Complete Streets
Evaluation Process

IN THE CITY OF HENDERSON

UPWP Task 1460-13 Complete Streets Corridor Ranking Study

Submitted to:
Regional Transportation Commission of Southern Nevada
City of Henderson

Submitted by:
PARSONS
May 2014

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E.1 Complete Streets and Study Objective

The intent of this study is to develop a process to identify and assess candidate corridors within the City of Henderson for implementation of complete street treatments. This process will include opportunities for “road diets”, roundabouts, enhancements of bicycle and pedestrian facilities, and other related multi-modal improvements. In developing this process, the study will evaluate sample corridors for feasibility of Complete Streets implementation. The City of Henderson will use this process to implement improvements either through new development, or as part of maintenance and rehabilitation projects. The objective of this study can be summarized in this statement:

**Study Objective**

Create a process that will be a dynamic tool for the City of Henderson to determine, now and in future planning, where there is the greatest demand and compatibility for Complete Streets elements and what opportunities are both applicable and feasible for any selected corridors.

It’s the goal of the City of Henderson for this planning and implementation process to establish best practices guidelines.

**National Complete Streets Initiative**

There is a growing movement across the country supporting development of Complete Streets in communities. Complete Streets developments promote networks that have enhanced safety, livability, and are welcoming to everyone. There are clear emerging trends with regard to enhancing non-motorized travel nationally.

The National Complete Streets Coalition (NCSC) is one of the national organizations leading this movement. It advocates adoption 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.”

National Complete Streets Coalition is a comprehensive resource for communities and agencies that are working toward creating a safe, comfortable, integrated transportation network for all users, regardless of age, ability, income, ethnicity, or mode of transportation.
As a result of this national initiative, the number of cities and regions that have implemented Complete Streets policies or have begun this process has been significantly increasing. Since 2005 over 100 jurisdictions have incorporated Complete Streets policies and standards into their planning and permitting process.

More recently, the Safe Streets Act of 2013 was introduced in the House of Representatives, in June 2013 as H.R. 2468. The bill would ensure that all users of the transportation system, including people walking, biking, taking public transportation, or driving, regardless of age or disabilities, are able to travel safely and conveniently on our streets.

The NCSC is a component of Smart Growth America. Smart Growth America (SGA) is a national organization “dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide”. Another result of the national initiative of SGA and the NCSC is that there has been an increase in potential federal resources to fund complete streets projects. Some of the federal programs that have been used for this purpose include:

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

The RTC developed a Complete Streets Study with three objectives. The first was to develop a regional Complete Streets Policy Statement. The second was to develop guidelines for the Southern Nevada jurisdictions. The last purpose was to recommend an

**RTC Complete Streets Regional Study and Design Guidelines**

**RTC Regional Complete Streets Study**

In an effort to promote the use of all transportation modes and make Southern Nevada a more sustainable place to live, the RTC is also conducting a regional Complete Streets Initiative. The first step towards the RTC achieving results in this initiative is the Complete Streets Study. The goal of the study was to create a report specific to Southern Nevada that provides guidance for jurisdictional and regional agencies looking to incorporate complete streets concepts into their standard practices.
implementation strategy for developing and funding Complete Streets projects. The overall study vision was 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.

The final report for the RTC Complete Streets Study was approved at the June 2012 RTC Board meeting. At the same meeting, the RTC Board adopted the recommended Complete Streets Policies. Subsequent to this adoption, the RTC worked with member entities to develop design guidelines based on the recommendations of the study.

**RTC Complete Streets Design Guidelines**

A national team made up of experts from traffic engineering, transportation planning, land use planning, architecture, landscape architecture, public health, sociology, and other backgrounds joined a cooperative effort to create the Model Design Manual for Living Streets. The RTC then lead a local collaborative effort to customize this manual for specific application in Southern Nevada.

In March 2013, the RTC Board adopted the *Complete Streets Design Guidelines for Livable Communities* manual for use in the development of Complete Streets in Southern Nevada. This design manual has been adopted as design guidance for the region and is suitable for both local and regional agencies to use as guidance on how to apply complete streets principles to the planning and design of streets.

It is not the intent of this manual to prescribe how to design every segment of every street. The guidelines in this manual are intended to compliment the RTC Complete Streets Policy. It is important to clearly identify the transportation context and goals of the community and corridors.
Now that the RTC Regional Complete Streets Policy and Design Guidelines are completed, the next step is for the RTC and its regional partners to begin incorporating these elements into existing plans, policies and standards, and begin implementing Complete Streets design features on specific roadway segments. The objective of this study and process developed in this report is to provide the City of Henderson with an evaluation and implementation tool to successfully carry out this next step.

E.2 Best Practices of Complete Streets Implementation

“Project Resource Book” National Best Practices
To better understand the current efforts and status of the Complete Streets policies throughout the country, a literature search was conducted to gather materials that identified the successful implementation of Complete Streets policies. At the time of this study, 488 Complete Streets policies are in place nationwide.

National Overview
The Best Complete Streets Policies of 2012, published by Smart Growth America and National Complete Streets Coalition, is a study of the 130 policies adopted by communities in 2012. The study evaluated the language used in these polices to determine the top ten cities that have created comprehensive Complete Streets policies. The Coalition based its scores on the ten elements of policy language they deemed necessary to craft a policy that can be successfully implemented.

Another good resource for national review of best practices is Complete Streets: Best Policy and Implementation Practices, published by the American Planning Association and the National Complete Streets Coalition. The “Making the Transition: Planning for Change and Addressing Problems” section is especially helpful by providing brief case studies of local jurisdictions that have implemented Complete Streets programs.

From Policy to Pavement: Implementing Complete Streets in the San Diego Region, American Planning Association, California Chapter, San Diego, June 2012 discusses different types of policies for implementation of Complete Streets and the pros and cons associated with each type of policy option.

Sample of Cities Reviewed
This study selected a few cities to highlight different components in their approaches to implementing Complete Streets elements on new projects and improving existing corridors.

- City of Seattle
- Indianapolis, Indiana
- Pennsylvania Department of Transportation
- City of Chicago
- Bend, Oregon
Best Practices Guidelines on Implementation

Implementation of a Complete Streets program can be challenging when trying to develop a program that is flexible and accommodating of elements in every corridor situation. The Maricopa Association of Government (MAG) Complete Streets Guide is an excellent source of information and fits closely to the challenges the City of Henderson may face.

In addition, the Completes Streets – A Guide to Road Diets and Lane Widths prepared for the RTC of Washoe County, provides an excellent example of what is already being implemented in Nevada.

These two documents provided a fundamental backbone to the approach taken in this study for the City of Henderson. Complete Streets elements are numerous and extensive. The RTCSNV Complete Streets Study and Design Guidelines provide extensive discussions and examples of these facilities. This report highlights examples and presents summaries on some items that were of particular interest to the City of Henderson.

E.3 The City of Henderson

The City of Henderson was officially incorporated on April 16, 1953, after nearly being sold off as war surplus property. The City began with merely 7,410 residents over thirteen square miles and has since grown to over 105 square miles and a population of 265,679 residents, according to the 2010 U.S. Census Bureau. Henderson has flourished throughout its history, being declared by the U.S. Census as America’s fastest growing city in 1994. Even with such rapid growth, 169% over a ten year period, the City has managed to promote a “small town” feeling by keeping the City well connected and providing amenities, such as 56 parks and more than 184 miles of trails. It is those amenities, along with significant destinations, that have earned Henderson titles such as Prevention’s #6 “Best Walking Cities of 2007” and CNN Money’s #66 “Best Place to Live.” As the City continues to grow, connectivity through Complete Streets is an important objective of the City of Henderson.

Sources, Destinations and Connecting Travel Modes

Chapter 3 of this study provides an overview of the following factors that will influence Complete Streets development in the City of Henderson:

1. Sources and destinations of travel
   a. Residential Distribution
   b. Employment and Businesses
   c. Schools and Parks
   d. Landmarks and other Destinations

2. Connecting through travel network modes
   a. Street, Bicycle and Pedestrian Facilities
   b. Transit
E.4 City of Henderson Complete Streets Evaluation Process

The City of Henderson Complete Streets Evaluation Process includes a three step process. Various factors and components of this process are discussed in detail in Chapters 4, 5 and 6 of this report. Recalling the study objective, the goal of the process is to be comprehensive, yet flexible and dynamic enough to account for a variety of different scenarios and future evolving objectives.

The process is summarized below and an illustration of this iterative process and its components is shown on the next page. As an additional tool, a “Process Roadmap” flowchart has been compiled to guide the City through the evaluation process and is included at the end of this Executive Summary.

Flexible Dynamic Decision Process
The goal of this study is not to create a rigidly structured decision process, but rather a flexible one that considers the primary factors for success, with flexibility for the planning leaders to apply these in harmony with their own evolving objectives for the community.

Summary of the City of Henderson Complete Streets Evaluation Process

1. Process Initiation
   a. “Support and Opportunity” – discussed in more detail in Chapter 4.
   b. “Candidate Approach” - discussed in more detail in Chapter 4.

2. Evaluation and Development

3. Recommendations
   Some brief examples of the process and recommendations are demonstrated in Chapter 7. Next steps for recommendations in further discussed in Chapter 8.
Stage 1) Process Initiation

Support and Opportunity

“Support and Opportunity” is made up of a variety of sources that may trigger the desire or need for carrying out the evaluation process described in this document. These sources include:

- Agency Objectives
- Stakeholder Support
- Funding Opportunities

These sources not only initiate the process, but establish priorities for the decision process during the evaluation and development stage. For example, these sources may be referenced at the beginning of the evaluation process where funding has been identified and agency and/or community support has been expressed for specific corridors and/or types of improvements. Or they may be referenced at any point of the conceptual development or evaluation process to ensure objectives are met and recommendations are within funding limitations. These sources may also be applied at the end of the process, after conceptual development and corridor ranking has been evaluated. They are essentially the decisive factors for determining whether any improvements are actually completed and the timeframe they are completed in. “Support and Opportunity” is discussed in more detail in Section 4.2.

Candidate Approach

Once “Support and Opportunity” sources trigger the desire or need for the evaluation process, a “Candidate Approach” should be established. This involves selecting the candidate corridors for evaluation of Complete Streets enhancements. The purpose of this step is to set the foundation for how the principal components of this evaluation process are applied and their respective priorities within the process. “Candidate Approach” and some sample scenarios are discussed in more detail in Section 4.3. Although there are various scenarios that exist, the approach can be initiated in any of these three general categories:

- Single Corridor
- Multiple Corridors
- City-Wide Complete Streets Program (or large number)

Stage 2) Evaluation and Development

Component 1 – Evaluation and Benefits

Under Component 1 (Chapter 5), candidates are evaluated for potential demand, need and compatibility, which translate into potential benefits. It presents a method to evaluate the success of implementing various Complete Streets improvements within single or multiple corridors. It also provides guidelines for a relative comparison or ranking in their demand and compatibility of corridors, when prioritization or competitive selection is necessary. During
progression of Component 1, applicable sources from “Support and Opportunity” may be referenced as part of the evaluation.

This study team first began by listing the main factors typically utilized by other successful programs for evaluating Complete Streets and then grouped these factors into three principal categories.

Evaluating these three principal factors seems logical for the process and would generally be the first components of the overall process for evaluating potential benefits:

1) Demand for Complete Streets implementation
2) Need for Complete Streets implementation
3) Compatibility for Complete Streets implementation

Component 2 – Concept Development and Costs

The goal of Component 2 is to provide guidelines for selecting Complete Streets elements and phasing (Chapter 6). Possible concepts and phasing levels are developed for candidates, which translate into potential costs. The component presents a method to categorize corridors into a transportation context and evaluate the Complete Streets zones and elements most applicable and beneficial for that specific category or sample corridor. Possible ultimate cross-sections are developed in this component and different levels of implementation may be determined.

The process of this component would be applied for a single candidate corridor or applied once candidates have been prioritized to a manageable number of corridors, where concepts can be developed for each. During progression of Component 2, applicable sources from “Support and Opportunity” may be referenced as part of the concept development.

Five steps are proposed for the Henderson Complete Streets element selection process, as shown below:

1. Define transportation context.
2. Identify appropriate modes (existing and potential new modes).
3. Identify constraints and number of lanes.
4. Select appropriate zones, elements, and sample cross-sections. Identify various levels of enhancement for phasing.
5. Revisit priorities and objectives, test the results, evaluate trade-offs, and categorize into funding levels and planning timeframes.

**Elements and Phasing**

For the purposes of evaluating Complete Streets improvements within the practicality of this planning process, implementation scenarios will be grouped into three general levels of enhancements:

**Level 1 Enhancements**: Minimal level of enhancement and maximum ease of construction. Enhancements may cover all modes: bicycle, transit, pedestrian, truck, vehicle or others. Typically lower cost and no new ROW purchase required.

**Level 2 Enhancements**: Medium level of enhancements and constructability effort involved. Typically greater cost than Level 1 and possibly minimal new ROW purchase required.

**Level 3 Enhancements**: Ultimate design build-out with high level of enhancements and higher level of constructability effort. Typically more costs are required than that of Level 2 enhancements on the same corridor segment and significant new ROW purchase may be required.

**Stage 3) Recommendations**

The final goal is to present recommendations for implementation that will meet priorities established by agency objectives and stakeholders, as well as the funding opportunities. The remainder of Chapter 4 will discuss more details of “Support and Opportunity” and “Candidate Approach”.

Chapters 5 and 6 of this report will lay out the guidelines to complete this process with the intent of accomplishing these separate but interconnected objectives. These chapters are followed by a demonstration of the process using actual streets in Henderson for evaluation and conceptual design.

**E.5 Demonstration of the Evaluation Process**

There are an unlimited number of variations of how the City of Henderson Complete Streets Evaluation Process could be applied under current conditions and objectives, as well as how these evolve in the future. The intent of Chapter 7 is to demonstrate a few scenarios and key components of how this process may be applied. Chapter 7 will demonstrate how the process may be applied for all different Candidate Approaches:

- City-Wide Evaluation, then Single Corridor Concept
- Multiple Corridors Evaluation
E.6  Next Steps

This document presents guidelines for stepping through an evaluation process for the implementation of Complete Streets in the City of Henderson. As COH applies this process under different scenarios, there will be a variety of conceptual outcomes coming from different process initiators: agency objectives, stakeholders and funding opportunities. Below is the process outlined by the RTC in the Regional Complete Streets Study.

This document addresses Step 1 of the RTC Complete Streets implementation process, and prepares COH for subsequent steps toward the “Application for Funding” and possible selection.

Implementation Beyond this Study

I) Application for Funding
   1. COH Corridor Evaluations, Rankings and Potential Improvements
   2. Test and Re-Evaluate

II) Assist with RTC Evaluation
   1. Benefit/Cost Analysis
   2. Compare Project Trade-Offs
   3. Feasibility
   4. Funding Match

III) Project Development
   1. Establish Performance Measures Plan (*before and after data collection*)
   2. Design and Costs Estimates
   3. Community Outreach
   4. Construction and Implementation

IV) Opportunities for Policy Development

Regardless of whether an evaluation is initiated based on input from the RTC, COH or some other stakeholders, the “Next Steps” will be used to advance the concept development and phasing into construction implementation. Depending on the level of enhancements being recommended, varying levels of effort will be required for this implementation. For example, Level 1 type enhancements may be implemented much more quickly, perhaps only requiring internal approval within COH. On the other hand, ultimate designs with Level 3 enhancements require more effort and investigation. Chapter 8 also includes general recommendations for a Community Outreach Plan.
E.7 Process Roadmap

As described in section E.4 above, The City of Henderson Complete Streets Evaluation Process includes a three step process. An illustration of this iterative process and its components is also shown in that section. However, this section E.4 is just a snapshot summary of the expanded details included in Chapters 4, 5 and 6 of this report. As an additional summary tool, a “Process Roadmap” flowchart has been compiled to guide the City through the evaluation process. This roadmap is meant to accompany the overall process graphic and used as a step-by-step decision guideline with examples and references to relevant parts of this report and other decision-making tools. The Process Roadmap is included in the following pages.

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<td><strong>Guidelines and Examples</strong></td>
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<td>1. What initiated the need for a Complete Streets evaluation? What are the objectives and priorities?</td>
<td>Agency Objectives</td>
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<td>Stakeholder Objectives</td>
<td>Safety concerns at intersection in community</td>
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<td>Funding Opportunity</td>
<td>Fuel Revenue Index</td>
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<td>2. What is the impact to the community? What are the available or required resources?</td>
<td>1. Low-level effort: Minimal time and effort, minimal impact.</td>
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<td>2. Mid-level effort:</td>
<td>Multiple design concepts, full alternative analysis, detailed benefit-cost evaluation.</td>
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<td>3. High-level effort:</td>
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<td>3. What corridor or corridors will be evaluated? What segments or limits? What will be the Candidate Approach?</td>
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<td>There is no comparative ranking with single corridor approaches. Will a review for Evaluations and Benefits be performed?</td>
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<td>Multiple Corridors</td>
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<td>City-Wide Evaluation</td>
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STEP 2: Component 1 - Evaluation and Benefits  *(See Chapter 5 for details)*

EVALUATE POTENTIAL BENEFITS: Select appropriate factors to be applied below, based on objectives, priorities and available resources. Summarize the evaluation based on comments or scoring. See Sample Evaluation Scoring Form in Appendix for a one suggested scoring method.

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<td>Commercial Density</td>
<td>Employment density maps</td>
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<td>Other Attractors Density</td>
<td>COH maps of schools, parks, trails and other destinations</td>
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<td>Traffic: Auto, Bicycle and Pedestrian Counts</td>
<td>Existing database from NDOT or previous projects Collect new data</td>
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<td>Transit Ridership</td>
<td>RTC database</td>
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<td><strong>Potential Need (Opportunities for Enhancements) - See Report Section 5.4</strong></td>
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<td>Safety &amp; Security</td>
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<td>Conflict Points / Road Safety Audits</td>
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<td>Crash History (or potential for reduction)</td>
<td>Existing database or new evaluation using Highway Safety Manual</td>
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<td>Security</td>
<td>Review of existing reports and conditions</td>
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<td>Mode Gap Analysis</td>
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<td>ROW maps, Master Plans, utility maps</td>
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<td>V/C Maps on existing or forecasted conditions</td>
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<td>Regional Connectivity</td>
<td>Regional maps and plans</td>
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**STEP 2: Component 2 - Concept Development and Costs**  
*(See Chapter 6 for details)*

EVALUATE CONCEPTS AND POTENTIAL COSTS: Follow the five-step process to evaluate existing and planned conditions and general costs associated with different concepts and improvement elements.

