Regional Complete Streets Study

SUBMITTED TO:
Regional Transportation Commission of Southern Nevada

SUBMITTED BY:
CDM Smith

JUNE 2012
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Includes those who participated in the Complete Streets Study Working Group and the Southern Nevada Policy Development Workshop

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# TABLE OF CONTENTS

**Chapter 1 - Introduction**
1.1 Background ...................................................................................................................................................................................... 1  
1.2 Development of the Report ................................................................................................................................................................. 5  
1.3 Potential Action Items ........................................................................................................................................................................ 7  

**Chapter 2 - Context**
2.1 Existing Roadway Challenges and Opportunities ................................................................................................................ 9  
2.2 Existing Plans and Policies ............................................................................................................................................................... 13  
2.3 Existing Regional Efforts ................................................................................................................................................................. 18  

**Chapter 3 - Recommended Complete Streets Policy**
3.1 Vision ............................................................................................................................................................................................. 21  
3.2 Complete Streets Definition for Southern Nevada ...........................................................................................................22  
3.3 Goals ........................................................................................................................................................................................................... 23  
3.4 Objectives ................................................................................................................................................................................... 23  
3.5 Policies ......................................................................................................................................................................................... 24  
3.6 Implementation ..............................................................................................................................................................................24  
3.7 Reimbursement of Costs .............................................................................................................................................................. 24  

**Chapter 4 - Applying Complete Streets to Southern Nevada**
4.1 Typical Features of Complete Streets ...................................................................................................................................25  
4.2 Application Considerations ...................................................................................................................................................29  
4.3 Evaluation Criteria ....................................................................................................................................................................38  

**Chapter 5 - Design Guidelines**
5.1 Design Objectives ...................................................................................................................................................................... 41  
5.2 Roadside Zone .............................................................................................................................................................................42  
5.3 Parking Zone ..............................................................................................................................................................................52  
5.4 Roadways and Lanes ............................................................................................................................................................... 60  
5.5 Median Zone .............................................................................................................................................................................68  
5.6 Intersections ..............................................................................................................................................................................73  
5.7 Prototypical Street Cross-Sections ...................................................................................................................................... 84  

**Chapter 6 - Implementation Strategy**
6.1 Strategic Points of Intervention ..............................................................................................................................................97  
6.2 RTC Complete Streets Program ............................................................................................................................................102
The Regional Transportation Commission of Southern Nevada (RTC) is both the transit authority and the Metropolitan Planning Organization for Clark County, Nevada. The RTC is responsible for identifying challenges and solutions to the region’s transportation issues. RTC’s goals include promoting sustainability, improved air quality, enhanced mobility, and increased quality of life in the region.

1.1 BACKGROUND

Purpose
As the regional transportation network in Southern Nevada becomes more congested, additional transportation capacity must be provided. This capacity needs to be added in a way that is safe and efficient for the public and also sustainable for the region. The RTC recognizes the need for a multimodal approach to capacity enhancements. With the help of its partner jurisdictional agencies, the RTC has made a number of significant efforts to improve alternative transportation options.

Along with enhancements, retrofitting existing streets has become a major priority in Southern Nevada. There is a growing recognition that street design has focused on automobile travel while not providing amenities for bicycles and pedestrians. As non-motorized modes of travel become increasingly popular, the need to redesign Southern Nevada streets is apparent.

Enhancements to the multimodal network must be done in a balanced and appropriate manner which takes into consideration local needs related to safety, livability, and economic development while maintaining mobility for all users. Capturing these elements within a designated roadway or transportation corridor is often referred to as making a roadway more complete or a “Complete Street.”

This study has three purposes. The first purpose is to develop a regional Complete Streets Policy Statement. The second purpose is to develop guidelines for the Southern Nevada jurisdictions. The third purpose is to recommend an implementation strategy for developing and funding Complete Streets projects.

Complete Streets include typical urban roadway design features such as traffic calming, dedicated transit lanes, bicycle lanes, mid-block crossings, landscaping, and wide sidewalks. However, not all streets need to include every Complete Streets element. Certain criteria generally dictate which design features are appropriate. In other words, the appropriate level of roadway completeness depends upon its context and function.

Complete Streets can be planned as a retrofit to existing streets or incorporated into the design of new streets. A comprehensive Complete
Streets policy and guidelines/standards can easily be applied to both cases. In either case, the future capacity of the roadway to carry vehicular traffic will be of concern to both the owning jurisdiction and the RTC. The careful application of Complete Streets design guidelines and the consideration of all users will usually produce a set of reasonable trade-offs that can be evaluated in determining the final roadway geometry. In most cases, more efficient use of existing right-of-way will provide an acceptable solution. In some cases, with heavy vehicular traffic, a systems approach will be necessary to identify parallel facilities that can help meet network demand.

Recently, the cities of Nashville, Tennessee and Columbus, Ohio adopted broad policies to ensure that Complete Streets concepts are included in all development and redevelopment actions. Other cities and regions have Complete Streets policies and procedures embedded within existing planning and zoning requirements to the extent that they are part of the nominal permitting process. Since 2005 over 100 jurisdictions have enacted Complete Streets policies and standards. A comprehensive listing of complete streets references and resources from around the United States can be found in Appendix B of this document.
Recent federal actions have increased the utility of federal resources to fund complete streets projects, either as stand-alone projects or in connection with typical roadway improvements. Typical federal programs that have been used for this purpose include:

- U.S. Department of Transportation’s Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program,
- Surface Transportation Funding Program (STP),
- Congestion Mitigation and Air Quality Funding Program (CMAQ).

Benefits of Complete Streets
Complete Streets and their benefits are being recognized by many different stakeholders. The National Complete Streets Coalition\(^1\) is the national organization that advocates adoption of Complete Streets policies. The Coalition calls for adoption of policies that ensure “transportation planners and engineers consistently design and operate the entire roadway with all users in mind including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.” Complete Streets offer a variety of mutual benefits to nearly all users of the transportation network, including the following.

1. **Safety**
Complete Streets reduce accidents through comprehensive safety improvements. This is particularly important for Southern Nevada, where 86 pedestrians died in auto-related collisions between 2008 and 2011.\(^2\) According to the report, “Complete Streets: Best Policy and Implementation Practices,” two previous findings have found a positive correlation between Complete Streets and safety.

   1. Design elements including sidewalks, raised medians, better bus-stop placement, traffic calming measures, and treatments for disabled travelers improve pedestrian safety.\(^3\)
   2. Designing streets for pedestrian travel by installing raised medians and redesigning intersections and sidewalks can reduce pedestrian risk by 28 percent.\(^4\)

   When the stakeholders for the study were surveyed in late 2010, they considered safety the number one reason for looking into Complete Streets concepts.

   **Increased Transportation Choices**
Providing multiple travel options within a transportation network can increase the capacity of a facility (in terms of people throughput) while

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\(^1\) [http://www.completestreets.org](http://www.completestreets.org)

\(^2\) 2011-2015 Nevada Highway Safety Plan


\(^4\) Ibid
offering safe and attractive alternatives to the automobile.

**Economic Revitalization**
Increased access and efficiency to employment, residences, schools, parks, and retail destinations can create conditions favorable for economic activity to occur. In addition, public investment in roadway infrastructure which improves the safety and comfort of an area, can lead to a surge in private investment at adjacent properties.

**Environmental Benefits**
Encouraging non-motorized transportation helps reduce harmful emissions and reduces our dependence on non-renewable fossil fuels. In addition, reducing the amount of land necessary to accommodate parking and auto-oriented development helps reduce our overall growth footprint and consumption of natural lands.

**Public Health**
Walking and cycling are natural ways to help reduce obesity and increase the amount of physical activity we experience day-to-day. According to The Centers for Disease Control and Prevention, physical activity and active transportation have declined compared to previous generations. The lack of physical activity is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke, and other chronic health conditions.

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**Making our Streets Safe for Bicycles and Pedestrians**
Complete street design features are only one step in improving safety for bicycles and pedestrians in Southern Nevada. There are various ongoing actions being undertaken to make our streets safe for bicycling and walking.

**Safe Routes to School - Clark County School District**
The purpose of this program is to enable children to walk and bicycle to school, make these activities safer and more appealing, and facilitate the development of projects that will create a better overall environment around the vicinities of schools. Not only is Safe Routes to School implemented to create a safer environment for students, but it also encourages a healthy option for them, as walking and riding a bicycle starting at a young age can help children be more active.

**Strategic Highway Safety Plan**
Nevada’s Strategic Highway Safety Plan, or SHSP, is a statewide, comprehensive safety plan that provides a coordinated framework for reducing fatalities and serious injuries on all Nevada public roads. The SHSP strategically establishes statewide goals and critical emphasis areas developed in consultation with Federal, state, local, and private sector safety stakeholders.

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Sources: Safe Routes to School (ccsd.net/partnership/saferoutes/); Strategic Highway Safety Plan (www.zerofatalitiesnv.com)
Expanding the availability of, safety for, and access to a variety of transportation options and integrating health-enhancing choices into transportation policy has the potential to save lives by preventing chronic diseases, reducing and preventing motor-vehicle-related injury and deaths, and improving environmental health.5

Accessibility
Incomplete streets are sometimes not accessible for persons with disabilities. Designing our roadways to be usable by persons of all abilities is not only the law, but also good practice.

1.2 DEVELOPMENT OF THE REPORT
The RTC Complete Streets Study began with scoping discussions between the consultant, CDM Smith (formerly Wilbur Smith Associates), and RTC staff in July 2010. The overall study vision is to create a report unique to Southern Nevada that provides guidance for local and regional agencies looking to incorporate Complete Streets design concepts into their standard practices. Once the regional report is completed, the RTC and its regional partners will work together in getting the elements from the report incorporated into existing plans, policies and standards. This study effort will ultimately help individual jurisdictions with implementation options for Complete Streets design features on specific roadway segments (if needed).

After the initial scoping period was complete and stakeholders were identified, the first stakeholder meeting took place on September 23, 2010. At that meeting, CDM Smith summarized the experiences of developing Complete Streets policies and guidelines in other regions. Discussion included the key elements needed for Complete Streets development in Southern Nevada, the roles each jurisdiction might play, and the essential goals for a Complete Streets policy. Five additional stakeholder meetings have occurred since the initial meeting. They took place on December 7, 2010, March 3, 2011, May 4, 2011, October 12, 2011, and December 14, 2011.

CDM Smith gave the first draft report to the RTC in June 2011. It was reviewed by the stakeholders and RTC staff the summer of 2011, with comments being submitted in September 2011. Additionally, the Southern Nevada Complete Streets Policy Development Workshop took place on July 13, 2011. This was sponsored by RTC and the Southern Nevada Health District. The workshop instructors were John LaPlante, P.E. and PTOE, and Ryan Snyder, who represent the National Complete Streets Coalition. Workshop discussion generally focused on the creation of Complete Streets policies, including the use of performance measures and the potential for changing

Designing our roadway to be usable by all abilities and skill levels is not only the law, but also good practice.
the project development process. Discussion on how to create room within the right of way for Complete Streets also took place.

The following meetings and discussions were held during the review of the draft document.

• Meetings with homebuilders, engineers and other stakeholders that regularly work with homebuilders (January 19 and January 31, 2012).

• Presentation for the Southern Nevada Home Builders Association, Community Planning and Infrastructure Committee (January 26, 2012).

• Presentation for the National Association of Industrial and Office Properties, Government Affairs Committee (March 1, 2012).

• Individual meetings with staff of several jurisdictions, including:
  ◦ City of Las Vegas Planning Department and Public Works Department (August 1, 2011)
  ◦ City of Henderson Community Development Department and Public Works Department (August 22, 2011)
  ◦ Clark County Public Works Department (April 11 and April 23, 2012)

• Comments on the December 2011 draft report were received from the City of Hen-

### Stakeholders and Workshop Participants

- RTC – Metropolitan Planning Organization, Transit
- Freeway and Arterial System of Transportation (FAST)
- RTC Transportation Access Advisory Committee
- Nevada Department of Transportation
- City of Henderson – Community Development, Public Works
- City of Las Vegas – Planning, Public Works
- City of North Las Vegas – Planning, Public Works
- Clark County – Comprehensive Planning, Public Works
- City of Boulder City – Community Planning
- City of Mesquite – Planning
- Southern Nevada Health District
- Clark County School District
- University of Nevada, Las Vegas – Safe Community Partnership
Potential Complete Streets action items could include revisions to the Uniform Standard Drawings.

Organization of the Report

The RTC Complete Streets Study Report is divided into the following chapters:

- Chapter 2, Context – this chapter discusses the existing roadway challenges that make Complete Streets necessary in Southern Nevada, along with the existing efforts underway to help make this possible.
- Chapter 3, Recommended Complete Streets Policy – this chapter provides the policy statement that CDM Smith and the study’s stakeholders recommend for adoption by the RTC Board of Commissioners.
- Chapter 4, Applying Complete Streets to Southern Nevada – this chapter discusses the conditions necessary to allow Complete Streets design features to occur regionally.
- Chapter 5, Design Guidelines – this chapter provides the recommended design guidelines for Complete Streets implementation in the region. Included are sample Complete Streets cross-sections that potentially can occur in Southern Nevada, per standard right-of-way width.
- Chapter 6, Implementation Strategy – this chapter discusses the options that the RTC and its regional partners have in implementing Complete Streets elements in the region. Included is a funding strategy called the RTC Complete Streets Program, which is featured in Section 6.2.

1.3 POTENTIAL ACTION ITEMS

Further discussion of these action items will take place in Chapter 6 of this report. These items will only occur after acceptance of the RTC Complete Streets Report by the RTC’s Executive Advisory Committee (EAC) and the RTC Board of Commissioners. Potential action items include:

- Coordinate the Complete Streets initiative with other community initiatives taking place in Southern Nevada.
- Incorporate Complete Streets strategies into the overall transportation narrative developed for the Regional Transportation Plan.
- Adopt the Complete Streets Policy for Southern Nevada, outlined in Chapter 3 of this report, either into the RTC Policies and Procedures document (used as a guide
for administering funds under RTC jurisdiction) or as a stand-alone statement.

- Revise the Uniform Standard Drawings to reflect various Complete Streets design concepts.

- Assist any Southern Nevada jurisdictions that decide to further update their long-range planning documents and zoning codes to reflect any of the Complete Streets elements in this report.

- Target federal discretionary funding programs for Complete Streets projects in Southern Nevada.

- Work with the EAC to set-aside a certain percentage of one or two federal transportation funds. The set-asides will initially be used to fund Complete Streets demonstration projects, which are intended to get the RTC’s partners accustomed to implementing them long-term.

- Once the demonstration projects are implemented, redevelop the funding of demonstration projects into a long-term Complete Streets funding program, with a secure fund source and a selection process identified.
The Las Vegas region has a number of entities which guide the operations and maintenance of transportation facilities, shown in Table 2-1. These entities have their own guiding goals and objectives and priorities in terms of servicing its users.

2.1 EXISTING ROADWAY CHALLENGES AND OPPORTUNITIES

Existing Roadway Conditions/Challenges

Until 2009, Southern Nevada continued to be one of the fastest growing urbanized areas in the country. A combination of high density development, high concentration of jobs in the Las Vegas Resort Corridor (the “Strip”), limited freeways in the overall network, and over-use of arterial streets have created conditions that induce traffic congestion in the Las Vegas metropolitan area. Overall, the area is auto-dominated. And although residential development is high in density, more recent developments have been designed as single-family housing units with large blocks, curvilinear street patterns, subdivision walls, and single points of vehicular access that lead to congestion at subdivision entryways. These development patterns have resulted in several transportation consequences, including neighborhood speeding, requests for signalization at entryways intersecting major roadways, and indirect biking and walking routes.

Downtown Las Vegas was developed a century earlier, so the area has a street design grid pattern that provides more direct connections for bicyclists and pedestrians. As it continues to go undergo redevelopment, various pedestrian and transit improvements have recently been completed, including conversion of Bonneville and Clark Streets into a one-way couplet with improved sidewalks and bicycle lanes, construction of center-running bus-rapid transit along Casino Center Boulevard, and improvement of sidewalks along 1st Street. Sidewalk improvements of these capital projects include 10 foot sidewalks, benches, planters, palm trees, and shade trees. However, there are plenty of street corridors in Downtown Las Vegas that need sidewalk improvement. Results from a survey conducted as part of the “Downtown Pedestrian Circulation Study,” completed in 2008, reports that the biggest challenges for walking in Downtown Las Vegas include poorly designed sidewalks, sidewalk obstructions, and the lack of street lighting that may contribute to the feeling of being safe. Downtown Henderson has gone through similar challenges and redevelopment projects, with Water Street be-
ing a recipient of recent pedestrian and transit improvements.

These challenges can actually be found throughout much of the Las Vegas metropolitan area. Often, streets have narrow sidewalks cluttered with furniture and utility poles with no buffer for fast-moving traffic in the adjacent travel lanes of the roadway, making it uncomfortable for pedestrians. The more recent master-planned communities, like Summerlin, Anthem, and Southern Highlands, have a unique combination that is fairly new to the region. These areas have the large blocks, curvilinear street patterns, and subdivision walls that provide few direct bicycle and pedestrian connections to desired destinations. However, these areas also provide detached sidewalks with landscaped buffers and sometimes tree shade and benches. Some residents have found this sidewalk pattern to be more desirable than what one sees in the older parts of the metropolitan area.

As part of the 2008 RTC Bicycle and Pedestrian Plan, RTC staff collected information on sidewalk types, driveways, and medians. Sidewalk types were characterized into the following four classes:

- Class 1 – detached sidewalk (landscaped buffer between the block wall/adjacent property and sidewalk; landscaped buffer between the sidewalk and curbside travel lane)

### Table 2-1 Lead Transportation Agencies

<table>
<thead>
<tr>
<th>Level</th>
<th>Agency</th>
<th>Transportation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Federal Transit Administration (FTA)</td>
<td>Oversight and funding of RTC Transit System</td>
</tr>
<tr>
<td>State</td>
<td>Nevada Department of Transportation (NDOT)</td>
<td>State highway facilities</td>
</tr>
<tr>
<td>Regional</td>
<td>Regional Transportation Commission of Southern Nevada (RTC)</td>
<td>Regional fixed route transit and paratransit services, regional bicycle facilities, regional ITS (FAST), Transportation Demand Management (Club Ride)</td>
</tr>
<tr>
<td>County</td>
<td>Clark County</td>
<td>Countywide roadway, bicycle, and pedestrian facilities</td>
</tr>
<tr>
<td>Local</td>
<td>Cities of Las Vegas, Henderson, North Las Vegas, Boulder City, Mesquite</td>
<td>Citywide roadway, bicycle, and pedestrian facilities</td>
</tr>
</tbody>
</table>
• Class 2 – same as class 1, except no buffer between the sidewalk and curbside travel lane
• Class 3 – typical sidewalk abutting block wall/adjacent property with no separation from the curbside travel lane
• Class 4 – no sidewalk provision

Analysis of the data collection found that roughly half the streets in the Las Vegas metropolitan area had sidewalks in Class 1 or 2, while the other half had sidewalks in Class 3 or 4. Class 1 and 2 sidewalks were often found in either master-planned communities or newer developed areas of the region. Class 3 or 4 sidewalks were often found in older developed areas or outlying parts of the region. Driveway and median information was also collected due to their bearing on cycling and walking safety. This information also provided the rationale for installing pedestrian countermeasures on certain roadway corridors.

