

CHAPTER 3—STREET AND HIGHWAY ELEMENT

Introduction

The Street and Highway Element describes an overall system. This system includes physical elements such as freeways, arterials and collectors. Just as important, the system includes operations/maintenance components that are critical to overall effectiveness, efficiency and safety. When considering the street and highway system, there are several key concepts that must be considered.

In a “system,” each part is designed to work effectively with all the other parts of the system. A change in any individual part will impact the operation of the entire system.

- Each physical component must be properly sized to work effectively with the adjacent components.
- Proper sizing of the physical components of the system is directly related to operations/maintenance.
- The planned street and highway system is built piece-by-piece, over many years.
- Deviation from the planned system can result in significant impacts that seriously degrade our quality of life and waste millions of dollars in both public and private funds.

The highway system is made of component parts. What makes these individual pieces a system is the relationship and interaction of each piece with all the others. In planned systems, these relationships are carefully examined and each component is crafted to work in the most effective and efficient manner with all the other pieces to produce the desired results. In a system of streets and highways, this means that each roadway segment is sized to move the anticipated traffic volumes within acceptable limits of congestion. Similarly, intersections are designed to move streams of traffic crossing or joining one another within acceptable limits of delay. These congestion and delay standards are referred to as level of service (LOS) standards. As streams of traffic join one another and volumes increase or decrease, the size of the roadway increases or decreases to match the volumes. System effectiveness declines when there is a mismatch of system components. This might occur when there are insufficient lanes to handle the volume of traffic or intersections are not equipped to handle the volumes of converging traffic. When changes are made on any piece of the system, the impacts from these changes, positive or negative, ripple throughout the entire system.

The current street and highway system in the Truckee Meadows was built piece-by-piece over many decades. The additional facilities needed to create the

system planned for the future will also be built in this incremental fashion. Millions of dollars are invested in each project, but a significant portion of the value of each specific piece is often not realized until many other pieces are in place. Not completing the entire system can also result in the waste of millions of dollars in prior investments because roads that were previously built or expanded would not be needed if the entire system is not completed.

The situation may arise in which the characteristics of an existing roadway built in accordance to the planned system are later significantly changed. This might occur when speeds are reduced on an arterial when schools are built in the vicinity. Merchants that locate along an arterial may ask for traffic calming by the installation of roundabouts, speed humps or the removal of traffic lanes. While these are legitimate concerns, the solutions may, nonetheless, have significant impacts on congestion that must be acknowledged and mitigated to achieve the desired system performance objectives in terms of congestion, delay, travel time and safety.

Operations and Maintenance

Another key concept of the street and highway system is the importance of operations and maintenance. Operations in this sense include such things as the timing and coordination of traffic signals, the posting of speed limits, use of changeable use lanes, dedication of lanes to high occupancy vehicles, access management, etc.

Two of these, timing and coordination of traffic signals and access management, are particularly important. When the street and highway system is planned, it is assumed that signal timing and coordination will be reasonably optimized to move traffic efficiently. Poor signal timing and coordination can seriously impact travel times and contribute to congestion. If poor signal timing and coordination are not corrected, unnecessary widenings and intersection improvements may be necessary to relieve this self-inflicted congestion.

Access refers to the entry of vehicles to and from the traveled portion of a roadway. This access can be to/from homes or businesses adjacent to the road, from intersecting streets or from parking on the sides of the roadway. Vehicles need to access the roadway, but they also interrupt the flow of traffic. The greater the number of these interruptions, the more impact they have on flow. Access management controls the amount of these interruptions and is a tradeoff between the need for access and the maintenance of traffic flow. The degree to which access is managed needs to be appropriate to the type of adjacent land uses and volume of traffic. Access management may typically involve exercising control over the number and location of driveways. Related to this is the control of the type of movements allowed into or out of these driveways through such things as signage, medians, etc. Access control may also involve control of parking adjacent to the travel lanes. The degree to which access of all types is controlled can have a huge impact on the ability of a roadway to carry traffic. For example, consider the very limited access allowed on an interstate highway

versus a neighborhood street. In sizing the pieces of the street and highway system, the degree of access is an important consideration. All other things being equal, the greater the degree of access control, the greater number of vehicles that can be accommodated per lane. When the degree of actual access significantly exceeds the original planning assumptions, significant unplanned for problems can occur inducing additional congestion.

Lack of maintenance can directly impact the ability of a roadway to carry traffic. Rough, potholed roads may force drivers to drive at slower than designed speeds. Uncleared debris or dirt on the roads may inhibit designed travel speeds. Inoperative or malfunctioning signals or missing signs may impact the movement of traffic. Inherent in the planning of the street and highway system is an assumption that it will be maintained to a reasonable standard so that the planned carrying capacity will not degrade.

The street and highway system is composed of many pieces, all of which have been sized to work effectively and efficiently with each other. Changes anywhere in the system can have significant impacts in our ability to address congestion. It must be recognized that deviations from the planned system, despite their validity or desirability, may waste millions of dollars of previous investment or require millions of dollars of unforeseen future investment. How the system is actually operated and maintained may have profound impacts on its effectiveness in providing the community with the effective, efficient and safe transportation that it desires.

Existing Conditions

The regional street and highway system components are freeways, freeway ramps, regional arterials and collectors that meet certain regional criteria. The regional street and highway system includes approximately 81 miles of freeways and approximately 431 miles of regional roadways. These roadways provide the basic transportation network used for the movement of people and goods in Washoe County. Nearly all travel modes (walking, bicycling, automobiles, public transit, paratransit, the local and interregional trucking industry) use some of the regional roadways. Many of the region's air quality improvement tactics are based on the efficient movement of people and goods on a safe, uncongested regional street and highway system.

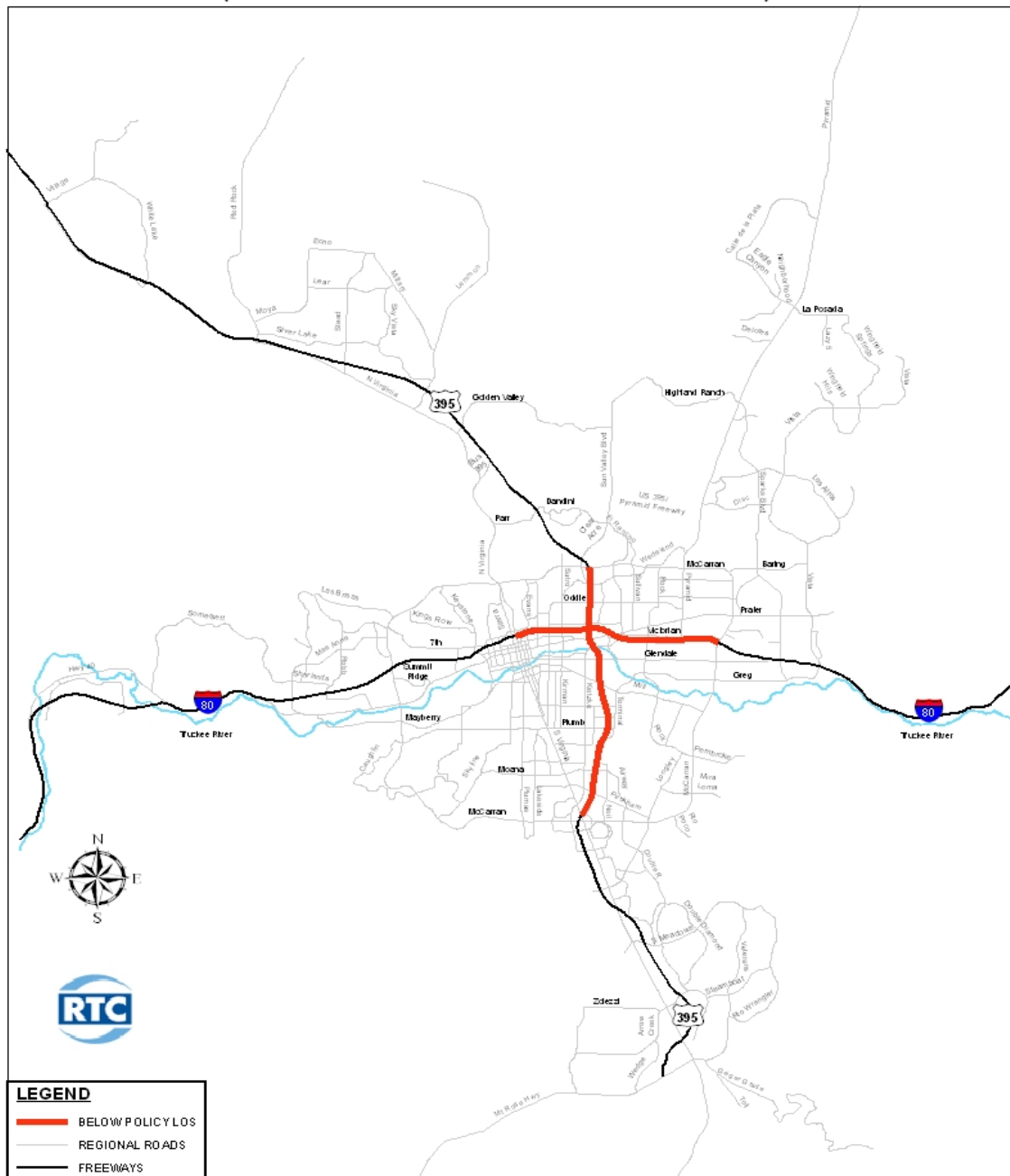
Washoe County Freeway System

The Washoe County freeway consists of I-80 and US 395/I-580. These two freeways intersect northeast of the downtown Reno core area at the "Spaghetti Bowl Interchange."