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<th>RESOURCES/TOOLS</th>
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</table>
| 1. Define transportation context. | High Density, High Intensity, Suburban  
Low Density, Low-Medium Intensity, Suburban  
Low-Medium Density, Low Intensity, Residential  
Low Density, Low Intensity, Residential  
Low Density, Low Intensity, Rural Residential | Transportation Context Characteristic Forms |
| 2. Identify appropriate modes (existing and potential new modes). | Pedestrian  
Bicycle  
Transit  
Automobile  
Truck (freight and goods movement) | Current conditions  
Master Plans |
| 3. Identify constraints and number of lanes. | Current conditions  
Master Plans |
| 4. Select appropriate zones, elements, and sample cross-sections. Identify various levels of enhancement for phasing. | Development Zone  
Pedestrian Zone  
Green Zone  
Parking Zone  
Exclusive Bicycle Zone  
Mixed Vehicle Zone | RTC Regional Complete Streets Study and Design Guidelines  
COH Master Plan, Design Codes |
| **Zones and Elements** | Level 1 Enhancements: Minimal costs  
Level 2 Enhancements: Medium costs  
Level 3 Enhancements: Highest costs | |
| **Phasing Levels** | |

5. Revisit priorities and objectives of “Support and Opportunity” from the Process Initialization. Test the results, evaluate trade-offs, and categorize into transportation funding levels and planning timeframes. Continue with Recommendations
STEP 3: Recommendations  *(See Chapter 8 for details)*

RECOMMEND NEXT STEPS: Determine which recommendations can be implemented immediately or which ones may need further development and evaluation.

### Potential Recommendations

- Move to implement recommendations
- Application for Funding
- RTC Evaluation (if applicable)
- Project Development
- Community Outreach
- Opportunities for Policy Development or Master Plan Updates
Chapter 1

Study Background
**CHAPTER 1: STUDY BACKGROUND**

### 1.1 Complete Streets and Study Objective

There is increasing awareness that street design has historically developed to primarily accommodate automobile travel. The incorporation of multi-modal facilities and amenities has not been equally considered in development of many street networks. As Southern Nevada becomes more congested, it is the goal of the RTC to add capacity in a safe and efficient way that has a balanced approach of accommodating all applicable modes. In harmony with this goal, the RTC has developed a Complete Streets Policy and Design Guidelines. The RTC defines a Complete Street as a road designed to be safe for all users, including design features that aim to make streets pleasant places for all users. Users include car drivers, transit riders, pedestrians of all ages and abilities, and bicyclists. The RTC has also identified significant Complete Streets benefits, such as:

- Make walking, biking, and transit riding more attractive.
- Improve travel options for groups that have limited access to cars.
- Improve safety of various modes.
- Increase the likelihood of physical activity.
- Reduce vehicle emissions to improve air quality.
- Improve the economic situation for communities.

Complete Streets are comprised of a variety of roadway design components. Typical features may include improvements such as traffic calming, dedicated transit lanes, protected bicycle lanes, pedestrian crossings, landscaping beautification, enhanced sidewalks and safety enhancements. However, not all components or category of components will be applicable and beneficial to all streets. It is important that the components incorporated are in harmony with certain planning goals and criteria specific to that corridor and that its transportation context and function are taken into consideration.

The next step in this regional plan for incorporating Complete Streets components is to have specific jurisdictions take the lead in implementing Complete Streets improvements within their own areas. The City of Henderson is one of these jurisdictions taking the process to this next step.

It is not the intent of this study to produce a specific list of ranked corridors assigned for implementation. This study provides a process that the City could use as a planning tool to create a list anytime in the future. The intent of this study is to develop a process that identifies candidate corridors within the City of Henderson for implementation of Complete Streets treatments. This process includes opportunities for “road diets”, roundabouts, completion of bicycle and pedestrian facilities, and other related multi-modal improvements. In developing this process, the study will evaluate sample corridors for feasibility of Complete Streets enhancements.
The City of Henderson will use this process to implement improvements either through new development, or as part of maintenance and rehabilitation plans. The objective of this study can be summarized in this statement:

**Study Objective**
Create a process that will be a dynamic tool for the City of Henderson to determine, now and in future planning, where there is the greatest demand and compatibility for Complete Streets elements and what opportunities are both applicable and feasible for any selected corridors.

It’s the goal of the City of Henderson for this planning and implementation process to apply best practices guidelines associated with organizations or criteria supported by the following:

- The National Complete Streets Coalition
- RTC Complete Streets Study and Design Guidelines
- Bicycle Friendly Community
- National or international related criteria

### 1.2 National Complete Streets Initiative

There is a growing movement across the country supporting development of Complete Streets in communities. It involves states, cities and towns engaging planners and engineers to plan and design networks that are safer, more livable, and welcoming to everyone. There are clear emerging trends with regard to non-motorized travel nationally. The Alliance for Biking and Walking 2012 Benchmarking Report states that:

“Since the 2010 Benchmarking Report, there has been a 63% increase in the number of states that have published goals to increase bicycling and walking, and a 27% increase in the number of states that have published goals to reduce bicycle and pedestrian fatalities.

A survey of other policies found that 19 (of the 51 largest) U.S. cities and 26 states have adopted complete streets policies that require streets be built to accommodate all potential road users. Nearly half of all states report having a bicycle and pedestrian advisory committee. And 38 states report having a publicly available bicycle map. Cities were surveyed on a number of planning and policy initiatives. Forty-one cities report having a bicycle master plan and 21 have a pedestrian master plan. Over half of cities have bicycle and pedestrian advisory committees.
City surveys examined current and planned bicycle and pedestrian infrastructure in order to benchmark the progress communities are making. Specifically, cities reported miles of bike lanes, bicycle routes, and multi-use paths. On average, cities have 1.8 miles of bicycle facilities (bike lanes, multiuse paths, and signed bicycle routes) per square mile—a 29% increase since the 2010 Benchmarking Report. Forty-four cities report that 100% of their bus fleet have bicycle racks, a 19% increase over the past two years.”

The National Complete Streets Coalition (NCSC) is one of the national organizations leading this movement. It advocates adoption 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.”

As a result of this national initiative, the number of cities and regions that have implemented Complete Streets policies or have begun this process has been increasing significantly. Since 2005 over 100 jurisdictions have incorporated Complete Streets policies and standards into their planning and permitting process.

The NCSC is a component of Smart Growth America (SGA). Smart Growth America is a national organization “dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide.” Another result of the national initiative of SGA and the NCSC is that there has been an increase in potential federal resources to fund complete streets projects. Some of the federal programs that have been used for this purpose include:

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

1.3 RTC Complete Streets Regional Study and Design Guidelines

RTC Regional Complete Streets Study

In an effort to promote the use of all transportation modes and make Southern Nevada a more sustainable place to live, the RTC is also
The RTC developed a Complete Streets Study with three objectives. The first was to develop a regional Complete Streets Policy Statement. The second was to develop guidelines for the Southern Nevada jurisdictions. The last purpose was to recommend an implementation strategy for developing and funding Complete Streets projects.

The final report for the RTC Complete Streets Study was approved at the June 2012 RTC Board meeting. At the same meeting, the RTC Board adopted the recommended Complete Streets Policies. Subsequent to this adoption, the RTC worked with member entities to develop a design manual based on the recommendations of the study.

**RTC Complete Streets Design Guidelines**

A national team made up of experts from traffic engineering, transportation planning, land use planning, architecture, landscape architecture, public health, sociology, and other backgrounds joined a cooperative effort to create the “Model Design Manual for Living Streets”. The RTC led a local collaborative effort to customize this manual for specific application in Southern Nevada. The RTC collaboration involved representation in development of this effort from key local agencies and jurisdictions including:

- Clark County
- City of Boulder City
- City of Las Vegas
- City of North Las Vegas
- City of Henderson
- Nevada Department of Transportation
- Clark County Regional Flood Control District
- Clark County Fire Department
- Southern Nevada Homebuilders Association
- Transportation and Planning Consultants
In March 2013, the RTC Board adopted the *Complete Streets Design Guidelines for Livable Communities* manual for use in the development of Complete Streets in Southern Nevada. This design manual has been adopted as design guidance for the region and is suitable for both local and regional agencies to use as guidance on applying Complete Streets principles to the planning and design of streets.

It is not the intention of the manual to prescribe how to design every segment of every street. It is important to clearly identify the transportation context and goals of the community and corridors. The suggested policies set forth in this manual are intended to compliment the RTC Complete Streets Policy.

Now that the RTC Regional Complete Streets Policy and Design Guidelines are completed, the next step is for the RTC and its regional partners to begin incorporating these elements into existing plans, policies and standards and implement Complete Streets design features on specific roadway segments. The objective of the study and process developed in this report is to provide the City of Henderson with a planning and implementation tool to successfully accomplish this.

## 1.4 COH Bicycle Friendly Community

The Bicycle Friendly Community (BFC) program began over a decade ago with a small group of bicycling experts from around the country belonging to the League of American Bicyclists. Their goal was to create a simple concept of community recognition and create a tool for advocates and a roadmap for communities wanting to improve conditions for bicycling.
In order to receive Bicycle Friendly Community status, an application must be submitted. The application involves a comprehensive and detailed form that collects basic demographic and background information, but also focuses on activities within five principal categories known as the “Five E’s”:

1. Engineering – the physical infrastructure and hardware in place to support cycling
2. Education – programs that ensure the safety, comfort and convenience of cyclists and their fellow road users
3. Encouragement – incentives, promotions and opportunities that inspire and enable people to ride
4. Enforcement – equitable laws and programs that ensure motorists and cyclists are held accountable
5. Evaluation – processes that demonstrate a commitment to measuring results and planning for the future

These “Five E’s” can be seen as a part of the Complete Streets development occurring in Southern Nevada through the collaborative efforts of the RTC and local participating jurisdictions. This specific study demonstrates the commitment of the City of Henderson for Complete Streets implementation, including creating a Bicycle Friendly Community, with an established process for evaluation, concept development and an outline for community outreach and education.

1.5 Overview of Study Approach

Scope of Work Summary
The scope of work accomplished in this study was developed with coordination of the RTC and the COH desired goals. Some of the tasks were given more attention based on the priorities discussed. Below is a general outline of study tasks that were undertaken to achieve the goals described in this chapter:

- **Task 1** – Coordination Meetings. Identify goals and objectives, review progress and development. The Project Team consists of Parsons, RTC and the COH.
- **Task 2** – Collect and review existing information, maps, relevant studies and research best practices for Complete Streets implementation.
• **Task 3** – Identify sample candidate corridors (case studies) and review these in order to develop evaluation factors for creating a Complete Streets evaluation process for the City of Henderson. Some of the considerations in development of this evaluation and process include:
  o High planning level of benefit evaluation based on potential demand, needs and compatibility.
  o High level cost evaluation based on potential concept development and levels of implementation.

• **Task 4** – Demonstrate the Complete Streets planning evaluation process with selected candidate corridors or for a city-wide effort.

• **Task 5** – Evaluate funding, policies and prepare an outline for a Community Outreach Plan to present recommendations to the general public.

• **Task 6** – Prepare the report. Document the analysis, findings, and recommendations. Prepare draft and final reports and present findings to RTC and the City of Henderson.
Chapter 2
Best Practices for Complete Streets Implementation
CHAPTER 2: BEST PRACTICES OF COMPLETE STREETS IMPLEMENTATION

2.1 Overview

The growing desire to make communities safer, more livable and welcoming has led to the implementation of Complete Streets policies around the country. Complete Streets, as defined by the RTC Regional Complete Streets Study, 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 Streets 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 with regards to non-motorized users of the facility.

The National Complete Streets Coalition and many other task force groups have formed to help communities develop a comprehensive plan for implementing Complete Streets. There is a large amount of resource documents available on the subject. The most relevant information has been reviewed and is contained within the Project Resource Book, which is an accompanying document to this study.

“Project Resource Book” National Best Practices

To better understand the current efforts and status of the Complete Streets policies and evaluation process throughout the country, a literature search was conducted to gather materials that identified the successful implementation. At the time of this study, 488 Complete Streets policies are in place nationwide.

Focusing on the areas where Complete Streets components were already accepted and implemented, materials were collected and distributed to the Complete Streets Study working group, as well as having been distributed to the City of Henderson and the RTC. The material gathered and contained within the Resource Book provides a foundation for Complete Streets policy development, implementation and evaluation.

This chapter summarizes the information collected and reviewed, organized into two principal categories:

1. Best Complete Streets Policies
2. Complete Streets Evaluation Processes
2.2 Best Complete Streets Policies

Complete Streets is a concept that has been implemented in many parts of the country at various levels of intensity. Because each local jurisdiction needs to develop a plan and process that will work best in their own locale, the best approach is to first familiarize planners with the best practices in place for the specific type of evaluation desired. The materials in the binder provide an extensive inventory of Complete Streets programs throughout the country. The information provided aids in the development of a pilot program and ultimately a policy that will be utilized for future development. To understand this process the study reviewed national policy guidelines and a few select cities that have implemented successful programs.

National Overview

The Best Complete Streets Policies of 2012, published by Smart Growth America and National Complete Streets Coalition, is a study of the 130 policies adopted by communities in 2012. The study reviewed the language used in these polices to determine the top ten cities that have created comprehensive Complete Streets policies. The Coalition based its scores on the ten elements of policy language they deem necessary to craft a policy that can be successfully implemented. The ten elements are listed as follows:

1. Strong vision and clear intent
2. All users and modes are included
3. Policies apply to all projects and phases
4. Clear, accountable exceptions are defined
5. Connected, integrated network
6. Collaboration between different agencies
7. Use the best and latest design guidelines
8. Context sensitivity
9. Include performance measures
10. Identify a successful implementation policy

Five examples named by the Coalition as the 2012 top cities using extraordinary policy language are:

- City of Rancho Cucamonga, California
- City of Hermosa Beach, California
- City of Huntington Park, California
- City of Indianapolis, Indiana
- City of Ocean Shores, Washington

The Coalition named the policies of these cities as an exemplary model for communities across the nation. While each of the cities listed took a slightly different approach in the development, adoption and implementation of their Complete Streets policy, they all generally contain the ten elements listed above. The policies are clearly defined and provide for design guidance and flexibility to accommodate all users and modes in both typical and unique community corridors.
The Coalition provided a guidance workbook as an attachment to the study. Within the guidance workbook the Coalition defined four key steps to effectively implement Complete Streets policy. The steps are as follows:

1. Restructure and revise related procedures, plans, regulations, and other processes to accommodate all users on every project. This includes incorporating Complete Streets into plans as they are updated, changing city code to support Complete Streets activities and related initiatives, and/or modifying procedural documents such as checklists and decision trees.

2. Develop new design policies and guides or revise existing to reflect the current state of best practices in transportation design. Communities may also elect to adopt nation or state-level recognized design guidance.

3. Offer workshops and other education opportunities to transportation staff, community leaders and general public so that everyone understands the importance of the Complete Streets vision and how they can aid implementation.

4. Develop and institute ways to measure progress and performance and collect and disseminate data on how the streets are serving all users. This is an opportunity to more fully explore the performance measures you discuss in the policy document.

Another good resource for national review of best practices is Complete Streets: Best Policy and Implementation Practices, published by the American Planning Association and the National Complete Streets Coalition. The section called “Making the Transition: Planning for Change and Addressing Problems” is especially helpful by providing brief case studies of local jurisdictions that have implemented Complete Streets programs. The cities whose programs are represented are: New Haven, Connecticut; Chicago, Illinois; Charlotte, North Carolina; Pennsylvania Department of Transportation; Metropolitan Transportation Commission, San Francisco Bay Area, California; Redmond, Washington; and Seattle, Washington. Each of these different jurisdictions made significant efforts to develop and implement Complete Streets programs.
From Policy to Pavement: Implementing Complete Streets in the San Diego Region, American Planning Association, California Chapter, San Diego, June 2012 discusses different types of policies for implementation of Complete Streets and the pros and cons associated with each type of policy option, listed as follows:

1. City Council Resolution
   - Pros – quick and easy, sets the vision
   - Cons – not comprehensive, may lack specificity and leave priorities, standards, procedures, and performance measures unchanged.

2. City Council Policy
   - Pros – can include most of the elements of an ideal policy.
   - Cons – possibly involves more steps, requiring longer preparation. Not integrated with other policies with which it may conflict.

3. Ordinance
   - Pros – implements the vision and provides specific standards and procedures; has the force of law.
   - Cons – more steps, requiring longer preparation. May not have adequate policy support.

4. Tax Ordinance
   - Pros – provides the vision, relevant policies, and funding source.
   - Cons – may lack policy support. Requires more public process since a public vote is required. May be difficult to achieve in a down economy.

5. Internal Policy
   - Pros – quicker implementation. Required buy-in from affected agencies provides education opportunities across departments and disciplines.
   - Cons – not necessarily anchored in official policy. May lack accountability mechanism such as performance measures and regular reports.

6. General Plan Policy
   - Pros – ideal policy vehicle for creating a complete streets policy and exceptions to Level of Service. The GP is the jurisdiction’s “constitution”. All other policies, zoning, and regulations must be consistent with the GP.
   - Cons – general plan amendments can require a lengthy process. Must be followed up with specific implementation steps.
7. Street Design Manual

- **Pros** – provides specific design guidelines allowing flexible options for Complete Streets features.
- **Cons** – may lack necessary policy underpinning, including priorities, design, flexibility, maintenance and operation details, performance measures, and a reporting requirement.

8. Pedestrian/Bike Plans

- **Pros** – provides specific improvements and/or framework for additional improvements.
- **Cons** – tends not to provide guidance for balancing pedestrian or bicycle accommodations with those for other modes.