Recently, RTC studies were conducted on pedestrian safety and access management to help push strategies and policies that may eventually be adopted by the Southern Nevada jurisdictions. These efforts have been important given that 36 pedestrian fatalities and 180 pedestrian injuries have occurred in the State of Nevada for 2009.1 The majority of pedestrian fatalities occurred either mid-block or at marked crosswalks. Intersections continue to be a place where pedestrian injuries and fatalities often occur. These statistics point to the opportunity that exists to improve pedestrian safety through complete streets treatments. Many pedestrian accidents occurred in areas with significant pedestrian activity and a lack of pedestrian infrastructure. Such locations are prime locations for incorporating complete streets treatments and evaluating their effects on pedestrian safety.

Past Accomplishments
In the past 10-15 years, the RTC has pushed for alternative transportation modes through the continuous development of the transit system and the bicycle master plan. The RTC and its jurisdictional agency partners have made steps in previous years to serve the overall transportation needs of Southern Nevada residents, including:

• The RTC Transit system, which has managed to serve the transit base population, while updating the transit fleet and facilities in recent years.
• Bus rapid transit (BRT) infrastructure and express routes have been developed in recent years, including Las Vegas Boulevard, Downtown Las Vegas, US 95, Boulder Highway, and Downtown Henderson.
• The ability to fund and construct the needed roadway capacity projects to serve the Southern Nevada population (that

1. 2011-2015 Nevada Highway Safety Plan
grew exponentially for many years until the recent recession).

- An expanding bicycle network with an existing system in-place and adopted segments awaiting implementation.
- The Club Ride Transportation Demand Management (TDM) program that promotes carpooling and other alternative modes of travel for employees getting to their workplace.
- Bike racks on buses in order to allow bicyclists a safer travel within the gaps of the existing bicycle network.

Future Opportunities

In general, the travel behavior is still oriented to driving alone rather than carpooling, transit riding, bicycling, or walking. According to the U.S. Census Bureau’s American Community Survey (2005-2009 five year estimates), 78.4 percent of Clark County residents drive alone to work, while 11.6 percent carpool, 3.4 percent take public transportation, and 1.9 percent walk (Figure 2-1). There are several opportunities to further enhance the existing transportation network, which include:

- Creating better connectivity between transportation modes within dense but suburban-designed neighborhood developments that exist in the Las Vegas Valley.
- Applying better access management tools to reduce excessive commercial driveways that are found in many of the arterial roads.
- Creating safe roads compliant with state and federal ADA regulations.
- Providing aesthetically pleasing roadway features, such as landscaping, better lighting, and other pedestrian furnishings that help create a sense of place.
- Helping address the general economic climate – livable/sustainable roadways may lead to commercial and residential development that is attractive to Southern Nevada residents and can provide employment opportunities.

2.2 EXISTING PLANS AND POLICIES

When the suggested Complete Streets policy statement and design guidance are forwarded for comments and recommendations, they will go through several RTC committees, including the following:

- Operations Subcommittee
- Specifications Subcommittee
- Metropolitan Planning Subcommittee
- Transportation Access Advisory Committee (TAAC)

Figure 2-1 Clark County Mode to Work (2009)

Source: U.S. Census Bureau’s American Community Survey (2005-2009 five year estimates)
Getting comments from the subcommittees and TAAC is important, as their comments will guide how to proceed presenting the information to the EAC. Once EAC reviews the Complete Streets information from this report, they will help decide how to proceed forward. For example, the EAC might recommend the policy statement be adopted by the RTC Board, recommend some of the information from the design guidance become standard drawings, or recommend policies be placed onto plan documents, etc. In the future, the RTC will try and incorporate industry review (e.g., residential and office property builders) in the comments and recommendation phases of study reports and plan documents.

Most of RTC study reports, plans, and capital program lists go through this general committee structure. In general, past and present planning study efforts from the RTC and the jurisdictions provide legitimacy to and context for the Complete Streets Study. The following sections go into these efforts in detail.

**Study Reports**

Previous transportation study efforts have attempted to convey multi-modal transportation elements in them. This includes several corridor studies that have led to BRT projects. These planning studies have focussed on a variety of issues, and have included goals to improve roadways for cars, provide access to transit, develop the bicycle network, and improve pedestrian amenities. Table 2 provides a list of previous and current studies that touch on multimodal street design or Complete Streets.

**Plans**

The Regional Transportation Plan (RTP), last developed in 2008, provides a regional foundation to transportation decisions. Discussion regarding how to accommodate all users is found within various sections of the RTP document. Accommodating all users is also reflected within the following RTP goals:

- Goal 2: Develop fully integrated modal options.
- Goal 4: Improve access to mass transportation facilities and services.
- Goal 7: Improve safety for all travelers.
- Goal 11: Contribute to the long-term sustainability of Southern Nevada communities.

The RTP identifies the strategic transportation investments that the RTC expects will be made over the next 20 years. Projects scheduled to be funded in the next four years are listed in the Transportation Improvement Program (TIP). The TIP is reviewed at least once a year and includes bicycle and pedestrian improvements as well as roadway and transit projects. For a roadway project to be eligible for Federal...
<table>
<thead>
<tr>
<th>Previous Studies (since 2008)</th>
<th>Transportation Elements</th>
<th>Land Use Elements</th>
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<tbody>
<tr>
<td>Sahara Avenue Corridor and Bus Rapid Transit Study</td>
<td>transit, pedestrian, intersection improvements</td>
<td>transit corridor planning</td>
</tr>
<tr>
<td>Tropicana Avenue Corridor Study</td>
<td>transit, pedestrian, intersection improvements</td>
<td>transit corridor planning</td>
</tr>
<tr>
<td>Flamingo Road Corridor Study</td>
<td>transit, pedestrian, access management, intersection improvements</td>
<td>transit corridor planning</td>
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<tr>
<td>Valley View Boulevard Study</td>
<td>transit, bicycle, pedestrian</td>
<td></td>
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<tr>
<td>Las Vegas Valley Arterial Development Study</td>
<td>access management, bus turnouts, intersection improvements</td>
<td></td>
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<tr>
<td>Las Vegas Boulevard North Land Use, Transit and Pedestrian Study</td>
<td>transit, bicycle, pedestrian</td>
<td>design standards for infill development, community gateway corridors</td>
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<tr>
<td>UNLV Multimodal Transportation Hub Feasibility Study</td>
<td>transit, bicycle, pedestrian</td>
<td>transit center</td>
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<tr>
<td>Maryland Parkway Bus Rapid Transit Study</td>
<td>transit, pedestrian, intersection improvements</td>
<td>transit corridor planning</td>
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<tr>
<td>Pecos Road Corridor Study</td>
<td>transit, pedestrian, access management, intersection improvements</td>
<td></td>
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<tr>
<td>Jones Boulevard Corridor Study</td>
<td>transit, bicycle, pedestrian</td>
<td></td>
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<td>East Charleston Boulevard Corridor and Parking Study</td>
<td>transit, Complete Streets (pedestrian enhancements and narrower traffic lanes), access management, intersection improvements</td>
<td>redevelopment / infill development</td>
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<tr>
<td>Buffalo Drive Road Safety Audit</td>
<td>roadway safety</td>
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<td>Clark County Area Access Management</td>
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<td>Pedestrian Safety Action Plan</td>
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<td>Current Studies</td>
<td>Transportation Elements</td>
<td>Land Use Elements</td>
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<tr>
<td>Community Mobility Study for Central Las Vegas</td>
<td>transit, bicycle, pedestrian</td>
<td>transit-oriented development</td>
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<tr>
<td>Analysis of Alternative Mode Enhancements on Arterial Roadways in Henderson</td>
<td>transit, bicycle, pedestrian</td>
<td></td>
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<tr>
<td>Nevada State College Area Transportation Plan</td>
<td>transit, bicycle, pedestrian</td>
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<td>Decatur Boulevard Transit Study</td>
<td>transit, pedestrian, intersection improvements</td>
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<tr>
<td>City of North Las Vegas Major Downtown Area Study</td>
<td>transit, bicycle, pedestrian</td>
<td>transit-oriented development</td>
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<tr>
<td>Stephanie Street Corridor Transportation Study</td>
<td>transit, pedestrian, intersection improvements</td>
<td>transit corridor planning</td>
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<td>Boulder Highway Relinquishment and Frontage Road Study</td>
<td>transit, bicycle, pedestrian</td>
<td>transit-oriented development</td>
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<tr>
<td>Transit Node Improvements in Southern Nevada</td>
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<td>Las Vegas Downtown Pedestrian Circulation Study</td>
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<tr>
<td>West Henderson UPWP Study</td>
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funding under the TIP, it must be on a road that is classified as a “Collector” or higher in the Federal Roadway Functional Classification. Transit, bicycle and pedestrian projects are not necessarily subject to this condition.

Projects have to be shown in the RTP and TIP to be eligible for federal transportation funding. In addition to federal funds, the RTC also oversees substantial local funds for transportation. Projects scheduled to receive local funding are identified in the RTC’s Capital Improvement Program. By agreement with the local entities, roadway projects eligible for local funds must be on the agreed Master Plan of Streets and Highways, all of which have a minimum of 80 feet of planned right-of-way.

Although the procedures for project development and implementation are different depending on whether or not federal funding is used, in practice the two processes work in parallel. For example, the locally-defined Master Plan of Streets and Highways forms the basis for the Federal Roadway Functional Classification, so that most roadways that are eligible to receive local funding may also qualify for federal funds. In considering complete streets elements, the significant point is that nearly all the of the fund sources available to the RTC can be applied in some degree to complete streets, but that each fund source, federal as well as local, has its own particular purposes and restrictions.

The RTC also has several plan documents that support the goals and objectives of the RTP document. This includes the Bicycle and Pedestrian Plan and the Short Range Transit Plan. NDOT also has their plan documents that affect Southern Nevada, including the Statewide Transportation Plan and the Statewide Bike Plan.

As mentioned above, each Southern Nevada jurisdiction has either a transportation plan, transportation element associated with a Comprehensive/Master Plan, or both. These documents are important, as several of them recognize the need for Complete Streets. In addition, there are several specific area- or corridor-level plan documents that develop strategies based on the linkage between land use and transportation. These documents include, but are not limited to:

- Boulder Highway Corridor Investment Strategy (City of Henderson)
- Downtown Centennial Plan (City of Las Vegas)
- Walkable Community Plans (City of Las Vegas)
- Downtown Master Plan and Investment Strategy (City of North Las Vegas)
- North 5th Street Transit-Supportive Concept Plan (City of North Las Vegas)
- South of Sahara Avenue Design Standards and Guidelines (Clark County)
- Design Standards for West Village Streetscapes (Clark County)
- Mesquite Boulevard Corridor Plan (City of Mesquite)
- Bikeways Plan (City of Mesquite)

**Design, Development and Zoning Codes**

In addition to studies and plans, most Clark County jurisdictions have adopted ordinances that require adherence to specific standards for new development and retrofit projects. The following references relate to zoning and development codes recently adopted by Southern Nevada jurisdictions. Each of these jurisdictional ordinances has a direct relationship to sections of the public right-of-way that are important for complete streets enhancements.

**City of Las Vegas**

There is a section in the City of Las Vegas Unified Development Code devoted to Complete Streets Standards. The following section of the City’s development code provides for standards for: street and network connectivity for development sites, standards for amenity zones, transportation and land use compatibility for various street rights-of-way, and cross sections and amenity zones for roadway right-of-way widths from 120’ to 47’. This ordinance applies to all new development projects, and, potential-
ly, could be expanded to include redevelopment projects in the future if the City chooses.

- Chapter 19.04, Complete Streets Standards, City of Las Vegas Unified Development Code (2011)

City of North Las Vegas
The City of North Las Vegas has a comprehensive, and recently updated, ordinance dealing with all aspects of site development dimensional standards. While these standards do not call out complete streets treatments per se, they do provide standards for the same cross sectional elements that are important to implementation of complete streets attributes in the community.

- Chapter 17.24, Development Standards, City of North Las Vegas Zoning Ordinance (2011)
  - 17.24.040 – Parking and Loading. This section provides standards for on and off-street parking and loading, handicapped parking requirements, bicycle facilities, reduction of parking spaces and alternative parking spaces.
  - 17.24.050 – Mobility and Circulation. The Mobility and Circulation section deals with multi-modal mobility and circulation. Page 271 includes five key purposes of this section of the code, which are in alignment with the principles of complete streets. This section also includes a street connectivity index for walled communities, lot layout and traffic calming measures, sidewalk standards, public transportation access standards, and bicycle and pedestrian linkages/circulation requirements.
  - 17.24.060 – Landscaping. This section provides standards for transit stop landscaping and amenities as well as landscaping standards adjacent to or located in the public right-of-way.
  - 17.24.110 – Site Design. This section provides guidelines for mixed use development within the City of North Las Vegas.

City of Henderson
The City of Henderson has adopted a very comprehensive set of development design standards. In many instances these are very similar to those adopted by the City of North Las Vegas. Chapter 19 of the Development and Design standards ordinance is applicable to all new development except for master planned or planned unit development. It is applicable to redevelopment in the case of demolition of a primary structure or “substantial renovation” projects.

  - 19.7.3 – Circulation and Mobility. This section’s purpose is to “promote the creation of a highly connected transportation system.” There are sub sections dealing with the development of a circulation plan and provisions for street connectivity. The street connectivity index, cross access, and pedestrian circulation elements are key sections of the ordinance that provide the basis for permitting that supports complete streets.
  - 19.7.4 – Parking and Loading. This section provides incentives for parking reduction that supports the use of alternative modes, including provisions for bicycle parking. Additionally, there are on- and off-street parking and loading standards that are very similar to those adopted by North Las Vegas.
  - 19.7.6 – District-Specific Standards. This section provides access, parking, and landscaping standards for mixed use districts in the City.
  - 19.7.12 – Sustainability. This section encourages and promotes use of alternative transportation modes, such as biking and walking. It promotes access to transit, carpooling, interconnected pedestrian systems, facilities for bicycle commuters, bicycle circulation systems and developer sponsored transit.
Clark County
The County has made changes to their development code in recent years to strengthen the pedestrian realm, including the option to install detached sidewalks and adjacent landscaping and enhanced pedestrian standards for streets in the mixed use overlay district.

- Chapter 30.24, Planned Unit Development
  - 30.24.080 – Design Standards and Guidelines. In general, this chapter is intended to encourage innovation for residential development projects. Particularly, it seeks to allow developers to provide efficient pedestrian and vehicular traffic systems in residential developments. Within the design standards and guidelines section, there is a list of optional amenities that includes enhanced perimeter landscaping with detached sidewalks and provision of bicycle and pedestrian pathway systems.

- Chapter 30.48, Zoning Overlay Districts, Clark County Development Code
  - 30.48.760 – Mixed Use Overlay Sub-district. This section provides for development density incentives for proximity to an existing or planned transit stop, provision of park and ride facilities, supplemental pedestrian facilities, parking and traffic circulation, and development of streetscapes that encourage pedestrian activity. This section also includes comprehensive requirements for the “pedestrian realm,” including minimum and enhanced standards for sidewalk width, amenity zones, and other streetscape features.

Regional Impacts
When combined with the recommended Complete Streets policy, the efforts outlined above will better enable Southern Nevada to realize the benefits of integrated multi-modal planning. As seen above, several jurisdictions have already adjusted their codes to facilitate Complete Streets concepts. Since the recommended Complete Streets policy is inherently limited in scope to primarily focus on improvements within the public right of way, these and other future planning efforts will continue to be invaluable in increasing transportation choices.

While Complete Streets are designed to accommodate all modes, their ability to attract increased numbers of pedestrians, bicyclists, or transit riders will be limited without corresponding land use changes that increase densities, mixed-uses, and street connectivity.

Since local land use decisions are controlled by the Southern Nevada jurisdictions, the RTC can best promote multi-modalism by eventually developing the design guidance in this report into context-sensitive roadway design specifications. The overall Complete Streets initiative will help ensure roadways are designed to support increased travel options when streets are built or reconstructed, or when there are significant changes in land use. The design guidelines provided in Chapter 5 of this Study Report are intended to complement existing standards adopted by Clark County jurisdictions. Recommended standards are based on national best practices and may be referred to when updating local development or zoning codes.

2.3 EXISTING REGIONAL EFFORTS

CMAQ Funded Bicycle Improvement Projects
Through the RTC’s Alternative Transportation Mode Master Plan Working Group – a cooperative effort with the local jurisdictions that include Clark County and the cities of Las Vegas, Henderson, and North Las Vegas – roadways were identified where installation of either bicycle lanes or bicycle routes would improve the regional bicycle network. The project will add approximately 100 centerline miles of existing roadways totaling 200 linear miles, 1600 bike lane symbol markings, and 1500 roadway signs.
In addition, the project will add approximately 60 miles of new bicycle routes and 260 new bicycle route signs. The project is anticipated for completion in mid-2012.

**Active Transportation Improvement Project**
Through a cooperative effort with the City of Las Vegas and Southern Nevada Health District, the RTC will be using funding secured from the Centers for Disease Control and Prevention to facilitate increased active transportation. Concurrent with the City of Las Vegas’ regular roadway maintenance program, new bicycle lanes will be installed along nearly 12 centerline miles to bridge gaps and bolster the overall bicycle network. A number of these proposed improvements are located along adopted Safe Routes to School and connect to public recreation facilities.

**Downtown Bicycle and Pedestrian Improvement Project**
Downtown Las Vegas is located in the urban core of the Las Vegas Valley, which includes major residential developments and serves as the second largest employment center for the region. The project will provide bicycle improvements, including new bicycle lanes, pavement striping, signage, and other improvements as needed to provide contiguous bicycle travel between various downtown land uses.

