




LAS VEGAS
DOWNTOWN
PEDESTRIAN
CIRCULATION STUDY
FINAL REPORT



Prepared for
 Regional
Transportation
Commission of
Southern Nevada

Prepared by
 Kinley-Horn
and Associates, Inc.

LAS VEGAS DOWNTOWN PEDESTRIAN CIRCULATION STUDY

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INTRODUCTION

As the Downtown Las Vegas area continues to redevelop with high density residential and more intense commercial uses, it is important that a comprehensive study be completed that addresses adequate improvements for pedestrian travel. The goal of this study is to set forth a plan to provide facilities and programs that encourage those who already walk downtown to continue to do so, at the same time attracting more people to walk in downtown Las Vegas. Many visitors to the downtown area will still need to drive to get there; however, walking can be the primary mode for trips between destinations downtown. The Regional Transportation Commission (RTC) of Southern Nevada has retained Kimley-Horn and Associates, Inc. (KHA) to conduct this study for the downtown area.

The purpose of the overall study is to prepare a downtown pedestrian plan that provides for improved walkability and reflects the desired future character of downtown as an urban regional center with varied land uses supporting high density residential and intense commercial uses. The project builds upon the Downtown Traffic Capacity, Transit, and Parking Needs Study completed by KHA for the RTC in July 2007. The resulting study includes recommendations for improved facilities, policies, and programs to improve pedestrian mobility in downtown Las Vegas. The project includes six primary tasks as listed below.

- Data Collection and Project Coordination
- Pedestrian Routes
- Analysis of Pedestrian Routes
- Analysis of Improvement Measures
- Implementation Plan
- Final Pedestrian Circulation Study

The Downtown Pedestrian Circulation Study assumes the same 10-year planning horizon utilized by the Downtown Traffic Capacity, Transit, and Parking Needs Study. All land use projections within the 10-year planning horizon have been provided by the City of Las Vegas (CLV). Analyses associated with developing the Downtown Pedestrian Circulation Study have been completed for two scenarios: (1) the existing 2008 condition and (2) the land use plan defined by CLV for full build-out of the study area, which was defined during the recently completed Traffic Capacity, Transit and Parking Needs Study.

The project study area, depicted to the right, was defined in the scope by the RTC and the CLV to include the area generally bounded by:

- Washington Avenue (North)
- Martin Luther King Boulevard and/or Interstate 15 (West)
- Maryland Parkway (East)
- Sahara Avenue (South)



ACKNOWLEDGEMENTS

The RTC of Southern Nevada would like to take the opportunity to thank those that played various roles in developing this plan. The following individuals provided important recommendations and valuable input in the development of this plan.

RTC

- Paulette Carolin – Metropolitan Planning Organization
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- Flinn Fagg – Planning and Development
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- David Bratcher – Office of Business Development
- Randy Fultz – Public Works
- Greg McDermott – Public Works
- Tom Kruse – Public Works

City of North Las Vegas (CNLV)

- Jeremy Davis – Planning and Zoning

Clark County (CC)

- Marcus Majors – Comprehensive Planning

Nevada Department of Transportation (NDOT)

- Melvin McCallum – Program Development
- Kent Sears – Traffic Engineering

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- Pam Terry – Downtown Area Command Crime Prevention
- Jason Begun – Deployment Operations Center
- Greg Rundell – Traffic Operations

UNLV Transportation Research Center

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Downtown Alliance

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- Christina Natale – The Molasky Group of Companies
- David Phillips – Forest City

Kimley-Horn and Associates, Inc. – Consultant

- Mike Colety – Project Manager
- Michael Green – Analyst
- Marcus Bush – Analyst
- Tia Newby – Marketing Coordinator
- Angela Brekken – Marketing Coordinator
- Lindsay Middleton – Graphic Artist

EXECUTIVE SUMMARY

The purpose of this report is to serve as a guide to the development of a pedestrian-friendly Downtown Las Vegas. This report includes data used to identify current and future pedestrian routes and evaluate existing facility conditions. Numerous alternative improvement measures were also evaluated to provide a source for comparable solutions to improve pedestrian mobility. Implementation strategies and recommendations have been included to serve as a means of achieving goals and objectives.

Sections of the report are organized as follows:

1. Technical Working Group
2. Data Collection
3. Pedestrian Routes
4. Analysis of Pedestrian Routes
5. Analysis of Improvement Measures
6. Implementation

The CLV Office of Business Development discussed numerous projects that will drive the momentum of the downtown area. The Strip will most likely push past Sahara Avenue and up along Main Street creating a resort corridor feel throughout the area south of Charleston Boulevard. A number of planned mixed-use redevelopment projects along with Union Park are expected to continue to shape the core of downtown into a traditional dense urban environment. Roadway improvement projects are also in design stages including major pedestrian facility improvements along Bonneville and Clark Avenues as well as the Downtown Bus Rapid Transit (BRT).

A field review was conducted to evaluate the typical conditions of sidewalks and other pedestrian facilities within the area. Preliminary issues identified in the field review include obstructions found along many sidewalks, which includes low clearance due to trees, streetlight poles, trash cans, vehicles, and gates. Numerous corners also lacked accessible ramps. The CLV also provided an inventory of existing streetlights that were evaluated in order to identify areas that lacked light fixtures.

Extensive traffic volumes were obtained during the Downtown Capacity, Transit, and Parking Needs Study, which included pedestrian counts. Areas that indicated high pedestrian volumes include the intersections surrounding the Fremont Street Experience as well as numerous intersections along Las Vegas Boulevard. Pedestrian-oriented results from the user survey conducted during the previous study were also identified. The Las Vegas Metropolitan Police Department also provided crash data that indicated that the downtown area had high occurrences of pedestrian crashes in 2007.

The CLV has identified various trails in the downtown area, which are in different stages from proposed to completed. These trails, in conjunction with the "street hierarchy" outlined in the previous study, were used to identify potential pedestrian routes. Cross-section guidelines were established as a means of evaluating the existing condition of each route and varied depending upon the intent and purpose of the route. This analysis resulted in each route being prioritized according to its need for improvement. Numerous improvement measures were also identified and evaluated, which included street lighting and crossings (separated and at-grade). Barriers that inhibit pedestrian access in and out of the downtown area, including I-15, I-515, and Union Pacific Railroad (UPRR), were also prioritized according to their need for improvement.

This report also includes strategies for implementing the various recommended improvements. Policies and programs that can help make downtown a more walkable environment are discussed. Funding options are also discussed and evaluated against their appropriateness to downtown.

Key Findings

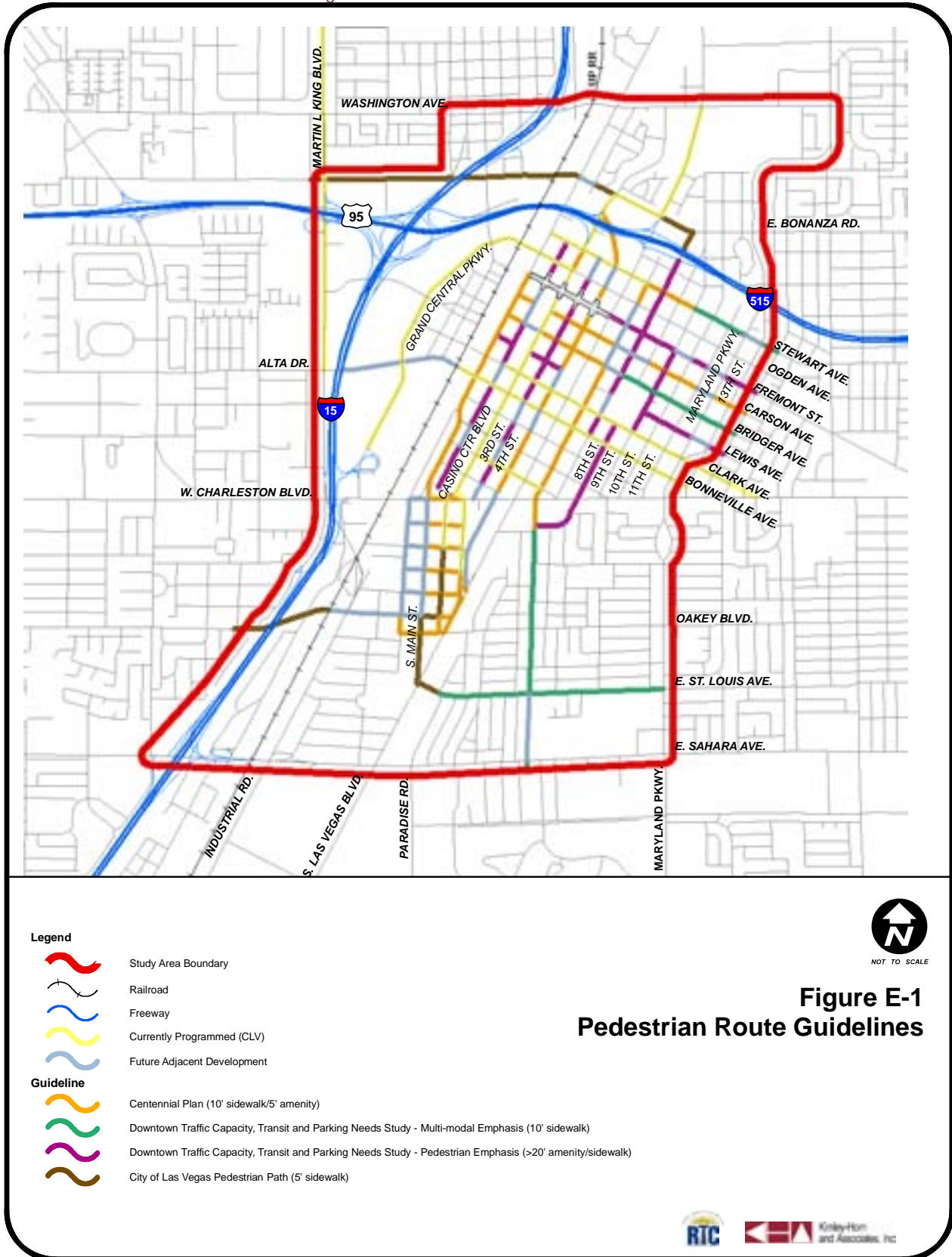
- Re-designing streets that follow pedestrian routes to conform to the cross-section guidelines (specified in Figure E-1) could make them more conducive to pedestrians. A large portion of the study area is and will continue to undergo redevelopment. It is recommended that such sidewalk and street improvements be completed by adjacent development as it occurs; however, this could result in the fragmentation of pedestrian facilities where it is important to provide linkages between destinations and zones (see Figure E-2 and Figure E-3). Alternative solutions could be taken into consideration in order to ensure comprehensive pedestrian mobility throughout the downtown area. Funding sources are available through various sources mentioned in section 6.3 of this report for future improvements that provide complete pedestrian routes by filling in sections that are not improved by adjacent redevelopment.
- Figure E-4 presents recommended pedestrian bridge locations. The Cultural Corridor Trail Bridge is in final design stages and will be constructed to span Las Vegas Boulevard in front of the Lied Discovery Museum. Numerous pedestrian bridge alternatives surrounding Union Park are currently under discussion between CLV staff and the developer. Four pedestrian bridges have been identified by both the CLV and Clark County at the intersection of Las Vegas Boulevard and Sahara Avenue; however, coordination with adjacent properties and future roadway improvements is necessary. The intersections of Las Vegas Boulevard/Main Street, Las Vegas Boulevard/Charleston Boulevard, and Charleston Boulevard/Main Street have been identified as general locations that could potentially require and benefit from the addition of pedestrian bridges. These locations should be re-evaluated in five years.
- The primary barriers affecting pedestrian mobility in and out of the downtown area are I-15, I-515/US 95, and the UPRR. These barriers have been evaluated and the results can be found on Figure E-5. The NDOT is currently conducting the I-15 Resort Corridor Study as well as the I-515 Corridor Study; coordination with NDOT is recommended in order to address under-crossings and off/on ramps that need improvement. The Sahara Avenue Corridor Rapid Transit Study Alternative Analysis Report proposes numerous roadway improvements along Sahara Avenue; however, no improvements include recommendations for improved pedestrian access along the industrial overpass. It is important to consider alternative solutions that provide better pedestrian access in and out of the resort corridor.
- There are a few locations within the study area that may have one streetlight at intersections and few in between blocks as illustrated on Figure E-6. It is recommended that lighting meets the RTC standard of 170-foot spacing for a roadway with 80 feet of right-of-way. It is recommended that the addition of streetlights at least be addressed with future redevelopment.
- The CLV Centennial Plan is an outstanding planning document for future downtown improvements; however, it does not cover the entire study area. It is recommended that the CLV continue to implement Centennial Plan policies within the boundary as well as adopt the Regional Transportation Plan Update that will be issued by the RTC later in 2008. This update will include Complete Street policies that will help implement improved pedestrian facilities throughout the entire area. It is also recommended that educational, encouragement, and enforcement programs be implemented as improved facilities are constructed. The Joining Forces grant is available to all areas within the state of Nevada and has sufficient funds to support ongoing pedestrian enforcement programs.

The following is a breakdown of estimated improvement cost* for the implementation of the different cross-section guidelines per city block using an average length of 430 feet.

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> ➤ Centennial Plan Guideline: <ul style="list-style-type: none"> » North/South streets: \$550,000 » East/West streets: \$430,000 ➤ Multimodal Emphasis Guideline: <ul style="list-style-type: none"> » \$470,000 | <ul style="list-style-type: none"> ➤ Pedestrian Emphasis Guideline <ul style="list-style-type: none"> » \$680,000 ➤ Pedestrian Path Guideline (5-foot sidewalk) <ul style="list-style-type: none"> » \$70,000 | <ul style="list-style-type: none"> ➤ Las Vegas Strip Corridor Pedestrian Bridges <ul style="list-style-type: none"> » \$10,000,000 each ➤ Standard Pedestrian Bridges <ul style="list-style-type: none"> » \$3,000,000 each |
|--|---|---|

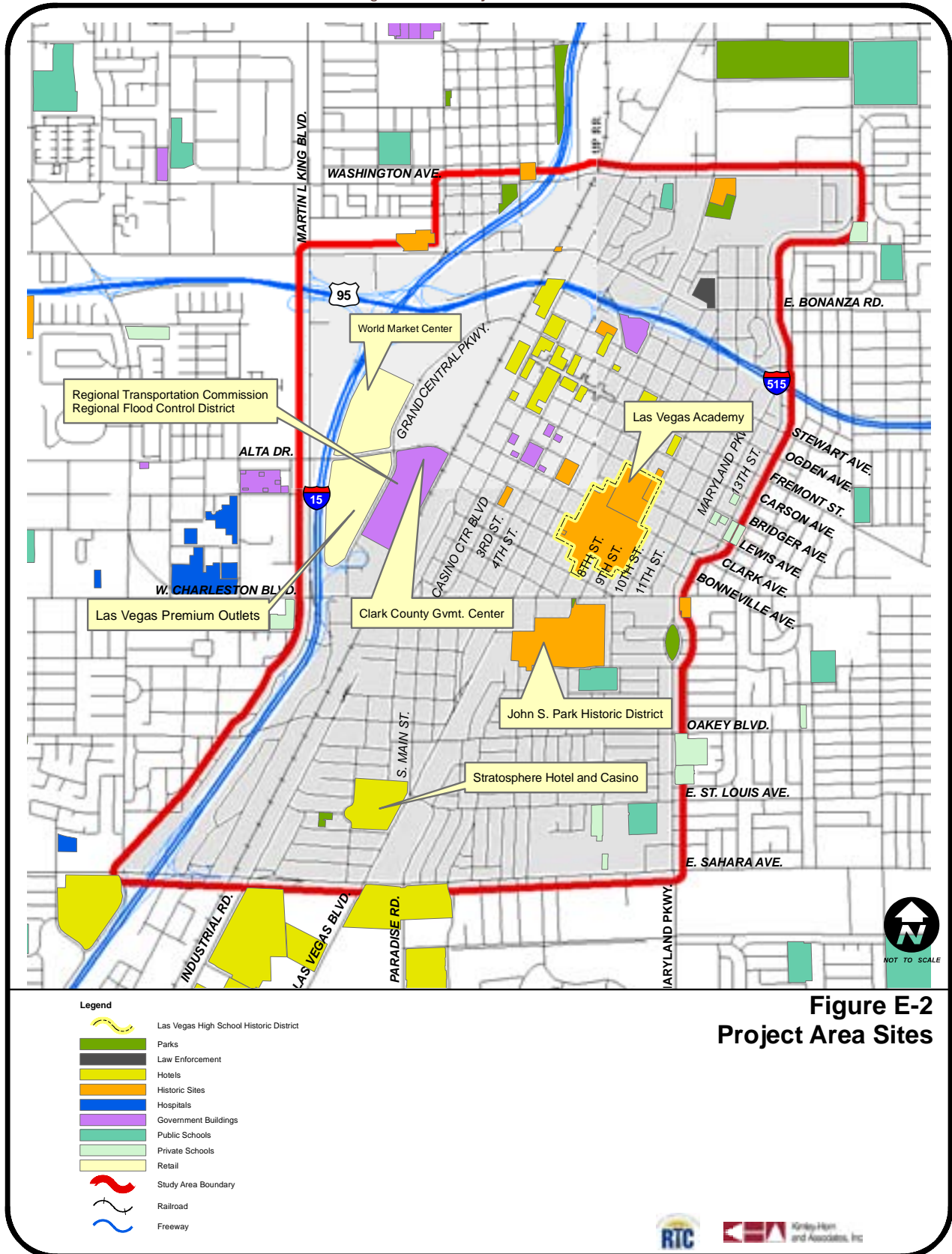
* These estimates do not include gas, power, or telephone line relocation as the cost associated can vary greatly. Some projects can incur \$500,000 or more per block in utility relocation costs and this should be taken into consideration.

Figure E-1 • Pedestrian Route Guidelines



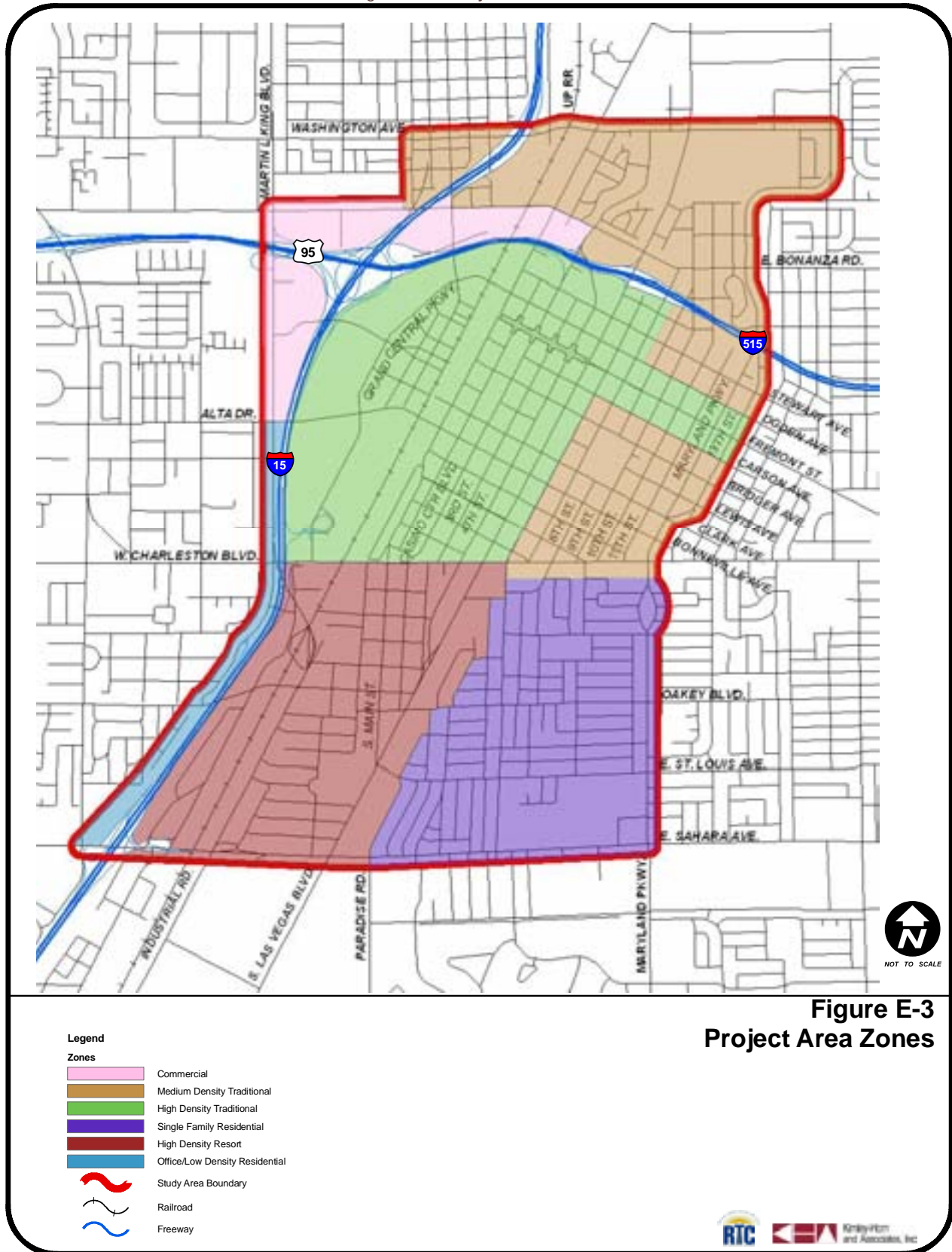
Downtown Pedestrian Circulation Study

Figure E-2 • Project Area Sites



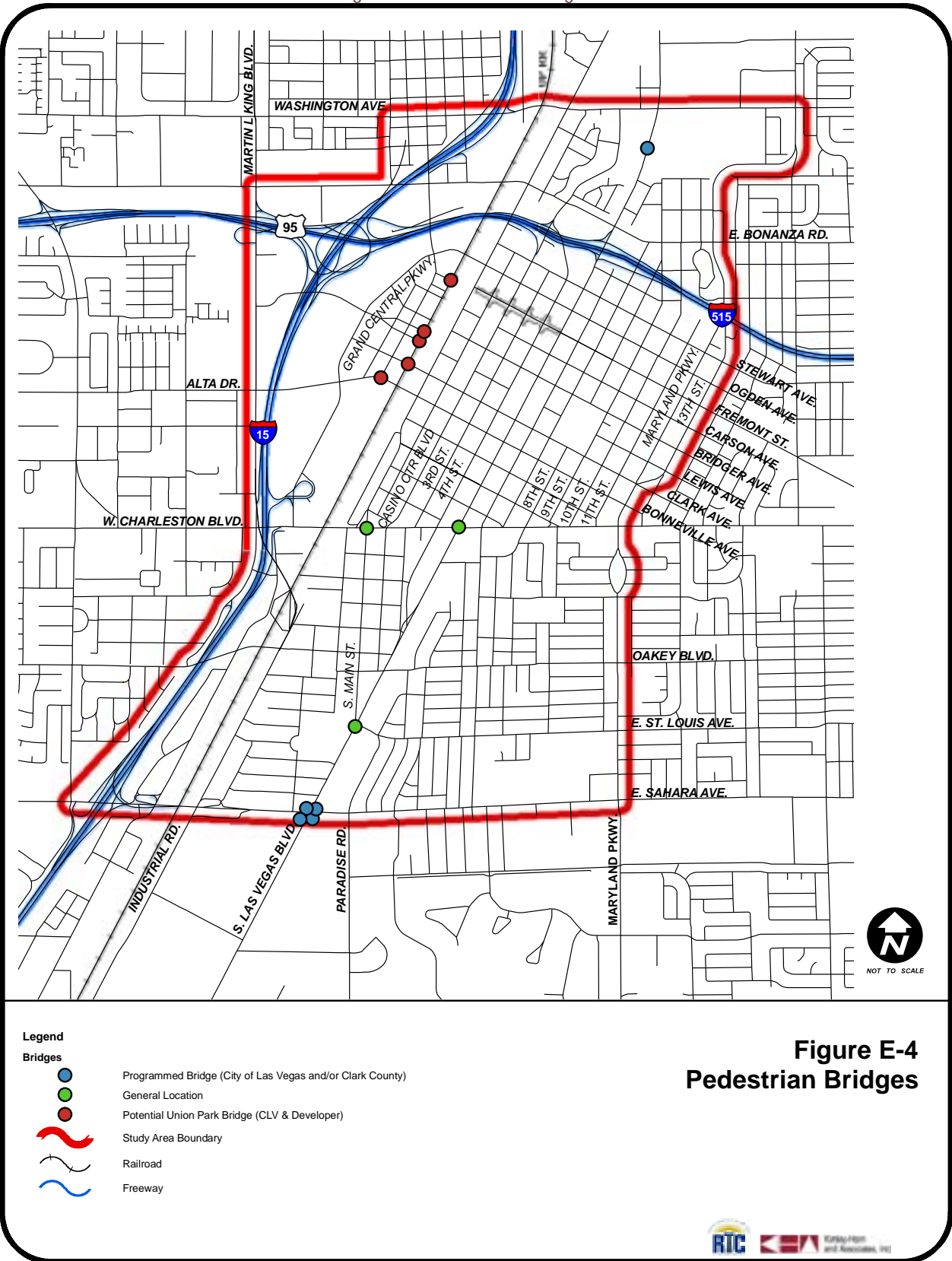
Downtown Pedestrian Circulation Study

Figure E-3 • Project Area Zones



Downtown Pedestrian Circulation Study

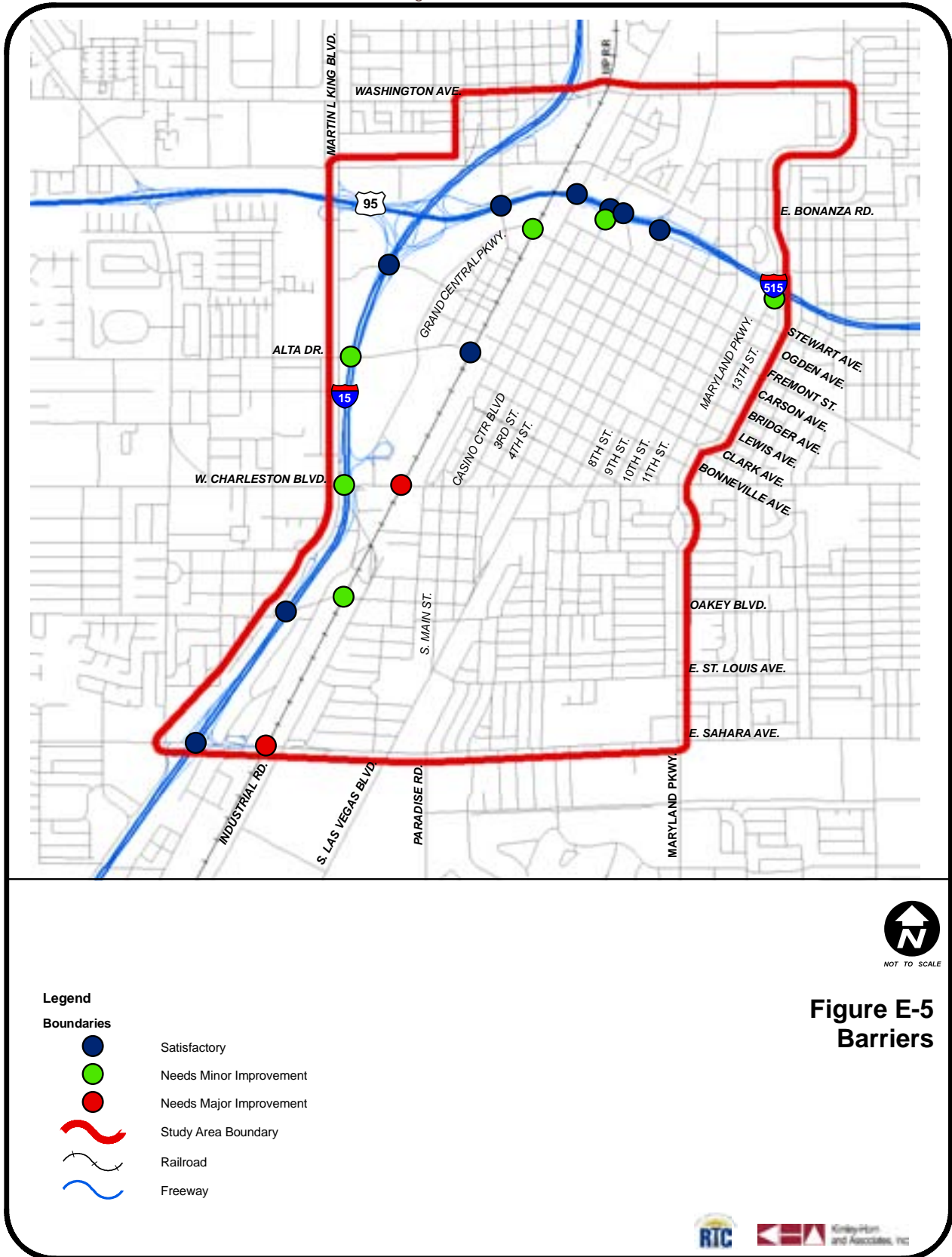
Figure E-4 • Pedestrian Bridges



**Figure E-4
Pedestrian Bridges**

Downtown Pedestrian Circulation Study

Figure E-5 • Barriers



Downtown Pedestrian Circulation Study

Figure E-6 • Lighting

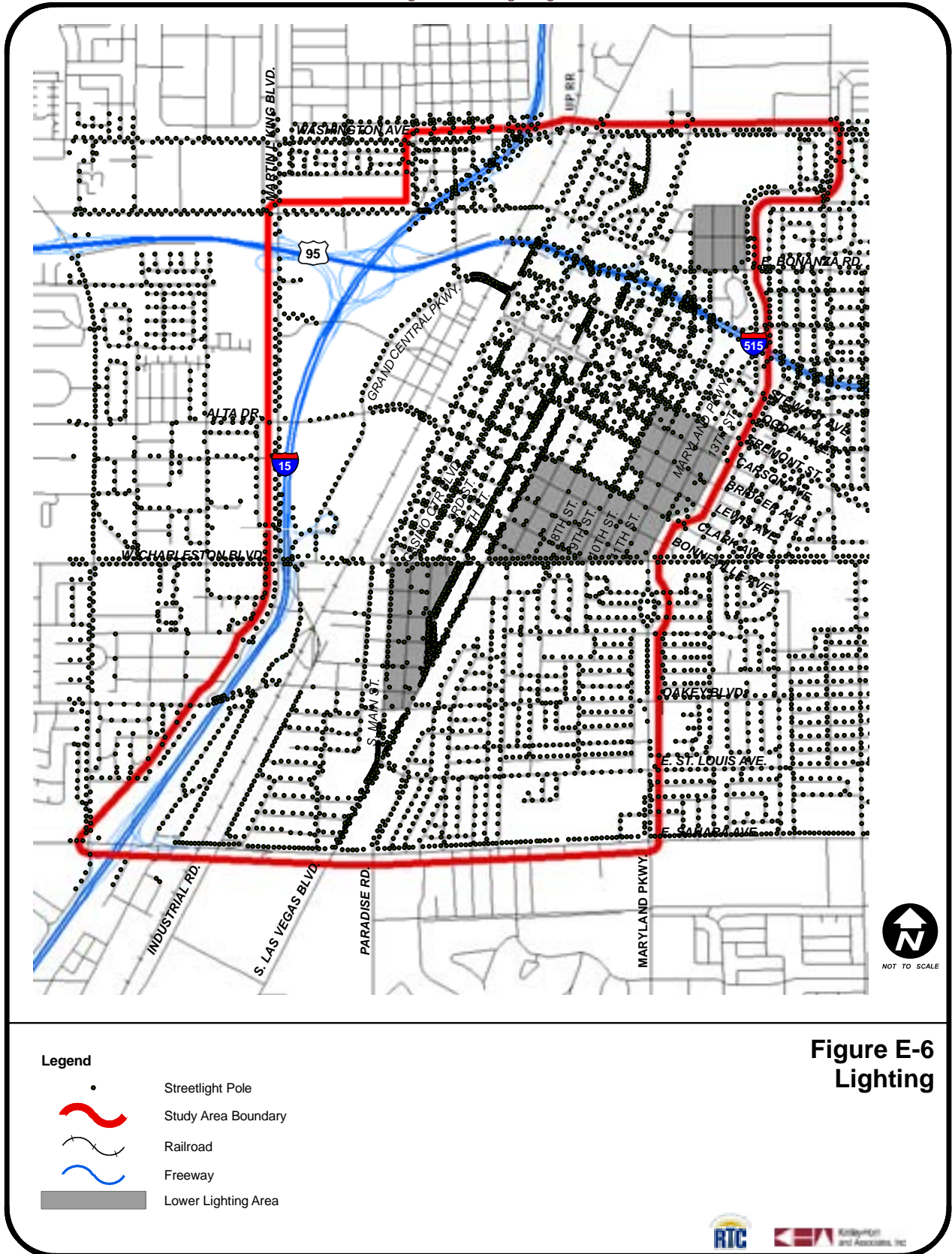


Figure E-6 Lighting

Downtown Pedestrian Circulation Study

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APPENDIX

Appendix A	Traffic Signal Cycle Lengths
Appendix B	Pedestrian Level of Service Calculations
Appendix C	Nevada Revised Statutes (Adverse Possession)
Appendix D	Vehicle Level of Service Spreadsheets
Appendix E	The Complete the Streets Act of 2008
Appendix F	Enforcement Flyer
Appendix G	Cost Estimate



SECTION 1: TECHNICAL WORKING GROUP



SECTION 1 TECHNICAL WORKING GROUP

In an effort to direct the development of this study, a Technical Working Group (TWG) was organized similar to that of the Downtown Traffic Capacity, Transit, and Parking Needs Study. Meetings have been held throughout the project in to obtain valuable feedback regarding the direction of the study. Representatives from local agencies and the Downtown Alliance involved in the TWG include:

- RTC of Southern Nevada
 - » MPO
 - » Transit
- City of Las Vegas (CLV)
 - » Public Works
 - » Office of Business Development
 - » Planning and Development
 - » Detention and Enforcement
 - » Leisure Services
- City of North Las Vegas (CNLV)
 - » Public Works
 - » Planning and Zoning
 - » Economic Development
- Clark County (CC)
 - » Comprehensive Planning
- Nevada Department of Transportation (NDOT)
 - » Program Development
 - » Traffic Engineering
- Downtown Alliance



The TWG held regular meetings to discuss the progress of each task of the study and address any issues. The dates of the TWG meetings were as follows:

- December 4, 2007
- February 26, 2008
- March 25, 2008
- May 6, 2008



SECTION 2: DATA
COLLECTION



SECTION 2 DATA COLLECTION

The focus of the data collection task was to collect and summarize existing data and project information within the study area. The following subtasks were completed during the data collection phase of the project.