9. Focus Plans (Specific Plans, Corridor Plans, etc.)

- **Pros** – tailored to a particular geographic area and population. Provides a pilot to test ideas. Successful strategies can be adapted to other projects, but may require a design-exception approval process.
- **Cons** – limits applicability to a small area. May lack some key elements that apply to a citywide policy, such as flexibility and accountability.

**Sample of Cities Reviewed**

This study selected a few cities to highlight different components in their approach to implementing Complete Streets elements on new projects and improving existing corridors.

**City of Seattle**

The City of Seattle has a strong program for developing and implementing Complete Streets. They have created an extensive checklist that is required to explain how the project meets the specific guidelines in place to ensure compliance with city standards. The checklist also contains a Priority Elements Matrix listing the preferred Complete Streets elements and other elements that could be considered in each street classification. The checklist compiles data and information on traffic volumes, street classification and type, the condition of existing infrastructure and any restriction that may exist within the project area. Using the compiled data, the City of Seattle will use the street classification guidelines to determine the Complete Streets elements they prefer to be incorporated within the project. Seattle uses the following criteria when implementing Complete Streets elements:

- Consider the recommendations of the Bicycle, Pedestrian, Transit and Freight Plans
- Consider the recommendations of other sub-area and neighborhood plans
- Analyze available traffic data
• Use the Complete Streets Checklist
• Update design standards regularly

In addition to the comprehensive checklist for project development, Seattle updates street design standards on a regular basis to ensure it is multi-mode user safe and friendly.

**Indianapolis, Indiana**

The City of Indianapolis was recognized as having the Best Complete Streets Policies of 2012. In an effort to implement Complete Streets elements the City of Indianapolis is building six major roundabouts in FY 2013-14. Documents contained in the Project Resource Book detail the design and construction of these projects.

Indianapolis is going to great lengths to ensure they are not just implementing Complete Streets elements, but that they are the safest elements. They have implemented the following performance measures to be examined every two years:

• Total miles of bike lanes / trails built or painted
• Linear feet of new pedestrian accommodation
• Number of new curb ramps installed along city streets
• Crosswalk and intersection improvements, and other safety elements
• Percentage of transit stops accessible via sidewalks and curb ramps
• Rate of crashes, injuries, and fatalities by mode
• Number of approved and denied exceptions

**Pennsylvania Department of Transportation**

The Pennsylvania Department of Transportation developed the checklist below to be used throughout its project planning and programming, scoping, and final design processes to ensure that bicycle and pedestrian accommodations are considered from the very beginning of a project.

1. **Consistency with Bicycle/Pedestrian Planning Documents**
   Is the transportation facility included in or related to bicycle and pedestrian facilities identified in a master plan?
   • MPO/LDD bike/ped plan
   • Local planning documents
   • Bicycle Routes
   • Statewide Bicycle and Pedestrian Master Plan

2. **Existing and Future Usage**
   Do bicycle/pedestrian groups regularly use the transportation facility?
   • Bike clubs
   • Bicycle commuters
   • Hiking, walking, or running clubs
   • Skateboarding or rollerblading groups
   • Bicycle touring groups
   • General tourism/sightseeing
Does the existing transportation facility provide the only convenient transportation connection/linkage between land uses in the local area or region?

3. **Safety**
   Would the transportation facility (and all users) benefit from widened or improved shoulders or improved markings (shoulders, crosswalks)?

4. **Community and Land Use**
   Are sidewalks needed in the area?
   - Presence of worn paths along the facility
   - Adjacent land uses generate pedestrian traffic
   - Possible linkages/continuity with other pedestrian facilities
   Is the transportation facility in close proximity to hospitals, elderly care facilities, or the residences or businesses of persons with disabilities?

5. **Transit**
   Is the transportation facility on a transit route?

6. **Traffic Calming**
   Is the community considering traffic calming as a possible solution to speeding and cut-through traffic?

City of Chicago

**Complete Streets Chicago**, implementation provides a clear and direct process for completing Complete Streets projects. This document presents the six stages of Complete Streets implementation.

**Stage 1**: Selection: Identify and promote projects that advance Complete Streets

**Stage 2**: Scoping: Address all modes - consider land use and roadway context

- **Step 1**: Establish Project Objectives
- **Step 2**: Perform Project Research
- **Step 3**: Conduct Site Visits
- **Step 4**: Assemble Data, Maps and Analysis
- **Step 5**: Set Modal Hierarchy
- **Step 6**: Revisit Objectives

**Stage 3**: Design: Address objectives defined during scoping stage

- **Step 1**: Draft Alternatives
- **Step 2**: Develop Design
- **Step 3**: Evaluate Impacts
- **Step 4**: Obtain Feedback & Approvals
- **Step 5**: Prepare Final Design
**Stage 4:** Construction: Ensure project is built as designed for Complete Streets

**Stage 5:** Measurement: Measure the effectiveness of Complete Streets

**Stage 6:** Maintenance: Ensure all users are accommodated through the project’s lifespan

The six stages are broken down in the project delivery process chart, with goals and elements of each. The process is inclusive, allowing for opportunities for public input, stakeholder and interagency outreach, and iterative design. The process puts project managers in control of the design process but also formalizes Compliance Committee involvement.

**Bend, Oregon**

The City of Bend has developed and adopted *Roundabout Evaluation and Design Guidelines* to implement the City’s Transportation System Plan, which states that roundabouts are the preferred method for intersection improvements. By providing traffic analysis standards, design consistency and an evaluation framework, Bend has provided a complete package of materials by which roundabouts can become a standard traffic feature.

### 2.3 Complete Streets Evaluation Processes

Implementation of a Complete Streets program can be challenging when trying to develop a program that is flexible and accommodating of elements in every corridor situation. There are several documents that were created to assist with the planning and evaluation process for such programs. Two plans were selected for inclusion in this study because of their closest applicability:

- **The Maricopa Association of Government (MAG) Complete Streets Guide** is a good source and fits closely to the challenges the City of Henderson may face.

- **The Completes Streets – A Guide to Road Diets and Lane Widths** prepared for the RTC of Washoe County, provides another good example of what is already being implemented in Nevada.

These two documents provided a fundamental backbone to the approach taken in this study for the City of Henderson. Both studies are reviewed and summarized in the following pages.
Complete Streets Guide, Maricopa Association of Governments (MAG), 2011  
One of the greatest challenges in developing a Complete Streets program is matching the appropriate Complete Streets elements with the specific lane use density and street type. MAG Complete Streets Guide provides an excellent planning process for evaluating transportation options by following these steps:

1. Identify the Context/Land Use Character of the street.

2. Identify the current modes of transportation appropriate for the area.

3. Determine the Complete Streets gaps — those design elements, facilities, and other transportation components that are necessary for a Complete Street.

4. Determine Other Priorities.

5. Identify the right-of-way and determine the appropriate number of vehicular, transit, and bike lanes. (Some of these lanes could be shared in certain instances.)

6. Select the appropriate pedestrian and design elements and facilities. For bicycle and pedestrian facilities use the MAG Regional Bicycle Plan and MAG Pedestrian Policies and Design Guidelines.

This process is illustrated on the following page. The MAG Complete Streets Guide continues in subsequent sections by evaluating each of the six Transportation Contexts (High Density/High Intensity Suburban, High Density/High Intensity Urban, etc.) for the appropriate Complete Streets element. A Sample Outcome is developed and illustrated for each Transportation Context based on this technique.
Figure 2-1: MAG Complete Streets Planning Process
RTC Washoe County Complete Streets Guide

The RTC Washoe County Complete Streets Guide suggests the best practice is for the Complete Streets Plan to update existing pedestrian and bicycle master plans, streetscape plans, greenway plans and piecemeal street improvements plans ensuring that all elements of a Complete Street are considered and implemented on every project.

The study recommends a new six step process be put into place. The six steps consist of:

1. Defining the existing and future land use and urban design context. This step determines the street classification. The classification should match the area and be consistent with adjacent land use. This step should ask the question what is the general function and circulation framework of the neighborhood and adjacent parcels?

2. Defining the existing and future transportation context. This step assesses the existing and future conditions of the overall transportation network. The design recommendation should be consistent with the entire transportation context.

3. Identifying deficiencies. This step identifies and addresses deficiencies with the modified corridor or new corridor. All modes and the relationship between the transportation and land use context should be addressed. This step should identify any movement gaps or safety factors that are present in the existing network.

4. Describing future objectives. This step uses the information obtained in the previous steps to develop future objectives and should serve as the basis for street classification. This step should ask the question what is the projective condition of the surrounding neighborhoods?

5. Recommending street classification and testing initial cross-section. This step should recommend the street classification based on the information obtained in the previous step. Once a recommendation is made a test cross-section should be created. The test cross-section should identify constraints that would impact the implementation of elements, such as lack of right-of-way, existing structures or landscaping, and the location and number of driveways.

6. Describing tradeoffs and selecting cross-sections. This step is for use when the recommended cross-section isn’t appropriate for the land use or transportation objective. When this becomes the case, multiple alternatives should be considered that best match the future expectations of the corridor.
2.4 Complete Streets Components

Overall Description

Complete Streets components are numerous and extensive. The RTCSNV Complete Streets Study and Design Guidelines provide extensive discussions and examples of these facilities. Generally, Complete Streets components fall into the following categories as defined by the RTCSNV Complete Streets Study:

- Traffic Calming
- Transit Lanes and Facilities
- Bicycle Lanes and Facilities
- Midblock Pedestrian Crossings
- Landscaping and Streetscaping
- Road Diets

The following section presents additional summaries on some items that were of particular interest to the City of Henderson.

Road Diets

Road Diets is a term used when automobile travel lanes are reduced in order to provide for enhanced access and facilities for other modes such as transit, bicyclists or pedestrians. This term is one of the simplest concepts in Complete Streets design. The section of the roadway that was previously assigned to motor vehicles is made narrower. This area then becomes a facility that is dedicated to travel by bicycles, pedestrians and/or transit. For example, a four-lane street could be transformed from a roadway with two-lanes in each direction to a street with one-lane in each direction, a center turn-lane, and bike lanes in both directions.

Intersection Control Systems

One of the most challenging areas to implement Complete Streets is within an intersection. Intersections contain the highest conflict points of the roadway network, and can be especially challenging for pedestrians and bicyclists to navigate. Complete Streets Design Guidelines for Livable Communities, (RTCSNV, 2013), provides extensive and detailed discussions and illustrations of preferred intersection control systems. Nearly all possible intersection design issues are covered, along with the Complete Streets alternative. Below is a list of the essential principles of intersection design covered in this document.

1. Intersection Geometry
   - Intersection Skew
   - Corner Radii
   - Curb Extensions
   - Crosswalk and Ramp Placement
   - On-Street Parking Near Intersections
   - Right Turn Channelization Islands

2. Yield and Stop Controlled Intersections
3. Signalized Intersections
   - Operational Design
   - Phasing

4. Roundabouts
   - Advantages and Disadvantages
   - General Design Elements of Roundabouts
   - Roundabout Design Criteria
   - Operations and Analysis
   - Single-Lane Roundabouts
   - Multi-Lane Roundabouts
   - Mini-Roundabouts
   - Neighborhood Traffic Circles

**Roundabouts**

Roundabouts are a method of intersection control whereby traffic is routed in a counter-clockwise direction without traffic stop signs or traffic signals. There are extensive reports available that detail the value and benefits of roundabouts. The primary reason that FHWA and many other agencies encourage these facilities is due to the significant potential for safety improvements when applied at appropriate locations:

- Reduce fatal crashes by 90%
- Reduce injury crashes by 75%
- Reduce pedestrian accidents by 30-40%

FHWA provides detailed information in their documents: Technical Guidance Summary, (February 2010) and the Roundabout Outreach and Education Toolbox, downloaded from the FHWA website on April 17, 2013. The Cities of Bend, Oregon and Indianapolis, Indiana have successful roundabout implementation programs, as was mentioned earlier in this section. There are some excellent public outreach brochures from Bend, Oregon and Carmel, Indiana (which is officially known as the most popular place for roundabouts in the United States).

**Cycle Tracks**

*Cycle Tracks, Lessons Learned*, Alta Planning and Design, 2009. A cycle track is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane (Figure 2-2). Cycle tracks have different forms, but all share common elements. Cycle tracks provide space that is intended to be exclusively or primarily for bicycles, and are separated from vehicle travel lanes, parking lanes and sidewalks. Cycle tracks can be either one-way or two-way, on one or both sides of a street, and are separated from vehicles and pedestrians by pavement markings or coloring, bollards, curbs/medians or a combination of these elements.
Cycle tracks are generally a safer facility than a bicycle lane; however, intersections create a huge challenge for the safety of cyclists. The document titled Cycle Tracks: Lessons Learned discusses ways to address the safety issues successfully through roadway design.

### 2.5 Complete Streets Design Guidelines for Livable Communities

Design Guidelines provide the basis for the development and implementation of Complete Streets projects. RTCSNV first approved the Complete Streets Study Report and Complete Streets Policies on June 14, 2012. The Complete Streets Design Guidelines for Livable Communities was adopted nine months later on March 14, 2013.

The Design Guidelines are based on a similar document prepared for Los Angeles County. This document was adapted for Las Vegas Valley with funding and assistance from the Centers for Disease Control and Prevention through the Southern Nevada Health District.

In adopting these Design Guidelines, RTCSNV has indicated its support for implementation of the Complete Streets projects in the Las Vegas Valley. Although, it is ultimately up to the local jurisdictions to approve their own standards for implementation on existing and proposed corridors, these Design Guidelines will provide good direction in all local projects.

- Parking Placement
- Channelization
- Mountable curb
- Bollards and Pavement Markings
Chapter 3

The City of Henderson
CHAPTER 3: THE CITY OF HENDERSON

3.1 Background

The City of Henderson was officially incorporated on April 16, 1953, after nearly being sold off as war surplus property. The City began with merely 7,410 residents over thirteen square miles and has since sprawled out across the southeast Las Vegas Valley, in Clark County, Nevada, to over 105 square miles and a population of 265,679 residents, according to the 2010 U.S. Census Bureau. Henderson has flourished throughout its history, being declared by the U.S. Census as America’s fastest growing city in 1994. Even with such rapid growth, 169% over a ten year period, the City has managed to promote a “small town” feeling by keeping the City well connected and providing amenities, such as 56 parks and more than 184 miles of trails. It is those amenities, along with significant destinations, that have earned Henderson titles such as Prevention’s #6 “Best Walking Cities of 2007” and CNN Money’s #66 “Best Place to Live.” As the City continues to grow, connectivity through Complete Streets is an important objective of the City of Henderson. The remainder of this chapter provides an overview of the following factors that will influence Complete Streets development in the City of Henderson:

- Sources and destinations of travel
- Connecting through travel network modes

3.2 Sources and Destinations of Travel

Residential Distribution

The greatest source of travel typically comes from residential density. Figure 3-1 shows communities in the City of Henderson. There are twenty-two master planned communities in Henderson. These communities accommodate many of the 265,679 residents within the City limits. The largest communities are Del Webb Anthem, Lake Las Vegas, and Green Valley. The following sections summarize destinations that will induce travel in the community.

Figure 3-2 shows residential distribution in the City of Henderson by graphically displaying density of population within city limits. The population distribution was color-coded into different ranges by square mile. White space indicates no population, blue indicates under 2,500 people, green indicates between 2,500 and 5,000 people, yellow indicates between 5,000 and 10,000 people and red indicates over 10,000 people per square mile. This graphical representation can help create a quick visual summary of residential distribution and where areas of greatest user demand may be located.
Figure 3-1: COH Master Plan Areas
Figure 3-2: COH Population Density
Employment and Businesses
From the beginning, Henderson has been a manufacturing center. Today there are more diverse industries and there have been many efforts made to attract modern industry. Education services, medical and biomedical technology, the supplier industry, and computer and electronic transfer are the leading industries showing growth in Henderson. Figure 3-3 shows commercial distribution in the City of Henderson by graphically displaying density of employment within city limits. The employment distribution was color-coded into different ranges by square mile, similar to the population density map shown previously. This graphical representation can help create a quick visual summary of employment distribution and where areas of greatest user demand may be located. The number one employer is the City of Henderson, followed by St. Rose Dominican Hospital-Siena, Green Valley Ranch Gaming LLC, M Resort, Sunset Station Hotel & Casino, Medco Health LLC, St. Rose Dominican Hospital, Wal-Mart Supercenter, and Fiesta Lake Mead Station. The top ten principal employers in the City of Henderson, listed above, are distributed mostly throughout the center of the City.

Schools and Parks
Figure 3-4 and Figure 3-5 show schools, parks and recreational facilities located within the City of Henderson. Henderson provides more than 1,285 developed acres for its 56 city parks, five of which are school parks. There are 27 elementary schools, ten junior high schools, and nine high schools serving the City of Henderson. Henderson has earned national accreditation through the Commission for Accreditation of Park and Recreation Agencies (CAPRA) three times, and also received the National Gold Medal for Excellence in Parks and Recreation Administration in 1999. Heritage Park is the largest multi-use sports complex in the Las Vegas Valley. The City also boasts the largest recreational facility, the Henderson Multigenerational Center and Aquatic Complex, in Nevada as well as Nevada's only scenic Bird Preserve. The City supports a variety of other cultural events as well, many of which are held at the outdoor amphitheater, The Henderson Pavilion, the largest one of its kind in Southern Nevada.

Landmarks and other Destinations
A broad range of cultural and artistic opportunities including concerts, performances, visual arts exhibits, festivals and special events are provided by The City of Henderson Cultural Arts & Tourism Department. These events are hosted at various locations throughout the City including the Henderson Events Plaza, Henderson Pavilion and Henderson Convention Center. The District at Green Valley Ranch Hotel and Casino is a popular destination for shopping and dining, as well as Galleria at Sunset. There are six public golf courses within the City. In the spring of 2014, a 23-acre water park called Cowabunga Bay will be opening providing an additional destination point in the City of Henderson.
Figure 3-3: COH Employment Density
Figure 3-4: COH Schools and Parks
Figure 3-5: COH Parks and Recreation Facilities
3.3 Travel Network Modes

As the City of Henderson continues to develop, it becomes more important to provide safe, efficient and attractive multi-modal connections to destinations for work, daily activities and leisure. These connections in Henderson include the street networks, pedestrian facilities, bicycle facilities and transit routes. An overview of these modes in Henderson and respective maps are provided in the sections that follow.