The primary existing problems on the freeway system are the approaches to the US 395/I-80 interchange. High traffic volumes, proximity to other interchanges and existing design capacity result in poor peak-period level of service (LOS) on all

approaches. **Figure 3-1** shows year 2005 Washoe County freeway locations where policy LOS is not met in during the peak hours.

**Figure 3-1
EXISTING FREEWAY CONGESTION -- 2005
(BELOW POLICY LEVEL-OF-SERVICE)**



Regional Road System (RRS)

The Regional Road System (RRS) (**Table 3-1**) consists of that part of the street and highway network that provides accessibility between communities within the region. The RRS generally includes all arterials and collectors that exceed 5,000 average daily trips (ADT) or provide connectivity between jurisdictions and across major geographic barriers. **Table 3-1** also shows the desired access control (Policy Access) on the RRS as the region moves toward the future. It is recognized that some of the access control designations have been degraded by existing development. Actual conditions are accounted for in any analysis of the roadways. The roadway improvements in the Regional Transportation Plan are intended to provide adequate travel service compatible with adopted regional policies for land-use and population growth.

The RTP identifies unacceptably congested roadway segments based upon the projected future land-use and population data provided by Reno, Sparks and Washoe County and the community's transportation goals, objectives and policies. Mitigations for these conditions are identified at a planning level in terms of new roads and nominal improvements to existing roads, final mitigations will be determined based upon more detailed planning and engineering studies outside the RTP process.

Regional Road System—Defined. The criteria for determining which roads should be categorized on the RRS are listed below:

1. All arterials as designated in Table 3-1. These roads are direct connections between freeways and other arterials, insure continuity throughout the region and generally accommodate longer trips within the region, especially in the peak periods on high traffic volume corridors.
2. Collectors that are not designated arterials but meet one of several criteria:
 - A. An ADT level of 5,000 (either today or in the 2040 time frame)
 - B. The crossing of a significant travel barrier such as the Truckee River or I-80
 - C. A facility that provides access to major existing or future regional facilities

If a street is identified as being a regional road, certain design standards and operational standards (agreed to by implementing jurisdictions) can help facilitate regional trip movements. The following roadway design elements and operational standards can help increase capacity by minimizing side friction and improving traffic flow:

- Number of through lanes
- Minimum signal spacing
- Median type or existence
- Left turn from a major street onto facility
- Left-turn from minor street or driveway onto facility
- Right deceleration lanes at driveways

- Driveway spacing
- Number of signalized intersections per mile
- Left-turn lanes
- Design speed
- Bicycle facilities

**Table 3-1
Regional Road System**

Street Name	From	To	Class	Policy Access
1st St	Keystone Ave	Lake St	Arterial	LAC
2nd St	Keystone Ave	Kuenzli St	Arterial	LAC
2nd St	Kuenzli St	Kietzke Ln	Arterial	MAC
4th St	I-80	Keystone Ave	Arterial	MAC
4th St	Keystone Ave	Valley Rd	Arterial	MAC
4th St	Valley Rd	Prater Way	Arterial	MAC
5th St	Keystone Ave	Sierra St	Arterial	MAC
5th St	Sierra St	Evans Ave	Arterial	ULAC
6th St	Ralston St	Evans Ave	Arterial	ULAC
6th St	Evans Ave	4th St	Arterial	MAC
7th Ave	Biller Ln	Chocolate Dr	Arterial	MAC
7th Ave	Chocolate Dr	Sun Valley Blvd	Arterial	LAC
7th St	Robb Dr	Vine St	Arterial	MAC
9th St	Sierra St	N Virginia St	Collector	LAC
9th St	N Virginia St	Evans Ave	Arterial	LAC
9th St	Wells Ave	El Rancho Dr	Collector	LAC
Airway Dr	Neil Rd	Longley Ln	Arterial	MAC
Arlington Ave	Skyline Blvd	6 th St	Arterial	MAC
Arrowcreek Pkwy	Thomas Creek Rd	S Virginia St	Arterial	MAC
Avenida de Landa	Sharlands Ave	Robb Dr	Collector	LAC
Baring Blvd	McCarran Blvd	Vista Blvd	Arterial	MAC
Beaumont Pkwy	Clubhouse Dr	Avenida de Landa	Collector	LAC
Belmar Dr	Los Altos Pkwy	Earthstone Dr	Collector	LAC
Bluestone Dr	E Huffaker Ln	Patriot Blvd	Collector	LAC
Bridge St	US Hwy 40 (Verdi)	S Verdi Rd	Collector	LAC
Brierley Way	Vista Blvd	Salomon Circle	Arterial	MAC
Brinkby Ave	Plumas St	S Virginia St	Collector	LAC
Business 395	US 395	N Virginia St	Arterial	HAC
California Ave	Hunter Lake Dr	S Virginia St	Arterial	LAC
Calle de la Plata Dr	Eagle Canyon Dr	Pyramid Hwy	Collector	LAC
Calle de Oro Pkwy	Cordoba Blvd	Wingfield Springs Pkwy	Collector	LAC
Campus Way	Neil Rd	Sierra Center Pkwy	Arterial	MAC
Cashill Blvd	McCarran Blvd	Skyline Blvd	Collector	LAC
Caughlin Pkwy	McCarran Blvd @Cashill	McCarran Blvd@Plumb Ln	Collector	LAC
Center St	S Virginia St	9th St	Arterial	LAC

Street Name	From	To	Class	Policy Access
Clear Acre Ln	Wedekind Rd	Dandini Blvd	Arterial	MAC
Colbert Dr	Maestro Dr	Longley Ln	Collector	LAC
Copper Canyon Pkwy	N of Eastern Slope Rd	Salomon Circle	Arterial	MAC
Cordoba Blvd	Calle de Oro Pkwy	La Posada Dr	Collector	LAC
Court St	Arlington Ave	S Virginia St	Arterial	LAC
Damonte Ranch Pkwy	S Virginia St	Veterans Pkwy	Arterial	MAC
Dandini Blvd	US-395	Clear Acre Ln	Arterial	MAC
David Allen Pkwy	Kiley Pkwy	Lazy 5 Pkwy	Arterial	MAC
Delores Dr	Lazy 5 Pkwy (east)	Lazy 5 Pkwy (west)	Arterial	MAC
Disc Dr	Pyramid Hwy	Vista Blvd	Arterial	MAC
Double Diamond Pkwy	Double R Blvd (north)	Double R Blvd (south)	Arterial	MAC
Double R Blvd	Damonte Ranch Pkwy	Longley Ln	Arterial	MAC
Durham Rd	Plumb Ln	Villanova Dr	Arterial	MAC
E Huffaker Ln	Longley Ln	Bluestone Dr	Collector	LAC
Eagle Canyon Rd	Calle de la Plata Dr	Pyramid Hwy	Arterial	MAC
Eastern Slope Rd	Loop Rd	Copper Canyon Pkwy	Arterial	MAC
Eastlake Blvd	US 395	S Virginia St	Arterial	MAC
Echo Ave	Moya Blvd	Military Rd	Arterial	LAC
Edison Way	Mill St	Rock Blvd	Arterial	MAC
El Rancho Dr	Victorian Ave	Clear Acre Ln	Arterial	MAC
Enterprise Rd	Evans Ave	Valley Rd	Arterial	MAC
Evans Ave	2nd St	McCarran Blvd	Arterial	LAC
Evans Ranch Rd	Village Pkwy	Red Rock Rd	Arterial	MAC
Foothill Rd	Broken Hill Rd	S Virginia St	Collector	LAC
Galleria Pkwy	Disc Dr	Los Altos Pkwy	Arterial	LAC
Galletti Way	Glendale Ave	4th St	Arterial	MAC
Garson Rd	S Verdi Rd	Mortinson Loop Rd	Arterial	MAC
Gateway Dr	Offenhauser Dr	South Meadows Pkwy	Arterial	MAC
Geiger Grade	S Virginia St	Storey County Line	Arterial	MAC
Gentry Way	Terminal Way	Neil Rd	Arterial	MAC
Gentry Way	S Virginia St	Kietzke Ln	Arterial	MAC
Glendale Ave	Kietzke Ln	Meredith Way	Arterial	MAC
Golden Valley Rd	N Virginia St	Biller Ln	Arterial	MAC
Greenbrae Dr	Rock Blvd	Howard Dr	Collector	LAC
Greg St	Mill St	I-80	Arterial	MAC
Grove St	S Virginia St	Harvard Way	Collector	LAC
Harvard Way	Grove St	Vassar St	Collector	LAC
Highland Ave	Evans Ave	Valley Rd	Collector	LAC
Highland Ranch Pkwy	Sun Valley Blvd	Pyramid Hwy	Arterial	MAC
Hills Dr	Lazy 5 Pkwy	Vista Blvd	Arterial	MAC
Holcomb Ave	S Virginia St	Mill St	Arterial	LAC
Howard Dr	Prater Way	Sparks Blvd	Collector	LAC
Hunter Lake Dr	California Ave	Susileen Dr	Collector	LAC
Keystone Ave	California Ave	Coleman Dr	Arterial	MAC
Keystone Ave	Coleman Dr	McCarran Blvd	Arterial	LAC

