarized as follows:

- **Connectivity**
  The overriding purpose and intent of this plan is to enhance opportunities for area residents to complete convenient, uninterrupted travel on foot and/or bike between origins and destinations within the southeastern part of the City of Arvada. Many short auto trips are being made for work, shopping and leisure that could be made by non-motorized modes. Addressing missing links and retrofitting rights-of-way to create complete streets are priorities to promote higher levels of bicycling and walking. The long-term goal is to make it easy for people to combine local trips on foot or bike with regional trips by train to minimize environmental, congestion, and quality of life impacts associated with increasing vehicle miles traveled (VMT).

- **Accommodating All**
  Creating a network of complete streets means providing options for all modes and all skill levels. Advanced bicyclists and less experienced riders, children and elderly, pedestrians and
automobiles all need to be safely and conveniently accommodated within public rights-of-ways.

- **Removal of Barriers**
The railroad corridor and major arterial roadways restrict opportunities for non-motorized movement in many locations. In any areas where at-grade crossings of the BNSF/FasTracks corridor will occur, sidewalks should be provided across the railroad right-of-way. The railway decking should be extended to accommodate pedestrians as well as automobiles. On major roadways, signals may need to be adjusted to better detect bicycles and provide both cyclists and pedestrians with adequate time to get across major intersections.

- **Parking**
In order to retrofit corridors to install bike lanes and pedestrian features, parking could be removed from one or both sides of a street. Neighborhood polling and coordination would be conducted prior to removing parking from any street. Streets where a railroad corridor, industrial use, or large format business or commercial predominate one side of the street, on-street parking would be removed on that side.

- **Enhanced Sidewalk Space**
In general, for corridors where the existing street is wider than necessary to accommodate traffic, it is proposed to reallocate the extra width to stripe bicycle lanes and install or upgrade sidewalks. Several corridors have interim recommendations that involve restriping the existing street as a low-cost, short-term enhancement, with long-term plans to narrow the roadway and enhance the pedestrian space. All new street construction will include wider sidewalks.

- **Lighting**
Appropriate lighting is a key element of operational safety for bicycle and pedestrian interaction with vehicular traffic. For a TOD area, planning of proper lighting would translate to ped/bike facilities that are comfortable and inviting for year round use.

- **Safety**
In addition to enhanced lighting and dedicated roadway space, the bicycling public desires a comprehensive, community-wide approach that addresses education, enforcement, encouragement and engineering measures to enhance user safety. Education of both bicyclists and motorists is desired to foster a greater awareness of sharing the road.
The primary objective of this study is to use the broad vision and goals that the community has established for citywide bicycling and walking and redevelopment of the station areas to develop a comprehensive, detailed plan to facilitate safe and efficient non-motorized access routes around the Olde Town, Arvada Ridge and Sheridan TOD sites. To accomplish this, the City of Arvada’s transportation planning consultant, Charlier Associates, Inc., reviewed a variety of applicable plans and policies, including:

- Olde Town Arvada Major Public Improvements Plan, Department of Public Works Engineering Division, July 2009
- RTD Gold Line 30% Engineering Submittal, CH2M Hill and URS, March 26, 2009
- Daily Traffic Volume Map, City of Arvada, updated April 2008
- City of Arvada Comprehensive Plan: Land Use Plan Map, June 16, 2008
- City of Arvada Trail Map, November 5, 2008
- City of Wheat Ridge Bike & Pedestrian Route Master Plan, City of Wheat Ridge Department of Public Works, July 23, 2007
- Adams County Parks, Trails and Open Space Plan, Adams County Planning and Development
- Arvada Transit Station Framework Plan, PB PlaceMaking, August 2006
- City of Arvada Comprehensive Plan: Major Bicycle and Trails Corridor Plan, Clarion Associates, October 2005
- Gold FastRoute Proposal, Bike Jeffco Bicycle Advocacy Group, November 2004
- City of Arvada Comprehensive Plan – Chapter 6, Transportation Plan
- Code of the City of Arvada, Colorado – Article 6, Development Standards
- City of Arvada Standard Drawings – Streets

The recommendations found within this TOD report build off of conceptual ideas presented in earlier studies and add necessary details to implement projects. The three Station Access Plans that follow identify specific improvements needed within the half-mile planning area surrounding each station to enhance walkability and connect the sites with the citywide system of primary bicycling corridors, as mapped on page 26.
The Gold Line of the RTD FasTracks system will begin at the Denver Union Terminal and extend west to Ward Road in Wheat Ridge, with the westernmost station within Arvada city limits located between Lee Street and Kipling Parkway along Ridge Road. Known the Arvada Ridge Station, this TOD site is envisioned to be a high-density, employment-based urban center with mixed-income and affordable housing.

The site is within the Ralston Fields Urban Renewal Area – a larger district extending north and east to the intersection of Garrison Street and Ralston Road. The urban renewal plan targets the area for future mixed-use redevelopment with a grid of pedestrian-oriented streets and enhanced multimodal connectivity.

The Burlington Northern Santa Fe Railroad (BNSF) operates a freight line track along the northern edge of the Arvada Ridge TOD site, providing service to the Coors brewery in Golden. RTD is planning to construct the Gold Line through this area as a double-track commuter rail transit line running parallel to and immediately north of the BNSF track.

Key issues within the half-mile study area that need to be resolved to enhance bike/ped access to the Arvada Ridge Station include safely crossing the railroad tracks and major roadways, completing gaps in the citywide bicycle system plan, and encouraging pedestrian supportive TOD infill development patterns.
Key Issues at the Arvada Ridge TOD Site

Crossing the Railroad Tracks

1 At the 30% engineering design stage, RTD’s plans for the station include platforms located on the north side of the BNSF tracks, with most of the initial TOD development and the RTD park-and-Ride located on the south side of the freight railroad.

Immediately adjacent to the site, Lee Street is a former at-grade railroad crossing that will be completely removed with the arrival of FasTracks. This crossing is frequently blocked by freight trains that are backing up to serve the industrial railroad spurs located just west of the Arvada Ridge site. The at-grade crossing will be replaced with a pedestrian bridge that will be accessed by elevators on either side to provide a pedestrian connection from the bus loading and park-and-ride plaza over the tracks to the Gold Line platform.

Miller Street will remain an at-grade crossing, and provides the best north/south access for bicyclists. Although less convenient, people also have the option to take their bikes up in the elevators and across the pedestrian bridge as needed to access the commuter rail vehicles and/or the transit-oriented development.

Bicycle Parking

2 Due to access issues involving the pedestrian bridge, elevator use, and street crossings potentially blocked by trains, this station site is recommended to provide an adequate quantity of bicycle parking facilities on both the north and south sides of the tracks. RTD is proposing to provide six bike racks and three locker units as part of the station plaza on the south side.

RTD’s bicycle storage policies include not permitting bicycle lockers within 250 feet of a station, station area, or patron gathering area. The proposed RTD bicycle locker placement is somewhat indirect and inconvenient since most bicyclists will be arriving to the site from the west and south. A location closer to the street entrances would be preferred. If the location cannot be moved, at minimum, there needs to be a curb cut provided to access the lockers from the site’s internal one-way street.

Additional bicycle parking racks located near the Ridge Road pedestrian crossing would benefit bicyclists accessing the Arvada Ridge Station from the north side of the tracks. This would eliminate the need for bicyclists to take bikes up in the elevators over the pedestrian bridge, lock them up on the south side of the tracks, and then go back over the pedestrian bridge to board the train. Due to limited space in the right-of-way between the tracks and Ridge Road, the City may want to look for an opportunity to provide the bicycle storage facilities on the north side of Ridge Road.

In general, it is recommended that all stations have additional bicycle lockers installed.

Enhancing Existing Streets for Bicycling and Walking

West of Kipling, bicycle connections to primary destinations of Red Rocks Community College, the Stenger Soccer Complex, Harold D. Lutz Sports Complex and the Van Bibber Creek Trail are in place using the existing system of signed and striped on-street bike lanes through single-family residential neighborhoods.

Missing links in the proposed city wide bicycle system include the following, with individual street retrofit cross sections beginning on page 35.

3 Miller Street – Multi-jurisdictional coordination with the City of Wheat Ridge will be needed to continue the striping of bicycle lanes on Miller Street south of Ridge Road. This wide street with low traffic volumes is a candidate to reallocate the center turn lane into space for bicycle lanes. Lane striping is recommended to continue south of Ridge Road for a distance of approximately
500 feet to the future western entrance into the TOD site, where marked crosswalks will be desired to indicate the bicycle transition and for use by pedestrians. (See page 37.) Sidewalks on Miller Street are currently lacking across the railroad right-of-way, but are present to the north and south. This gap needs to be completed.

4 Ridge Road – This street is viewed as a key connection to link the bicycle systems of the cities of Arvada and Wheat Ridge together, as well as provide access west to the Ward Road Gold Line station. The road currently has areas with no shoulder, no sidewalk on the north side, and a narrow bridge to cross. However, low ADT numbers make this a suitable shared road facility for use by experienced commuter cyclists, even without a shoulder.

The City of Wheat Ridge is preparing to update their bicycle and pedestrian plan in 2010 and the two communities will be working together on accommodating non-motorized needs within this corridor. Several interim improvements may be made immediately, including warning signage at the existing narrow bridge to facilitate sharing of the roadway by bicycles and automobiles. The City of Arvada discourages a mid-block pedestrian crossing on Ridge Road unless a pedestrian signal is installed. Highly visible crosswalk markings are desired both at the mid-block crossing and within the Lee Street/Ridge Road intersection. Consideration should also be given to using advance stop bars and marked crosswalks at the T-intersection with Independence Street.

Long-term, the desired corridor treatment is to add bicycle lanes. It is acceptable to provide a sidewalk only along the north side of Ridge Road due to proximity of the rail corridor, lack of space, and infrequent ability to cross the tracks to access destinations to the south. As the land to the north develops, upgrading to an urban cross-section with on-street parking and a detached sidewalk on the north side of the street is recommended. (See pages 53-54.)

To best accommodate cars, buses, bikes and pedestrians, Ridge Road should be widened, which would require re-locating many utility poles and widening the bridge, as well as a multi-jurisdictional agreement with Wheat Ridge. Road lanes will be either 9 or 10 feet wide, depending on whether or not future routing of RTD buses will utilize Ridge Road. Lane widths are recommended to be 10 feet minimum on all bus routes, since a bus is 10 feet wide from mirror to mirror.

5 W. 51st Place/W. 52nd Avenue – Between Kipling and Garrison, W. 51st Place and W. 52nd Avenue will be signed as a shared roadway bike route to connect with existing bike lanes striped on W. 52nd Avenue between Garrison and Allison. On-street parking is currently allowed on both sides of the road. Low ADT in this residential area does not necessitate separate bicycle lanes and subsequent re-striping. (See page 55.)

6 Independence Street – East of Kipling, the addition of designated bicycle lanes on Independence will be critical to provide connectivity to future mixed-use redevelopment within the Triangle Area of the Ralston Fields Urban Renewal District, as well as to primary east/west bicycling corridors.

The section of Independence between W. 58th Avenue and Ridge Road should have striping removed and lanes narrowed to provide two 5-foot bike lanes, as there are no parking issues in this area. The dual turn lane would be narrowed to 9 feet and the travel lanes narrowed to 10 feet in order to make this retrofit work. However, this partial solution is not favorable unless the whole section of Independence, from W. 58th Avenue to W. 51st Avenue is retrofitted for bike lanes. Due to limited sight distance near the hill at Grandview, it would be problematic to have cyclists crossing Independence to a suitable, parallel shared road facility between W. 58th Avenue and Ridge Road. It would also be dangerous to install a partial bike facility, where the bike lanes suddenly end at Ridge Road, forcing cyclists to unexpectedly merge with traffic. In order to install bike lanes, parking would have to be removed from both sides of Independence south of Ridge Road. Neighborhood polling and community meetings would be held prior to the removal of parking.

Narrow sidewalks and ADA issues also need to be addressed. Although short-term solutions are difficult, this is a needed connection. As redevelopment occurs, recommendations include removing the parking areas, installing bike lanes, narrowing the street, and widening the sidewalks. (See page 38.)
Continuous sidewalks will also extend across the railroad right-of-way to link with existing facilities.

**Intermodal Coordination**

Five RTD bus routes currently serve the Ralston Fields Urban Renewal Area. RTD is anticipated to modify and increase its bus service in conjunction with construction of the Gold Line. The proposed density of housing and commercial activity at Arvada Ridge and in the Triangle area will enhance the opportunities for adding local circulator services as well as reorienting some of the local bus routes to the Gold Line.

Any streets that are existing and/or proposed routes to be served by RTD buses will have minimum travel lane widths of 10 feet. Residential streets where buses will not travel may have lanes narrowed to 9 feet to help achieve joint objectives of calming traffic and creating complete, multimodal street corridors.

At the Arvada Ridge station site, not all pedestrians will be arriving from cars or buses within the park-and-ride lot. Both pedestrians and bicyclists will want to have direct access to the station plaza and platform, and should not be routed indirectly around the perimeter of the RTD parking lot site. The City of Arvada should work with RTD to strengthen the central north/south walkway by providing highly visible crosswalks, potentially utilizing raised speed tables through the parking lot.

**Pedestrian Crossings of Major Streets**

In general, pedestrians have difficulty crossing wide streets with multiple lanes and continuous turning movements. To improve the pedestrian environment, signals need to be timed to accommodate walking speeds per MUTCD, crosswalks should be marked with advance stop bars, and ADA-compliant curb ramps and crossing treatments should be provided. A pair of perpendicular curb ramps leading to each crosswalk is recommended rather than a single diagonal ramp intended to simultaneously serve both directions of pedestrian travel, but often directing people into the street in path of motor vehicles. (See page 75 for details.)