Street, Bicycle and Pedestrian Facilities

Henderson is known nationwide for its premier master-planned communities, all of which are connected by an extensive road and highway system. The COH Master Streets & Highways Plan is shown in Figure 3-6. The majority of the streets throughout the City are considered primary arterials with one hundred foot right-of-way clearance. Primary arterials are followed by secondary arterials which have eighty foot right-of-way clearance. The typical cross section for a primary arterial includes at least two travel lanes in each direction, a median island, bike lanes, and sidewalks; though there are a few specific streets which include additional pedestrian amenities such as landscaped areas, paths, and/or trails. The typical secondary arterial cross section consists of two travel lanes in each direction, a middle double turning lane, bike lanes, and sidewalks. There are a few areas which alter this cross section to accommodate landscaping, paths, and trails, but this is only in a very limited area. Per the configuration of the cross sections of both primary and secondary arterials, bike lanes and/or shared travel lanes are provided throughout the entire City. A city with a population the size of Henderson has great traffic demands. Forecasting and building for future growth has allowed congestion to remain minimal, however, as traffic patterns have changed with the expanding population certain arterials no longer require the same level of service as they once had to accommodate. This allows the City to evolve and alter the cross sections of streets in order to serve the changing needs of its residents. Ensuring that all streets are designed to accommodate the correct level of service creates a safer environment for all people in the City.

There are also many shared-use trails and a few bicycle routes spanning the City, in total there are more than 184 miles of trails. During the development of this study, the City of Henderson is undergoing an effort to inventory all the bicycle facilities in the City. Figure 3-7: COH Master Bicycle and Trail Plan shows the bicycle and trail facilities planned in Henderson. This is the most current version of the document, adopted in February 2014 and includes paths (paved surfaces), trails (soft surfaces) and bike lanes and/or routes.

Transit

Transit is another very important mode of travel that exists in Henderson, including seven different routes serving the City. Figure 3-8 shows the transit routes and connections currently in the City.
Figure 3-6: COH Master Streets & Highways Plan
Figure 3-7: COH Master Bicycle and Trail Plan

This map is offered as a general reference guide only. Neither warranty of accuracy is intended nor should any be assumed.

Original MB&T Plan approved by City Council: October 21, 2003
Last adoption to MBT Plan approved by City Council: February 4, 2014

City of Henderson
Parks & Recreation Department
240 Water St. MSC 411
Henderson, NV 89015
702-267-4000
www.cityofhenderson.com
Figure 3-8: Transit Service in COH
Chapter 4

Overview of Complete Streets Planning Process
CHAPTER 4: OVERVIEW OF COMPLETE STREETS PLANNING PROCESS

4.1 Overview of Process

As the Project Team began developing the Complete Streets Planning Process, it became increasingly apparent that in order to meet the dynamic goals of the Study Objective, the process could not be a one-dimensional sequence of steps. Not only will the process need to be multi-dimensional in how steps could be applied and their priorities, but the process should also be an iterative one where different outcomes are tested and revised.

Study Objective
Create a process that will be a dynamic tool for the City of Henderson to determine, now and in future planning, where there is the greatest demand and compatibility for Complete Streets elements and what opportunities are both applicable and feasible for any selected corridors.

The factors that contribute to the success of a project are interwoven within the process so the same corridor can rank high or low depending on the approach taken or the improvements recommended. Some steps in the criteria evaluation will influence sequential steps. Therefore, the process will be an iterative one where various decisions and outcomes should be tested. This document helps to simplify the complexity of the process by organizing it into stages and principal components and then providing guidelines for applying these components. These guidelines are laid out in a way that meets the objectives expressed by the City of Henderson by allowing Complete Streets improvements to be developed through various scenarios and priorities during evaluation. The overall process includes three stages as listed below:

1. Process Initiation
   a. “Support and Opportunity” – discussed in more detail in section 4.2 of this chapter.
   b. “Candidate Approach” - discussed in more detail in section 4.3 of this chapter.

2. Evaluation and Development

3. Recommendations - Some brief examples of the process and recommendations are demonstrated in Chapter 7.

An illustration of this iterative process and its components is shown in Figure 4-1 below:
Figure 4-1: Overview of Complete Streets Planning Process
Stage 1) Process Initiation

Support and Opportunity

“Support and Opportunity” is made up of a variety of sources that may trigger the desire or need for carrying out the evaluation process described in this document. They can be categorized into three broad types:

- Agency Objectives
- Stakeholder Support
- Funding Opportunities

These sources will not only initiate the process but will establish priorities, will be checked against during process development and will ultimately determine the “Support and Opportunity” on final recommendations and implementation.

For example, these sources may be referenced at the beginning in the case where funding has been identified and agency and/or community support has been expressed for specified corridors or types of improvements. They may be referenced at any point of the conceptual development or evaluation of the process to make sure objectives are met and recommendations are within funding limitations. These sources may also be applied at the end of the process, after conceptual development and corridor ranking has been evaluated. They are essentially the decisive factors for determining whether any improvements are actually completed or the timeframe they are completed in. “Support and Opportunity” is discussed in more detail in Section 4.2 of this chapter.

Candidate Approach

Once “Support and Opportunity” sources initiate the desire for the process, a “Candidate Approach” should be established. There are various scenarios that may be driving this evaluation process. The “Candidate Approach” considers the scenario that initiated the process and establishes the number of corridors to be evaluated. This is followed by an evaluation of two principal planning components that will each be applied to that approach. “Candidate Approach” and some sample scenarios are discussed in more detail in Section 4.3 of this chapter.

Stage 2) Evaluation and Development

As the project team reviewed best practices and case studies of numerous cities implementing Complete Streets in their communities, there were a wide variety of factors used for evaluating or ensuring the success of the projects or programs. However, even though all the different evaluation factors varied, in general it came down to one principal factor: recommended improvements for successful programs should have greater benefits in comparison with the costs for implementing them.
Typically a benefit to cost ratio can be developed for a specific project by converting all the benefits and the costs into monetary values and then calculating the ratio. If the benefit/cost ratio is 1.0 or greater, the project or recommended improvements are determined to be worthwhile. If the ratio is less than 1.0, the costs of the improvements likely outweigh the benefits received and the project may not move forward. Still, other stakeholder and politically based factors may have influence on this final decision.

However, for the purpose of this study, a comprehensive benefit to cost ratio evaluation approach may not be practical for every corridor under consideration. There is a lot of information that would need to be available for this determination such as the expected change in mode use after improvements, the monetary value of health benefits, forecasted increases in sales from surrounding businesses or reduction in air pollution emissions as a few examples. Additionally, the planning approach may actually be for numerous or all corridors in the city and not just for single corridor.

This report provides a method to evaluate corridors using a general benefit to cost comparison, one that is more manageable but still effective for the level of planning applicable to this study.

Component 1 – Evaluation and Benefits
Under Component 1 (Chapter 5), candidates are evaluated for potential demand, need and compatibility, which translate into potential benefits. It presents a method to evaluate the success of implementing various Complete Streets improvements within single or multiple corridors. If desired, it also provides guidelines for a relative comparison or ranking in their demand and compatibility of corridors when prioritization or competitive selection is necessary. During progression of Component 1, applicable sources from “Support and Opportunity” may be referenced as part of the evaluation.

Component 2 – Concept Development and Costs
The goal of Component 2 is to provide guidelines for selecting Complete Streets elements and phasing (Chapter 6). Possible concepts and phasing levels are developed for candidates, which translate into potential costs. The component presents a method to categorize corridors into a transportation context and evaluate the Complete Streets zones and elements most applicable and beneficial for that specific category or sample corridor. Possible ultimate cross-sections are developed in this component and different levels of implementation may be determined. This component is applicable for a single candidate corridor or once candidates have been prioritized to a manageable number, where concepts can be developed for each. During progression of Component 2, applicable sources from “Support and Opportunity” may be referenced as part of the concept development.
Stage 3) Recommendations
The final goal is to present recommendations for implementation that will meet priorities established by agency objectives and stakeholders as well as the funding opportunities. The remainder of Chapter 4 will discuss more details of “Support and Opportunity” and “Candidate Approach”. Chapters 5 and 6 of this report will lay out the guidelines to complete this process with the intent of accomplishing these separate but inter-connected objectives. These chapters are followed by a demonstration of the process using actual streets in Henderson for evaluation and conceptual design.

Best Application of Available Resources
The level at which evaluation and development factors are considered, or if they are applied at all, will be dependent on priorities and existing resources. Their application is limited by what may be currently accessible or the resources available to obtain and process the information. For example, bicycle and pedestrian counts may not be readily available for all corridors. Completing a full analysis of criteria such as conflict points or a road safety audit may be outside the available funding. Completing an analysis for every residential area along a subject corridor using the COH Connectivity Index may not be practical and typically will not provide an increased level of decisive information compared to the effort. The City of Henderson will allocate available resources in a way that will be most beneficial to the project and the objectives of the funding source, public agencies, the affected community and other stakeholders involved.
4.2 Support and Opportunity

The overall planning process involves an evaluation of the “Support and Opportunity” for implementation of proposed Complete Streets enhancements in the City of Henderson. As stated in the overview, there are three general sources that may trigger the desire or need for carrying out the process described in this document. These sources will establish priorities for the decision process during evaluation and development and will ultimately determine the “Support and Opportunity” for final recommendations and implementation:

- Agency Objectives
- Stakeholder Support
- Funding Opportunities

“Support” considers Agency Objectives and Stakeholder Support. The existing published positions and policy adopted by the COH and the RTC show the level of existing support for any recommended improvements. Additionally, Stakeholder Support is determined from the surrounding community. “Opportunity” in this chapter indicates potential funding sources that may be available, as well as the opportunities for fitting the construction work into the schedules of existing improvement or maintenance plans and schedules.

As demonstrated in Figure 4-1, these sources may be referenced at various points throughout the evaluation or development. It may come into play at the very beginning of the process if funding has been identified and agency and/or community support has been expressed. It may also be reviewed as different corridors and conceptual designs are evaluated and developed. Finally, “Support and Opportunity” elements may be reviewed at the end of the process to validate final implementation. The decisive factor determining whether any improvements are actually completed, or the timeframe they are completed in, comes from having the “Support and Opportunity” described in this chapter.

Figure 4-2: Three Sources of Support and Opportunity
Agency Objectives

The desire or need to initiate a Complete Streets evaluation for a corridor, or set of corridors, may come from within the City of Henderson or from the RTC. Published positions currently in place or developing are a demonstration of the existing support for implementation of any Complete Streets improvements and will influence the concept development. The section that follows provides a brief summary of agency support in terms of plans, policy and standards that either exist or are being considered for future implementation for Southern Nevada and the City of Henderson.

RTC Objectives

The final report for the RTC Complete Streets Study was approved by the Board in June 2012. During the same meeting, the RTC adopted their Complete Streets Policy. This policy consisted of the following elements:

- Vision
- Complete Streets Definition
- Complete Streets Attributes
- Goals
- Objectives
- Complete Streets Policies
- Reimbursement of Costs

RTC Policy Goal

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 document includes seven “Complete Streets Policies” that were adopted as a part of the overall policy:

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.

Following approval of the study and policy, the RTC worked with local entities to develop a design manual to further this goal. In March 2013, the RTC Board adopted the Complete Streets Design Guidelines for Livable Communities manual for use in the development of Complete Streets in Southern Nevada. This design manual has been adopted as design guidance for the region and is suitable for both local and regional agencies to use as guidance on how to apply Complete Streets principles to the planning and design of streets.

It is not the intention of the manual to prescribe how to design every segment of every street. It is important to clearly identify the transportation context and goals of the community and corridors. The suggested policies set forth in this manual are intended to compliment the RTC Complete Streets Policy. These reports identified some potential action items to follow. Some of these action items are listed below and are already in progress. In addition to the RTC adopted documents and policy, this list includes regional plans and standards that should be referenced when evaluating and developing Complete Streets enhancements in the City of Henderson.

- Incorporate Complete Streets strategies into the narrative developed for the Regional Transportation Plan.
- Revise the Uniform Standard Drawings to reflect various Complete Streets design concepts.
- Assist any Southern Nevada jurisdictions desiring to update their long-range planning documents and zoning codes with Complete Streets elements.
- Additional funding goals were also included, and are described in more detail in the section below titled “Funding Opportunities”.

City of Henderson Objectives

When selecting the types and level of enhancements to incorporate into a corridor, it’s important to review the future objectives and other priorities established or desired for that corridor.

Future objectives that should be considered are master plans or comprehensive plans for RTC and the City of Henderson regarding
future land use and street, bicycle and pedestrian networks. Funding plans or street rehabilitation and maintenance cycles may also be included in this consideration.

Streets are often viewed as primarily providing a channel of transportation. However, they can also serve other functions for the community. Other priorities may include consideration for green streets, economic development, healthy communities and historic preservation to name some examples. Streets may serve the function of encouraging healthy habits and exercise, beautification, increasing property values, neighborhood or downtown revitalization, sustainability, safe routes to school, equestrian paths and special populations.

The City of Henderson provides significant support for a Complete Streets program in their existing official documents. As an example, the following relevant principals and policies are included in the Henderson Comprehensive Plan (2006).

**Principles for Building Community through Connected Places**
Three principles were developed by the City of Henderson to encourage “Building Community through Connected Places”. These principles focus on:

- Ensuring connections at the local and regional levels through local streets and sidewalks that link neighborhoods together.
- Promoting development of public transportation and land uses to support it.

**Principle 1: Neighborhoods will be connected through local streets, sidewalks, and trails.** New developments should provide local street, pedestrian, and bicycle connections between neighborhoods and to services, parks, and transit. This principle includes policy language for the following:

- New Developments Provide Multiple Options for Travel
- Neighborhood Streets Kept as Local Streets
- Pedestrian and Bicyclist Activity Promoted
- Connected Community Design
- Connected Trail System
- Compatible Infill Includes Pedestrian Linkages to Existing Networks

**Principle 2: Our arterial street system will foster connectivity to destinations around the community.** This principle includes policy language for the following:

- Efficient Arterial Streets
- Amenities for Arterial Streets
Principle 3: Community destinations will be linked by transit and a balanced transportation system. Our transportation network will include a balanced system of roadways, regional transit, and bicycle and pedestrian facilities. This principle includes policy language for the following:

- Transit Linkages
- Public Transit Accessibility & Connectivity
- Coordinated Master Transportation Plan

City of Henderson 2012 Green Report
As an example of “other priorities” to be considered, the City of Henderson developed the 2012 Green Report to promote community-wide sustainable practices with the “Our Henderson” program. The “Transportation Section” of this report provides the following summaries supporting Complete Streets:

Transportation Section
Master Streets and Highways Plan Update
The Master Streets and Highways Plan establishes policies and design criteria for coordination of streets and highways with the location of trails for pedestrians and cyclists. The updated Plan provides for dedicated bike lanes for cyclists on all major roadways to increase safety and comfort.

Sidewalk Improvements
Students at Smalley Elementary School and Mannion Middle School can now travel safely to class thanks to a federal grant. Children walking and riding their bikes to and from school were forced to share a 5-foot sidewalk or rode their bikes on busy Greenway Road. The grant funded the installation of 1,300 feet of eight-foot wide paved multi-use path on the easterly side of the roadway that walkers and cyclists can now share.

Boulder Highway Bus Rapid Transit
The Boulder Highway Bus Rapid Transit System began daily service in late 2011 with extended service to the Nevada State College campus and the Water Street District in downtown Henderson. System improvements include shade shelters and bus stops with additional curb height for direct entry into the buses. In addition, the transit vehicles are equipped with
electronic transmitters that communicate with traffic signals along the corridor to ensure more efficient circulation and reduce overall travel times.

**Safe Routes to School**
The City received a federal grant to enhance walking routes to schools in the Highland Hills neighborhood. The project replaced 182 handicapped access ramps to create a walking route that is fully compliant with ADA standards. These improvements also enhance the neighborhood by improving pedestrian access to O’Callaghan Park and the College of Southern Nevada.

**Development Design Standards**
The City of Henderson has also adopted a comprehensive set of development design standards that should be referenced when considering any Complete Streets enhancements. Chapter 19 of the Development and Design standards, officially cited as the “Development Code of the City of Henderson, Nevada”, includes code that supports Complete Streets development. The following is a summary of City of Henderson code from Chapter 19.7 discussed in the RTC Complete Streets Study:

- 19.7.3 – Circulation and Mobility. This section’s purpose is to “promote the creation of a highly connected transportation system.” There are subsections 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 included.

- 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.

**Stakeholder Support**
The desire or need to initiate a Complete Streets evaluation for a corridor, or set of corridors, may also come from community stakeholders. Potential sources may include:

- Private residents
- Commercial stakeholders
- Community advocate groups
- Political leaders
Understanding the community and what they would like to see in the City of Henderson is an important part of the process. This information may come from previous outreach activities on various projects or public interaction involving development. It can also be gathered from a new community outreach plan specific for refining the next steps from this study. When appropriate, input from these stakeholders may be solicited throughout the development and implementation process. An outline for a possible Community Outreach Plan was developed for the City of Henderson Complete Streets Program and is included in the last chapter of this report discussing “Next Steps”.

**Funding Opportunities**

**RTC Complete Streets Funding Program**

The RTC has led the regional initiative for a Complete Streets Program with the goal of funding related improvements in Southern Nevada. The Regional Transportation Plan (RTP) provides a regional basis for transportation decisions. It identifies strategic transportation investments that the RTC plans over the next 20 years. Projects scheduled to be funded in the next four years are listed in the Transportation Improvement Program (TIP). Projects scheduled to receive local funding are identified in the RTC’s Capital Improvement Program. Roadway projects eligible for local funds are required to be on the agreed Master Plan of Streets and Highways.

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**Role of the RTC in Complete Streets Funding**

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 whenever necessary.

As outlined in Figure 4-3, the RTC Regional Complete Streets Study presents a general process for jurisdictions to receive funding for Complete Streets projects. This report provides the City of Henderson with an evaluation process to identify its best candidates for the application of potential RTC funding. This RTC Study also outlines “Eligible Activities” for the RTC Complete Streets Program:

**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.

**Sources of Funds**

The RTC Regional Complete Streets Study identifies general action items recommended for funding the program:

- Target 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 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.