Street Name	From	To	Class	Policy Access
Kietzke Ln	Neil Rd	Victorian Ave	Arterial	MAC
Kiley Pkwy	Pyramid Hwy	Lazy 5 Pkwy	Arterial	MAC
Kings Row	McCarran Blvd	Keystone Ave	Collector	LAC
Kirman Ave	Plumb Ln	Mill St	Collector	LAC
Kirman Ave	Mill St	Truckee River	Arterial	MAC
Kuenzli St	2nd St	Kietzke Lane	Arterial	MAC
La Posada Dr	Pyramid Hwy	Cordoba Blvd	Arterial	MAC
Lake St	Truckee River	6th St	Collector	LAC
Lakeside Dr	Ridgeview Dr	Moana Ln	Arterial	MAC
Lakeside Dr	Moana Ln	Plumb Ln	Collector	LAC
Las Brisas Blvd	Robb Dr	McCarran Blvd	Collector	LAC
Lazy 5 Pkwy	Sun Valley Extension	La Posada Dr	Arterial	MAC
Lear Blvd	Moya Blvd	Military Rd	Arterial	MAC
Lemmon Dr	N Virginia St	Ramsey Way	Arterial	MAC
Liberty St	Arlington Ave	Holcomb Ave	Arterial	LAC
Lincoln Way	McCarran Blvd	Sparks Blvd	Arterial	LAC
Locust St	Plumb Ln	Ryland St	Arterial	LAC
Longley Ln	S Virginia St	Rock Blvd	Arterial	MAC
Loop Rd	Eastern Slope Rd	Vista Blvd	Arterial	MAC
Los Altos Pkwy	Pyramid Blvd	Vista Blvd	Arterial	MAC
Los Altos Pkwy	Vista Blvd (north)	Vista Blvd (south)	Arterial	MAC
Lymberry St	Lakeside Dr	Moana Ln	Collector	LAC
Mae Anne Ave	McCarran Blvd	Sierra Highlands Dr	Arterial	MAC
Mae Anne/Mesa Park	Sierra Highlands Dr	4th St	Arterial	MAC
Maestro Dr	Sierra Center Pkwy	Double R Blvd	Arterial	MAC
Matley Ln	Plumb Ln	Villanova Dr	Arterial	MAC
Mayberry Dr	W 4th St	California Ave	Arterial	MAC
McCarran Blvd	Entire Length		Arterial	HAC
Meadowood Circle	Entire Length		Arterial	MAC
Meadowood Way	Kietzke Ln	Meadowood Circle	Arterial	MAC
Military Rd	Lemmon Dr	Echo Ave	Arterial	MAC
Mill St	Lake St	Kirman Ave	Arterial	LAC
Mill St	Kirman Ave	McCarran Blvd	Arterial	MAC
Mill St Ext	McCarran Blvd	Sparks Blvd	Arterial	MAC
Mira Loma Dr	Longley Ln	Southeast Connector	Collector	LAC
Moana Ln	Skyline Blvd	Plumas St	Arterial	LAC
Moana Ln	Plumas St	Neil Rd	Arterial	MAC
Mortinson Loop Rd	I-80@Garson Rd	Mortinson Town Center	Arterial	MAC
Mount Rose St	Arlington Ave	S Virginia St	Arterial	LAC
Mt Rose Hwy	Tahoe MPO Boundary	Timberline Dr	Arterial	MAC
Mt Rose Hwy	Timberline Dr	S Virginia St	Arterial	HAC
Moya Blvd	Red Rock Rd	Echo Ave	Arterial	LAC
N Virginia St	Truckee River	McCarran Blvd	Arterial	LAC
N Virginia St	McCarran Blvd	Business 395	Arterial	HAC
N Virginia St	Business 395	Red Rock Rd	Arterial	MAC

Street Name	From	To	Class	Policy Access
N Virginia St	Village Pkwy	White Lake Pkwy	Arterial	MAC
Neighborhood Way	Eagle Canyon Dr	North terminus	Arterial	MAC
Neil Ln	Meadowood Circle	Neil Rd	Arterial	MAC
Neil Rd	Kietzke Ln	Gentry Way	Arterial	LAC
Neil Way	Meadowood Circle	Neil Rd	Arterial	MAC
Nichols Blvd	McCarran Blvd	Howard Dr	Arterial	MAC
North Connector	Sun Valley Blvd	Lemmon Dr	Arterial	HAC
Nugget Ave	Rock Blvd	McCarran Blvd	Arterial	MAC
Oddie Blvd	Wells Ave	Pyramid Hwy	Arterial	MAC
Offenhauser Dr	Portman Ave	Gateway Dr	Arterial	MAC
Old US-395	Eastlake Blvd	S Virginia St	Arterial	MAC
Outer Ring Rd	Sparks Blvd	Vista Blvd	Arterial	HAC
Parr Blvd	N Virginia St	US 395	Arterial	LAC
Patriot Blvd	S Virginia St	Bluestone Dr	Arterial	MAC
Peckham Ln	Lakeside Dr	Longley Ln	Arterial	MAC
Pembroke Dr	McCarran Blvd	Southeast Connector	Collector	LAC
Plumas St	Ridgeview Dr	California Ave	Arterial	MAC
Plumb Ln	McCarran Blvd	Terminal Way	Arterial	MAC
Portman Ave	Bluestone Dr	Offenhauser Dr	Arterial	MAC
Prater Way	I-80/4th St	McCarran Blvd	Arterial	LAC
Prater Way	McCarran Blvd	E of Vista Blvd	Arterial	MAC
Prototype Dr	Gateway Dr	Double R Blvd	Arterial	LAC
Putnam Dr	Washington St	Sierra St	Arterial	LAC
Pyramid Hwy Extension	Mill St	I-80	Arterial	MAC
Pyramid Hwy	I-80	Queen Way	Arterial	MAC
Pyramid Hwy	Queen Way	Calle de la Plata Dr	Arterial	HAC
Pyramid Hwy	Calle de la Plata Dr	Winnemucca Ranch Rd	Arterial	MAC
Raggio Pkwy	Dandini Blvd (east)	Dandini Blvd (west)	Arterial	MAC
Ralston St	2 nd St	University Terrace	Collector	LAC
Red Rock Rd	US-395	Nevada California Border	Arterial	MAC
Redfield Pkwy	S Virginia St	Kietzke Ln	Arterial	MAC
Richard Springs Blvd	Lazy 5 Pkwy (future)	Eagle Canyon Dr	Arterial	MAC
Ridgeview Dr	Plumas St	Lakeside Dr	Arterial	MAC
Rio Poco Rd	McCarran Blvd	Reggie Rd	Collector	LAC
Rio Wrangler Pkwy	Damonte Ranch Pkwy	South Meadows Pkwy	Arterial	MAC
Robb Dr	4 th St	Las Brisas Blvd	Arterial	MAC
Rock Blvd	McCarran Blvd (east)	Prater Way	Arterial	MAC
Rock Blvd	Prater Way	McCarran Blvd (north)	Arterial	LAC
Ryland St	Holcomb Ave	Mill St	Arterial	LAC
S Verdi Rd	S Verdi Ct	Garson Rd	Arterial	MAC
S Virginia St	US 395 @ Bowers Man	Mt Rose Hwy	Arterial	HAC
S Virginia St	Mt Rose Hwy	Plumb Ln	Arterial	MAC
S Virginia St	Plumb Ln	Truckee River	Arterial	LAC
Sadlier Way	Valley Rd	Wells Ave	Arterial	MAC
Salomon Circle	Loop Rd	Brierley Way	Arterial	MAC