The City will consider additional pedestrian accommodation within the 1/2-mile study area around Arvada Ridge, including:

7 **Kipling Parkway Underpass** – A tunnel will eventually allow cyclists and pedestrians to cross Kipling Parkway at the Van Bibber Creek Trail. The proposed underpass will provide grade-separated access between new segments of trail to be relocated through the Lutz site and along northern edge of the cemetery property. Once completed, the Van Bibber Creek Trail extension will link facilities in the City of Wheat Ridge with Arvada’s on-street bike network at Independence, Grandview, and W. 57th Avenue.

Funding has also been acquired to add a 10-foot sidewalk along the west side of Kipling Parkway from W. 58th Avenue to W. 51st Avenue.

**Ralston Fields Urban Renewal Area**

The Arvada Urban Renewal Authority (AURA) initiated an urban renewal plan to provide an overall planning and implementation guide for three adjacent areas in Arvada, collectively known as Ralston Fields. The areas are Arvada Ridge, the Lutz/Stenger Sports Complex and the Triangle Area at 58th and Kipling.

Implementation of the AURA plan will create a higher-density, employment-based urban center with mixed income and affordable housing, including a five-acre transit village at the station site. Goals include solving traffic, circulation and access problems to facilitate the benefits of the proposed commuter rail system, encourage pedestrian and bicycle modes of travel, and locate shopping, recreation, housing opportunities and public amenities within easy reach of existing residential neighborhoods.

Outside the 1/2-mile Arvada Ridge TOD study area, additional bicycle-related enhancements are desired as part of the larger AURA urban renewal district.
These include:

- The Van Bibber Creek is currently being channelized and landscaped as part of a flood control project. A primary off-street trail is proposed to continue through the Ralston Fields URA with multiple connections to the citywide bicycle system. The Van Bibber Creek Trail extension is proposed to shift south on the Lutz property, cross under Kipling, and continue on street routes to Garrison.
- Community trails, in the form of sidepaths running north-south along Kipling, are also incorporated into the AURA plan to connect with the Van Bibber Creek Trail.
- Garrison Street should be signed as a bike route, and the short segment of informal trail that completes the missing blocks of Garrison Street between W. 57th Avenue and Ralston Road should be upgraded to AASHTO standards and signed. This could involve right-of-way acquisition.

**Arvada Ridge TOD**

8 Current configuration of the W. 51st Place entrance to the Arvada Ridge Market Place/Super Target is intimidating to less experienced cyclists. Recommendations include narrowing vehicular turning lanes to provide space for a bicycle lane to assist with proper lane positioning to maneuver through the signalized intersection with Kipling Parkway. The traffic signal should also have bike detection and minimum green times long enough to allow cyclists to cross.

It is also desired to retrofit W. 51st Place east of Kipling Parkway to allow cyclists easy access to the site from the Independence Street bikeway without the grade problems on Kipling Parkway. This will need to be a multi-jurisdictional agreement with Wheat Ridge.

9 Proposed street extensions within the five-acre TOD site will be designed to accommodate multiple modes of travel and create the highest quality pedestrian places. This means constructing wide sidewalks and narrow internal streets. Local streets with on-street parking and narrow travel lanes slow vehicular speeds. In such environments, bicycles and vehicles can safely share the road with no special bicycle accommodations. However, to better accommodate both bus and bike access to the FasTracks boarding plaza, on-street bike lanes are desired to be provided on the internal east/west street that will access the station plaza area from Miller. (See page 55.)

10 As part of the Ralston Fields Urban Renewal Plan, an internal north/south street will connect the freestanding retail pads along Kipling, and terminate at the transit station. This street will retrofit the existing parking lot drive into a local, traffic calmed street that incorporates pedestrian supportive and pedestrian place elements including wide sidewalks, corner treatments, street trees, bicycle parking racks, etc.

**Topographical Challenges**

The Arvada Ridge TOD site offers notable views to the south and west since it is at a higher elevation along the ridge than Kipling Parkway and the surrounding commercial development. However, with great views come access challenges.

Non-motorized users may cross Kipling using the Ridge Road bridge, or cross at-grade at the intersections of W. 51st Place. Steep right-of-way slopes along Kipling Parkway restrict bike/ped access to the Kipling sidepaths at this intersection.

A large retaining wall on the north side of the existing Target development creates an additional internal access barrier. Stairs may be constructed in the center break to accommodate pedestrians, but grades greater than 5% are not bicycle friendly. Cyclists should be encouraged through site design to use the street system.
Arvada’s central station is envisioned to revitalize Olde Town Arvada as a vibrant regional destination where people can shop, dine, work, play, learn, worship and live within walking distance from the FasTracks station. Infill development for a “New Town” located adjacent to the historic Olde Town is underway to create a signature mixed-use neighborhood that enhances, preserves, and supports Olde Town’s history and character.

Since the Olde Town TOD will be comprised of two distinct mixed-use development districts, pedestrian-friendly street improvements are necessary to encourage walking within and between Olde Town and New Town. Public infrastructure investments are desired to create a unique character for the district.

Narrow streets with on-street parking contribute to the pedestrian and bicycle friendliness of most of the area surrounding this station, with the Wadsworth Bypass and Ralston Road as exceptions. Numerous large auto-oriented commercial developments to the south also severely limit non-motorized access options.

A high priority for the Olde Town station is therefore to provide visible, safe and convenient access to the Ralston Creek Regional Trail system to the north. This will be accomplished through on-street connections to the west and a trail connection to the east as part of the priority citywide bicycle system.
Key Issues at the Olde Town Arvada TOD Site

Trail Connections

Multiple well-marked, convenient, and easy-to-use routes are desired to link Olde Town Arvada with the Ralston Creek Trail. Initial connections and long-term projects that can serve people with various riding skills, walking interests, and comfort levels are recommended as follows:

1 **Ralston Creek Trail** – This 13.6-mile multi-use path is the City of Arvada’s major greenway spine, serving as both a transportation corridor and recreational destination for a variety of users. The majority of the route consists of an off-street path along the creek, with on-street portions located between Brooks Drive at Ralston Road and W. 59th Place, and on Marilyn Jean Drive and W. 60th Avenue to cross Olde Wadsworth Blvd.

Olde Wadsworth will be upgraded to bike lanes with bike lane signs and pavement symbols added. Olde Wadsworth will be re-striped to reduce the bike lane width to 4 feet. The additional space will be used to upgrade sidewalks.

The at-grade crossing on Olde Wadsworth at the Ralston Creek Trail is currently marked with both advance pedestrian/bicycle warning signs and pedestrian/bicycle crossing warning signs. A highly visible ladder-style crosswalk will be added at the crossing. Since Olde Wadsworth Boulevard moves only moderate volumes of traffic (6,473 ADT based on 2006 counts), gaps in traffic should make crossing at-grade easy. However, the width of the roadway and speed of vehicles may be intimidating to non-motorized users. Slightly narrowing vehicular lanes and necking down the crossing distance using curb extensions at the intersection may be undertaken if ADT increases prompt improvements. An underground crossing is not necessary here, due to low ADT and very good sight distance.

2 **Carr Street** – Just west of the 1/2-mile TOD planning area, Carr is a local north/south street with low traffic volumes and speeds that will combine with W. 57th Avenue to provide access into the western side of Olde Town. North of Ralston Road, Carr Street is striped with on-street bicycle lanes and is a key route in the larger City of Arvada bicycle system. To the south, Carr goes under I-76 and provides an option to gain access to the Clear Creek Trail.

There is currently a significant barrier between the bike lanes on Carr Street north of Ralston Road and the proposed bike lanes on Carr Street south of W. 57th Avenue. This barrier is on school owned property. The ultimate solution would be to acquire right-of-way or an easement from the school and install a connecting segment of trail on this property. If this can be accomplished, the traffic signal will need to be modified at Ralston and Carr to allow cyclists to pass straight through. The signal currently allows southbound left turn movements only.

If the missing gap cannot be filled by acquiring right-of-way, the corridor will need to shift to Balsam Street, which should be signed as a bike route. Way-finding signage will be needed to get cyclists from Balsam Street to Carr Street via Grandview Ave. If routing on Balsam Street, W. 59th Avenue should have parking removed and bike lanes added to enhance the connectivity from the Carr Street bike facilities to the Ralston Creek Trail entrance on Balsam Street adjacent to Memorial Park. Because this is a residential neighborhood and City staff utilizes parking on the south side of the street, neighborhood polling and involvement would be necessary. However, completing the missing gap within the Carr corridor is the preferred routing option. (See pages 41-42.)

To the south, the Carr Street cross-section is 34 feet wide throughout the TOD area. Residents currently do not park on Carr Street in the TOD area. Long-term plans include reducing the bike lane and vehicle travel lane widths to provide space for expanded sidewalks, which are mostly non-existent in this area. The south end of the proposed bikeway, which lies in Wheat Ridge jurisdiction, will need way-finding signage installed to allow cyclists to navigate the neighborhood roads in Wheat Ridge which directly access the Clear Creek Trail. Carr Street will also need to have enhanced bikeway signage, especially on the south end where Carr Street continues under Interstate 70 toward the neighborhood connection to the Clear Creek Trail. A multi-jurisdictional agreement is needed for the south end of the bikeway.
3 Olde Wadsworth Blvd – The most direct route from the Ralston Creek Trail into Olde Town Arvada is along Olde Wadsworth. North of the creek, lane striping is present, although it is not designated if intended to be used as a bicycle lane or parking lane. (See page 42 for cross-section retrofit details.) Bike lane symbols will be added to Olde Wadsworth from W. 64th Ave. to Ralston Road. A striped crosswalk exists on Olde Wadsworth at the crossing of the Ralston Creek Trail. This crossing currently has both advance bicycle/pedestrian warning signs and bicycle/pedestrian crossing signs.

Between Ralston Road and the rail corridor, bike lane striping does not exist, nor is recommended to be added. Experienced cyclists currently use and will continue to use Olde Wadsworth as the most direct route to access downtown destinations, but cyclists will not be encouraged to continue south on Olde Wadsworth through Olde Town due to the chicanes and parking situation. Less experienced bicyclists will prefer more indirect travel and will be directed through signage to the Ralston Creek Trail, Allison Street, or Carr/Balsam Street via W. 59th Avenue. Or they may use the sidepath trail along the Wadsworth Bypass to the east.

South of the BNSF/FasTracks corridor to W. 55th Avenue, Arvada anticipates retrofitting the existing multi-lane street section. Olde Wadsworth Boulevard will be restriped to provide two vehicular travel lanes, on-street parking, and bicycle lanes.

New Connections – The upcoming land use and transportation study of the Ralston Road corridor will provide opportunity to further examine the potential to create an additional bicycling/walking link directly into Olde Town from the Ralston Creek Trail. Currently, Olde Wadsworth Boulevard is the only through north/south street, and the only signalized intersection of Ralston Road. It is recommended that the Ralston Road Corridor Plan fully examine this north/south connectivity issue and strive to create additional safe and convenient linkages and street crossings for persons traveling on foot and bike. The corridor study will also examine opportunity for east/west bicycle accommodation on Ralston Road.

4 Wadsworth Bypass Path – An existing multiuse path on the east side of the Wadsworth Bypass needs to be signed as a critical downtown link in Arvada’s primary bicycle system. Since Wadsworth is a major arterial (traffic volumes over 54,000 ADT), wide sidepaths are present along various parts of the corridor to accommodate nonmotorized travel. The section of path from the Ralston Creek Trail south to W. 56th Avenue should be signed as a preferred access to transit route, as well as the spur ramp connecting at-grade to Grandview Avenue. A curb cut is needed at the terminus of the trail on Grandview to provide seamless transition from off-street to on-street routes.

Since this path is a key connection in the citywide system, the crosswalk on the east side of the intersection with Ralston Road should be improved by installing raised porkchop island treatments, as shown below.

Enhanced On-Street Routing

Throughout Downtown, minor street improvements (signing and striping) are recommended to enhance circulation and access for bicyclists while maximizing on-street parking and minimizing conflicts with primary vehicular traffic flows.

5 Yukon Street – The existing bike lanes found on W. 57th Avenue end at Yukon Street. To create a highly-identifiable, continuous route, bicycle lanes may
be continued on Yukon between W. 57th and Grandview. Extending the bike lanes would involve stripping old lines and removing parking from one or both sides of the street. Neighborhood polling and involvement would be necessary in this area. Yukon Street has a low ADT and could also remain a shared road facility if signed with bike route/way-finding signage to clearly identify the link to Grandview. (See page 52.)

6 **Grandview Avenue** – To preserve the pedestrian-friendliness of Olde Town and maintain on-street parking in front of shops while identifying the preferred bicyclist travel route, install shared-roadway treatments along Grandview from Yukon to Lamar Streets. (See page 52.)

7 **Station Connector Route** – Bike route wayfinding will be used to identify the preferred local street route that links the Arvada TOD stations together. Bike routes will be implemented on Allison Street and W. 54th Avenue, with bicycle lanes striped on Olde Wadsworth, W. 55th Avenue and Vance Street. (See pages 55-58.)

**Future Infill Redevelopment**

Not all connections currently exist within the Olde Town Station planning area. Three key segments will need to be created through future land use planning and public infrastructure investments:

8 **Vance Street** – This short, two-block street serves as the critical connection linking the Downtown bicycling system together and merging the RTD rail and bus facilities into an intermodal center. Due to the grades and heavier traffic volumes found on Olde Wadsworth, Vance Street will be the preferred bicycle facility for users of all abilities.

Arvada Public Works is planning to widen Vance between Grandview and 55th to specifically to enhance multimodal connections and allocate street space to bicycle travel. One vehicular travel lane, a designated bicycle lane, and on-street parking will be provided on both sides of the widened street. Urban, 12-foot wide hardscape sidewalks and streetscape elements including corner treatments, pedestrian seating, decorative paving and decorative lighting will also be installed as part of the project.

As an interim measure, the existing cross-section is recommended to be restriped to implement bicycle lanes. Due to low ADT on Vance, the center turn lane may be removed and the street restriped with parking provided on one side in addition to the bike lanes. (See page 58.)

9 **W. 56th Avenue** – Reconfiguration of the Boyd’s Crossing Park-and-Ride should include clearly identified bicycle accommodation on W. 56th Avenue between the Wadsworth Bypass and Vance Street. This will require collaboration with RTD on future site design.