![RTC General Process for Complete Streets Funding Selection](image-url)

*Figure 4-3 - RTC General Process for Complete Streets Funding Selection*
The following are potential sources of funds for the RTC and City of Henderson Complete Streets Program. These may fund Complete Streets projects, either as stand-alone projects or accomplished in unison with typical roadway improvements:

- 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)
- Federal Transit Administration
- Clark County Fuel Revenue Index
- Capital Improvement Programs
- Potential local fund sources and investment from local businesses, community, universities and other stakeholders

Although available funding may come from various sources with separate priorities, most can be applied at some level to Complete Streets enhancements. However, it is important to keep in mind that each fund source, whether federal or local, has its own specific objectives and limitations.

For instance, some Complete Streets aspects such as road diets or speed reduction of roadway segments may face obstacles qualifying under the CMAQ Program due to potential air quality conflicts from these changes. Although a goal of Complete Streets enhancements is to increase transportation mode share, they may increase motorist traffic. Further study involving traffic modeling and simulation may be required to demonstrate qualification under this program. Otherwise, other federal or local funding pursuits may be more practical. On the other hand, CMAQ was utilized through the RTC’s Alternative Transportation Mode Master Plan Working Group for funding bicycle improvement projects. Roadways were evaluated for installation of bicycle lane routes with the goal of improving the regional bicycle network. As another example of federal funding, the U.S. Department of Transportation’s TIGER Program is a recent federal discretionary fund that has been used toward Complete Streets implementation within Water Street in Henderson.

The RTC Policy for Complete Streets, adopted 2012, also discusses improvements that may be eligible for a “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.

**Clark County Fuel Revenue Index Opportunities**

In September 2013, the Clark County Board of Commissioners approved an ordinance that will index the fuel tax. The ordinance went into effect on January 1, 2014 and will remain in place through December 31, 2016. It will result in an approximate three-cent
increase per gallon of gas per year. This initiative created bonding capacity to generate a substantial amount of revenue for transportation related infrastructure improvements throughout the Southern Nevada region. Many of these projects are located within the City of Henderson include design elements of Complete Streets.

**Capital Improvement Plan Opportunities**

Complete Streets implementation does not need to occur all at once with a large federal funding source. Improvements can also take place incrementally by having roadway maintenance projects foster implementation plans. The City of Henderson has used this strategy by having Complete Streets improvements incorporated into projects identified in its Capital Improvement Plan (CIP).

The City of Henderson publishes its CIP on an annual basis as a plan for all municipal capital expenditures. The 2013 publication covers projects planned from July 1, 2013 through June 30, 2019. Operations and Maintenance costs are also estimated for new capital projects.

**Integrating Complete Streets Elements Into All Projects**

> 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. RTC encourages 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.

- RTC Complete Streets Study, 2012

The City of Henderson strongly supports making enhancements within the scope of its CIP because of the potentially high benefit to cost ratio. The City can also take advantage of existing project schedules so Complete Streets enhancements can be completed in a timely and effective manner. For example, they may turn a sidewalk repair project into an enhanced pedestrian facility, or use a repaving project to implement a road diet and stripe new bike lanes. Although all levels and phases of improvements may be considered during the COH Complete Streets Process, the
evaluation should consider how the benefits compare to costs, especially when there is opportunity to include enhancements like these.

4.3 Candidate Approach and Scenarios

After the process has been initiated by one or more of the “Support and Opportunity” sources, the next step in the planning process is to determine the “Candidate Approach”. This involves selecting the candidates to evaluate for Complete Streets enhancements. The purpose of this part of the process is to set the foundation for how the principal components are applied and their priorities within the process. Although there are various scenarios that exist, the approach can be defined by three general categories:

- Single Candidate Corridor
- Select Multiple Corridors (manageable number)
- City-Wide Evaluation (large number)

The City of Henderson, through a previous process, may have set aside funding to implement Complete Streets improvements for a single specified corridor, such as the Horizon Drive segment from I-515 to Boulder Highway. COH may also have several corridors already in mind that appear to be good candidates for evaluation. The City may also wish to begin development of a comprehensive Complete Streets program involving all principal corridors in the city. Whichever “Candidate Approach” is selected, it will be important to consider the time and resources available to the COH when determining the level of evaluation that is practical.

Single Candidate Corridor

When the Single Candidate Corridor approach is taken, it could mean an internal evaluation has already been performed and possible funding already allocated. Since there are no other candidates in competition, Component 1 “Evaluation and Benefits” possibly could be skipped in the process. However, it is recommended that a portion of the steps for this component still be completed for validation, if further evaluation is desired or even comparative ranking against other corridors in future analysis. Additionally, the information acquired will be helpful for determining the most appropriate enhancements to make during the process of Component 2 “Conceptual Development and Cost”.

Select Multiple Corridors

When there are only a select number of corridors, COH may still utilize a more comprehensive process as outlined in Chapter 5 for Component 1 “Evaluation and Benefits”. Available information may be applied for completing a competitive evaluation and ranking for these select corridors. However, time and resources will determine the limitations on what factors are included in the evaluation.
City-Wide Complete Streets Program
When considering all applicable corridors located in the city, it can be highly time-consuming and inefficient to attempt to run them all through a comprehensive level of Components 1 and 2. Therefore, this process includes steps for conducting a broad level of benefit/cost analysis. These steps utilize certain city-wide evaluation factors that can be more efficiently applied to create their own respective rankings. These rankings can then be cross-referenced to create a narrowed, manageable list of “Select Multiple Corridors” for further development and evaluation.

Example Scenario Applications

Scenario: A corridor already listed in COH planning document with set funding amount, or a potential for funding has been identified for a specified corridor.

Support and Opportunity: Agency evaluation may have already been addressed, but can be revisited as necessary. Funding is typically already allocated but an evaluation will be required for what levels of enhancements can be implemented with the available potential funding. Alternatives may be presented to the funding sponsor and to the community for feedback as applicable.

Candidate Approach: Single Candidate Corridor

Component 1 Evaluation and Benefits: This component possibly could be skipped since the corridor has already been identified for enhancements. However, the process could still be completed for validation or comparative ranking of future corridors.

Component 2 Concept Development and Costs:
1. Develop possible ultimate outcome cross-sections
2. Determine potential and applicable phasing (Enhancements Levels 1 through 3)

Alternative Evaluation: Rerun process with any alternative outcomes.

Scenario: COH wishes to implement improvements in unison with Capital Improvement Program funding and schedules.

Support and Opportunity: Follow CIP guidelines as described in the document. Determine CIP timelines and general levels of enhancements that can be implemented with the available funding for each corridor. Determine if any other funding will be available to supplement CIP funding. Agency evaluation may have already been addressed but should be revisited as necessary. Alternatives may be presented to the community for feedback as applicable after completing Component 2 development.

Candidate Approach: Select Multiple Corridors
**Component 1 Evaluation and Benefits:** Utilize Component 1 to prioritize corridors and levels of enhancements that can be completed with CIP funding.

1. Determine demand and need for all applicable CIP corridors.
2. Evaluate compatibility of each applicable level.

**Component 2 Concept Development and Costs:**

1. Develop possible ultimate outcome cross-sections
2. Determine potential and applicable phasing (Enhancements Levels 1 through 3)

**Alternative Evaluation:** Rerun process with any alternative outcomes.

_Scenario: RTC announces funding availability for Complete Streets improvements to be awarded to highest ranking corridors in Southern Nevada._

_Support and Opportunity:_ Agency evaluation may have already been addressed internally with COH during development, but an application would be made to the RTC with the refined list and design concepts for possible competitive evaluation with other agencies to determine regional funding distribution. Alternatives may be presented to the funding sponsor and to the community for feedback as applicable.

_Candidate Approach:_ City-Wide Complete Streets Program

**Component 1 Evaluation and Benefits:** Run corridors through the Component 1 City-Wide Process to complete a broad benefit/cost analysis for evaluation or comparative ranking so a refined list of candidates can be advanced to Component 2.

1. Develop demand and need prioritized list
2. Develop ranked list of Complete Streets compatibility
3. Cross-reference the lists for a refined list of “Select Corridor Candidates”

**Component 2 Concept Development and Costs:** Run each of the “Select Corridor Candidates” through the Component 2 Process.

1. Develop possible ultimate outcome cross-sections
2. Determine potential and applicable phasing (Enhancements Levels 1 through 3).

**Alternative Evaluation:** Rerun process with any alternative outcomes.
Chapter 5
Component 1
Evaluation and Benefits
CHAPTER 5:
EVALUATION AND BENEFITS

5.1 Benefits of Complete Streets

One major component for implementing Complete Streets enhancements in the City of Henderson is developing a process for determining the appropriate elements to be used on a specific corridor or street segment. This process, as discussed in Chapter 6, provides guidelines for recommended cross-sections and design layouts. However, this process should not be applied across all streets or corridors in the City equally or simultaneously. Different corridors will produce different kinds and ranges of benefits from Complete Streets enhancements. The benefits for each corridor will vary with potential funding or improvement timetables. A primary step is to develop a tool that will guide COH in evaluation of the streets or corridors for implementation of this process. This chapter discusses the development of this tool and recommendations for utilizing it.

As the project team reviewed best practices and case studies of numerous cities implementing Complete Streets in their communities, there were a wide variety of factors used for evaluating or ensuring the success of the projects or programs. However, even though all the different evaluation factors varied, in general it came down to one principal factor: recommended improvements for successful programs should have greater benefits in comparison to the costs for implementing them. The Resource Book included in the appendix of this report contains documents that demonstrate a correlation of the following benefits for a community due to Complete Streets improvements.

Safety
When Complete Streets are implemented with careful design considerations, the improvements can greatly improve safety and reduce accidents.

Increased Transportation Choices
Complete Streets improvements by definition and according to best practices policy, provide users with multiple options for traveling to their destinations and can increase capacity of a corridor.

Economic Revitalization
Several documents demonstrate a correlation to increased economic benefits to a community due to Complete Streets improvements. With an increased attraction to a corridor due to multi-modal routes, improved access and efficiency to work and leisure destinations, the corridor will often experience a rise in private investment along the corridor.
Environmental Benefits
Providing alternate modes of travel beyond just the automobile helps to reduce congestion, air emissions and dependency on non-renewable fossil fuels. It also decreases the need for accommodating the land use footprint from parking associated with vehicle travel.

Public Health
Complete Streets can greatly reduce motor-vehicle-related injury and deaths. In addition it provides users with facilities that encourage walking, cycling and in general increased physical activity, which has a significant impact on reducing rates of obesity, diabetes, heart disease, stroke, and other chronic health conditions.

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.

As more people are seeking a healthier lifestyle with varied exercise and mobility options, the transportation network provides opportunities for this to occur. In most American cities and towns that developed in the 20th Century, transportation facilities were built primarily to expedite automobile travel. Now, health conscious, community-oriented people are looking for their community leaders to bring in new facilities that are friendly to pedestrians, bicyclists, and transit users, as well as regular motor vehicle users. People are not just looking for the fastest way to get from Point A to Point B; they are looking for a route that allows them a healthy, active experience involving fresh air and exercise with their families and friends. Community members that are environmentally conscious are also looking for ways to make respective improvements in transportation with hybrid vehicles or choosing non-motorist modes of travel. Business owners understand the benefits of attracting employees and consumers through safe, efficient and alternative travel mode options.

5.2 Evaluating Benefits in this Study
This study team first began by listing the main factors typically utilized by other successful programs for evaluating Complete Streets and then grouped these factors into three principal categories. Evaluating these three principal factors seems logical for the process and would generally be the first components of the overall process for evaluating potential benefits:

1) Demand for Complete Streets implementation
2) Need for Complete Streets implementation
3) Compatibility for Complete Streets implementation

Complete Streets improvements can be applied in some degree to any street. However, if there is very limited or no demand, need or
compatibility for improvements, such as in undeveloped or industrial land use areas, then funding would be better spent elsewhere.

By evaluating these three principal factors, COH will essentially be evaluating which projects have the greatest potential for benefits. The higher the demand and need for improvements, and the more compatible the corridor is for recommended improvements, the greater potential for users to take advantage of them which translates into a greater positive effect or resulting benefits as well as an increased chance of success and stakeholder consensus.

The Project Team reviewed best practices from various cities to determine what factors and criteria are most applicable for evaluating demand, need and compatibility for Complete Street components. Next the list was compared with the guidelines recommended by the RTC in the Regional Complete Streets Study. Appendix E: Evaluation Factors for Complete Streets Compatibility of the RTC Complete Streets Study discusses five general evaluation factors.

- Connectivity
- Safety
- Roadway Design
- Mobility
- Land Use Context

These factors were not fully developed at the time because the RTC wanted to leave this flexibility for each jurisdiction to further develop the criteria and evaluation process in a way that most appropriately fit their objectives and the characteristics of their own community.

One of the greatest challenges in developing a tool of evaluation factors is using general categories where criteria for one category could easily be applicable or influence the evaluation of another category. For example, determining gaps of bicycle or pedestrian facilities along a corridor could be considered a criteria point factor under the Connectivity, Safety or Mobility categories, depending on how each are defined. Another example is vehicle traffic (AADT) which could be evaluated under Safety or Land Use Context. While a higher volume of traffic indicates a high intensity corridor and possibly more potential for converting vehicle users to other modes, it is also a drawback in terms of poor compatibility due to safety for the non-vehicle mode options.

Flexible Dynamic Decision Process
The goal of this study is not to create a rigidly structured decision process, but rather a flexible one that considers the primary factors for success with flexibility for the planning leaders to apply these in harmony with their own evolving objectives for the community.
The development process for the evaluation factors was an iterative one through a combination of best practices, RTC’s previous work, COH applicability trial-and-error case studies and feedback from the current study group. Figure 5-1 illustrates how the preliminary list of evaluation factors was integrated into the three overall principals containing the five general RTC evaluation factors and then further developed to create an overall tool for applicability to the City of Henderson Complete Streets Evaluation Process.

The following sections describe Component 1 Evaluation and Benefits and the specific factors that can be utilized for corridor evaluation and ranking. Each of these factors can then be rated from low to high for each corridor in order to create a relative ranking. The table at the end of this section is an example of how the evaluation factors could be integrated into a consolidated corridor ranking system.
Figure 5-1: Component 1 – Evaluation Factors
5.3 Evaluating Demand for Complete Streets

Henderson experienced a dramatic population growth from 1950 to 2010, as shown in Table 5-1. Along with this increase in population and increased demand for moving people, the demand for various modes of travel has increased as well.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Population Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>5,717</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1960</td>
<td>12,525</td>
<td>6,808</td>
<td>119%</td>
</tr>
<tr>
<td>1970</td>
<td>16,400</td>
<td>3,875</td>
<td>31%</td>
</tr>
<tr>
<td>1980</td>
<td>23,376</td>
<td>7,976</td>
<td>49%</td>
</tr>
<tr>
<td>1990</td>
<td>64,942</td>
<td>40,566</td>
<td>166%</td>
</tr>
<tr>
<td>2000</td>
<td>175,381</td>
<td>110,439</td>
<td>170%</td>
</tr>
<tr>
<td>2010</td>
<td>257,729</td>
<td>82,348</td>
<td>47%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

The potential demand for Complete Streets improvements along a corridor is determined by the sources of possible users and the density of travel destinations attracting those users. This is referred to as **Land Use Intensity** in this report and the related factors for evaluating it are described in the section that follows.

**Land Use Intensity**

Land Use Intensity is a factor made up of various indicators for potential use of Complete Street improvements. It is composed of various sub-factors that indicate how much activity is surrounding a certain corridor and how many attractors exit to generate trips. The more activity and attractors, the more people of the community are traveling between locations and are interested in having different options to reach their destinations. Various modes of travel have various unique advantages, making some more fitting for different destinations and land uses. The following sub-factors are included for determining Land Use Intensity for a specified corridor.

- **Residential Density**, involves evaluating sub-areas for their density of housing units and then determining the level of residential density surrounding specified corridors.
- **Commercial Density**, involves identifying the number of businesses along the street network and then determining the level of commercial density surrounding specified corridors.
- **Other Attractors Density**, involves identifying attractors such as schools, parks, recreational centers, golf courses and trails and then determining the overall level of these “other attractors” surrounding specified corridors.
- **Traffic**, involves evaluating auto, bicycle and pedestrian counts that are available or that can be obtained to determine...
existing traffic for each mode along specified corridors. Bicycle and pedestrian counts may not be readily available for all corridors and therefore may not be applied.

- **Transit Ridership**, involves identifying ridership numbers for routes with stops located on specified corridors to determine the level of transit riders that will most likely benefit from multi-modal connections from the transit stop to their final destination. However this criterion may not be applied if it appears to be reflected by residential and commercial density.

In general, the higher density of residential and commercial land use, the greater the intensity of the area and the greater demand for multiple modes of travel. Additionally, areas that have a higher density of "other attractors" will typically be an indicator of greater demand. These residential, commercial and other attractor areas provide both origination points for multi-modal demand and destination points of the community. Areas with higher industrial or undeveloped land use will have lower demand for Complete Streets in comparison.

This study utilized existing maps or developed new maps with existing data to demonstrate the evaluation factors and the process. When available, projected data for future years should be utilized as well. Projected densities or planned land use is very important for determining the demand for enhancements that will have long-term impacts and ensure greater benefits for the community.

### 5.4 Evaluating Need for Complete Streets

While the demand for Complete Streets improvements is based on land use intensity, there may also be areas where there is an opportunity for improvements due to the desire for increasing safety and security or for increasing mobility and closing gaps between various facilities. This study includes evaluation criteria that review corridors for these areas and determines the “Need for Improvements”.

#### Safety & Security

Another principal evaluation factor that should be reviewed when considering corridors and improvements is the safety and security of traveled areas. Safety in this context refers to decreasing possibilities for accidents as much as possible, while security refers to decreasing possibilities for intentional harm coming from theft or other crimes. The following three sub-factors can be evaluated for determining the level of Safety and Security for a specified corridor:

- Conflict Points / Road Safety Audits
- Crash History and Highway Safety Manual
- Security
Conflict Points and Road Safety Audits
One way to determine if there is an opportunity for safety improvements is to perform a Road Safety Audit and/or evaluate the number of conflict points currently existing in the corridors and their intersections. Conflict points for recommended improvements should be analyzed as well. Adding pedestrian and bicycle improvements to a corridor may have several benefits, but if not implemented with careful considerations, they can easily increase the number of conflict points and safety concerns. The greater the number of existing conflict points, the higher rating the corridor would receive for potential safety design improvements.