- Obtain recently completed or ongoing technical/planning studies within or adjacent to the project study area that impact pedestrian mobility from the RTC or other entities as appropriate;
- Obtain available crash data from FAST and NDOT for pedestrian-involved crashes within the study area;
- Review and add pertinent data from the CLV's Trails and Centennial Plan for planned trails and pedestrian corridors within the study area;
- Develop a preliminary map illustrating existing pedestrian volume counts, existing traffic signal cycle lengths, crash data, trails and transit routes. Data from the Downtown Traffic Capacity, Transit, and Parking Needs Study will be utilized;
- Summarize the pedestrian-oriented results of the user survey conducted during the Downtown Traffic Capacity, Transit, and Parking Needs Study;
- Review field conditions typical for pedestrians in different areas within the study area;
- Meet with CLV staff to discuss the existing land use, pedestrian tourist and employment destinations, and planned redevelopment within the downtown study area. Preliminary maps displaying this data will be developed; and
- Develop a TWG to review data.

Existing data was collected for the project study area in order to outline current and future pedestrian destinations, existing facility conditions, and safety issues as well as other relevant information needed to identify pedestrian routes that, with various improvements, will provide the facilities and environment necessary for a walkable downtown Las Vegas. Additionally, this data was utilized for the evaluation of alternatives. The following summary includes existing site information; street classification; bus, bike, and pedestrian routes; intersection volume counts; traffic signal lengths; relevant crash data; and user survey data. This data was used to prepare exhibits depicting existing pedestrian facilities as well as future pedestrian route alternatives. The intent of the assessment was to identify existing and future pedestrian routes, which were then analyzed and incorporated into the implementation plan.

2.1 Data Received

Various data has been collected from different sources and is presented in this section. The following lists the type of information gathered and its source.

CLV

- Downtown trails
- Streetlight Inventory
- Future redevelopment and street improvement projects



Nevada Department of Transportation

- Crash data

Las Vegas Metropolitan Police Department

- Pedestrian/vehicle incident data

Regional Transportation Commission (Downtown Traffic Capacity, Transit, and Parking Needs Study)

- Pedestrian volume counts
- Pedestrian-oriented user survey data
- Traffic signal cycle lengths
- Transit routes
- Bicycle facilities
- Street hierarchy: pedestrian emphasis and multimodal emphasis

2.1.1 EXISTING LAND USE AND PROPOSED PROJECTS

An inventory of existing sites and land uses within the study area boundary was taken to identify the areas within the study limits and are illustrated in **Figure 2-1**. The existing land uses that were captured within the exhibit include Single Family Residence, Multi-Family Residence, Commercial, Mixed Use, Industrial, and Public Facility land uses. As seen on the exhibit, Commercial and Industrial land uses extend throughout the boundaries of the study area as does the Multi-Family Residence land use. The Single Family Residence land use is concentrated in the southeast quadrant of the study area. It should also be noted that the Single Family Residence land use is bounded by the major arterial corridors of Charleston Boulevard, Las Vegas Boulevard, Maryland Parkway, and Sahara Avenue, which are high volume corridors.

Specific sites within the project study area which may be considered pedestrian destinations are identified on **Figure 2-2**.

2.1.2 RELEVANT STUDIES

Numerous relevant studies have also been gathered that may provide information applicable to this study. The following is a list and description of the various studies.

CLV Centennial Plan

In 2000, the CLV published this document to establish fundamental design standards to guide the redevelopment of the downtown core, which includes areas such as site planning, transportation and parking, streetscapes, architectural design, signage, landscaping, and outdoor dining. Typical street sections are also included in these standards. The downtown area was broken up into nine planning districts that are characteristic with their surrounding land uses and architectural character. These districts include the Office Core, Las Vegas Boulevard, Downtown South, 18b-the Arts District, Parkway Center, Central Casino Core, Northern Strip Gateway, East Village, and Fremont East. The incorporation of these districts is discussed later in this document.





Downtown Traffic Capacity, Transit, and Parking Needs Study

KHA was retained in 2006 to prepare a study that identified existing traffic and operational conditions, user feedback, planned infrastructure improvements, and existing parking supply and demand. This data was used to evaluate future network operational conditions and provide recommended improvements. The report also presents a street hierarchy that identifies specific streets as having a traffic, multimodal, or pedestrian emphasis. The streets identified as multimodal or pedestrian will be analyzed in the analysis of pedestrian routes task of this study. The Downtown Pedestrian Circulation Study is meant to build upon this report by addressing pedestrian needs within the study area.



Safe Access is Good for Business (Federal Highway Administration)

This study was published by the Federal Highway Administration (FHWA) in August 2006; its goal was to promote the design of safer approaches to businesses in order to reduce the number of collisions and improve traffic flow. A few key points include the idea that properly designed entrances shared by multiple businesses allow more site area for parking. Internal connections between businesses allow customers to circulate easily without reentering a busy road. Driveways and service road entrances farther away from signalized intersections allow easy access for customers, even during times of peak congestion.

Sahara Avenue Corridor Rapid Transit Study

This report, which was completed in October 2007, was prepared for the RTC by The Louis Berger Group in cooperation with Parsons Brinckerhoff. The study investigated the Sahara corridor from I-215 to Hollywood Boulevard because Sahara Avenue is an important route that provides access across the Las Vegas valley and to residential and commercial destinations and the Las Vegas Resort Corridor. The results of this study will help address pedestrian issues that currently exist at the intersection of Sahara and Las Vegas Boulevard. In particular, the report recommends various pedestrian bridge alternatives that will be discussed in the alternatives task of this study.

Managing Travel for Planned Special Events (FHWA)

Also published by the FHWA (June 2007), this study identifies five phases in the management of special events. These phases include regional planning and coordination, event operations planning, implementation activities, day-of-event activities, and post-event activities. The study also addresses traffic management planning components necessary in special events planning, which include traffic flow and route planning, site access and parking planning, pedestrian access planning, traffic control planning, travel demand management (TDM), transit service planning, incident management, and traveler information planning.

Road Diet Handbook: Setting Trends for Livable Streets

Jennifer Rosales, Senior Professional Associate with Parsons Brinckerhoff, published this handbook in July 2007 to serve as a comprehensive resource of the road diet concept. This concept involves the conversion of a four-lane roadway to a two-lane roadway with two-way left-turn lanes that allow additional room for bike lanes and widened sidewalks, as well as landscaping or parking. The two-way left-turn lane could also be used as a raised median, serving as a pedestrian refuge in the middle of a crosswalk. Left-turn pockets would be placed at locations with high left-turn movements. This alternative would be ideal for roadways that have stretches of two-way left-turn lanes that are not used often and which leave pedestrians stranded in the middle. Implementations of the road diet concept have resulted in a reduced number and severity of crashes and increased property values.

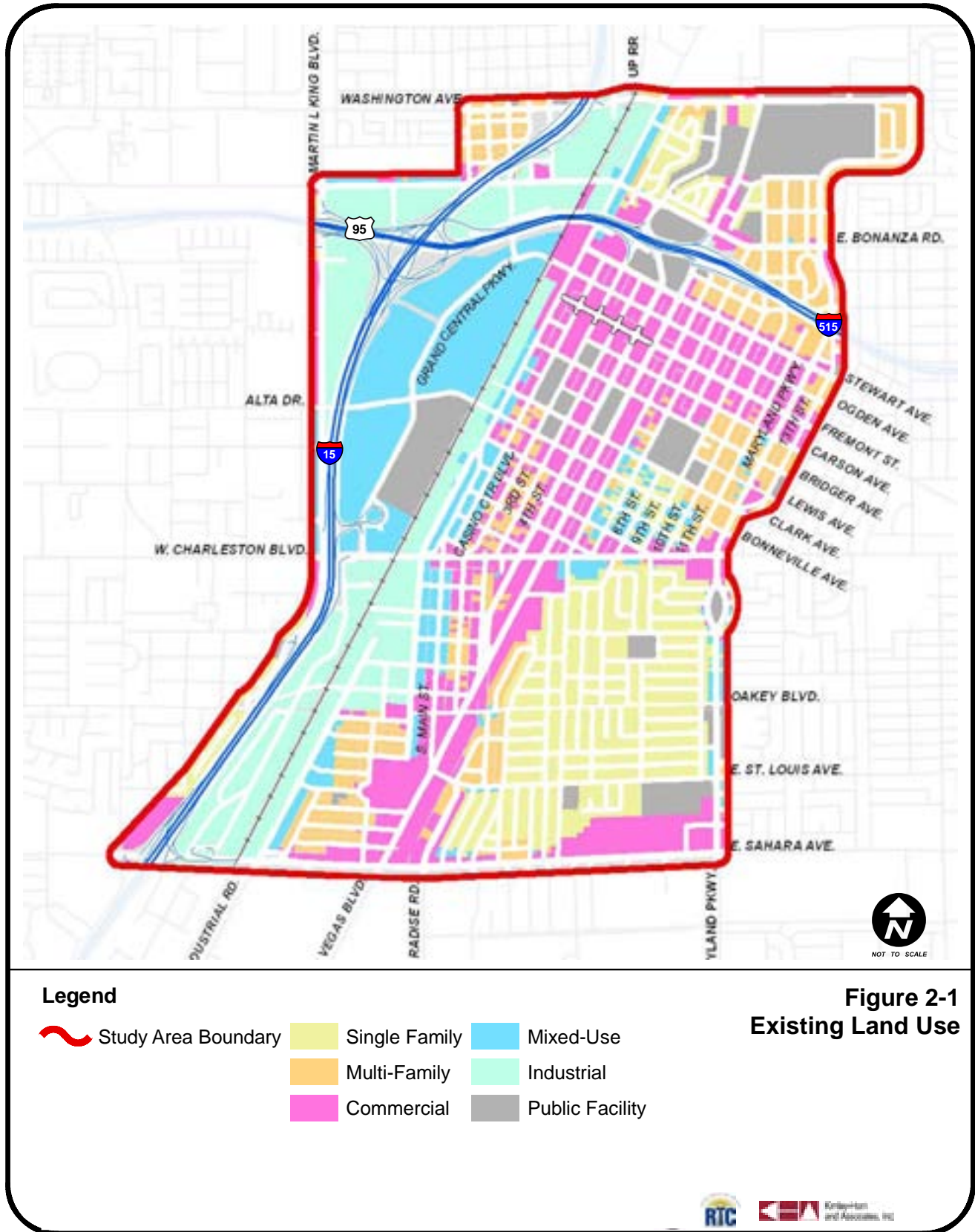
Indianapolis Paves the Way for Bikes and Pedestrians

This article, written in October 2007, discusses a new project in Indianapolis that consists of removing parking and travel lanes and replacing them with bicycle and pedestrian space. The eight miles of separated greenway is being used as an economic development tool.

Other studies that were researched through this study process include the following:

- *Improving the Pedestrian Environment through Innovative Transportation Design (ITE)*
- *Design and Safety of Pedestrian Facilities (ITE)*
- *State of Oregon Bicycle and Pedestrian Plan*
- *Santa Barbara Pedestrian Plan*
- *Madison Wisconsin Pedestrian Plan*
- *Sacramento Pedestrian Safety Guidelines*
- *Planning and Designing for Pedestrians: Model Guidelines for the San Diego Region*

Figure 2-1 • Existing Land Use



Downtown Pedestrian Circulation Study

Figure 2-2 • Project Area Sites

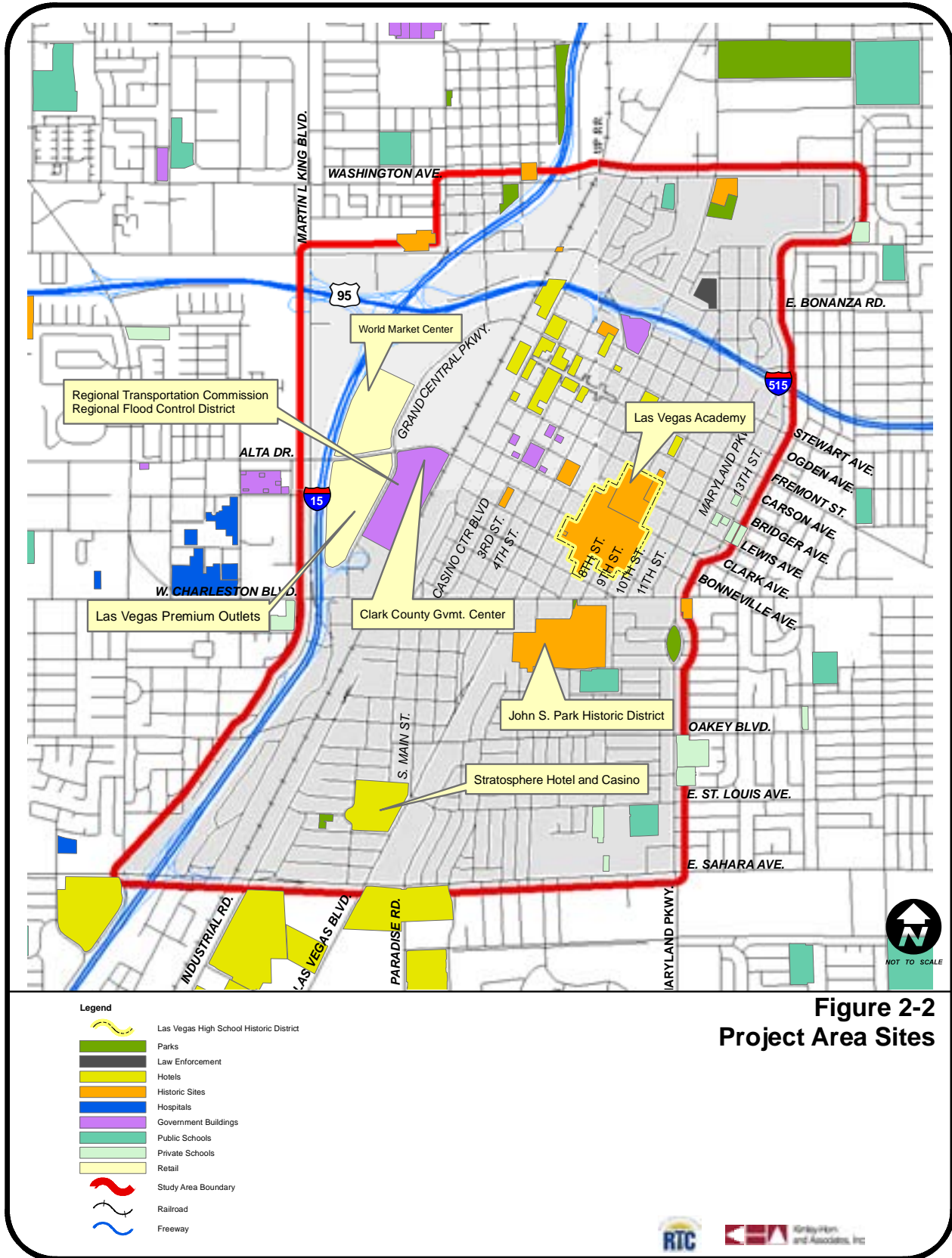


Figure 2-2
Project Area Sites

Downtown Pedestrian Circulation Study

2.1.3 DOWNTOWN REDEVELOPMENT

The downtown area continues to undergo redevelopment with some of the current larger redevelopment projects shown on **Figure 2-3**. Union Park, currently under construction, is located north of Alta Drive and east of Grand Central Parkway and will be a mixed-use development with office, retail, and commercial developments. The general area southwest of Charleston Boulevard and Main Street has been approved for a combination of condominiums, hotels, and a sports arena. Union Park, along with other future major projects indicated on **Figure 2-3**, are expected to have an impact on the vitality of the downtown area and potentially the pedestrian routes among destinations. Some of the projects include pedestrian facilities within their development. **Figure 2-4** presents all current projects that the CLV Office of Business Development lists as proposed, permitting, approved, and under construction as of January 2008. It is expected that the construction of these projects will include adjacent sidewalk improvements.

Numerous street improvement projects exist within the study area that are in various design stages and include improved pedestrian facilities. The following is a list and summary of the reported projects shown in **Figure 2-5**:

- Bonneville/Clark Improvements
 - » The Bonneville/Clark improvements involve turning the two parallel streets into a one-way couplet. The project consists of reconstructing all sidewalks with streetscape areas widened to as much as 19.5 feet to allow room for palm trees and shade trees. Typical cross-sections for this project can be found on **Figure 2-6**.
- Downtown BRT
 - » This project has two phases, the first along Grand Central Parkway to Ogden Avenue/Casino Center Boulevard and the second south along Casino Center Boulevard. This portion makes an alignment change just before Charleston Boulevard and continues south along 3rd Street. The improvements consist of new lane configurations to accommodate bus lanes and stations at the center as well as the side of the roadway. It also includes 10-foot sidewalks with planters. A rendering as well as typical cross-sections of this project can be found on **Figure 2-7**.
- Casino Center Streetscape Improvements
 - » The Casino Center Streetscape improvements are along Casino Center Boulevard between Colorado Avenue and Charleston Boulevard. This segment of roadway will conform to the Centennial Plan standard of 10-foot sidewalks with a five-foot amenity zone. Additions also include decorative stars embedded into the sidewalk and custom benches with planters that serve as artwork. Specific cross sections are unavailable at this time.
- Hoover Streetscape Improvements
 - » These improvements consist of bringing the portions along Hoover Avenue between Casino Center Boulevard and Las Vegas Boulevard up to the standards of the Centennial Plan typical street section. Specific cross sections are unavailable at this time.
- Martin Luther King Improvements
 - » This project entails the widening of Martin Luther King Boulevard from Alta Drive to Carey Avenue. Sidewalks will be added where they are missing and reconstructed at portions due to the widening; however, they will be five feet at the length of the project. Specific cross sections are unavailable at this time.
- Boulder Highway/Fremont Street BRT
 - » This BRT project, currently in final design stages, begins within the study area at 8th Street and Fremont Street and continues southeast onto Boulder Highway. The segment from 8th Street to Bruce Street will have an exclusive curbside bus lane. The following segments alternate between mixed flow travel lanes and exclusive curbside bus lanes.

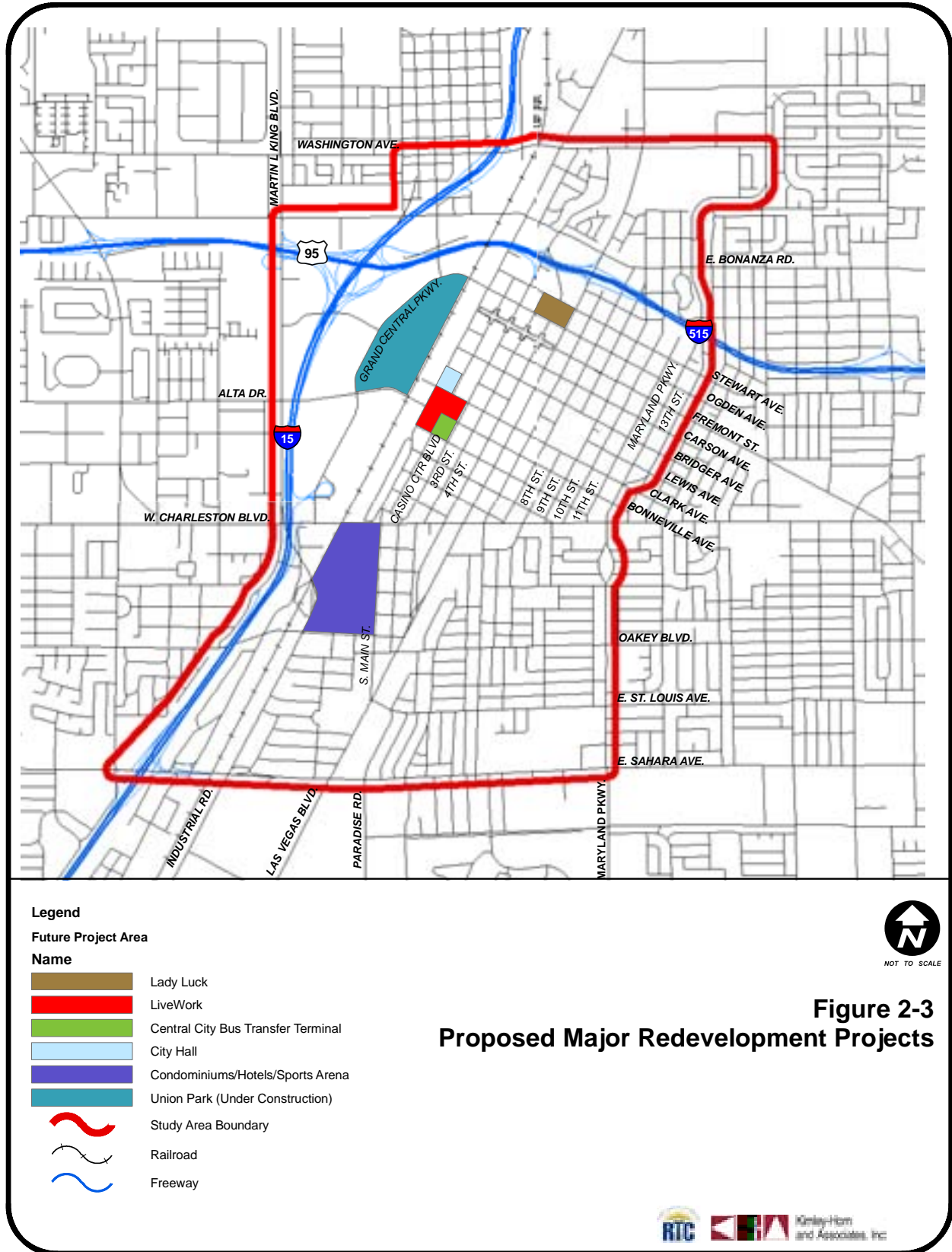
- Stewart Avenue Rehab Phase I and Phase II
 - » The Stewart Avenue improvements consist of two phases: Phase I is from Las Vegas Boulevard to Maryland Parkway and Phase II is from Main Street to Las Vegas Boulevard. Five-foot sidewalks will be maintained the length of both projects; however, Phase II has a streetscape emphasis and sidewalks will be widened to 10 feet where right-of-way allows. Specific cross sections are unavailable at this time.

Taking the future downtown redevelopment into consideration, the existing and future land use data was also used in categorizing various zones within the study area. Similar to the Las Vegas Downtown Centennial Plan, which outlined nine planning districts, **Figure 2-8** breaks the study area into six more generalized zones that describe the type of environment the surrounding area will be in the future. This figure, which was developed using the existing and future site data, will help plan for comprehensive pedestrian connectivity. The recommended improvements from this study will accommodate the different pedestrian needs specific to these six zones.

These zones include:

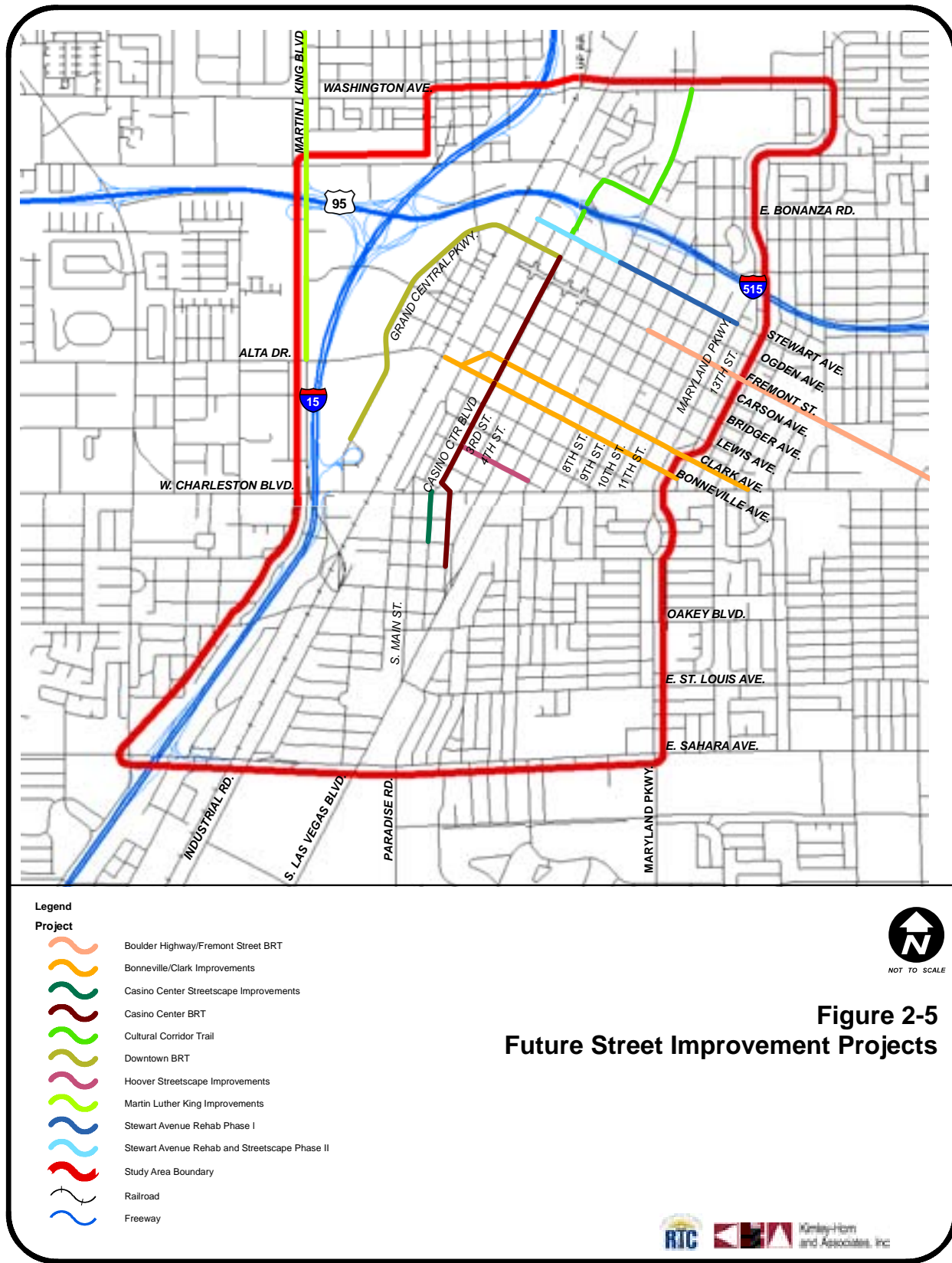
- High density resort
 - » With the momentum of the resort corridor along Las Vegas Boulevard moving north of Sahara Avenue and up along Main Street with the Pulse project, the high density resort zone will be similar to the Strip.
- High density traditional
 - » Both high and medium density traditional are intended to have a traditional downtown feel. However, the high density traditional zone is planned to have a larger number of high-rise buildings with retail on the street level.
- Medium density traditional
 - » This zone has an urban feel similar to the high density traditional zone, except more spread out. Most buildings are one and two stories as opposed to high rises.
- Single-family residential
 - » The single-family residential zone almost completely consists of unattached homes.
- Office/low density residential
 - » The office/low density residential zone contains office complexes as well as single-family residential.
- Commercial
 - » Warehouses and “big box” retail are primarily located in the commercial zone.

Figure 2-3 • Proposed Major Redevelopment Projects



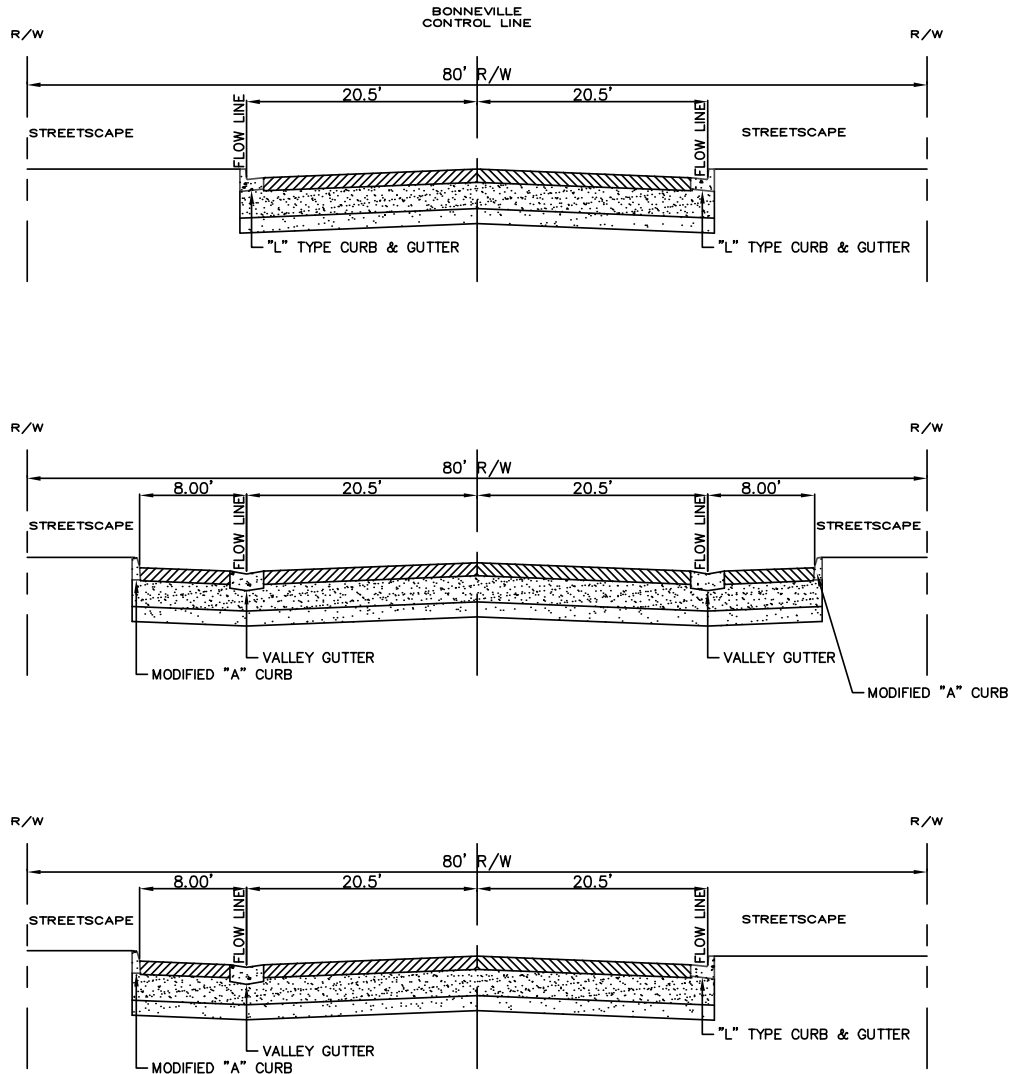
Downtown Pedestrian Circulation Study

Figure 2-5 • Future Street Improvement Projects



Downtown Pedestrian Circulation Study

Figure 2-6 • Bonneville/Clark One-Way Couplet



NOTE: BOTH BONNEVILLE AND CLARK AVENUE WILL INCLUDE THREE 12-FOOT TRAVEL LANES AND ONE 5-FOOT BICYCLE LANE. BOTH STREETS WILL ALSO HAVE SECTIONS THAT HAVE PARKING ON BOTH SIDES, ONE SIDE, AND NO PARKING. HOWEVER, THE SIZE OF THESE PARKING AREAS VARY.