In addition, some corridors will be developed with wider sidewalks and landscape buffers to encourage comfortable and safe pedestrian movement. The main goal is to improve transportation accessibility and options within Downtown Las Vegas for all who live, work, and visit the area. Engineering design is being funded through local sources and construction will be supported partly through Federal Transit Administration funding. The project is anticipated to begin in early 2012.

**Electric Bicycle Program**
To help minimize short distance travel by car, the RTC (through its Club Ride Program) has partnered with several government agencies to implement the Electric Bicycle (E-Bike) program. Participating organizations are encouraged to use the E-Bikes to go to meetings, lunch, short distance errands, and other activities instead of using an automobile. Ultimately the program is intended to reduce congestion and impacts to air quality while also encouraging more physical activity. Through a cooperative effort with NDOT, the RTC was able to secure funding for the procurement of 25 electric-assist bicycles along with lockers to be deployed at the partner agencies’ work sites. In addition to the RTC, E-bikes will be deployed at multiple office locations for the Southern Nevada Water Authority, City of Las Vegas, Clark County, FAST Traffic Management Center, and Clark County Department of...
Air Quality and Environmental Management. Maintenance of the E-bikes will be managed by the RTC through its Bike Center at the Bonneville Transit Center.

**Bonneville Transit Center**
In November 2010, the RTC opened the Bonneville Transit Center in Downtown Las Vegas. The facility serves as the main terminal for all express routes and one-third of the existing bus routes, making it a major destination point with greater intermodal choices for those traveling to or within the downtown area. Notably, the Bonneville Transit Center is also the home for the first bicycle center in Southern Nevada.

The RTC Bike Center is a bike valet, shop, and repair facility that encourages sustainable transportation in Downtown Las Vegas. This facility provides secure, indoor parking for up to 75 bikes at a time with staff available to repair patrons’ bicycles while they are parked. Membership costs $20 per year for unlimited use of the facility and registration includes a BikeLink smart card and identification stickers. Members of the RTC Bike Center are able to use restroom and private showers (also located within the Bonneville Transit Center) that are secured for their exclusive use. There are also regular free clinics, such as how to repair flat tires and safety tips for bicycle commuting, as well as events to encourage ridership. In addition to the RTC Bike Center, there are also 15 bicycle racks located outside the Bonneville Transit Center for patrons that need the flexibility of 24-hour access.

**UNLV Transit Center**
The RTC is working with the University of Nevada, Las Vegas (UNLV) to develop a new transit facility within the campus. UNLV typically has over 25,000 students per year in attendance and is located adjacent to one of the region’s busiest transit corridors. To facilitate and encourage access via public transportation and non-motorized travel, the RTC is planning to implement a self-serve bike center within this transit center so that students will have an enclosed and secure facility on campus to store their bicycles.

**Sahara Avenue Bus Rapid Transit Project**
The RTC is developing a 12-mile BRT corridor along Sahara Avenue from Hualapai Way to Boulder Highway. Sahara Avenue is located near the center of the developed Las Vegas metropolitan area that serves the heaviest employment centers along with extensive areas of existing/planned commercial and residential development. The implementation of this project will further bolster the RTC’s efforts to implement a comprehensive BRT network by connecting directly to three other BRT routes (Strip and Downtown Express, Henderson and Downtown Express, and Boulder Highway Express) and the Deuce premium double-deck bus service on the Las Vegas Strip. Funding for the project comes from the TIGER Discretionary Grant Program. The project is anticipated for completion in early 2012.

**Downtown Las Vegas Multi-Modal Transportation Project**
The RTC is working with the City of Las Vegas to convert Main Street and Commerce Street into a one-way couplet. Besides the conversion of traffic flow along these street corridors, the project will also enhance sidewalks/crosswalks and install bicycle lanes and transit amenities. Many of the multi-modal elements resemble the basic design features of Complete Streets, which is why both jurisdictions are interested in implementing the project. Another benefit of this project is that the roadway improvements will be implemented in conjunction with the reconstruction of storm water and sewer systems in the same area. The project is under design and the City of Las Vegas is seeking local and federal funds to pay for the construction.
The following chapter outlines the recommended Complete Streets Policy for Southern Nevada. Additions and revisions to the recommended policy will be based on input from several stakeholders, most notably the RTC’s Executive Advisory Committee. This policy will help guide the implementation strategy for Complete Streets initiatives and projects throughout the region.

### 3.1 Vision

As the transit agency and Metropolitan Planning Organization (MPO) for the region, the Regional Transportation Commission of Southern Nevada (RTC) is committed to fully integrating modal options. This includes supporting projects that enhance walking and bicycling infrastructure. Additionally, the RTC will improve access to public transportation facilities and services. This includes supporting urban development patterns and Americans with Disabilities Act (ADA) infrastructure that allow for greater accessibility to transit stops and stations. Finally, the RTC continues to improve safety for all travelers. This is particularly important for those who rely on transportation infrastructure to be physically active and for students who walk or bike to school.

The recent growth period in Southern Nevada directly impacted transportation needs. Many of the RTC’s federal, state, and local funding sources were used to develop better traffic signals and more travel lanes. Today, these funding sources are running well short of what is needed. Plus, urban growth in the region has slowed down. The typical roadway transportation project that just adds capacity and infrastructure is insufficient given these conditions. The RTC must adhere to its vision, which is to “provide a safe, convenient and effective regional transportation system that enhances mobility and air quality for citizens and visitors.”

Recent RTC and RTC-supported projects have already fulfilled some of these desires. There are already bus rapid transit routes existing in the region and more are being constructed for implementation in the near future. New transit shelters are being placed throughout the metropolitan area, while the recently built transit station in Downtown Las Vegas provides greater mobility and accessibility. Efforts are underway to add more bicycle lanes and routes. Recent planning studies are looking to improve roadway safety, pedestrian safety, and access management between roadways and building developments. Jurisdictions and the RTC are working together on projects that improve landscaping, sidewalks, and the interface with building developments.

Promoting Complete Streets projects can offer Southern Nevada the ability to reduce traffic congestion, improve air quality, and increase
the quality of life of residents by providing safe, convenient, and comfortable routes for walking, bicycling, and public transportation. Integration of Complete Streets into the RTC’s existing policies allows the potential to prevent chronic diseases, reduce motor vehicle related injury and deaths, improve environmental health, stimulate economic development, and ensure access of transportation options for all people in Southern Nevada.

3.2 COMPLETE STREETS DEFINITION FOR SOUTHERN NEVADA
Complete Streets are roadways designed to safely and comfortably accommodate all users, regardless of age, ability or mode of transportation. Users include motorists, cyclists, pedestrians and all vehicle types, including public transportation, emergency responders, and freight and delivery trucks among others.

In addition to providing safety and access for all users, Complete Street design treatments take into account accommodations for disabled persons as required by the ADA. Design considerations for connectivity and access management are also taken into account for non-motorized users of the facility.

Implementation of Complete Street design treatments will be based on whether it connects the networks for all modes, whether it improves the functionality for all users, and whether it is appropriate given the surrounding context of the community. The final elements of a Complete Street roadway will be largely based on these factors. At a minimum, a Complete Street roadway includes sidewalks and sidewalk amenities, transit shelters and amenities whenever there is a route along the corridor, and provisions for bicycle facilities where appropriate.

Complete Streets Attributes
While every street cannot be designed to serve all users equally, there are opportunities to enhance service for all users while maintaining its principal transportation function. Complete Streets incorporate community values and support adjacent land uses while ensuring safety and mobility. Proper applications of Complete Streets concepts support sustainable growth and preservation of scenic, aesthetic and historic resources.
3.3 GOALS
The purpose of this RTC Complete Streets Policy is to create a comprehensive and uniform Complete Streets vision and policy for the region. This will allow the implementing entities to incorporate Complete Streets guidelines and standards into both development and redevelopment actions. The regional goals are:

- Southern Nevada’s transportation network will be supported through a variety of feasible transportation choices, which allows for sustainable growth.
- The livability of neighborhoods and commercial centers located along the region’s transportation corridors will be enhanced by a safe and inviting pedestrian environment.
- The design of multimodal roadway facilities will not compromise the needs of larger vehicles such as transit vehicles, fire trucks, and freight delivery trucks.
- Inclusion of Complete Streets design elements will allow for design flexibility on different street functions and neighborhood contexts.
- Inclusion of Complete Streets design elements will improve the integration of land use and transportation, while encouraging economic revitalization through infrastructure improvements.

3.4 OBJECTIVES
1. Create an integrated and connected transportation network that supports transportation choices and sustainable growth.
2. Ensure that all transportation modes are accommodated to the extent possible in all public roadway facilities in the region.
3. Develop and use the latest design standards and guidelines in the design of Complete Streets.
4. Provide flexibility in the implementation of this policy so that streets chosen for implementation of Complete Streets elements can be developed to fit within the context of their principal purpose and surroundings without compromising the safety of users and needs of larger vehicles.
3.5 POLICIES

1. RTC promotes the incorporation of Complete Streets concepts and design standards in all appropriate public streets (except freeways) throughout the region.

2. RTC will seek every opportunity to provide guidance and funding for the planning, design, and implementation of Complete Streets.

3. RTC will provide policy and technical support to local entities in the incorporation of Complete Streets elements into their development codes and comprehensive plans.

4. RTC will provide technical support to local entities in the development of a process for evaluating, ranking, and prioritizing Complete Streets projects in their area.

5. RTC will encourage local entities to consider Complete Streets elements as an integral part of the planning and design of roadway projects, whether new construction, reconstruction, or rehabilitation.

6. RTC will consider modifications to the Master Plan of Streets and Highways or the Roadway Functional Classification that may be necessary to configure a particular street as a Complete Street.

7. Public streets excluded from this policy include those where:
   a. Complete streets concepts is in conflict with existing laws, codes, or ordinances; or
   b. Compliance with this policy would conflict with goals or physical conditions related to the unique aspects of the location.

3.6 IMPLEMENTATION

This Policy is effective from the date of approval by the RTC Board of Commissioners. Additional criteria, guidelines, and techniques for implementation of this Policy will be incorporated in appropriate RTC publications.

3.7 REIMBURSEMENT OF COSTS

Construction of curb, gutter, sidewalk, landscaping, street lights, and parking lanes (defined as the eight feet of pavement to the curb) included in an approved, entity-sponsored Complete Streets project will be eligible for reimbursement by the RTC on a case by case basis.
This section describes a basic framework for understanding, identifying, and applying Complete Streets principles and guidelines within Southern Nevada. Many of these techniques are consistent with guidance provided by national industry publications on Complete Streets or context-sensitive solutions.

4.1 **TYPICAL FEATURES OF COMPLETE STREETS**

Features of complete streets include improvements to enhance the pedestrian, bicycle and transit environment and make access to these modes more convenient. These improvements range from slowing traffic to creating transit lanes. The following describes typical features of complete streets and how they may benefit Southern Nevada.

**Traffic Calming**

Traffic calming utilizes design strategies to slow down cars and increase drivers’ awareness of pedestrians and bicyclists. By slowing down automobile speeds, traffic calming features can have a positive effect on the pedestrian environment, including improved safety for pedestrians, increased pedestrian activity, and more vibrant street life. Traffic calming treatments that contribute to complete streets include:

- Medians;
- Traffic circles;
- Curb extensions;
- Lane narrowing;
- Pavement treatments; and
- Channelized islands.

**Transit Lanes and Facilities**

Transit only lanes, often implemented within Bus Rapid Transit (BRT) projects, increase the priority of transit on the street network and improve transit efficiency and convenience. Enhanced transit facilities, such as bus shelters, stop locations, and lighting are often incorporated into streetscape design elements of streets with BRT. Creating a more efficient and comfortable transit system with these improvements will encourage greater ridership.

**Bicycle Lanes and Facilities**

Bicycle lanes, routes, parking, and other facilities provide infrastructure to better accommodate bicyclists on roadways. Accommodating bicycles through these facilities encourages bicycle use by making it safer and more convenient for bicyclists to use the roadway network. Overarching benefits of encouraging bicycle use include improved environmental and per-
sonal health, reduced traffic congestion, and enhanced quality of life. Specifically, bicycle lanes define roadway space, improve comfort for bicyclists, encourage bicyclists to ride in the correct direction of travel, and signal motorists that bicyclists are allowed to be on the road. Bicycle lanes help to better organize the flow of traffic and reduce the chance that motorists will stray into bicyclists’ path of travel. In various surveys bicyclists have stated their preference for marked on-street bicycle lanes. In addition, real-time studies (where bicyclists of varying abilities and backgrounds ride and assess actual routes and street conditions) show that bicyclists are more comfortable and assess a street as having a better level of service for them where there are marked bike lanes present.

Bicycle lanes perform the following functions:

- Support and encourage bicycling as a means of transportation;
- Help define road space;
- Promote a more orderly flow of traffic;
- Encourage bicyclists to ride in the correct direction, with the flow of traffic;
- Give bicyclists a clear place to be so they are not tempted to ride on the sidewalk;
- Remind motorists to look for bicyclists when turning or opening car doors;
- Signal motorists that bicyclists have a right to the road;
- Reduce the chance that motorists will stray into bicyclists’ path of travel;
- Make it less likely that motorists passing bicycles will swerve toward opposing traffic;
- Decrease the stress level of bicyclists riding in traffic.

**Midblock Crossings**

Midblock crossings are crosswalks located midblock, not at an intersection. They provide locations for pedestrians to cross streets where the spacing of intersections is far apart or when the pedestrian’s destination is immediately across the street. In these instances, pedestrians will tend to cross the street even when there is no crosswalk, exposing them to traffic where drivers may not expect them. Midblock crossings respond to this behavior by providing a safe connection. Installing midblock crossings is best only when there is a high amount of pedestrian activity occurring in a specific area.

The design of midblock crossings may include high-visibility crosswalks, signals, warning signs, flashing lights, in-ground warning lights, and curb extensions. Midblock crossings should be considered where there is high pedestrian demand to cross, and where street and traffic conditions are adequate. There are three characteristics of well-designed and placed midblock crossings, including:

Curb extensions are used as a form of traffic calming. They improve the pedestrian environment by reducing street crossing distances, improving the visibility of pedestrians at street corners, and providing an on-street parking area, which creates a buffer between cars and pedestrians. This curb extension also narrows the automobile travel lane. This helps to reduce automobile speeds, leading to a safer crossing environment for pedestrians.

Transit facilities are a standard component of complete streets.
They are highly visible to motorists, bicycles and pedestrians;

- They reduce walking distance for pedestrians; and

- They contribute to pedestrian convenience.

**Landscaping**

Landscaping and street trees provide numerous benefits to automobiles, pedestrians and bicyclists. Landscaping not only improves the visual aesthetic of a street, but also makes streets safer and more comfortable for pedestrians. From a motorist’s perspective, landscaping and street trees create vertical walls that frame the street with a defined edge that results in more frequent assessment of their speed leading to overall speed reductions. For pedestrians, slower moving traffic relates to a more comfortable walking environment. Furthermore, landscaping and street trees provide a buffer between pedestrians and cars, provide shade, and lead to increased pedestrian activity.

When landscaping is placed either on the median or in the furnishings area of the street, keep in mind unmaintained growth to certain trees and shrubs can lead to decreased visibility and shadows that can distract motorists from seeing the entire roadway. Existing codes are in place to help ensure that landscaping is maintained regularly and these potential issues do not occur regularly on Southern Nevada roadways.

**Road Diets**

Road diets can improve pedestrian safety through lower vehicular speeds and reduced pedestrian crash rates.1 Furthermore, when center-running left turn lanes are included, traffic flow becomes more efficient with fewer conflicts of automobiles waiting for left turns when located in the left through lane.

Research has been conducted looking at lane reductions from four lane roads to two lane roads with a center running left turn lane. Added congestion can outweigh the benefits if vehicle volumes exceed capacity or if significant traffic is diverted to other thoroughfares. The upper limit threshold to avoid impacts on level of service is approximately 20,000 to 24,000 AADT.2

Regarding lane width reductions, the Highway Capacity Manual3 states that there is no effect

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2. Ibid.


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[1] Providing bike lanes can increase safety for those traveling by bicycle.

[2] Midblock crossings provide locations for pedestrians to cross streets where the spacing of intersections is far apart.
on automobile capacity for lane widths between 10 feet and 12.9 feet. The greatest impact to automobile capacity for urban thoroughfares is at intersections. However, intersection improvements can be made that both improve the pedestrian environment and improve automobile capacity by carefully adjusting the pedestrian crossing signal phase.

Landscaping not only improves the visual aesthetic of a street, but also makes streets safer and more comfortable for pedestrians.

A road diet refers to a reduction in the number of lanes and/or a reduction in lane width in order to achieve improvements to road conditions for pedestrians, bicyclists, or transit riders.

*Width Adjustment Factor.*
Network Connectivity

Example A shows a local example of a suburban style street network, with three entrances to the subdivision. Example B shows additional access points to the surrounding network, which would improve automobile, bicycle, and pedestrian access to the surrounding goods and services. In Example C, the additional access points provide access for only bicycles and pedestrians.

4.2 APPLICATION CONSIDERATIONS

Applying Complete Streets design features onto any Southern Nevada roadway will depend on several factors, including its street function and surrounding context.

Roadway Connectivity to Surrounding Land Uses

Connectivity relates to how an entire area is connected by the street system, not only to the number of intersections along a street segment. A highly connected area includes a system of parallel routes and cross connections, few closed-end streets, and frequent points of access.

By contrast, a conventional cul-de-sac street pattern, typical of subdivision design, usually has large blocks with many dead end streets. This pattern offers few route options since all traffic is funneled out onto a small number of arterial roads, which can cause congestion. In addition, arterial roadways typically are designed to handle only motor vehicle traffic, and are not accommodating to pedestrian and bicycle traffic. A pattern of streets with numerous connections and short blocks makes it easier to move around, especially for bicycles and pedestrians.

There are two important components related to the connectivity of subdivisions: internal circulation and connectedness to the surround-
When a subdivision is well-connected both internally and to the surrounding street network, it can provide improved access for pedestrians and bicycles. Dead-end streets and limited access to collectors and arterials usually increases the travel distance to access goods and services, making walking and bicycling less convenient.

Land Use Context
The land use context of transportation corridors and neighborhood areas may support or deter walking, bicycling, and transit. Recent research has shown that in neighborhoods with a diverse mix of complementary uses, people are more likely to walk, ride bicycles, and use transit. On the other hand, segregated uses such as conventional suburban development can make it inconvenient to use non-automobile modes.

Understanding land use context is critically important to understanding the needs of transportation networks and facilities. The following features of land use context influence transportation needs:

- Land Use and Intensity – in particular, the type and mix of building developments.
- Site Design and Urban Form – how buildings are oriented to the street, setbacks, and type of parking and block lengths.
- Building Design – in particular, the height, width, scale, and access points of buildings and how they shape the roadway environment.