Crash History and the Highway Safety Manual
Another useful tool can be to review available crash history for a corridor or its intersections. Sometimes this information is collected for each intersection and sometimes it is collected in terms of crashes per mile. Depending on the goal for the corridor however, the mode type of crashes will influence this evaluation. COH may determine applicability and priorities when determining which modes are evaluated in the crash data. For instance, information often focuses primarily on vehicle to vehicle crashes and may not necessarily involve pedestrians, bicyclists or transit users. This data may not be clear indicators of where the potential safety improvements are highest in demand for all modes. When the crash data is available for additional modes, this will help to evaluate the needs for Complete Streets improvements more comprehensively for the corridor. The more history of crashes, the higher rating the corridor would receive for potential safety design improvements.

It is also important to consider the potential benefits in safety improvements resulting from the specific enhancements being reviewed. One tool that may be used to evaluate safety is the AASHTO Highway Safety Manual (HSM) which was “developed to help measurably reduce the frequency and severity of crashes on American roadways by providing tools for considering safety in the project development process. The HSM assists practitioners in selecting countermeasures and prioritizing projects, comparing alternatives, and quantifying and predicting the safety performance of roadway elements considered in planning, design, construction, maintenance, and operation.”

The HSM includes factors that can be applied to demonstrate improved safety conditions by implementing Complete Streets elements into roadway design. However, the document is still a developing tool and good engineering judgment should always be considered with application of this manual.
Security
One of the principal factors that influence whether potential users decide to use a specific mode choice, is the comfort level they have in using that option. The more security concerns with a corridor for its existing or planned facilities, the higher rating it would receive for potential improvements.

Security concerns occur in areas where there is inadequate lighting, low activity areas, unsheltered areas or known high crime areas with inadequate protection. All these items will not be practical or applicable for all types of enhancements, but appropriate considerations should be made. For example, a transit center that provides good lighting, security staff, camera surveillance and locking storage facilities for bicycles is an example of good security. However, all these same items would not be practical for bike lanes or pedestrian facilities on the same corridor.

Mobility
Mobility is a factor that evaluates the ability to move all applicable modes for the corridor based on existing conditions or planned facilities. It means having complete and adequate connections for all modes from one end of a corridor to the other, or from one major destination to another. This includes transit stops as a form of an origin and a destination. This factor involves identifying gaps and filling them in with the appropriate connections. It also can be an evaluation of where enhancements can be made beyond just meeting minimal requirements. The greater the deficiency of mobility along a corridor, the higher the rating it would receive for potential improvements. A Mobility evaluation may include the review of the following items:

- Master pedestrian and bike plans and street designations
- Bicycle facility gap analysis
- Pedestrian facility gap analysis
- Number of existing or planned transit routes
- ADA requirements and opportunity for enhancement

5.5 Evaluating Compatibility for Complete Streets
The Compatibility for Complete Streets improvements along a corridor is broken into two general categories: Roadway Design and Connectivity. It’s important to note that although the criteria items listed in this section may demonstrate incompatibility for all modes to be included within a corridor, it does not necessarily eliminate the corridor for Complete Streets enhancements. At times, full improvements may still be possible. These may be more compatible with changes such as reducing speed limits, purchasing additional right-of-way (ROW) or with appropriate changes to transportation policy. Although these changes may be very costly or require significant effort, they should be considered when there is strong
community and political support. Alternatively, minor improvements may be implemented easily and receive a higher rating for compatibility or a benefit/cost ratio than the implementation of full improvements. All applicable levels of improvements should be evaluated for compatibility.

**Roadway Design**

Roadway Design is a factor used to evaluate potential benefits of enhancements because improvements that are most compatible with the corridor design typically have more users attracted to utilize these improvements. This section provides guidance on evaluating the corridor for implementing Complete Streets in general. However, compatibility in Road Design can also indicate ease of construction and may be related to costs, therefore this factor should be referenced again once specific enhancements are recommended from the process outcome in Chapter 6.

The primary factor to determine compatibility of a corridor for Complete Streets enhancements is the geometric design of the roadway. This involves an evaluation of right-of-way (ROW) constraints, number of existing traffic lanes, posted speed limits and volume/capacity ratios. The more the design has flexibility for road-diets or multiple modes of travel to be included along the corridor, the higher rating it would receive for Complete Streets compatibility. The following items may be considered when evaluating compatibility from roadway design.

- **ROW Constraints**, involves identifying the existing, master planned and/or potentially available right-of-way for a corridor to assess the ability to add new or expand existing multi-modal facilities.
- **Traffic Lanes**, involves an assessment of the number of lanes within a corridor. Generally, a corridor with a higher number of lanes is already auto-oriented and less compatible for additional modes of travel. A corridor with less than three vehicle lanes will have more compatibility to include alternate vehicular modes. It is important to note
- **Traffic**, involves reviewing the existing AADT for the corridor. Generally, a corridor with higher traffic volumes is already auto-oriented and less compatible for additional modes of travel. A corridor with lower vehicle traffic volumes will have more compatibility to enhance alternate modes.
- **Posted Speed Limits**, involves identifying the speed limits currently assigned for vehicles traveling along the corridor roadway. Generally, a corridor with higher speed limits is already auto-oriented and less compatible for additional modes of travel. A corridor with lower vehicle speeds will have more compatibility to safely include alternate modes.
- **Volume/Capacity (V/C) Ratios**, involves determining the current or forecasted traffic volumes along a specified corridor segment and comparing this to the capacity of traffic for the same corridor segment. Generally, a corridor with higher V/C ratios is already congested having a lower Level of Service (LOS) and cannot lose existing vehicle travel lanes. Segments with lower V/C ratios present some opportunity for road-diets, and/or other Complete Streets enhancements, by reducing the width or number of lanes along that corridor, without sacrificing an acceptable LOS. This creates the possibility to add new or expand existing multi-modal facilities within the existing right-of-way limits.

During the evaluation of potential improvements, it is important to consider the different implications from adding a new mode versus enhancing an existing mode. The review should consider factors such as Agency Objectives (including master bike plans) and the costs of the improvements against the benefits.

It is also important to note that all appropriate enhancements should be considered as part of the process in this study (Component 2, Conceptual Development, Enhancement Phasing). Roadways having a higher number of traffic lanes, higher volumes and higher speeds do not eliminate opportunities for enhancements. However these road types may require more costly enhanced facilities and treatments to ensure safety and comfort of all modes.

### Connectivity

Connectivity indicates increased benefits because a traveler can easily and efficiently move from one place to another using a variety of travel routes and modes. A connected network involves an appropriate number of access points from a neighborhood to an arterial. It also includes access throughout the city or region with interconnected roadways and parallel streets that are friendly to all transportation modes. Good connectivity also means minimal access barriers such as fences, property walls, drainage facilities or utilities.

For the purpose of this study, connectivity will be evaluated in terms of compatibility for the Complete Streets enhancements being evaluated. Therefore, connectivity can be applied in various ways in this planning process. Flexibility is important, so several methods for including connectivity are incorporated, ranging from the corridor-specific level, to a system level and finally at a regional level. The application of these methods will be dependent on the objectives or the enhancements being evaluated. The following section describes compatibility with three levels of connectivity criteria:

- Corridor connectivity and accessibility
- System connectivity and capacity
- Regional connectivity
Corridor Connectivity and Accessibility

Generally, good connectivity to a corridor means shorter block lengths, good grid-like network of streets and minimal dead-end streets or cul-de-sacs where one-way or extended routes are necessary for access to corridors. Short blocks are attractive to users on bikes or on foot because they reduce the required distance to destinations and provide more direct access to properties. Good grid networks promote progression, good signal timing, reduce delay, and similar traffic flow characteristics. Speed limits can be reduced without sacrificing travel times due to having more direct routes to destinations. Grid street networks also benefit transit planners and their capability of reaching more users. Emergency vehicles can also reach emergency locations more quickly and directly.

In Figure 5-2, the National Complete Streets Coalition discusses the importance of a good street network and demonstrates the potential loss of flexibility from a poor network. A disconnected network makes travel difficult. A typical subdivision with curvilinear streets, cul-de-sacs, and walled exterior boundaries limits connectivity and makes travel more difficult. This development pattern provides fewer connection points, requiring traffic to use smaller number of access points with greater waiting times. Improved bicycle and pedestrian access will allow more people to get out of their cars and use alternative modes of travel.

For transit providers, a community of Complete Streets with shorter blocks is easier to serve. Most agencies look for a ½ mile spacing between routes, which is more easily achieved with a grid system, as is easy travel in any direction.

After updating its City Code to achieve Complete Streets, North Myrtle Beach, South Carolina now requires most blocks to be human-scaled, between 300 and 400 feet long.

Virginia’s Complete Streets policy was augmented by a new policy to end maintenance support for new streets that end in cul-de-sacs.

- National Complete Streets Coalition
In many places built since the 1950s, roadway design usually means a system of widely spaced, large arterials fed by smaller roadways that rarely connect with each other. This system concentrates motorized traffic on a limited number of large roads, which causes longer, indirect trips and limits opportunities for alternate routes. Such a network makes it difficult for people who might walk, bike, or take public transportation because the indirect routes lengthen their trips and force them onto roads that are usually not designed for their safety or comfort. Public transportation also has a difficult time serving isolated neighborhoods with only one or two entry or exit points. So, people end up driving, even for very short trips.

Well-designed, connected Complete Streets make travel more efficient by providing choice not only in modes, but also in routes. Pedestrians and public transportation riders are especially motivated to find direct routes to their destination or their transit stop, and prefer lower-traffic streets. This is much easier to do when the street network is a connected grid of relatively short blocks.

Source: National Complete Streets Coalition
It is also important to consider the objective of the enhancements being added to a corridor. At times too much connectivity can be a negative impact such as when it interferes with the intended free flow of a facility. Similar to an express transit system, a facility can actually have too many stops defeating the purpose of the system. However, connectivity to the corridor and improvements should still be included at significant access points. For example, minimal access interruption can be a benefit for cycle tracks or for other free-flowing bicycle facilities but there should be good access at destination points. Careful consideration should be given to the corridor connectivity as a factor when evaluating its impact on compatibility.

One way to evaluate the corridor connectivity is to utilize the “Connectivity Index” included in the City of Henderson Development and Design Standards (adopted 1/19/2010, revised 10/18/2011). Section 19.7.3 Circulation and Mobility describes how this method was developed to objectively evaluate how easily residents can gain access to a main arterial. Figure 5-3 illustrates how connectivity can be determined for residential areas surrounding a corridor candidate. The method defines links and nodes and demonstrates a method to quantify these within a development. Using these numbers, a “Connectivity Index” can be calculated for that specific development. A planner could evaluate all the developments, or a sample set of developments, adjacent to the corridor to determine an overall composite Connectivity Index for the candidate.

**System Connectivity and Capacity**
In the previous section that discusses compatibility based on road design factors, the V/C ratio is an indicator for the potential to reduce lanes of a candidate corridor. However, another important aspect of compatibility is an evaluation of the system connectivity and its capacity to carry diverted traffic flows due to proposed improvements. One approach is to utilize modeling software to analyze the whole system with proposed enhancements, lane configurations or traffic control conditions and determine the impacts for accommodating traffic flows. Another approach may be to evaluate streets parallel to the corridor candidate or alternate routes that connect travelers to similar destinations. This could be done by reviewing the V/C ratios of these routes as well as the candidates. It is possible that the corridor candidate itself may not appear to have a V/C ratio compatible for a road-diet based on its own road design. However, if identified alternate routes show a high capacity for absorbing diverted traffic, the candidate may still be compatible based on the system analysis of connectivity.

**Regional Connectivity**
Regional Connectivity is simply identifying if the corridor candidate will improve the ability for users to connect from one part of the city or region, to another part. A corridor rates high in having Regional Connectivity when the corridor itself is a major arterial or connects directly to a major arterial having city-wide or regional coverage.
Figure 19.7.3-A: Connectivity Index
This figure provides an example of how to calculate the connectivity index. In the diagram, there are 36 links (circles) and 21 nodes (stars); therefore, the connectivity index is 1.71 (36/21 = 1.71). In addition, each side of the development includes at least one street stub or connection to the greater street system every 1,500 feet.
5.6 City-Wide Complete Streets Program Evaluation and Ranking

Because of the dynamic process that is involved in evaluating corridors for Complete Streets improvements, all of the evaluation factors described in this chapter are not intended to be mandatory in the process, but are presented as options for application. Different circumstances, enhancements and objectives may translate into different priorities. Applying all the factors outlined would be a comprehensive approach and could be costly and time consuming. At times not all the information is available equally for each candidate or the existing data may come from different sources or timeframes. Evaluation of a corridor can be accomplished utilizing an appropriate mix of these tools.

As stated at the beginning of this chapter, the Component 1 factors presented are intended to provide a broad level of a benefit to cost ratio. By selecting corridors with the greatest demand, need and the most compatibility, decision makers will increase the chances of success and maximize the value of the investment.

When analyzing one corridor, or a manageable number of select corridors, it is more practical to complete a comprehensive evaluation using most of the factors recommended. However, when there is a large number of corridors being reviewed, such as under the scenario of a city-wide Complete Streets Program, evaluators need to be able to quickly prioritize city streets into a manageable number of candidates for further consideration and possible design development.

One approach for quickly assessing a large number of candidates is to select tools that can evaluate factors at a city-wide or large scale level. These tools should also be strong indicators for the criteria they are representing. One example for completing this approach is to evaluate corridors for possible road-diets or Complete Streets components as shown in Figure 5-4. Two “Compatibility” factors that are typically available at a large-scale level are the V/C ratios and the AADT for each corridor. Two “Demand” factors that are typically available at a large-scale level are the residential density and commercial density for each corridor. Streets can then be ranked by both compatibility and demand from highest to lowest. The lists can then be cross-referenced to create a consolidated ranking of the top candidates. The top candidates now become the “Select Multiple Corridors” as discussed in Chapter 4, a manageable number of corridors to advance in the overall evaluation process and conceptual design development. Corridors that are not included as a top candidate are not necessarily eliminated from the program. They are just designated as a lower priority or possible candidates for lower levels of enhancement. Chapter 7 of this report will demonstrate various approaches for implementing the evaluation factors and ranking described in this chapter.
Figure 5-4: Example of City-Wide Evaluating and Ranking for Road Diets
Chapter 6
Component 2
Concept Development and Costs
CHAPTER 6:

CONCEPT DEVELOPMENT AND COSTS

6.1 Concept Development Process and Phasing

The second component of the overall process requires identifying the different design features under consideration. These features may include pedestrian enhancements, bicycle lanes, dedicated transit lanes, roadway landscaping, enhanced street crossing features, and reduced street width (road diet). By analyzing the specific street, its function, location and transportation context; the City can determine which design features are best for the specific street corridor under investigation. The National Complete Streets Coalition of Smart Growth America discusses this point:

“Instead of trying to make each street perfect for every traveler, communities can create an interwoven array of streets that emphasize different modes and provide quality accessibility for everyone. Some streets may emphasize vehicles or trucks, while others emphasize pedestrians or public transportation. In more industrial areas, some streets will emphasize access for freight vehicles.”

Charlotte, North Carolina defines its street network along a continuum from most pedestrian-oriented to most auto-oriented, referring both to the design of the street and to the adjacent land uses. Each street type emphasizes different mixes of modes, but is designed with all potential travelers in mind.

- National Complete Streets Coalition

Five steps are proposed for the Henderson Complete Concept Development Process, as shown below.

1. Define transportation context.
2. Identify appropriate modes (existing and potential new modes).
3. Identify constraints and number of lanes.
4. Select appropriate zones, elements, and sample cross-sections. Identify various levels of enhancement for costs and phasing.
5. Revisit priorities and objectives of “Support and Opportunity” from the Process Initialization. Test the results, evaluate trade-offs, and categorize into transportation funding levels and planning timeframes.
Step 1: Define Transportation Context

Henderson adopted many of the transportation and land use contexts that were prevalent during the significant growth period of 1990-2010. Using a modified grid system with 100' wide major arterials, and 80' wide minor arterials, Henderson provided an excellent street network to serve automobiles; wide, marked lanes to serve bicyclists; and dedicated sidewalks to serve pedestrians. The current transportation network provides additional capacity for anticipated growth. This additional street width allows for flexibility to implement Complete Streets improvements.

When developing transportation context categories for Complete Streets improvements, land use plays a significant role in determining which transportation modes are most appropriate. It requires a comprehensive understanding of how land use conditions are integrated with the transportation network. This step is important for setting the foundation of the next steps that follow in the process. It helps the planner to have an understanding of the objectives of the corridor and the ultimate vision of its development.

For example, a residential neighborhood with a rich mix of diverse uses provides a greater opportunity for residents to walk, ride bicycles or take transit than a single-use residential neighborhood. A roadway network with improved multi-modal mobility encourages use of transportation alternatives as more people use different
modes of travel. On the other hand, if a residential neighborhood has limited access and proximity to a variety of commercial and recreational uses, there is a greater use of vehicles to access the necessary goods and services.

Transportation context considers which modes are most compatible with a particular area. Establishing this context is essential for determining the needs of the transportation system users. When the development is more intense and there are more people in a particular area, generally there are more vehicle trips. The greater number of vehicle trips also means that wider streets are needed to adequately handle the number of vehicle trips while maintaining an adequate level of service. Widening the streets to provide adequate traffic flow makes these streets less inviting to pedestrians and bicyclists.

For example, marked bicycle lanes are not generally a desired option on major arterials with more than 40,000 vehicles per day or AADT (Annual Average Daily Traffic). At the other end of the spectrum, a marked bicycle lane is not appropriate on a small residential street that allows on-street parking with fewer than 5,000 vehicles per day.