Street Name	From	To	Class	Policy Access
Sharlands Ave	Mae Anne Ave	Robb Dr	Arterial	MAC
Sierra Center Pkwy	S Virginia St	Maestro Dr	Arterial	MAC
Sierra Highlands Dr	McCarran Blvd	7th St	Collector	LAC
Sierra Rose Dr	Talbot Ln	Kietzke Ln	Arterial	MAC
Sierra St	California Ave	N Virginia St	Arterial	LAC
Silver Lake Rd	Red Rock Rd	Sky Vista Pkwy	Collector	LAC
Silver Stream Rd	Copper Canyon Pkwy	Eastern Terminus	Collector	LAC
Silverada Blvd	9th St	Wedekind Rd	Collector	LAC
Sinclair St	Holcomb Ave	Truckee River	Collector	LAC
Sky Vista Pkwy	Lear Blvd	Silver Lake Rd	Collector	LAC
Sky Vista Pkwy	Silver Lake Rd	Lemmon Dr	Arterial	MAC
Skyline Blvd	McCarran Blvd	Arlington Ave	Collector	LAC
Smithridge Dr	Peckham Ln	Meadowood Circle	Arterial	MAC
Somersett Pkwy	Mae Anne Ave	US Hwy 40 (Verdi)	Arterial	MAC
South Meadows Pkwy	S Virginia St	Sunny Hills Town Center	Arterial	MAC
Southeast Connector	South Meadows Pkwy	Greg St	Arterial	HAC
Sparks Blvd	Greg St	Pyramid Hwy	Arterial	MAC
State St	S Virginia St	Holcomb Ave	Arterial	MAC
Stead Blvd	N Virginia St	Echo Ave	Arterial	MAC
Steamboat Pkwy	Damonte Ranch Pkwy	Rio Wrangler Pkwy	Arterial	MAC
Stoker Ave	4th St	7th St	Collector	LAC
Sullivan Ln	Prater	El Rancho Dr	Collector	LAC
Summit Ridge Rd	McCarran Blvd	W 4th St	Collector	LAC
Sun Valley Blvd	Dandini Blvd	Highland Ranch Pkwy	Arterial	MAC
Susileen Dr	Hunter Lake Dr	Cashill Blvd	Collector	LAC
Sutro St	Truckee River	US 395	Arterial	MAC
Sutro St Ext	US 395	Clear Acre Ln	Arterial	MAC
Talbot Ln	Redfield Pkwy	Sierra Rose Dr	Arterial	MAC
Terminal Way	Gentry Way	Mill St	Arterial	MAC
Thomas Creek Rd	Mt Rose Hwy	Zolezzi Ln	Collector	LAC
Toll Rd	Geiger Grade	Comstock Estates Dr	Collector	LAC
TRIC Frontage Roads	Mustang	USA Parkway	Arterial	MAC
University Terrace	Vine St	Sierra St	Collector	LAC
US Hwy 40 (Verdi)	I-80 (west)	I-80 (east)	Arterial	MAC
Valley Rd	Enterprise Rd	4 th St	Arterial	MAC
Vassar St	S Virginia St	Kietzke Ln	Arterial	LAC
Vassar St	Kietzke Ln	Terminal Way	Arterial	MAC
Veterans Parkway	South Meadows Pkwy	Geiger Grade	Arterial	HAC
Victorian Ave	Prater Way	McCarran Blvd	Arterial	LAC
Village Pkwy	N Virginia St	North Terminus	Arterial	MAC
Villanova Dr	Harvard Way	US-395	Collector	LAC
Villanova Dr	US-395	Terminal Way	Arterial	LAC
Vine St	2 nd St	University Terrace	Collector	LAC
Vista Blvd	I-80	Wingfield Hills (east)	Arterial	MAC
Vista Blvd	Wingfield Hills (east)	Town Center	Collector	LAC

Street Name	From	To	Class	Policy Access
W Huffaker Ln	Meadow Vista Ct	S Virginia St	Collector	LAC
W Mortinson Loop Rd	Crystal Park Rd	Southern Terminus	Collector	LAC
W Sun Valley Arterial	Outer Ring Road	Eagle Canyon Rd	Arterial	HAC
Washington St	Putnam Dr	2 nd St	Collector	LAC
Wedekind Rd	Sutro St	Pyramid Hwy	Collector	LAC
Wedge Pkwy	Mt Rose Hwy	Arrowcreek Pkwy	Arterial	MAC
Wells Ave	S Virginia St	Ryland St	Arterial	LAC
Wells Ave	Ryland St	Oddie Blvd	Arterial	MAC
West St	6 th St	5 th St	Arterial	MAC
White Lake Pkwy	Village Pkwy	N Virginia St	Arterial	MAC
Windmill Farms Blvd	Pyramid Hwy	Kiley Pkwy	Arterial	MAC
Wingfield Hills Rd	Vista Blvd (west)	Vista Blvd (east)	Collector	LAC
Wingfield Springs Pkwy	Vista Blvd	Calle de Oro Pkwy	Collector	LAC
Winnemucca Ranch Rd	Pyramid Highway	Nevada California Border	Arterial	HAC
York Way	Rock Blvd	McCarran Blvd	Collector	LAC
Zolezzi Ln	Thomas Creek Rd	Arrowcreek Pkwy	Collector	LAC

Figure 3-2 shows year 2005 Washoe County regional road system locations where adopted LOS was not met.

Intersections

When analyzing the RRS, the intersections are one of the most important components to measure, in terms of congestion. As part of the RTC's signal optimization program, 140 intersections were counted in 2006. The program includes approximately 360 intersections, with counts being done on a third of the intersections each year. This keeps the data current with counts being, at the most, three years old. This program provides information regarding not only number of vehicles through the intersection, but also information such as peak-hour volume, the peak with the greatest delay, the peak-hour average vehicle delay and the level of service. **Figure 3-3** shows the level of service for the 140 intersections counted in 2006. Generally, the more congested intersections are on the busiest streets, such as McCarran Boulevard, Kietzke Lane, Prater Way, Pyramid Way and Virginia Street.

In addition to congestion at intersections, accident data is also very important. Information on intersection safety is obtained from the NDOT in the form of a safety/severity index. This index includes the rate of crashes, severity of injuries and fatalities compared with the number of crashes.