Another consideration is that the hierarchies of retail establishments have changed. Since 1940, the number of persons per supermarket has drastically increased, while the average store size has grown over 3 times as large. Today’s stores offer more products, but they are also farther away than before.

An effective solution requires changes in both the built commercial environment and transportation systems. Distances between residential and commercial areas can be reduced by developing smaller centers that require smaller market areas, and by creating more direct links between residential and commercial areas. This would bring destinations within acceptable walking distance. The appeal of walking can be further improved by focusing on the design and location of streets, as well as the built design of commercial areas to consider pedestrians. This would provide pedestrians, bicyclists and transit users an attractive alternative to using high-speed, high-volume arterials and crossing vast parking lots to reach stores.

The new apartments on the far left side of this photograph are located near a wide variety of land uses. Within a one-block walk of this building are offices, restaurants, retail establishments, financial services, a church, a police and fire station, and a variety of condos and apartment buildings. With this mix of land uses, walking, biking, and transit become viable options for reaching a variety of destinations.

Many single-use housing tracts, such as this suburban neighborhood, are isolated from community facilities and destinations. When those destinations are too far to walk or bike to, the automobile becomes the main form of transportation.
Land Use and Intensity: Low-density development with separated uses creates a greater need for automobile travel and provides low accessibility for those who travel by other modes. Higher-density development with a variety of land uses brings destinations closer to those who are traveling, especially to those who travel by bike or on foot. This leads to a greater likelihood that people will choose to travel by modes other than automobiles.

Site Design and Urban Form: The design of each individual property site affects the form of the overall urban fabric. Certain site design treatments can improve building accessibility for pedestrians. These include minimizing building setbacks, orienting building entrances to the street, and placing off-street parking in other locations besides the front of buildings. On a slightly larger scale, creating shorter block lengths also helps improve accessibility for pedestrians.

Building Design: Building design affects the roadway environment. Multi-story buildings provide greater numbers of origins and destinations. Many multi-story buildings close together create districts of activity where the activities are close together and easily accessible by foot or bike. Spacing building entrances close together improves pedestrian access. The overall mass and shape of buildings also influences pedestrian comfort. Excessively large buildings with few entrances and large blank walls create an environment that not comfortable for pedestrians. Narrow, vertically-oriented buildings that are accessible from the sidewalk tend to increase pedestrian comfort.
Figure 4-1 Context Zones

C-1 Natural

C-2 Rural

C-3 Suburban

C-4 General Urban

C-5 Urban Center

C-6 Urban Core
### Table 4-1 Context Zones

<table>
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<th>Context Zone</th>
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<th>General Character</th>
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<td>Not applicable</td>
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<tr>
<td>C-2 Rural</td>
<td>Agricultural with minimal development</td>
<td>Agricultural activity and natural features</td>
<td>Large setbacks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>C-3 Suburban</td>
<td>Primarily single family residential with curvilinear internal roadway configurations and limited connections to landscape character. Includes separated public and commercial uses that support the residential uses, including schools and shopping centers.</td>
<td>Detached buildings with landscaped yards, normally adjacent to C-4 zone. Non residential uses may consist of neighborhood or community shopping centers, big box retail, service or office uses, and public/institutional uses such as schools.</td>
<td>Varying front and side yard setbacks.</td>
<td>1 to 2 story</td>
</tr>
<tr>
<td>C-4 General Urban</td>
<td>Mix of housing types, including attached units, with a range of commercial and civic activity at the neighborhood and community scale</td>
<td>Predominantly detached buildings, balance between landscape and buildings</td>
<td>Shallow to medium front and side yard setbacks</td>
<td>1 to 3 story with some variation and few taller workplace buildings</td>
</tr>
<tr>
<td>C-5 Urban Center</td>
<td>Mix of housing types, including attached housing such as townhouses and apartments. Includes workplace and civic activities at the community or sub-regional scale. May include large-scale hotel and tourist attraction areas.</td>
<td>Includes attached and detached buildings, landscaping within the public right of way.</td>
<td>Small or no setbacks, buildings oriented to street with placement and character defining a street wall</td>
<td>2+ story with some variation</td>
</tr>
<tr>
<td>C-6 Urban Core</td>
<td>Highest intensity areas in sub-region or region, with high-density residential and workplace uses, entertainment, civic, and cultural uses</td>
<td>Buildings form a sense of enclosure and continuous street wall landscaping within the public right of way</td>
<td>Small or no setbacks, building oriented to street, placed at front property line</td>
<td>2+ story with a few shorter buildings</td>
</tr>
</tbody>
</table>

For Complete Streets suitability and design purposes, land use context zones are used to categorize the physical form and character of an area. The land use context zones highlight the connection between land use and transportation and provide characteristics that can be applied to different transportation corridors and neighborhood areas within Southern Nevada. Figure 4-1 shows the transition between six basic context zones from rural to urban settings using aerial photography examples from places around Southern Nevada. Each zone has a unique set of characteristics which define its character. Table 4-1 shows a summary of the characteristics and includes typical placement and height and the built environment within these zones.

Different zones can either support or discourage modes of transportation and play a large role in defining the suitability for Complete Streets design features. Generally, higher density areas with a mix of uses and well-connected street patterns have more opportunities for Complete Streets design features. However, there are still opportunities to implement Complete Streets design features in lower density areas with limited land use mix and roadway connectivity. The next chapter of this report will discuss the design features recommended for Southern Nevada, how they can be applied on typical roadway patterns seen in the region, and the impacts/trade-offs in implementing them.

Roadway Function
Typically, civil engineers define various roadways through a classification system, which includes the following categories:

- Local roadways;
- Collector roadways;
- Minor arterial roadways;
- Major arterial roadways; and
- Highways and freeways.

Different street classifications may be more or less suitable for complete streets. Street classifications are used to describe a hierarchy of roadways with attributes related to capacity, design, speed and access. These attributes of a roadway help define the suitability for complete street treatments. Generally, roadways with low or moderate speeds, medium to high volumes, and access for many different types of modes have more opportunities for complete street treatments.

Flexibility
The design guidelines, discussed in the next chapter of this report, are not meant to be prescriptive. Instead, the guidelines offer guidance on best practices for achieving the goals and objectives of the recommended Complete Streets Policy for Southern Nevada. Ultimately, every roadway corridor is unique. Application of design guidelines should be made based on a...
functional understanding of the guidelines and a clear understanding of the mobility and safety trade-offs associated with the selection of one treatment over another. Inputs commonly considered in this process include a design vehicle, roadway design speed, and level of service.

Since vehicular capacity and performance are critical for achieving the mobility needs for many in Southern Nevada, selection of Complete Streets corridors must be done within the context of the regional transportation network. The impacts on adjacent roadways in regard to increases in travel time and reductions of speed and level of service for the personal automobile, which may occur as a result of implementing Complete Streets design features, is a critical element of the process.

**Design Vehicle**

There are many shapes, sizes, and types of vehicles which use the roadway and must be accommodated when evaluating design guidelines. The design of a vehicle impacts the design criteria of many aspects of the transportation facility including the lane width and curb return radii. The American Association of State Highway and Transportation Officials (AASHTO) defines 19 different design vehicles within four general classifications which include passenger cars, buses, trucks, and recreational vehicles.

Since it is not practical to design all Complete Streets facilities for the needs of all vehicles, a *design vehicle* is identified. The identified vehicle represents the largest one that would be most frequently used on a particular roadway (e.g., a bus on a major transit route). A vehicle which infrequently uses a particular roadway but must be accommodated is referred to as a control vehicle. The control vehicle is often larger than the design vehicle, so transportation engineers and planners must understand the trade-offs and potential implications when the control vehicle uses a roadway designed to a smaller vehicle standard.

In areas where Complete Streets design features are most applicable, selecting a control vehicle instead of the design vehicle to develop guidelines will often result in conditions where conditions for non-motorized travel is compromised (e.g., crossing distances or the speed of turning vehicles), which conflict with the greater goals of Complete Streets. Therefore, requirements for both the design vehicle and control vehicle must be considered when allocating lane width and turning radii to these vehicles.

**Roadway Design Speed**

Travel time is primarily a function of speed, thus trip planning and route selection are often based on the highest speed roadway facility. *Design speed* is traditionally used to define the appropriate speed assigned to a given facility based on the geometric design elements such as...
horizontal curvature, super-elevation, and sight distance. AASHTO suggests assigning as high a design speed as practical to attain a desired degree of safety, mobility, and efficiency within the constraints of the environmental quality, economics, aesthetics, and social or political impacts.

AASHTO’s “A Guide for Achieving Flexibility in Highway Design” (2004) suggests the target speeds in urban areas should “create a safe roadway environment in which the driver is encouraged by the roadway’s features and the surrounding area to operate at lower speeds.” To achieve the goals of the recommended Complete Streets Policy, it is suggested to follow a similar approach to the context sensitive design guidance and design based on a target speed rather than a design speed when designing roadway facilities. A target speed is the highest speed vehicles should operate to support a safe and efficient multimodal travel environment including non-motorized modes such as bicycles and pedestrians. Target speeds should be selected using sound judgment which considers the driver’s expectations of the facility, the geometric conditions of the facility, and safety, especially during inclement weather conditions.

Many of the design elements suggested in these guidelines impact the decision regarding the appropriate target speed of the facility. Although Complete Streets are not focused on design elements to simply reduce speed such as those suggested though traffic calming treatments, they do focus on measures which create safe conditions for all modes, including non-motorized travel. The measures that do have an impact on speed or the perceived safe travel speed by the user include:

- Signalization-spacing and timing – signal timing can be adjusted to assist in the efficient progression of traffic and keep vehicle speeds moderated at a safe level.
- Travel lane width – narrower lanes create caution in driver behavior. This can be achieved through restriping or physical measures such as curb extensions.
- On-street parking or transit stops – elements that naturally slow travel on the roadway.
- Reducing curb-turn radii at intersections and eliminating high-speed channelized right turn lanes.
- Paving materials, pavement coloring, and/or signage – represents a change in the environment, where drivers are notified of increased pedestrian activity.

Long-term maintenance and operation costs should be considered before implementing some safety countermeasures. Asphalt in Southern Nevada typically contains higher levels of oil when compared to other regions. This may impact the long-term effectiveness of pavement striping and coloring treatments as trackout can degrade their visibility.

Depending upon the context and the role of the transportation facility, speeds which support safe and efficient multimodal travel typically do not exceed 35 mph. As speed increases, the severity of accidents which involve motorized and non-motorized modes significantly increases (see Figure 4-2).

Figure 4-2 Fatalities based on Speed of Vehicle

![Figure 4-2 Fatalities based on Speed of Vehicle](Source: Ernst, Michelle and Lilly Shoup. Dangerous by Design. 2009. http://www.transact.org/PDFs/2009-11-09-Dangerous%20by%20Design.pdf)
Level of Service

Level of service (LOS) is a measure of the quality of the traffic operating conditions and is typically a function of travel speed, travel time, volume to capacity ratio, or average vehicle delay. A rating of “A” through “F” is typically assigned where LOS A represents the least congested conditions and LOS F represents the most congested conditions.

The Highway Capacity Manual and most jurisdictions in the RTC planning area have target LOS thresholds which they maintain in order to achieve adequate performance within the traffic network. Design of a facility is based on some future long range projection of traffic and the required roadway capacity to meet the travel needs and for operation at a given LOS.

The Complete Streets guidelines suggest continued use of LOS to quantify vehicular traffic performance but to use this measure as one of many factors in determining the design of a facility. Often times the mobility and safety needs along a Complete Streets corridor call for added vehicle congestion to offset the needs of other travel modes. Local guidelines should be eased to allow the flexibility necessary to allow these designs to occur.

Balancing Service for all Users

The City of Boulder, Colorado has made complete street principles an integral part of the City’s transportation master plan (TMP). The TMP’s goals were centered on a community desire to minimize the impacts of traffic and improve quality of life. The goals called for reducing trips in single-occupancy vehicles to 25 percent and essentially holding steady the number of vehicle-miles traveled. These goals were lofty, and the City realized that other transportation options would be necessary to provide people access to the places they needed to go. Boulder adjusted the TMP to provide for better sidewalks, better pedestrian street crossings, more bicycle facilities, increased carpooling options, and improved transit service. The City has also worked to tie its land use plans to the transportation plans it has created. Given the goals in the TMP, along with a constrained budget, the City has had to prioritize transportation options for all modes of travel. The TMP has also been created by using a level of service measure that takes all transportation modes into account.

Some of the funding that once went to improve capacity for automobiles has been redirected to pedestrian and bike projects. So while automobile level of service may not be holding at the same levels as in the past, the level of service for pedestrians and bicyclists has increased dramatically. The City now provides 300 miles of on-street bike facilities, and trips made by modes other than personal automobiles have been increasing since the initiation of Boulder’s TMP goals.
4.3 EVALUATION CRITERIA

Not all streets need to include every element typical of Complete Streets. Certain criteria generally dictate which features are appropriate. The following evaluation criteria are suggested when Southern Nevada Jurisdictions determine what roadway facilities are prime candidates for implementing Complete Streets design features. The suggested criterion factors are not only useful for determining what roadway facilities are Complete Streets candidates, but they are important in figuring out the level of implementation for Complete Streets on a given roadway.

Appendix E shows an example of how the evaluation criteria can be applied to Southern Nevada using several inputs. However, this document is not dictating the steps and results shown in Appendix E as completely accurate and implementable for the region. Ultimately, the Southern Nevada Jurisdictions and the RTC, through the Executive Advisory Committee, will reach a consensus in determining where Complete Streets projects take place. Below are suggested evaluation criteria:

- Right-of-way capacity can determine the number of Complete Streets design features that can be implemented onto a roadway.
- Land use is a key factor in determining the need for Complete Streets treatments and the number of such treatments that are appropriate.
- Complete Street design features can help improve safety by creating safe spaces to walk, bicycle, catch the bus, or cross the street.
- Mobility refers to the movement of people using all modes.
- Mobility refers to the movement of people using all modes.
Safety
Complete Street design features can help improve safety by creating safe spaces to walk, bicycle, catch the bus, or cross the street. Complete Streets helps reduce crashes through comprehensive safety improvements for pedestrians, bicycles, transit users, and motorists. Improvements such as sidewalks, medians, and traffic-calming measures can all improve pedestrian safety.5

Mobility
Mobility refers to the movement of people using all modes, including walking, bicycling, transit, and automobiles. Roadways designed for more users may already include Complete Street design features, such as sidewalks, bicycle facilities, and enhanced transit facilities, among others.

Roadway Design
Roadways with lower speed limits tend to be more accommodating for Complete Streets because bicycles and pedestrians are more comfortable and safer where vehicle speeds are slower. Also, right-of-way capacity can determine the number of Complete Streets design features that can be implemented onto a roadway.

Block Pattern and Connectivity
A well-connected network of streets and pathways is an important part of enhanced mobility for multiple modes. An interconnected grid helps disperse traffic and allows for smaller, more human-scaled streets. Recent development patterns in the Las Vegas Valley resemble curvilinear patterns with walled subdivisions, limited connectivity, and few intersections. There are older developments in the Las Vegas Valley, however, that include well-connected block patterns.

Land Use Context
Please see the discussion in Section 4.2 of this document.

The design guidelines presented in this section provide descriptions related to the form and function of the four Complete Streets zones: roadside, parking, roadways and lanes, median, and intersection. The guidelines were developed based on national standards from ITE, AASHTO, and TCRP as well as local and regional standards from Southern Nevada Jurisdictions, RTC, and NDOT (see Appendix D). Individually, each zone functions for a specific purpose, but taken together the zones enhance the movement of all transportation modes, including walking, bicycling, transit, and automobiles. The Complete Streets zones (see Figure 5-1) are not meant to limit activities, but rather describe design features and best practices to build a cohesive and welcoming street.

5.1 DESIGN OBJECTIVES

The regional Complete Streets Guidelines are developed to provide input for planning and design of multi-modal transportation facilities in Southern Nevada. Contrary to standards, this chapter is pure guidance and not specific, prescriptive requirements. If directed by the RTC Executive Advisory Committee, these guidelines can form the basis for regional standards that can further push the principals of Complete Streets design features. It should be noted that the various streetscape components described in the design guidelines section may or may not be applicable on particular streets. Several factors will determine design guideline applicability, including right-of-way availability, land use context, bicycle plans, transit plans, and other different factors.

Figure 5-1 Complete Street Zones

Note: Intersection zone not shown.
5.2 ROADSIDE ZONE

The roadside zone is the area between the curb and property line that is intended for use by pedestrians. A successful sidewalk will create a feeling of safety, comfort, and attractiveness, which are important components for successful residential and commercial districts. Many factors contribute to the safety and comfort of the pedestrian, including the interface between the building edge and sidewalk, width of sidewalk, street trees and foliage, pedestrian-oriented activity, lighting, and amenities that buffer pedestrians from traffic.

The roadside zone is divided into four separate areas (see Figure 5-1):

- **Frontage Area** – the space between the property line and throughway (or walkway) area of the sidewalk.

- **Throughway Area** – the space of pedestrian travel between the frontage and furnishings area.

- **Furnishings Area** – the space that provides the primary buffer between the sidewalk throughway area and the roadway. Landscaping, transit stops, streetlights, parking meters, bicycle parking, benches, bollards, and utilities which support the streetscape environment are commonly found in this area.

- **Curbside Area** – the space located between the furnishings area and the curb, includes space for utilities and parking overhangs.

Typical sidewalk configurations include a combination of these four elements and are typically a function of land use and pedestrian activity. Many arterials and collectors in the Las Vegas Valley include only one or two of the areas listed and are unfriendly for pedestrians. Although many of these facilities have inactive frontages (e.g., subdivision walls or back side of buildings) and have little need for a well defined frontage area, some level of accommodation should be explored when applying these guidelines. Table 5-1 shows examples of various sidewalk configurations.

Bus shelters are often located in the frontage area of the roadside zone.