FIGURE 2-6
BONNEVILLE/CLARK ONE-WAY COUPLET

Figure 2-7 • Downtown Bus Rapid Transit (BRT)

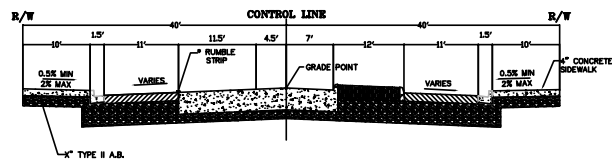
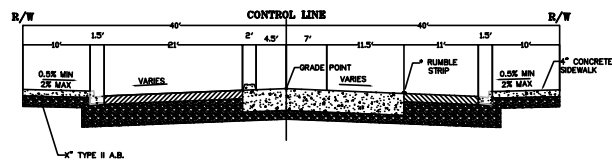
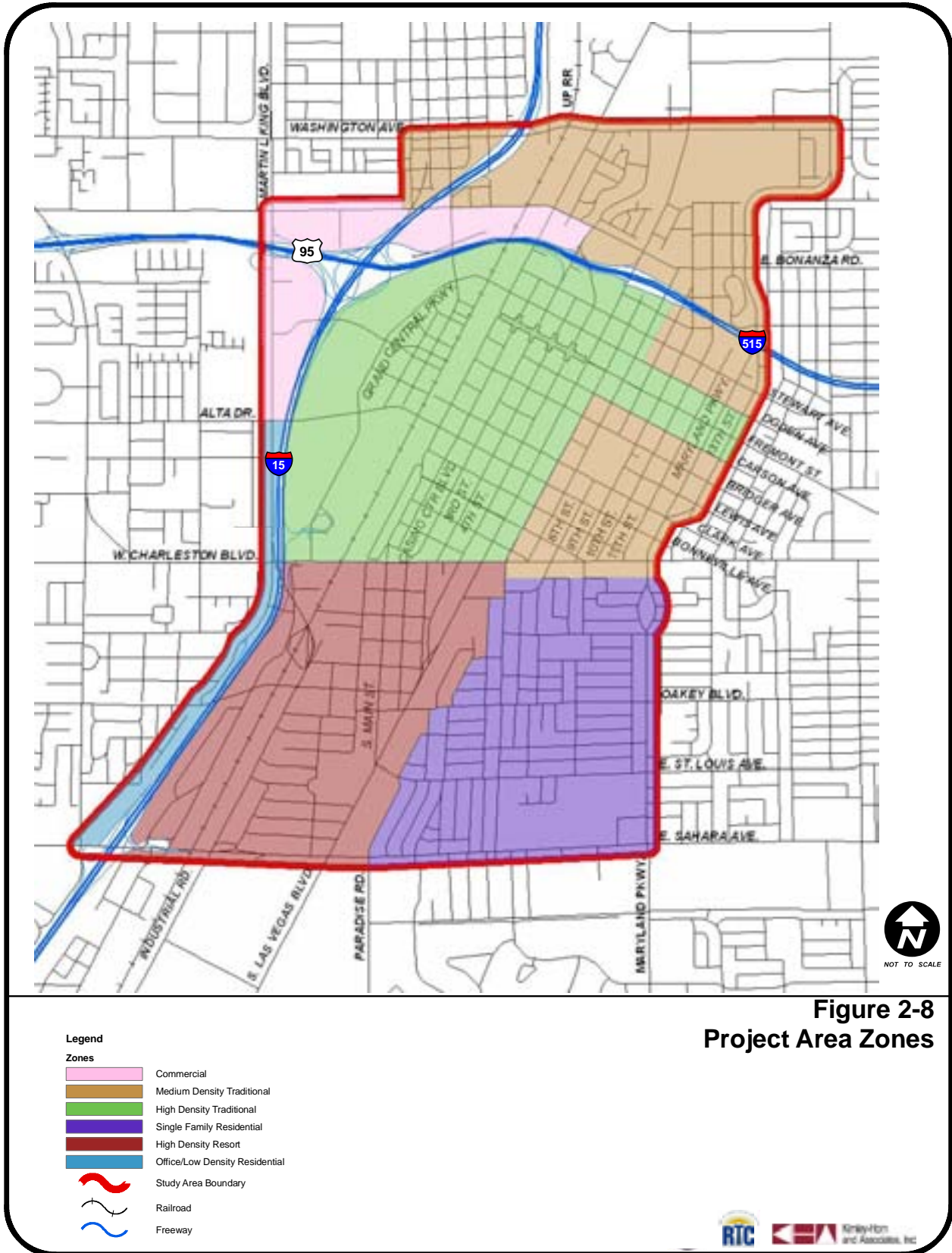


FIGURE 2-7
BUS RAPID TRANSIT (BRT)

Figure 2-8 • Project Area Zones



Downtown Pedestrian Circulation Study

2.2 Existing Conditions

2.2.1 STREET NETWORK PARAMETERS

Detailed field reviews were conducted to capture the characteristics of the study area. The first detailed field review was performed for each of the 59 study area intersections during October and November 2006 as part of the Downtown Traffic Capacity, Transit, and Parking Needs Study. General street network parameters within the study area are summarized in Table 2-1. As seen in the table, speed limits are generally 35 miles per hour or slower and the roadway cross-sections generally include two lanes per direction. Figure 2-9 illustrates the general CLV street classifications and number of lanes by corridor. As seen by this figure, the downtown roadway network bounded by Stewart Avenue, 13th Street, Bonneville Avenue, and Las Vegas Boulevard is generally secondary collectors. These roadways typically have lower travel speeds and volumes and accommodate shorter intra-community trips. Primary arterials within the study—which include Sahara Avenue, Charleston Boulevard, Bonanza Road, portions of Washington Avenue, Las Vegas Boulevard, portions of Maryland Parkway, Main Street, and Martin Luther King—have the capacity for medium to high speeds and high traffic volumes and provide regional connectivity. With Union Park and other improvements, Grand Central Parkway has been designated as a Parkway Arterial, as it can accommodate higher volumes yet does not provide connectivity across regions of the city.

Table 2-1 – Summary of General Street Network Parameters

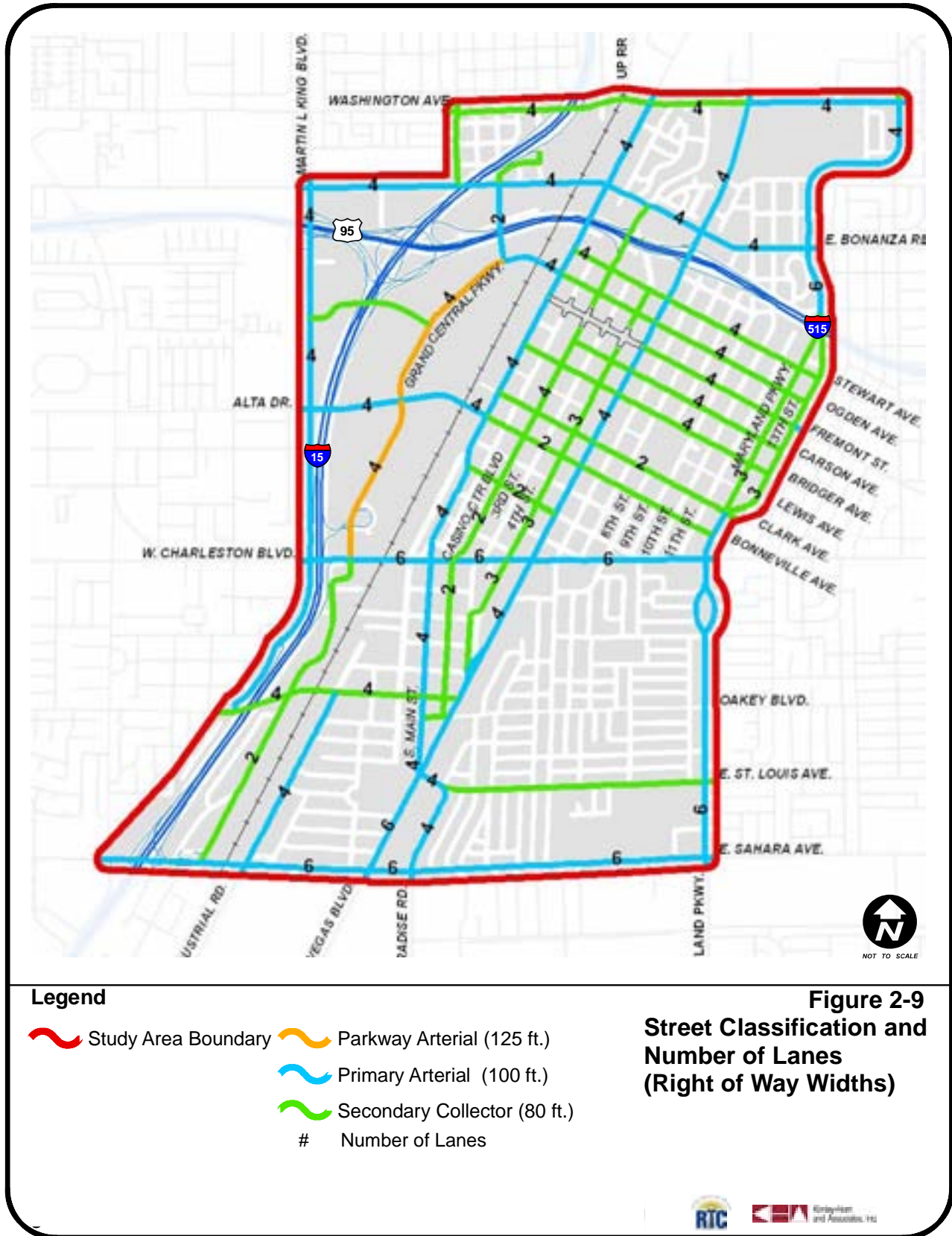
ROADWAY	TRAVEL LANES PER DIRECTION	SPEED LIMIT (MPH)	MEDIAN TYPE
Washington Avenue	2	35	TWLTL
Bonanza Road	2	35	TWLTL
Stewart Avenue	2	30	TWLTL
Ogden Avenue	2	Not Posted	TWLTL
Fremont Street	2	25	Undivided
Carson Avenue	1, 2	25	TWLTL
Bridger Avenue	2	25	TWLTL
Lewis Avenue	1	Not Posted	Undivided
Clark Avenue	1	25	Undivided
Bonneville Avenue	1, 2	30, 35	TWLTL
Gass Avenue	1	25	Undivided
Charleston Boulevard	3	35	TWLTL
Wyoming Avenue	1, 2	25, 35	TWLTL
St. Lous Avenue	2	Not Posted	TWLTL
Sahara Avenue	3	45	Raised Curb
Martin Luther King Boulevard	2	35	TWLTL
Grand Central Parkway	2	35	Raised Curb
Industrial Road	1, 2	35	TWLTL
Main Street	2	25, 30	TWLTL
Casino Center Boulevard	2	25, 30	Undivided
3rd Street	1	Not Posted	Undivided
4th Street	3	25, 30	One-Way
Las Vegas Boulevard	2, 3	30, 35	Raised Curb



ROADWAY	TRAVEL LANES PER DIRECTION	SPEED LIMIT (MPH)	MEDIAN TYPE
Paradise Road	2	Not Posted	Raised Curb
Roadway	Travel Lanes per Direction	Speed Limit (mph)	Median Type
7th Street	1	Not Posted	Undivided
9th Street	1	25	Undivided
Maryland Parkway	2, 3	35	Raised Curb
13th Street	3	35	One-Way

TWLTL - Two-Way Left Turn Lane

Figure 2-9 • Street Classification and Number of Lanes (Right-of-Way Widths)



Downtown Pedestrian Circulation Study

2.2.2 TYPICAL CONDITIONS

Another field review was performed in October 2007 with the purpose to identify the existing conditions of the pedestrian facilities within the study area. The following pictures illustrate the types of obstacles that were encountered during the field review.



Oakey Boulevard west of Maryland Parkway
Facing west
Pole and trash cans blocking sidewalk



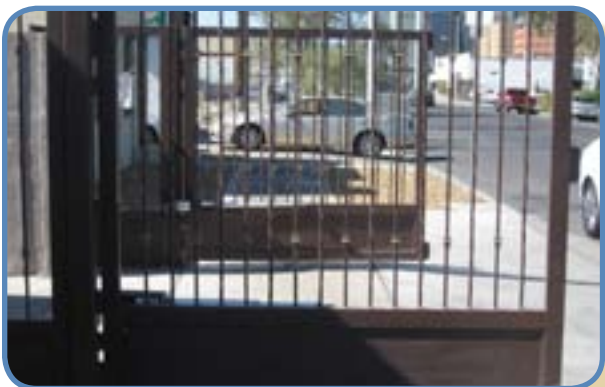
Main Street north of Oakey Boulevard
Facing north
Pole and vehicles blocking sidewalk



Bonneville Avenue east of Main Street
Facing east
No sidewalk ramp, low clearance



Casino Center Blvd. and Gass Ave.
Facing south
No sidewalk ramp, poor drainage



Casino Center Boulevard and Gass Avenue
Facing west
Gate blocks sidewalk when open

2.2.3 INTERSECTION DATA

2.2.3.1 Volume

The RTC *Downtown Traffic Capacity, Transit, and Parking Needs Study* included 24-hour volume data. NDOT count stations were identified within and/or adjacent to the project study area and the most recent count data was obtained for each location. This data was summarized and indicated that the majority of the study area has typical weekday peaking characteristics between 7:00 A.M. and 9:00 A.M. and between 4:00 P.M. and 6:00 P.M. In addition, traffic data had been collected at these intersections during these peak hours, which included pedestrian volume counts that were used to evaluate a peak-hour volume for both the morning and evening. Although the pedestrian peak hour volume was taken based on the traffic peak hour, the pedestrian peak hour and traffic peak hour coincided in almost all cases. The peak-hour volumes from each leg of the intersections were added and evaluated into three categories: high, medium, and low. The results can be found in **Figure 2-10** and **Figure 2-11**. As indicated by the figures, the intersections with the highest pedestrian volume include those between the two blocks north and south of the Fremont Street Experience, the intersections along Fremont East, and the intersections at Las Vegas Boulevard/Sahara Avenue and St. Louis Avenue/Charleston Boulevard. The intersections with medium pedestrian volumes tend to be along arterials such as Las Vegas Boulevard, Charleston Boulevard, and Bonanza Road. Intersections near residential neighborhoods see the lowest pedestrian volume.

2.2.3.2 Signalized Intersection Timing Plans

Traffic signal timing plans were obtained from RTC FAST and a copy is included in **Appendix A**. A typical primary arterial intersection such as Las Vegas Boulevard and Charleston Boulevard has an AM and PM rush hour cycle length of 140 seconds with 28 seconds allotted for pedestrian clearance during each phase, whereas secondary collector intersections such as 4th Street and Bridger Avenue have 70-second cycle lengths with 20 seconds for pedestrian clearance during each phase. This information will be used in evaluating intersections that will be incorporated into pedestrian routes. The adjustment of the geometrics of certain intersections may be recommended to provide proper pedestrian mobility. Adjustment of the time allocated for pedestrians to cross during a phase at signalized intersections may also be recommended.

The total pedestrian clearance time (or the sum of the “don’t walk”, yellow change, and red clear indications) can be calculated by dividing the pedestrian walking distance by the pedestrian’s walking speed. The pedestrian walking distance is typically measured from the middle-most point of the ADA ramp face of curb to the far side of the traveled way by the CLV. The CLV also uses four feet per second as the walking speed for calculation of the pedestrian clearance interval. The CLV does allow for slower walking speeds of 3.5 feet per second at locations with high senior or children activities such as near hospitals and senior centers. These parameters will be considered during the analysis phase of the project.

2.2.3.3 Crash Data

The Las Vegas Metropolitan Police Department provided **Figure 2-12**, which illustrates the regions through the Las Vegas valley that have the highest concentration of pedestrian versus auto collisions. Although this exhibit does not outline specific streets, it indicates that the downtown area is among the highest areas in the city for such incidents. The NDOT provided **Figure 2-13** that illustrates the locations of all pedestrian crashes that occurred downtown between January 2003 and December 2006. Each marker indicates the location at which one or more incidents occurred. This exhibit shows that almost every intersection within the region defined by Stewart Avenue to the north, Main Street to the west, Bridger Avenue to the south, and Las Vegas Boulevard to the east had at least one incident. Fremont Street had an incident at every intersection.

2.2.4 TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES

Existing transit routes are illustrated on **Figure 2-14**. Streets that currently accommodate buses could potentially be multimodal routes that serve pedestrians as well. For example, the CLV is in the final design stages for a BRT system along Casino Center Boulevard. The Casino Center BRT will increase pedestrian mobility by allowing pedestrians to connect to multiple stations along the length of the road. By providing clearly defined sidewalks, pedestrians can safely walk to and from destinations and bus transfer stations.

Bicycle facilities can also be used in conjunction with larger sidewalks to provide a more pedestrian-friendly environment. Narrowing vehicle travel lanes allows room for bicycle lanes and widened sidewalks that can increase pedestrian mobility. **Figure 2-15** shows existing bicycle facilities.

The CLV has identified numerous pathway systems throughout the downtown area, which are presented in **Figure 2-16**. The following lists the status of the trails identified on this figure.

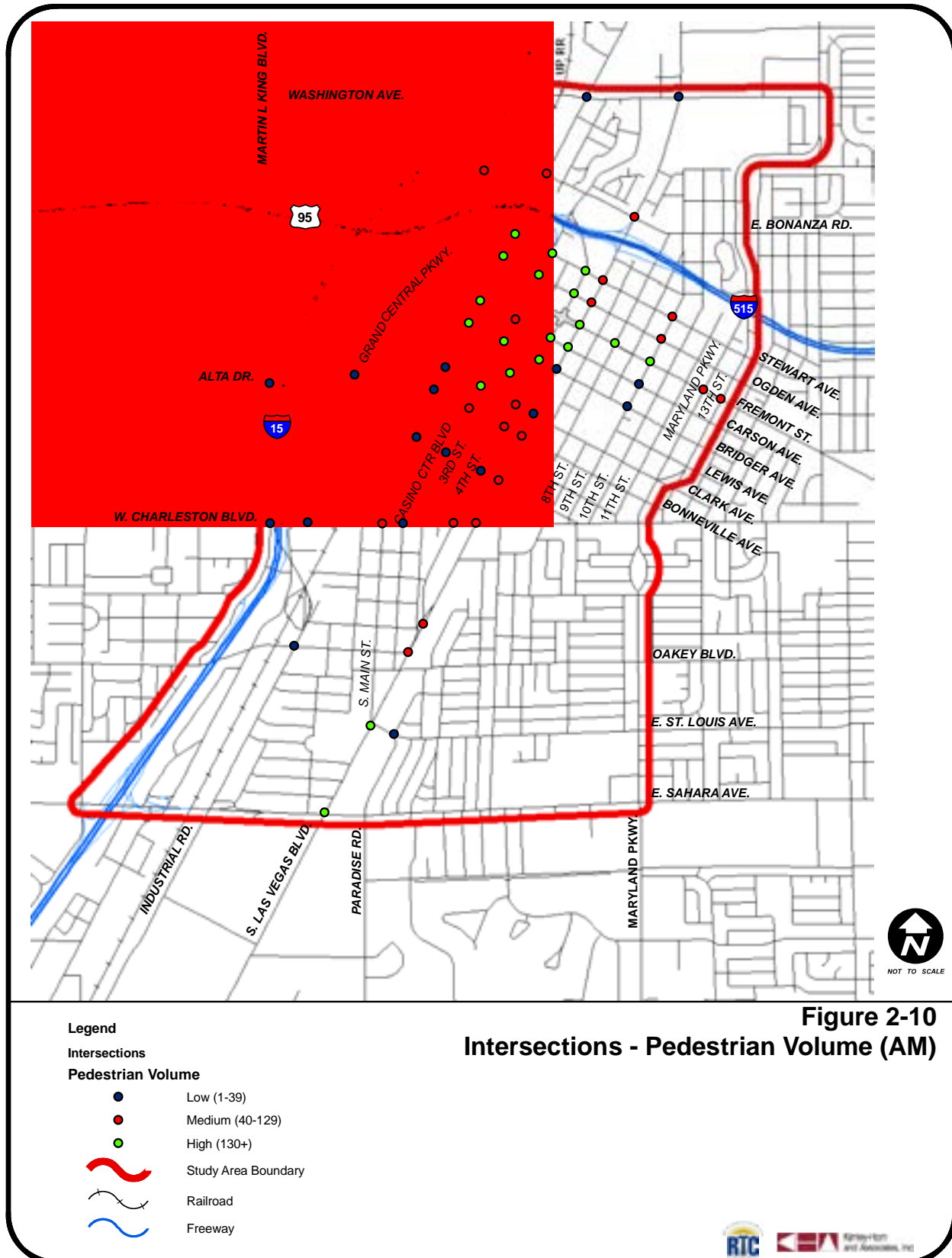
- Pioneer Trail
 - » The Pioneer Trail has been completed and has portions that lead into the northern regions of the study area. This trail, which spans from Valley View Boulevard to Las Vegas Boulevard, serves as a pedestrian route through sixteen significant historical sites.
- Cultural Corridor Trail and Bridge
 - » Current trail projects are prioritized under SNPLMA-(Southern Nevada Public Land Management Act) funding. The Cultural Corridor Trail and Boulder Plaza Park are more than 90% complete in the design process with SNPLMA funding. The Cultural Corridor Trail improvements will not include the widening of any sidewalks, which are five feet on average. However, these improvements do involve the replacing of broken panels and the addition of a decorative film that contains illustrations from local artists spaced evenly along the trail. Banner poles will also be placed at the back-of-sidewalk. The Cultural Corridor Trail has a bridge component, currently at the 60% design stage, which will cross Las Vegas Boulevard in front of the Lied Discovery Museum.
- Boulder Plaza Park
 - » The design for Boulder Plaza Park, located on Boulder Avenue between Main Street and 1st Street, includes developing amenities and infrastructure such as landscaping, fencing, and irrigation in order to support a future sculpture. A graphic of the proposed design can be found on **Figure 2-17**. On November 7, 2007, the CLV made a request for a Site Development Review (23931) before City Council. The Planning Commission and staff recommend approval under the condition that the CLV coordinate with the City Traffic Engineer to allow short-term commercial loading from the 1st Street public right-of-way to adjacent commercial businesses. This was a concern addressed by Mr. Edward Stachowski, owner of a property along Main Street, along with the fact that the area would need to be cleaned first. He stated that the homeless feel they can do whatever they want due to the lack of police activity in the area.
- Neon Boneyard Park
 - » The Neon Boneyard Park will be a public park and museum preserving and displaying historic neon signs. The park will include picnic facilities, playground equipment, passive recreation space, and enhanced landscaping. The proposed site layout can be found on **Figure 2-18**.
- Art Trail, Entertainment Trail, and Tortoise Trail
 - » These trails have not yet been prioritized for SNPLMA funding.
- Multi-use Non-Equestrian
 - » Pathways identified as multi-use non-equestrian require twenty feet of total width including five feet of transition and landscaping.

➤ Pedestrian Paths

- » Pedestrian paths are simply five-foot sidewalks that are identified so they can provide connectivity throughout the CLV Master Plan.

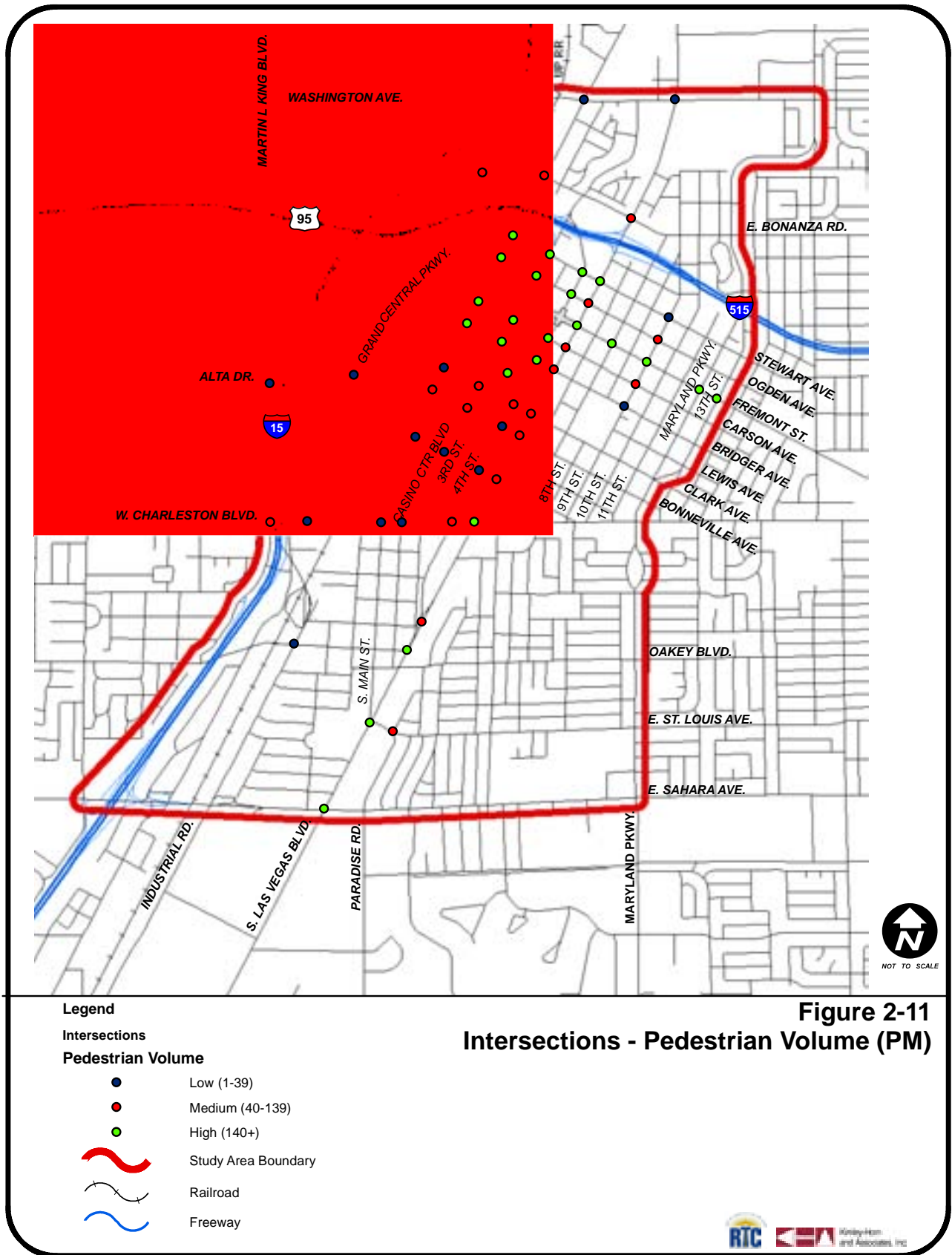
The Downtown Traffic Capacity, Transit, and Parking Needs Study recommended that certain streets have either a multimodal or pedestrian emphasis. These streets will be compared with the CLV pathway systems and incorporated into a comprehensive network of recommended pedestrian routes.

Figure 2-10 • Pedestrian Volume (AM)



Downtown Pedestrian Circulation Study

Figure 2-11 • Pedestrian Volume (PM)



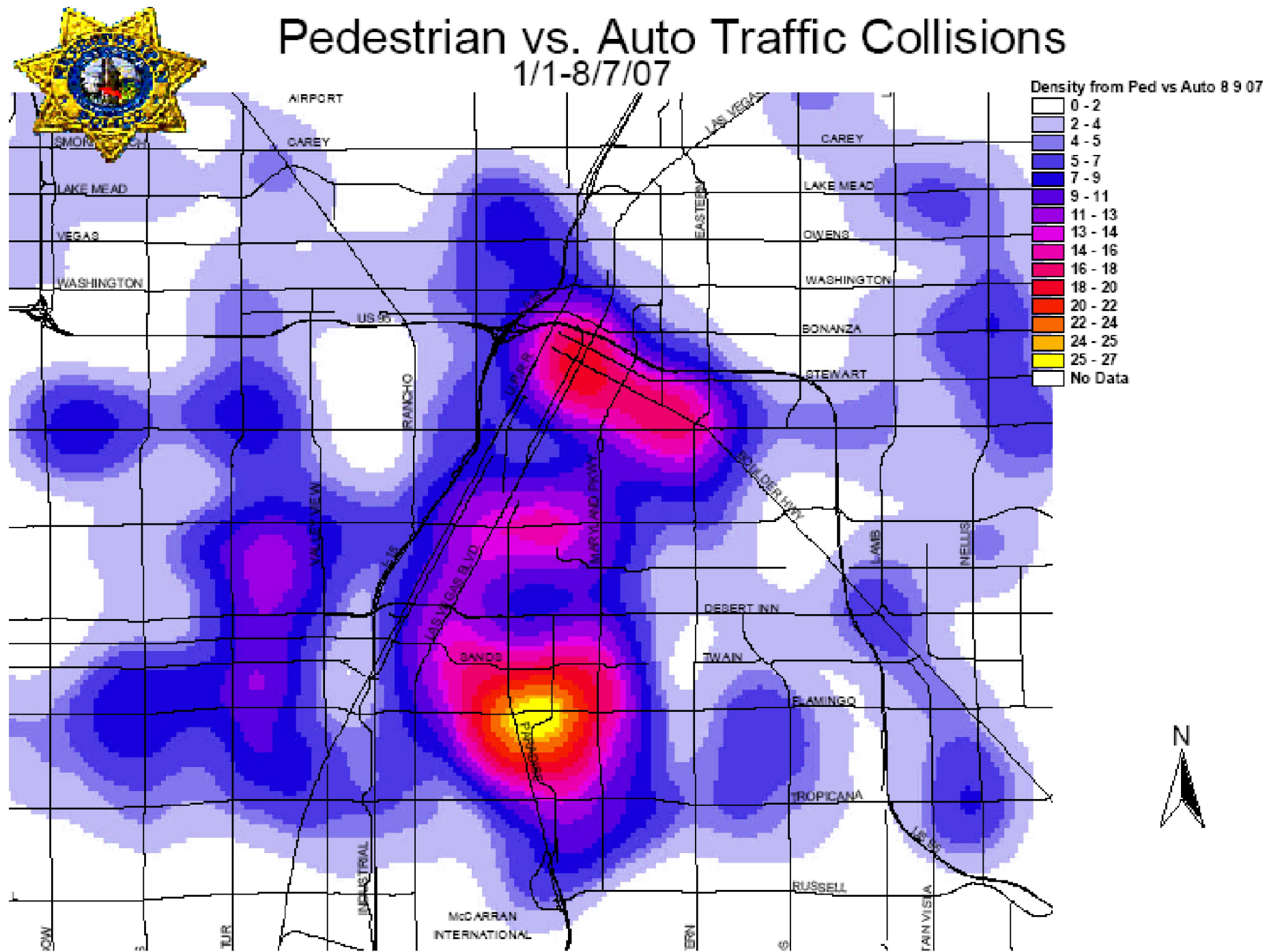


FIGURE 2-12
LAS VEGAS METROPOLITAN POLICE
DEPARTMENT CRASH DATA

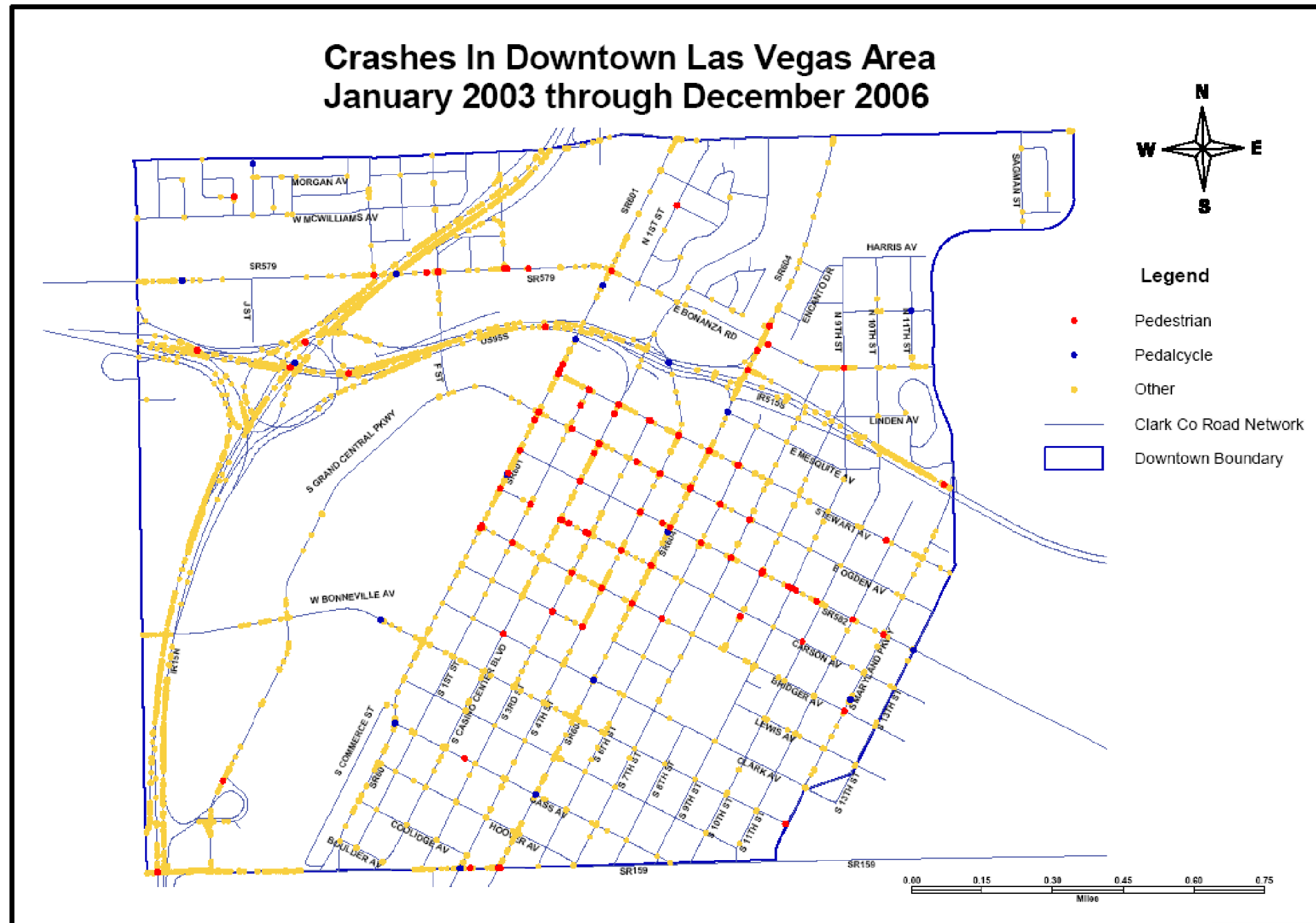








FIGURE 2-13
NEVADA DEPARTMENT OF TRANSPORTATION
CRASH DATA

Figure 2-14 • Existing Transit Routes



Legend

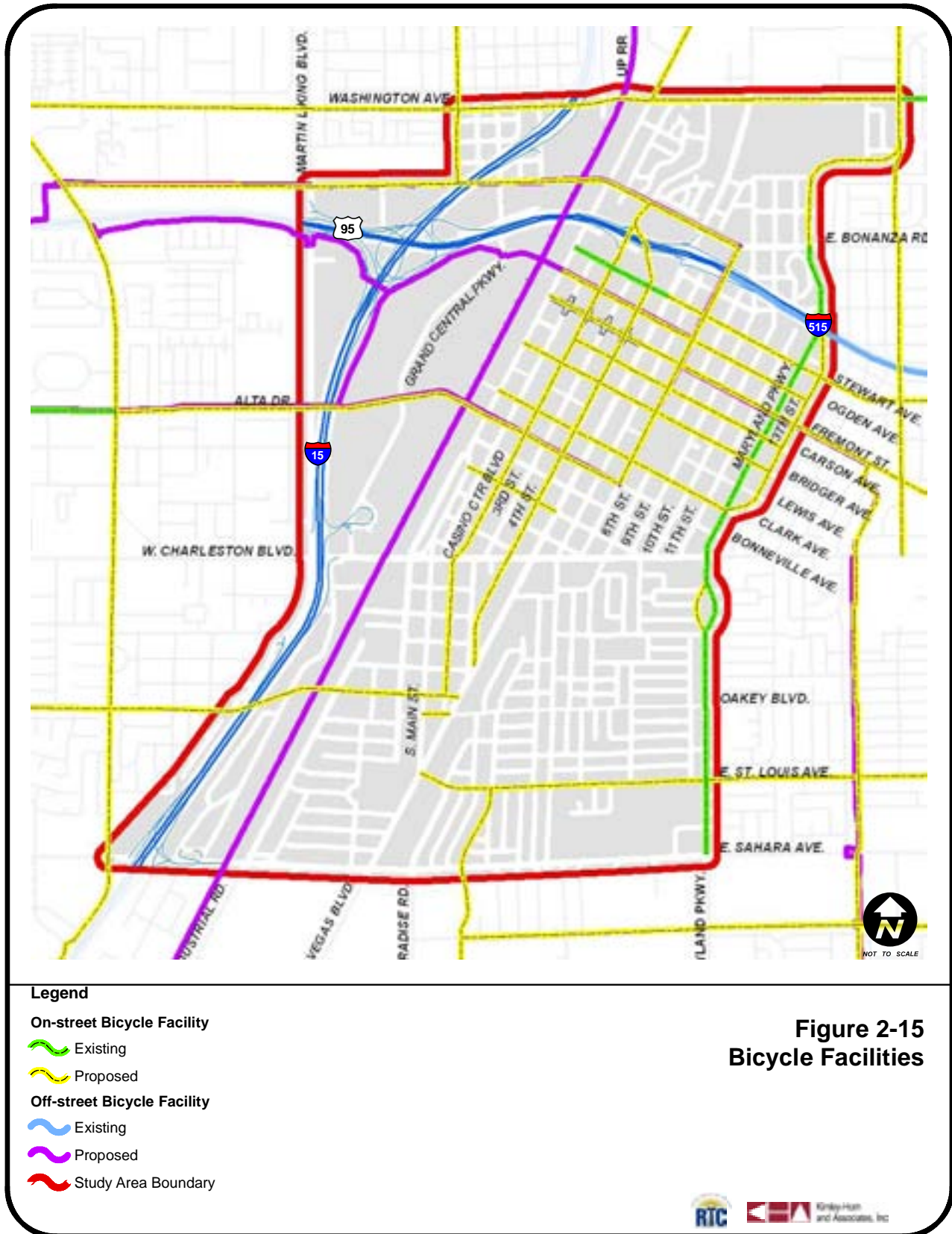
-  Downtown Transportation Center
-  Proposed Central City Bus Transfer Terminal
-  Study Area Boundary
-  Max Bus Route
-  Deuce Bus Route
-  Other Bus Route