Collaboration with the Colorado Department of Transportation (CDOT) will be necessary to permit a full access intersection at the Wadsworth Bypass/CSH 121. The City is currently engaged in conversations with CDOT for its approval. This will benefit buses routing into and out of the park-and-ride facility, and is critical to complete bicycle system continuity along W. 56th Avenue and access to the multiuse path located on the east side of the Bypass. The recommended intersection treatment is a demand-actuated signal that would normally provide continuous traffic flow along the Wadsworth Bypass, with a red phase only as needed to accommodate crossing traffic. The signal must be bicycle-friendly to facilitate non-motorized activation.

It is important to note that being able to make this connection across the Bypass at W. 56th Avenue is critical to continuity of the overall citywide bicycle system, and necessary for the eastern portion of the New Town Infill area to be a connected part of the TOD core by any mode of travel – foot, bike or car.

To the east, the City of Arvada Traffic and Transportation Division proposes removing the on-street parking and installing two 11-foot travel lanes, two 4-foot bike lanes, and a 5-foot sidewalk. Long-term, additional right-of-way may be acquired to provide a center turn lane and 16-foot wide hardscape streetscape improvements. Bike lane connectivity will remain. (See page 59.)

10 **Neighborhood Circulation** – Long-term, as residential and PUD areas located southwest of Olde Town redevelop, opportunities should be sought to create smaller blocks with greater connectivity. Since the rail corridor
limits north/south circulation and access for all users, improved east/west connectivity is needed to provide convenient local travel options, especially for non-motorized modes. A new, more direct east/west connection from Olde Wadsworth to Balsam Street – whether a through vehicular street or non-motorized trail – is recommended to enhance the bicycle and pedestrian-friendliness of the neighborhood and provide convenient access to the expanded, mixed-use Downtown area.

Parking in Olde Town

Auto Parking – A study is currently underway to determine short-term and long-term recommendations to improve parking and transportation in Olde Town Arvada. The July 2009 draft of the Olde Town Arvada Parking and Transportation Demand Plan reports an existing parking supply of 7,681 off-street spaces (95.2%) and 366 on-street spaces (4.8%). This meets current demand and represents a surplus of 64% of the overall supply, and 31% of the effective core supply. Depending on development scenarios that may occur in conjunction with the opening of the Gold Line commuter rail station, there may be a need for up to 2,000 additional spaces in the future. This need will be carefully managed through parking and transportation demand management (TDM) strategies, and potentially, construction of new parking structures.

The Gold Line EIS and Olde Town Arvada Parking Study forecast that single occupant vehicle access into Olde Town could be reduced by up to 20 to 30 percent due to implementation of commuter rail, local feeder bus service, and the buildout of a dense, mixed-use, pedestrian friendly downtown. Making recommended pedestrian improvements is critical to meet the goal of having less than 70 percent of trips into Olde Town as drive alone automobile trips, or future parking deficits will likely be larger.

Bicycle Parking – Parking supply throughout Olde Town and New Town infill areas will also include an adequate supply of bicycle parking. Developments are required to provide minimum quantities of bicycle parking as specified in the Code of the City of Arvada – Section 6.8.3.

This TOD Access Plan also recommends supplemental parking be provided within the public rights-of-way in mixed-use areas. Inverted-U style racks are appropriate urban streetscape components to be provided within the furnishing zone of the sidewalk (hardscape area between through walkway and curb). Parking racks must be located at least 2 feet away from street trees, benches, trash receptacles and other objects also located in the furnishing zone, with a 30” min. separation distance between racks. (See page 70.)

Walking in Olde Town

General – The historical downtown is the most pedestrian-friendly environment within the City of Arvada, and an excellent example of pedestrian-friendly transportation infrastructure and land uses combining to create a unique destination and sense of place. All existing sidewalks are at least 5 feet wide; many provide supplemental space within the pedestrian realm for street tree plantings, street furniture, stylized light posts, sidewalk merchandising displays, and outdoor dining areas. Much attention has been paid to creating a unique core downtown streetscape along Olde Wadsworth Boulevard and Grandview Avenue.

Corridors that serve as transition areas into Olde Town will systematically see improvements to create more urban streetscape conditions. This includes widening sidewalks and making other pedestrian supportive improvements along 57th Avenue, Balsam Street, the western portion of Grandview, and other streetscape amenities will be necessary to successfully encourage walking trips from areas adjacent to Olde Town and reduce the demand for parking spaces. Recommendations of this TOD access study do not impact parking beyond the potential of removing a few parking spaces from one block of Yukon Street where on-street bicycle lanes are recommended.
streets as outlined by redevelopment considerations presented on pages 62-64.

The goal for all streets within the half-mile planning area around the Olde Town station, with the exception of the Wadsworth Bypass under CDOT jurisdiction, is to be Pedestrian Supportive. The historic development patterns of downtown and adjacent neighborhoods, combined with new urban, mixed-use development create street corridors with a good sense of enclosure and pedestrian-oriented buildings. Through traffic calming measures and prioritized investments in the creation of multimodal corridors, streets throughout all of Olde Town, New Town and surrounding neighborhoods can be Pedestrian Supportive environments.

However, it is important to recognize that the full Olde Town Station planning area is too large to be able to support the intensity required to create a Pedestrian Place throughout. Pedestrian Places are usually considered only to be the core activity areas embedded within larger Pedestrian Supportive districts or corridors. A Pedestrian Place environment can typically be supported for a maximum length of 1/4 mile. The existing downtown core is desired to remain the Pedestrian Place within the larger district.

**Ralston Road** – The major corridor most in need of pedestrian improvements within the TOD study area is Ralston Road. Traffic volumes and speeds are high; sidewalks are narrow, located immediately back of curb, and often obstructed with street furnishings and snow in winter.

Long-term, additional space is desired to construct wider, detached sidewalks either through roadway narrowing and/or expanded right-of-way. A full range of transportation options will be explored in 2010 as part of the Ralston Road corridor study.

As an immediate interim measure, management practices should be modified and public-private partnerships created to place newspaper stands, benches and signs on private property to create a less obstructed pedestrian travelway. Long-term reinvestment in this corridor should look to substantially enhance the pedestrian environment in the section adjacent to Olde Town.

**Wadsworth Bypass and Commercial Land Uses** – This major arterial and CDOT roadway carries traffic volumes in excess of 50,000 ADT. Land uses along the Wadsworth Bypass south of the railroad tracks are primarily single-use, big box commercial buildings that are oriented toward automobile access.

While investments have been made to enhance the walking environment along Wadsworth and throughout this commercial district, the fact is that large areas of surface parking served by wide streets with fast traffic prohibit this area from becoming very pedestrian friendly. Major reinvestment and intensification of land use would be necessary for corridors leading up to the train station to become pedestrian supportive, as discussed on pages 61-64.

Through such auto-oriented environments, people will not be likely to walk a 1/4 mile or more to reach destinations. However, sidewalks should still be provided on both sides of all streets, and every signalized intersection should be made as pedestrian-friendly as possible. Large spacings between signals on Wadsworth further discourage use by walking and bicycling modes, as trip lengths quickly become too long and indirect to be made on foot or bike. A new signal at W. 56th Avenue is strongly encouraged to provide connectivity to residential neighborhoods located to the southeast.
Arvada’s eastern FasTracks station is located off of Sheridan Boulevard, just north of I-76. The vision for this TOD site is to become one of the most desirable employment centers in Arvada. Infill development within the half-mile TOD planning area is proposed to include a full range of recreational, retail, transportation and housing options that can support the commercial/industrial center and provide a rich environment for employees.

The Sheridan station is located 1/2 mile north of the Clear Creek Trail — a major 19.5-mile regional trail that connects communities from Golden to Commerce City. It links directly with Denver’s Platte River trail system and Arvada’s Ralston Creek Trail. Enhanced connections from the Sheridan station to the regional trail system are desired, but will be difficult.

The TOD site is bisected by parallel BNSF and Union Pacific rail lines, which diverge just west of Sheridan Boulevard. The two active tracks, combined with the proposed FasTracks line, create a significant barrier for internal bicycle and pedestrian travel as RTD is not planning to provide a grade-separated crossing at this site. Other issues at the Sheridan station include optimizing pedestrian and vehicular connectivity and encouraging non-motorized modes in an area with lower density, segregated land uses and longer trip distances.
Key Issues at the Sheridan TOD Site

Separated Land Uses

The Sheridan TOD is proposed to be less of a mixed-use development than areas surrounding Arvada’s other two FasTracks stations. As a major employment redevelopment site, the Sheridan Station is intended to provide a diverse range of employment opportunities within an easy walk of the station. However, most of the area within walking distance of the station is characterized by one- and two-story industrial buildings with a few residential and older agricultural parcels. Zoning allows a wide variety of uses including heavy industrial with open lot storage, as well as small business and industrial condominium development.

The City of Arvada 2007 Station Area Framework Plan calls for an industrial district on most of the TOD site, with no residential allowed. A large format retail district is planned for the southern edge along an extended Ralston Road. Mixed-use with limited residential is targeted for the area immediately around the station. However, this area is currently being designed by RTD as the site of a 400-car surface parking lot and detention pond, with a small area reserved for station expansion if needed in 2030.

These land use patterns, combined with a lack of internal railroad crossing opportunity within the TOD, create longer trip distances for persons traveling on foot or bike than is typically found within transit oriented developments. Rather than a Pedestrian Place, the goal for the Sheridan Boulevard Station is to make the site and surrounding neighborhoods as pedestrian friendly as possible while focusing on creating a limited number of enhanced connections to the station platform.

Options for Crossing the Tracks

1. A Footbridge – RTD’s 30% engineering plans for the Sheridan site show a single-sided platform, accessible from the north off of a bus loading plaza. To the south of the proposed Gold Line tracks are multiple tracks used for freight and Amtrak service. First are the Union Pacific Railroad (UPRR) tracks, which veer northwest after crossing under Sheridan Boulevard. Immediately south of the UPRR, is the Burlington Northern Santa Fe (BNSF) line, which continues westward within right-of-way shared by the FasTracks corridor through the City of Arvada. No pedestrian bridge is proposed to be provided across the tracks by RTD to connect the northern and southern portions of the TOD planning area.

The 2007 Arvada Transit Station Framework Plan called for an internal pedestrian footbridge to connect the transit station to properties located both north and south of the tracks. If the Sheridan TOD area successfully intensifies over time into higher density employment uses, a public-private partnership could potentially develop this footbridge connection. However, this plan assumes the connection is not made.

2. Tennyson Street – Under existing conditions, Tennyson Street provides the most hospitable option for bicycle and pedestrian travel across the multiple railroad tracks. This low to moderately traveled street crosses the railroads at-grade, but offers a very indirect route to access the station platform. Bicycling is feasible, but walking to take commuter rail from the southern portion of the TOD is very unlikely due to the lengthy trip distances involved.

Tennyson is a multi-jurisdictional road, shared with Adams County. Asphalt shoulders will need to be added to some of the narrower sections to allow bike lanes to be installed. There are also tree removal issues on the east side of the road. Some parking will have to be removed. The road will need asphalt shoulders installed on the south end and the road will have to be re-striped.
3 Sheridan Boulevard Bridge – A third option to cross the railroad tracks involves coordinating with CDOT for non-motorized accommodation as they redesign and replace the existing Sheridan Boulevard bridge over the railroad tracks. More direct pedestrian access is desired up the roadway embankments to link with the frontage roads and internal streets of the TOD site.

Internal Site Connectivity

4 New TOD Streets – The 2007 Station Area Framework Plan calls for new internal streets through the TOD site. As redevelopment occurs parcel by parcel, plans should support this long-term vision to encourage walking trips by providing continuous, tree-lined sidewalks. Buildings will likely be large in footprint, but should have active street frontages to enhance the streetscape environment. On-street parking is also recommended to buffer pedestrians from vehicular traffic.

North of the tracks, the RTD park-and ride site design provides good pedestrian connectivity up to the intersection of W. 60th Avenue and Wolff Street. The proposed circulation infrastructure will encourage bicyclists to ride on the internal drive rather than on sidewalks with their sharp turning radii. Additional curb ramps should thus be installed to offer direct access from the street to the provided bicycle parking facilities.

5 Frontage Roads – The Sheridan Boulevard frontage roads also provide opportunity for enhanced multimodal access, especially on the southern portion of the site to link to the regional Clear Creek Trail. Depending on intensity of development and anticipated traffic volumes, the southern frontage road may be striped with bike lanes or marked with sharrows, but should provide clear wayfinding from the within the TOD site to the Clear Creek Trail. Sidewalks should be provided for pedestrian benefit.

Perimeter Roadway Improvements

6 Sheridan Boulevard – The Sheridan corridor is included as a proposed route in the Arvada Comprehensive Plan Major Bicycle and Trails Corridor Plan. However, significant long-term investment in the corridor would be required to implement the plan for Sheridan. As a regional roadway under CDOT jurisdiction, Sheridan Blvd carries over 46,000 vehicles per day and is currently intolerant to both bicycle and pedestrian travel. The most pressing need is to provide continuous sidewalks along both sides of the roadway.

Currently, much of the corridor exhibits well-worn footpaths where sidewalks start and stop, demonstrating levels of need. The corridor is served by RTD’s Bus Route 51: Sheridan Crosstown. Pedestrians accessing the bus stops need adequate, continuous facilities along the corridor, as well as safe roadway crossings to access bus stops for return travel.

In general, spacing of intersections and driveway access points are fairly frequent and right-of-way is restricted, so sidewalks should not be signed or designated as bike routes. Within the TOD planning area, Sheridan Boulevard must provide for pedestrian access across the railroad. Multi-jurisdictional coordination with CDOT is critical to ensure pedestrians are accommodated in roadway bridge replacement.

7 W. 60th Avenue – Continuous sidewalks should be provided along W. 60th Avenue, beginning with the RTD site frontage. As the 60th Avenue corridor redevelops, the sidewalk should be reconstructed as a detached walkway. This relatively narrow, low-volume street is recommended as a shared roadway. (See page 49.)