Transportation Context in this study is characterized by the corridor’s physical conditions, its user intensity, the density of sources and destinations along the corridor. These fall into three general categories:

- **Intensity**: speed limits, traffic volumes, number of lanes and multimodal application
- **Density**: land use, including residential, commercial and other trip generating attractors
- **Physical Limitations**: available right-of-way, parking provisions or other space limitations.

Each of these characteristics are typically based off of planned or projected conditions when possible, however, existing information was collected when needed for information such as the latest available traffic volumes. It is also good to consider existing characteristics and compare these with planned. For instance, a street may be planned for six lanes but only have four currently, with little need for full build-out. Current classifications should also be compared against future land zoning and Master Plans to consider changes as long-term recommendations. Using the characteristics outlined above, this study divides Henderson into five categories of Transportation Context, which are described in the next section.

*It is important to consider existing versus Master Plan conditions and planned land use zones. One of the conclusions that may result from this evaluation process may be recommendations to modify the Master Plan.*
High Density, High Intensity, Suburban
This category consists of land uses that have a relatively high density and intensity. Primarily, the development in this context is large commercial facilities, multi-family housing and large shopping centers. There are high volumes of traffic, between 25,000 to 50,000 AADT, with high pedestrian traffic. Generally, local or regional transit serves employees, customers and residents. The following streets are examples of this transportation context in Henderson: North Valle Verde Drive, College Drive, Wigwam Parkway and Windmill Parkway.

Low Density, Low to Medium Intensity, Suburban
This context consists of low density residential development with some adjacent commercial areas located at major intersections. Typically, these areas also contain multi-family housing near the commercial/retail areas, with some schools and parks nearby. Vehicle volume is in the 18-25,000 AADT range, with regular bicycle and pedestrian use. The major arterials in this context may have a combination of sidewalks, marked bicycle lanes and restricted on-street parking. The following streets are examples of this transportation context in Henderson: Green Valley Parkway, Warm Springs Road and Horizon Drive.

Low to Medium Density, Low Intensity, Residential
This transportation context is similar to the one described above, except the traffic and activity levels are lower, with AADT in the 10-18,000 range. The development pattern is generally one of single family homes, parks and schools with wide streets. Public transit service is generally provided or planned in the future. The following streets are examples of this transportation context in Henderson: North Valle Verde Drive, College Drive, Wigwam Parkway and Windmill Parkway.

Low Density, Low Intensity, Residential
Neighborhoods in this transportation context contain narrower streets, which demand a slower speed of travel and accommodate less traffic. This context is used for internal neighborhood transportation. There is generally no transit service and no marked bicycle lanes; however, most of these streets contain sidewalks. The traffic volume on these streets is generally lower than 10,000 AADT. The following streets are examples of this transportation context in Henderson: Greenway Road (north of Interstate 515), Robindale Road, Equestrian Drive and Racetrack Road.

Low Density, Low Intensity, Rural Residential
These residential areas are predominantly rural with a land use designation of Rural Neighborhood Preservation, Low or Very Low Density Residential. Parcel size in these areas is generally greater than one acre, with less than 1,000 vehicles per day traveling these roadways. The following streets are examples of this transportation context in Henderson: Paradise Hills Drive, Mission Drive and Racetrack Road (north of East Warm Springs Road).
To be consistent with context zones and characteristics established at the regional level in Southern Nevada, the Henderson transportation context categories developed in this study were compared with those identified in the *RTC Regional Complete Streets Study* (June 2012). The RTC study explains in detail how land use development affects transportation systems. The six Context Zones and their distinguishing characteristics are shown in Table 6-1.

Table 6-2 provides a summary of the five transportation context zones established for the City of Henderson and how these relate best to the regional context zones. The table also provides detailed comparison of the context characteristics identified for each category. It is important to note that the characteristics listed in this table specifically apply in Henderson. Their relation to the regional context categories established by the RTC may vary under different jurisdictions. The contexts in the table are shown in descending levels of density and intensity, with the highest on the left side of the table and the lowest on the right side. The characteristics that most clearly reflect this trend are right-of-way width, number of lanes, speed limits, and daily traffic.

The Appendix contains sample pages that evaluate specific Henderson Complete Streets candidates according to the characteristics shown in Table 6-2. This evaluation provides a basis for determining which corridors are most likely to be successful Complete Streets candidates.

### Table 6-1: RTCSNV Context Zones and Characteristics

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1 Natural.</td>
<td>Natural landscape</td>
</tr>
<tr>
<td>C-2 Rural.</td>
<td>Agricultural with minimal development</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>
</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>
</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>
</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>
</tr>
</tbody>
</table>

*Source: RTC Regional Complete Streets Study, June 2012*
Table 6-2: Complete Streets Transportation Context Categories in Henderson

| Context Characteristics (Planned condition unless noted otherwise*) | City of Henderson Context Zones | Southern Nevada Regional Context Zones (as applicable in the City of Henderson) |
|---|---|---|---|---|---|
| | High Density, High Intensity, Suburban | Low Density, Low-Medium Intensity, Suburban | Low-Medium Density, Low Intensity, Residential | Low Density, Low Intensity, Residential | Low Density, Low Intensity, Rural Residential |
| ROW | 100’ or more | 80-100’ | 80-100’ | 40-60’ | 40-60’ |
| Number of Lanes | 6-8 lanes | 4-6 lanes | 4-6 lanes | 2 lanes | 2 lanes |
| Speed Limits | 45-55 | 35-45 | 35-45 | 25-35 | 25-35 |
| AADT (*based on existing data) | 25,000+ | 18-25,000 | 10-18,000 | <10,000 | <5,000 |
| Land Use | Residential, commercial, retail | Residential, schools, parks, retail commercial | Residential, schools, parks | Residential, schools, parks | Residential, rural |
| Parking | No on-street parking | No on-street parking | No on-street parking | On-street parking available | On-street parking available |
| Transit/Facilities | Existing public transit route | Existing public transit route | Existing public transit route | No public transit route | No public transit route |
| Primary Mode | Auto | Auto | Auto | Auto | Auto |
| Pedestrian Facilities | Sidewalk width from 5-8’; medium level | Sidewalk width from 5-8’; medium level | Sidewalk width from 5-8’; medium level | Sidewalk width 5-8’ | No dedicated sidewalk |
| Bicycle Facilities | No marked bicycle lanes | Marked bike lanes, 5-8’ wide; medium level | Marked bike lanes, 5-8’ wide; medium level | No marked bicycle lanes | No marked bicycle lanes |
Step 2: Identify Appropriate Modes

The next step in the Complete Streets Evaluation Process requires identification of the appropriate modes for each specific situation. As stated in the previous section, categorizing a candidate street into a transportation context helps keep focus on the vision for the corridor and modes of transportation appropriate there. In considering which Complete Streets improvements are appropriate for a specific corridor in Henderson, it is necessary to determine the level of current improvements and how these facilities can be improved. Possible modes for consideration are:

- Pedestrian
- Bicycle
- Transit
- Automobile
- Truck (freight and goods movement)

Pedestrian Facilities

Henderson contains extensive pedestrian facilities in the form of sidewalks and trails. Virtually every city street has a 5-8 foot wide sidewalk, with the exception of some internal residential neighborhood streets, some industrial and most rural areas. These sidewalks create a positive environment for walking within the residential areas.

Sidewalks can sometimes be intimidating for pedestrians, especially when they are located directly adjacent to higher speed roadways. One key aspect to increasing pedestrian access and activity in these areas is to enhance the pedestrian zone with landscaping and a physical separation from the vehicular traffic. Many sidewalks along Henderson have received an upscale treatment, with street trees providing shade in some areas, and some separation between the street and the sidewalk. However, there are other areas with opportunities for enhancements. Chapter 7 of the RTC Complete Streets Design Guidelines discusses pedestrian crossing principles, performance measures and possible toolbox options to consider.

Bicycle Facilities

Henderson contains an extensive network of bicycle facilities in the form of marked bicycle lanes, signed bicycle routes and shared-use bicycle and pedestrian paths. Most bike lanes are 4-5 feet wide, with some as wide as 8 feet. These accommodations encourage bicycle use by improving safety and convenience within the transportation network. Marked bicycle lanes provide one of the most visible ways of demonstrating that the community supports bicycle ridership. They clearly identify dedicated lanes showing all roadway users that bicycles have a designated location in the traffic flow pattern.

Chapter 3 of this report includes maps identifying many of these facilities. This includes figures that show the existing bicycle and pedestrian trail network in Henderson and the current City of
Henderson Master Bicycle and Trails Plan. Chapter 8 of the RTC Complete Streets Design Guidelines discusses bikeway design principles, types, system integration and implementation.

Transit Services
Transit is another very important mode of travel that exists in Henderson, including seven different routes serving the City: 110, 111 (A and B), 115, 212, 217, Henderson and Downtown Express (HDX) and the Boulder Highway Express (BHX). Transit services in Henderson are provided by the RTC, which connects residents with Las Vegas and Clark County, as well as moving residents within the city. Chapter 3 of this report includes a map of the transit service for the City of Henderson area. Chapter 9 of the RTC Complete Streets Design Guidelines discusses transit accommodations principles, access and connections, design, placement and alternative modes.

Automobile Facilities
Henderson’s automobile facilities are specified in the Master Streets and Highway Plan, as shown previously in Chapter 3. Typical section details are also included in the Appendix of this report. The sections range from 50 feet to 300 feet and are separated as applicable to just West Henderson and as applicable to the rest of the City. As the street profile section drawings show, almost all Henderson streets provide for automobile, bicycle and pedestrians. Automobile travel lanes vary from 10-foot to 25-foot widths. Figure 6-2 is a typical street section for a 100 foot wide road.

Truck Facilities and Goods Movement
Truck movement is a mode considered essential to the economic health of Henderson. It is generally confined to commercial and industrial corridors which are served by major and minor arterials. Good Complete Streets practice means considering all modes on corridors, but it is important to consider the transportation context and generally, it is better to route bicyclists and pedestrians to a parallel route on roadways that are away from these major arterials. However, there are some situations where pedestrian and bicycle facilities can be implemented and utilized safely on major arterials where there is frequent truck movement. Careful consideration should be given so these facilities do not inhibit the functional
purpose of the corridor or create routes that would be dangerous or uncomfortable for new modes. In considering which Complete Streets improvements are appropriate for a specific corridor in Henderson, it is necessary to determine the level of current improvements and how these facilities can be enhanced.

**Step 3: Identify Constraints and Multimodal Lanes**

The next step in the Complete Streets Evaluation Process is to identify physical conditions existing on the specific roadway under consideration. These roadway characteristics include the following:

- Right-of-way widths
- Number of lanes (existing and Master Planned)
- Speed limits
- On-street parking

It is also necessary to consider which physical conditions may constrain the roadway or limit the implementation of a Complete Streets project. Potential constraints may include the following:

- Walls
- Drainage facilities
- Environmental constraints
- Utilities
- School zones

Assessing some of these conditions is part of Step 1, Define Transportation Context. However, in this step, the purpose is to evaluate physical limitations or constructability challenges and not determining functional characterization. The City of Henderson’s standards and Master Plan should be referenced when determining number of lanes and widths. It is important that any reduction in the number or width of lanes does not negatively impact safety or system efficiency. Some examples of the lane types that may be considered include the following:

- Physically or buffered separated pedestrian, bike or transit lanes
- Dedicated or shared pedestrian, bike or transit lanes
- Green bike lanes and bike boxes
- Cycle tracks

**STEP 4: Select Appropriate Zones, Elements and Phasing**

The next step in the Complete Streets Evaluation Process involves selecting zones, elements and possible phased levels of enhancements that apply to the corridor. Once these choices are made, the appropriate design standards to the roadway being evaluated should be applied.

**Complete Streets Zones**

As stated previously in this report, the process for developing Complete Streets and selecting elements for consideration will typically be an iterative one. Due to the multitude of possibilities, it
will assist planners if they first break down the available right-of-way of the corridor into functional zones. Generally, these zones will consist of the following:

- Development Zone
- Pedestrian Zone
- Green Zone
- Parking Zone
- Exclusive Bicycle Zone
- Mixed Vehicle Zone

An example of this zone setting is included in the Figure 6-3.

After zones and approximate widths or available space are associated with these zones, the planner may begin to test application of various elements within the zones that are appropriate for their function. These types of elements and possible phasing are discussed next.

**Elements and Phasing**

Enhancement levels and phasing may cover all modes: bicycle, transit, pedestrian, truck, vehicle or others. For the purposes of evaluating Complete Streets improvements within the practicality of this planning process, implementation scenarios will be grouped in to three general levels of enhancements:

**Level 1 Enhancements**: Minimal level of enhancement and maximum ease of construction. Typically lower cost and no new ROW purchase required. Construction costs and annual maintenance costs per mile would be minimal. Examples of Level 1 enhancements could include:

- Maintenance of existing striping to bike lanes, crosswalks, stop bars and other bicycle and pedestrian pavement markings
- Adding “hard” landscaping or additional enhanced landscaping to existing irrigation-ready or drought tolerant landscape buffers
- Adding low-cost amenities such as benches or bike racks
- Performing signal timing studies for pedestrian crossings
- Improve sidewalk ramps to comply with ADA requirements
**Level 2 Enhancements:** Medium level of enhancements and constructability effort involved. Typically construction costs and annual maintenance costs would be higher per mile than Level 1 and possibly minimal new ROW purchase required. Examples of Level 2 enhancements could include:

- Level 1 Enhancements may be included
- Adding standard new sidewalks
- Low-cost traffic calming or enhancing existing pedestrian refuges, medians or bulb-outs
- Adding minimal new irrigated landscaping to areas with water service points or additional enhanced landscaping to existing irrigation-ready or drought tolerant landscape buffers
- Enhance existing lighting systems
- Adding low-end bike lockers with minimal system requirements or enhancing existing bike storage facilities

**Level 3 Enhancements:** Ultimate design build-out with high level of enhancements and higher level of constructability effort. Typically construction costs and annual maintenance costs would be higher per mile than that of Level 2 enhancements on the same corridor segment and significant new ROW purchase may be required. Examples of Level 3 enhancements could include:

- Adding comprehensive new irrigated or drought tolerant landscaping with new water service points as required
- Adding additional higher-cost amenities
- Incorporating advanced new signal timing systems and pedestrian crossing activators
- Enhanced transit facilities and amenities
- Adding high-end bike lockers with electronic systems and customer service availability, new enclosed bicycle facility centers or enhancing existing bike storage facilities
- Adding higher cost security lighting or new lighting systems
- Adding higher-cost traffic calming or new enhanced pedestrian refuges, medians or bulb-outs

**Step 5: Test results, evaluate trade-offs, categorize into transportation planning timeframes**

With any process, the user needs to test the results that have been reached and determine if they are reasonable, given the specific situation. There are always various trade-offs in this process. For example, reducing the number of lanes on an existing urban arterial street will cause fewer automobiles to travel on this street at a slower speed. This loss of vehicle capacity can be offset by an increased number of bicyclists and pedestrians along with a reduction in the number of vehicular crashes.
When feasible, each of the Complete Streets projects and the phased Levels of Enhancements under consideration should be evaluated under a basic benefit/cost analysis. Initially, this process would consist of making a qualitative assessment of how well the project meets the overall Complete Streets program evaluation criteria. Additionally, if there is limited funding available, the City may want to be able to implement smaller project improvements on corridors that may rank lower overall but could be completed sooner. These projects may have higher benefit/cost ratios than other higher ranked compatibility corridors. Each project and level of enhancement should be evaluated in terms of a possible timeline for implementation.
Chapter 7

Process Demonstration
CHAPTER 7: PROCESS DEMONSTRATION

7.1 Overview

There are an unlimited number of variations of how the City of Henderson Complete Streets Evaluation Process could be applied under current conditions and objectives, as well as how it could evolve in the future. The intent of this chapter is to demonstrate a few scenarios and key components of how this process may be applied. The following sections will demonstrate how the process may be applied for all three Candidate Approaches:

- City-Wide Evaluation
- Single Corridor Evaluation
- Multiple Corridors Evaluation

This section begins with a demonstration of how to create a ranked list of potential corridors for the “City-Wide” broad level evaluation based on selected criteria. This section also evaluates some sample “Multiple Corridors” for a comparative analysis. A sample cross-section outcome using the “Single Candidate Corridor” approach is also included.

It is not the intention for the manual to prescribe how to design every segment of every street. It is important to clearly identify the transportation context and goals of the community and corridors. The suggested policies set forth in this manual are intended to compliment the RTC Complete Streets Policy.

It is important to note that while this section performs an example evaluation, the purpose is not to make recommendations for actual implementation, but to demonstrate the process. In real practice, COH staff will apply specific priorities and weighted values to each evaluation factor. For purposes of simplicity in this demonstration, all criteria are weighted equally and only a select number of scenarios are highlighted.

It is also important to note that an evaluation of a specific segment within a corridor may result in a different outcome compared to an evaluation of the entire corridor. In practical application, COH may evaluate segments of corridors or the entire corridor. However, when performing the “City-Wide Evaluation” in this study, the entire corridor was being evaluated.
7.2 City-Wide Evaluation

A “City-Wide Evaluation” for Complete Streets can be performed with a variety of objectives. However, when there are a large number of corridors being reviewed, such as under this scenario, evaluators need to be able to quickly prioritize city streets into a manageable number of candidates for further consideration and possible design development. One approach for quickly assessing a large number of candidates is to select tools that can evaluate factors at a city-wide or large scale level. These tools should be strong indicators for the criteria they are representing. One example is outlined below to perform a City-Wide Evaluation for Complete Streets and Road Diets.

City-Wide Evaluation for Complete Streets and Road Diets

Sample Scenario: RTC announces availability of funding that may be used for enhancing bicycle or pedestrian facilities by determining streets for potential road-diets.

Step 1: Process Initiation

Support and Opportunity: Objectives of both the RTC and COH support these types of enhancements. Funding has been identified, however the funding is to be awarded to highest ranking corridors in Southern Nevada.