**Figure 2-14
Existing Transit Routes**



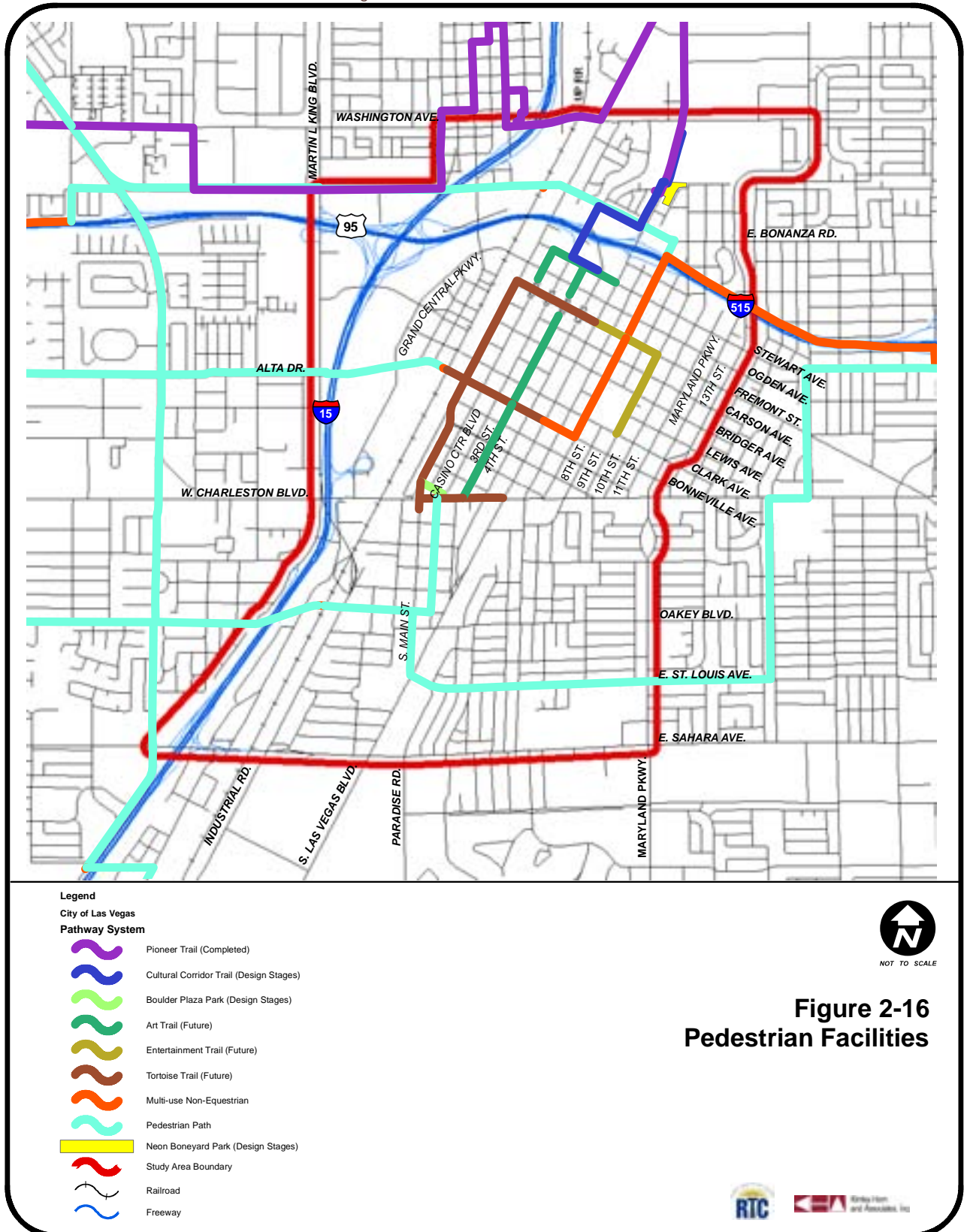
Downtown Pedestrian Circulation Study

Figure 2-15 • Bicycle Facilities



Downtown Pedestrian Circulation Study

Figure 2-16 • Pedestrian Facilities



Downtown Pedestrian Circulation Study

Figure 2-17 • Boulder Plaza Park



FIGURE 2-17
BOULDER PLAZA PARK

Figure 2-18 • Neon Boneyard Park

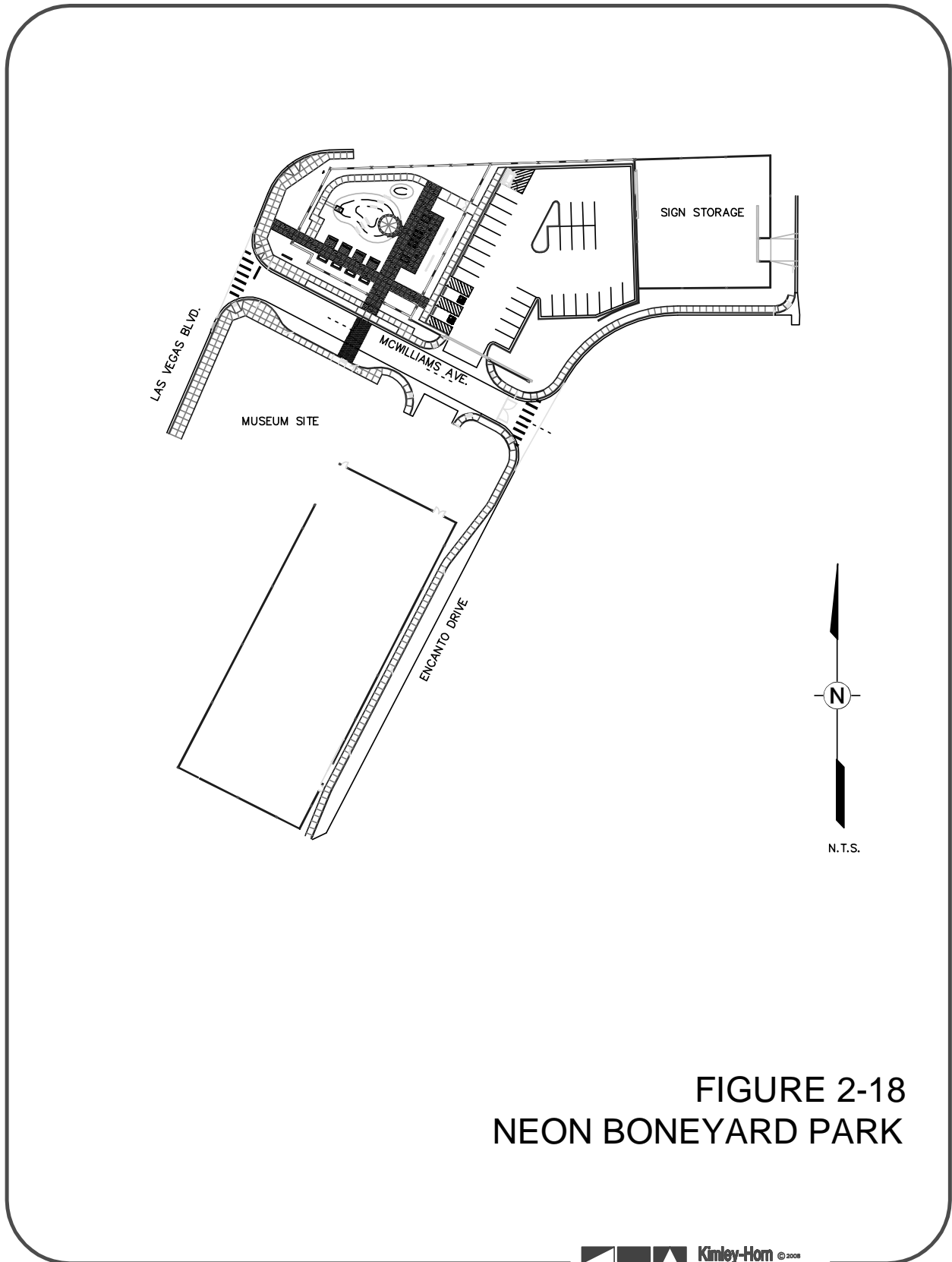


FIGURE 2-18
NEON BONEYARD PARK

2.2.5 STREETLIGHT INVENTORY

The CLV provided an inventory of all existing streetlights throughout the study area. The information for each streetlight includes the location of streetlights along the street network as well as their position such as back of curb, back of sidewalk and the center of median. Both can help in evaluating pedestrian safety and mobility along trails and routes.

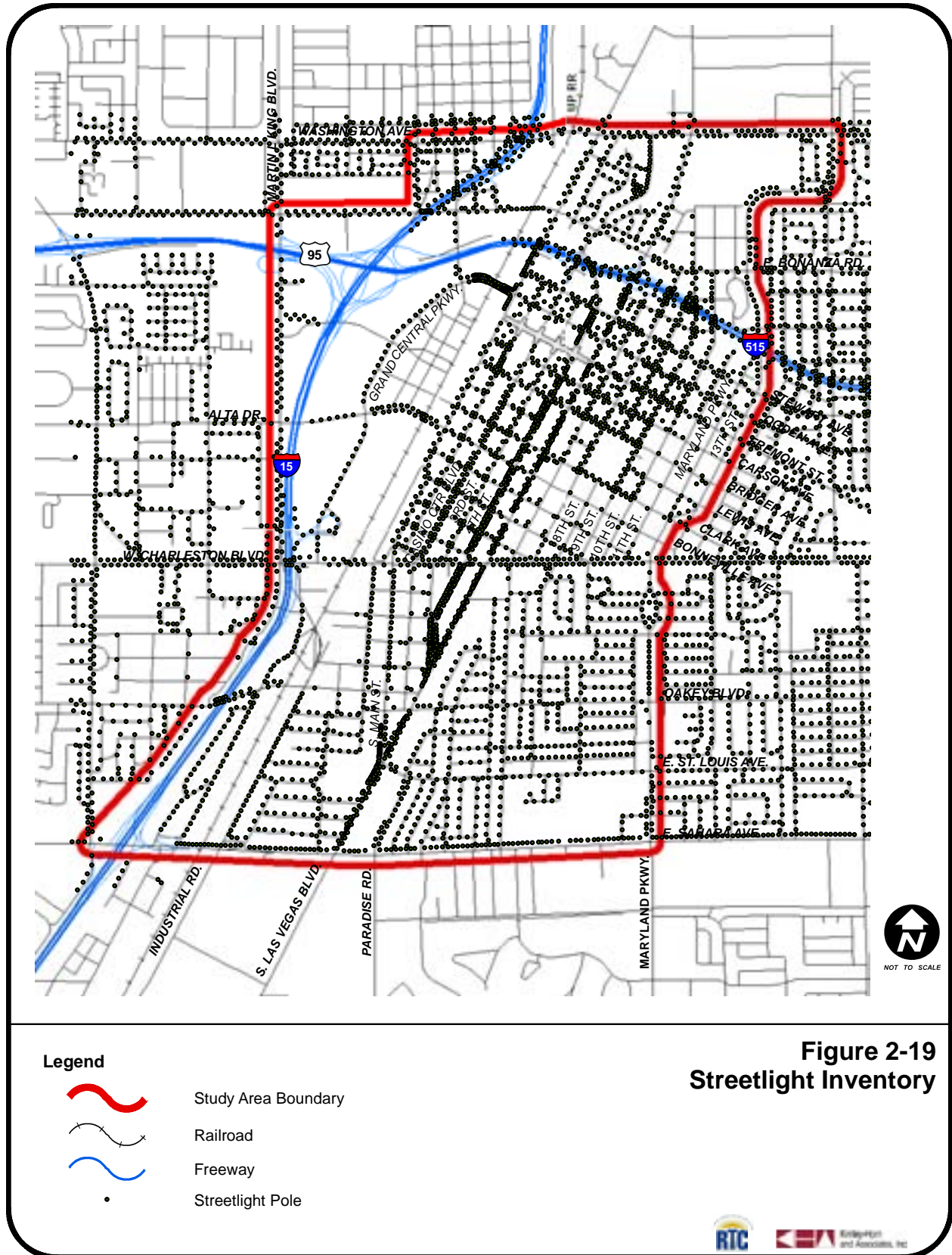
As shown in **Figure 2-19**, fewer streetlights are located in the following areas:

- First Friday central area, specifically California Street, Colorado Avenue, Imperial Avenue, Utah Avenue, and Wyoming Avenue.
- The area bound by Fremont Street, Las Vegas Boulevard, Charleston Boulevard and the eastern boundary with the exception of the northwest corner of this area around the Las Vegas Academy.
- The two blocks of homes south of the Cashman Center.

Safety can be considered a major obstacle in promoting walking as a desirable mode of transportation within the downtown area. The lack of lighting can make poorly lit side streets easy areas to become victim to criminal activity and make pedestrians feel less safe. Also, even if a poorly lit area is statistically safer from crime than another area, the lack of lighting makes streets undesirable routes for pedestrians due to the perception of safety. This inventory has been used to identify lighting improvements along the recommended pedestrian routes in an effort to create a safe and more desirable walking environment. It has also been used in evaluating the alternative solutions for making First Friday a more pedestrian-friendly event.

Many of the streetlights within the study area are positioned at the back of the curb. Since the edge of the foundation is actually at the back of curb, the pole is in the middle of the sidewalk. This poses pedestrian mobility issues, especially in five-foot sidewalks. This inventory has helped identify areas where this issue is not addressed by CLV roadway improvements.

Figure 2-19 • Streetlight Inventory



Downtown Pedestrian Circulation Study



2.2.6 PEDESTRIAN-ORIENTED DEVELOPMENT

Both sides of the segments of roadway within the project area have been analyzed and classified according to the level of pedestrian-oriented development utilizing both the existing land use exhibits and a corridor review. High, medium, and low represents the amount of pedestrian traffic a particular segment is anticipated to generate based on its existing land use and type of destination sites. Approved projects have also been taken into consideration in this evaluation. The results of this analysis are shown in **Figure 2-20**.

The land use has been categorized into the following three types:

- High: high-rise destinations and low-rise retail
- Medium: medium-density residential, motels, parking garages adjacent to high category land use, and single-story businesses
- Low: limited access single family residential, parking lots, vacant land, industrial buildings, and warehouses

Figure 2-20 • Pedestrian-Oriented Development

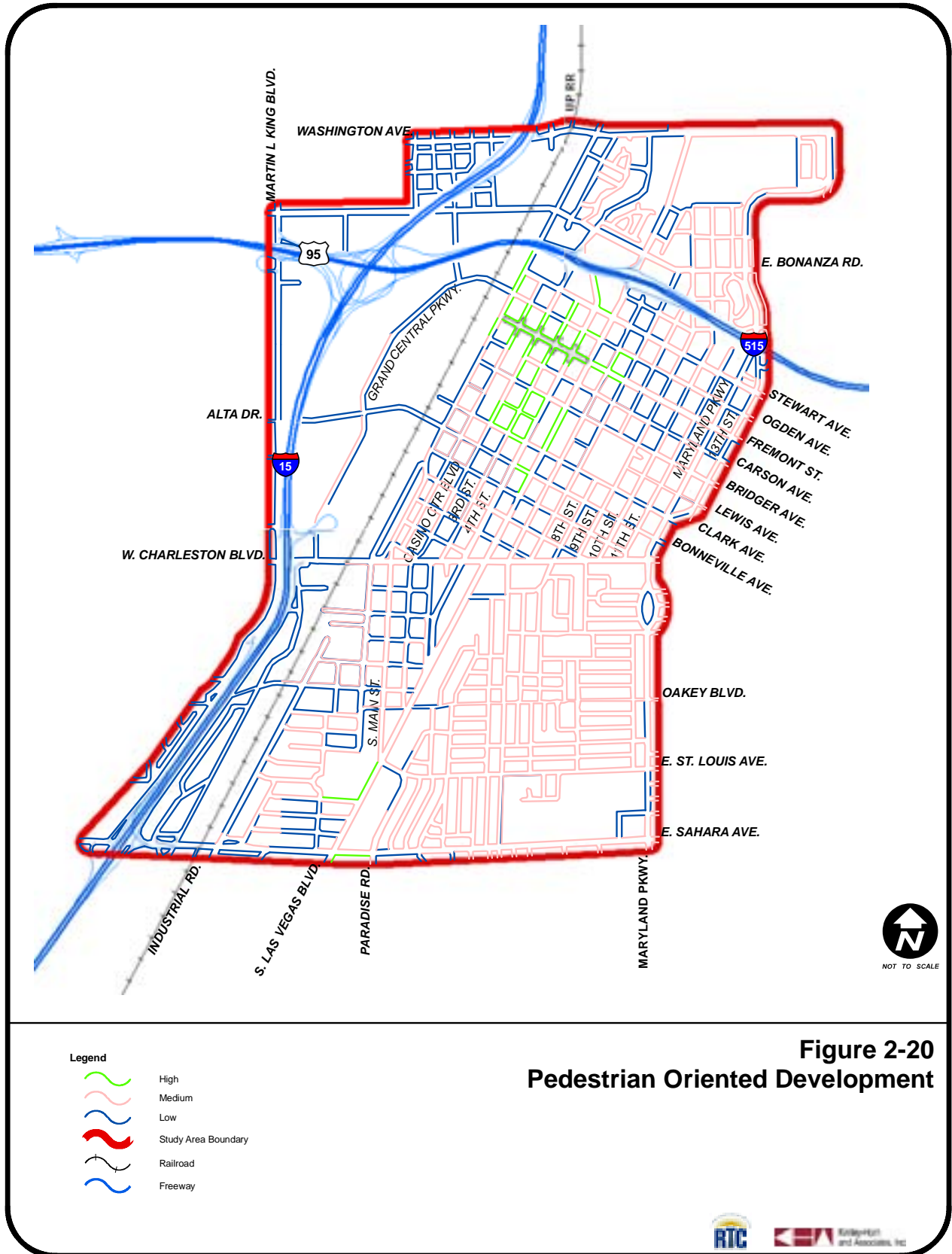
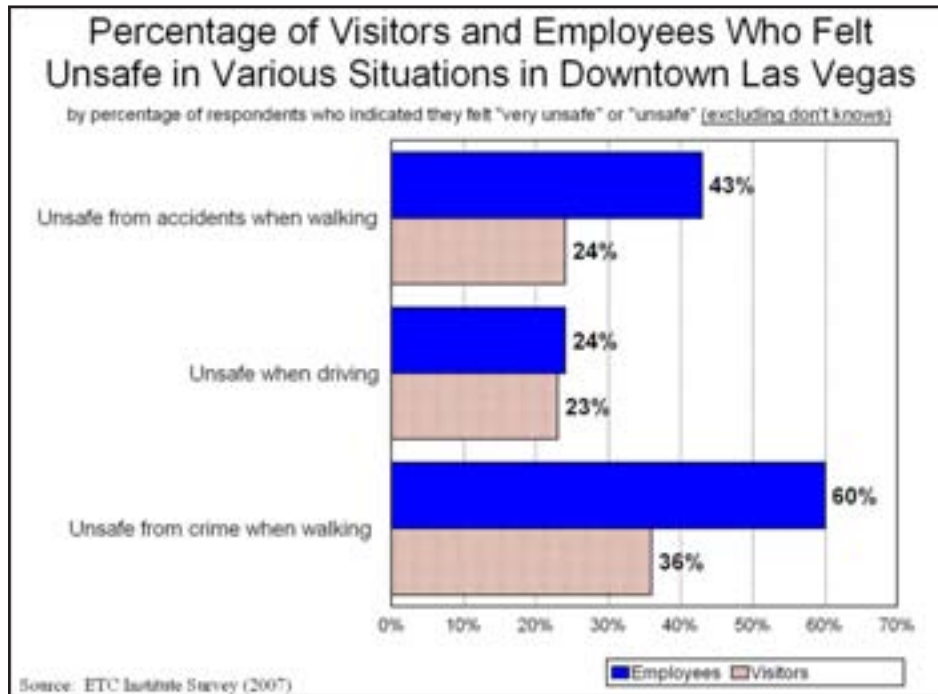


Figure 2-20
Pedestrian Oriented Development

Downtown Pedestrian Circulation Study

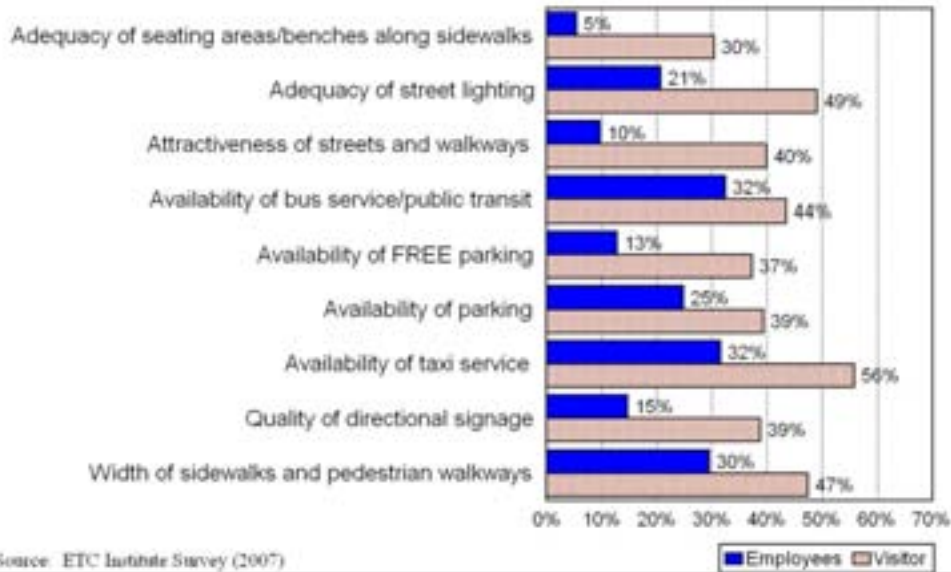
2.3 User Survey

A survey was administered by the ETC Institute during December of 2006 as part of the RTC *Downtown Traffic Capacity, Transit, and Parking Needs Study*. This survey was given to both employees and visitors within the Downtown study area with the purpose of gathering general travel characteristics and information to help identify priorities for transportation improvements. The following are the results of the pedestrian-oriented sections of the survey. In general, visitors tended to be more satisfied than employees. This finding could be based on the notion that visitors tend to spend more time near the Fremont Street Experience, which has more desirable pedestrian facilities and is well lit. Another key finding is that employees do not feel safe from crime and accidents when walking downtown and they are unsatisfied with the adequacy of seating areas/benches along sidewalks as well as the attractiveness of streets and walkways. This information indicates that addressing pedestrian safety as well as street beautification could increase user satisfaction.



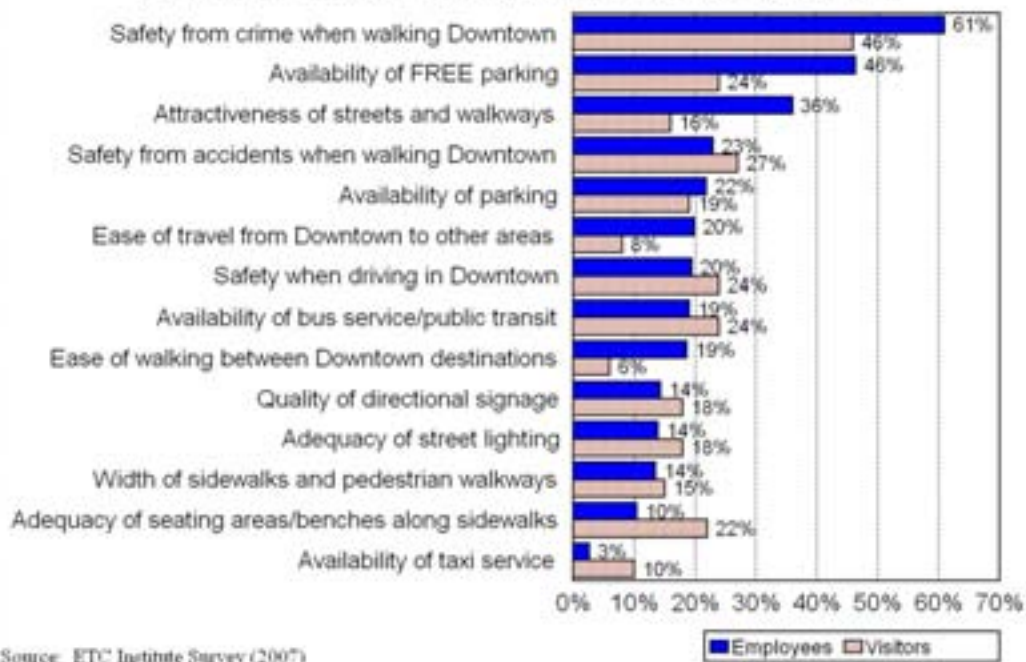
Percentage of Visitors and Employees Who Rated Various Aspects of Transportation in Downtown Las Vegas as "Very Good" or "Good"

by percentage of respondents who rated the item as "very good" or "good" (excluding don't knows)



Issues that Visitors and Employees Thought Should Be the Top Priorities for Improvement in Downtown Las Vegas

by percentage of respondents who selected the item as one of their top four choices



2.4 Conclusions

The data collection task began with the gathering of relevant studies, downtown trails information, crash data, pedestrian volume data, pedestrian-oriented user survey data, traffic signal cycle lengths, and transit and bicycle routes. Among the studies, the *CLV Centennial Plan, Downtown Traffic Capacity, Transit, and Parking Needs Study* (RTC), and the *Sahara Avenue Corridor Rapid Transit Study* (RTC) present valuable information that will be taken into consideration throughout the tasks associated with this study. The project team met with CLV officials to obtain information regarding major redevelopment projects downtown which are illustrated in **Figure 2-3**. The CLV also provided information regarding future street improvement projects, presented in **Figure 2-5**, which identifies segments of roadway that are already in the process of being improved to better accommodate pedestrians as well as other modes of transportation.

The data collected was then used to evaluate the existing conditions of the study area. A preliminary field review identified the general types of obstacles present in existing pedestrian facilities such as lack of ADA ramps, poor sidewalk conditions, and sidewalk obstructions. The pedestrian volume data revealed that the busiest intersections are within two blocks north and south of the Fremont Street Experience, along Fremont Street east of Las Vegas Boulevard, at Las Vegas Boulevard/Charleston Boulevard, and St. Louis Avenue/Sahara Avenue. Primary arterials tend to have 140 second cycle lengths with 28 seconds of pedestrian clearance per phase whereas secondary collectors tend to have 70-second cycle lengths with 20 seconds of pedestrian clearance per phase. The detailed traffic signal reports can be found in **Appendix A**. Crash data revealed that there was a crash involving a pedestrian at almost every intersection within the blocks between Main Street, Stewart Avenue, Bridger Avenue and Las Vegas Boulevard between 2003 to 2006. Crashes were also seen at other high volume intersections such as Las Vegas Boulevard/Charleston Boulevard and Las Vegas Boulevard/Sahara Avenue. The CLV provided a streetlight inventory that revealed areas lacking streetlights in regions that include the area surrounding the center of the First Friday event and the area generally east of Las Vegas Boulevard, south of Fremont Street, and north of Charleston Boulevard with the exception of the northwest corner around the Las Vegas Academy. The pedestrian-oriented user survey data revealed that employees feel less safe and are less satisfied with existing pedestrian facilities downtown than visitors. These results could be explained due to the fact that the most improved pedestrian facilities tend to be located near tourist destinations.



SECTION 3: PEDESTRIAN ROUTES

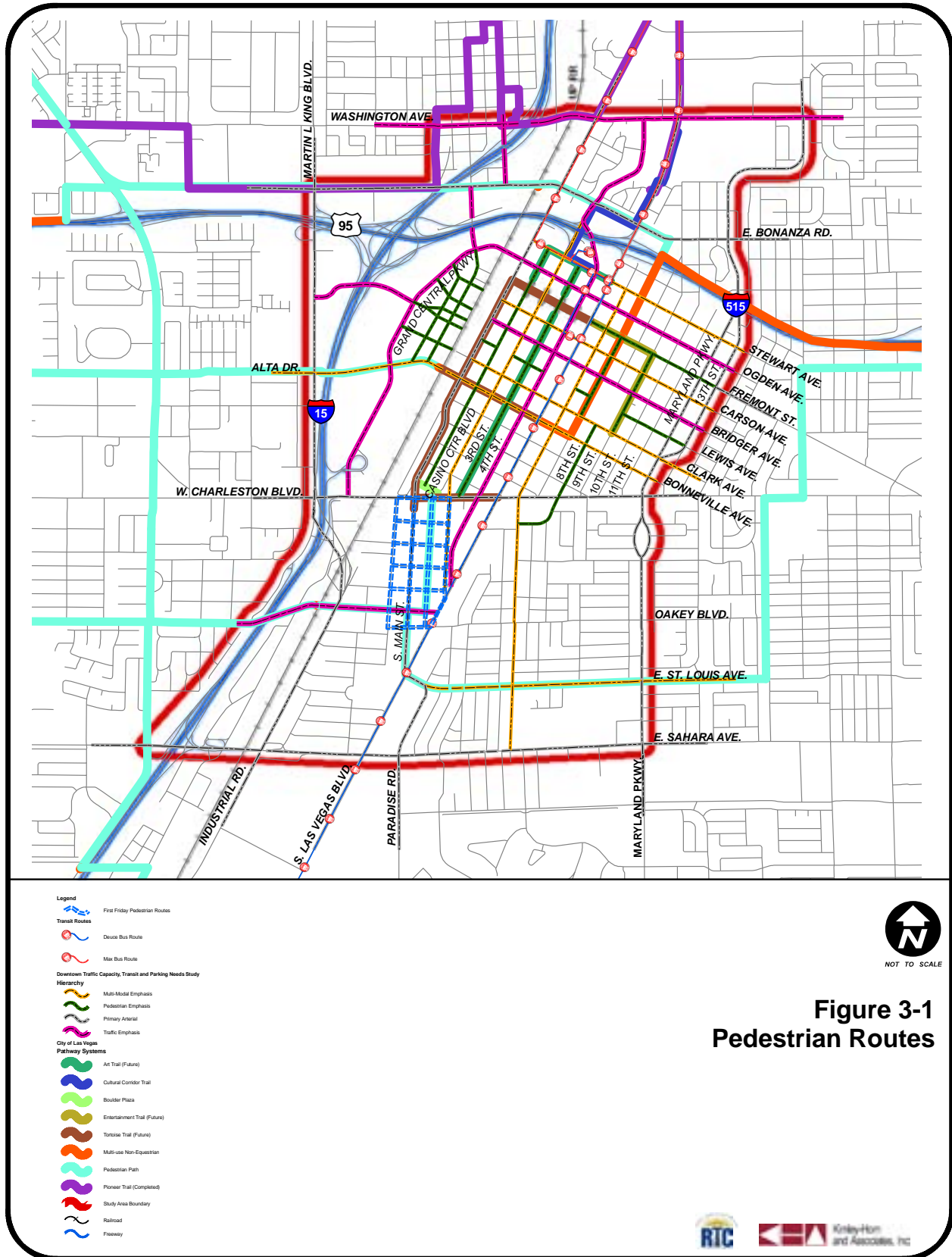


SECTION 3 PEDESTRIAN ROUTES

Figure 3-1 depicts multiple pedestrian route alternatives, which include the existing trail network as well as streets with a pedestrian emphasis indicated in the street hierarchy outlined within the RTC *Downtown Traffic Capacity, Transit, and Parking Needs Study*. These routes will be analyzed using various parameters including feasibility and appropriateness. The existing cross sections of each segment will help identify which segments are practical for improvements, which will be measured by categorizing segments into groups that either do not need much improvement, have substandard existing facilities, or un-constructed areas. The existing and future land use data as well as volume data will also be used in evaluating whether or not each segment provides linkage among destinations within the downtown area.