8 Tennyson Street – Sidewalks are provided for the street section north of the railroad. Sidewalks should be added across the railroad right-of-way and continue south for as long as urban development is present. On-street bike lanes/paved shoulders are recommended to be implemented on Tennyson between W. 64th Avenue and the access to the regional Clear Creek Trail. To accommodate the multimodal improvements, multi-jurisdictional coordination will be required to widen the roadway. (See page 45.)
Connections to the Clear Creek Trail

A spur trail is desired along the north bank of the Clear Creek to link to commercial uses planned for the southern portion of the TOD site. No new bridges across the waterway are recommended; instead trail routing should utilize the W. 56th Avenue bridge.

South of the City limits, a nice at-grade trail crossing treatment currently exists across Tennyson. This trail/roadway intersection should be signed with wayfinding as the preferred bike route leading from the trail to the Sheridan station.
The focus of this study was to assess nonmotorized access needs within a 1/2-mile planning area surrounding each of the three FasTrack stations. In addition, a conceptual reference to the connections of these transit stations to each other, as well as ties to the Arvada trail system, was desired.

Recognizing that the bicyclist travel shed around each station is 2.5 miles, the goal was to identify a system of primary bicycle corridors at least this long that feed into the stations from each direction. An assessment of the current trails map and 2005 Major Bicycle and Trails Corridor Plan contained within the City of Arvada Comprehensive Plan reveal major gaps in the proposed citywide system in the southeastern portion of the community.

An in-field inventory and analysis was conducted to identify those corridors best suited as primary bicycle routes, as presented on the map on the following page. Bicyclists can and will ride on additional streets, but the identified trails and roadway corridors are desired to be recognizable as a safe and convenient place to ride to reach major community destinations, including the TOD sites.

Missing Links
Overlaid onto this proposed primary corridor system is an assessment of missing links. Dashed lines represent areas in need of improvements to provide continuous bicycle travel throughout each corridor. The facility type may change from on-street bike lanes, to shared roadways, to off-street trails – but transitions should be seamless to provide continuous, uninterrupted travel.

During the public review of the draft plan, proposed corridor improvements were discussed and identified for prioritization. The TOD Access Plan’s methodology and approach recommend a shift in the way projects are selected for implementation. Traditionally, less costly projects are completed first. However, this can result in an incomplete network with major obstacles to bicyclists who desire to travel for longer trip distances.

The preferred approach is to select a few corridors and make a focused investment of resources to complete needed enhancements from beginning to end. A few complete bicycle travel routes will increase bicycle mode shift better than short, disconnected segments. See pages 69-71 for an implementation plan for immediate priorities.
Primary North/South Bicycling Corridors

Oak/Quail/Miller Streets
This corridor provides north-south connectivity from existing bike lanes on Allendale Drive to the Van Bibber Creek Trail, south to the Arvada Ridge station.

Oak Street north of 58th Avenue should be adopted as a shared road facility. The ADT is low on Oak Street in the residential area. There is a gap on Oak Street between Allendale Drive and W. 64th Avenue. A shared route should be added on Quail Street between 60th Avenue and 63rd Place. Another shared road route should be added at Quail Street/W. 63rd Place. W. 63rd Place will access Oak Street and allow cyclists to cross 64th Avenue at the traffic signal. Bicycle detection will be needed at the signal on 64th/Oak Street.

Oak Street is currently striped with bike lanes south of W. 58th Avenue, continuing onto Miller Street. Bike lanes on Miller should be extended south from Ridge Road to connect to W. 52nd Avenue. Extension of bike lanes south on Miller will require multi-jurisdictional coordination with the City of Wheat Ridge to implement. (See page 37.)

Kipling Parkway
A sidepath facility exists on the east side of Kipling, with incomplete segments on the west side. The cities of Arvada and Wheat Ridge have long-range plans to complete a bike/ped facility within the Kipling corridor to ensure a seamless transition across jurisdictional boundaries. Exact facility treatment should be determined with close multi-jurisdictional coordination as Wheat Ridge and Jefferson County proceed with future phases of their bicycle/pedestrian planning work.

Independence Street
This corridor runs along the eastern edge of the Arvada Ridge station area, extending from W. 57th Avenue to the trail network in Jack B. Tomlinson Park. Restriping is recommended to accommodate on-street bicycle lanes. (See page 38.)

Garrison Street
Garrison Street extends south from Oberon Road to the Clear Creek Trail, intersecting the Ralston Creek Trail. The linkage between these two major trail systems makes Garrison a key north-south corridor. Signing a bicycle route on shared roadway lanes is recommended throughout. (See pages 39-40.)

A 400’ segment of this corridor north of W. 57th Avenue is currently an informal, unpaved footpath which should be improved to better accommodate nonmotorized access. The Ralston Road Corridor Plan will incorporate the Triangle Area and should address completion of this missing link.

Carr Street
Like Garrison, Carr Street is a major corridor that extends north/south through most of Arvada, from the Heritage Canal Trail south to the Clear Creek Trail in Wheat Ridge. A missing gap exists between Ralston Road and W. 57th Avenue where a trail connection is desired. If this cannot be accomplished across the school property, the bicycle route will need to jog over and utilize Balsam Street. The Balsam Street section may be a signed bike route due to the narrower pavement width and lower traffic volumes. The short section of W. 59th Avenue that connects Carr to Balsam should have bike lanes, to be achieved by restriping existing pavement and removing some parking.

Reallocating roadway space to include bike lanes is recommended on Carr Street north of the Ralston Creek Trail. The road will need to be re-stripped north of the railroad tracks to add the needed width for a continuation of the on-street bike lanes which are present on both sides of this gap. Parking at Peck Elementary will need to be re-configured to allow parallel parking instead of the current “pull in” parking. (See page 41.)

At the southern end of the corridor, bike route signing should be extended south of 52nd on Carr, utilizing access under I-70. This will need to be undertaken working in conjunction with the City of Wheat Ridge. Long-term
a new, direct north/south spur path connection to the Clear Creek Trail may be feasible by obtaining easements along property boundaries. Otherwise, directional signing should be installed to guide users through the Wheat Ridge residential neighborhood to the Clear Creek Trail.

**Olde Wadsworth Boulevard**

Bicyclists will not be encouraged to ride Olde Wadsworth through the historic Olde Town. However, bike lanes are recommended north of Ralston Road and south of Olde Town, as discussed on page 17.

**Pierce Street/Wadsworth Bypass Path**

The Pierce Street segment of this corridor extends north from the Ralston Creek Trail to W. 68th Avenue. A shared road facility already exists on portions of Pierce Street. Bike route designation will be completed throughout the corridor, with on-street bicycle lanes marked between W. 62nd and W. 64th Avenues. (See pages 43-44.)

Multiple path options exist for users wishing to continue travel into Olde Town, with the sidepath facility located on the east side of the Wadsworth Bypass completing a critical link. This path’s intersection with Ralston Road should be enhanced and maintained as a highly visible crossing. Colored and raised speed tables across the right turn lanes are suggested to further identify the significance of this crossing and slow right-turning vehicular traffic. Further south, directional signage to the Olde Town station is recommended to identify grade-change path access to Grandview Avenue.

**Marshall/Lamar Streets**

Users wishing to travel south from Pierce may jog over to Marshall/Lamar Streets at W. 60th Avenue and continue south to the Clear Creek Trail. Bike lanes are recommended in this corridor due to higher vehicular traffic volumes and the corridor’s role as a key north-south bicycling route.

The road will need to be re-striped north of 52nd. Currently, there are wide striped lanes with informal parking. An interim solution is to remove parking from one side, with long-term plans to narrow the travel lanes and widen the sidewalk space. Marshall/Lamar Street is a residential neighborhood. Polling and neighborhood involvement will be necessary to allow parking to be removed in the sections which are narrower than 40 feet. There is a particularly troublesome spot at the Ralston Road, Lamar intersection. This section should be totally re-worked and striped with bike lanes. There is also a grade issue at the intersection. (See page 44.)

At the Ralston Road intersection, two brick pillars may need to be removed on the west side of Lamar to facilitate bicycle access to the Ralston Creek Trail. On the east side, bicyclists are briefly routed on a 10-foot sidewalk along Ralston Road to access the trail.

South of W. 52nd Avenue, there are areas where the road width varies. The road will need to be re-striped and may also need to be widened in some areas. Bike detection enhancements should be added to the traffic signals along the Lamar Street bikeway.

**Tennyson Street**

Tennyson Street provides north-south connectivity along the eastern portion of the study area. This corridor will connect W. 64th Avenue, W. 60th Avenue and the Clear Creek Trail, and is envisioned as the primary route for bicycle access to the Sheridan station. Bike lanes are recommended within this corridor.

Pavement widening will be required on the southern segments to accommodate the bicycle lanes. Working with adjacent jurisdictions to strengthen this connection to the Clear Creek Trail will be critical, because the at-grade track crossing on Tennyson serves as the only location where bicyclists can easily cross the multiple railroads traversing the eastern portion of the City of Arvada. The route will also be the only way to link the northern and southern portions of the Sheridan TOD planning area for travel by bicycle.

Within Arvada city limits, missing segments of sidewalks will be added along Tennyson as part of station area infill improvements. (See page 45.)
Primary East/West Bicycling Corridors

**Ralston Creek Trail**
This primary off-street bikeway is an existing paved multiuse path that generally follows Ralston Creek diagonally across Arvada, linking to the regional Clear Creek Trail. The bikeway uses short stretches of on-street routing to complete missing path segments. Low-volume local streets such as Brooks Drive and Johnson Way connect the route between Miller and Holland Streets. W. 60th Avenue is used to cross Olde Wadsworth Boulevard and link to the Ralston Creek Trail under the Wadsworth Bypass. Recommended improvements include signing and striping an enhanced at-grade crossing of Olde Wadsworth Boulevard.

**W. 64th Avenue**
This on-street corridor provides east-west connectivity in the northern portion of the study area. Bicycle lanes exist between Vance and Benton Streets. Facility improvements include extending existing bicycle lanes west to Allison Street and east to Tennyson Street. Continuation of bicycle accommodation beyond Arvada city limits into Adams County is additionally desired to link to the regional trail systems that converge around Little Dry Creek Lake. (See pages 46-48.)

**Allendale Drive/Oberon Road**
Running diagonally through Arvada parallel to the Union Pacific Railroad, these two streets should be signed as key shared roadway routes linking the primary north-south corridors of Garrison Street, Carr Street, and Olde Wadsworth Boulevard. Adding a bike lane to the north side of Oberon Road is under consideration.

**W. 60th Avenue**
This on-street corridor runs north of the Sheridan TOD site, between Pierce and Tennyson Streets. The relatively narrow, low-volume section between Pierce and Sheridan is recommended as a shared roadway, while bicycle lanes are proposed east of Sheridan where the roadway widens.

However, either treatment could be implemented throughout the entire corridor. The presence of designated bike lanes east of Sheridan within the 1/2-mile TOD infill area is viewed as a means to help to define the preferred bicycle railroad crossing at Tennyson and encourage bicycle use along W. 60th Avenue to access the FasTracks station. Cyclist input into the planning process requested consideration of widening W. 60th between Pierce and Sheridan. This segment is the only good east/west bicyclist choice north of the creek unless re-routing indirectly up to 64th Avenue. There is a significant hill with limited sight distance just east of Lamar, so extra roadway width for bike lanes is ultimately desired. (See page 49.)

**Allendale Dive**
Allendale is currently striped with on-street bike lanes, and serves as a major east-west link extending beyond the study area to Simms Street and Ward Road.

**Van Bibber Creek Trail/Grandview Avenue**
The City has plans to relocate and extend the existing Van Bibber Creek Trail west to Independence Street, including a new underpass under Kipling Parkway. The off-street trail will transition at Independence to an on-street route on Grandview. One block of Yukon Street is recommended to connect to Grandview Avenue, which will be designated as a shared-use roadway running directly past the Olde Town FasTracks station to Marshall. (See page 52.)

**W. 57th Avenue**
Alternatively, bicyclists may jog one block to the north and use existing on-street bike lanes along W. 57th Avenue from Independence to Yukon Streets. The 2010 Ralston Road corridor study will revisit bicycling accommodation in conjunction with automobile and streetcar accommodation for all parallel corridors including the Ralston Creek Trail, Ralston Road, W. 57th and Grandview Avenues.

**Ridge Road**
This recommended on-street route located immediately north of the Arvada Ridge Station should have share-the-road and narrow bridge warning signage
posted as interim measures. As the surrounding TOD area redevelops, roadway widening is desired to include bike lanes or paved shoulders due to the access provided to FasTracks at the Arvada Ridge and Ward Road stations. Ridge Road improvements will require multi-jurisdictional coordination with the City of Wheat Ridge to implement. (See pages 53-54.)

**Station Connector Route**
Since development of an off-street trail immediately parallel to the BNSF and FasTracks rail lines is not feasible due to right-of-way constraints, an on-street route is needed to link Arvada’s TOD station areas together. The identified route follows a combination of low-volume local streets recommended for shared use and streets with designated bike lanes. Supplemental wayfinding signage is recommended since the route jogs diagonally on W. 51st Place, W. 52nd Street, Allison Street, W. 54th Avenue, W. 55th Avenue and Vance Street in route to the Olde Town station. (See pages 55-58.)

Long-term, as areas located southwest of Olde Town redevelop, opportunities should be sought to create smaller blocks with greater east/west connectivity. This will greatly enhance the walkability of the neighborhood and provide a more direct bicycling connection between the Olde Town station and the primary north/south corridor along Carr Street.

**W. 52nd Avenue**
An existing sidepath runs along most of the south side of W. 52nd from Allison to Marshall Streets. The corridor has controlled access, with limited street and drive intersections to create motorized/non-motorized conflict points. However, the segment between the Wadsworth Bypass and Saulsbury Court is incomplete.