Landscaping is a common feature in the furnishings area of the roadside zone. The trees in this image are located in the furnishings area.
<table>
<thead>
<tr>
<th>Setting</th>
<th>Frontage Area</th>
<th>Throughway</th>
<th>Furnishings Area</th>
<th>Curbside Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suburban</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Suburban</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Urban</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Urban</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 5-1 Example Sidewalk Configurations in the Las Vegas Valley
Pedestrian activity levels within the roadside zone are influenced by a number of external factors which are not associated with the design of the roadside zone. These include:

- **Adjacent Context** – the context of the surrounding areas plays the most significant role in determining the level of pedestrian activity and thus roadside needs. Major activity centers including schools, employment centers, and tourist-related destinations located within an urban area directly contribute to pedestrian activity levels. The following have an impact on the travel needs:
  - *Land Use and Intensity* – land use which produces a higher number of trips will generate a larger number of pedestrian trips. A higher intensity of these uses will also increase trips.
  - *Site Design and Urban Form* – buildings oriented directly toward the street with minimum setbacks, as opposed to those who front an off-street parking area will experience increased pedestrian activity. Areas with shorter block lengths and continuous building frontages also create conditions which support increased pedestrian activity.
  - *Building Design* – buildings with active uses on the ground floor and accessible entries to the roadside zone will encourage pedestrian activity. Large sections of inactive building frontages or high walls discourage pedestrian activity and reduce the perceived safety of an area. In addition, the height, width, scale, and variety of buildings will play a role in the comfort of the pedestrian and the overall use of a facility by pedestrians.

- **Roadway Environment** – the size and operational specifications of a roadway have an impact on how welcomed the pedestrian feels in the adjacent roadside zone. Higher traffic speeds decrease the safety and comfort of pedestrians. Larger curb to curb distances on roadway facilities create longer crossing distances and longer traffic cycle lengths, adding delay and impedances to crossings.

- **Transit Service** – many RTC riders access transit service by walking and thus represent pedestrian activity within the roadside zone. Increased transit service or the quality of transit infrastructure will lead to higher levels of pedestrian activity.
Parking structures provide plenty of parking while allowing buildings to remain easily accessible to pedestrians in the roadside area.

Spaces for active uses, such as outdoor dining or food carts, are encouraged wherever appropriate.

- **Parking Supply and Policies** – accommodation for large amounts of parking, especially at no charge, encourages driving and decreases pedestrian activity levels. Surface parking between the building frontage and the roadway requires large setbacks and driveway entrances making pedestrian access to destination more challenging. Structured or underground parking concentrates parking supply and preserves frontages for storefronts and other pedestrian-oriented uses.

Design considerations for the roadside zone include the following factors:

- All elements of the roadside zone must meet ADA accessibility standards including providing an unobstructed path of travel and appropriate grades/slopes of curb ramps to accommodate wheelchairs and other mobility assistive devices.

- Accommodate drainage features.

- Convenient access is encouraged between the roadway zone and adjacent land uses, such as building entrances, parks, and open space.

- Pedestrian-oriented and scaled signage and lighting is encouraged. Roadway lighting may also be accommodated.

- Landscaping, where provided, should be low-impact, such as drought tolerant plants, and provide adequate shade and protection for pedestrians. Utilize the Regional Plant List developed by the Southern Nevada Regional Planning Coalition’s (SNRPC) Urban Forestry Work Group to identify appropriate landscaping treatments.

- Spaces for active uses, such as outdoor dining or food carts, are encouraged wherever appropriate.

- Where right-of-way is available, amenities may be provided that offer separation between pedestrians and traffic, such as newsstands, bicycle parking, street trees, and street lights.

Design guidance for the Roadside Zone is shown in Figure 5-2 and specific treatment descriptions in this zone are presented in the tables that follow.
**Figure 5-2  Roadside Zone**

<table>
<thead>
<tr>
<th>Roadside</th>
<th>Width</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Curbside</td>
<td>1.5 to 3 feet</td>
<td>Interface between sidewalk and curb for vehicle overhangs. Additional width should be provided where adjacent to parking for vehicle overhangs when diagonal and perpendicular parking are provided. This area may also include some utilities, and parking meters.</td>
</tr>
<tr>
<td>B Furnishing</td>
<td>3 to 6 feet</td>
<td>Includes space for landscaping transit stops, streetlights, utilities, etc. Additional width may be provided in areas with high pedestrian activity.</td>
</tr>
<tr>
<td>C Throughway</td>
<td>5 to 15 feet</td>
<td>Area for pedestrian travel. Must be clear of obstacles and conform to ADA requirements.</td>
</tr>
<tr>
<td>D Frontage</td>
<td>Up to 4 feet</td>
<td>Provides a buffer between building frontage and sidewalk and may include outdoor seating and overhanging elements (awnings or signs).</td>
</tr>
<tr>
<td>E Parking Overhang</td>
<td>-</td>
<td>Location for parking overhang where diagonal and perpendicular parking is provided or for opening vehicle doors where parallel parking is provided.</td>
</tr>
<tr>
<td>F Lighting</td>
<td>-</td>
<td>Pedestrian scaled lighting in addition to street lighting is recommended in areas with high pedestrian activity.</td>
</tr>
<tr>
<td>G Landscaping</td>
<td>-</td>
<td>Street trees and landscaping may be provided in the furnishings area.</td>
</tr>
<tr>
<td>H Furniture</td>
<td>-</td>
<td>Includes seating and trash receptacles, may be provided in the furnishings area.</td>
</tr>
<tr>
<td>I Awning/Signage</td>
<td>-</td>
<td>Awnings and signage may be located in the frontage area.</td>
</tr>
<tr>
<td>J Sidewalk Cafe, Private Furnishing</td>
<td>-</td>
<td>Sidewalk cafes and private furnishings may be located in the frontage area.</td>
</tr>
</tbody>
</table>
Table 5-2 Roadside - Frontage Area

<table>
<thead>
<tr>
<th>Definition</th>
<th>The frontage area is the space between the property line and throughway (or walkway) area of the sidewalk.</th>
</tr>
</thead>
</table>
| Suitability | Collectors: Widely Used  
Minor Arterials: Widely Used  
Major Arterials: Widely Used  
The frontage area is most appropriate when the sidewalk is immediately adjacent to fences, building edges, or vegetation along the outside edge. Ground floor active uses are encouraged in the frontage area. |
| Benefits | Provides a buffer between the sidewalk throughway and the building front, increasing the comfort level of pedestrians along the sidewalk.  
Can provide space for private street furniture and signage, as well as street cafes. |
| Considerations | The frontage area provides a comfortable distance from building façades to accommodate adjacent uses and activities, such as seating, signage, or tree plantings.  
Private furnishings within the frontage area may include seating and tables, signage, and merchandise displays (subject to permits by the right-of-way owner).  
Overhanging elements, including awnings and signage, may extend into the frontage area.  
Additional buffer distance is encouraged between frontage areas and exposed surface parking lots adjacent to the street.  
If the furnishing area cannot be provided, amenities normally found in this area may be accommodated within frontage area. |
Table 5-3  Roadside - Throughway Area

<table>
<thead>
<tr>
<th></th>
<th>Definition</th>
<th>Benefits</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>The throughway area is the space of pedestrian travel between the frontage and furnishings areas.</td>
<td>Provides a clear walking space for pedestrians.</td>
<td>The throughway area is encouraged to be entirely clear of obstacles and provide a smooth, continuous walking surface with limited grade.</td>
</tr>
<tr>
<td><strong>Suitability</strong></td>
<td>Collectors: Widely Used</td>
<td>At the minimum, the throughway zone is always provided with the installation of a sidewalk. It is desirable in all areas where pedestrian activity is present, expected, or desired.</td>
<td>Throughway area width may vary by context and activity of adjacent land use and must also conform to ADA requirements.</td>
</tr>
<tr>
<td></td>
<td>Minor Arterials: Widely Used</td>
<td></td>
<td>Additional width is encouraged in high pedestrian volume areas, such as transit stops and busy entrances and exits. It also accommodates expected pedestrian volume surges, or where there is no buffer between high speed/volume roadways.</td>
</tr>
<tr>
<td></td>
<td>Major Arterials: Widely Used</td>
<td></td>
<td>Where right-of-way is available, a planting strip between the sidewalk and roadway (detached sidewalk) provides additional separation from moving vehicles and enhances the pedestrian environment.</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td></td>
<td>Allows for safe and unobstructed movement, removed from vehicle conflicts and other hazards.</td>
<td>Continuous sidewalk throughways are encouraged on both sides of a roadway.</td>
</tr>
</tbody>
</table>
### Table 5-4  Roadside - Furnishings Area

<table>
<thead>
<tr>
<th>Definition</th>
<th>The furnishings area provides the primary buffer between the sidewalk throughway area and the roadway. Landscaping, transit stops, streetlights, parking meters, bicycle parking, benches, and utilities which support the streetscape environment are commonly found in this area.</th>
</tr>
</thead>
</table>
| **Suitability** | Collectors: Widely Used  
The furnishing area is most appropriate on all sidewalk facilities to support streetscape and utility needs of the pedestrian and roadway environment.  
Minor Arterials: Widely Used  
Width and the depth of amenities are based on adjacent context and pedestrian activity levels.  
Major Arterials: Widely Used  
Sidewalks along transit routes with curbside operations (or within areas with active ground floor uses) are encouraged to provide additional width for the furnishing area to accommodate seating, bus stops, and bus shelters. |
| **Benefits** | Provides an important buffer component between the pedestrian walking area and the roadway.  
Provides space for pedestrian and transit amenities, such as benches and lighting, shelters, landscaping, or bicycle parking. |
| **Considerations** | Bicycle parking can occur in the furnishings area. Not only does it provide a valuable resource for bicyclists, but also can act as a pedestrian buffer from vehicle traffic.  
The furnishing area may also accommodate amenities of curbside transit stops (see Section 5.6, Intersections).  
Additional setbacks of amenities may be required to keep pedestrians in clear sight of motorists’ views.  
Street trees, planting strips, street furniture, utility poles, signal poles, signal and electrical cabinets, telephones, traffic signal cabinets, signs, fire hydrants, bollards, and bicycle racks are encouraged to be located and consolidated within this area.  
The furnishing area can extend into the parking area through the use of curb extension (see Section 5.6, Intersections).  
If furnishings are not provided, design features normally placed in this area may be placed in the frontage area. |
Table 5-5  Roadside - Curbside Area

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The curbside area represents the interface zone between the furnishings area and the curb.</td>
<td></td>
<td></td>
<td></td>
<td>Prevents vehicle overhangs from hitting objects adjacent to the curb during parking maneuver.</td>
<td>The curbside area should generally be kept clear of any objects, with the exception of parking meters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provides additional clearance for tall vehicles, such as buses, transit vehicles, and trucks.</td>
<td>Adjacent to on-street parking, charging stations for electrical cars may be located in the curbside area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Permits the opening of parked vehicles doors by providing clearance from any street furnishings.</td>
<td>The width of curbside area is encouraged to accommodate vehicle overhangs, which will vary depending on angle of parking spaces and type of curb.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Additional width is encouraged at transit stops with shelters to provide wheelchair access to the shelter.</td>
</tr>
</tbody>
</table>
Detached sidewalks that provide a planting strip between the sidewalk and roadway provides additional separation from moving vehicles and enhances the pedestrian environment.

The availability of safe and convenient parking is critical for bicyclists riding transit. Bicycle parking can be as simple as a staple rack (see photo above) or an inverted U rack adjacent to a transit shelter. Another style of bicycle parking includes a sophisticated system of pre-rented lockers. Bicycle parking used in Southern Nevada may need physical cover to protect it from the sun and extreme heat conditions certain times of the year.
5.3 PARKING ZONE

The parking zone is the area between the curb and roadway or bicycle lane. This zone provides benefits to the pedestrian by creating a buffer between the roadway and the roadside zones. Currently, there are several areas in the Las Vegas Valley that provide on-street parking along collector and arterials roadways, including Downtown Las Vegas and Downtown Henderson. Two primary areas are described below which are contained within the parking zone:

- On-street parking area – an area between the roadway travel lane and the curb where parking is allowed.
- Bus turnout area – recessed areas away from the travel lane where transit vehicles can park during loading/unloading or layover periods.

Parking zones may not be included on all or some portion of Complete Streets due to right-of-way limitations, safety concerns, or non-supportive land use. Factors that impact whether or not a parking zone should be provided on a Complete Street include:

- Adjacent land use – is the use supportive of restricted/metered visitor or patron parking? Commercial uses have the highest benefit from on-street parking.
- Building Design – is the adjacent use oriented toward the street with its entry conveniently located for motorist who park on-street?
- Roadway speeds – parallel on-street parking is discouraged on roadway with speeds greater than 35 mph. Angled on-street parking is discouraged on roadway with speeds greater than 25 mph. Roadways identified as a transit route without dedicated lanes and have speeds of 35 mph or greater benefit from the presence of the parking zone by allowing the transit vehicle to safely load outside the travel lane.

Parking for patrons supporting adjacent commercial activities is the most common use of the parking zone. This activity is often regulated by meters or time restrictions to control how long people use the space and the associated cost. This space can also be repurposed based on the demands of the adjacent uses and the roadway. These uses include:

- Loading/Unloading zones for delivery vehicles during certain hours of the day; general parking otherwise.
- Peak hour general purpose travel lane to address concentrated travel demand; general parking during midday and nighttime hours.
- Peak hour transit only lane to allow transit service to bypass congestion and easily access curbside stops; general parking during midday and nighttime hours.

Design guidance for the Parking Zone is shown in Figure 5-3 and Figure 5-4 and specific treatment descriptions in this zone are presented in the tables which follow.

The parking zone provides benefits to the pedestrian by creating a buffer between the roadway and the roadside zones.
### Parallel Parking

<table>
<thead>
<tr>
<th>Letter</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10 to 12 feet</td>
<td>Travel lane: If the width of the adjacent parking lane is narrower, a wider travel lane may be appropriate. (See Roadways and Zone for more information)</td>
</tr>
<tr>
<td>B</td>
<td>8 to 12 feet</td>
<td>Parking lane: Additional width should be provided where bus turnout is provided in the parking lane. Where ROW is constrained and where speeds are below 30 MPH width may be lower.</td>
</tr>
<tr>
<td>C</td>
<td>21 to 24 feet</td>
<td>Parking length: Parking length should be defined where parking is meters or in commercial districts, such as downtowns.</td>
</tr>
<tr>
<td>D</td>
<td>40 to 60 feet</td>
<td>Taper length: Taper area for bus turnout.</td>
</tr>
<tr>
<td>E</td>
<td>50 to 70 feet</td>
<td>Bus Turnout Length: Location for bus turnout adjacent to stop.</td>
</tr>
</tbody>
</table>

### Diagonal Parking

<table>
<thead>
<tr>
<th>Letter</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11 to 12 feet</td>
<td>Travel lane: If the width of the adjacent parking lane is narrower, a wider travel lane may be appropriate. (See Roadways and Zone for more information)</td>
</tr>
<tr>
<td>B</td>
<td>16 to 18 feet</td>
<td>Parking lane: Diagonal parking may be provided in special circumstances where vehicle speeds and volumes are low. Dimension varies based on stall angle.</td>
</tr>
<tr>
<td>C</td>
<td>40 to 60 feet</td>
<td>Taper length: Taper area for bus turnout.</td>
</tr>
<tr>
<td>D</td>
<td>50 to 70 feet</td>
<td>Bus Turnout Length: Location for bus turnout adjacent to stop.</td>
</tr>
<tr>
<td>E</td>
<td>8-9 Feet</td>
<td>Parking width: Width of diagonal parking stall.</td>
</tr>
</tbody>
</table>

---

**Figure 5-3 Parking Zone**
### Perpendicular Parking

<table>
<thead>
<tr>
<th></th>
<th>Width</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11 to 13 feet</td>
<td>Travel lane&lt;br&gt;If the width of the adjacent parking lane is narrower, a wider travel lane may be appropriate. (See Roadways and Zone for more information)</td>
</tr>
<tr>
<td>B</td>
<td>18 to 24 feet</td>
<td>Parking lane&lt;br&gt;Perpendicular parking may be provided in special circumstances where vehicle speeds and volumes are low.</td>
</tr>
<tr>
<td>C</td>
<td>9 feet</td>
<td>Parking Width&lt;br&gt;Length of parking stall adjacent to sidewalk.</td>
</tr>
<tr>
<td>D</td>
<td>50 to 70 feet</td>
<td>Taper Length&lt;br&gt;Taper area for bus turnout.</td>
</tr>
<tr>
<td>E</td>
<td>50 to 70 feet</td>
<td>Bus Turnout Length&lt;br&gt;Location for bus turnout adjacent to stop.</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>On-street parking is an area between the roadway travel lane and the curb where parking is allowed.</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| **Suitability** | Collectors: Widely Used  
Minor Arterials: Widely Used  
Major Arterials: Appropriate |
| On-street parking lanes are encouraged on lower speed roadways (35 mph or less) where context is appropriate, especially areas with ground floor commercial uses.  
Configuration: Parallel parking is recommended on high-volume roadways; angled parking may be used on low-volume, low-speed roadways (25 mph or less); and reverse back-in parking is recommended along low-volume, low-speed roadways (25 mph or less) with heavy bicycle activity.  
On-street parking is not recommended near fire hydrants (refer to local code) and:  
- within 20 feet of the nearside of a midblock crossing  
- within 20 feet from the curb return of an un-signalized intersection  
- 30 feet from the curb return of a signalized intersection unless curb extensions are provided (see Section 5.6, Intersections)  
- 40 feet before or after a midblock bus turnout (see Subsection on Bus Turnouts) |
| **Benefits** | Supports local economic activity of merchants and visitor needs of residents by providing proximate access for parking.  
Increases pedestrian comfort by providing a buffer from moving traffic.  
Provides an indication to motorists that operating speeds are reduced.  
Places motorist in close proximity to the roadside zone and encourages business to locate entries in the roadside zone.  
Creates a buffer space between the roadway and roadside zone, which can be used for temporary functions (loading zone for business, dedicated transit lane, or general purpose travel lane) or permanent features (bus turnouts or extension of the furnishings area). |
Accessible spaces must be provided according to local requirements.

Additional width may be provided for areas with high parking turnover, truck loading activity, bus stops, and/or bicycle lanes.

While there are several benefits to on-street parking, there are also trade-offs when adding parking to a roadway. Because of the added friction caused during the parking maneuver, traffic can be slowed and vehicle capacity is reduced. Conflicts can also arise with bicyclists during the parking maneuver and while opening doors. Parked cars can also become visual obstructions for motorists when exiting driveways and approaching intersections. Careful consideration of vehicle capacity and land use context is advised when adding on-street parking. For example, when on-street parking is being considered on high capacity roadways, surrounding land use context may be a factor in determining the appropriateness of on-street parking.