The street hierarchy concept is similar to the functional classification system that characterizes different types of roadway based on capacity or number of lanes such as arterial, collector, and residential. However, the street hierarchy considers walking, bicycling, and public transportation, which allows roadways to be classified according to an emphasis on a particular usage. Such classifications include traffic emphasis, transit emphasis, pedestrian and streetscape emphasis, and multimodal emphasis. The pedestrian and streetscape emphasis involves the use of available right-of-way to increase sidewalk width and add streetscape improvements. The implementation of this emphasis on appropriate roadways can improve pedestrian safety and encourage walking as another mode of transportation. Similarly, the multimodal emphasis uses right-of-way to increase sidewalk widths as well as bicycle and/or BRT lanes.

Figure 3-1 • Pedestrian Routes



Downtown Pedestrian Circulation Study



3.5 Conclusions

Figure 3-1 illustrates numerous pedestrian route alternatives, including the existing and proposed CLV trail network and streets with a pedestrian emphasis indicated in the street hierarchy outlined within the RTC *Downtown Traffic Capacity, Transit and Parking Needs Study*. The analysis of these routes will be presented in a later section of this report. The existing cross sections of each segment will help identify which segments are practical for improvements. This will be measured by categorizing segments into groups that either do not need much improvement, have substandard existing facilities or un-constructed areas. The existing and future land use data as well as volume data will also be used in evaluating whether or not each segment provides linkage between destinations within the downtown area.



SECTION 4: ANALYSIS OF PEDESTRIAN ROUTES



SECTION 4 ANALYSIS OF PEDESTRIAN ROUTES

4.1 Task Overview

The purpose of the Analysis of Pedestrian Routes task was to evaluate the pedestrian route alternatives that have been identified. The following subtasks have been completed during this task.

- Establish cross-section guidelines to be used in evaluating each route;
- Assign guidelines to the appropriate pedestrian routes;
- Establish a ranking system and review the existing condition of each route;
- Obtain information regarding currently programmed street improvement projects; and
- Provide recommendations that summarize the results of this task.

Numerous pedestrian route alternatives have been identified in a previous task of this study. Such routes include roadways within the Centennial Plan boundary; pathway systems identified by the CLV; street segments identified as having a pedestrian emphasis or multimodal emphasis in the Downtown Traffic Capacity, Transit, and Parking Needs Study; transit routes; and roadways adjacent to the First Friday event.



4.2 Cross-Section Guidelines

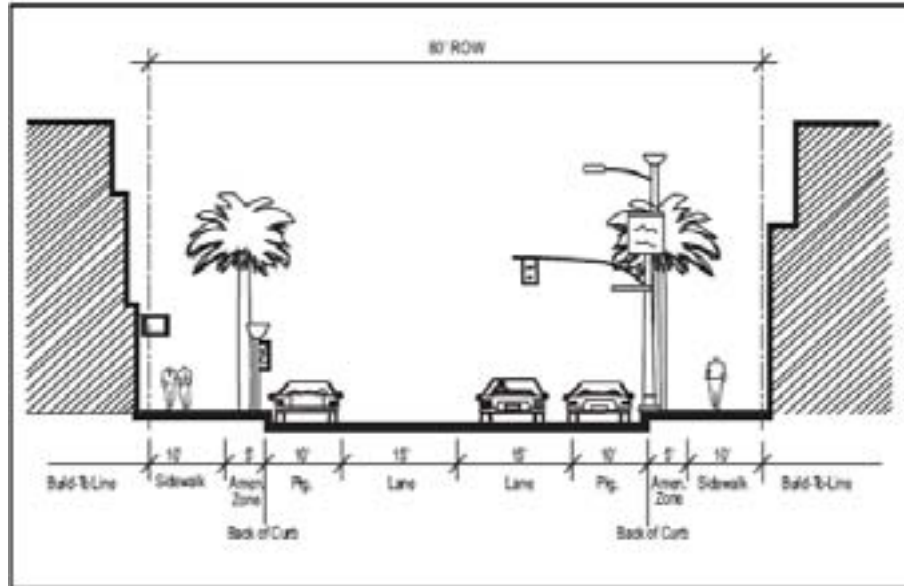
In evaluating the existing condition of the pedestrian route alternatives, four cross-section guidelines were established in order to identify routes that need the most improvement. All pedestrian routes are along streets that have at least 80 feet of right-of-way, except 6th Street and 8th Street south of Charleston Boulevard, therefore all of the cross-section guidelines are based on 80 feet. Adjustments to the cross-section guidelines for these two segments are discussed later in this report. The first two cross-section guidelines include:

- Centennial Plan guideline
 - » The Las Vegas Centennial Plan presents a typical cross-section for all streets within the boundary limits that calls for a ten-foot sidewalk along with a five-foot amenity zone illustrated in Figure 4-1. The exceptions stated in this figure involve special landscape and theme requirements; however, they still have the same cross-section requirements as all other streets.
- Pedestrian Path guideline
 - » This guideline originates from the definition of a pedestrian path according to the CLV, which is simply a five-foot sidewalk. Pathway systems identified as pedestrian paths are simply meant to serve as connectors to other pedestrian facilities.

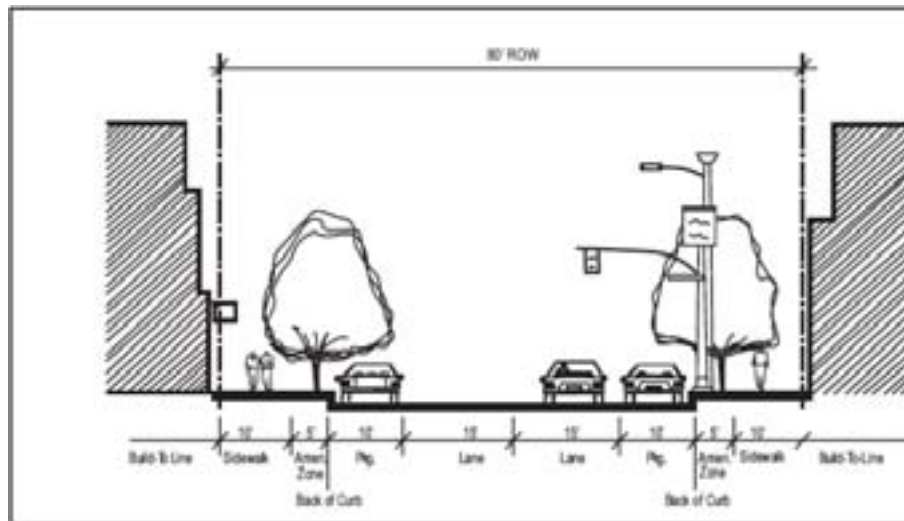
The Downtown Traffic Capacity, Transit, and Parking Needs Study outlined a street hierarchy that categorized streets as having a traffic, primary arterial, multimodal, or pedestrian emphasis. The study also provided the following two cross-sections guidelines:

- Multimodal Emphasis guideline
 - » While allocating available right-of-way to numerous modes of transportation including buses, automobiles, bicycles, and pedestrians, the Multimodal Emphasis guideline calls for a ten-foot pedestrian zone that accommodates both sidewalk and streetscape as shown in Figure 4-2.
- Pedestrian Emphasis guideline
 - » The primary objective of the Pedestrian Emphasis guideline is to maximize the right-of-way allocated to pedestrians. The enhancement of pedestrian facilities could improve public safety as well as encourage the use of alternative modes of transportation. As shown in Figure 4-3, this guideline provides at least a twenty-foot pedestrian zone to allow room for a widened sidewalk along with extended streetscape and benches.

Figure 4-1 • Centennial Plan Guideline



TYPICAL NORTH-SOUTH STREETS (EXCEPT MAIN STREET, CASINO CENTER, FOURTH STREET AND LAS VEGAS BOULEVARD)



TYPICAL EAST-WEST STREETS (EXCEPT STEWART AVENUE, OGDEN AVENUE, CLARK AVENUE, BONNEVILLE AVENUE AND FREMONT STREET)

FIGURE 4-1 CENTENNIAL PLAN GUIDELINE

Figure 4-2 • Multimodal Emphasis Guideline

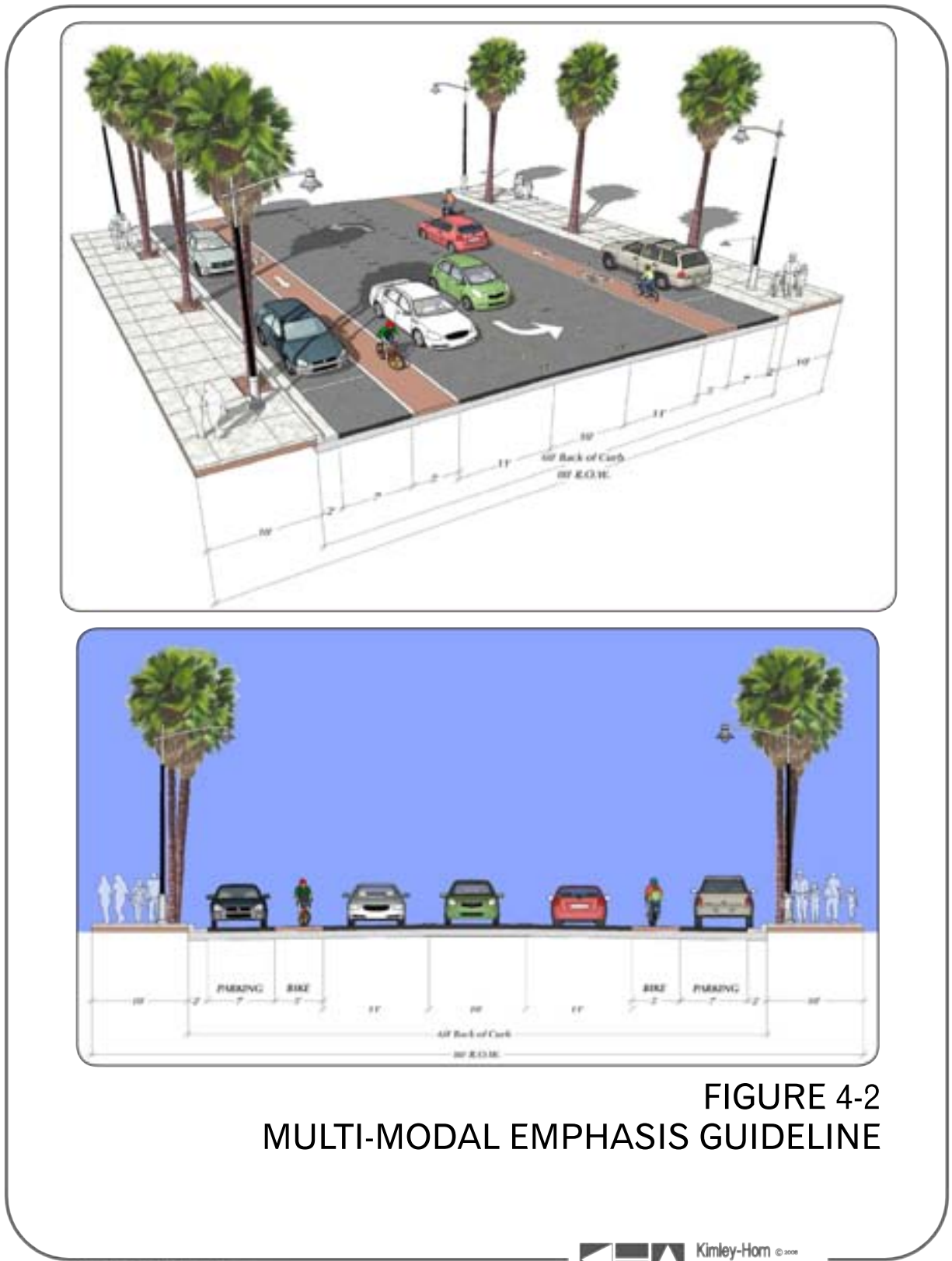


FIGURE 4-2
MULTI-MODAL EMPHASIS GUIDELINE

Figure 4-3 • Pedestrian Emphasis Guideline



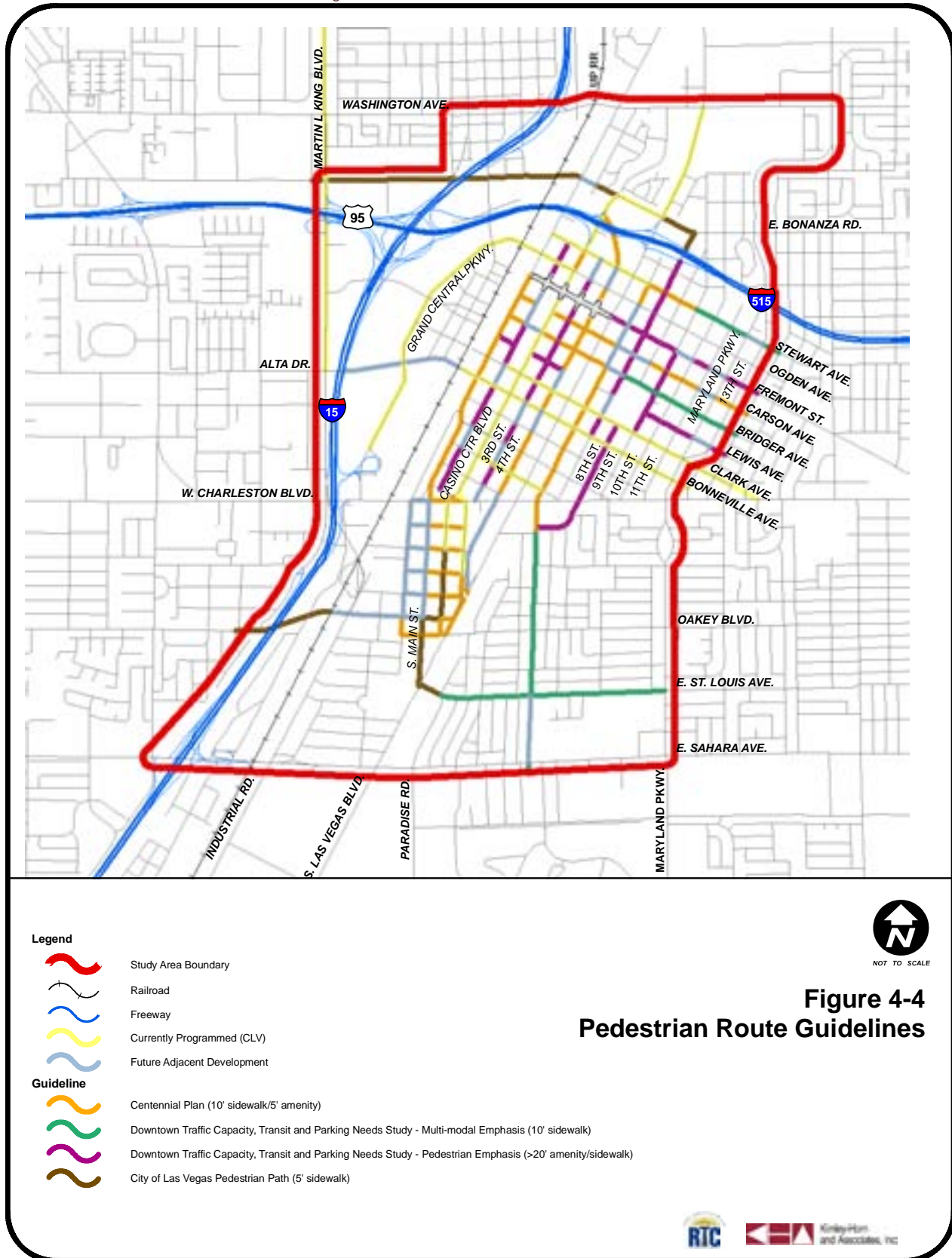
4.3 Pedestrian Route Guidelines

Upon establishing the four cross-section guidelines, *each pedestrian route* was assigned a particular guideline to be used in evaluating its existing condition. The following breakdown lists which guideline each pedestrian route was assigned. A graphical representation of this distribution can be found in **Figure 4-4**.

- Centennial Plan guideline
 - » Bus routes as well as routes designated as traffic emphasis, primary arterial emphasis, or multimodal emphasis in the Downtown Traffic Capacity, Transit, and Parking Needs Study that are within the Centennial Plan boundary.
- Multimodal Emphasis guideline
 - » Routes designated as multimodal in the Downtown Traffic Capacity, Transit, and Parking Needs Study that are outside of the Centennial Plan boundary.
- Pedestrian Emphasis guideline
 - » Routes designated as pedestrian emphasis in the Downtown Traffic Capacity, Transit, and Parking Needs Study as well as those identified as multi-use non-equestrian by the CLV.
- Pedestrian Path guideline
 - » Routes designated as pedestrian paths by the CLV.

* 6th Street south of Charleston Boulevard ranges from 45 to 60 feet of right-of-way and 8th Street south of Charleston Boulevard ranges from 45 to 55 feet of right-of-way. Clark County Standards require a minimum of 37 feet (for curb, gutter, and vehicle travel way) measured from back-of-curb to back-of-curb along residential two-way local streets in the CLV. This leaves between 8 and 23 feet that can be dedicated to sidewalk and streetscape improvements along these routes. Alternatives can include improvements on only one side of the street in order to maximize the sidewalk/streetscape width.

Figure 4-4 • Pedestrian Route Guidelines



Downtown Pedestrian Circulation Study



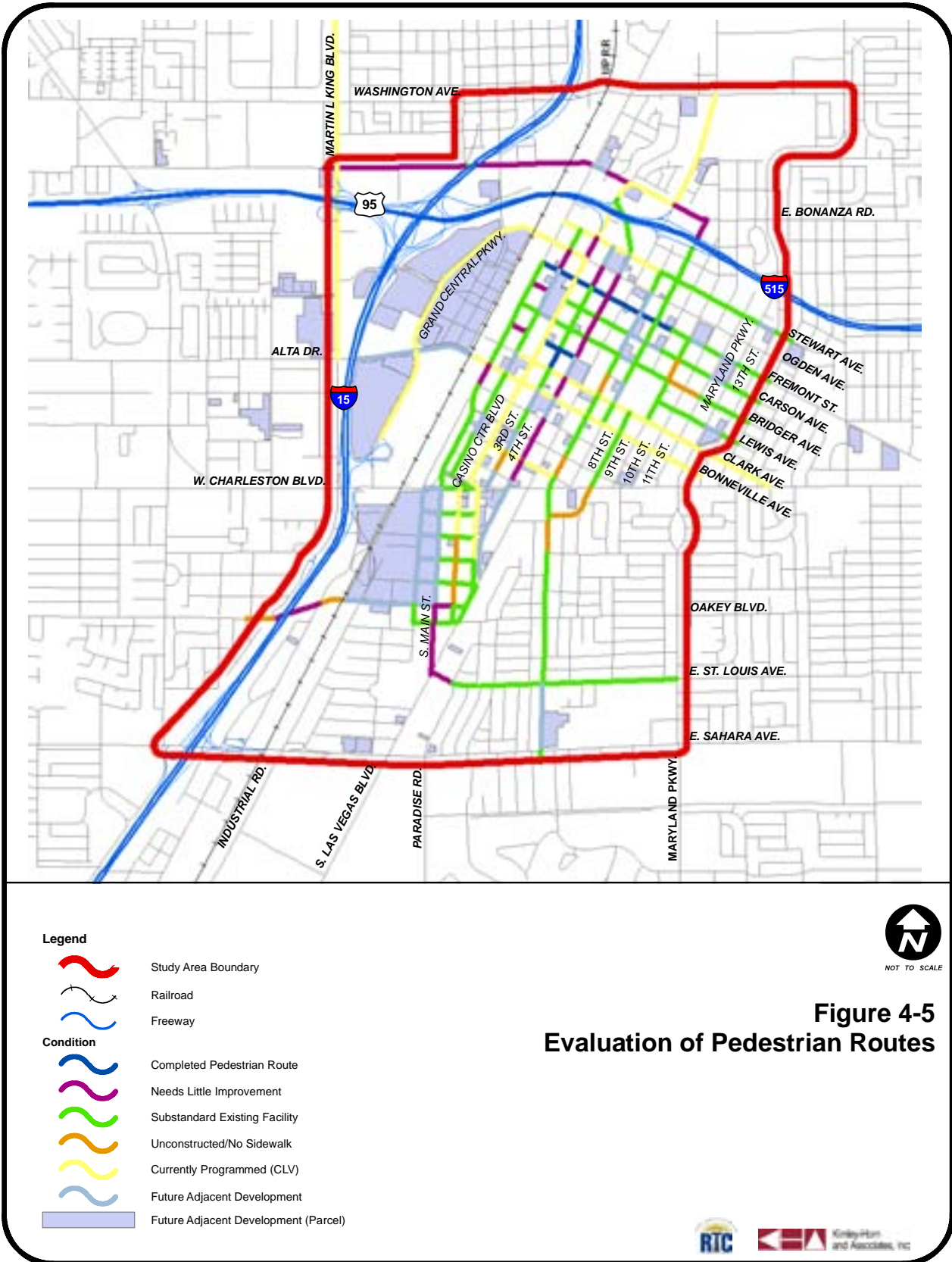
4.4 Evaluation of Pedestrian Routes

Each pedestrian route was evaluated into four categories described below. Example photographs of each category can be found on page 65.

- Completed Pedestrian Route
 - » Meets or exceeds guidelines.
- Needs Little Improvement
 - » Close to meeting guidelines and provides at least a five-foot-wide unobstructed walkway offset from the roadway.
- Substandard Existing Facility
 - » Significantly misses guidelines (Ex. five-foot sidewalk where 10-foot sidewalk is recommended).
- Un-constructed/No Sidewalk
 - » Either has un-constructed areas or missing sidewalks.
- Currently Programmed (CLV) / Future Adjacent Development
 - » These routes are along segments of roadway that have improvement plans that are either under construction or in design stages. Such segments were not analyzed since those projects are believed to include facilities that meet these guidelines. Specific details regarding these projects can be found in section 2.1.3.
 - » This category also includes routes adjacent to development/redevelopment projects. Segments adjacent to these projects were also not analyzed since it is expected that CLV will require these projects to improve adjacent sidewalks to Centennial Plan standards where they are within the boundary and to the appropriate standard elsewhere to provide adequate pedestrian facilities.

Figure 4-5 presents the pedestrian routes as they were classified by each category.

Figure 4-5 • Evaluation of Pedestrian Routes



Downtown Pedestrian Circulation Study

The following images represent examples of each category:



Completed Pedestrian Route

Lewis Avenue and Casino Center Boulevard →
← Fremont Street and 8th Street



Needs Little Improvement

4th Street and Gass Avenue →



Substandard Existing Facility

← 6th Street and Franklin Avenue
6th Street South of Charleston Boulevard →



*This is a historic neighborhood; all existing trees and residences should be preserved.

Un-Constructed / No Sidewalk

← Casino Center Boulevard and Utah Avenue



4.5 Historic Areas

Numerous historic areas exist within the study area. Taking them into consideration when making pedestrian facility improvements could help preserve their integrity. These areas include neighborhoods and buildings that serve as cultural and historical foundations of the city. The intent is to preserve such areas as a living part of the community and development in order to embellish the character of the city as well as maintain its heritage. As shown on **Figure 4-6**, the historic areas listed below are adjacent to pedestrian routes.

Historic areas can serve as great pedestrian attractors. While preserving these sites, improved adjacent walkways can provide an enhanced pedestrian environment that provides educational benefits as well. Such improvements could include the addition of kiosks and pamphlets that provide factual information regarding each historical site. The information regarding the history of these sites has been provided by the CLV.

Las Vegas Grammar School ("Fifth Street School")

Built in 1936, the Las Vegas Grammar School is one of the only remaining intact Mission style buildings of its era. It was built using federal funds as part of a building program to alleviate a population boom in Las Vegas. The building was built without air-conditioning, and was therefore designed to provide natural air-flow. The building is currently owned by the CLV and is being renovated.



John S. Historic District



Mr. John S. Park was a Las Vegas pioneer who arrived in the city in 1905 at the age of 53 to serve as a cashier and eventually became owner of the First State Bank. He organized and became the first president of the Consolidated Power and Telephone Company in 1906, which eventually became Southern Nevada Power Company. His home was located south of Charleston Boulevard near South 7th Street.



The John S. Park Historic District was built mostly between the early 1930s to the mid 1950s. It includes two subdivisions, the Park Place Addition and the Vega Verde Addition. The majority of the homes in the Vega Verde Addition were built in the Ranch and Minimal Traditional styles, popular during the 1940s and 1950s when most of this subdivision was built. The Minimal Traditional style evolved in the mid-1930s as a simplified version of the earlier Period Revival styles with slightly lower pitched roofs and less traditional detailing. The Ranch style began to replace the Minimal Traditional in popularity during the early 1940s and became the preferred post-war suburban house style. This style, influenced by the Spanish and Prairie styles of the 1920s and 1930s, is typically one-story and characterized by very low-pitched roofs and broad, rambling facades with a horizontal emphasis. Developers Franklin & Law, owned by George Franklin and John Law, built most of the homes in the Vega Verde Addition. Franklin & Law offered a choice of four models if home buyers did not have their own plans. The homes were mostly Ranch style and sold for \$4,000 to \$12,000.

Las Vegas High School Historic District



The Las Vegas High School neighborhood Historic District is a well preserved and unified group of buildings associated with the growth and development of Las Vegas. The district includes the bulk of the homes built between the late 1920s, coinciding with the announcement of the construction of the Hoover Dam, and continuing until World War II, when wartime housing developments began construction nearby. Today, the neighborhood has seen much of the original housing demolished or converted into professional offices.

Las Vegas High School

Located downtown in the Las Vegas High School Historic District, the administration building and gymnasium represent the most sophisticated examples of the Art Deco style in Las Vegas. Constructed in 1931 and funded by \$350,000 from bond sales, the lavish building represents the growth and development of Las Vegas during the Hoover Dam construction.



The Morelli House



The Morelli House was designed and built in 1959 by the Sand's orchestra conductor and music director Antonio Morelli, a classically-trained musician. As music director for the Sands, he came into contact with America's top performers of the day like Dean Martin, Frank Sinatra, and Sammy Davis, Jr. The Morelli House was moved to its permanent location in 2001, after which it was listed on the Nevada State Register of Historic Places. It is currently the headquarters of the Junior League of Las Vegas, and is undergoing an interior rehabilitation.

The Mormon Fort

Originally constructed in 1855 by Mormon missionaries sent to Las Vegas, the Mormon Fort is the oldest inhabited building in Nevada. Two years after it was built, the fort was abandoned by the Mormons and eventually purchased by Octavius Gass who developed it into a large ranch. Ownership passed on to the Stewart family who eventually sold the ranch to the San Pedro, Los Angeles and Salt Lake Railroad in 1902. Today, the fort and dwelling has undergone major reconstruction and serves as a museum and visitors center.



The Moulin Rouge Hotel and Casino



The Moulin Rouge Hotel and Casino opened in 1955 and was Las Vegas' first interracial entertainment facility. Designed by architects Zick and Sharp, the casino boasted an impressive modern design, topped only by the huge neon sign in bright pink script. Although the hotel was only open for five months, stars such as Sammy Davis, Jr., the Platters, Maurice and Gregory Hines, Lionel Hampton, and Dinah Washington performed there. The casino suffered a fire in 2003 and all that remains is the front façade and famous sign. The hotel buildings were not touched. Plans for redevelopment are being considered.

The Railroad Cottages

The railroad cottages were built between 1909 and 1911 by the San Pedro, Los Angeles and Salt Lake Railroad for its mid-level workers. Sixty-four units were completed on four square blocks between Casino Center and Fourth Street, Garces and Clark.

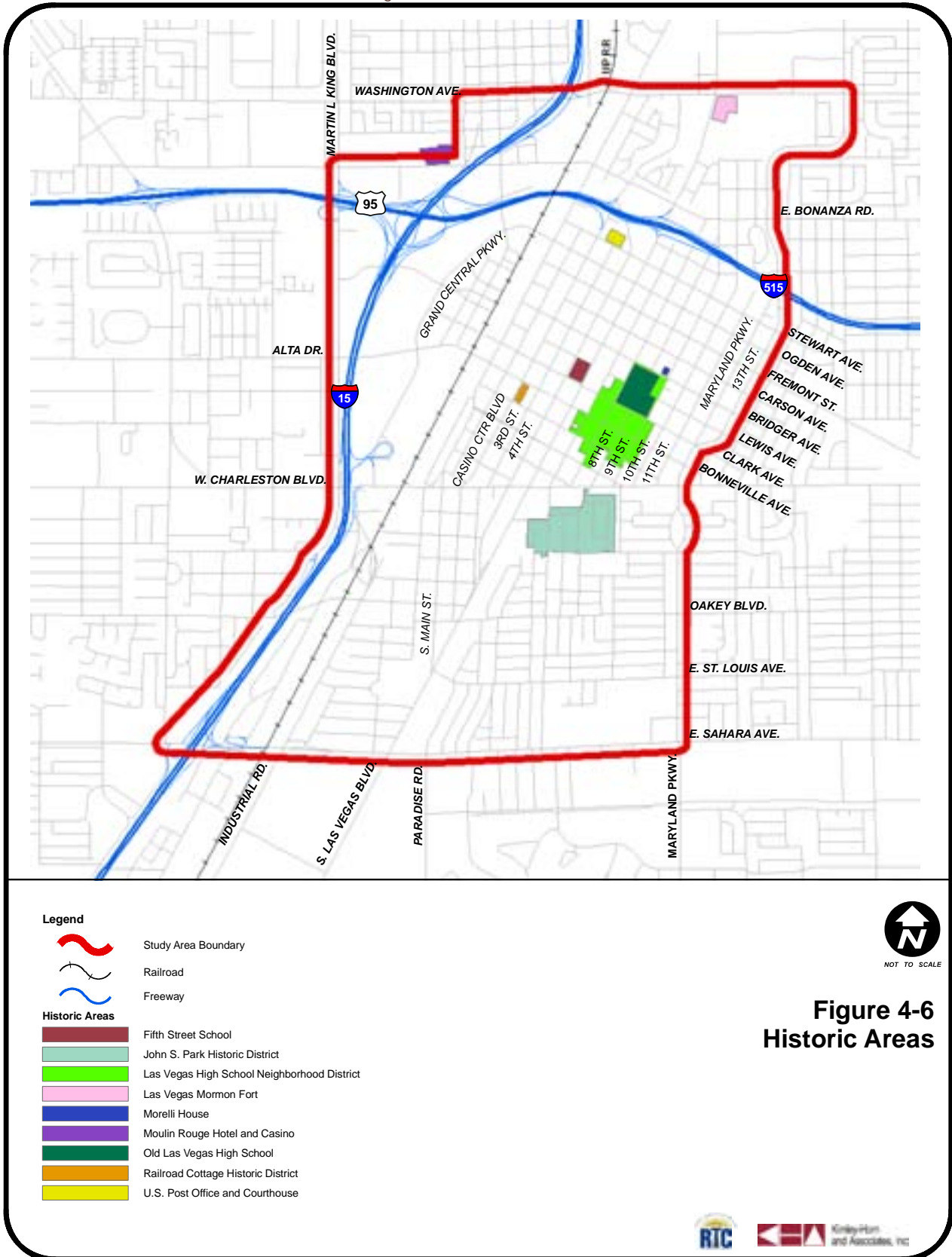


The Post Office Building



The Post Office building was built in 1931 as part of a massive government building project during the Depression years. It is an excellent example of the Neo-classical style endorsed by the Treasury Department's Supervising Architect's office as the most fitting style for public buildings. The building was the site of the McCarran-Greenspun trials, as well as the Kefauver hearings into organized crime. Today the building serves as a museum and art gallery.

Figure 4-6 • Historic Areas



Legend

-  Study Area Boundary
-  Railroad
-  Freeway

Historic Areas










-  Fifth Street School
-  John S. Park Historic District
-  Las Vegas High School Neighborhood District
-  Las Vegas Mormon Fort
-  Morelli House
-  Moulin Rouge Hotel and Casino
-  Old Las Vegas High School
-  Railroad Cottage Historic District
-  U.S. Post Office and Courthouse



Figure 4-6
Historic Areas



Downtown Pedestrian Circulation Study

4.6 Sidewalk Pedestrian Capacity

Currently being developed and planned by the CLV in conjunction with Newland Communities, Union Park will transform the 61 acres between Grand Central Parkway, Alta Drive, and the UPRR into an environmentally friendly, mixed-use development that will serve as a new urban core in downtown Las Vegas.

A pedestrian level of service (LOS) evaluation was completed for two typical cross-sections within Union Park adjacent to The Smith Center for the Performing Arts. Upon completion of the Charlie Palmer Hotel, a large number of patrons to Union Park will remain on the site following an event at The Smith Center. City Parkway and Union Park Promenade could serve as main pedestrian facilities during such events. Ideally, the walkway capacity should not be so large that on an average day, it appears as if few pedestrians are walking around. Busy and crowded streets attract even more pedestrians. However, it is also undesirable to have a LOS any greater than E; at this LOS, pedestrians are unable to move without shuffling and are in very close contact with one another. At LOS F, walkways become overly congested and capacity is extremely restricted, which is an uncomfortable environment for pedestrians.

Based on the design cross-sections, the maximum peak 15-min flow rate for both City Parkway and Union Park Promenade before LOS F are **2588 (pedestrians/15-min)** and **1208 (pedestrians/15-min)**, respectively. To provide a comparison, the maximum peak 15-min flow rate for a standard five-foot sidewalk before LOS F is **518 (pedestrians/15-min)**. The calculation of this data is documented in **Appendix B**.

As shown, both City Parkway and Union Park Promenade can sustain significantly higher pedestrian flow rates before the walkway reaches LOS F, than a standard five-foot sidewalk. Both sidewalks have landscaping adjacent to the roadway; however, City Parkway has a larger unobstructed walkway-twelve feet on average compared to eight feet.