The City will likely re-stripe W. 52nd Avenue between Allison Street and Marshall Street to provide two bike lanes that are 4.5 feet wide. The travel lanes will be reduced to 10 feet and the dual left turn lane reduced to 11 feet. This would provide continuous east-west connectivity on 52nd Avenue encompassing the southeast end of the city. This area is business dominated and should provide an opportunity to re-stripe the road with minimal impacts. (See page 60.)

**Clear Creek Trail**
This 19-mile regional multiuse pathway connects communities between Golden and Commerce City, skirting the southern edge of the City of Arvada just south of I-70 in the City of Wheat Ridge. Wayfinding signage is recommended to identify on-street north/south connections that lead to Arvada’s three FasTracks rail stations. These include identifying connections located along Garrison, Carr, Marshall, the Sheridan frontage road, and Tennyson Street.

**Future Bicycling Corridors**
Multi-lane roadways with heavy volumes of fast-moving traffic are less than ideal corridors for most bicyclists. However, major arterial streets often provide the most convenient, if not the only, way to access many destinations within a community. Often, substantial levels of re-investment in infrastructure are required to make such corridors bicycle-friendly. The process can be expensive and complicated, as major regional corridors frequently span multiple jurisdictional boundaries and often fall under the purview of the Colorado Department of Transportation.

Within southeastern Arvada, four major arterials should be addressed in the future for enhanced bicycle accommodation. Each corridor will need site-specific study to determine appropriate facility design treatments for various segments.

Major corridors targeted for future study and improvements include:
- **Ralston Road**
- **Wadsworth Bypass**
- **Kipling Parkway**
- **Sheridan Boulevard**

Additionally, it is important to note that for pedestrian travel, these corridors should have continuous sidewalks present on both sides of the street, and people should be able to safely and conveniently walk across the street to access bus stops located on either side.
Small details make a difference to people who bike and walk. The following text and Google Earth images identify key roadway intersections and off-street trail connections in need of improvements to provide seamless transitions between Arvada’s primary bicycle corridors in the southeastern part of the community.

**Roadway Intersections**

Often, major roadway intersections are widened to enhance capacity and improve traffic flow for motor vehicles – but multi-lane intersection crossings compromise safety and convenience for non-motorized modes. The following recommendations will help to improve the efficiency of the existing street system for all users by helping the City of Arvada address “complete street” principles within key intersections along primary bicycling corridors.

**W. 51st Place & Kipling Parkway**

The entrance to Target (and the future Arvada Ridge FasTracks station) at W. 51st currently accommodates two vehicular entrance lanes and three exit lanes. Narrowing lanes to provide space for an eastbound bicycle lane will assist cyclists in assuming the proper lane position to continue on the W. 51st/W. 52nd bike route leading to Olde Town. Bike lane placement will be to the left of the right turn only lane. Wayfinding signage will identify the shared-roadway route as it continues to the east.

**Ridge Road & Independence Street**

Since bicyclists will be turning both north and south to travel on Independence Street, an advance stop line or bicycle box treatment is recommended for this T-intersection.
**Garrison Street & W. 44th Avenue**
This offset intersection, located in Wheat Ridge, is part of the route cyclists need to travel from the Clear Creek Trail up to the Arvada Ridge TOD station. The addition of directional signing along Garrison Street will assist bicyclists using the route.

**Wadsworth Bypass & W. 56th Avenue**
For bicycle system continuity, W. 56th is the preferred route. Approval for a full movement intersection at the Wadsworth Bypass.

**Marilyn Jean Drive & Wadsworth Blvd**
The routing of the Ralston Creek Trail currently uses this at-grade crossing of Wadsworth, however, the intersection lacks highly visible crosswalk markings and MUTCD warning signs.

**W. 64th Avenue & Wadsworth**
Add bicycle lane pockets on 64th at both intersections to assist bicyclists in using the citywide system between Tennyson and Carr.

**Ralston Road & Wadsworth Bypass**
The most direct link from Olde Town to the Ralston Creek Trail is provided by the new pathway along the east side of the Wadsworth Bypass. However, the intersection with Ralston Road is intimidating for bicyclists and pedestrians. Constructing porkchop islands with raised speed tables across the right turn lanes is recommended, along with adding wayfinding signage.

**Grandview Avenue & Marshall/Lamar**
The right turn only lane will be removed as part of the Gold Line project. This will reduce the turning radius, narrow the crossing distance for pedestrians, and allow an advance stop line to be added to benefit bicyclists.
Trail Connections
Many of the following connections currently exist and simply need wayfinding signs to assist users in knowing the recommended routes. Others require small, but important, physical improvements to create seamless transitions from on-street to off-street bicycle facilities. Although some of these improvements are in other jurisdictions, the City will work with Wheat Ridge and Adams County to encourage these spot improvements.

Garrison Street to Clear Creek Trail
Sign and identify connection to the Gold Line’s Arvada Ridge Station along Garrison Street from the Clear Creek Trail in Wheat Ridge.

Marshall Street to Clear Creek Trail
Access currently provided, but unpaved on east side.

Carr Street to Clear Creek Trail
Explore the feasibility of making a future connection to the Clear Creek Trail from the southern terminus of Carr Street under I-76 in Wheat Ridge.

Sheridan Commercial District to Clear Creek Trail
Utilizing the nice wide, new walkway on the east side of the W. 56th Avenue bridge, extend a spur trail along the north side of Clear Creek to access to the Sheridan Blvd frontage road serving the future commercial district in the southern portion of the TOD site.

W. 64th Avenue & Sheridan
Existing porkchop islands should be reconfigured to make space to continue bicycle lanes on W. 64th Avenue through the intersection.
**Tennyson Street to Clear Creek Trail**
Highly visible at-grade trail crossing treatment exists. Bicycling improvements to Tennyson need to include wayfinding to identify this north/south route leading to the Clear Creek Trail.

**Trail along Wadsworth Bypass to Grandview Ave**
Construction on Grandview and the Bypass path system is now completed. However, a curb cut is needed to permit trail access from Grandview.

**Garrison Street**
There is a missing gap in the Garrison Street bike route between W. 57th Avenue and Ralston Road. Work with property owners to allow paving the unofficial gravel footpath.

**Ralston Creek Trail to Lamar Ave**
Ensure maintenance of cross-walk markings since users need to cross intersection at-grade. Remove obstacles for access to ADA ramps on the west side of intersection.

**Carr Street**
Another missing gap is located on Carr Street between W. 57th Avenue and Ralston Road. The City desires to work with the school district to determine if a connection can be made for non-motorized access.

**Alternative Access through the Sheridan TOD Site**
RTD is not planning to build a pedestrian bridge over the railroad at the Sheridan station. If an internal connection cannot be made as part of TOD redevelopment, explore constructing a path that utilizes the Sheridan Blvd bridge.
Accommodating Bicyclists
The Citywide System Connections section of this plan (pg. 25-30) outlines a series of primary bicycling corridors that will provide non-motorized access and connectivity throughout southeastern Arvada and into neighboring jurisdictions. This section of the report presents roadway cross sections necessary to implement bicycling recommendations within the primary corridors.

In many instances, bicycling retrofits may be cost-effectively accomplished by reallocating roadway space through lane restriping. Often, this will need to involve a reassessment of on-street parking needs. Neighborhood polling and coordination will be conducted prior to removing parking from any street. If the predominate land use along one side of a street is non-residential, such as railroad, industrial, commercial, or large format business, parking would be removed from that side of the street.

In general, streets striped with bicycle lanes will be designated with black and white MUTCD Bike Lane signs and pavement markings. Select corridors (generally with speeds over 30 mph and traffic volumes greater than 10,000 ADT) will have yellow Share the Road warning signs posted as an interim measure until on-street bicycle lanes can be provided. Shared roadway space on lightly traveled bicycle routes will be signed with green MUTCD signs that include directional wayfinding. These streets will initially have no associated pavement markings, but “sharrow” markings may be added in the future, or bicycle lanes may eventually be striped if traffic volumes and/or public demand warrant a designated separation between vehicular and bicycle users.

Accommodating Pedestrians
Several corridors will ultimately have long-term improvements to enhance the pedestrian realm. Some projects will include constructing wider sidewalks; others will involve relocating the curb-and-gutter to narrow the street while widening the sidewalk space. Curb reconstruction projects with the lowest associated storm drainage retrofit costs are recommended to be implemented first.

On local residential streets, it is the City’s preference to narrow the vehicular travel lane widths to 9 feet. On streets that serve more of a collector function and/or will be used by RTD buses and other large vehicles, 10-foot minimum lane widths will be provided where possible. All cross-sectional diagrams presented following are for planning purposes only; future design phases for individual corridor retrofit projects will make site-specific considerations.
In addition, pedestrian accommodation will be enhanced in other corridors beyond the primary bicycling corridors presented in this plan. Please see pages 61-64 for an overview of various pedestrian considerations that may apply to all corridors, depending on type of pedestrian environment desired.

**Street Cross-Sections**
The cross-sectional diagrams on the following pages are organized by North-South Corridors and East-West Corridors. Graphics for each corridor show existing conditions, restriping retrofits to benefit bicyclists, and long-term reconstruction recommendations (depicted in brown) that will primarily benefit pedestrians. Recommendations for each corridor are provided on the following pages:

**North-South Corridor Recommendations**
- Oak Street & Miller Street ................................................................. 37
- Independence Street ....................................................................... 38
- Garrison Street ................................................................................ 39-40
- Carr Street & W. 59th Avenue ............................................................ 41
- Balsam Street & Olde Wadsworth Blvd ............................................. 42
- Pierce Street ..................................................................................... 43-44
- Marshall & Lamar Streets ................................................................. 44
- Tennyson Street .............................................................................. 45

**East-West Corridor Recommendations**
- W. 64th Avenue ................................................................................ 46-48
- W. 60th Avenue ................................................................................ 49
- W. 57th Avenue ................................................................................ 50-51
- Yukon Street & Grandview Avenue .................................................... 52
- Ridge Road ....................................................................................... 53-54
- Station Connector Route ................................................................. 55-58
  - · Arvada Ridge TOD, W. 51st Place & W. 52nd Avenue .................... 55
  - · Allison Street & W. 54th Avenue .................................................. 56
  - · W. 55th Avenue ............................................................................ 57
  - · Vance Street .................................................................................. 58
- W. 56th Avenue ................................................................................ 59
- W. 52nd Avenue ............................................................................... 60
North-South Corridor Recommendations
Oak Street & Miller Street  (looking north)
North-South Corridor Recommendations

Independence Street  (looking north)

**Independence Street (51st Ave. to 54th Ave.) - Existing**
- Existing sidewalk
- 7’ parking lane
- 10.5’ vehicle lane
- 10.5’ vehicle lane
- 7’ parking lane
- 35’ existing travelway

**Independence Street (51st Ave. to 54th Ave.) - Interim Restriping**
- Existing sidewalk
- 5’ bike lane
- 11’ vehicle lane
- 2’ striped median
- 11’ vehicle lane
- 5’ bike lane
- 35’ existing travelway

**Independence Street (51st Ave. to 54th Ave.) - Retrofit Construction**
- Existing sidewalk
- Sidewalk expansion
- 2.5’ bike lane
- 10’ vehicle lane
- 10’ vehicle lane
- 4’ bike lane
- 28’ future travelway

**Independence Street (54th Ave. to 57th Ave.) - Existing**
- Existing sidewalk
- 2’ bike lane
- 11’ vehicle lane
- 11’ TWLTL
- 11’ vehicle lane
- 2’ shoulder
- 31’ existing travelway

**Independence Street (54th Ave. to 57th Ave.) - Interim Restriping**
- Existing sidewalk
- 4’ bike lane
- 10’ vehicle lane
- 11’ TWLTL
- 10’ vehicle lane
- 4’ bike lane
- 37’ existing travelway

**Independence Street (54th Ave. to 57th Ave.) - Retrofit Construction**
- Existing sidewalk
- Sidewalk expansion
- 2.5’ bike lane
- 10’ vehicle lane
- 10’ vehicle lane
- 4’ bike lane
- 28’ future travelway
North-South Corridor Recommendations

Garrison Street  (looking north)
North-South Corridor Recommendations

Garrison Street  (looking north)
### North-South Corridor Recommendations

**Carr Street** (looking north) & **W. 59th Avenue** (looking east)

<table>
<thead>
<tr>
<th>Street</th>
<th>Existing</th>
<th>Restriping</th>
<th>Retrofit Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carr Street</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retrofit Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Carr Street - Existing**: 12-17' lane allocation varies
- **Carr Street - Restriping**: 6' bike lane, 11' vehicle lane, 6' bike lane
- **Carr Street - Retrofit Construction**: sidewalk expansion, 6' bike lane, 11' vehicle lane, 6' bike lane

- **W. 59th Avenue (Carr to Balsam) - Existing**: 4' bike lane, 11' vehicle lane, 4' bike lane
- **W. 59th Avenue (Carr to Balsam) - Restriping**: sidewalk expansion, 4' bike lane, 11' vehicle lane, 4' bike lane
- **W. 59th Avenue (Carr to Balsam) - Retrofit Construction**: sidewalk expansion, 4' bike lane, 11' vehicle lane, 4' bike lane

**Notes**: Right lane only, no parking.
North-South Corridor Recommendations
Balsam Street & Olde Wadsworth Boulevard (looking north)
North-South Corridor Recommendations

**Pierce Street** (looking north)

- **Pierce Street (N. of 64th) - Existing**
  - Existing sidewalk
  - 8' parking lane
  - 11' vehicle lane
  - 11' vehicle lane
  - 8' parking lane
  - 38'

- **Pierce Street (N. of 64th) - Restriping/Route Designation**
  - Existing sidewalk
  - 7' parking lane
  - 12' shared lane
  - 12' shared lane
  - 7' parking lane
  - 38'

- **Pierce Street (N. of 64th) - Retrofit Construction**
  - Sidewalk expansion
  - 7' parking lane
  - 12' shared lane
  - 12' shared lane
  - 7' parking lane
  - 38'