In some cases parking can be metered and/or priced to manage use.
### Table 5-7 Parking - Bus Turnouts

<table>
<thead>
<tr>
<th>Parking - Bus Turnouts</th>
<th>Definition</th>
<th>Suitability</th>
<th>Benefits</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Bus turnouts are recessed areas away from the travel lane where transit vehicles can park during loading/unloading or layover periods.</td>
<td>Collectors: Not Desirable Minor Arterials: Not Desirable Major Arterials: Appropriate</td>
<td>Allows traffic to proceed around the transit vehicle, reducing delay for automobiles. Clearly defines location of the transit stop. Reduces potential rear-end accidents. Increased distance from roadway may improve pedestrian comfort. Provides a layover opportunity for a transit service at the end of a route location.</td>
<td>Turnouts are primarily associated with midblock stops. If block lengths are large, midblock crossings may be considered near midblock transit stops. Typical bus turnouts usually include an entrance taper, stopping area, and exit taper. Additional length of bus turnouts is encouraged for articulated buses or transit stops that serve multiple routes. In heavily congested areas, turnouts may be used as a trade-off to improve auto performance.</td>
</tr>
<tr>
<td><strong>Suitability</strong></td>
<td></td>
<td>Bus turnouts are encouraged where curbside transit service is provided and traffic speeds are too high (35 mph or faster) to feasibly allow safe use of a bulb or curb extension. If on-street parking is allowed along the transit route, a no-parking zone should be established where the transit vehicle would pullout. If on-street parking is not allowed, a curb cut may be provided for the turnout. See Section 5.6, Intersections for nearside and farside stop guidance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Benefits**
- Allows traffic to proceed around the transit vehicle, reducing delay for automobiles.
- Clearly defines location of the transit stop.
- Reduces potential rear-end accidents.
- Increased distance from roadway may improve pedestrian comfort.
- Provides a layover opportunity for a transit service at the end of a route location.

**Considerations**
- Turnouts are primarily associated with midblock stops. If block lengths are large, midblock crossings may be considered near midblock transit stops.
- Typical bus turnouts usually include an entrance taper, stopping area, and exit taper.
- Additional length of bus turnouts is encouraged for articulated buses or transit stops that serve multiple routes.
- In heavily congested areas, turnouts may be used as a trade-off to improve auto performance.
Parklets are typically two or three successive parking spaces converted into a miniature urban park or seating area. Parklets may be raised to make them level with sidewalks or at street level with protection from automobile traffic.

Bike corrals typically consist of six to 12 bicycle racks located in one to two on-street parking spaces. They are typically implemented next to street corners or on main streets with destinations that attract a high demand for bicycle parking that cannot be fully accommodated with bicycle racks on the sidewalk. Bike corrals can accommodate large number of bicycles, increase business visibility, and be provided at a minimal cost.

Floating parking lanes are where cars are parked against stripes that buffer the parked cars from the bicycle lane (or cycle track) instead of parking directly against the curb. This buffer zone protects cyclists from running into opening car doors and motorists from stepping into the path of an oncoming cyclist.
Design Innovations for the Parking Zone

Back-in angle parking provides motorists with improved vision of bicyclists, pedestrians, cars, and trucks as they exit a parking space and enter moving traffic.

Parking located in the median area can provide additional spaces where there is high demand for parking. Streets must be wide enough to accommodate median parking, with very slow moving travel speeds and additional pedestrian treatments.
5.4 ROADWAYS AND LANES

The roadway and lanes zone includes all features dedicated to movement, including travel lanes for bicycles, transit, and vehicles. The majority of all motorized mobility occurs in this area of Complete Streets. The allocation of roadway for each of these modes within this zone should be carefully designed. In some cases the vehicle travel lane width may be minimized in order to provide greater accommodation for bicycle or transit usage or to simply reduce vehicle travel speeds for safer pedestrian crossings. While minimizing lane widths offers many benefits, it is also important to provide appropriate access to emergency vehicles and buses.

Three areas are designed within the roadway and lanes zone which include:

• Mixed Roadway – the area of the street which accommodates vehicle flow and is augmented with shared or dedicated facilities for other modes, as appropriate.

• Bicycle Lanes – delineated lanes for bicycle travel.

• Curbside Transit Lanes – dedicated on-street facility for transit vehicles.

The composition and makeup of roadways and lanes in Southern Nevada is guided by plans, policies, and codes identified in Section 2.2 of this document. They help identify where the various transportation modes share lanes and have their own lanes. Design guidance for the roadways and lanes zone is shown in Figure 5-5 and Figure 5-6 and specific treatment descriptions in this zone are presented in the tables which follow.

This section of Boulder Highway has specified lanes for bus transit, bicycles, and private automobiles.

Where dedicated bike lanes are not feasible, pavement markings and signs can help to alert drivers that bicyclists may be using the travel lane.
### Bicycle Lanes

<table>
<thead>
<tr>
<th></th>
<th>Width (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 to 7</td>
<td>Bicycle lane Additional width should be provided adjacent to curbside parking or on roadways with higher speeds or volumes</td>
</tr>
<tr>
<td>B</td>
<td>10 to 12</td>
<td>Travel lane adjacent to bicycle lane Auto travel lane. 10’ lane may be appropriate with smaller design vehicle and where ROW may be constrained, vehicle speeds are low and access is retained for emergency vehicles.</td>
</tr>
<tr>
<td>C</td>
<td>10 to 12</td>
<td>Travel lane Auto travel lane. 10’ lane appropriate with smaller design vehicle and where ROW may be constrained, vehicle speeds are low and access is retained for emergency vehicles.</td>
</tr>
<tr>
<td>D</td>
<td>9 to 11</td>
<td>Parking lane adjacent to bicycle lane Additional clearance provided for bicyclist safety.</td>
</tr>
</tbody>
</table>

### Bus and Busways

<table>
<thead>
<tr>
<th></th>
<th>Width (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11 to 13</td>
<td>Bus Lane Transit-only travel lane. Additional clearance provided for vehicle size.</td>
</tr>
<tr>
<td>B</td>
<td>10 to 12</td>
<td>Travel lane Auto travel lane. 10’ lane may be appropriate with smaller design vehicle and where ROW may be constrained, vehicle speeds are low and access is retained for emergency vehicles.</td>
</tr>
<tr>
<td>C</td>
<td>8 to 12</td>
<td>Parking lane adjacent to bus lane No additional width necessary.</td>
</tr>
</tbody>
</table>
### Figure 5-6 Roadways and Lanes Zone

<table>
<thead>
<tr>
<th>Mixed Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
</tr>
<tr>
<td><strong>C</strong></td>
</tr>
</tbody>
</table>

![Mixed Roadway Diagram](image)
Table 5-8  Roadways and Lanes - Mixed Roadways

<table>
<thead>
<tr>
<th>Roadways and Lanes - Mixed Roadways</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The area of the street which accommodates vehicle flow and is augmented with shared or dedicated facilities for other modes, as appropriate.</td>
</tr>
</tbody>
</table>

| Suitability                      | Collectors: Widely Used Mixed roadways to be provided according to regional and local plans. Transit service and bicycle routes are appropriate within a mixed roadway. |
|----------------------------------|****************************************************************************************************************************************|
| Minor Arterials: Widely Used     |                                                                                                                                      |
| Major Arterials: Widely Used     |                                                                                                                                      |

| Benefits                          | Provides basic accommodation for all transportation modes.                                                                 |
|                                   | Typically requires the least amount of right-of-way that minimizes crossing distances for pedestrians. |

| Considerations                    | Mixed roadways are typically most appropriate where right-of-way is limited or roadway congestion is not an issue. |
|                                   | Mixed roadways that accommodate bicycles within the travel lane need to provide a wider lane of travel and are encouraged to have speeds of 35 mph or less. |
|                                   | These roadways may also utilize sharrow stencil treatments to guide cyclists along the safest path of travel. Sharrows are shared roadway markings intended to show where cyclists can ride on the street without being hit suddenly by an opened car door. These markings can be used even when there is not a bicycle lane. Sharrows should be placed at least 11 feet from the curb face or edge of pavement on streets with parallel parking. On streets with no parking and an outside lane width of less than 14 feet, sharrows should be placed at least four feet from the curb or edge of pavement. In both cases, measurement is to the center of the marking. Sharrows should be placed immediately after an intersection and spaced at intervals of no more than 250 feet. |
|                                   | Congested intersections along mixed roadways are encouraged to utilize treatments that add priority and/or safety to transit, bicycles, and pedestrians. |
### Table 5-9  Roadways and Lanes - Bicycle Lanes

<table>
<thead>
<tr>
<th>Definition</th>
<th>Delineated lanes for bicycle travel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitability</strong></td>
<td></td>
</tr>
<tr>
<td>Collectors: Widely Used</td>
<td>Bicycle lanes are encouraged on roadways when it is desirable to prioritize available road space for use by bicyclists and to provide more predictable movements by both bicyclists and motorists.</td>
</tr>
<tr>
<td>Minor Arterials: Widely Used</td>
<td></td>
</tr>
<tr>
<td>Major Arterials: Occasionally Used</td>
<td>Bicycle lanes are appropriate on roadways with operating speeds of 35 mph or below.</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Enhances safety, comfort, and mobility for bicyclists by providing dedicated space that reduces potential for conflict.</td>
<td></td>
</tr>
<tr>
<td>Adds to a comprehensive network of recommended routes for bicyclists.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 5-9: Roadways and Lanes - Bicycle Lanes (cont’d)

<table>
<thead>
<tr>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional width is encouraged when the lane is adjacent to curbside parking, vertical curb, or guardrail. This helps to reduce chances of collision with these obstacles, along with increasing bicyclist comfort. At least one additional foot of width is suggested for these circumstances.</td>
</tr>
<tr>
<td>Additional width is desirable on roadways with higher speeds or higher volumes of trucks and buses. This helps to reduce the chance of collision and improve bicyclist’s comfort. At least six to twelve inches of additional width is suggested for these circumstances.</td>
</tr>
<tr>
<td>Avoid placing head-in angled parking adjacent to bicycle lanes due to the lack of visibility between cyclist and drivers backing out of spaces.</td>
</tr>
<tr>
<td>Where possible, stormwater drain gates should be removed from bike lanes. Where not practical, pavement markings should be put in place to guide bicyclists around obstructions.</td>
</tr>
<tr>
<td>Conflict zones, such as areas with high rates of automobile turning and merging, can be given special treatment. FHWA has approved green pavement markings for bike lanes in these areas. The approval is only an interim approval, not an official approval. While FHWA is evaluating the green pavement markings for possible official approval, requests to use green colored pavement need to comply with the provisions of Paragraphs 14 through 22 of Section 1A.10 of the Manual on Uniform Traffic Control Devices.</td>
</tr>
</tbody>
</table>
Table 5-10 Roadways and Lanes - Curbside Transit Lanes

<table>
<thead>
<tr>
<th>Definition</th>
<th>Dedicated on-street facility for transit vehicles (see also Section 5.5, Median Zone)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitability</td>
<td>Transit lanes are designated by the RTC. These lanes are currently provided along corridors where the opportunity to add them existed and the surrounding land use context was deemed appropriate. Future curbside transit lanes will follow the same suitability approach.</td>
</tr>
<tr>
<td>Minor Arterials: Appropriate</td>
<td></td>
</tr>
<tr>
<td>Major Arterials: Appropriate</td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>Curbside transit lanes allow transit operations to function independent of roadway congestion, improve operating speeds, and reliability.</td>
</tr>
<tr>
<td></td>
<td>On transit priority corridors, curbside transit lanes use less right-of-way than center-running transit lanes since stops may be placed within roadside zone.</td>
</tr>
<tr>
<td></td>
<td>Provides area for emergency vehicles to bypass traffic.</td>
</tr>
<tr>
<td>Considerations</td>
<td>May result in loss of curbside parking and/or a general purpose travel lane.</td>
</tr>
<tr>
<td></td>
<td>Pavement markings and signage are encouraged to designate the bus only restrictions on these lanes.</td>
</tr>
<tr>
<td></td>
<td>Curbside transit lanes are typically shared at the intersection with right turn movements. Signage may be used to identify this configuration.</td>
</tr>
<tr>
<td></td>
<td>Avoid application on streets or in areas where unsafe conditions may occur. This may require a segment of mixed roadway within or adjacent to a curbside transit lane.</td>
</tr>
<tr>
<td></td>
<td>When considering curbside transit lanes, impacts on commercial loading zones should be analyzed to determine any detrimental impacts.</td>
</tr>
<tr>
<td></td>
<td>Routes using curbside transit lanes that make left turns across traffic are encouraged to utilize transit only signal to allow safe maneuver for transit vehicles.</td>
</tr>
</tbody>
</table>
A shared street (or living street) is a pedestrian oriented street where motorists are secondary in the roadway compared to cyclists and pedestrians through varied paving and other features. Pedestrians should feel comfortable enough to overflow from crowded sidewalks and cross the street easily. Shared streets are often at one level with no curbs to differentiate sidewalks.

Bicycle boulevards are streets with low speed limits and vehicle traffic volumes that share right-of-way to bicycle traffic. The boulevards use a variety of traffic calming elements (including a bicycle lane) and have a distinctive look through wayfinding signage so that cyclists and motorists are aware that the boulevard exists.

Buffered bicycle lanes (or cycle tracks) are separated by a striped zone or bollards on one or both sides of the roadway. This design separates bicycle traffic from parking and motorized traffic. The lane design makes bicycling more comfortable and appealing to current and potential cyclists.
5.5 MEDIAN ZONE
The median zone is used to restrict vehicle turn movements, limit automobile access, reduce vehicle conflicts, provide pedestrian refuges, and provide street trees. Three treatments are designed within the median zone, which includes:

- **Landscaped Median** – the area of the street that accommodates vehicle flow and is augmented with shared or dedicated facilities for other modes, as appropriate.
- **Center-running Transit Lanes** – delineated lanes for transit vehicles.
- **Midblock Crossings** – dedicated on-street facility for pedestrians getting to transit stops.

Design guidance for the median zone is shown in Figure 5-7 and specific treatment descriptions in this zone are presented in the tables that follow.

The median can provide space for dedicated transit lanes.
### Landscaped Median

| A | 4 to 20 feet | Median Center portion of street that separates opposing directions of travel. Additional width is necessary when used as a pedestrian refuge, for street trees, and left-turn lanes. |
| B | 2.5 feet | Curb and Gutter Interface between median and travel lane. |
| C | 2 feet (min) | Tree Clearance Offset between face of median tree at maturity and face of curb. |
| D | 8 to 9 feet | Tree Spacing and Height Near the ends of medians, it is important to maintain motorists’ field of view. Trees should be pruned to have no branches lower than 8 feet above the curb. Trees can be spaced as close as 15 feet on center, depending on the species. |

### Transit Median

| A | 11 to 14 feet | Transit Lane Center portion of street is used for transit-only lanes. |
| B | 2 to 3 feet | Transit Lane Buffer Additional distance between vehicular traffic and transit lane. |

![Figure 5-7 Median Zone](image-url)
### Table 5-11 Medians - Landscaped Medians

<table>
<thead>
<tr>
<th>Definition</th>
<th>Medians - Landscaped Medians</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>The center portion of the roadway that provides a physical separation of traffic (typically moving in opposite directions) and includes landscaping.</td>
<td></td>
</tr>
<tr>
<td><strong>Suitability</strong></td>
<td>Collectors: Not Appropriate</td>
<td>Landscaped medians are encouraged where there is desire to regulate left-turn movements and improve safety conditions.</td>
</tr>
<tr>
<td></td>
<td>Minor Arterials: Appropriate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major Arterials: Very Appropriate</td>
<td></td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>Landscaping enhances the aesthetics of a corridor and acts as a natural traffic calming treatment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provides a shaded refuge area for crossings, either at the midblock or intersection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improves safety and access management by reducing the number of conflict points between traffic turning across the travel lane.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be used to identify a transition in the roadway environment, functioning as a gateway treatment.</td>
<td></td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td>Medians may be raised to provide physical separation from the travel lane. Mountable medians can be used in areas with high truck or heavy vehicle traffic.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative/contrast vegetation and sustainable materials for landscaping is encouraged, particularly during the extremely warm times of the year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Careful placement of landscaping is needed in order to not impede on sight-distance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to the Regional Plant list by the SNRPC Urban Forestry Work Group to identify appropriate landscaping treatments.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The recommended design of the landscaped median is one wide enough to also accommodate a left turn lane at intersections.</td>
<td></td>
</tr>
</tbody>
</table>
## Table 5-12 Medians - Center-running Transit Lanes

<table>
<thead>
<tr>
<th><strong>Definition</strong></th>
<th>Dedicated on-street facility for transit vehicles along the median.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitability</strong></td>
<td>Designated by the RTC where priority is deemed appropriate. Due to the median configuration, treatment is applied in areas where there is a desire to regulate left turn movements.</td>
</tr>
<tr>
<td>Collectors: Not Appropriate</td>
<td>Minor Arterials: Appropriate</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>Allows transit operations to function independent of roadway congestion, while improving operation speeds and reliability.</td>
</tr>
<tr>
<td>Allows dedicated transit lanes without losing on-street parking or impact commercial loading zones.</td>
<td></td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td>Median right-of-way must be wide enough to accommodate stations and boarding areas.</td>
</tr>
<tr>
<td>Pavement markings or colored pavement and signage may be used to designate the bus only restrictions on these lanes.</td>
<td></td>
</tr>
<tr>
<td>Restrict movement across the median to only specific locations (typically signalized locations), which may impact property access.</td>
<td></td>
</tr>
<tr>
<td>Passenger loading occurs adjacent to the transit lane. Passengers must be able to safely access these stops and feel safe while waiting for the transit vehicle to arrive.</td>
<td></td>
</tr>
<tr>
<td>Left turning movements may require a dedicated signal phase for transit vehicles.</td>
<td></td>
</tr>
<tr>
<td><strong>Medians - Midblock Crossings</strong></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>Crossing location for non-motorized modes which does not occur at the intersection.</td>
</tr>
</tbody>
</table>
| **Suitability** | Collectors: Appropriate  
Minor Arterials: Appropriate  
Major Arterials: Appropriate  
Midblock crossings are best used when placed along arterials or collectors that have long block lengths and significant spacing between signalized crossing points. Sight distance for automobile traffic is fully adequate. |
| **Benefits** | Provides a safe crossing location for non-motorized modes.  
Increases connectivity for pedestrians and improves accessibility to transit stops (especially midblock locations). |
| **Considerations** | Inclusion of median islands is important in longer midblock crossings (greater than 60 feet). Offset crossing within the Island is ideal.  
Level of pedestrian protection may vary depending on traffic conditions and crossing demand. Fully signalized crossing is the highest level of protection while passive signage is the lowest level.  
Curb extensions to be used in minimizing crossing distance and making pedestrians more visible to motorists. This is especially important along roadways where on-street parking is provided. Parking restrictions are a good alternative where on-street parking is provided and curb extensions are not feasible.  
Access design that complies with ADA requirements is necessary for crossings and signals at mid-block crossings. |
5.6 INTERSECTIONS

The intersection is the interface point between two roadway facilities. This section describes the fundamental aspects of intersection design, including managing the interface between different modes.