4.7 Top Priority Routes

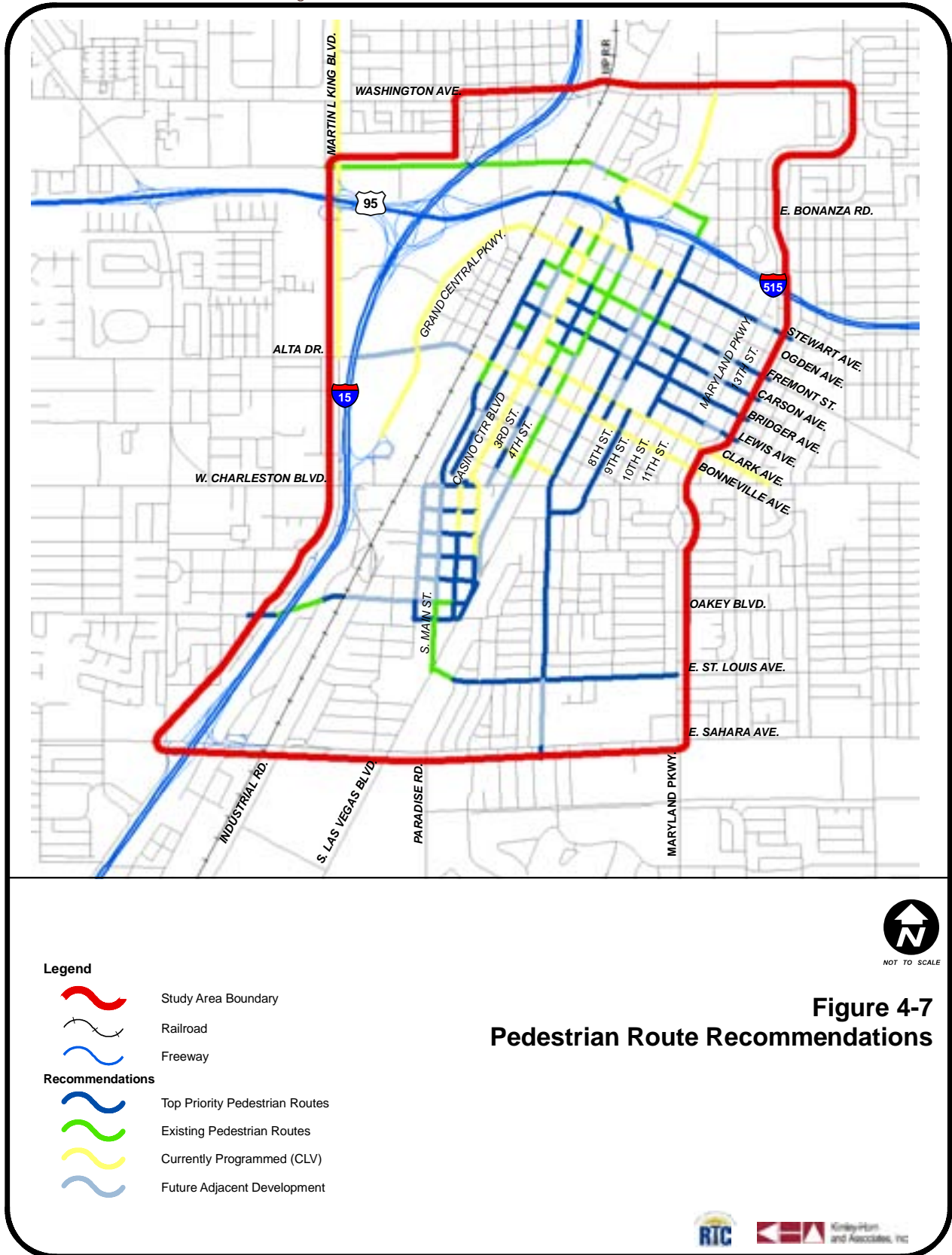
The ranked pedestrian routes were prioritized in order to identify those that would provide the greatest benefit to pedestrian mobility in the study area. **Figure 4-7** illustrates the routes broken out into four categories that rank each segment highest to lowest in regards to their need for better pedestrian facilities. These categories are described below. Connectivity is also an important factor that was considered. It is critical not only to provide a complete route, but to also allow access between the various zones (see **Figure 2-8**).

- Top Priority Pedestrian Routes
 - » These routes have either substandard existing facilities or no sidewalks at all. The improvement of these routes is vital to the mobility of pedestrians throughout the downtown area.
- Existing Pedestrian Routes
 - » These routes are adequate to serve the current and future pedestrian demand. Some routes within this category do not necessarily meet all guideline requirements, but serve as acceptable facilities that can comfortably accommodate pedestrian needs.
- Currently Programmed (CLV)
 - » As mentioned in previous sections of this report, numerous sections of pedestrian routes follow currently programmed roadway projects. These segments are a lower priority as they are already being addressed; however, they should still be taken into consideration should there be any design changes associated with the individual projects.
- Future Adjacent Development
 - » Future adjacent development has also been included in the analysis throughout this report. Routes adjacent to future development are a lower priority as it is assumed they will be improved along with the new developments. However, these routes should still be improved in the event that any adjacent parcels do not develop.

All segments that were ranked in the “Top Priority Pedestrian Routes” category should be the first to be addressed; however, the following should be taken into consideration:

- First Friday area
- Fremont Street (east of 8th Street)
- Main Street (north of Charleston Boulevard)
- 6th Street (north to Bridger Avenue) then 7th Street (Bridger Avenue to US 95)
- St. Louis Avenue
- Bridger Avenue
- 1st Street

Figure 4-7 • Pedestrian Route Recommendations



Downtown Pedestrian Circulation Study



SECTION 5: ANALYSIS OF IMPROVEMENT MEASURES



SECTION 5 ANALYSIS OF IMPROVEMENT MEASURES

5.1 Task Overview

Alternative improvements that address pedestrian safety, pedestrian crossings needs, both at-grade and separated grade, as well as policies and programs have been evaluated as part of the alternatives task. Alternative improvements associated with the First Friday event have also been addressed under this task. The following subtasks have been completed during this phase of the study.

- Coordinate with the Las Vegas Metropolitan Police Department to identify critical factors and design attributes that have shown a statistical decrease in criminal activity after such improvements have been implemented;
- Obtain available streetlight inventory data;
- Evaluate study area intersections using vehicle LOS, pedestrian volume, crash data, and adjacent existing and future development in order to address both separated grade and at-grade crossing needs;
- Research policies, goals, and guidelines currently being used by other agencies; and
- Analyze the existing conditions surrounding the First Friday event and evaluate improvements.

5.2 Adverse Possession

Most streets within the study area have 80 feet of public right-of-way and all of the recommended cross-section guidelines can accommodate improvements within this limit. However, some streets, such as portions of 7th Street and 8th Street, have existing sidewalk that is on private property. In these segments, sidewalk is being provided outside of the 80-foot right-of-way.

There is a legal doctrine, adverse possession or prescriptive right-of-way, which allows private property to become a public easement. Each state has different requirements; however, the concept is that if private land or a portion thereof has been openly used by a user other than its owner for over a specified period of time, then that land becomes property of that user. This legality is relevant to downtown streets as it could allow portions of existing sidewalk on private land to become part of the public right-of-way, thus allowing additional space for pedestrian improvements. The Nevada Revised Statutes state specific requirements that can be found in **Appendix C**. Among the requirements listed, Nevada law requires that the land in question be known to have been used continuously for five years and that all assessed taxes have been paid by the claimant.

Adverse possession has been upheld in numerous occasions on the Las Vegas Strip, where protesters were legally allowed to remain on sidewalks in front of resorts. Although the sidewalks were originally part of the resorts' private property, the sidewalks became a public easement since they were openly used by the public for more than five years. At least one case ruled against adverse possession; however, it is still in litigation. In regards to downtown sidewalks, the use of adverse possession could provide additional space for pedestrian improvements; however, it is recommended that professional legal advice be sought should this approach be deemed appropriate.

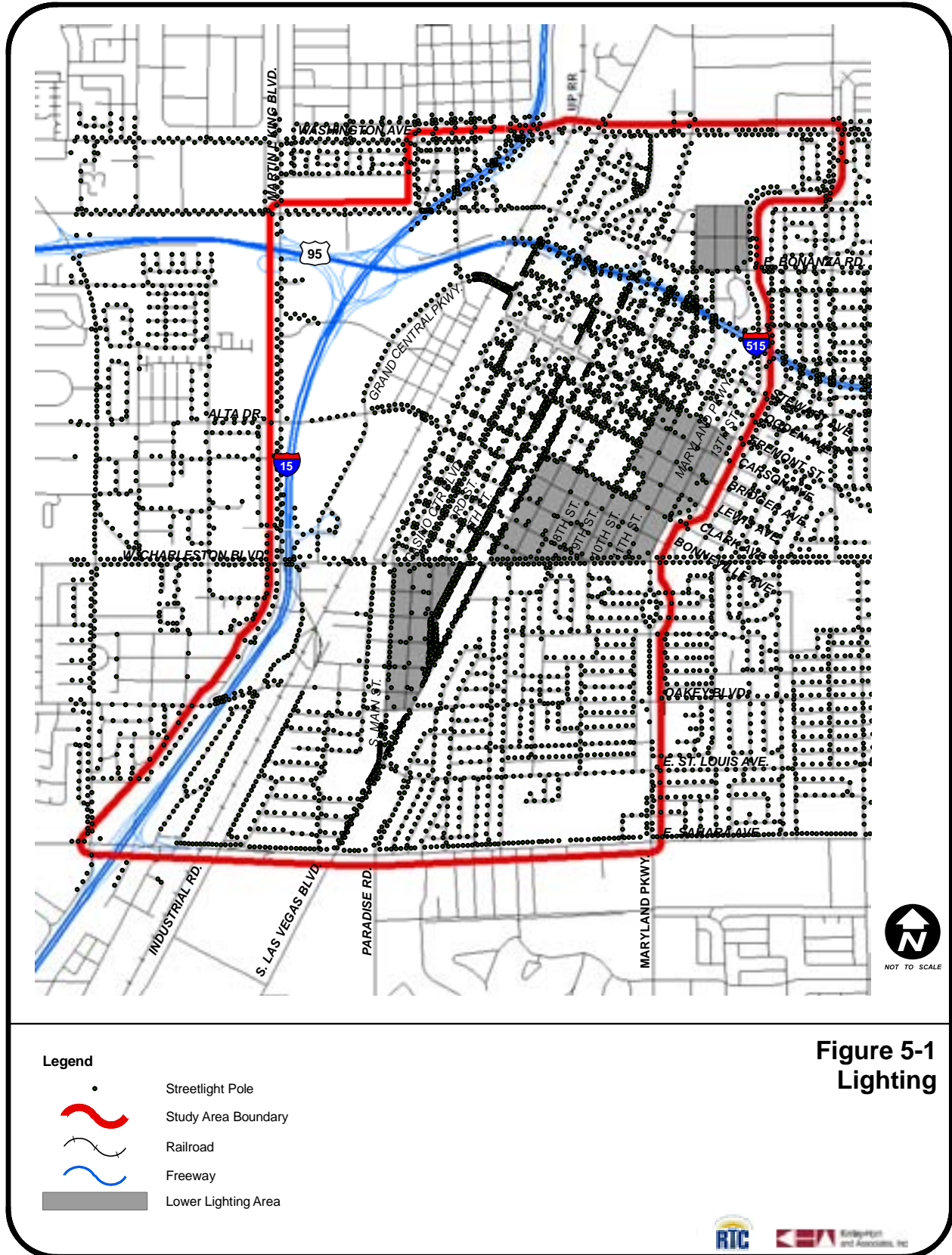


5.3 Lighting

The Downtown Traffic Capacity, Transit, and Parking Needs Study performed a user survey that looked at how both tourist and employees felt about various situations in downtown Las Vegas. Responders to the survey were asked to rank their preferences of top priorities for improvements downtown. Among the items that the users felt were most important as they relate to pedestrian safety include safety from crime when walking downtown, safety from accidents when walking downtown, and the adequacy of street lighting. Although lighting has not been shown to be related to crime, increased lighting does improve the perception of walkability for pedestrians and is considered by many pedestrians to be a key enhancement, as was shown in the user survey. Additional lighting can also help pedestrians see the sidewalk and obstructions, as well as be seen by motorists.

Figure 5-1 highlights areas that are lacking streetlights. In most places, these areas only have one streetlight per intersection with no lighting in between blocks. It is recommended to add lighting to these areas so that pedestrians can adequately see and be seen as well as help make streets more attractive routes. It is also recommended that any new streetlights be placed at a location that minimizes the amount of sidewalk blocked by the light pole.

Figure 5-1 • Lighting



Downtown Pedestrian Circulation Study

5.4 Crossing Needs

5.4.1 SEPARATED GRADE CROSSINGS

Separated grade or bridge crossings allow pedestrians to traverse intersections completely independently from vehicles. At such intersections, pedestrians would not be able to cross the street; rather, they would be forced to use the bridge, thus allowing the pedestrian phase of the signal to be removed from the cycle. This can be beneficial to both pedestrians and vehicles. Without the minimum pedestrian clearance time, signal phases can be shorter. The absence of pedestrians can also eliminate conflicts with right-turn vehicles. These factors could increase the vehicle LOS of an intersection, as concluded in the Sahara Avenue Corridor Rapid Transit Study. By eliminating any wait time, not only can bridges increase pedestrian mobility, they can also significantly decrease conflicts between pedestrians and vehicles.

Preliminary recommended pedestrian bridge locations were evaluated using data collected in earlier stages of this study including peak hour pedestrian volumes, intersection vehicle LOS, and crash data. Intersections with higher AM and PM peak hour traffic volumes as well as lower levels of service (LOS E-F) indicate potential bridge locations. In such instances, the demand for crossing pedestrians could be causing vehicles to see longer delays at intersections. Pedestrian crash locations at such intersections were also taken into consideration as they may further indicate a need to reduce potential pedestrian/vehicle conflicts.



Among the intersections identified as potential bridge locations is Sahara Avenue and Las Vegas Boulevard. This intersection has been identified by Clark County and the CLV as a planned pedestrian bridge location. It was also addressed in the Sahara Avenue Corridor Rapid Transit Study Alternative Analysis Report prepared for the RTC of Southern Nevada. The study provides numerous alternatives for pedestrian bridge crossings that coincide with the various roadway improvement options that include separated grade, tunnel, one-way couplet, and road widening alternatives. The widening of the roadway to eight through lanes is the recommended roadway improvement; however, the study recommends four pedestrian bridges regardless of which roadway treatment is eventually chosen. According to the study, if pedestrian bridges were implemented at the intersection today, the vehicle LOS would be improved from F to E. Existing pedestrian bridges on Las Vegas Boulevard were constructed on easements provided by property owners who helped contribute to construction costs; therefore, it is recommended to coordinate with corner property owners regarding the construction of such bridges.

As redevelopment continues to drive the momentum of the Las Vegas Strip north of Sahara Avenue, it is important to identify locations that could potentially need pedestrian bridges before development begins. Not only will this ensure that adequate crossings exist in the future, it will also help funding efforts. It is the intention of this study to identify bridge locations so that they are required by developers in order for their plans to be approved during the entitlement process. An intensive field review was performed in order to ensure that need for pedestrian bridge crossings near future redevelopment locations were identified by this study. It is recommended



that special consideration given to the intersection of Las Vegas Boulevard and Charleston Boulevard. It is not likely that any pedestrian bridges at this intersection will be constructed in the near future; however, there are significant pedestrian crossing concerns. Re-striping the sidewalks and repainting the medians can help create a more clearly defined path that can be better seen by both pedestrians and motorists. When funds are available, flashers could be installed to help alert motorists to watch for crossing pedestrians. The implementation of these measures could enhance pedestrian safety until pedestrian bridges can be constructed. Finally, as the area continually changes due to re-development, it is recommended that the location of pedestrian bridges be re-evaluated at least every five years as



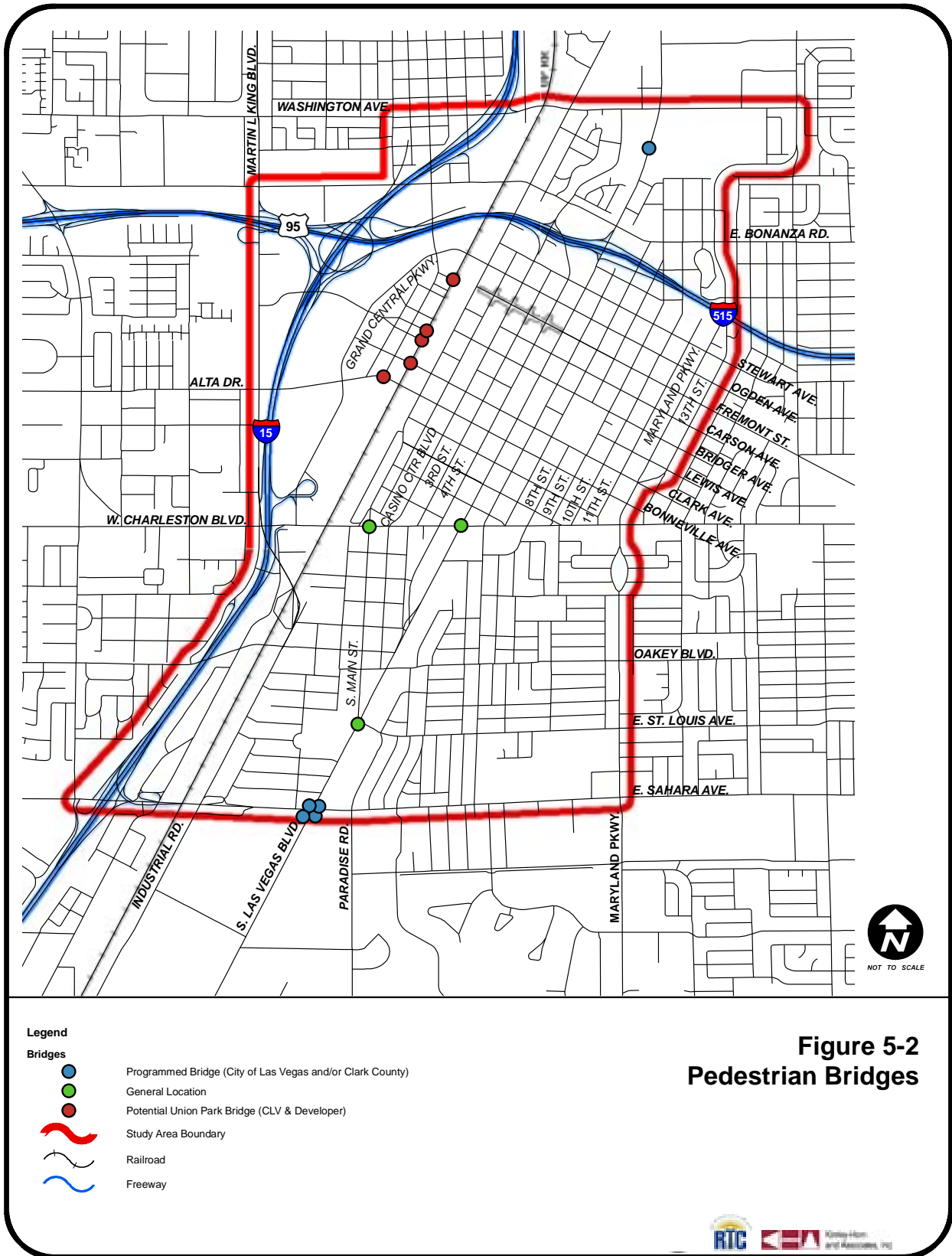
development progresses. **Figure 5-2** presents preliminary recommended pedestrian bridge locations, bridges identified by Union Park planners and developers, and currently planned bridges.

The UPRR isolates the Union Park site from the rest of downtown; therefore, planners and developers have identified pedestrian bridge alternatives. As shown on **Figure 5-3**, there are currently three locations that cross UPRR and one that crosses Alta Drive. The bridges that would cross UPRR are at West Clark Avenue, Discovery 1 Drive and/or Discovery 2 Drive, and along the Fremont Street alignment. There is also the potential for a bridge across Alta Drive at City Parkway to provide access to the Clark County Government Center.

Pedestrian bridges have already been implemented along the Las Vegas Strip in order to improve pedestrian mobility, enhance pedestrian safety, and reduce vehicle congestion at major intersections. However, the following should be considered in the design of pedestrian separated grade crossings:

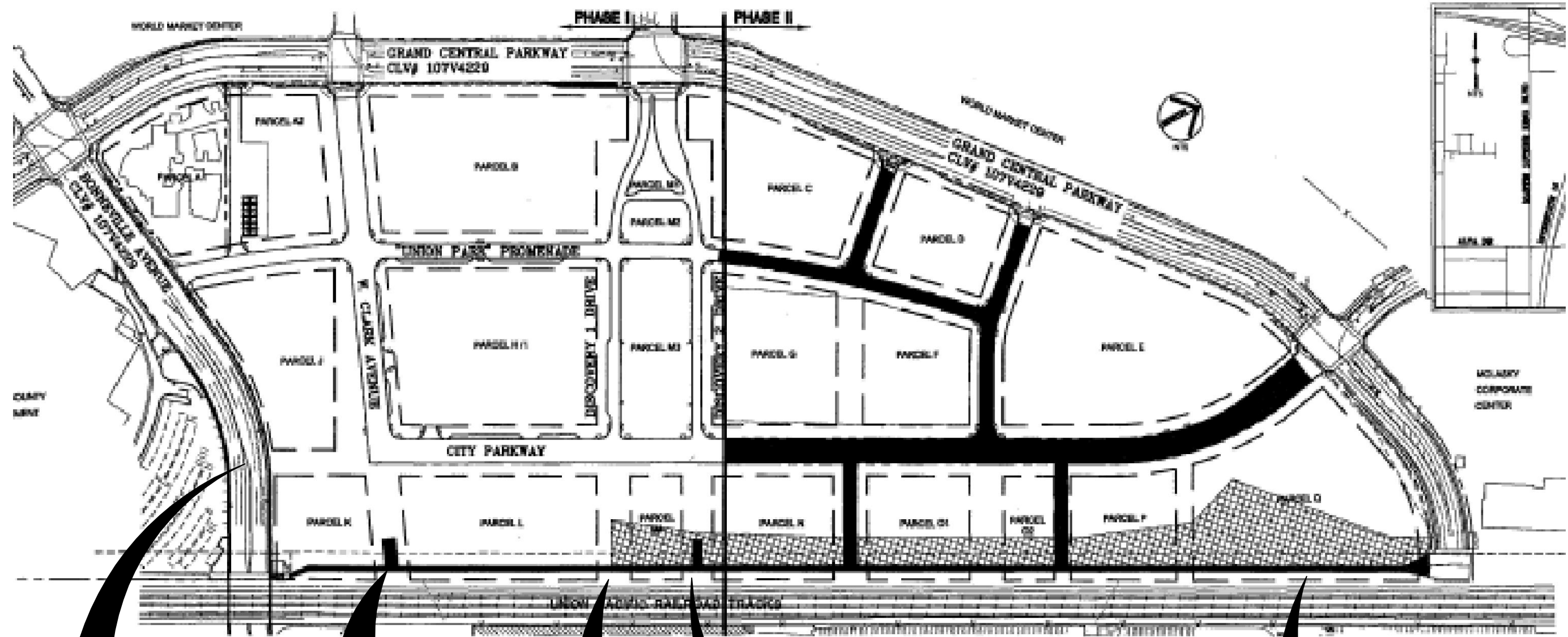
- Bridges should have a minimum 15-foot cross-section width.
- Transit grade escalators should be used.
- Elevators should be glass, air conditioned, and able to transport a gurney.
- Adequate pedestrian queuing areas should be provided at the escalator, stair, and elevator landing areas.
- Barriers should be provided along the bridge walkways for pedestrian safety as well as prevention of objects being thrown onto the street below.
- Surface should be constructed from materials that are easy to clean for the removal of graffiti.
- Bridge designs should recognize and reduce walkway vibrations.
- A 17-foot minimum height clearance should be maintained.
- Local agencies prefer that support columns are not placed in the median of the roadways being crossed.
- Ensure signal head visibility.

Figure 5-2 • Pedestrian Bridges



Downtown Pedestrian Circulation Study

Figure 5-3 • Union Park Bridges



WEST CLARK AVE.

ACCESS TO CLARK COUNTY GVMT. CENTER

DISCOVERY 1 DR.

DISCOVERY 2 DR.

ADJACENT TO PARCEL Q

FIGURE 5-3
UNION PARK BRIDGES



5.4.1.1 Vehicle Level of Service

A network model was developed during the Downtown Traffic Capacity, Transit, and Parking Needs Study using Synchro Version 6 traffic signal coordination software by Trafficware. This model was used in the previous study in order to evaluate the existing operating conditions of numerous intersections within the study area and to compare them with future conditions using growth factors. This network model was used again in this study in order to demonstrate the effect of implementing pedestrian bridges.

The existing and future conditions referred to in this document utilize the same data from the previous study. A Synchro model was developed using street centerline data available through the Clark County GIS department. The lane configurations and traffic control utilized were identified in the field review conducted during the previous study. Peak hour traffic volumes, associated with the common AM and PM peak hours which were gathered in 2006, were then added to the model. The resulting operating conditions from this analysis can be found on **Figure 5-4**.

The 5-year and 10-year growth factors were derived from trip generation estimates from the previous study. The trip generation calculations yielded a daily trip estimate of approximately 82,800 for the first 5-year period (2011) and a daily trip estimate of 73,200 for the second 5-year period (2016). Based upon the similarity of the two 5-year trip generation estimates, a straight line growth rate to approximate both 5-year periods over the 10-year planning horizon was utilized. Although this does not mean that every corridor and intersection is assumed to be consistent for the first and second 5-year periods, it can still serve as an estimate that will allow both scenarios-future conditions with and without bridges-to be compared. **Figure 5-6** and **Figure 5-8** present operating conditions without pedestrian bridges using these growth rates for both 2011 and 2016, respectively.

This analysis was performed again with the assumption that all pedestrian phases would be absent due to the implementation of pedestrian bridges. This assumes that pedestrian bridges would be present at all legs of the intersection. Although the number of recommended pedestrian bridges at the intersections of Las Vegas Boulevard/Main Street, Las Vegas Boulevard/Charleston Boulevard, and Charleston Boulevard/Main Street were not specified, the evaluation of each intersection with all pedestrian phases absent will allow for a uniform comparison. **Figure 5-5**, **Figure 5-7**, and **Figure 5-9** demonstrate the effect of implementing pedestrian bridges on the existing and future street network.

As shown in this comparison, the implementation of pedestrian bridges could improve the LOS at a few locations. It is important to note that some roadways, including Sahara Avenue, are planned to undergo significant improvements. This, along with the implementation of pedestrian bridges, could improve the intersection LOS which is not reflected in this evaluation.

Figure 5-4 • Existing Vehicle Level of Service



Legend

Study Area Boundary

Level of Service

- A-C
- D-E
- F

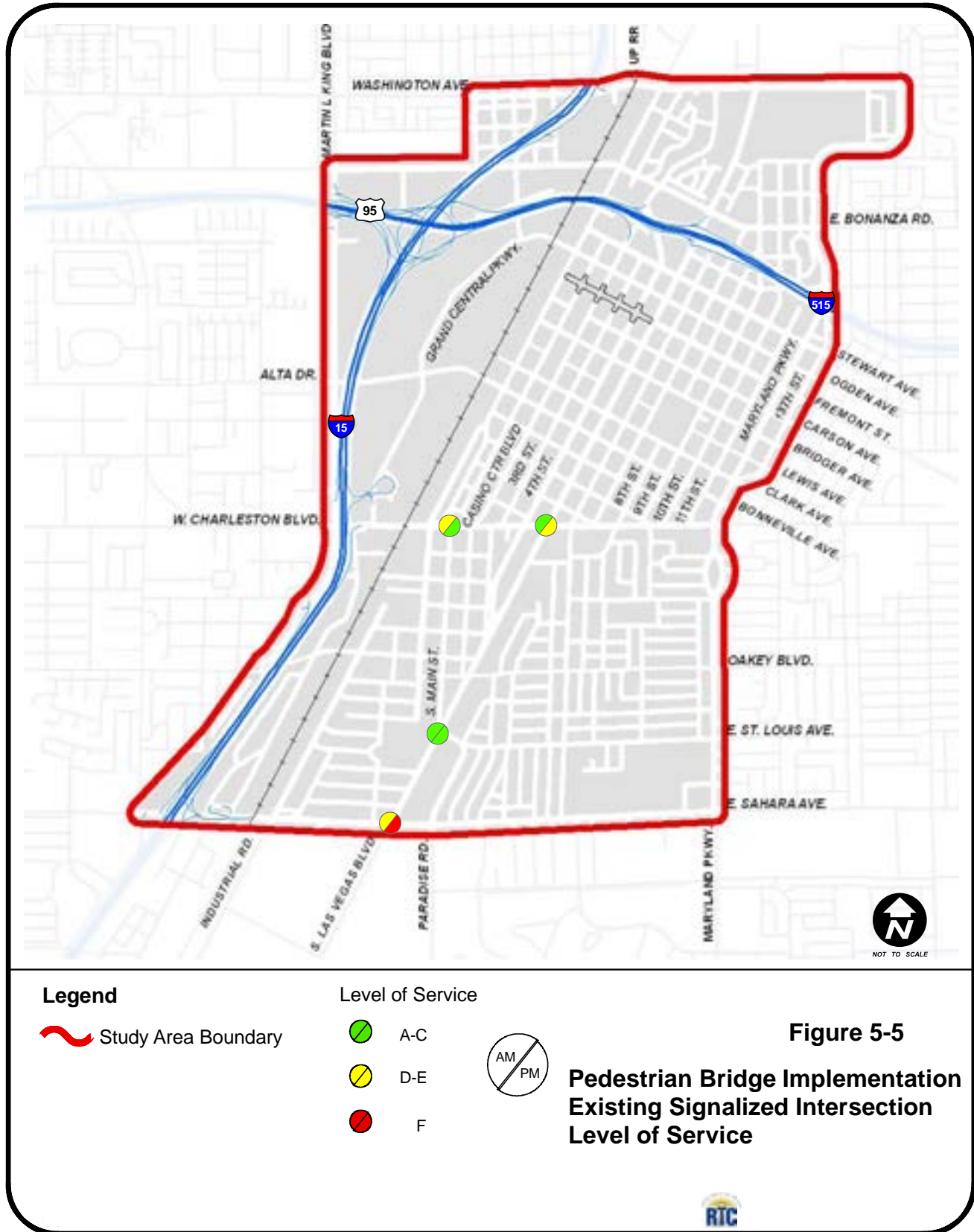


Figure 5-4

Existing Signalized Intersection Level of Service

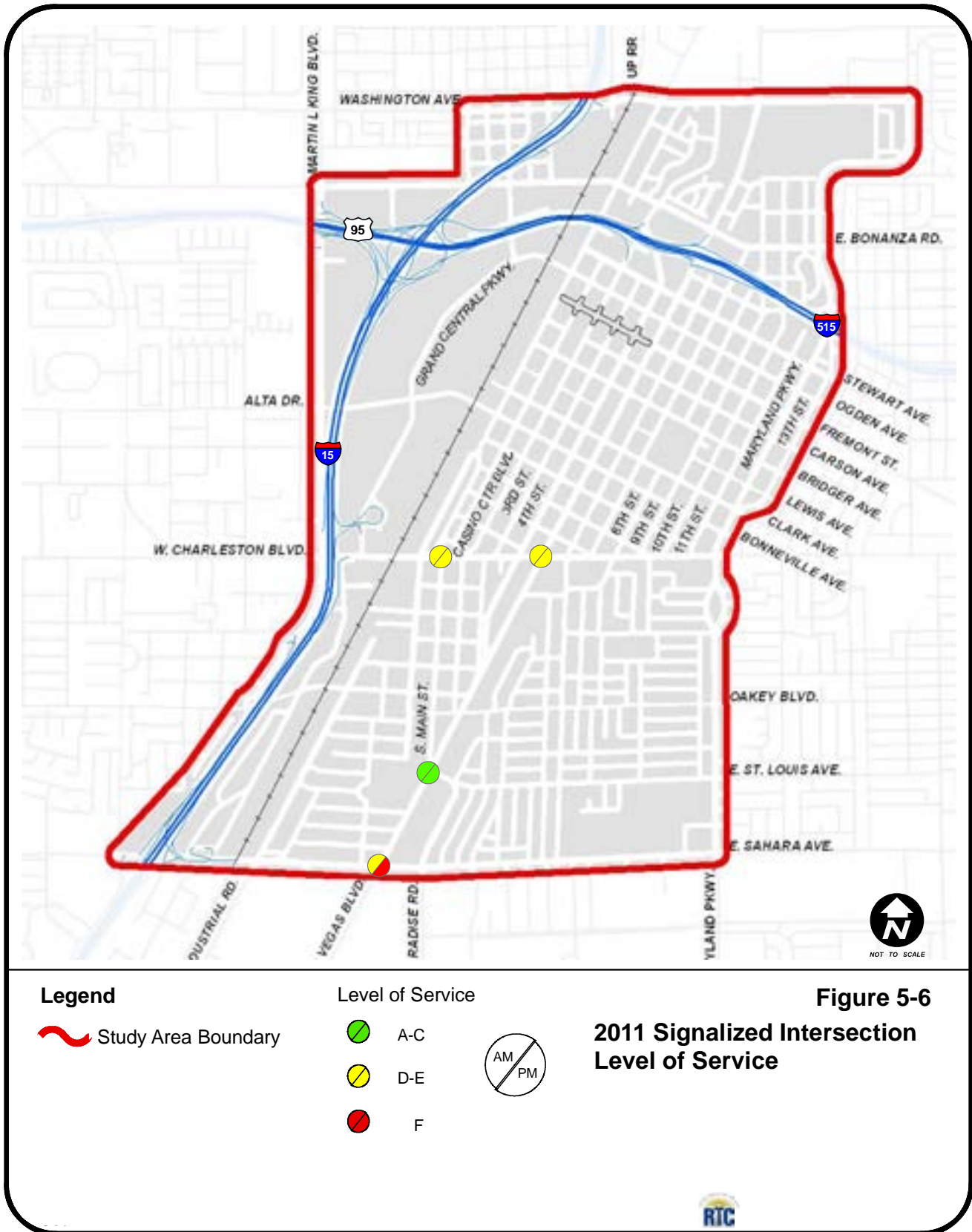


Figure 5-5 • Existing Vehicle Level of Service – Pedestrian Bridge Implementation