- **Pierce Street (S. of 62nd) - Existing**
  - 11' vehicle lane
  - 11' vehicle lane
  - 22'

- **Pierce Street (S. of 62nd) - Route Designation**
  - 11' shared lane
  - 11' shared lane
  - 22'
North-South Corridor Recommendations

Pierce, Marshall & Lamar Streets (looking north)

**NOTE:**
*Vehicular lane widths less than 10’ are not desirable for buses. Travel lanes may be narrowed to 9’ only if there will be no RTD bus service or commercial truck traffic in this corridor.*
North-South Corridor Recommendations

Tennyson Street  (looking north)

NOTE:
*Vehicular lane widths less than 10’ are not desirable for buses. Travel lanes may be narrowed to 9’ only if there will be no RTD bus service or commercial truck traffic in this corridor.
East-West Corridor Recommendations

**W. 64th Avenue** (looking west)
North-South Corridor Recommendations

W. 64th Avenue (looking west)
East-West Corridor Recommendations

W. 64th Avenue  (looking west)
East-West Corridor Recommendations

W. 60th Avenue (looking west)

W. 60th Avenue (Pierce to Sheridan) - Existing

W. 60th Avenue (Pierce to Sheridan) - Restriping/Route Designation

W. 60th Avenue (Pierce to Sheridan) - Retrofit Construction

W. 60th Avenue (Sheridan to Tennyson) - Existing

W. 60th Avenue (Sheridan to Tennyson) - Restriping

W. 60th Avenue (Sheridan to Tennyson) - Retrofit Construction
East-West Corridor Recommendations

W. 57th Ave  (looking west)
**East-West Corridor Recommendations**

**W. 57th Ave** (looking west)
East-West Corridor Recommendations

Yukon Street (looking north) & Grandview Avenue (looking west)
**East-West Corridor Recommendations**

**Ridge Road** (looking west)

NOTE:
*Vehicular lane widths less than 10’ are not desirable for buses. Travel lanes may be narrowed to 9’ only if there will be no RTD bus service or commercial truck traffic in this corridor.
East-West Corridor Recommendations

Ridge Road (looking west)

NOTE:
*Vehicular lane widths less than 10’ are not desirable for buses. Travel lanes may be narrowed to 9’ only if there will be no RTD bus service or commercial truck traffic in this corridor.
**East-West Corridor Recommendations**

**Station Connector Route: within Arvada Ridge, W. 51st Place & W. 52nd Avenue** *(looking west)*

**W. 51st Place / W. 52nd Ave. (Kipling to Garrison) - Existing**

- 15' lane w/ informal on-street parking
- 15' lane w/ informal on-street parking
- 30' future travelway
- Wide sidewalks

**W. 51st Place / W. 52nd Ave. (Kipling to Garrison) - Route Designation**

- 15' lane w/ informal on-street parking
- 15' lane w/ informal on-street parking
- 30' future travelway

**W. 51st Place / W. 52nd Ave. (Kipling to Garrison) - Retrofit Construction**

- Sidewalk expansion
- 15' lane w/ informal on-street parking
- 15' lane w/ informal on-street parking
- 30' future travelway

**NOTE:**

*Vehicular lane widths less than 10’ are not desirable for buses. Travel lanes may be narrowed to 9’ only if there will be no RTD bus service or commercial truck traffic in this corridor.
**East-West Corridor Recommendations**

**Station Connector Route: Allison Street** (looking north) & **W. 54th Avenue** (looking west)

- **Allison Street - Existing**
  - 11-13' shared lane
  - 14-16' Lane allocation varies
  - 27' sidewalk expansion

- **Allison Street - Route Designation**
  - 13.5' shared lane
  - 27' sidewalk expansion

- **Allison Street - Retrofit Construction**
  - 13.5' shared lane
  - 27' sidewalk expansion

- **W. 54th Ave. - Existing**
  - existing sidewalk
  - 17.5' vehicle lane w/ parking (not striped)
  - 17.5' vehicle lane w/ parking (not striped)

- **W. 54th Ave. - Route Designation**
  - 7' parking lane
  - 10.5' shared lane
  - 10.5' shared lane
  - 7' parking lane

- **W. 54th Ave. - Retrofit Construction**
  - sidewalk expansion
  - 7' parking lane
  - 10.5' shared lane
  - 10.5' shared lane
  - 7' parking lane
East-West Corridor Recommendations

Station Connector Route: W. 55th Avenue (looking west)
**East-West Corridor Recommendations**

**Station Connector Route: Vance Street** (looking north)

- **Vance Street (S. of Grandview Ave/BNSF) - Existing**
  - 12' vehicle lane
  - 12' center turn lane
  - 12' vehicle lane
  - 36' existing travelway
  - Existing sidewalk

- **Vance Street (S. of Grandview Ave/BNSF) - Interim Restriping**
  - 4' bike lane
  - 10' vehicle lane
  - 10' vehicle lane
  - 5' bike lane
  - 7' parking lane
  - East side of street
  - 36' existing travelway

- **Vance Street (S. of Grandview Ave/BNSF) - Retrofit Construction**
  - Sidewalk expansion
  - 7' parking lane
  - 5' bike lane
  - 10' vehicle lane
  - 10' vehicle lane
  - 5' bike lane
  - 7' parking lane
  - West side of street
  - 50' proposed widening, plus R.O.W. for sidewalks
East-West Corridor Recommendations

W. 56 Avenue (looking west)
East-West Corridor Recommendations

W. 52nd Avenue (looking west)
There are different types of pedestrian environments and different reasons why people walk. Designing pedestrian-friendly spaces that encourage and accommodate walking requires an understanding of the different types of walking behavior and walking environments. People walk for various reasons, including utilitarian walking (as a mode of travel/to reach a destination), rambling (recreational walking), strolling and lingering (walking with children, people-watching), promenade (walking to see and be seen), and special events such as a farmers market. Not all environments are created equal, and together, create a continuum of pedestrian friendliness with four classifications. These include:

- **Pedestrian Intolerant Environments** are areas where walking is unsafe and unattractive. Examples include freeway corridors, certain industrial or extraction land uses, landfills, and so forth. In general, Intolerant environments lack pedestrians, either due to a lack of pedestrian accommodations and/or dominance by automobile traffic and auto-oriented land uses.

- **Pedestrian Tolerant Environments** are areas and corridors where walking is technically safe (there are continuous sidewalks and some kind of reasonably safe street crossings), but the land use patterns are such that little walking activity is likely to be generated. These include arterial street corridors, remote or rural streets and certain light industrial or warehousing areas. Such places will only attract limited amounts of utilitarian walking, and will not appeal to recreational walkers or strollers.

- **Pedestrian Supportive Environments** are areas that are safe for walking, where sidewalks are continuous and buffered from streets, wide enough for passing and walking side by side, and where good street crossings have been provided. Land uses are either dense enough to both generate and attract utilitarian walking trips of reasonably short lengths (half mile or less), or are of the sort that will attract recreational walkers and joggers. Building fronts, not blank walls or parking lots, face streets. A good test to know if an environment is Pedestrian Supportive is whether or not a parent would feel comfortable letting a child walk ahead of them with minimal supervision.

- **Pedestrian Places** are districts of limited extent, with mixed-use land development, moderate to high densities, good transit service, great streets, and provide extensive pedestrian accommodation in the form of sidewalks, crosswalks, and other facilities. Here people will stroll and linger past store fronts and urban landscape features, walking for both utilitarian and recreational purposes. The actual ongoing presence of significant numbers of people indicates that a community has successfully created and maintained a Pedestrian Place.

This section of the TOD Access Plan establishes policies for where and how to create each type of environment within the City of Arvada’s three station planning areas.
Pedestrian activity is one of the key measures by which urban places are distinguished from suburban-style developments. In lower-density suburban areas, some rambling may be encouraged by providing sidewalks on residential streets and multi-use pathways in open space and parks. Little utilitarian walking will take place and no strolling/lingering is likely to occur because land uses are segregated and travel distances are longer than most people are willing to walk.

In urban places – downtowns and mixed-use activity centers – pedestrians are abundant. Walking supports the urban environment – making it feasible – and is enhanced by that environment. Since transit oriented developments are intended to be urban places, the following recommendations should be implemented to retrofit existing corridors and create new streets within the TOD planning areas. These policy considerations will need to be balanced with right-of-way and cost constraints, and are intended to provide direction to creating public-private partnerships for redevelopment areas.

**Pedestrian Intolerant Considerations**
- Pedestrian intolerant environments should not be found within transit oriented developments.
- Arterial corridors that lack sidewalks create the most intolerant conditions. All missing sidewalk links along arterials should thus be a high priority for completion, given funding constraints. This will likely require multi-jurisdictional and multi-agency coordination.

**Pedestrian Tolerant Considerations**
- Tolerant environments provide pedestrian facilities, but include a minimal level of accommodation. They are not recommended within transit oriented developments.
- Where necessary to construct attached sidewalks, minimum walkway widths will be 6 feet.
- Wherever possible, on-street parking or bicycle lanes will be encouraged to provide separation from vehicular traffic where a buffer planting strip is not possible.

**Pedestrian Supportive Considerations**
- The type of recommended retrofit treatment to create pedestrian supportive environments varies by context – dependent on the adjacent land use and type of street.
- In areas with predominantly single family residential land use, sidewalks will be detached and at least 5 feet in width.
The width of the buffer planting strip (also thought of as the separation distance from sidewalk to back of curb) will be determined by the functional classification of the street, with greater separation required where higher traffic volumes and speeds are present.

Overstory street trees spaced 20 to 30 feet on center are desired to be planted in all buffer planting strips to create high quality, tree-lined pedestrian environments.

In mixed use areas, sidewalks will be detached and at least 8 feet in width to allow two pairs of pedestrian to comfortably meet and pass one another.

All buffer planting strips will be at least 5 feet in width, with the design treatment varying by first floor land use – residential uses may have grassy planting strips, but all live/work and commercial uses will have a hardscape furnishing zone.

Overstory street trees will be planted 20 to 30 feet on center in buffer planting strips, or within tree wells provided within the furnishing zone.

Sidewalks within pedestrian supportive environments will be maintained to a high standard. This includes vegetation trimming and snow removal.

**Pedestrian Place Considerations**

- Successful Pedestrian Places require the full complement of walking types: recreational rambling, utilitarian walking, and strolling/lingering along store fronts. Urban environments generate this kind of pedestrian activity only within limited geographical areas where people are moving about between multiple activities.

- This is feasible in only a limited number of special places that become local icons that give identity to the community and its neighborhoods. The central core of the Arvada Ridge and Olde Town transit oriented developments should strive to become Pedestrian Places.

- Places should provide at least three highly identifiable areas in close proximity – such as outdoor seating, a water feature, and pedestrian-oriented shopping.

- Urban design characteristics will be oriented in favor of pedestrians.
• Sidewalks will be wide, including 8- to 12-foot clear walkways with additional sidewalk space provided in a setback zone on private property to accommodate outdoor merchandising and dining activities.

• The adjacent land uses must be able to activate the space by attracting pedestrian presence, or the place will not feel as inviting as intended.

Where these land use conditions are not present, the environment can still be (and should be) Pedestrian Supportive. However, outside of a limited number of Pedestrian Places, pedestrians will not be numerous. Walking should be encouraged, especially for recreational and utilitarian purposes, but the kind of pedestrian presence desired in the center of the TOD planning areas is not practical or achievable across the entire landscape.

Transit Oriented Development (TOD) Street Considerations

• TOD street cross-sections should be as narrow as possible to calm motor vehicle traffic and create pedestrian supportive environments.

• On-street parking will be provided on both sides of every street.

• Streets used by buses to access intermodal station plazas must have lanes wide enough to accommodate bus traffic.

• All other internal TOD streets not intended to accommodate bus travel will restrict travel lanes to 9’ to 10’ feet in width.
Bicycling and walking are personal modes of transportation. Therefore, details matter. At the most basic level, bicyclists and pedestrians must feel comfortable, safe, and secure when moving through corridors, crossing streets and accessing transit. However, non-motorized users also seek out high quality environments with interesting details – whether within parks and greenways or well-designed street corridors. Many of these details can be engineered as part of infrastructure and development projects; others are more organic and include shade, terrain, accessibility and interaction with other people.

The success in implementing individual projects identified in the previous section of this plan will largely depend on how effectively the City of Arvada, in partnership with other governmental agencies and the private sector, can address the details that matter to non-motorized modes of transportation. This section of the plan addresses this need, following established best practices:

**Bicycle Planning**
National planning and design guidance will be followed to minimize liability, enhance and encourage safe bicycle travel, and utilize a national body of research on the design of appropriate bikeway facilities. Key reference documents include:


**Pedestrian Planning**
Recommendations for successfully accommodating pedestrians within Arvada’s TOD study areas reference the following:

- *Principles of “Pedestrian Science,”* developed by Charlier Associates, Inc. based upon several years of research into effective placemaking, as summarized on pages 61-64.

The following pages define facility types and highlight details of various design treatments that will be used to implement recommendations contained within this plan.
A bicycle lane is a portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use by bicyclists. Bike lanes are established to delineate the right-of-way assigned to bicyclists and motorists, and to provide more predictable movements by each.

Bike lanes are usually paired, one-way facilities located on both sides of streets with moderate to heavy traffic volumes. They are typically not needed on local streets, but are well suited to collectors and minor arterials.

The minimum width of a bike lane is typically 4 feet, or 5 feet if adjacent to on-street parking or if measured from the curb face. When on-street parking is present, bike lanes should always be placed to the left of the parking lane (between the parking lane and the motor vehicle lane).

**RETROFIT GUIDELINES**

The following points should be considered when retrofitting existing corridors to include bicycle lanes.