Design guidance for the intersection zone is shown in Figure 5-8 and Figure 5-9, while specific treatment descriptions in this zone are presented in the tables which follow.

*Curb extensions help to reduce the length of street crossings for pedestrians. Green pavement markings at this intersection also help to notify both bicyclists and motorists of possible bike movements.*
### Figure 5-8 Intersections Zone

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10 to 12 feet</td>
<td>Crosswalk. High visibility (longitudinal), textured, and/or colored crosswalks.</td>
</tr>
<tr>
<td>B</td>
<td>10 to 12 feet</td>
<td>Bus Stop Width. Additional width provided for bus stop after turn.</td>
</tr>
<tr>
<td>C</td>
<td>80 to 90 feet</td>
<td>Bus Stop Length</td>
</tr>
<tr>
<td>D</td>
<td>2.5 feet</td>
<td>Bus Shelter Depth</td>
</tr>
<tr>
<td>E</td>
<td>18 feet</td>
<td>Bus Shelter Length</td>
</tr>
<tr>
<td>F</td>
<td>10 to 35 feet</td>
<td>Curb Radius. Additional radius provided for bus routes with frequent right turns.</td>
</tr>
<tr>
<td>G</td>
<td>-</td>
<td>Crosswalk Curb Extension</td>
</tr>
<tr>
<td>H</td>
<td>10 to 11 feet</td>
<td>Turn Lane Width</td>
</tr>
<tr>
<td>I</td>
<td>6 to 8 feet</td>
<td>Bus Curb Extension Width</td>
</tr>
</tbody>
</table>
**Figure 5-9 Intersections Zone**

<table>
<thead>
<tr>
<th>Intersection</th>
<th>5 to 6 feet</th>
<th>Bicycle Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>15 to 16 feet</td>
<td>Bicycle Lane with Right Turn Lane</td>
</tr>
<tr>
<td>L</td>
<td>6 (min) feet</td>
<td>Pedestrian Refuge</td>
</tr>
</tbody>
</table>
| M            | -          | Curb Ramps  
Where possible provide curb ramps on straight edge of curb, not curved. |
| N            | 20 to 30 feet | On-Street Parking at Intersection  
Distance between edge of crosswalk and front of first parked car. |
Table 5-14  Intersections - Crosswalks

<table>
<thead>
<tr>
<th>Definition</th>
<th>Delineated space (typically marked) to assist pedestrians in crossing the street.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitability</strong></td>
<td>Collectors: Widely Used</td>
</tr>
<tr>
<td>Minor Arterials: Widely Used</td>
<td>Major Arterials: Widely Used</td>
</tr>
</tbody>
</table>

**Benefits**

Improved safety – crosswalks provide a delineated space at intersections to notify roadway users where pedestrians will likely cross.

**Considerations**

- Crosswalks may be used with other intersection treatments to improve safety.
- Crosswalks are encouraged at regular intervals to reduce out-of-direction travel (no more than 300-400 feet).
- Crosswalks with longitudinal markings or textured paving are encouraged.
- Where medians exist, pedestrian refuges with push buttons are encouraged.
- Reduced street width improves pedestrian safety by shortening the pedestrian crossing distance. This can be accomplished by reducing number of turning lanes, adding curb extensions, or narrowing travel lanes.
Table 5-15  Intersections - Bus Stops

<table>
<thead>
<tr>
<th>Intersections - Bus Stops</th>
<th>Definition</th>
<th>Suitability</th>
<th>Benefits</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Location on transit route, at which transit vehicles stop for passengers to alight and board.</td>
<td>Collectors: Appropriate</td>
<td>Provides designated location for accessing transit.</td>
<td>Bus loading areas should be fully accessible per ADA requirements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minor Arterials: Appropriate</td>
<td>Provides shelter and other amenities to increase the comfort of passenger waiting areas.</td>
<td>Consider advantages and disadvantages of near side and far side bus stops based on volume, lane configurations, and turning movements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major Arterials: Appropriate</td>
<td>Helps to ensure adequate access to transit for various users, including disabled and elderly persons.</td>
<td>Level of bus stop amenities may vary based on several factors, including service type, usage of stop, and available resources.</td>
</tr>
</tbody>
</table>
### Intersections - Curb Radii

<table>
<thead>
<tr>
<th>Definition</th>
<th>The curved connection of curbs in the corners formed by the intersection of two streets.</th>
</tr>
</thead>
</table>
| **Suitability** | **Collectors:** Widely Used  
**Minor Arterials:** Widely Used  
**Major Arterials:** Widely Used  
Suitable at all intersections. |
| **Benefits** | A shorter curb radius improves visibility of pedestrians waiting to cross the street.  
A shorter curb radius reduces pedestrian crossing distance.  
A shorter curb radius lowers the speed of turning vehicles and severity of crashes if they occur. |
| **Considerations** | Curb radii are best designed when they accommodate the design vehicle identified for a roadway facility.  
When defining curb radii in walkable areas, pedestrian crossing distance is an essential factor for consideration.  
In cases where a shorter curb radii is used where trucks and buses are common, a widened curb lane may be used to provide more space to complete the turn.  
Extra attention is needed when placing yellow tactile pads on curb radii, particularly for disabled and limited sight persons.  
Channelized right-turn lanes are not encouraged because they create conflicts with pedestrians/bicyclists and increase turning speeds. In some cases, however, a “pork-chop” curb radii or a channelized right turn island can provide a refuge for pedestrians to cross the right turn lane before crossing the through lanes. Where channelized right-turn lanes are provided, they are encouraged to be designed for low speeds (5 to 10 mph) and high pedestrian visibility. |

---

**Table 5-16 Intersections - Curb Radii**

<table>
<thead>
<tr>
<th>Curb Radii</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Collectors: Widely Used</td>
<td>Suitable at all intersections.</td>
<td></td>
</tr>
<tr>
<td>Minor Arterials: Widely Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Arterials: Widely Used</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Intersections - Curb Extensions (Bulb-outs)

<table>
<thead>
<tr>
<th><strong>Definition</strong></th>
<th>Curb extensions (also referred to as bulb-outs) extend the line of the curb into the traveled way reducing the width of the street.</th>
</tr>
</thead>
</table>
| **Suitability** | Collectors: Appropriate  
Minor Arterials: Widely Used  
Major Arterials: Widely Used  
Curb extensions may be used on any type of roadway, especially those that are wider. |
| **Benefits** | Reduced pedestrian crossing distance and improved driver visibility of pedestrians.  
Facilitates pedestrian crossing at preferred locations. |
| **Considerations** | Where bicycle lanes exist, locate curb extensions outside the width of the bicycle lane.  
May be used where there is on-street parking and where only a small percentage of turning vehicles are larger than the design vehicle.  
Not appropriate for intersections with exclusive right-turn lanes or intersections with a high volume of right-turning trucks or transit vehicles turning onto narrow cross streets.  
Drainage is an important factor in the design of curb extensions. |
### Table 5-18 Intersections - Turn Lanes

<table>
<thead>
<tr>
<th>Definition</th>
<th>Designated lanes for turning movements.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitability</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Benefit</strong></td>
<td>Reduces delay on automobiles and transit.</td>
</tr>
<tr>
<td></td>
<td>Allows for a protected turning movement, thus increasing the safety of the intersection for motorists.</td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td>Dedicated turning phases may impact the cycle time and allowable pedestrian crossing time at the intersection.</td>
</tr>
<tr>
<td></td>
<td>Right turn pockets can be used by transit vehicles for through movements, allowing for a queue jump opportunity if a far side stop is in place.</td>
</tr>
<tr>
<td></td>
<td>Pedestrian refuges may be considered if crossing distances are significantly long.</td>
</tr>
<tr>
<td></td>
<td>Left turn restrictions may be considered at intersections with low turn demand to eliminate the need for dedicated turn lane pockets.</td>
</tr>
<tr>
<td></td>
<td>Proper marking of bike lanes showing the path of transition are encouraged where right turn lanes are present.</td>
</tr>
</tbody>
</table>
### Table 5-19  Intersections - Bicycle Lane Treatments

<table>
<thead>
<tr>
<th>Definition</th>
<th>Bicycle lanes at intersections require uniformity in facility design, signs and pavement markings.</th>
</tr>
</thead>
</table>
| **Suitability** | Collectors: Appropriate  
Minor Arterials: Appropriate  
Major Arterials: Occasionally Used  
Appropriate wherever bicycle lanes are present |
| **Benefits** | Minimize conflicts between right-turning motorists and bicyclists proceed straight through an intersection. |
| **Considerations** | On intersection approaches with an exclusive right-turn lane, the bicycle lane should be positioned to the left of the right-turn lane.  
Adjacent to a near-side or far-side bus stop, bike lane striping should be dashed.  
Bicycle loop detectors should be provided at signalized intersections with appropriate pavement marking to indicate where the bicyclist should stop. |
Design Innovations for the Intersections Zone

Bicycle boxes are located at intersections to prevent collisions between motorists turning right and cyclists going straight. In this intersection safety design, a vehicle stops just before the bicycle box and is not allowed to turn right on red. The bicycle box provides an area for cyclists to pull up in front of a vehicle at an intersection. Initial education and enforcement efforts are needed with bicycle boxes prior to implementation.

A plaza is an urban open space that functions as a public square or marketplace.

Raised intersections are installed at intersections with lower traffic volumes, and like speed bumps, are used to slow traffic. By placing pedestrians and vehicles on the same plane, the raised intersection provides a safety advantage for pedestrians when motorists are physically forced to moderate their speed.
A pedestrian scramble phase is a pedestrian crossing system that stops all vehicular traffic and allows pedestrians to cross an intersection in every direction, including diagonally, at the same time.

A queue jump is a lane on the approach to an intersection that is often restricted to transit vehicles only. The queue jump lane often has a signal which provides a phase specifically for vehicles within the lane. The purpose of the lane is to allow higher-capacity vehicles to bypass the regularly queued traffic to reduce delay and increase operational efficiency of the transit system. Some variations of the queue jump may permit bicyclists, mopeds, and/or motorcycles.
5.7 PROTOTYPICAL STREET CROSS-SECTIONS

The following street cross-sections provide prototypical scenarios for redesigning streets to incorporate design features to better accommodate bicycles, pedestrians and transit users. Designs of 80', 100', and 120' right-of-way widths are provided for illustration purposes to show different levels of design features. Scenarios presented include various changes including road diets, bicycle lanes, wider sidewalks, and landscaping. Sidewalk design is also portrayed for four different sidewalk widths: 8’, 10’, 15’, and 20’.

The street cross-sections presented in this section are provided to show the range of possibilities for incorporating complete streets treatments into typical ROW widths. They are intended for illustrative purposes only and can be used to provide guidance for future street design efforts.
Collector and minor arterial streets often have a ROW of 80-feet. Existing 80-foot ROW streets typically include four travel lanes, parking lanes and six-foot sidewalks (see Figure 5-20). Where parking is not provided a center turn-lane is typically included (see Figure 5-21).

Streetscape improvements to enhance pedestrian, bicycle, and transit access may include the following:

- widened sidewalks;
- sidewalk and median landscaping and street trees; and
- bicycle lanes.

To create space for these improvements the prototypical street sections include lane width reductions and/or lane removal. Figures 5-22 through 5-26 show various configurations for incorporating complete street elements into an 80-foot ROW.
**Figure 5-22  Four Lanes with Parking**

- Four travel lanes.
- Parking included.
- Wider sidewalks and landscaping.
- Median removed and lane width narrowed.

**Figure 5-23  Four Lanes with Bicycle Lanes**

- Four travel lanes.
- Bicycle lanes.
- Wider sidewalks and landscaping added.
- Lane width narrowed to provide space for pedestrian and bicycle amenities.
Figure 5-24  Two Lanes with Median/Turn-Lane, Bicycle Lanes and Parking

Two travel lanes.
Median/turn lane.
Parking included.
Bicycle lanes.
Wider sidewalks and landscaping.
Two lanes removed and lane width narrowed to provide space for amenities.

Figure 5-25  Four Lanes with Median and Wide Sidewalks

Four travel lanes.
Wider sidewalks and landscaping.
Parking removed and lane width narrowed to provide space for amenities.
Two travel lanes.
Median.
Parking included.

Protected bicycle lanes cycle track with protected parking buffer.

Optional: Re-design with wider sidewalks and no median is recommended where left-turn movements are limited or in commercial areas with more pedestrian activity.

Figure 5-26  Two Lanes with Median and Cycle Track Bicycle Lanes
Local Implementation of Complete Streets

In 2011 the City of Las Vegas adopted Complete Street Standards within the City’s Unified Development Code. The code includes requirements for street connectivity and provides street dimensions and standards that connect land use with street classification.
**100’ ROW**

The 100’ ROW is typically applied to arterial streets. Existing 100-foot ROW streets in Clark County usually include six travel lanes, a median or turn-lane, and six-foot sidewalks (see Figure 5-27).

Streetscape improvements to enhance pedestrian, bicycle, and transit access may include the following:

- Widened sidewalks;
- Bus-only lanes;
- Sidewalk and median landscaping and street trees; and
- Bicycle lanes.

To create space for these improvements the prototypical street sections include lane width reductions and/or lane removal. Figures 5-28 through 5-33 show various configurations for incorporating complete street elements into an 100-foot ROW.

---

**Figure 5-27 Existing 100’ ROW - Six Lanes with Median/ Turn-Lane**

Note regarding design speed in 100’ ROW:

Many 100-foot ROW streets have a speed limit of 45mph. When recommending complete street enhancements to these streets, it is important to consider the target speed, which is the highest speed vehicles should operate to support a safe and efficient multimodal travel environment including non-motorized modes such as bicycles and pedestrians. On typical 100-foot ROW streets, with six travel lanes and five-foot sidewalks (with two-foot curb and gutters), it may be appropriate to consider reducing the maximum speed in addition to other design enhancements. Further discussion on design speed is available in Chapter 4 of this report under the section titled “Application Considerations.”
Figure 5-28  Six Lanes with Median/Turn-Lane and Wide Sidewalks

- Six travel lanes.
- Wider sidewalks and landscaping.
- Median landscaping.
- Lane width narrowed to provide space for amenities.

Figure 5-29  Four Lanes with Median and Curbside Transit Only Lanes

- Four travel lanes.
- Median/turn lane.
- Curbside transit only lanes.
- Widened sidewalks and landscaping.
- Two lanes removed and lanes narrowed to provide space for transit only lanes and other amenities.
Figure 5-30 Four Lanes with Center-Running Transit Only Lanes

Four travel lanes.
Center-running transit only lanes.
Widened sidewalks and landscaping.
Two lanes removed and lanes narrowed to provide space for transit only lanes and other amenities.

Figure 5-31 Four Lanes with Median/Turn-Lane, Bicycle Lanes, and Parking

Four travel lanes.
Median/turn lane.
Parking included.
Bicycle lanes.
Wider sidewalks and landscaping.
Two lanes removed and lane width narrowed to provide space for amenities.
Figure 5-32  Four Lanes with Median/Turn-Lane, Parking, and Wide Sidewalks

- Four travel lanes.
- Median/turn lane.
- Parking included.
- Fifteen-foot sidewalks and landscaping.
- Two lanes removed and lane width narrowed to provide space for amenities.

Figure 5-33  Four Lanes with Median/Turn-Lane, Parking, and Cycle Track Bicycle Lanes

- Four travel lanes.
- Median/turn lane.
- Parking included.
- Cycle-track bicycle lanes with three-foot buffer located between parking lane and sidewalk.
- Lane width narrowed to provide space for amenities.
120' ROW
The 120' ROW is applied to major arterial streets. Existing 120-foot ROW streets in Clark County typically include six travel lanes, a median or turn-lane, a wide shoulder and six-foot sidewalks (see Figure 5-32).

Streetscape improvements to enhance pedestrian, bicycle, and transit access may include the following:

- Widened sidewalks;
- Bus-only lanes;
- Multi-way boulevard design;
- Sidewalk and median landscaping and street trees; and
- Bicycle lanes.

To create space for these improvements the prototypical street sections include lane width reductions and/or lane removal. Figures 5-35 through 5-38 show various configurations for incorporating complete street elements into an 100-foot ROW.

Figure 5-34 Existing 120' ROW - Six Lanes with Turn-Lane and Wide Shoulder
Figure 5-35  Six Lanes with Median/Turn-Lane, Parking and Wide Sidewalks

Six travel lanes.  
Median/turn lane.  
Parking included.  
Thirteen-foot sidewalks and landscaping.  
Lane width and shoulder narrowed to provide space for amenities.

Figure 5-36  Six Lanes with Median/Turn-Lane and Curbside Transit-Only Lanes

Six travel lanes.  
Curbside transit only lanes.  
Median/turn lane.  
Parking included.  
Lane width and shoulder narrowed to provide space for transit-only lanes and amenities.
**Figure 5-37 Four Lanes with Median/Turn-Lane, Bicycle Lanes, and Center-Running Transit-Only Lanes**

- Four travel lanes.
- Bicycle lanes.
- Center-running transit only lanes.
- Parking included.

Two lanes removed and lane width and shoulder narrowed to provide space for transit-only lanes and amenities.

**Figure 5-38 Six Lane Multi-Way Boulevard with Median/Turn-Lane**

- Six travel lanes,
- Median/turn lane.
- Parking included.

Curbside lanes and parking separated by landscaped median

Lane width and shoulder narrowed to provide space for amenities.
The following implementation strategy defines strategic points of intervention for complete streets programming, including visioning, goal-setting, local agency plans, coordination with private development, and investment in public streets. This chapter also defines RTC’s mechanism for selecting and funding complete street improvements.

6.1 STRATEGIC POINTS OF INTERVENTION

Complete Streets implementation will be successful only if an initial policy statement is followed by changes throughout the transportation planning process. An initial resolution of a policy making body may be followed by adoption of a policy statement, inclusion in mode-specific plans, and either the revision of roadway standards or creation of a new design manual. In many cases, the successful implementation of Complete Streets will be more likely if changes in transportation are complemented by changes in land use policy and development practices. It is recognized that development initiated by the private sector has a significant role in implementing multi-modal corridors in coordination with public agencies.