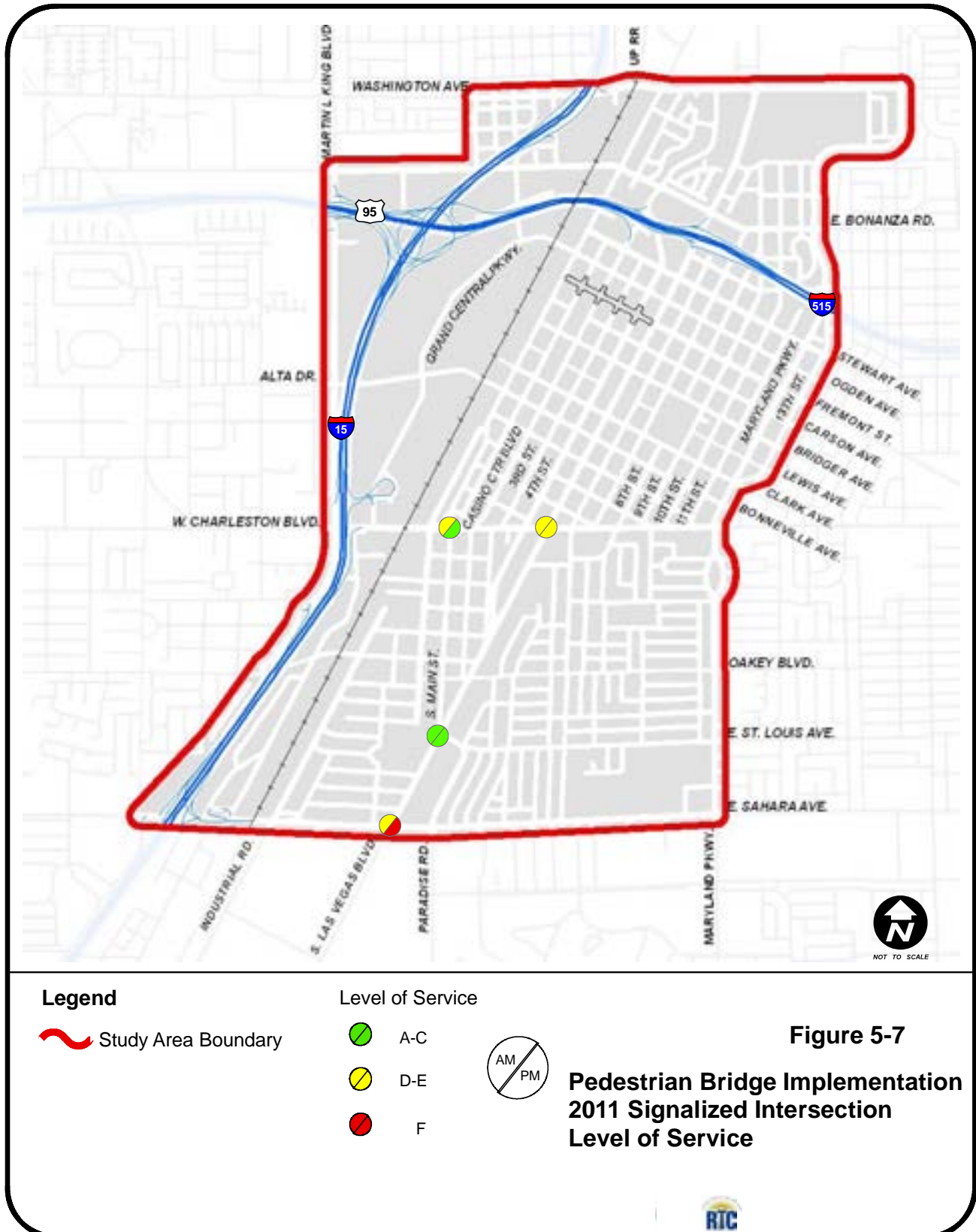
Downtown Pedestrian Circulation Study

Figure 5-6 • 2011 Vehicle Level of Service



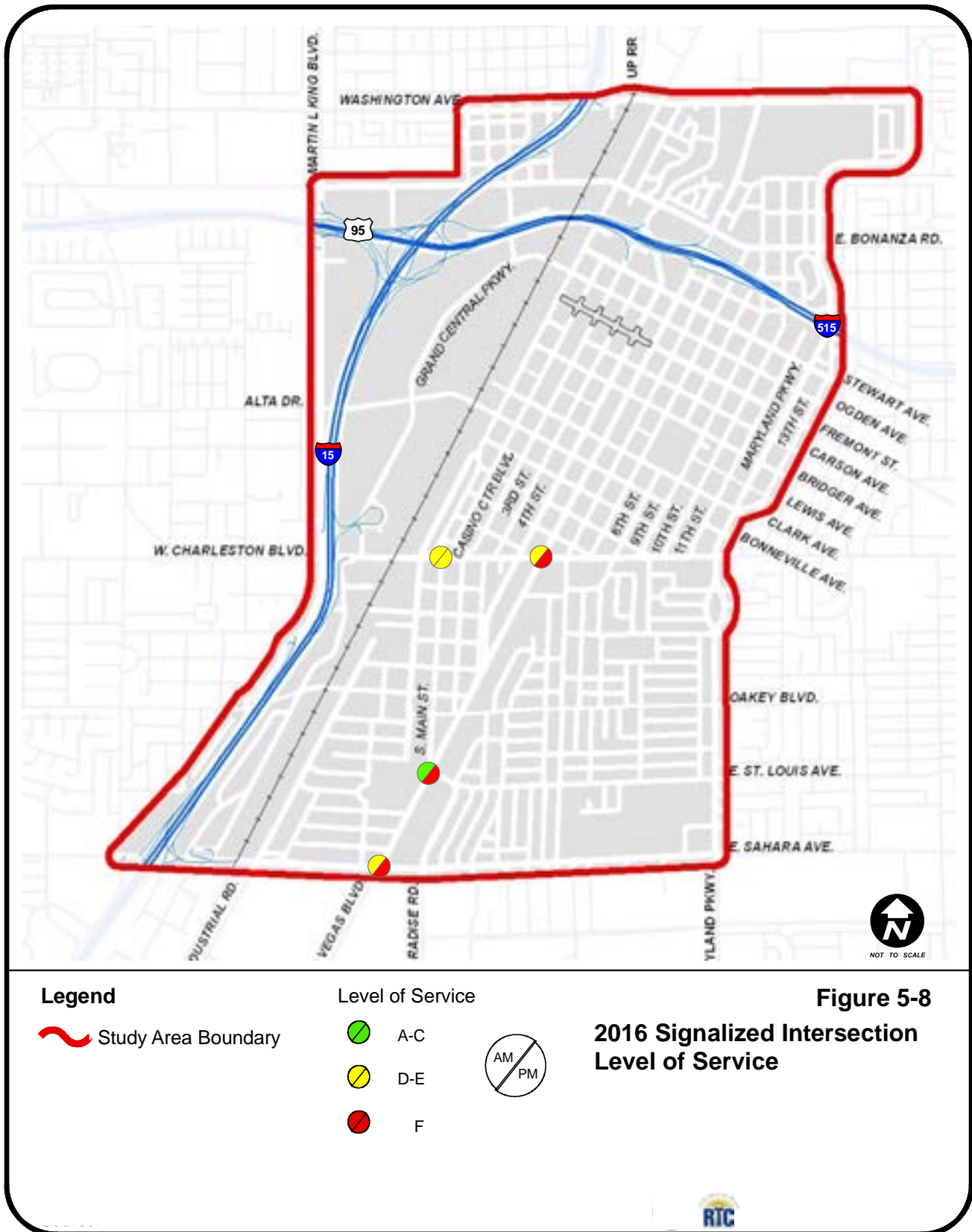
Downtown Pedestrian Circulation Study

Figure 5-7 • 2011 Vehicle Level of Service – Pedestrian Bridge Implementation



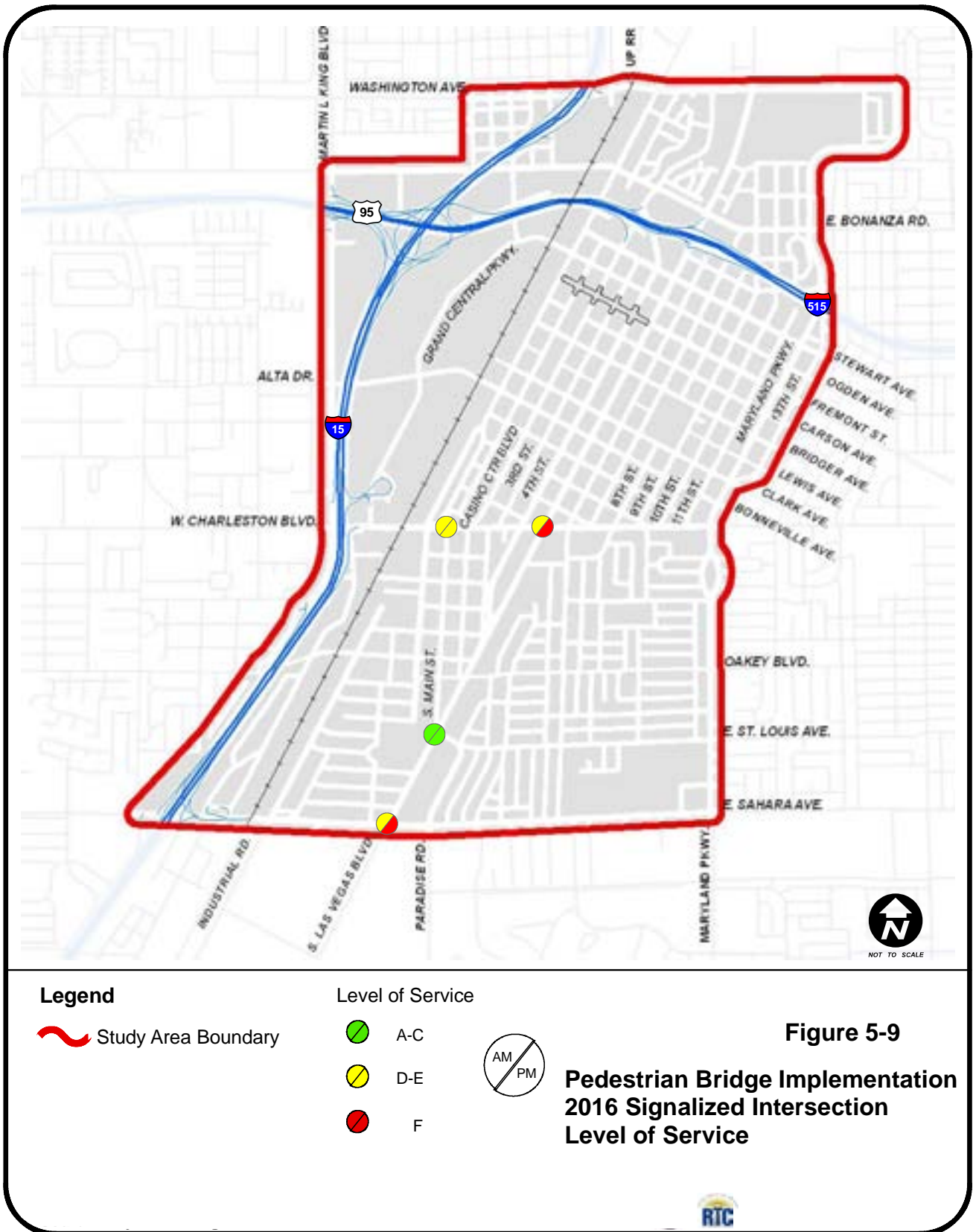
Downtown Pedestrian Circulation Study

Figure 5-8 • 2016 Vehicle Level of Service



Downtown Pedestrian Circulation Study

Figure 5-9 • 2016 Vehicle Level of Service – Pedestrian Bridge Implementation



Downtown Pedestrian Circulation Study

5.4.2 AT-GRADE CROSSINGS

The Institute of Transportation Engineers (ITE) lists over 70 treatments for at-grade pedestrian crossings. Since multiple treatments can be used at each crossing and each treatment has numerous advantages and disadvantages, design should incorporate only appropriate and safe treatments into pedestrian systems. A pedestrian crossing is defined as any location where the pedestrian leaves the sidewalk and enters the roadway (FHWA). These include all crossings, mid-block, and intersections, at which the pedestrian enters the motorist's travel path. In general, designing the correct layout per existing conditions requires the correct use of the following elements:

- Signs, signals and markings;
- Crosswalks;
- Mid-block crossings;
- Turning radius;
- Medians; and
- Sight lines.

Signs, Signals, and Markings

Although safety at an intersection can be largely attributed to geometric design, it also relies on the accessible information supplied to the pedestrians, regardless of impairment or disability. Accessible information refers to the ability of all pedestrians, including those with visual, cognitive, or ambulatory impairments to be able to understand and use the information provided. In order to ensure that every pedestrian can safely use a crossing, they should include:

- Indication to motorists and pedestrians that pedestrians can cross as indicated;
- Use of multiple sensory devices to indicate crossing direction, duration, and location;
- Detectable warnings on curb ramps to warn visually impaired persons that they are entering the roadway;
- Sufficient signal timing and sight lines; and
- Manageable and predictable crossing distances.

Some informational barriers that pedestrians face include:

- Difficulty identifying the boundary between the sidewalk and street;
- Blocked sight lines;
- Signal devices that do not provide accessible information;
- Unpredictable or actuated vehicle phases without accessible pedestrian signal information;
- Exclusive pedestrian phases without accessible pedestrian information to determine the crossing phase for visually impaired people;
- Motorists making right turns during a red light;



signs



medians, signs, and signals

- Lanes at intersections that permit a continuous flow of vehicular traffic;
- Geometrics in which the crossing location and correct direction of travel is not clear; and
- Small signage or pedestrian signals at long crossings.

Crosswalks

A crosswalk is defined as “the portion of a roadway designated for pedestrians to use in crossing the street” (ITE, 1998). These are implied at intersections whether or not there are markings to indicate their existence. Given that the majority of pedestrians use a crosswalk in order to cross traffic, crosswalks have been a prevalent topic of study pertaining to pedestrian safety in the past decade. Research by Zegeer, Stuart, and Huang (1999) came to the following conclusions regarding the incidence of pedestrian crashes:

- Increases with greater pedestrian volumes, average daily traffic (ADT) rates, and number of roadway lanes;
- Is not affected by crosswalk location, speed limit, direction of traffic flow, crosswalk condition, installation of marked crossings, or crosswalk marking pattern;
- Decreases with the presence of a median;
- Is higher on multi-lane (four or more lanes) roads with high ADT;
- Is similar on all two-, three-, and multi-lane roads with lower ADT; and
- Is significantly higher for pedestrians aged 65 and above.

This research also recommends that markings in crosswalks be enhanced with additional treatments such as traffic calming, signalization, signing, or other countermeasures. The study also recommends to:

- Design enhanced crossings that combine highly visible ladder striping with additional pedestrian treatments;
- Ensure that pedestrians with vision impairments can detect and access mid-block crossings;
- Not install marked crosswalks without additional treatments;
- Provide raised medians and curb extensions on multi-lane roads;
- Increase the visibility of the crosswalk with flashing signals, lights, and warning signals;
- Maintain the expected pedestrian travel pattern;
- Reduce turning radii around corners; and
- Provide substantial sight distances and eliminate obstructed sight lines between vehicles and pedestrians.

Mid-Block Crossings

A mid-block crossing is one at which a marked crosswalk has been provided for pedestrians to cross traffic. They do not necessarily have other features such as signals or signage to indicate to the driver that pedestrians are present. Mid-block crossings can be advantageous to a pedestrian system because they:

- Reduce the number of pedestrian /vehicle conflicts to the number of lanes being crossed whereas a two-lane four-way intersection has sixteen pedestrian /vehicle conflicts;
- Provide more frequent crossing opportunities for pedestrians;
- Allow direct access to major pedestrian destinations; and
- Reduce congestion at intersections with heavy pedestrian traffic volumes.

A key finding from the study by Zegeer, Stuart, and Huang (1999) is that unsignalized, marked crosswalks at mid-block or intersections create higher risk for pedestrians than unmarked crossings on streets with greater than 10,000 vehicles per day. Also, marked crosswalks on roads with less than 10,000 vehicles per day do not reduce the risk for pedestrians. To increase pedestrian safety, a mid-block crossing could also implement other features to be discussed later in this section.

Turning Radius

As part of the geometric design, the turning radius at an intersection can greatly affect the safety of pedestrians. As the curves widen, pedestrians will experience:

- Longer crossing distance;
- Less ability to see and be seen by vehicles;
- Less space available on corners for pedestrians to collect;
- Curb ramps compromised by limited space;
- Difficulty to audibly discern between parallel and perpendicular traffic flow; and
- Cars turning at higher speeds.



Curb Radius Reduction

Although a tighter curve at an intersection is inherently safer for pedestrians, the current practice is to use a larger radius than the design minimum in order to accommodate larger vehicles such as semi-trucks and buses making a right turn. However, this does not necessarily need to be accomplished by widening the curb. The following are alternatives that can still accommodate larger turning vehicles:

- Add a parking lane;
- Set the stop lines farther back from the intersection and allow trucks to turn into the out-of-lane area to initiate the turn;
- Design intersections at right angles; and
- Use a compound curve that decreases in radius as the vehicle goes through the turning movement.

Medians

A median is a part of a divided roadway that:

- Separates the flow of traffic;
- Provides a protective area for pedestrians;
- Creates shorter span distances for pedestrians; and
- Allows pedestrians to cross vehicular traffic through smaller gaps.

The FHWA recommends that when designing a median the following criteria should be considered:

- Medians should provide ramps in accordance with the Americans with Disabilities Act (ADA);
- Medians should be raised to increase visibility and safety;
- Provide a minimum of a four-foot by four-foot platform between the ramps;
- Provide 24 inches of detectable warning on each ramp; and
- Consider the mobility limitations of wheelchair users.



signals and medians

Sight Lines

In order to avoid collisions at conflict points, both pedestrians and drivers should have generous sight distance provided by the geometric design of the intersection. More specifically, sight lines should allow the motorist a long enough period of time to determine the pedestrian's speed and to stop, if necessary. Elements that increase the sight line include:

- Raised medians and crosswalks;
- Advanced stop lines before a marked crosswalk;
- Curb extensions, "bulb outs", or "curb bulbs"; and
- Smaller turning radii.

Things that obstruct sight lines include:

- Utilities, bollards, signage, and other visual clutter near a crossing;
- Refuge islands in between right-turn lanes and through lanes;
- Walls and fences near intersections; and
- Parking near the crosswalk or intersection.



curb extensions

5.5 Barriers

The downtown area is surrounded by numerous barriers, some of which greatly constrict the mobility of pedestrians in and out of the area. Each barrier location, shown on **Figure 5-10**, has been analyzed in order to identify areas that need the most attention. The following lists the three categories into which each point was evaluated:

- Satisfactory
 - » Five-foot minimum sidewalk
 - » There is also additional room for widening at Alta/UPRR, Main/US 95, Discovery/I-15, and Casino Center/US 95.



Alta/UPRR



Discovery/I-15

- Needs Minor Improvements
 - » No sidewalk exists at Wyoming/UPRR.
 - » The overpass supports are in the middle of the sidewalk on the north side of Charleston/I-15.
 - » The overpass supports are in the middle of the sidewalk on both sides of Alta/I-15.
 - » No direct pedestrian path exists on the west side of Casino Center south of US 95 due to the off ramp.
 - » There is missing sidewalk and direct paths at Maryland/US 95 and 13th/US 95.



Maryland/US 95



Wyoming/UPRR

- Needs Major Improvements
 - » Very narrow walkway at Sahara/Industrial overpass
 - » Very narrow walkway at Charleston/UPRR underpass

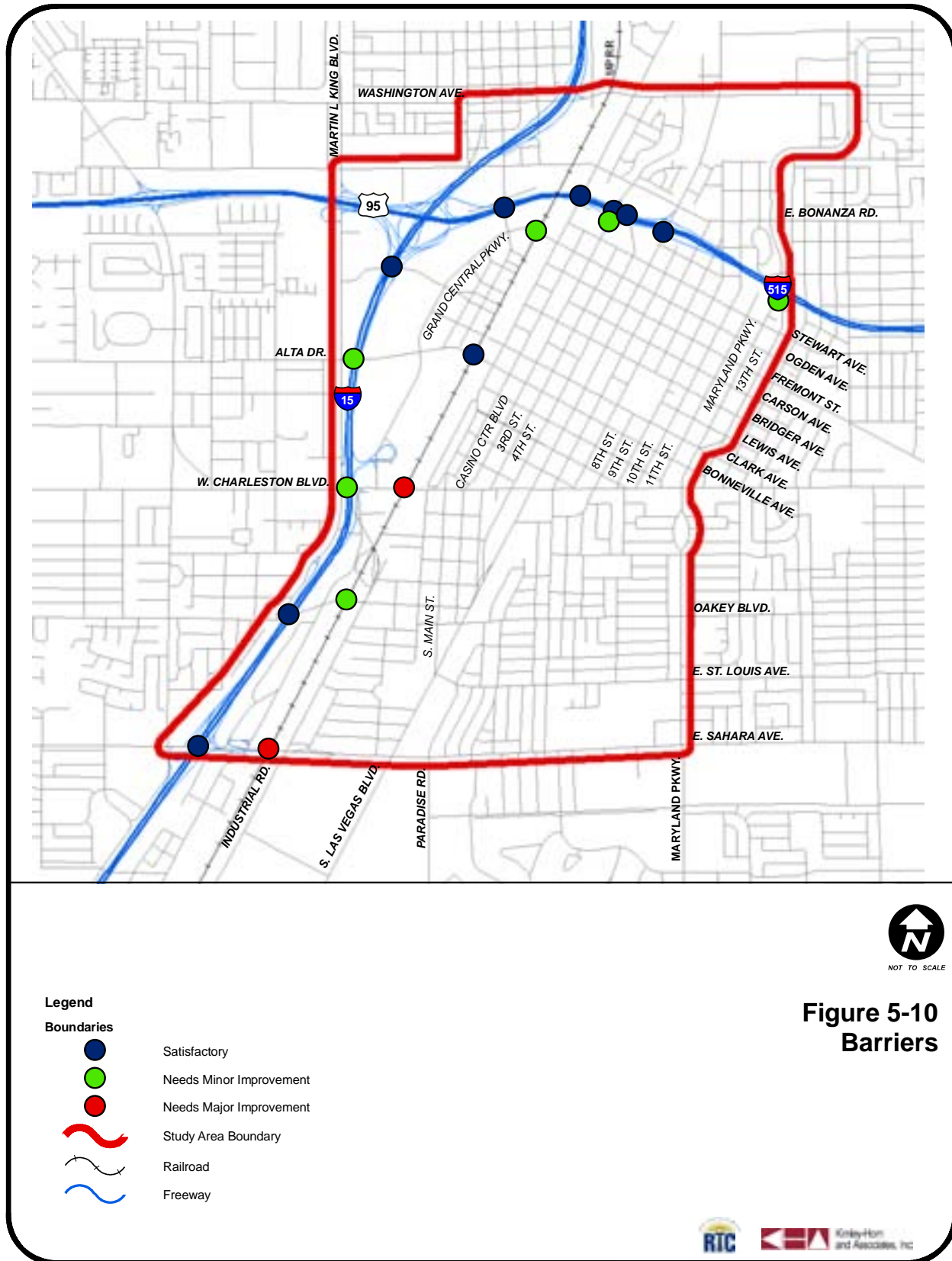


Charleston/UPRR



Sahara/Industrial overpass

Figure 5-10 • Barriers



Downtown Pedestrian Circulation Study

5.6 Special Events

Downtown is home to many special events throughout the year. It is not the intent of this study to provide special events planning; however, the study did evaluate First Friday, a major reoccurring downtown event that attracts a high number of pedestrian trips, in order to provide useful tools for all events planned in the downtown area.



lack of streetlights - floodlight around stage area

Considered the premier arts event in Las Vegas, the First Friday event has grown to attract astounding numbers since its inception in October 2002—from 300 attendees to as many as 10,000. The event showcases shops and galleries within the Arts District and serves as a platform for local artists and street performers.

First Friday is produced by Whirligig, Inc., a local non-profit arts organization, with support from the CLV. Upon meeting with Cindy Funkhouser, Board President, and Nancy Higgins, Executive Director, it was discussed that parking and safety are two major issues with lighting, sidewalk conditions, and crossings being major safety concerns. Lack of funding directly affects organizers of the event to address these issues. According to Ms. Higgins, “Improved sidewalks and lighting would be wonderful!”

The official parking location designated for First Friday is at the Clark County Government Center. There is a trolley route, which takes approximately 30 minutes per cycle, picks up patrons from this area and travels through the event areas. However, at one of the recent events, only 1,000 of the 10,000 visitors used the trolleys. The Arts Factory provides complimentary valet parking on Boulder Avenue, yet the capacity of this space is limited, therefore the majority of patrons seek parking on surrounding streets closest to the main stage area.

As depicted in Figure 5-1, there is a significantly lower concentration of street lights surrounding the First Friday main stage area located on Casino Center Boulevard south of Charleston Boulevard. This raises a number of concerns with Whirligig representatives.



main stage area

With large numbers of patrons parking on poorly lit side streets, inadequate lighting makes it very difficult for motorist to see crossing pedestrians. The main stage area on Casino Center Boulevard is lit by flood lights; however, upon exiting this area patrons must walk down very dark streets and alleys that could affect pedestrian perception of safety. Extra lighting in the surrounding areas could make patrons feel safer when walking back to their cars. This could also attract more locals from all over the city because it would make them feel more comfortable walking in the area.



parking signage

Pedestrian safety from conflicts with vehicles is another major concern. With poor sidewalk conditions and no sidewalks in many locations, a large number of patrons walk in the street. A number of intersections do not provide handicap ramps either, presenting a risk to the disabled. The main stage area is located south of Charleston Boulevard; however, many art galleries and the valet parking are located north of Charleston Boulevard. This presents a significant crossing need for the event as



no sidewalk

there has been at least one crash involving a patron trying to cross this busy street.

Overall, First Friday is an extremely successful pedestrian-oriented event, however it could be further enhanced by addressing issues such as sidewalk conditions, lack of lighting, and pedestrian crossings.



no sidewalk

5.7 Other Alternatives/Factors

Pedestrian Malls

A pedestrian mall is an area, like Fremont Street in downtown Las Vegas, where streets are closed and converted to pedestrian areas. Although the Fremont Street pedestrian mall has been considered successful, many pedestrian malls are not and have even been converted back to roadways that carry vehicular traffic.

In 1979, the City of Chicago closed nine blocks of State Street to vehicular traffic in order to create a more pedestrian-friendly mall area. The conversion was part of a nationwide movement to create mall areas in downtown regions of cities with a peak of 200 urban centers funded by a federal program. The project's cost was \$17 million in 1979, and the street was closed for 27 years. The streetscape during that period had wide sidewalks, planters, and additional lighting in place. However, with little traffic flow, the streets seemed empty and dangerous after dark and were thought to be unsafe even though it had the lowest crime rate in the city. Major stores went out of business and were replaced with fast food restaurants.

Upon reopening in 1996 at a cost of \$24 million, the street regained its vitality and new stores have opened. Increased pedestrian and vehicular traffic make it seem safer after dark. Business displays are also visible to passing motorists, an attribute that the Fremont Street Experience has always had.

Nolte, Carl. "Chicago's State Street Mall Called Transit 'Disaster.'" *San Francisco Chronicle*, 24 Nov. 1997. Accessed 4 Mar. 2008 <www.sfgate.com>.

Access Management

In an effort to reduce the number of crashes and traffic delay along a roadway, government agencies have been utilizing access management, a planning measure that evaluates the location and spacing of driveways, street connections, median openings, and traffic signals. Access management also involves the use of raised medians and dedicated turn lanes to funnel turning vehicles from through lanes. Access management can reduce the number of conflicting turning movements between vehicles exiting or entering a driveway. Converting a two-way left-turn lane into a median with an opening provides a turning location with fewer conflicts, which can also reduce the number of crashes.

Although the goal of access management is to reduce the number of vehicular crashes, it can also create a safer environment for pedestrians. The number of pedestrian/vehicle conflict points can be reduced by limiting the number of driveways and access points. Numerous government agencies across the country implement guidelines and policies that relate to access management. The City of Tucson Transportation Access Management Guidelines specify median opening and driveway spacing.

Businesses, however, have expressed concern over the impact that access management could pose to their properties. The FHWA has published a report titled "Safe Access is Good for Business" in an effort to address this concern by identifying the positive effects that access management actually provides. There are two types of businesses: destination businesses and drive-by businesses. Customers plan to visit destination businesses in advance of their trip, whereas drive-by businesses attract their customers on impulse. Destination businesses located on a busy arterial with difficult access can actually intimidate customers. Drive-by business customers expect to get in and out as easily as possible, which can be accomplished through visibility, signage, and convenient access. Access management does not impact the demand for goods or services; therefore, not only can implementing access management policies in the downtown area create a safer pedestrian environment, it can also benefit businesses.

5.8 Policies, Goals, and Guidelines

Entities ranging from cities to agencies have produced many different plans to implement improved pedestrian facilities. The following are a number of policies and guidelines found in various master plans.

CLV CENTENNIAL PLAN

The CLV published the Centennial Plan in 2000 in order to establish fundamental design standards to guide redevelopment of the downtown core in areas such as site planning, transportation and parking, streetscapes, architectural design, signage, landscaping, and outdoor dining. The Plan divided the downtown area into nine districts for which goals and objectives varied. These districts include the Office Core, Las Vegas Boulevard, Downtown South, 18b-the Arts District, Parkway Center, Central Casino Core, Northern Strip Gateway, East Village, and Fremont East.. Policies that relate to pedestrian and bicycle use as stated in the Centennial Plan are listed below.

Streetscapes

- Create streetscapes that provide safety, comfort, and interest for pedestrians.
- Establish a network of urban trails, open spaces, and linkages that will further the city's Urban Pathways System concept.
- Encourage a network of arcades through downtown.
- Boulder Street will be closed to vehicular traffic and will become a pedestrian-only public plaza featuring public art.
- First Street will be reduced to one lane in each direction. Sidewalks shall be ten feet wide with chokers located at all intersections, not including the five-foot amenity area. Parking will be parallel on both sides of the street.
- Landscaping and streetscape is required along all city streets per district design standards.
- To permit the required ten-foot sidewalk and five-foot amenity area, all buildings shall be set back five feet from the property line along:
 - » Both sides of Casino Center Boulevard between Charleston Boulevard and Ogden Avenue.
 - » Both sides of Third Street between Charleston Boulevard and Imperial Avenue.

Right-of-Way Improvements

- All streets shall have a five-foot amenity zone and a ten-foot, unobstructed sidewalk.
- The surface of the sidewalk should appear as a consistent pattern. The sidewalk must ramp down at the corner to provide handicapped access and have stamped pattern concrete.
- The entire width of public right-of-way sidewalks shall not exceed a two-percent slope.
- All new development shall provide and install light fixtures, benches, trash receptacles, and tree gates in accordance with the Las Vegas Downtown Centennial Plan area models and specifications. Placement and spacing of light fixtures shall be as directed by Public Works.
- Supporting landscape and streetscape design improvements shall be incorporated into any new streetscape design including lighting and other landscape elements such as freestanding planters, planter boxes, and hanging baskets.
- Streetlights and decorative pedestrian lights shall be incorporated into any new streetscape improvements per district standards. Overhead lights must provide the ambient light necessary for safety and traffic operations and must meet CLV Department of Public Works standards. Pedestrian lights should be placed in a clear geometric pattern with regular spacing to add a sense of order to the street.

- Roadway lighting shall be installed per the Public Works approved standards.

North-South Streets

- Major north-south streets (Main Street, Fourth Street, Las Vegas Boulevard, Casino Center - north of Charleston Boulevard, and Third Street - south of Charleston Boulevard) shall be designed thematically with palms as the primary landscape element. The palm trees shall be 25 feet or greater in height and be spaced at 30-foot increments. Southern Live Oak, Shoestring Acacia, Ash, and Pistache shade trees may be provided between the palm trees with a minimum height of 15 feet.
- All other north-south streets shall have only shade trees.

East-West Streets

- East-west streets shall be designed thematically with Southern Live Oak, Shoestring Acacia, African Sumac, Ash, and Pistache shade trees as the primary landscape element. These trees shall be 36-inch box trees at 15- to 20-foot intervals.

Alleys

- Alleys not abandoned with new development shall be redeveloped to conform to the standard alleyway treatment.

BICYCLE AND PEDESTRIAN ELEMENT OF THE REGIONAL TRANSPORTATION PLAN (REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA)

Upon its completion, this study will outline goals for the region that have specific objectives, performance measures, expected results, and entity-specific policies and programs.

- Implement transportation systems that improve air quality and protect the environment.
- Increase number of pedestrian and bicycle corridors connecting residential with commercial areas, employment centers, and schools.
- Increase number of subdivision walls with pedestrian and bicycle portals.
- Encourage trip chaining and alternate mode travel by encouraging entities to include considerations of connectivity in roadway and subdivision designs.
- Implement transportation programs that improve availability of bicycle accommodations serving all forms of mass transportation to fully integrate modal options.
- Increase availability of facilities to secure bicycles at transit terminals, park-and-ride facilities, and places of employment.
- Promote subdivision walls with pedestrian and bicycle portals that allow access to transit and other nearby regional destinations.
- Implement transportation programs that provide travel options responsive to individual preferences for time, cost, convenience, and reliability.
- Implement retrofit projects that improve bicycle and pedestrian access from residential areas to employment, schools, parks, and transit.
- Develop a transportation system that improves access to mass transit facilities by the elderly and physically challenged in furtherance of the ADA.
- Provide transit stops with shelters and/or benches while maintaining adequate sidewalk width for mobility devices.
- Secure funding for expansion, operations, and maintenance of systems and routes. Develop a transportation system that considers design solutions that increase capacity for less cost.
- Expand the transportation network within existing rights-of-way.
- Continue participation and education efforts that enhance public awareness and support of the transportation system.
- Develop a transportation system that continues to improve transit accident rate.
- Include bollards or other passenger protection facilities at transit stops to reduce danger from vehicles leaving the roadway.
- Implement transportation programs that reduce bicycle- and pedestrian-related crashes.
- Improve pedestrian safety through the Alternate Mode working group, Safe Routes to School, NV Highway Strategic Planning Program, and other venues.
- Ensure that all possible funding is allocated and expended for alternate mode maintenance and new projects.