**Figure 3-2
EXISTING REGIONAL ROAD CONGESTION -- 2005
(BELOW POLICY LEVEL-OF-SERVICE)**

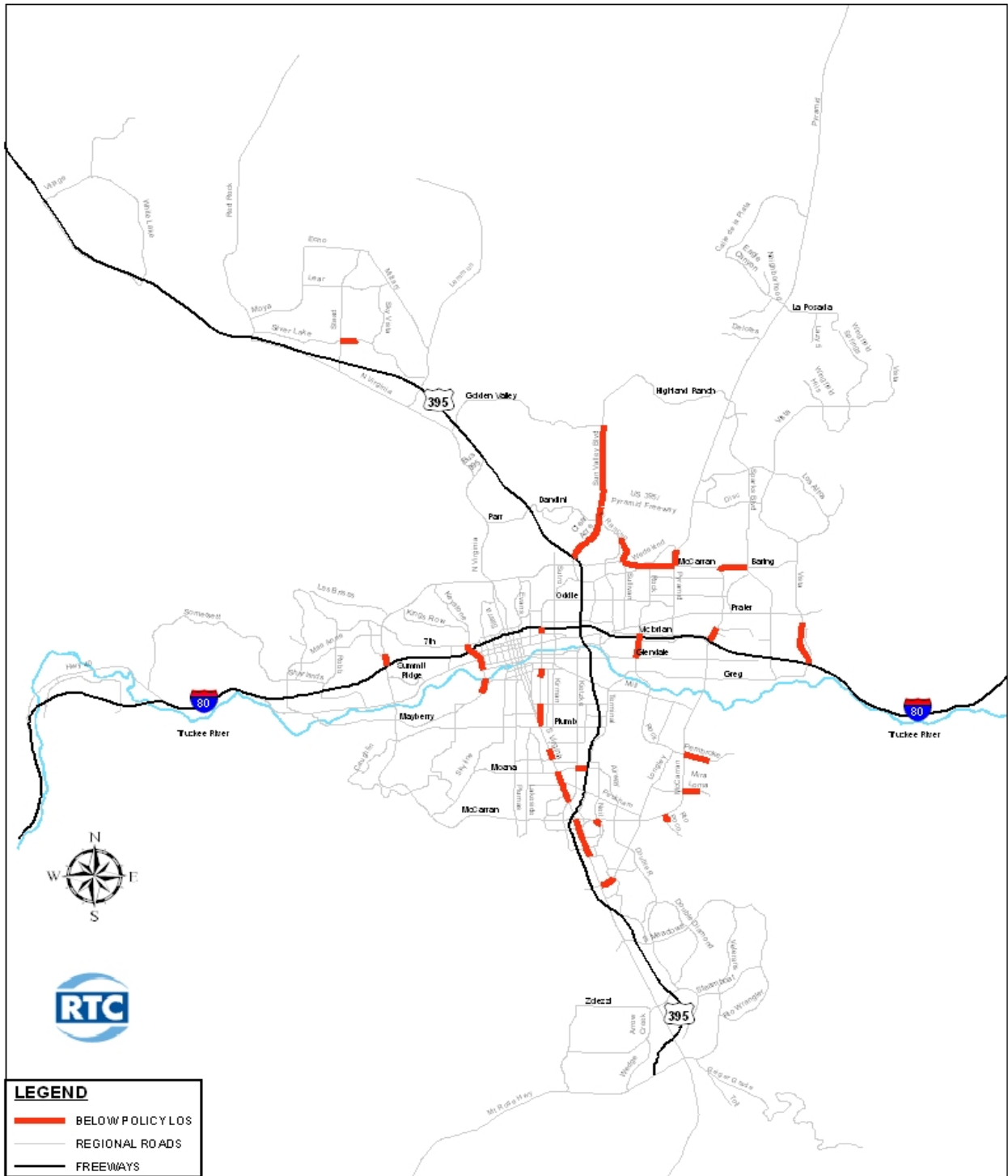
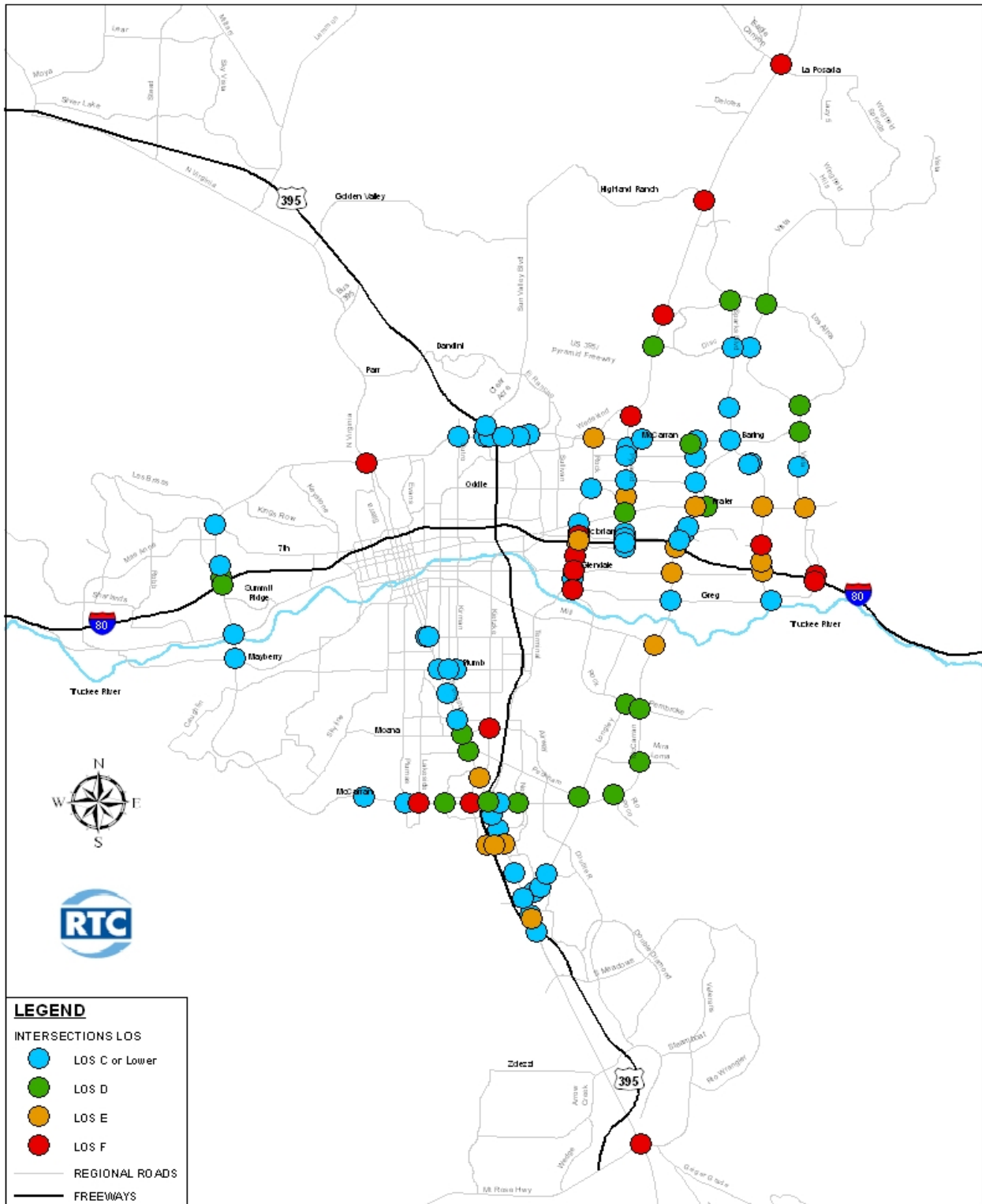


Figure 3-3

EXISTING CONDITIONS -- INTERSECTION LEVEL-OF-SERVICE



Street and Highway Element Objectives

The Street and Highway Element objectives cover the areas of congestion, condition, safety and air quality. The objectives serve two purposes. First, they are intended to provide direction for the future development of the street and highway system so that operations, maintenance and system additions support achieving the objectives. Second, objectives are compared with periodic assessment of actual accomplishments to determine if adequate progress is being made or if adjustments to activities are necessary.

Congestion

1. Average per capita daily travel time will not increase above 2000 levels more than 20% by 2008; 30% by 2018, and 40% by 2030 and beyond.
2. All signalized intersections will be within policy level of service by the year 2012 and maintained at that policy level of service thereafter.

Condition

1. The average pavement condition index (PCI) for all roads will be no less than 65 by 2007; and no less than 70 by 2012 and beyond.
2. No more than 6% of the pavements within the region will have a PCI below 40 by 2012 and no more than 2% will be below a PCI of 40 by 2020 and beyond.

Safety

1. The average safety/severity index provided by the Nevada Department of Transportation (NDOT) for the top 30 highest accident intersections will be below 1.00 by 2012 and below 0.70 by 2020 and beyond.

Air Quality

1. The RTP will maintain conformity with all federal air quality standards and requirements.

General

1. By 2011, the RTC, working with Washoe County, City of Sparks, City of Reno, NDOT and surrounding jurisdictions, shall develop mechanisms to ensure that there is mitigation of inter-county transportation impacts. If this cannot be accomplished voluntarily, the RTC shall seek legislation or other appropriate action to achieve inter-county equity for transportation impacts.

2. The RTC will analyze the feasibility of controlling the cost of road construction by offering access to public aggregate pits as an option for bidders on street and highway construction.
3. The RTC shall pursue appropriate legislation to allow the assessing of tolls. The RTC shall look for opportunities to institute tolling for financing facilities where feasible and appropriate.
4. The RTC shall look for opportunities for public/private partnerships where feasible, economical and where there is a clear net benefit to the public. The RTC shall pursue appropriate legislation to allow public private partnerships.
5. By 2013, the RTC will actively collaborate with NDOT and other interested parties and establish a pilot program to develop a transition plan to move away from fuel tax fees based on vehicle miles traveled (VMT) or other measurable mechanisms.

Street and Highway Policies

The following street and highway policies will provide guidance and direction in achieving the overall plan goals and the street and highway objectives.

1. The Washoe County regional street and highway system shall be a balanced system of freeways and regional roads, well coordinated with other transportation systems, and wherever possible consistent with the character of the area that it passes through and the type and volume of traffic to be served.
2. Coordinate street and highway planning with local, regional, state agencies and federal agencies.
3. Street and highway planning, design and traffic operations shall incorporate efficiency, effectiveness and safety for all modes.
4. Existing and future traffic needs for the Regional Road System (RRS) will be determined through technical analyses and prioritized based upon the most cost effective solutions to congestion.
5. Implement the Financial Plan and pursue underutilized or new funding sources.
6. All new and widened regional street and highway facilities will be constructed according to the design standards of the local jurisdiction and/or the latest edition of the American Association of State Highway Officials publication *A Policy on Geometric Design of Highways and Streets*, whichever is more stringent.

7. Prioritize street and highway funding for capacity improvements to promote in-fill development and higher intensity development along transit-oriented development corridors and within downtown, regional and emerging employment centers.
8. Assure adequate right-of-way for the construction of future streets and widening of existing streets through timely advance planning and preliminary design, property acquisition, dedication of easements and development setbacks, including those facilities in a post 2030 time horizon.
9. The Access Management Standards shown in **Table 3-2** will be used in the design of future improvements to the Regional Road System (RRS) and the classification of existing improvements for planning purposes.
10. The level of service standards as shown in **Table 3-3** will be used for assessing the need for and location of future street and highway improvements for Washoe County at a planning level. As appropriate, design of facilities will be based upon more detailed operational analysis.
11. The Level of Service (LOS) thresholds shown in **Table 3-4** will be used to identify the approximate levels of congestion of roadway segments based upon daily travel as appropriately designed.
12. If a development approval or operational decision contemplated by a local government is inconsistent with the land-use assumptions upon which the RTP is based, the policies on level of service or access management or any other aspect of the RTP, the local government should not take such action until agreement has been reached with the RTC on an amendment to the RTP that will mitigate the congestion impacts of the action by the local government.
13. School locations should be identified in a systematic manner with coordination among school, law enforcement and traffic officials. The school district shall be encouraged to not site schools at such locations and in such a manner that they will require any new speed controlled school zones on any arterial roadway projected to have more than 10,000 Average Daily Trips (ADT) in the final year of the current RTP. This includes locating school property adjacent to an arterial meeting the above ADT threshold or developing a school walk route plan that crosses an arterial meeting the above ADT threshold.