- On-street parking may only be needed on one side to accommodate residences and/or businesses, and can be removed from the other side of the street to provide additional space for bicycle lanes.
- Existing on-street parking lanes can be narrowed to 7’ in many areas to provide additional space for bicycle lanes.
- Reconsider the number of lanes (including turn lanes) needed in a given corridor.
- Special treatment must be given to the treatment of bicycle lanes at major intersections. See Intersection Design (pages 68-69) for details.
The “sharrow” or shared lane marking is a thermoplastic or painted white pavement marking consisting of a bicycle and chevrons to assist bicyclists with positioning on narrow shared roadways with on-street parallel parking. Markings direct cyclists to travel outside the car door zone and encourage safe coexistence with motor vehicle traffic.

The sharrow is currently in use in more than 70 cities, including local communities of Boulder, Denver and Fort Collins. It is proposed to be added to the national MUTCD as Section 9C07 in the pending 2009 edition and may be considered for future use on Arvada’s signed bike routes.

**MUTCD PLACEMENT GUIDELINES**

- Do not use sharrows on roadways with speeds <35 mph, on shoulders, or within designated bike lanes.
- Preference is for use on streets with on-street parking. Centers of the sharrow markings will be placed a minimum of 11’ from the curb face or edge of pavement.
- If used on streets where parking is not present and with an outside travel lane less than 14’ wide, the centers of the shared lane marking symbol should be placed 4’ from the curb face or edge of pavement.
- Sharrow markings should be placed immediately after an intersection and spaced at intervals not greater than 250’ thereafter.

**ADDITIONAL GUIDANCE**

- Several jurisdictions recommend placing sharrow markings >11’ from curb when adjacent to parking to center the marking within the travel lane. This placement further removes bicyclists from the door swing of parked cars and minimizes stencil wear from vehicle tires.
- Sharrows may be combined with Bike Route signing in urban areas and Share the Road signing in rural applications.
- Installations to consider include: business district streets with full time on-street parking; along signed bicycle routes; where there is an up-hill bike lane and not room or desire for a designated down-hill bike lane; and to assist bicyclists in positioning correctly in through lanes where right-turn only lanes exist.
Intersection Design

Bike lanes complicate bicycle and motor vehicle turning movements at intersections. As a general rule, bike lane signing and striping should enhance awareness and visibility of road users, promote movements that are well defined and universally understood, and encourage bicyclists and motorists to merge into proper lane position in advance of intersections. Guidance for bike lane signing and marking treatments with various vehicular turning configurations are found within Chapter 9C of the MUTCD and on pages 25-30 of AASHTO.

**NATIONAL OVERVIEW**

- A through bicycle lane will not be positioned to the right of a right turn only lane.
- The solid bike lane line should be replaced with a broken dotted line to indicate areas in advance of intersections where bicyclists and motorists will merge.
- When the right lane is dropped to become a right turn only lane, bike lane striping should stop at least 100' before the beginning of the right turn lane. Through bicycle lane markings should resume to the left of a right turn lane.
- At intersections where the 4’ min. bike lane width cannot be provided due to throat widening for turning lanes, bike lane striping should be discontinued following a regulatory sign.
- A set of bike lane pavement markings will be provided immediately after each intersection, regardless of approach treatment.

**ADDITIONAL GUIDANCE**

Many cyclists are not comfortable riding within a corridor where a bike lane abruptly ends, particularly in advance of complicated intersections where bicyclists need the most assistance. Narrowing vehicular lanes at intersections within designated corridors may provide space for a bike lane slot in the proper roadway position.

Additional innovative intersection design treatments including use of bicycle detector pavement markings, sharrows, stop line positioning, leading pedestrian interval (LPI) signals, and bike boxes may also be considered.
**BICYCLE DETECTOR PAVEMENT MARKINGS**
- Per the MUTCD, a special pavement symbol may be placed on the pavement indicating the optimum position for a bicyclist to accentuate a signal.

**LPI SIGNALS**
- A leading pedestrian interval (LPI) refers to when the ‘walk’ signal appears three or more seconds before the green traffic signal. The ‘walk’ signal then remains active for the duration of the green signal. This brief timing adjustment allows pedestrians (and bicyclists) more time to cross the street, and increases their visibility to drivers, especially those making turns.

**SHARROWS**
- Some jurisdictions use a sharrow pavement marking within intersections with a pork chop island separating right-turning motor vehicle traffic from shared-lane through traffic, or where a continuous flow lane is added and the bicyclist should stay in the approach lane.

**COLORED TREATMENT THROUGH A CONFLICT AREA**
- Seattle, WA, Portland, OR, Cambridge, MA, and New York City are experimenting with use of European-style colored bike lanes in high-conflict areas. Applications include high volumes of turning movements across a bike lane to enter or exit where ramp-like configurations are present. Such treatments are currently being studied for standardization by national committees.

**BIKE BOXES**
- An advanced stop line or “bike box” is an intersection safety design to prevent bicycle/car collisions, especially those between drivers turning right and bicyclists going straight. Bike boxes improve the visibility of bicyclists by allowing cyclists to move to the front of the queue and position themselves for turning movements. Pavement markings should be accompanied by signs communicating where bicyclists and motor vehicles should stop.
- Boxes may be delineated in green or blue pavement coloring with a white bicycle symbol inside, and may include colored bicycle lanes approaching and leading from the box.
Sufficient and appropriate bicycle parking will be provided throughout each of the TOD sites. Inverted “U” style bicycle racks are recommended. Each rack will adequately support two bicycles and allows users to secure the frame and one or both wheels.

Variations of this style that still allow users to lock both the frame and the front tire to the rack, such as the Honolulu bike rack, are also acceptable.

Bike racks will be placed in secure and convenient locations, but must not interfere with pedestrian travel.

The Association of Pedestrian and Bicycle Professionals (APBP) provides guidance for rack placement, including the following minimum requirements:

**RACK PLACEMENT GUIDELINES**
- 2-foot clear distance between edge of bike and other objects including, but not limited to, back of curb, pedestrian ramp, trash receptacles, and street trees
- 30-inch separation between two parallel inverted U racks (as illustrated in the diagram at left).
- 8-foot pedestrian clear zone between handle bar (or tire, depending on bike parking direction) and building facade.
- Generally allow an area 6.5 feet by 4 feet for each bike rack.

Consider providing bicycle lockers or indoor storage in locations where bicycles will be parked overnight or for longer durations. Monitor parking for levels of use (add racks or lockers as needed) and to ensure facilities are being used as intended.
Multiuse Paths

A multiuse path is a bikeway physically separated from motorized vehicular traffic by an open space or barrier, and may be located either within the highway right-of-way or within an independent right-of-way such as a greenway corridor.

Shared use path design must accommodate a wide variety of non-motorized users, including commuting and recreating cyclists, rambling and strolling pedestrians, families, senior citizens, dog walkers and others. Each of these groups will use the space differently, necessitating careful design to minimize potential user conflicts. Centerline striping (shown at left) can minimize conflicts by designating space for specific user groups or directions of travel.

GENERAL GUIDELINES

Paths must meet bicycle transportation standards including a 10-foot minimum surface width, 3-foot lateral clearances, 8-foot vertical clearances, 5 percent grade, and 95-foot turning radii.

Special design features are needed at all at-grade roadway crossings to separate users and/or alert drivers of non-motorized crossings. Bridges, underpasses and pedestrian-actuated signals may be warranted when well-utilized paths cross high-speed, high-volume roadways.

Multiuse path crossings at major intersections also require special attention to ensure safe and efficient operations for all motorized and non-motorized users. For example, a porkchop Island is recommended at the trail crossing at the intersection of Ralson and Wadsworth. Porkchop Islands are triangular islands placed adjacent to free-right turn lanes. They separate right-turning vehicles from through lanes and provide a refuge for pedestrians and bicyclists to cross the free-right lane before crossing the through lanes.

SIDEPATH CONSIDERATIONS

Sidepaths are a type of multi-use path running immediately parallel to a street or roadway, like an extra wide sidewalk. Sidepaths have special design challenges, as motor vehicles may not expect to encounter bikes entering an intersection from outside the travel lanes. AASHTO discourages two-way paths located immediately adjacent to roadways due to the operational and safety issues that are likely to occur.

Sidepaths should not be considered a substitute to street improvements even when the path is located adjacent to a highway, as many bicyclists find these paths less direct or convenient than streets, particularly for utility trips. Sidepaths must also meet AASHTO transportation standards including a 10-foot minimum path width and a 5-foot minimum separation distance from street, or a 42-inch vertical barrier from adcent traffic.
Rails-with-Trails

The U.S. Department of Transportation completed a 2002 study entitled Rails-with-Trails: Lessons Learned – Literature Review, Current Practices, Conclusions. This study examined the safety, capacity, design and liability issues associated with the development of shared use paths and other trails within or adjacent to active railroad and transit rights-of-way.

The study documented 65 rail-with-trail projects totaling 239 miles in 30 states. These trails are located adjacent to active rail lines ranging from a few slow-moving short-haul freight trains weekly, to high-frequency Amtrak trains traveling as fast as 140 mi/hr. While most are located on public lands leased to private railroads, many are on privately owned railroad property.

The rail-with-trail development process varies from location to location, although common elements exist. Trail advocacy groups and public agencies often identify a desired rail-with-trail as part of a bikeway master plan. They then work to secure funding prior to initiating contact with the affected railroad. Railroad companies may support or oppose projects depending on corridor-specific operational considerations, right-of-way constraints, and public safety concerns.

SEPARATION GUIDELINES

While there is no consensus on acceptable setbacks, distances of 25 feet or greater are typical. At an absolute minimum, trail users must be kept outside the “dynamic envelope” of the track – that is, the space needed for the trains to operate.

In 2004, the advocacy group Bike Jeffco proposed development of a rail-with-trail along the Gold Line Corridor to create a commuter bike route between Wheat Ridge, Arvada and Denver. Called the Gold Line FastRoute, this proposal sought to link together pieces of local streets with trail segments to be constructed within the railroad right-of-way to form a continuous route for bicycle travel. However, engineering work completed by RTD to date shows that this corridor requires the full right-of-way width to accommodate future eastbound and westbound Gold Line tracks plus the BNSF freight line.

At minimum, 16’ separation distance is required between the RTD tracks, with another 25’ separation from the BNSF tracks. In most locations, the BNSF line will need to be shifted within the right-of-way to accommodate the additional rail use, and many areas will require the construction of retaining walls. Thus there is no room to develop a parallel FastRoute trail without taking private property – which would go against a major objective of the Gold Line process.

Instead, alternate on-street routes and riparian corridor trails are recommended to make connections through Arvada as depicted in the system of recommended primary bicycling corridors identified on page 26.
Sidewalks

The mere presence of sidewalks does not make a place become a pedestrian destination. Within transit oriented developments, sidewalks need to be of adequate width to accommodate high levels of pedestrian travel and contain the desired amenities that contribute to vibrant street life.

The pedestrian realm is generally considered to include sidewalks, as well as the buffer zones on either side that separate the walkway from motor vehicle traffic and link the walkway to adjacent properties. The pedestrian retrofit chapter of this plan presents recommended cross-sections that address considerations within the pedestrian realm. See pages 61-64.

UNIVERSAL DESIGN GUIDANCE

Universal design refers to the use of broad-spectrum design solutions that benefit all users, not just those with disabilities. The underlying assumption is that facilities designed to accommodate individuals with physical disabilities are also appropriate and well-suited for children, seniors, bicyclists, people walking with a stroller, and others.

Universal design improves the marketability of housing within TODs by creating areas where walking and bicycling are safe, comfortable and convenient. These design principles enhance overall mobility and reduce automobile dependency by providing a range of travel alternatives. Universal design also facilitates “aging in place,” which is very important to communities such as Arvada that value their Baby Boomer population and desire for the community to remain an attractive place to live past retirement.

Key aspects of universal design can be met by following requirements of the American with Disabilities Act (ADA) for public infrastructure. These details include the following:

- Per ADA regulations, when a sidewalk crosses a roadway, a 24 inch strip of truncated domes (as shown at left) will be placed along the boundary.
- A sidewalk ramp at least 4 feet in width with truncated domes will be placed in locations where the sidewalk meets the grade of the surrounding street.
- Maximum ramp slope should be 1:12 unless the rise is < 6” in which case the slope maximum is 1:10.
- Truncated domes will be between 7/8 inch and 1 7/16 inch in diameter and 3/16 inch in height, arranged in a distinctive pattern.
- Truncated domes are not required when a 3” curb is used.
- Curbing material will have a 70% color contrast from the surrounding paving materials, regardless of vertical separation.
When feasible, raised pedestrian tables are the preferred treatment where heavily traveled sidewalks, trails or paths intersect with the street. Colored or textured pavement treatments can also be used to enhance visibility.

Traffic signal timing will accommodate the slower walking pace of elderly pedestrians per MUTCD.

ADDITIONAL CONSIDERATIONS FOR PLACEMAKING

Great streets, successful transit-oriented developments, and livable urban places go beyond providing minimal pedestrian accommodation. Effective public space is defined by the attention to detail that creates a welcoming pedestrian environment which attracts people of all ages and interests, and encourages them to interact with each other and their environment. Key to this process is designing sustainable outdoor places that create a comfortable live-work environment over the long term.

Sidewalks can be this type of place – one that merges indoor with outdoor – by paying close attention to details of the pedestrian realm and adjacent land use. Public infrastructure and private infill development projects in Arvada’s TOD areas are recommended to include the following types of design details wherever possible:

- Functional and programmable urban spaces that include public plazas, urban pocket parks and public art.
- Varied building setbacks to provide interesting space on the sidewalk to allow merchandise displays, outdoor seating, sidewalk performers and other activities that animate the downtown area.
- Widening of sidewalks onto private property in key locations to allow dining al fresco with views of activity along the street corridor.
- Adding green character to street cross-sections in a manner appropriate to the urban context of a TOD center. This includes incorporation of:
  - Street trees planted in tree wells
  - Potted plants in hanging baskets, window wells, and pots on sidewalks
  - Permeable paving to allow natural stormwater infiltration
  - Green roofs
  - Pedestrian realm canopy vines growing on arbor-like arcade structures
  - Awnings and arcades to create pedestrian scale and provide shelter from sun and rain.
Pedestrian Crossings

The ability of pedestrians to cross a street, and do so with a high degree of perceived comfort and safety, is a critical component of successful pedestrian environment design. The following considerations represent quality urban design to achieve multimodal goals and enhance street crossings within Arvada’s TOD areas:

STREET CROSSING CONSIDERATIONS

- **Marked crosswalks** will be provided on all legs of every intersection in TOD areas with heavy pedestrian activity. Ladder type markings are preferred for high visibility, to allow cars to see the crosswalk at a greater distance, and encourage vehicular traffic to take notice of pedestrians crossing the street. Special crosswalks of colored, patterned and/or textured design may be used to convey a unique sense of place within the TOD setting.