The following five areas are identified as strategic points of public agency intervention:

- Long-Range Community Visioning and Goal Setting
- Local Agency Plans
- Policies and Standards
- Coordination with Private Development
- Investment in Public Streets

While set out in a sequence from broad visioning to implementation, these strategic points of intervention do not have to be completed in linear steps. Currently public agencies within Southern Nevada are at various stages in implementing Complete Streets elements through one or more of these points of intervention. Rather than a step-by-step process, this categorization is useful to both the RTC and local agencies in identifying existing deficiencies in the planning, development and reconstruction of the street system. Incorporating Complete Streets throughout all identified strategic points is essential and helps avoid lost momentum.

Additionally, Complete Streets are not a panacea and cannot be considered a “silver bullet” to creating livable communities; rather they should be regarded as one tool among many. With this in mind, ensuring that the development of Complete Streets processes are comprehensive throughout all strategic points will help capitalize on the benefits they do indeed provide. There is also a natural linkage between
the points of intervention. For example, limited funds available for public street investment can be used more effectively if they implement smartly developed design standards, and these design standards are more likely to be developed if their need is identified in local agency plans. Capitalizing on this synergy will help better realize the benefits of Complete Streets.

**Long-Range Community Visioning and Goal Setting**

At a regional level, the RTC Complete Streets Study is designed to fill multiple roles. In addition to providing a scan of new multi-modal concepts and best design practices, the Complete Streets Study aspires to solidify a unified community vision. The Complete Streets Study, and the process used for its development, provides a new framework for discussing transportation needs within the region. The Complete Streets concept is helping to create a simple and clear vision for future progress – one that includes addressing the needs of all road users of all ages and abilities. This vision will be crafted through a development process that includes community members, who are the primary roadway users; elected officials, who champion community needs; and public agencies with an implementation role in street design and construction.

With this in mind, the RTC intends to continue the development and promotion of bicycling, walking, and transit riding as acceptable modes of travel within the general public. It will also coordinate the Complete Streets vision with other community initiatives taking place in Southern Nevada. In particular, the RTC is actively supporting existing efforts that include:

- The Nevada Strategic Highway Safety Plan, developed by NDOT and the Nevada Office of Traffic Safety among others, which aims to reduce roadway fatalities to zero.
- The Clark County Safe Routes to School Program developed by the Clark County School District, which aims to make school routes safer through better infrastructure, more education, and continued school zone enforcement.
- Efforts being made by the Southern Nevada Regional Planning Coalition to develop transit-oriented development and walkable communities throughout the region.
- Efforts being made by the Southern Nevada Health District to increase physical activity through funding infrastructure projects and educating the public of the health benefits gained through bicycling and walking.
The movement to adopt access management policies in each Southern Nevada jurisdiction, pushed forward by the Clark County Area Access Management Study completed by the RTC in 2010.

These initiatives often share the same goals as Complete Streets policies and are viewed as complementary to the RTC Complete Streets initiative.

Local Agency Plans
Currently, local agencies within Southern Nevada are at various stages of including Complete Streets elements into their long-range plans. Each Southern Nevada jurisdiction has either a transportation plan, a transportation element associated with a Comprehensive/Master Plan, or both. Identifying a need for Complete Streets in these local agency plans helps solidify the regional vision at the jurisdictional level and facilitate development of useful policies or standards.

Local agency plans can be simply characterized as long-range planning documents with lengthy update cycles. Ideally the aim for these planning documents is to adjust for changing economic and land-use conditions and to get updated more regularly in order to reflect best multi-modal design practices. For example, the City of Seattle is currently reevaluating its 10-year Bicycle Master Plan after just four years to include innovative Bicycle Boulevards and Cycle Tracks that were not originally considered during the inception of the planning document. Responding to rapidly changing conditions and identifying locations for Complete Streets elements will likely be an ongoing process for local agencies.

The RTC will be updating its 20-year Regional Transportation Plan (RTP) in 2012. The intention is to incorporate Complete Streets goals, objectives, policies, and strategies into the overall transportation narrative developed for the RTP. In addition, the RTC will support the efforts of jurisdictions that wish to incorporate the Complete Streets concept into their planning documents.

Policies and Standards
Policies and standards are often considered the most tangible outcome of Complete Streets planning efforts. Typically, Metropolitan Planning Organizations (MPOs) do not have direct control over roadway construction. The common implementation strategy at the regional level traditionally has been to link funding criteria to Complete Streets policies. However, the RTC does have relatively more influence over roadway design than other MPOs through its administration of the Clark County motor vehicle fuel tax and Uniform Standard Drawings. With this enhanced role in designing roadway facilities, the RTC will work with its regional partners to determine the best way forward in

Local agency plans such as the City of Las Vegas’s Complete Street Standards includes street design standards for providing complete streets.
implementing Complete Streets policies and standards. Options include the following:

- Adopt the Complete Streets Policy for Southern Nevada, outlined in Chapter 3 of this report, either into the RTC Policies and Procedures document (used as a guide for administering funds under RTC jurisdiction) or as a stand-alone statement.
- Update the Complete Streets Policy after six months or a year of its initial adoption, in order to include performance measures and other elements that can strengthen the policies.
- Explore long term funding mechanisms for the maintenance of Complete Streets improvements, including landscaping.
- Revise the Uniform Standard Drawings to reflect various Complete Streets design concepts. In addition to the design guidance provided in Chapter 5 of this report (which reflects Federal Highway Administration guidance from the Manual on Uniform Traffic Control Devices), the RTC and its regional partners can use the following documents for further guidance:
  - Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (developed by the Institute of Transportation Engineers)
  - Urban Bikeway Design Guide (developed by the National Association of City Transportation Officials)
  - Model Design Manual for Living Streets (coordinated by Ryan Snyder Associates for Los Angeles County)
  - Guide for the Development of Bicycle Facilities (to be published by the American Association of State Highway and Transportation Officials in 2012)
- Create a Complete Streets Design Manual for Southern Nevada, if the RTC and its regional partners determine that roadway design for Complete Streets needs guidance beyond revising the Uniform Standard Drawings.

**Coordination with Private Development**

The private development community works with local planning agencies to determine what public improvements, dedications or conditions will be required in conjunction with their project. The private development community values having these issues identified early in the project development phase. Local agency costs can also be minimized when bicycle and pedestrian facilities are included early in the initial street design; trying to re-engineer plans at later project stages or add facilities once construction has begun is complex and costly. The most effective way for private developers and local agencies to ensure the needs of all roadway users is to plan for multimodal accommodation from the very beginning of project development and throughout subsequent stages of project implementation.

Referencing Table 2-2 and 2-3 (in Chapter 2), the Cities of Las Vegas, North Las Vegas, and Henderson all have street connectivity indexes in their zoning codes and the City of Las Vegas has recently adopted a chapter on Complete Streets Standards in their code. The RTC will assist any of the Southern Nevada jurisdictions that decide to further update their zoning codes to reflect any of the Complete Streets elements in this report. Also, a checklist can help ensure that the needs of non-motorized users are considered in initial project stages and that costs of needed improvements are built into the proposal. To facilitate this process, RTC has developed a checklist (Appendix A) that can be used by both Southern Nevada jurisdictions and local developers to identify Complete Street features early in the project development phase.
Investment in Public Streets

The RTC will seek implementation of Complete Streets through funding strategies. The balancing act for the RTC is to implement a network of visible Complete Streets construction projects that build community support, while also ensuring a long-term funding source is in place for continuous planning and implementation. Criteria associated with recent federal discretionary funds, such as the U.S. Department of Transportation’s TIGER Program, have helped to jump-start Complete Streets implementation in several corridors such as Sahara Avenue and Water Street in Henderson. Successful implementation can also be promoted through monetary set-asides of existing transportation funds. The RTC will work with its regional partners to determine the best way forward in funding Complete Streets projects. Options include the following:

- Target existing and future federal discretionary funding programs for Complete Streets projects in Southern Nevada. This option can only take place if a project is designed/ready for construction and appropriate program funding is available.

- Work with the RTC Executive Advisory Committee (EAC) to set-aside a certain percentage of one or two federal transportation funds. Initially the set-asides will be used to fund a limited number of Complete Streets demonstration projects. This will help the RTC and its partners decide how best to implement Complete Streets in the long-term.

- Once the demonstration projects are implemented, restructure the funding mechanism for demonstration projects into a long-term Complete Streets Program, with a fund source and a selection process identified.
Potential steps of selecting demonstration projects and creating a long-term Complete Streets Program is discussed in Section 6.2.

Complete Streets implementation can also take place incrementally. Some of the Southern Nevada jurisdictions have made roadway maintenance projects centerpieces of their implementation plans. From a national perspective, communities with successful Complete Streets policies no longer think of non-motorized and transit accommodation as special large-scale projects, but rather as part of all upcoming projects (typically identified in the Capital Improvement Program). As mentioned earlier, the RTC administers certain local funds, such as Clark County’s motor vehicle fuel tax. If the recommended Complete Streets Policy for Southern Nevada is adopted, the following policy can support this transformation regionally:

- RTC will encourage local entities to consider Complete Streets elements as an integral part of the planning and design of roadway projects, whether new construction, reconstruction, or rehabilitation.

If these specific policies are accepted, then Southern Nevada residents will see local agencies use a sidewalk repair project to rebuild a curb ramp, turn a repaving project into a road diet, or take advantage of utility work to close gaps in the non-motorized network.

It should also be noted that regardless of funding source or implementation strategy, the first Complete Streets projects are often the most difficult. This is particularly the case with some of the innovative design treatments discussed in Chapter 5, which some may perceive as reducing automobile capacity. However, national experience has shown that after initial projects were installed they were welcomed, easing the way for continued implementation of the Complete Streets Policy and gradually (but fundamentally) changing the way streets serve the needs of residents and visitors.

6.2 RTC COMPLETE STREETS PROGRAM

Principles

The RTC Complete Streets Program is a mechanism for funding Complete Streets investments in the region. The main goal of the RTC Complete Streets Program is to implement roadway improvements that include design features which will yield Complete Streets benefits. The basis for this program comes from the Complete Streets Policy for Southern Nevada. Key points discussed in the policy statement include: providing transportation choices; increasing livability of communities through safe and inviting pedestrian environments; and integrating transportation uses based on context of land uses and street functions. Based on the key points from the policy statement, several principles have been developed for the program. The principles serve as a foundation for RTC’s role in Complete Streets implementation. They also serve as a framework for eligible activities and selection criteria.

Role of the RTC

The RTC will administer the program by identifying and securing funds and ensuring project delivery with the agencies in charge of implementation. The jurisdictions, with help from the RTC, will prioritize roadway segments for Complete Streets implementation and select projects. Acting as the administrator, the RTC
will ensure that Complete Streets elements are featured in project design. It will also ensure that agencies applying for funds work with various community stakeholders from beginning to end of this process. Finally, the RTC will evaluate the effectiveness of the program and modify specifics of the program whenever necessary.

At first, the RTC will fund demonstration projects. The goal of these projects is to get the government agencies comfortable with the process and to build community support. After the completion of the demonstration projects, the RTC Complete Streets Program will be a full-fledged, long-term activity with a set fund source(s) and process for nominations, selections, and project oversight.

Sources of Funds
RTC staff will work with the RTC EAC in selecting funds for the program and determining the proper cost of the projects selected (keeping in mind that not all Complete Streets projects can feature the multitude of Complete Streets concepts that are feasible for a particular roadway segment). At first, the group will determine a set-aside percentage from one or more of the available sources of transportation funds. Determination of these set-aside percentages will provide funding for demonstration projects that build community support for Complete Streets. The number of demon-

RTC Complete Street Principles

Principles for the RTC Complete Streets Program are:

Principle #1 – Provide Transportation Choices
- Enable Southern Nevada residents to access jobs, schools, stores, and civic facilities through various travel modes.

Principle #2 – Increase Community Livability
- Upgrade the physical environment of streets in order to create a sense of place, support revitalization, and promote safety.

Principle #3 – Integrate Transportation and Land Use
- Link transportation investments with existing and future land uses, with an emphasis on aspects of the built environment that directly impact pedestrians, bicyclists and transit users.

Principle #4 – Involve Stakeholders
- Enable stakeholders to participate in the process of developing capital projects in order to meet the goals of the community.
CHAPTER 6

Regional Complete Streets Study

Demonstration projects will be based on what fund sources were chosen for set-aside funding.

Once demonstration projects are chosen and implemented, the RTC will once again work with the EAC in selecting funds to set-aside. This time, however, the funds selected will be for the actual program long-term. Final determination of set-aside fund sources (and their percentages) will be made by RTC staff and the EAC. At this point, federal transportation funds are considered the main group of fund sources for the program. Local funds, however, can be used if the RTC is able to secure a local Complete Streets fund source, which may occur once the program is established and the RTC builds local support. The local match for projects is based on the fund source being used. The following are potential sources of funds for the RTC Complete Streets Program:

- Federal Highway Administration -
  - Surface Transportation Program (STP) Clark
  - STP Enhancement
  - Congestion Mitigation and Air Quality (CMAQ) Program
- Federal Transit Administration -
  - Section 5307 (S.5307)
  - S.5307 Enhancement
- A future local fund source if it becomes available.

Eligible Activities
Activities eligible for the RTC Complete Streets Program include sidewalk enhancements, crosswalk enhancements, bulb-outs, road diets, medians, landscaping, bicycle facilities and amenities, transit amenities, and safe routes to school infrastructure projects. Activities must be located within existing or proposed public right-of-way, or on public/Bureau of Land Management land. The final list of eligible activities will be developed between RTC staff and the EAC. Final determination of eligibility can be based on the design guidance outlined in Chapter 5 of this report.

Initially, higher-level Complete Streets concepts such as road diets, narrowing lanes, and speed reduction of roadway segments may have difficulty for qualifying under the CMAQ Program. This is due to the potential air quality conflicts these concepts pose. Although higher-level Complete Streets concepts will increase transportation mode share, they may increase motorist traffic. Until these types of concepts are modeled in a traffic simulation program, it will safer to pursue other federal or local funding available.

Applicants and Nomination Process
During the demonstration project phase of the RTC Complete Streets Program, applicants will be limited to the local jurisdictions. Furthermore, because the RTC is eligible to use the fund sources mentioned above, it will reserve the right to apply for program funding or partner with another agency who is applying for program funding.

In order for a project to be nominated and considered for funding, the program will have three baseline requirements, including:

- Filling out the checklist found in Appendix A of this report.
- Determining the project readiness, including whether the project design has gone through review by various agencies.
- Determining whether local match is secured for the project.

Selection Criteria
In terms of selecting demonstration projects for the RTC Complete Streets Program, the process can be flexible. If a project meets the baseline requirements above for nomination and fulfills the majority of the program principles stated above, then it can be placed into a list of potential demonstration projects. Once the list is compiled by RTC staff, a workshop will convene between staff and the EAC to discuss the projects. The outcomes of the
Eligible activities for the RTC Complete Streets Program are displayed in this photo simulation with bicycle lanes, crosswalk enhancements, and bulb-outs.

workshop are the selection of demonstration projects from the list and how it will be announced to the public. Preference will be given to “shovel-ready” projects; however, other projects will still be considered.

Once the RTC Complete Streets Program is ready to start after its demonstration phase, the selection process will be more stringent. The RTC envisions a selection approach, with the following sequential steps:

1. The RTC, with input from the Southern Nevada jurisdictions, will evaluate the best candidate roadways for implementing Complete Streets design features. This can be based on direct input from Section 4.3 and Appendix E of this report. Evaluation criteria discussed in Section 4.3 include safety, mobility, roadway design, block pattern and connectivity, and land use context. Developing this framework can also be based on the discretion of the EAC.

2. Based on the results in step 1, eligible applicants will apply for funding by filling out an application form (which will ask the applicant to describe the project, its readiness, and the local match) and the checklist found in Appendix A of this report. Projects will only occur on street segments that correspond with the best candidate roadways list in step 1.
3. The EAC develops a Complete Streets Working Group, consisting of RTC staff and stakeholders from various jurisdictional agencies, which will prioritize and select projects from the list of applications. At this stage, RTC staff will suggest the working group use three main criteria in selecting projects – comparing the benefit/cost analysis for each project (which particularly looks at the maintenance costs of the project’s Complete Streets design features), comparing the capacity trade-offs for each project, and how well the project addresses complete street attributes based on the Complete Street Checklist in Appendix A.

4. Steps 2 and 3 will be done on a yearly basis.

**Project Delivery**

The administrative procedures for making awards and for project oversight will be developed after the RTC Board has given broad approval to move ahead with the RTC Complete Streets Program. Since the program will be using mostly federal transportation funds and potentially local transportation funds, award of funding is conditional upon all applicable state and federal regulations. In the case of federal funds, this includes compliance with procedures under the National Environmental Policy Act, as well as any applicable federal procurement requirements.

Federal Transit Administration (FTA) funds will normally be administered by the RTC under the terms of an FTA grant and the RTC will apply appropriate conditions to ensure compliance with FTA requirements. Federal Highway Administration (FHWA) funds will normally be administered by the Nevada Department of Transportation (NDOT). Recipients of program funds will be responsible for entering into a stewardship agreement with NDOT to ensure compliance with FHWA requirements.

The RTC will show funding for the RTC Complete Streets Program in the Regional Transportation Plan. As a matter of policy, the RTC shows awarded projects in the Transportation Improvement Program (TIP), whether or not federal funds are being used. The RTC will ensure that federally funded projects are properly shown in the TIP before FTA grants or NDOT stewardship agreements are initiated.

Due to the nature of multi-source funding arrangements, as well as forging stakeholder partnerships, implementation of a project chosen from the RTC Complete Streets Program may take a few years. The RTC will be pushing for projects that are already in the preliminary engineering stage when the program goes through its demonstration phase. Once the demonstration phase is completed and the actual program is running, RTC staff expects to receive applications for projects just in the conceptual design stage. Therefore, the typical amount of years it may take to construct a project under the program is two to five years, with one to two years to complete preliminary engineering and one to three years to complete construction.
Figure 6-1 Demonstration Project Selection Process

**STEP 1**
Identify Best Candidate Streets

*Complete Street Evaluation Criteria*
- Safety Issues
- Appropriate Context
- Mobility Needs
- Suitable Connectivity
- Roadway Design

Local Preferences
- Define Mobility Improvements
- Examine Land Use Relationships
- Determine Local Match
- Use Checklist for Internal Evaluation

**STEP 2**
Application for Funding

*Complete Streets Checklist*

**STEP 3**
Project Prioritization and Selection

*Prioritize and Select Projects for Funding*
- Benefit/Cost Analysis
- Compare Project Trade-offs
- Feasibility

RTC Board Approval

*Funding Allocation*

*Project Development*
- Review Using Checklist
- Design
- Cost Estimates
- Urban Design
- Relationship to Plans

Complete Street Project Selected