Table 3-2

Access Management Standards-Arterials¹ and Collectors							
Access Management Class	Posted Speeds	Signals per mile and Spacing ⁶	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways?	Driveway Spacing ²
High Access Control	45-55 mph	2 or less Minimum spacing 2350 feet	Raised w/channelized turn pockets	Yes 750 ft. minimum	Only at signalized locations	Yes ⁴	250 ft./500 ft.
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/turn pockets	Yes 500' minimum	No, on 6- or 8-lane roadways w/o signal	Yes ⁵	200 ft./300 ft.
Low Access Control	35-40 mph	5 or less Minimum spacing 900 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way, left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft.
Ultra-Low Access Control	30-35 mph	8 or less Minimum spacing 560 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft. 100 ft./100 ft. ³

¹ On-street parking shall not be allowed on any new arterials per Policy 7 of the Congestion Management Systems (Chapter 9). Elimination of existing on-street parking shall be considered a priority for major and minor arterials operating at or below the policy level of service.

² Minimum spacing from signalized intersection/spacing from other driveways.

³ Minimum spacing on collectors.

⁴ If there are more than 30 inbound, right-turn movements during the peak-hour.

⁵ If there are more than 60 inbound, right-turn movements during the peak-hour.

⁶ Minimum signal spacing is for planning purposes only; additional analysis must be made of proposed new signals in the context of existing conditions, planned signalized intersections, and other relevant factors impacting corridor level of service.

Table 3-3

Regional Level of Service Standards	
LOS D	<ul style="list-style-type: none"> All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon
LOS E	<ul style="list-style-type: none"> All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon
LOS F	<ul style="list-style-type: none"> Plumas Street—Plumb Lane to California Avenue Rock Boulevard—Glendale Avenue to Victorian Avenue South Virginia Street—Kietzke Lane to South McCarran Boulevard Sun Valley Boulevard—2nd Avenue to 5th Avenue Intersection of North Virginia Street and Interstate 80 ramps
<p>Except as noted above, all intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors.</p>	

**Table 3-4
Average Daily Traffic Level of Service Thresholds
By Facility Type for Roadway Planning**

Facility Type	Maximum Service Flow Rate (daily for Given Service Level)				
Number of Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway					
4	≤ 28,600	42,700	63,500	80,000	90,200
6	≤ 38,300	61,200	91,100	114,000	135,300
8	51,100	81,500	121,400	153,200	180,400
10	63,800	101,900	151,800	191,500	225,500
Arterial-High Access Control					
2	n/a	9,400	17,300	19,200	20,300
4	n/a	20,400	36,100	38,400	40,600
6	n/a	31,600	54,700	57,600	60,900
8	n/a	42,500	73,200	76,800	81,300
Arterial-Moderate Access Control					
2	n/a	5,500	14,800	17,500	18,600
4	n/a	12,000	32,200	35,200	36,900
6	n/a	18,800	49,600	52,900	55,400
8	n/a	25,600	66,800	70,600	73,900
Arterial/Collector-Low Access Control					
2	n/a	n/a	6,900	13,400	15,100
4	n/a	n/a	15,700	28,400	30,200
6	n/a	n/a	24,800	43,100	45,400
8	n/a	n/a	34,000	57,600	60,600
Arterial/Collector-Ultra-Low Access Control					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400

**Prioritization of Routine Operations and Maintenance,
System Preservation and Capacity Needs**

A major street and highway issue of today and the future will continue to focus on the issue of priority of routine operations and maintenance, system preservation and capacity needs. A safe and efficient street and highway system is crucial to the continued growth and prosperity of our community. Routine operations, which include such things as repairing traffic signals, repainting pavement markings, sweeping, plowing, sanding, filling pot holes, etc, must be funded first to assure safety. Our existing streets, highways and bridges represent a tremendous capital investment that

must be preserved through more extensive maintenance, rehabilitation and reconstruction activities to retain function and value. Finally, additional capacity must be built to accommodate increased travel through out the system. Although all of these areas are essential to a well functioning transportation system, the lowest life-cycle cost is generally achieved when priority is given to funding routine operations and maintenance, followed by system preservation and then new capacity. To a substantial degree, our community’s decision makers have historically allocated resources based upon this sense of priorities and this is expected to continue into the future.

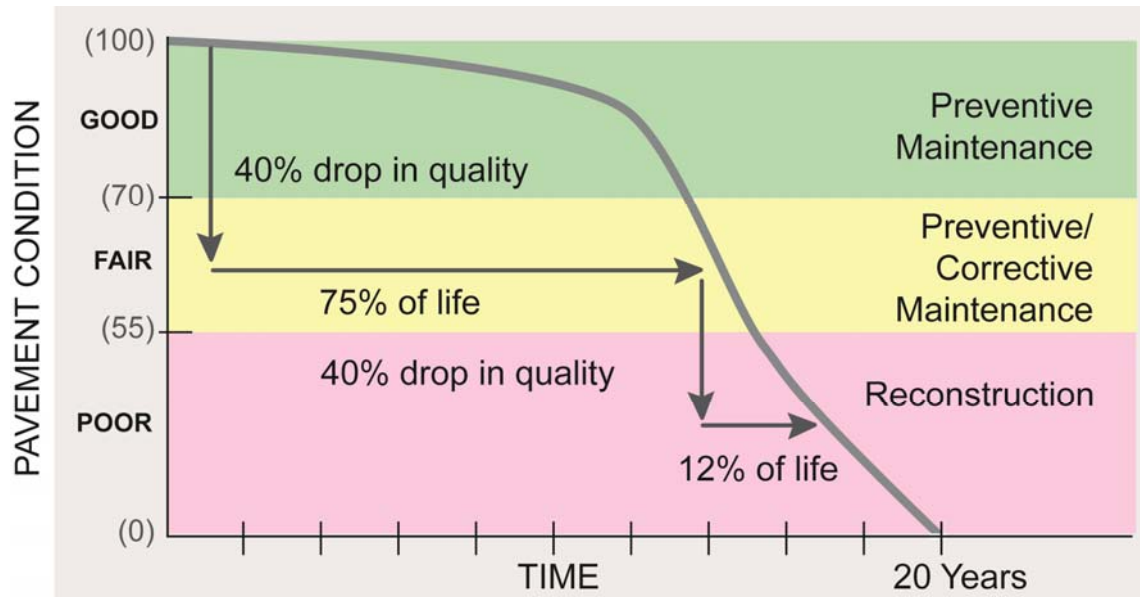
Street and highway routine maintenance and operations, and system preservation are currently funded largely through fuel taxes. This funding structure has the advantage of requiring users of streets and highways to pay for their maintenance based on use (gallons of gas purchased). However, these funds alone are insufficient and have been supplemented by all three local jurisdictions. It is essential that this level of effort be sustained in real dollar per capita terms so that the maximum life-cycle value of these investments is realized.

The cost of deferred maintenance is substantial. One dollar of maintenance cost, when deferred, can increase up to four dollars in reconstruction costs if the roadway deteriorates substantially. **Table 3-5** shows the classifications of maintenance and **Figure 3-4** displays the relationship of time to roadway quality and maintenance cost. The financial requirements for routine maintenance and operations, system preservation and new capacity between 2008 to 2030 are contained in Chapter 8—Financial Element.

Table 3-5
Classifications of Maintenance

<p>Preventive Maintenance. Performed to improve or extend the functional life of a pavement. Is a strategy of surface treatments and operations intended to retard progressive failures and reduce the need for routine maintenance and service activities.</p>
<p>Corrective Maintenance. Performed after a deficiency occurs in the pavement, such as loss of friction, moderate to severe rutting, or extensive cracking. Also referred to as “reactive” maintenance.</p>
<p>Emergency Maintenance. Performed during an emergency situation, such as a blowout or severe pothole that needs repair immediately. Is also temporary treatments designed to hold the surface together until more permanent repairs can be performed.</p>

**Figure 3-4
Road Deterioration vs. Time and Cost**



Future Conditions

System-wide Overview

To meet the goals and objectives articulated by the community, significant additional investments will need to be made in the street and highway system as the Reno-Sparks urban area expands. Federal regulations require the RTP to examine a status quo (no new roads are built) scenario of future conditions. In addition, the RTP also examines a constrained scenario (constrained funding for both roads and transit) that assumes only limited roadway capacity improvements will be made based upon currently existing sources and transit hours of service will remain fixed. The constrained scenario is a planning level exercise that made two significant assumptions. First, routine operations and maintenance and system preservation would be given priority over capacity improvements, since this is the most economic life-cycle approach. Second, regional economic activity and existing revenue streams would not be negatively impacted by significantly increased traffic congestion and delay.