- **Short crosswalk lengths** are needed to encourage trips on foot. Optimally, crosswalks will not be more than 40 feet long (four lanes of traffic) on any intersection leg. Where distances cannot be 40 feet or less, a median refuge island will be considered and installed where practicable. Refuges may be in the configuration of a “porkchop” at skewed intersections where right-turn slip lanes are present and curb radii >30’ are unavoidable. Porkchop islands will be raised to provide a vertical barrier between vehicles and pedestrians, and include curb ramps or cut-throughs across islands per ADA guidelines.

- **Median refuge islands** may also be appropriate. Refuge islands must be of adequate width to hold wheelchairs, bicyclists and people with strollers outside of the travel lanes.

- **Traffic signal design and timing** must consider pedestrians and meet the requirements of the MUTCD. Split phase timings, pedestrian-only phases, or pedestrian actuated push button signals are recommended to be used to allow proper traffic flow as well as ample pedestrians crossing time.

STREET CORNER CONSIDERATIONS

- **Two perpendicular curb ramps** will be provided at each corner where practical. Curb ramps will be placed in a manner that will allow pedestrians to directly continue on their path of travel from sidewalk to crosswalk, rather than being directed diagonally into traffic by a single curb ramp.

- **Accessibility features**, including the design of all landings, running slopes, ramp cross-slopes, transitions, side flares and ramp surfaces, will conform with the Americans with Disabilities Act (ADA). Tactile warning strips will be used to signal the transition from pedestrian space to vehicular space. Use of colored, truncated domes is the preferred design treatment rather than use of grooved or otherwise textured pavement surfaces.

- **Curb radii** at corners will be as small as practicable to accommodate the project design vehicle while reducing length of pedestrian crossings. Whenever feasible, curb bulbs or curb extensions with small radii will be used to further shorten pedestrian crossing distances and enhance visibility of the pedestrian.

- **Sight triangles** at intersections will be free of street furnishings and other obstacles that may limit visibility.
**Signage**

For consistency with national standards, the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) – Part 9 will be used for guidance on signing all bicycle facilities.

**BICYCLE LANES**
- The Bike Lane (R3-17) sign shall be used only in conjunction with marked bicycle lanes, and shall be placed at periodic intervals along the bicycle lanes.

**BICYCLE ROUTES**
- Bicycle Route Guide (D11-1) signs should be provided at decision points along designated bicycle routes, including signs to inform bicyclists of route direction, distance, and destination (D1-1b).
- Signs should be repeated at regular intervals so that bicyclists entering from side streets will have an opportunity to know that they are on a bicycle route.
- Bike Route signs may be supplemented with future “sharrow” pavement markings.

**SHARE THE ROAD**
- In situations where there is a need to warn motorists to watch for bicyclists traveling along the highway, the Share the Road (W16-1) plaque may be used in conjunction with the bicycle warning sign (W11-1).
- As yellow warning signs designed to increase motorist awareness, Share the Road signing is not intended to serve as directional route signage.

**CONSTRUCTION WORK**
- The Pedestrian/Bicycle Detour (M4-9a) sign should be used where a pedestrian/bicycle detour route has been established because of the closing of a pedestrian/bicycle facility to through traffic.

**RAIL STATION IDENTIFICATION**
- The MUTCD Light Rail Transit Station (I-12) sign is recommended to be used to direct bicycle users to FasTracks stations. It should be supplemented by the name of the transit system, arrows, and distance information (D1-1b).
- It may also be supplemented with or used alternatively with Bike Route signing (D11-1) along primary corridors leading to the FasTracks stations.
- Signs should be appropriately sized for road or path use, depending on application.
- Alternatively, custom designed signs featuring RTD’s Kiss-n-Ride ID Sign (Type 25) may be used.

**TRAIL IDENTIFICATION**
- Custom signs designed by the City of Arvada as part of the parks and greenways overall signage program will be used to identify trail linkages at key junctures. However, standard MUTCD bike route signs should still be used along designated bicycle routes.
The Action Plan

This plan has outlined a comprehensive approach to facilitate walking and bicycling to and around Arvada’s three FasTracks stations, and includes recommendations for many corridor and spot improvements that will be implemented over time. Based on public input, the recommendations of area bicyclists, and review by City Staff and the Arvada Park Advisory Committee, there are two types of priorities for immediate, short-term implementation.

The first focuses on ten critical infrastructure investments, presented in the matrix on the following page. Three of these will require close and ongoing coordination with other jurisdictions to determine feasibility and final details of project design; seven may be implemented solely by the City of Arvada and are desired to be completed within the next five years. The second set of action items are more issues-based and extend beyond specific physical improvements that were the focus of this study.

Additional projects beyond the top ten should continue to be pursued and implemented as opportunity arises. However, completing critical gaps in north/south connectivity within the designated corridors is the City’s top overall priority. This approach will most quickly create a complete and functional bicycle network. North/south circulation is also viewed as most critical to link to the FasTrack stations from both the Clear Creek Trail and the Ralston Creek Trail, as well as the many neighborhoods located in northern portions of the City of Arvada.

Each corridor will require a detailed site-specific analysis to arrive at accurate working cost estimates at time of construction, which is work beyond the scope of this study. The following assumptions can be used for cost estimating projects, based on September 2009 figures provided by the City of Arvada Public Works and Utilities Department:

- **Bicycle lanes** $2,450+ per mile
  Includes $240/mile for striping; $75 each for pavement markings, with average spacing of five/mile; $100 per sign, with average spacing of five/mile. (multiply costs times two for both sides of roadway)
  Additional $260/mile in striping where on-street parking is present; plus 10% contingency fee.

- **Shared roadways** $1,100+ per mile
  Includes $100 per sign, with average spacing of five/mile (multiply costs times two for both sides of roadway), plus 10% contingency fee.

- **Additional costs for all projects** –
  Costs to be added for each project include: $1000/day for flagger; $500/day for mobilization; and $500/day for traffic control. In addition, costs for retrofit projects that involve removing existing pavement lines and re-striping need to add $1/square foot for line removal for a single 4” line. Estimates must include all lines to be removed. (all prices subject to change)
Summary of the Top Ten Needs for Priority Implementation

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Target Date</th>
<th>Implementation Considerations</th>
</tr>
</thead>
</table>
| 1. Sheridan Boulevard – A new Sheridan Blvd roadway bridge will be built over the railroad tracks by the Colorado Department of Transportation (CDOT). Pedestrian and bicycle accommodation is desired to be included. | 2009 – begin dialogue to coordinate design between agencies | • The Sheridan bridge provides the only walking route north/south across the railroads within the TOD planning area.  
• CDOT needs to be made aware of the importance of this project in providing circulation and access to investments being made in the FasTracks Gold Line Corridor. |
| 2. Wadsworth Bypass – Coordinate with the Colorado Department of Transportation (CDOT) to provide a signalized intersection and multimodal access across the Wadsworth Bypass at W. 56th Avenue. | 2009 – begin dialogue to coordinate design between agencies | • The W. 56th crossing is critical to provide realistic walking and biking trips distances from neighborhoods located southeast of Olde Town.  
• CDOT needs to be made aware of the importance of this project in providing circulation and access to investments being made in the FasTracks Gold Line Corridor. |
| 3. Projects that require coordination with the City of Wheat Ridge – Ensure implementation of linkages across City boundaries, specifically within the corridors of:  
  • Ridge Road, to the Ward Road FasTracks Station  
  • Miller Street, to the Arvada Ridge Station TOD entrance  
  • Kipling Parkway, in conjunction with City of Wheat Ridge bicycle planning  
  • Garrison, Carr, and Marshall Streets, to identify linkages to the Clear Creek Trail | 2009 – City of Arvada TOD Access Plan reviewed by City of Wheat Ridge  
2010 – City of Wheat Ridge bike plan update begins; to be reviewed by City of Arvada for coordination | • Ideally, both jurisdictions will implement the same design treatment within a single corridor.  
• Transitions between facility types (i.e. from on-street bicycle lanes to a parallel sidepath or shared roadway) will occur at logical, context-sensitive locations instead of abruptly at jurisdictional boundaries.  
• Projects within each community should be implemented on similar time frames, combining resources to let as a single contract when possible. |
<p>| 4. Carr Street – To create a continuous north/south corridor, work with the school district to secure a trail connection at missing gap between Ralston Road and W. 57th Avenue. Add bike route signing throughout entire corridor. | completed by 2011 | • Formalizing the non-motorized connection in the missing block of Carr Street will require negotiation with property owners. |</p>
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Target Date</th>
<th>Implementation Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5. Pierce Street</strong> – Restripe to extend existing bike lanes south from W. 64th Avenue to W. 62nd Avenue. Implement signed shared roadway treatment south of W. 62nd to Ralston Road.</td>
<td>completed by 2011</td>
<td>• Pierce Street is viewed as the #1 priority North/South corridor for implementation since it connects between the Ralston Creek and Little Dry Creek Trails, and extends access into northern portions of Arvada.</td>
</tr>
<tr>
<td><strong>6. Independence Street</strong> – Restripe roadway with on-street bicycle lanes from W. 57th Avenue to the trail network in Jack B. Tomlinson Park.</td>
<td>completed by 2011</td>
<td>• Public process will be required with property owners along the corridor to effectively resolve any potential parking issues. The on-street parking may alternate sides of the street depending on land use and parking demand per block.</td>
</tr>
<tr>
<td><strong>7. W. 52nd Avenue</strong> – Designate as a shared roadway bike route from Independence to Garrison Street. Stripe on-street bicycle lanes from Allison to Marshall Street.</td>
<td>completed by 2011</td>
<td></td>
</tr>
<tr>
<td><strong>8. Garrison Street</strong> – Designate as a shared roadway from Oberon Road to the Clear Creek Trail. Pave a 400’ segment of non-motorized pathway to provide continuous travel between W. 57th Avenue and Ralston Road.</td>
<td>completed by 2014</td>
<td>• Signing along southern segment will be undertaken in cooperation with the City of Wheat Ridge. • Formalizing the non-motorized connection in the missing half block of Garrison will require negotiation with private property ownership.</td>
</tr>
<tr>
<td><strong>9. Tennyson Street</strong> – Stripe with bicycle lanes north of W.58th. Widen roadway to provide paved shoulders from W. 58th to Clear Creek Trail.</td>
<td>completed by 2014</td>
<td>• Improvements south of the railroad will require coordination with Adams County for implementation.</td>
</tr>
<tr>
<td><strong>10. Van Bibber Creek Trail</strong> – Extend trail and add underpass connection at Kipling Parkway. Extend the existing multiuse pathway from Oak Street, routing along the south side of the Stenger Sports Complex, under Kipling Parkway, and along the northern edge the Arvada Cemetery to connect with Grandview Avenue.</td>
<td>completed by 2014</td>
<td>• Coordinate the Van Bibber Creek trail extension across Kipling Parkway with the Arvada Urban Renewal Authority • Initiate fund raising efforts through various grant programs.</td>
</tr>
</tbody>
</table>
Additional Ideas to Pursue
Public input into the planning process for this TOD Access Plan generated discussion on additional ideas to incorporate as the City of Arvada continues to implement its bicycle and pedestrian program. These new ideas, which will require more in-depth study beyond the scope of this planning effort, have been consolidated into five major themes as follows:

Safety – Successful bicycle and pedestrian planning and programming typically addresses multiple issues in what is known as a “4 E approach.” This approach recognizes that comprehensive improvements can be made for bicycling and walking by simultaneously focusing on education, enforcement, encouragement and engineering needs.

This study specifically concentrated on addressing infrastructure, or engineering, needs. The City of Arvada and local cycling advocates are working together to address the other three E’s. Specific topics raised through public input include:

- Safety education for youth and adult bicyclists
- Signs directed at bicyclists and drivers telling them to be alert
- Double centerline striping on pathways to separate directions of traffic
- Provide nighttime lighting along designated routes to benefit evening commuters
- Exploring use of reflective pavement

Beautification – Several comments received focused on enhancing the aesthetic quality of the bicycling and walking routes and using nonmotorized projects as a way to beautify the community. Main ideas included:

- Incorporating public art, especially at the Sheridan Station
- Employing sustainable landscaping practices

Access – Arvada residents desire for the City to focus on getting as many people to the stations as possible through non-motorized modes. This means focusing on north/south access routes and also coordinating with the City of Wheat Ridge for multi-jurisdictional continuity. Specific destinations that people would like to be able to bicycle to through improved routes include:

- Regis University
- Red Rocks Community College
- Tennyson Knolls Elementary

Wayfinding – Signage to assist bicyclists in knowing which routes to take is a major priority. Similarly, there was discussion on the need for additional wayfinding for walking routes within the TOD planning areas. New ideas that the city may want to pursue include:

- Color coded sidewalks/pathways leading to stations (1-2 blocks from station)
- Signs with distance (miles, blocks, etc.) to major destinations, including the FasTracks stations

Sustainability – As the City of Arvada systematically works to become a more “green” community, the bicycle/pedestrian system was viewed as a logical place to begin to incorporate principles of sustainability. Inherently, these modes are green, and incorporation of the following would support a more sustainable approach to transportation:

- Renewable light sources at stations, along pathways, etc.
- Zeroscaping instead of grass
- Recycling at all stations
- Covered bicycle parking areas to encourage people to ride more and drive less
- Support services at stations including air, slime for tires, etc.
- Promote and expand “adopt a trail/pathway” programs