Candidate Approach: City-Wide Evaluation

Step 2: Evaluation and Development

Component 1 Evaluation and Benefits: Run corridors through a Component 1 City-Wide Evaluation Process to complete a broad analysis and comparative ranking evaluation. In this example, “Compatibility” and “Demand” are applied, but “Need” is not part of the evaluation. Two “Compatibility” factors that are typically available at a large-scale level are the V/C ratios and the AADT for each corridor. As mentioned previously in the report, V/C signifies the ratio of traffic volumes to capacity of the road and AADT is the annual average daily traffic. These are strong indicators for potential road-diets. Land Use Intensity factors may be used to evaluate indicators for the potential demand of enhanced bicycle or pedestrian facilities. Two “Demand” factors that are typically available at a large-scale level are the residential and commercial density for each corridor.

Streets are then ranked by both compatibility and demand from highest to lowest. The lists are then cross-referenced to create a consolidated ranking of the top candidates as shown in Figure 7-1. The top candidates now become the “Select Multiple Corridors” as discussed in Chapter 4, which is a manageable number of corridors to advance in the overall evaluation process and conceptual design development.
Figure 7-1: City-Wide Evaluating and Ranking for Road Diets
Corridors that are not included as a top candidate are not necessarily eliminated, but are just designated as a lower priority. In this particular demonstration, it is more practical to begin the evaluation with traffic factors to determine “Compatibility” and then further prioritize this list with an evaluation of the potential “Demand”. Below are the steps outlined and carried out in the next section of this chapter:

1. Determine Compatibility
   a. Develop ranked list of Complete Street compatible corridors based on AADT.
   b. Develop ranked list of road diet compatible corridors based on V/C ratios.

2. Determine Demand
   a. Cross-reference these lists against residential and commercial density to create a refined list of “Select Corridor Candidates”.

In actual practice, this list may be further refined by an evaluation of other demand factors such as locations of schools, parks, trails or other attractions.

1. Determine Compatibility
   a. AADT for General Compatibility for Complete Streets Implementation

The first step is to perform a city-wide evaluation of all corridors where existing AADT information is available. Best practices for Complete Streets implementation provide guidelines that optimal levels for AADT are typically between 10,000 to 25,000 vehicles per day. Below that range, there does not appear to be enough demand to justify the improvements in terms of priority and user benefits. Traffic volumes above this range indicate highly auto-oriented corridors and may not be as compatible due to safety and capacity concerns. Facility improvements for non-motorized modes may still be included along corridors with these higher traffic volumes. However, this typically requires a higher level of protected enhancements, which can be more costly.

For this study, an evaluation of the City of Henderson daily traffic was performed. Information was collected from NDOT’s database of Clark County traffic counts, and AADT was determined along the entire corridor and then averaged.

   b. V/C Ratios for Compatibility of Road-Diets

The V/C ratios for arterials can then be correlated to Level of Service (LOS). LOS is a term used to describe quality of the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay, and safety. LOS is designated with a letter, A to F, with A representing the best operating quality and F the worst.
According to the City of Henderson’s Traffic Impact Analysis Guidelines, if an intersection operates below a level-of-service of C, mitigation measures must be provided, such as: signalization, channelized medians, turning lanes, increase in storage lanes, restricted turns, or additional lanes. The Highway Capacity Manual 2000 methodology for assigning LOS for arterial streets is based on travel speed and the class of the arterial. There are various factors that are involved in the relationship between LOS and V/C ratios. According to the Transportation Research Board, Highway Capacity Manual, Special Report 209 (1994), in order to maintain a LOS of C or greater, the V/C ratio must be less than 0.70.

For the purposes of this study, a conservative V/C ratio of 0.60 or lower was selected for ranking corridors with the greatest potential for implementing a mode shift by trading available vehicular capacity for use by pedestrian or bicyclists. Maps were developed to show projected V/C ratios throughout the City of Henderson where data was available. V/C ratios were determined for the entire corridor and then averaged. These maps are included in the Appendices.

The final step for determining “Compatibility” is to cross-reference the two lists against each other and create a refined list of corridors that meet the selected criteria for both factors. The results are shown in Table 7-1. Corridors with an optimal V/C ratio of less than 0.60 and an AADT between 10,000 and 25,000 are included. The table includes 12 corridors with good potential for reducing lane widths or converting lanes into new and/or enhanced pedestrian and bicycle facilities.

<table>
<thead>
<tr>
<th>BEST COMPLETE STREETS &amp; ROAD-DIET COMPATIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>STREET</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>RACETRACK RD</td>
</tr>
<tr>
<td>PASEO VERDE PKWY</td>
</tr>
<tr>
<td>COLLEGE DR</td>
</tr>
<tr>
<td>HORIZON RIDGE PKWY</td>
</tr>
<tr>
<td>SEVEN HILLS DR</td>
</tr>
<tr>
<td>WINDMILL PKWY</td>
</tr>
<tr>
<td>VALLE VERDE DR</td>
</tr>
<tr>
<td>GIBSON RD</td>
</tr>
<tr>
<td>BOULDER HWY</td>
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<td>WARM SPRINGS RD</td>
</tr>
<tr>
<td>HORIZON DR</td>
</tr>
<tr>
<td>ANTHEM PKWY</td>
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</tbody>
</table>

The next step in the process is to determine the potential demand along the refined list of compatible corridors and further prioritize these so benefits might be realized by the highest number of users. The following maps and description provide a sample demonstrate for this process.
Figure 7-2: COH Population Density (Potential Demand)
Figure 7-3: Employment Density (Potential Demand)
2. Determine Demand

Maps showing housing and commercial density in the City of Henderson were developed as a tool for determining potential demand (Figure 7-2 and Figure 7-3). A description of these maps is also provided in Chapter 3.

Based on this data, a visual inspection was performed and areas were categorized into low, medium and high levels of density. These levels were evaluated and determined relative to areas within the City of Henderson only. Depending on the respective boundaries of these density levels, corridors received scores for both its overall surrounding residential and commercial density levels. When a corridor fell within mixed levels, scores were adjusted to account for this. Corridors were then ranked in terms of potential demand for Complete Streets improvements. Scores for potential demand ranged from 1 to 4, with 1 indicating the highest potential demand, and 4 indicating the least potential demand.

Applying both residential and commercial density potential demand rankings to the previous filtered list results in an even further refined list of corridors. The 12 corridors are listed in Table 7-2 with the Potential Demand applied.

<table>
<thead>
<tr>
<th>STREET (Full Corridor)</th>
<th>AVG. AADT (10k &lt; AADT &lt; 25k)</th>
<th>AVG. V/C RATIO (V/C &lt; 0.60)</th>
<th>POTENTIAL DEMAND (1= Highest, 4 = Lowest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASEO VERDE PKWY</td>
<td>14000</td>
<td>0.24</td>
<td>1</td>
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<tr>
<td>WARM SPRINGS RD</td>
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</tbody>
</table>

As stated earlier, this list may be further refined by an evaluation of other demand factors such as locations of schools, parks, trails or other attractors. Additionally, specific segments of the corridors could be identified by agency objectives to be used in the evaluation, rather than the full corridor. It is important to note that map information on densities is based on current conditions in this sample demonstration. Projected densities should also be referenced as tools in the evaluation of potential demand and decision-making process.

The next step is to decide which of these corridors may warrant further investigation and development. These “Select Corridor Candidates” are then run...
through the Component 2 Process. In this case, the concept development would specifically include new and/or enhanced pedestrian and bicycle facilities. Phasing for these improvements would be determined based on the prioritized list created, funding opportunities and scheduling opportunities. The top two candidates after evaluation of potential demand were:

- Paseo Verde Parkway
- Warm Springs Road

### 7.3 Single Corridor Evaluation

It was noted that Paseo Verde Parkway is well developed with several Complete Streets features, including attractive landscaping, detached sidewalks and a parallel running pathway. Therefore the team decided to further evaluate Warm Springs Road for a sample outcome. The following pages summarize this process component for the limits between Pecos Road and Stephanie Street. Figure 7-4 displays the existing conditions for this corridor segment. Figure 7-5 shows the Master Plan for this segment and Figure 7-6 demonstrates a possible sample outcome.
Warm Springs Road, from Pecos to Stephanie

<table>
<thead>
<tr>
<th>Henderson Context Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
</tr>
<tr>
<td>Low Density, Low to Medium Intensity, Suburban</td>
</tr>
<tr>
<td>ROW</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>Street Width (feet)</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>Number of Lanes/ Configuration</td>
</tr>
<tr>
<td>4; two in each direction with center median</td>
</tr>
<tr>
<td>Speed Limits</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>AADT</td>
</tr>
<tr>
<td>21-23,000</td>
</tr>
<tr>
<td>Land Use</td>
</tr>
<tr>
<td>Residential, schools, parks</td>
</tr>
<tr>
<td>Parking</td>
</tr>
<tr>
<td>No on-street parking</td>
</tr>
<tr>
<td>Transit/Facilities</td>
</tr>
<tr>
<td>Existing public transit route</td>
</tr>
<tr>
<td>Auto</td>
</tr>
<tr>
<td>Auto dominant</td>
</tr>
<tr>
<td>Pedestrian Facilities</td>
</tr>
<tr>
<td>Sidewalk width from 5-8’; medium level</td>
</tr>
<tr>
<td>Bike Facilities</td>
</tr>
<tr>
<td>Marked bike lanes, 5’ wide; medium level</td>
</tr>
</tbody>
</table>

Figure 7-4: Warm Springs Road - Existing Conditions and Context
This Sample Outcome involves removing one of the vehicle lanes that is part of the Master Plan in order to include a 6-foot bicycle lane, a 4-foot buffer from vehicles and a 14-foot landscaped pedestrian facility. This configuration is shown in Figure 7-6 and is one of the recommendations included in the RTC Complete Streets Design Guidelines for a 100-foot ROW street.

A projected V/C ratio of 0.53, indicates that this road-diet conversion may be completed without creating traffic concerns, however additional system network modeling might be recommended. Also due to the expanded width of the bicycle lane, good pavement marking and signing will be essential. It is important to note that this corridor has several alignment curves that may impact driver’s sight distance. The corridor generally has drivers that exceed the 40 mph speed limit, creating a potentially uncomfortable condition for some cyclists. It may be necessary to consider a reduction in the posted speed limit for this corridor and provide additional traffic calming design enhancements. An outreach effort could help educate the community on the changed conditions as well as traffic enforcement temporarily issuing warnings to speeders. An alternative design that would decrease the buffer separation, but provide more room for cyclists, is to include an 8-foot bicycle lane. Some cyclists prefer the wider overall bike lane where they can more easily ride side-by-side to each other.
Step 3: Recommendations
Various Complete Streets elements, sample outcomes and phasing levels may continue to be developed for this segment, as well as for others on the refined list of candidates. The objectives of agencies, stakeholders and funding should be referenced at all appropriate stages of the process. Recommendations are to be made based on the outcome of the evaluation process and presented to decision makers. The approved list may be added to a list of corridors where additional detailed alternative analysis is conducted, a detailed benefit/cost analysis is conducted and community outreach is incorporated. These items are discussed more in the final Chapter 8: Next Steps.

7.4 Multiple Corridors Evaluation
This section is a demonstration of a possible Multiple Candidate Corridor Approach. In this case study demonstration, the scenario could be to implement Complete Streets elements as collaboration with Safe Routes for Schools. The proposed improvements may be to add bike lanes and pedestrian crossing enhancements at school crossings. Objectives will be to rank the locations according to where the greatest potential benefits may be captured and present a preliminary sample outcome as a recommendation. The City of Henderson selected a few sample locations near schools for collecting new traffic counts. A summary of these locations is included in Table 7-3 and Figure 7-7 below, followed by a summary of the evaluation for potential benefits.

Table 7-3: New Traffic Counts for Evaluation of School Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
<th>Students</th>
<th>AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valle Verde Dr, south of High View Dr near Lennox Dr and Fox Ridge Park</td>
<td>Near Fox Ridge Park, school crossing for Estes McDoniel Elementary School</td>
<td>638</td>
<td>7,076</td>
</tr>
<tr>
<td>Warm Springs Rd, east of Lake Mead Pkwy</td>
<td>Near CT Sewell Elementary School</td>
<td>713</td>
<td>6,803</td>
</tr>
<tr>
<td>Warm Springs Rd, near Emden St</td>
<td>Near B. Mahlon Brown Junior High School</td>
<td>850</td>
<td>5,603</td>
</tr>
<tr>
<td>Windmill Pkwy, west of Pecos Rd near Charter Oak St</td>
<td>Corridor segment has 25 mph school crossing for the Aggie Roberts Elementary School</td>
<td>834</td>
<td>15,658</td>
</tr>
<tr>
<td>Windmill Pkwy, west of Green Valley Pkwy near Bundy St</td>
<td></td>
<td></td>
<td>9,077</td>
</tr>
</tbody>
</table>
Figure 7-7: School Locations and Corridors Evaluated in Henderson
Summary of Potential Benefits

**Land Use Intensity:** Other Attractions, specifically schools were evaluated as a primary factor. Residential density and traffic were also considered. As shown in Table 7-3, B. Mahlon Brown Junior High School (Warm Springs) and Aggie Roberts Elementary School (Windmill) have the greatest number of students attending. However Warm Springs includes two schools relatively close and may have the greatest combined benefit for certain enhancements. Windmill shows the highest intensity in terms of traffic volumes.

**Safety & Security:** Existing data was not available, however, the Highway Safety Manual indicates that locations with higher AADT generally have greater opportunity for accident reduction from safety enhancements. Windmill may have the greatest opportunity here.

**Mobility:** All locations are on the COH Master Bicycle and Trail Plan (February 2014). Valle Verde and Windmill do not have transit directly on their corridors, but do connect to some cross routes. Warm Springs does not have any transit routes at its specific locations.

**Road Design:** Master Plan was considered for ROW and design at all locations. All locations are in an appropriate range for multi-modal inclusion without requiring costly enhancements for safety. In this situation, speed limits are 25 mph or less when the school zones are active.

**Connectivity:** To evaluate connectivity potential, the location maps were visually inspected for block length or corridor access points and a grid-like system. The best connectivity appears to be along the Windmill Parkway corridor. Warm Springs near CT Sewell Elementary School, which has undeveloped land on one side, appears to have the lowest level of connectivity potential for the enhancements.

**Recommendations**

After review of all locations and factors applied, all locations appeared to show good potential for benefits. However, in terms of prioritization, it was decided that Windmill Parkway scored highest, due to overall Land Use Intensity, the number of students, traffic volumes, Mobility and Connectivity. Enhancements at the Warm Springs locations could also be a priority if the combined benefit of both these schools is considered together.
Chapter 8

Next Steps
CHAPTER 8: NEXT STEPS

8.1 Outline of Next Steps

This document presents guidelines for stepping through an evaluation process for the implementation of Complete Streets in the City of Henderson. As COH applies this process under different scenarios, there will be a variety of conceptual outcomes coming from different process initiators: agency objectives, stakeholders and funding opportunities. Below is the process outlined by the RTC in the Regional Complete Streets Study.

This document addresses Step 1 of the RTC Complete Streets implementation process, and prepares COH for subsequent steps toward the “Application for Funding” and possible selection.

Implementation Beyond this Study

I) Application for Funding
   1. COH Corridor Evaluations, Rankings and Potential Improvements
   2. Test and Re-Evaluate

II) Assist with RTC Evaluation
   1. Benefit/Cost Analysis
   2. Compare Project Trade-Offs
   3. Feasibility
   4. Funding Match

III) Project Development
   1. Establish Performance Measures Plan *(before and after data collection)*
   2. Design and Costs Estimates
   3. Community Outreach
   4. Construction and Implementation

IV) Opportunities for Policy Development
However, whether the process is driven by the RTC, COH or some other stakeholders, the “Next Steps” will be to advance the concept development and phasing into construction implementation. Depending on the level of enhancements being recommended, varying levels of effort will be required for this implementation. For example, Level 1 type enhancements may be implemented much more quickly, perhaps only requiring internal approval within COH. On the other hand, when ultimate designs including potential for Level 3 enhancements are desired, more effort and investigation will be required, similar to the actions outlined above. The following section also includes recommendations for a Community Outreach Plan outline.

### 8.2 Community Outreach

Understanding the community and what they would like to see in the City of Henderson is an important part of the process. This information may come from previous outreach activities on various projects or public interaction involving development. It can also be gathered from a new community outreach plan specific for refining the next steps from this study. When appropriate, input from these stakeholders may be solicited throughout the development and implementation process.

Community Outreach is a key factor to the success of a Complete Streets implementation program, both early on in the process and throughout the development of specific corridors and improvements. Similar to the evaluation process effort, the level of outreach and education on Complete Streets implementation in the City of Henderson will be dependent on resources and objectives specific to each situation. A recommended Community Outreach Plan including two tier levels is outlined below:

1. Tier One: City-Wide Complete Streets Program
2. Tier Two: Project Specific

**Best Application of Available Resources**

The level at which Community Outreach is performed will be dependent on priorities and resources. The City of Henderson will allocate available resources in a way that will be most beneficial toward objectives of funding sources, public agencies, the affected community and other stakeholders involved.
Tier One: City-Wide Complete Streets Program

- Identify and contact target groups in the community
- Develop Complete Streets Program Materials
- Educate the community
  - Background
    - History
    - National context and trends
  - Activity in Southern Nevada
    - Activity by RTCSNV
    - Involvement by City of Henderson
    - Other jurisdictions
  - Benefits
  - Complete Streets elements and concepts
  - Evaluation and implementation process
  - Funding opportunities and policy development
- Receive community input on Complete Streets concepts, interest toward locations for implementation and other relevant feedback

Possible Groups for Outreach

- Developers
- Nevada enforcement agencies
- Trucking companies
- Chamber of Commerce
- Health organizations in Southern Nevada

- Specific business interest groups
- Safe Routes to Schools and school districts
- Advocacy groups

Possible Complete Streets Program Materials and Branding

- COH Complete Streets Program Mission Statement
- COH Complete Streets Program Logo
- COH Complete Streets Program Fact Sheets
- COH Complete Streets Program Website
- COH Complete Streets Program Master Plan

Tier Two: Project Specific

Tier Two Community Outreach could involve a similar outline of public involvement, but would be much more focused on the community surrounding the location or corridor under consideration. Project specific outreach is typically already done when major improvements are involved along a corridor or intersection. However, community outreach is not always necessary or practical for routine maintenance or minor enhancements.

Developing a city-wide program outreach as described above will take time to develop. Certain components already exist within the RTC and COH, but the program continues to evolve.