Figure 3-5 indicates the projected increase in Vehicle Miles Traveled (VMT) and total system (regional roads and freeways) delay for the status quo scenario. **Figure 3-6** illustrates the same information for the constrained funding scenario. As can be expected, total system delay is lower with the constrained scenario but still significantly higher (23 times greater) than the base-line year of 2000.

Figure 3-5
RTP Planning Area VMT and Delay—Status quo (No Build) Scenario

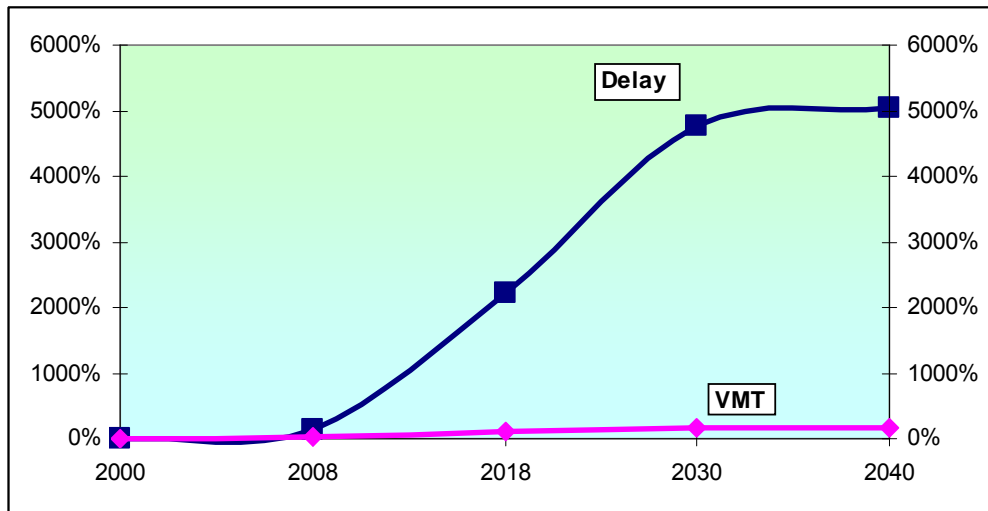
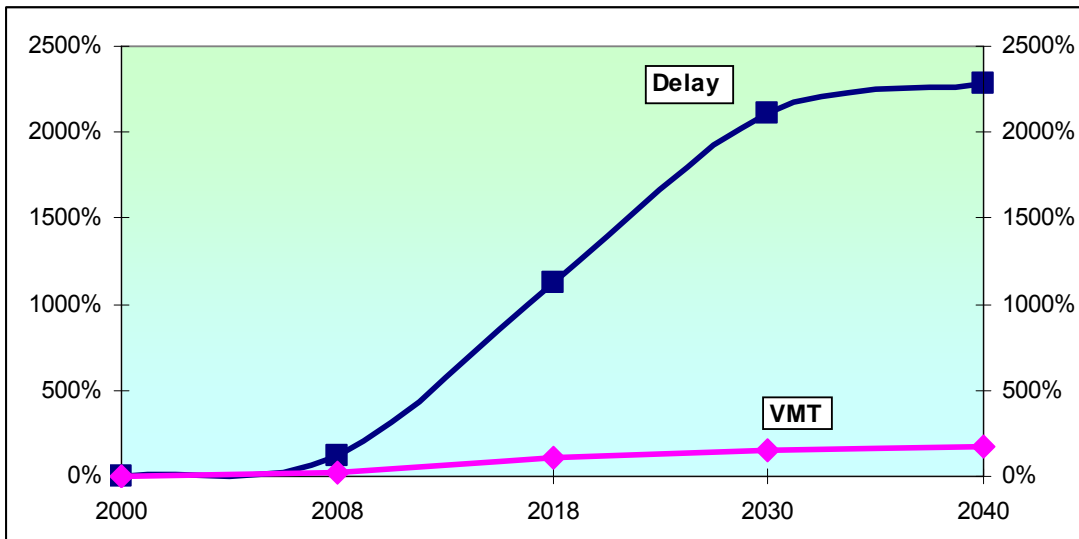
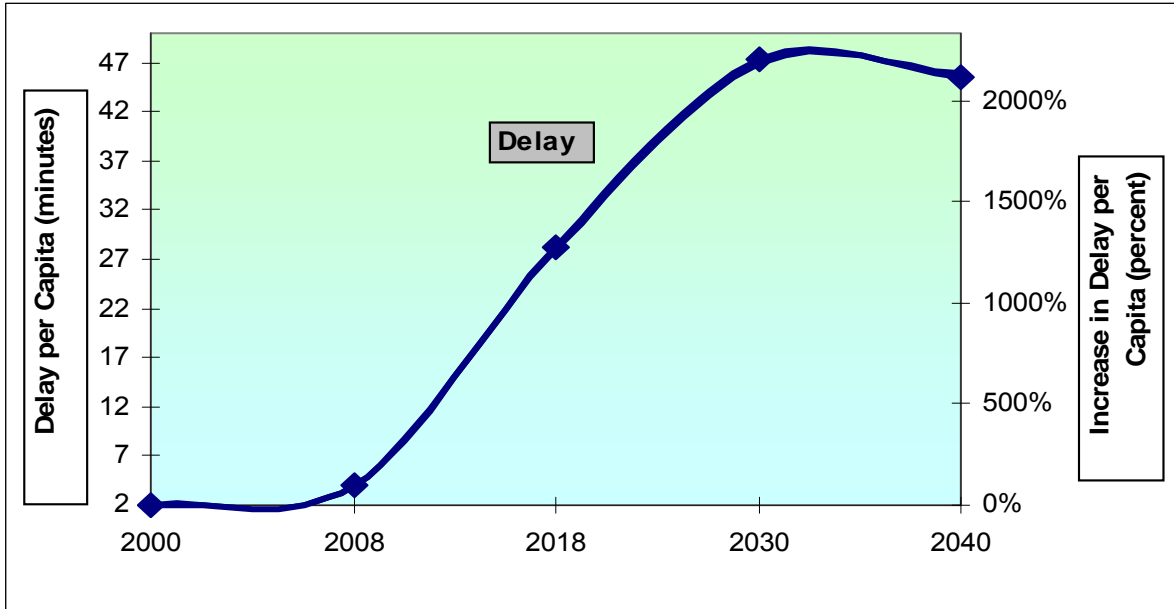


Figure 3-6
RTP Planning Area VMT and Delay—Constrained Funding Scenario

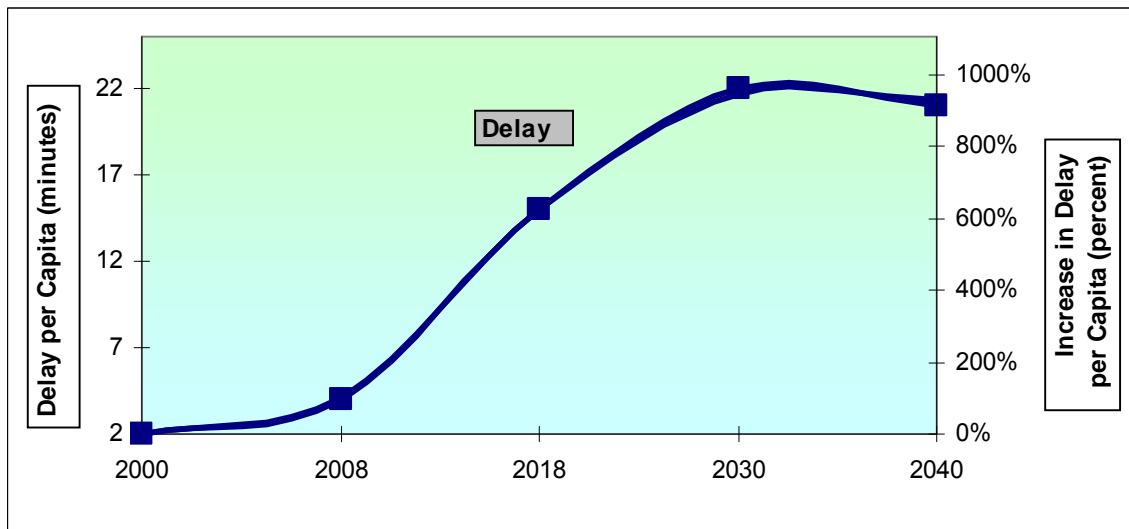


Figures 3-7 and 3-8 show the expected levels of per capita delay under the status quo and constrained funding scenarios. Again, per capita delay under the constrained funding scenario is lower than the status quo scenario but still 950% percent higher by 2030 than the delay experience in the base year 2000.

**Figure 3-7
Average Daily per Capita Delay-Status Quo Scenario**



**Figure 3-8
Average Daily Per Capita Delay-Constrained Scenario**



As noted in the Chapter 8, the Financial Plan, existing revenues are insufficient to maintain the condition of the current roadway system. Under both the status quo and constrained funding scenarios, the condition of the region's roadways is expected to decline. It is reasonable to expect additional congestion and delay due to degraded capacity caused by deteriorating pavements, but this has not been quantified in this data.