NEVADA DEPARTMENT OF TRANSPORTATION STATEWIDE TRANSPORTATION PLAN (NevPLAN)

Adopted by the State of Nevada Transportation Board in 2002, the NevPLAN outlines the goals, performance measures, and strategies of the NDOT for the statewide transportation system. These statewide goals include mobility, accessibility, and safety for all modes of transportation.

- Provide a comprehensive transportation system that adequately meets present and future accessibility and mobility needs.
- Implement the Silver State Management Programs, Nevada State Transit Plan, and Statewide Bicycle and Pedestrian Plans.
- Follow NDOT's Public Participation Plan.
- Ensure safety of the users of the statewide transportation system by implementing policies and programs that reduce total crashes, property damage crashes, injury crashes, total injuries, and fatalities.
- Support enforcement of safety laws and policies and Transportation Public Safety Education Programs.
- Enhance the environment affected by the transportation system and mitigate harmful impacts of carbon monoxide and particulate matter.
- Designate routes for hazardous materials transportation.
- Provide a complete transportation system that is efficient and effective in the movement of people and goods.

ACCOMMODATING BICYCLE AND PEDESTRIAN TRAVEL: A RECOMMENDED APPROACH

The United States Department of Transportation (USDOT) published this policy statement following the TEA-21 Act of 1998 and last updated it in August of 2007. Included with this statement are policies as well as suggestions for the implementation of a bicycle and pedestrian plan. The USDOT encourages all levels of government and professional associations to adopt this policy to indicate their commitment to bicycle and pedestrian facilities as a vital factor of their transportation system. Adoption would include at least one of the policies and the commitment to utilizing any of the actions appropriate to their situation.

Policies

- Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless improvements are not warranted by law, excessive cost, or lack of need.
- In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day, as in states such as Wisconsin. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate.
- Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.
- Sidewalks, shared use paths, street crossings (including over- and under-crossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.
- The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through planning projects for the long term, addressing the needs of bicyclists and pedestrians along and crossing corridors, and designing facilities to the best current available standards and guidelines.

Actions

- Define the exceptional circumstances in which facilities for bicyclists and pedestrians will NOT be required in all transportation projects.
- Adopt new manuals or amend existing manuals covering the geometric design of streets, the development of roadside safety facilities, and design of bridges and their approaches so that they comprehensively address the development of bicycle and pedestrian facilities as an integral element of the design of all new and reconstructed roadways.
- Adopt stand-alone bicycle and pedestrian facility design manuals as an interim step towards the adoption of new typical sections or manuals covering the design of streets and highways.
- Initiate an intensive re-tooling and re-education of transportation planners and engineers to make them conversant with the new information required to accommodate bicyclists and pedestrians. Training should be made available for, if not required of, agency traffic engineers and consultants who perform work in this field.

CITY AND COUNTY OF DENVER PEDESTRIAN MASTER PLAN

In 2004, the Pedestrian Master Plan was developed to encourage and enhance alternate modes of transportation. A number of policies were created for Denver County to provide guidance on how to achieve this goal. Policies that allow for increased access and safety to the pedestrian network and environment are listed in this report.

Crossings

- Improve pedestrian crossings in areas where safety is an issue.
- Employ a full range of intersection design options to improve pedestrian safety.
- Coordinate with the neighborhood traffic management program to utilize traffic-calming techniques in areas where there is high pedestrian activity and potential conflict with vehicles.

Signals

- Appropriately locate signal types and functions to improve pedestrian safety.

Sidewalks

- Add, repair, replace, and maintain a citywide network that is safe, barrier free, and meets all ADA criteria.
- Provide City Standard curb ramps at all intersections.
- Remove and/or re-configure streetscape elements that are obstacles to pedestrians.
- Design Streetscapes to be compatible with American with Disabilities Acts (ADA) and meet all current guidelines.
- Educate City agencies about pedestrian needs and requirements.
- Develop a broad-based, citizen-led committee to support and/or identify improvements to the physical pedestrian environment.
- Provide a pedestrian system of Green Streets, parkways, multi-use trails, and pedestrian bridges that integrates into a continuous network.
- Require direct on-site pedestrian connections between new developments and transit stops.
- Provide for mobility along edges of and into parks where they abut right-of-way, particularly along arterials where connections to bus transit stops are needed.
- Proposed sidewalks along the edges of new and existing parks, parkways, and open space should be designed in a manner sensitive to park use, design, and history.
- Pedestrian facilities along edges of multiple jurisdictions and between existing neighborhoods and in-fill development should be designed and built in a manner that provides direct and continuous connection for pedestrians.

Streetscape

- Integrate the entire streetscape roadway design to encourage walking and pedestrian safety.
- Adopt cross-sections that serve as pedestrian design guidelines.
- Develop designs for curb cuts and curb ramps that consider pedestrian safety and street functionality equally.
- Develop a system of signage, landmarks, plantings, art work or other features to identify designated pedestrian routes for high-profile pedestrian destinations.
- Enhance the pedestrian route network by providing amenities such as trees, benches, informational signs, and lighting.
- Encourage the inclusion of amenities, plantings and art in pedestrian improvement projects.

- Preserve historic character and design including historic sidewalks, appropriate tree preservation/replacements and respect for the spatial design of parkways.

Mixed-use transit

- Promote land use and site design that makes walking convenient and enjoyable.
- Connect entrances and exits to sidewalks and minimize “blank walls” to promote street level activity.
- Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips.
- Promote an active street life and encourage outdoor seating for restaurants, cafes, and other dining establishments, along with other pedestrian oriented uses, while maintaining a minimum obstructed walkway.
- Encourage filling in gaps along corridors and in neighborhood centers to support a lively pedestrian environment.
- Locate buildings, parking lots, and site amenities to promote safe pedestrian movements between uses and between the site and the public right-of-way.

THE CITY OF OAKLAND PEDESTRIAN MASTER PLAN

This plan was produced in 2002 to promote pedestrian safety and access, especially for routes to schools and transit facilities. It also identifies policies intended to improve design elements as well as develop community education programs to help expand the pedestrian network over a 20-year period. Some of these policies have been highlighted below.

Safety

- Improve pedestrian crossings in areas of high pedestrian activity where safety is an issue.
- Use traffic signals and their associated features to improve pedestrian safety at dangerous intersections.
- Budget funds for additional sidewalks to fill in gaps in the sidewalk network in areas identified as high priority for safety concerns.

Access

- Develop an environment throughout the City, prioritizing routes to school and transit that enables pedestrians to travel safely and freely.
- Where possible and desirable, convert underused travel lanes to bicycle or pedestrian paths or amenities.

Network

- Create and maintain a pedestrian route network that provides direct connections between activity centers.
- Install signage to discourage drivers from using local streets as through routes.
- Develop projects and programs to improve pedestrian safety around schools.
- Implement pedestrian improvements along major transit lines and at transit stations.

Streetscape and Land Use

- Provide pedestrian amenities and promote land uses that enhance public spaces and neighborhood commercial districts.
- Encourage the inclusion of street furniture, landscaping, and art in pedestrian improvements.
- Include pedestrian-scale lighting in streetscape projects.
- Work with community groups to install signs, artwork, and landscaping that highlight historical and community landmarks.
- Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips.
- Consider implementing "pedestrian only" areas in locations with the largest pedestrian volumes.
- Require contractors to provide safe, convenient, and accessible pedestrian rights-of-way along construction sites that require sidewalk closure.
- Encourage the inclusion of public walkways or trails in large, private developments.
- Discourage motor vehicle parking facilities that create blank walls, unscreened edges along sidewalks, and/or gaps between sidewalks and building entrances.

Education

- Educate citizens, community groups, business associations, and developers on the safety, health, and civic benefits of walkable communities.
- Through cooperation with other agencies, the City should create incentives to encourage travelers to use alternative

transportation options.

- Promote safe and courteous walking and driving and the benefits of walking through community outreach programs.
- Sponsor Walk to School Day as an annual, city-wide event that encourages people to walk and promotes both pedestrian and driver safety around schools.
- Sponsor Pedestrian Safety Week as an annual, city-wide educational event to promote pedestrian and driver safety.
- Publicize the pedestrian route network through the internet and other means.
- Publicize the network of walkways in brochures that explain their history and describe suggested walking tours.

Enforcement

- Prioritize the enforcement of traffic laws that protect the lives of pedestrians.
- Develop a fine structure that discourages walking and driving behavior that threaten the safety or access of pedestrians.

STATE OF VERMONT BICYCLE AND PEDESTRIAN PLAN

The goals of this 1998 plan published by the State of Vermont Agency of Transportation are consistent with the other alternative mode plans. The aim of the Bicycle and Pedestrian Plan is to provide all visitors and citizens with various transit options through the state.

Goals

- To provide all residents and visitors with a safe, efficient, and accessible transportation system that allows them to walk and bicycle with independence and comfort.
- To support and enhance a healthy environment and ecosystem by providing safe and convenient bicycle and pedestrian facilities.
- To allow resident and visitors to safely use public transportation corridors for bicycling and walking.

CITY OF PORTLAND PEDESTRIAN MASTER PLAN

Published in 1998, this plan was created concurrently and in accordance with the Portland Metropolitan Regional Transportation Plan. It was the first step by the City of Portland to develop a Pedestrian Element of the Transportation System plan. These collective documents outline a 20-year plan to redevelop the Portland area including recently annexed suburban areas. The Plan set forth policies, street classifications, and design guidelines emphasizing pedestrian travel.

- Plan and complete a pedestrian network that increases the opportunities for walking to shopping and services, institutional and recreational destinations, employment, and transit.
- Promote walking as the mode of choice for short trips by giving priority to the completion of the pedestrian network that serves neighborhood shopping, schools, and parks.
- Support walking to transit by giving priority to the completion of the pedestrian network that serves transit centers, stations, and stops; providing adequate crossing opportunities at transit stops; and planning and designing pedestrian improvements that allow adequate space for transit stop facilities.
- Encourage walking by developing educational programs for both motorists and walkers and by supporting and participating in encouragement events for walkers.
- Recognize that auto, transit, and bike users are pedestrians at either end of every trip and that citizens and visitors experience the City as pedestrians.
- Ensure that those traveling on foot have comfortable, safe, and attractive pathways that connect neighborhoods, parks, transit facilities, commercial districts, employment centers, and attractions.
- Provide trees that will shade sidewalks on hot days.
- Provide sidewalks of adequate width to accommodate the pedestrians that future development is expected to generate.
- Ensure that the pedestrian circulation system is safe and accessible to children, seniors, and the disabled (including the blind.)

5.8.1 CONCLUSIONS

Although the policies, goals, and guidelines outlined in this section include points that are specific to the area for which they were developed, many include statements that are consistent with elements also addressed in this study.

- The CLV Centennial Plan includes policies requiring the addition of streetlights with all new development. The City of Oakland Pedestrian Master Plan also contains a policy regarding the inclusion of pedestrian lighting in all streetscape improvement projects.
- The USDOT policy statement includes a policy requiring that pedestrian ways be established with new development in all urban areas.
- The Bicycle and Pedestrian Element of the RTC includes a goal of increasing the number of pedestrian corridors connecting residential with commercial areas, employment centers, and schools. Similarly, this study categorized areas into zones (Figure 2-8) in order to establish pedestrian routes that could increase the connectivity between the different regions of downtown Las Vegas.
- The Bicycle and Pedestrian Element of the RTC, USDOT policy statement, City and County of Denver Pedestrian Master Plan, and the City of Portland Pedestrian Master Plan all contain policies that are intended to develop a network that is accessible to users of all ages and abilities. This study has identified areas within the study area that appear to be in need of improved facilities including the addition of sidewalks and curb ramps in order to achieve this goal.
- A number of the referenced documents include policies that encourage the use of programs to help achieve particular goals. The following is a list of the different plans that include such policies:
 - » Education Programs
 - Bicycle and Pedestrian Element of the RTC
 - City of Oakland Pedestrian Master Plan
 - City of Portland Pedestrian Master Plan
 - » Encouragement Programs
 - City of Oakland Pedestrian Master Plan
 - City of Portland Pedestrian Master Plan
 - » Enforcement Programs
 - NDOT NevPLAN
 - City of Portland Pedestrian Master Plan
- The City and County of Denver Pedestrian Master Plan contains policies on the establishment of a pedestrian advisory committee as well as the preservation of historic areas. This plan, along with the City of Oakland Pedestrian Master Plan, also includes policies that address filling in gaps along corridors.



SECTION 6:
IMPLEMENTATION



SECTION 6 IMPLEMENTATION

An implementation plan is an integral part of any planning document as it provides strategies for achieving goals and objectives. This section provides details regarding policies, programs, and funding options applicable to the downtown area; however, the USDOT provides general guidelines for building support of a pedestrian plan. The Pedestrian and Bicycle Information Center refers to institutionalization as the process of integrating pedestrian and bicycle considerations into policies and processes, which involves the following actions:

- Modifying Existing Documents
- Developing Management and Maintenance Practices
- Building Education and Enforcement Programs
- Building Communication and Collaboration

Modifying existing documents is the first step towards the accommodation of pedestrians. Policies, planning documents, roadway/street design manuals, standards, specifications, zoning codes, and land use regulations should all be updated to include pedestrian considerations. Local entities have already updated and created numerous documents that identify policies and design guidelines geared toward pedestrian usage, some of which will be identified in section 6.1. These policies and guidelines have been evaluated and additional recommendations that are comprehensive towards the entire study area are also outlined in section 6.4.

Pedestrian facilities require maintenance, including sweeping streets, cutting back vegetation, and cleaning drainage inlets. Ensuring that all curbs are properly painted is also a good maintenance practice and a cost-effective strategy that can help pedestrians see and be seen while walking along a roadway. The CLV already has a street sweep schedule that services the downtown area once every two weeks. With the improvement of additional facilities, maintenance schedules should be reviewed to ensure that walkways are receiving adequate attention.

Educating drivers and pedestrians about laws and responsibilities as well as enforcing proper behaviors and use of facilities can be accomplished through education and enforcement programs. More detail regarding programs is discussed in section 6.2.

The final recommended step in building support for pedestrian considerations is communication and collaboration. This can be accomplished through Pedestrian Advisory Committees (PAC), advocacy groups, boards and commissions, interdepartmental/interagency cooperation, and recognition for good work. The RTC has established the Transportation Access Advisory Committee (TAAC), which is a group of citizens that evaluate existing facilities and make recommendations regarding compliance with the ADA of 1990. Although it is not a PAC, the concept is that if a pedestrian facility is ADA compliant, then it goes a long way towards accommodating all pedestrians.

6.1 Policies

Policies are guiding principles that serve as courses of action that aid in achieving goals or objectives. Policies regarding the pedestrian mode of transportation have been in discussion since the early 1990s. In 1991, Congress demonstrated its recognition of the importance of integrating pedestrian elements into transportation policy by passing the Intermodal Surface Transportation Efficiency Act (ISTEA). Pedestrian considerations included funding alternatives for improvement programs and requirements to include pedestrian elements in long range plans. More guided direction was provided with the Transportation Equity Act for the 21st Century (TEA-21), which included policies requiring plans to include strategies to increase pedestrian safety. Signed into law in 1998, TEA-21 also included policies stating that pedestrians should be given “due consideration” in state and local plans and that pedestrian facilities should be considered with all new and redevelopment projects. A Guidance Memorandum was then issued that reinforced the pedestrian policies of TEA-21, including clarification of the phrase “due consideration”; the decision to not accommodate pedestrians in a design plan should be the exception, not the rule. The Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) was passed in 2005 and provided more direction as well as increased funding for certain programs.

Various movements support the implementation of policies that take all modes of transportation into consideration. Complete the Streets is a coalition comprised of steering committee members from various groups including non-profit organizations, pedestrian advocacy groups, and government agencies. The goal of this movement is to have local entities adopt policies for all streets to become accommodating to all modes of transportation. In regards to downtown, there are numerous documents that include pedestrian-oriented policies including the CLV Centennial Plan as well as the future Regional Transportation Plan Update. Further details regarding these documents will be discussed later in this report; however, it is the goal of this study to ensure there are policies directed to the entire study area.

6.1.1 COMPLETE STREET POLICIES

The Complete the Street movement is encouraging all states, cities, and towns to plan and design roads that accommodate all users. Many streets across the country primarily emphasize the movement of vehicles and are not pedestrian friendly. Every city needs arterials that move traffic, therefore certain streets may have a particular modal emphasis. However, the goal is that every street should still accommodate all modes of transportation.

In March, 2008, Senator Tom Harkin (D-IA) introduced Senate bill S. 2686, The Complete Streets Act of 2008. Its passage would require all states and Metropolitan Planning Organizations to adopt Complete Street policies and apply them to transportation improvement projects as well as incorporate the principles of such policies into design guidelines and manuals. A copy of the bill can be found in **Appendix E**. On May 1, 2008, Congresswoman Doris Matsui introduced complete streets legislation, bill HR595, to the House of Representatives.

In the development of a Complete Street policy, the following should be taken into consideration. Complete Street policies:

- Aim to create a comprehensive and integrated transportation network;
- Recognize that all streets are unique and need to accommodate different users;
- Can be adopted by all agencies and apply to all roads;
- Apply to new and re-construction projects;
- Clearly state any exceptions;
- Specify the use of the most current design standards;
- Include solutions appropriate to the community; and
- Incorporate measures of effectiveness and performance.

6.1.2 CLV CENTENNIAL PLAN

The City of Las Vegas Centennial Plan includes many pedestrian considerations. Also identified in section 5.8, the plan calls for widened sidewalks and enhanced streetscapes to provide a safer and more comfortable pedestrian environment. It also states specific design guidelines for street improvements; however, the plan is directed to a specific boundary area. Although it addresses the need to provide streets that can be comfortably used by all modes of transportation, more generalized policy statements could be adopted by the CLV to ensure that pedestrian mobility and safety is addressed for all streets within the downtown area.

6.1.3 BICYCLE AND PEDESTRIAN ELEMENT OF THE REGIONAL TRANSPORTATION PLAN

This is a section within the Regional Transportation Plan, produced by the RTC of Southern Nevada, which addresses the need to provide mobility for all modes of travel. This document follows the FHWA "Planning Considerations" that include the following:

- Vision and goal statements
- Assessment of current conditions
- Identification of activities required to meet vision and goals
- Evaluation of progress
- Public involvement
- Implementation of bicycle and pedestrian elements in the Regional Transportation Plan

Goals discussed in this document can be found in section 5.8. Although policies are not identified, Complete Street policies will be included in the Regional Transportation Update that should be completed in the later portion of 2008.

6.2 Programs

Numerous types of pedestrian-related programs can be implemented in order to educate citizens, encourage walking, and enforce state and local laws. The FHWA recommends when developing pedestrian programs, entities follow a comprehensive strategy that includes the following elements:

- Engineering
- Education
- Encouragement
- Enforcement

6.2.1 EDUCATION PROGRAMS

Education programs aim to teach important walking and bicycling skills to citizens of all ages. Methods include reaching out to schools and universities as well as incorporating information in driving courses and licensing examinations. Nevada has numerous programs that aim to educate the public in an effort to reduce pedestrian crashes.

The Nevada Bicycle and Pedestrian Safety Education Program aims to educate children and adults on appropriate knowledge and skills to prevent injuries and accidents. Part of the Nevada Department of Public Safety, the program uses workshops and continuing education for school teachers, community volunteers, recreational leaders, and law enforcement officers. The program also uses other pilot programs, campaigns, and partnerships in the community to promote their mission of preventing injuries to adults and children from bicycle and pedestrian crashes. The intent of the program is to:

- Increase proper bicycle helmet use
- Increase obedience to traffic laws by pedestrians, bicyclists, and motorists
- Increase walking or bicycle use as a substitute commute to school or work
- Increase physical activity and reducing negative environmental effects thereby promoting a healthier community
- Increase and package educational opportunities in such a way as to encourage widespread application

The Clark County School District Police Department (CCSDPD) provides courses on pedestrian and bicycle safety. These courses are developed for teachers, law enforcement and community activists who want to educate children in the community on pedestrian safety. Individual schools can request that their staff receive this training and incorporate the information into their lesson plans. There are various curricula specific to each age group because there are differences to consider when relating to each group. For example, most younger children have not developed senses that enable most adults to comprehend complex traffic conditions. Children tend to be shorter and lack peripheral vision, the ability to hear directionally, and judge speed. These physical differences should be taken into consideration when developing these courses. For more information on this program, please contact the CCSDPD Traffic Safety Coordinator.

6.2.2 ENCOURAGEMENT PROGRAMS

With the implementation of improved pedestrian facilities, encouragement programs can help motivate the public to choose walking as a form of transportation by creating incentives for walking and providing ways to integrate more pedestrians onto the transportation network.

In order to encourage the use of alternate modes of travel, the RTC of Southern Nevada created the Club Ride program. Many employers have signed up for the program, although anyone can join even if their employer has not. The main incentive of Club Ride is that the RTC maintains a continuously updated database of Club Ride individuals and destinations in Southern Nevada from which travel options are generated for each member. Once enrolled and active in the club, employees can become eligible for monthly prizes, discounts at local shops, and pre-tax benefits at no cost to them. This provides employees with a variety of workplace-specific options of alternate modes of travel for their daily commute to work. The RTC is currently reviewing the rate of increase of participating companies and considering a focused effort to increase the number of companies as well as individuals from each company taking part in the program.

Walking can also be promoted through events, such as running fundraisers, parades, and festivals. Downtown Las Vegas hosts the following events that encourage walking:

- Las Vegas Marathon hosted annually in February;
- Martin Luther King, Jr. Parade along Fourth Street;
- St. Patrick's Day Parade presided over by the mayor to benefit the Sons of Erin;
- Fremont Street Mardi Gras celebration at the Fremont Street Arcade;
- Stars, Cars & Guitars Motorhead Festival with events for all ages;
- New Year's Eve Downtown celebration;
- First Friday Events each month in the Arts District; and
- Susan G. Komen Race For The Cure 5K run charity event.

6.2.3 ENFORCEMENT PROGRAMS

Not only can enforcement programs educate both motorists and pedestrians on public safety, they can also encourage walking by making pedestrians feel more comfortable. The FHWA recommends that enforcement programs review local laws and make sure that they conform to the current version of the Uniform Vehicle Code and Model Traffic Ordinance. Specific to downtown, additional non-motorized patrols can expedite enforcement in areas that are dense and congested.

On Tuesday, April 1, 2008, law enforcement officers from the Las Vegas Metropolitan Police Department, City of North Las Vegas Police Department, City of Henderson Police Department, and Nevada Highway Patrol participated in a joint agency task force aimed at bringing awareness to the community on the importance of sharing the road with pedestrians. This enforcement effort was sponsored by the Nevada Department of Public Safety in support of the UNLV Safe Community Partnership, a program with the mission of reducing traffic crashes. This is the second year that pedestrian efforts have been eligible for funding through the Joining Forces grant. Officers go through training on pedestrian safety and often develop a new perspective. The group moved along Maryland Parkway starting at Sahara Avenue and ending at Tropicana Avenue. Officers pulled over both motorist and pedestrians in violation of the law, issuing tickets in the amount of \$190 plus court costs, the fee



associated with a standard moving violation. They also handed out flyers that illustrated a cartoon aimed at demonstrating the importance of pedestrian safety (see **Appendix F**).

Erin Breen, Director of the Safe Community Partnership was present throughout the day and provided insightful information regarding enforcement programs. The goal of these efforts is not to issue as many tickets as possible. Hopefully those who were pulled over learned a valuable lesson; however, **the community truly benefits from the program when it is broadcast over the news for thousands of viewers to see.** The media can use those pulled over as an example and make viewers question whether or not they observe the rules of the road. Enforcement programs can help change the mentality of motorists and pedestrians alike by educating the public on proper behavior and encouraging doing the right thing.



Ms. Breen mentioned that she has heard many people attribute the number of pedestrian crashes in Las Vegas to lack of laws concerning pedestrian safety. She added that Nevada has the same laws as California, a state known for being pedestrian friendly. Nevada has seen a significant drop in the number of vehicles that speed through school zones after implementing enforcement efforts. The same could be accomplished with the implementation of pedestrian enforcement programs.

The idea of changing the mentality of the community also relates to engineering design of pedestrian crossings. The enforcement group set patrols at many crosswalks along Maryland Parkway, however, many patrols were at locations that have been improved using design treatments including the Danish crossing that includes flashing beacons, a median which directs pedestrians to look at on-coming traffic, and offset sidewalks. Such crossings in front of the University and the Boulevard Mall are considered advanced treatments being implemented for pedestrian crossings. Regardless of how well designed the crossings were, the enforcement officers were never short of people violating the law. Therefore, a balance of engineering, education, encouragement, and enforcement is critical in order to help build a pedestrian friendly community.

6.3 Funding

Numerous funding sources have contributed to the improvement of pedestrian facilities in the past. Such sources range from government agencies, communities, and foundations.

6.3.1 GOVERNMENT SOURCES

Multiple national sources of funding are available for pedestrian and bicycle improvement projects. One of the major sources is the SAFETEA-LU. Authorized in August 2005, this act authorizes the use of \$244.1 billion for use on all modes of surface transportation, including improvements pertaining to highways, bicycling, walking, and mass transit.

SAFETEA-LU funds allocated for projects in Nevada have been approved for more than of \$25 million per project for various transportation improvement projects. Projects funded in 2008 include the widening of US 95 from Rainbow Boulevard to Ann Road from six to eight lanes including an HOV lane, as well as interchange improvements at the northern CC-215 beltway at both I-15 and US 95.

SAFETEA-LU has numerous funding categories including the Congestion Mitigation and Air Quality Program (CMAQ) that provides funding for programs that reduce emissions and/or increase the use of alternate modes of travel. Eligibility includes projects that improve transportation systems management and operations that mitigate congestion and improve air quality. For the 2008 fiscal year, \$19,119,177 has been authorized for Nevada and is available for obligation through September 30, 2011. Pedestrian improvements could benefit most when CMAQ funding is combined with roadway improvement projects.

The Safe Routes to School Program is another category that allows funding of any street improvement that can increase safety along a street within a two-mile radius of a school. These funds can also be allocated towards educational programs that teach students about the benefits and availability of walking to school.

The Bureau of Land Management signed the SNPLMA into law in October of 1998 to allow the sale of specified areas of Southern Nevada and the Las Vegas area to fund a variety of projects, including parks, trails and natural areas and capital improvements. Although SNPLMA funds cannot be used for general sidewalk improvement, they have been awarded to projects along roadways within the downtown area. With the increased number of applicants, numerous CLV trail projects within the downtown area have been denied funding including the Art and Entertainment Trails (see **Figure 2-16**). Projects that could be perceived as urban development most likely will not be awarded funding at this time. Although it appears that SNPLMA funding is currently being awarded to projects that are part of open space preservation or trails that are not adjacent to roadways, these funds could be a potential source as land sales increase.

Trail improvements that have received SNPLMA funding include:

- \$3.6M for the Cultural Corridor Trail and Bridge, CLV
- \$6.5M for the Lake Mead Parkway Trail, Clark County
- \$2.5M for the Downtown Trails Connection, City of Henderson

Community Development Block Grants (CDBG) can be used for economic development, infrastructure, environmental projects, and community building through the Department of Housing and Urban Development (HUD). In March of 2006, the CLV authorized the distribution of \$5.4 million in CDBG to fund public service programs and construction. These federal HUD entitlements went towards the revitalization of deteriorating neighborhoods and the expansion of economic opportunities for people with low to moderate incomes. The funds are also designated for public service programs and projects such as senior centers, community centers, sports fields, sidewalk and streetscape improvements, and streetlights in an effort to improve the alternative transportation infrastructure in low-income neighborhoods.

Another funding option is the establishment of a Special Improvement District (SID). Residential and commercial developments can use a SID for street pavement, sidewalks, curbs, gutters, or other standard improvements and may include driveways and wet utility improvements. SIDs can be implemented by property owners, developers, or a governing entity through three distinct processes. For a governing entity to implement a SID, the Provisional Order Method would need to be followed through a series of public hearings, design, and cost analysis. The following is the process through which government agencies can implement a SID:

- The City Engineering Department prepares preliminary plans, assessment plats, and cost estimates for improvement projects;
- A public hearing is announced of which all property owners to be assessed must be notified;
- If opposition is not a majority, an ordinance forming the SID may be adopted;
- Construction plans and costs estimates are finalized, the project is advertised, and the contract is awarded. A second public meeting is announced; and lastly
- An ordinance is adopted levying assessments against property owners.

Although redevelopment projects could implement SIDs, proponents of a SID could face opposition from current property owners. In such cases, the governing agency proposing the SID would need to provide significant benefits to the property owners. However, it is anticipated that SIDs will be utilized for improvements directly impacting major redevelopment projects where the developer owns a majority of the impacted land.

6.3.2 COMMUNITIES AND FOUNDATIONS

Throughout the country, various community partnerships have teamed up to raise funds for pedestrian improvement projects. A number of these fundraisers have helped finance open space trails to offset the cost of land; however, Pioneer Square in Portland, Oregon is a good example that could be applicable to downtown Las Vegas. The proceeds from selling bricks went towards the construction of the pedestrian plaza. Donors got their names engraved on their brick, displaying immense community support and contributing towards the cost of construction. This strategy can be used for plazas as well as sidewalks, especially in historic areas or along main thoroughfares.

Countless foundations provide support for many different causes. With respect to pedestrian mobility in downtown Las Vegas, the Kresge Foundation provides funding under the Green Building Initiative which strives to advance environmental conservation by awarding grants for sustainable designs. The foundation awards grants ranging between \$50,000 and \$100,000, which supports the integrated design process for projects including historic preservation. Although the award amount is not nearly enough to fund comprehensive improvements through all of downtown, these foundations could provide funding towards smaller projects, such as improvements to the various historic districts. The following website is a comprehensive resource in regards to foundations: www.foundationcenter.org.

6.4 Facilities

Re-designing streets that follow pedestrian routes to conform to the cross-section guidelines (specified in Figure 4-4) could make them more conducive to pedestrians. A large portion of the study area is and will continue to undergo redevelopment. It is recommended that such sidewalk and street improvements be completed by adjacent development as it occurs; however, this could result in the fragmentation of pedestrian facilities where it is important to provide linkages between destinations and zones (see Figure 2-2 and Figure 2-8). Alternative solutions can be taken into consideration in order to ensure comprehensive pedestrian mobility throughout the downtown area. Funding sources are available through the various sources mentioned in section 6.3 of this report for future improvements that provide complete pedestrian routes by filling in sections that are not improved by adjacent redevelopment.

Figure 5-2 presents recommended pedestrian bridge locations. The Cultural Corridor Trail Bridge is in final design stages and will be constructed to span Las Vegas Boulevard in front of the Lied Discovery Museum. Numerous pedestrian bridge alternatives surrounding Union Park are currently under discussion between CLV staff and the developer. Four pedestrian bridges have been identified by both the CLV and Clark County at the intersection of Las Vegas Boulevard and Sahara Avenue; however, coordination with adjacent properties and future roadway improvements is necessary. The intersections of Las Vegas Boulevard/Main Street, Las Vegas Boulevard/Charleston Boulevard, and Charleston Boulevard/Main Street have been identified as general locations that could potentially require and benefit from the addition of pedestrian bridges. These locations should be re-evaluated in five years.

The primary barriers affecting pedestrian mobility in and out of the downtown area are I-15, I-515/US 95, and the UPRR. These barriers have been evaluated and the results can be found on Figure 5-10. The NDOT is currently conducting the I-15 Resort Corridor Study as well as the I-515 Corridor Study; coordination with NDOT is recommended in order to address under-crossings and off/on ramps that need improvement. The Sahara Avenue Corridor Rapid Transit Study Alternative Analysis Report proposes numerous roadway improvements along Sahara Avenue; however, no improvements include recommendations for improved pedestrian access along the industrial overpass. It is important to consider alternative solutions that provide better pedestrian access in and out of the resort corridor.

There are a few locations within the study area that may have one streetlight at intersections and few in between blocks as illustrated on Figure 5-1. It is recommended that lighting meets the RTC standard of 170-foot spacing for a roadway with 80 feet of right-of-way. All new streetlights should be placed to minimize obstruction as much as possible. It is recommended that the addition of streetlights at least be addressed with future redevelopment.

The CLV Centennial Plan is an outstanding planning document for future downtown improvements; however, it does not cover the entire study area. It is recommended that the City continue to implement Centennial Plan policies within the boundary as well as adopt the Regional Transportation Plan Update that will be issued by the RTC later in 2008. This update will include Complete Street policies that will help implement improved pedestrian facilities throughout the entire area. It is also recommended that educational, encouragement, and enforcement programs be implemented as improved facilities are constructed. The Joining Forces grant is available to all areas within the state of Nevada and has sufficient funds to support ongoing pedestrian enforcement programs.

The following is a breakdown of estimated improvement cost* for the implementation of the different cross-section guidelines per city block using an average length of 430 feet. A complete breakdown of this cost estimate can be found in Appendix G.

- Centennial Plan Guideline:
 - » North/South streets: **\$550,000**
 - » East/West streets: **\$430,000**
- Multimodal Emphasis Guideline:
 - » **\$470,000**
- Pedestrian Emphasis Guideline
 - » **\$680,000**
- Pedestrian Path Guideline (5-foot sidewalk)
 - » **\$70,000**
- Las Vegas Strip Corridor Pedestrian Bridges
 - » **\$10,000,000** each
- Standard Pedestrian Bridges
 - » **\$3,000,000** each

* These estimates do not include gas, power, or telephone line relocation as the cost associated can vary greatly. Some projects can incur \$500,000 or more per block in utility relocation costs and this should be taken into consideration.



APPENDIX





APPENDIX

Please see attached CD at the end of this report for the appendix files.