Identification of Future Congested Street and Highway Segments

To determine future roadway facility needs, traffic projections for the years 2018, 2030, and 2040 (for the illustrative facilities plan) were developed using the RTC's travel demand forecasting tool. This process identifies roadway segments that are projected to have unacceptable levels of congestion in the future. This is a planning level exercise and specific solutions to correct these congested conditions have, in most cases, not yet been identified. To insure that reasonable financial resources are available to fund whatever the ultimate solutions may be, the RTP identifies and costs "nominal" solutions to these congested segments. These "nominal" improvements assume that the existing roadway segment will be widened, which may be unrealistic or controversial. Subsequent, more detailed planning and engineering studies beyond the RTP process will be undertaken to provide the community with the full range of options. Solutions to the congestion could include widening, new roadways, improvements to parallel roadways to divert traffic, asymmetric widening, customized cross sections with reduced right-of-way requirements or increasing roadway capacity through the implementation of stricter access controls. Ultimately, the goal of these more detailed project development activities is to find a reasonably cost-effective solution that provides congestion relief while minimizing the impact to other community resources.

Washoe County Freeway System. The Washoe County Freeway Corridor Study, completed in January 2003, identified freeway improvements needed within the Reno-Sparks metropolitan area between 2003 and 2030. The study was undertaken to fully define investment needs and options for major freeways and interchanges in the Reno-Sparks metropolitan area. These improvements were included in the RTP. In addition, updated analysis has identified additional unacceptable congested freeway segments which are addressed in the RTP.

The nominal freeway improvements shown in the RTP include substantial widening of existing freeways, construction of new freeways, new and/or modified interchanges and conversion of a portion of the Pyramid Highway to a limited access freeway. In some locations, the existing freeways will be widened to 10 lanes. With the improvements listed in the RTP, some segments of the freeways are still projected to fall below the policy LOS standards in the future. These areas will be addressed in future RTPs. In other locations, over 90% of the capacity on the mainline freeway during the peak hours is used by 2040. Assuming the 2040 population and employment forecasts and completion of all of the freeway improvements, a number of freeway segments could become deficient by 2040 or earlier if population and/or employment growth occurs at greater rates than currently projected. The physical limitations along the freeway in some locations will prevent further widenings to the freeway system. In addition, even where additional physical widening of the mainline freeway may be feasible, the additional improvements that would be required at the interchanges and surface arterials in the urban core to efficiently collect and concentrate traffic into the existing freeway corridors become practically and economically much less feasible. The RTP nominal freeway improvements and associated costs are shown in **Tables 3-6 and 3-7** and on **Figures 3-9 and 3-10**. **Table 3-6** and **Figure 3-9** represent the 2008 to 2030

time frame and **Table 3-7** and **Figure 3-10** represent the illustrative facilities plan for the years 2031 to 2040.

Regional Road System (RRS). The RTC travel forecasting tool provides the future traffic projections on the regional road system. The forecasting tool shows that regional roads will see increased levels of congestion in the future if improvements to the road network are not completed. Intersection operations, signal upgrades, right-of-way requirements and level of congestion are analyzed as part of this RTP. The nominal regional road improvements and associated costs are shown in **Tables 3-6 and 3-7** and on **Figures 3-9 and 3-10**. **Table 3-6** and **Figure 3-9** represent the 2008 to 2030 time frame and **Table 3-7** and **Figure 3-10** represent the illustrative facilities plan for the years 2031 to 2040. With the nominal improvements listed in the RTP, there are still some segments of the regional road system that are projected to fall below the policy LOS standards in the future. These segments will be addressed in future RTPs.

The RTP indicates the need for substantial widening of arterials or other mitigations, and an emphasis on stringent facility access controls, such as signal spacing, driveway locations, medians and restricted turn movements. To meet policy LOS standards, rigorous access control management must be applied to all classifications of roadways from collectors to arterials so that the expected capacity of the roadways can be realized.

Street and Highway Unfunded Needs

The RTP is fully funded through the year 2030 as described in Chapter 8—Financial Element. Many more projects are needed between 2031 and 2040 to meet community congestion standards than can be funded under a reasonable projection of available revenues. Projects contained in **Table 3-7** represent an illustrative list of projects between 2031 and 2040 and are not part of the fiscally constrained transportation plan and program. The inclusion of this table provides an opportunity to identify additional projects for future consideration in the event that additional funding sources become reasonable available. In nonattainment and maintenance areas, the advancement of a non-exempt, illustrative project requires a formal amendment to the RTP, TIP, and STIP and a new conformity determination by FHWA/FTA. It is the intention of the RTC to seek additional transportation funding in the future.

Street and Highway Summary

The congested segments of the existing street and highway system (freeways and regional roads) as well as the new roads that are to be added to the system are shown in **Tables 3-6 and 3-7** and **Figures 3-9 and 3-10**. For existing congested segments, nominal improvements are identified to create financial placeholders for eventual mitigation. Actual mitigations for these segments have not yet been identified and may be significantly different than the nominal improvements described including improvements to other existing facilities, new road segments, changes in access management, etc.

Figure 3-9
STREET AND HIGHWAY CONGESTED SEGMENTS/NEW ROADS
FULLY FUNDED PLAN
2008 TO 2030

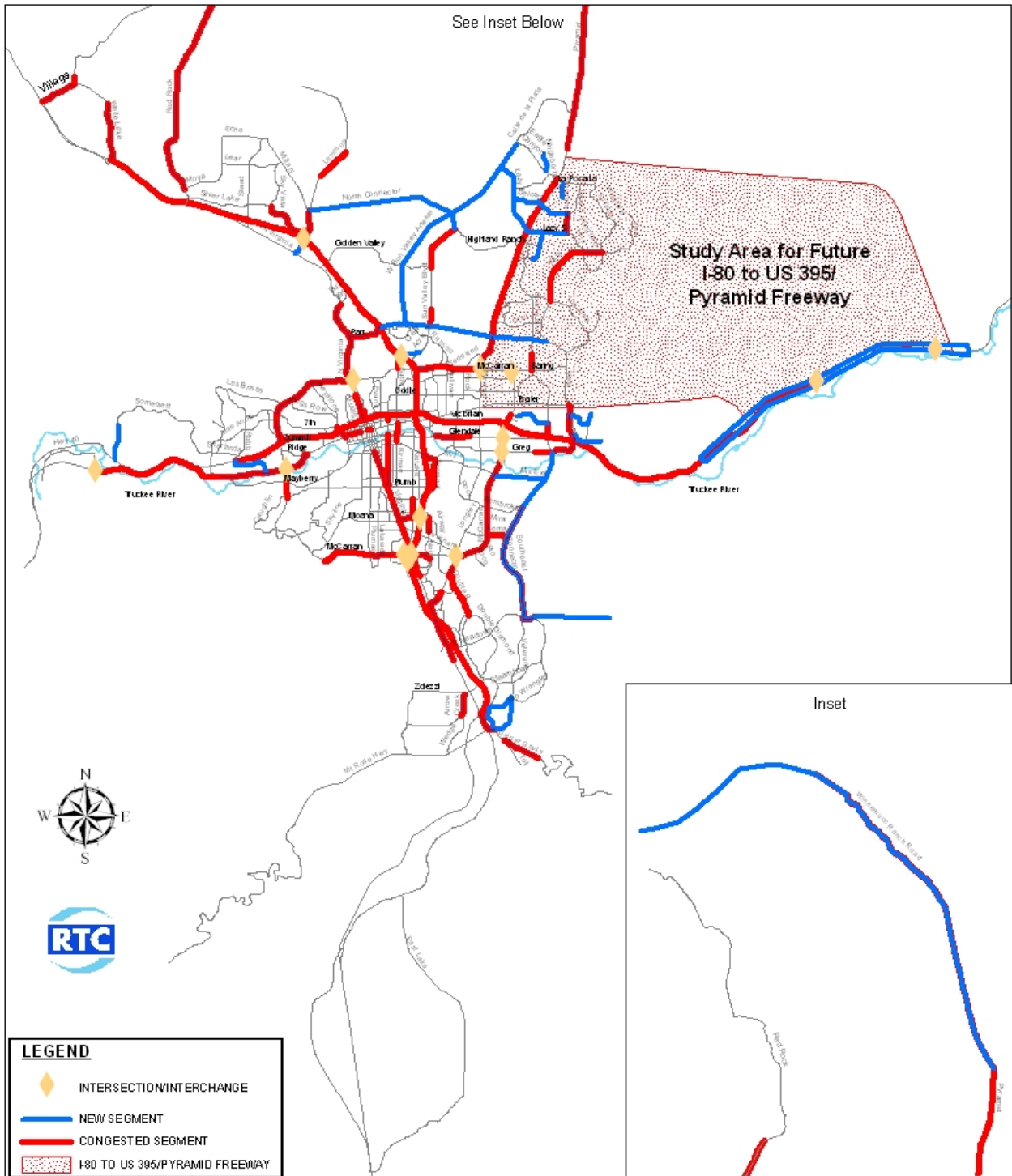
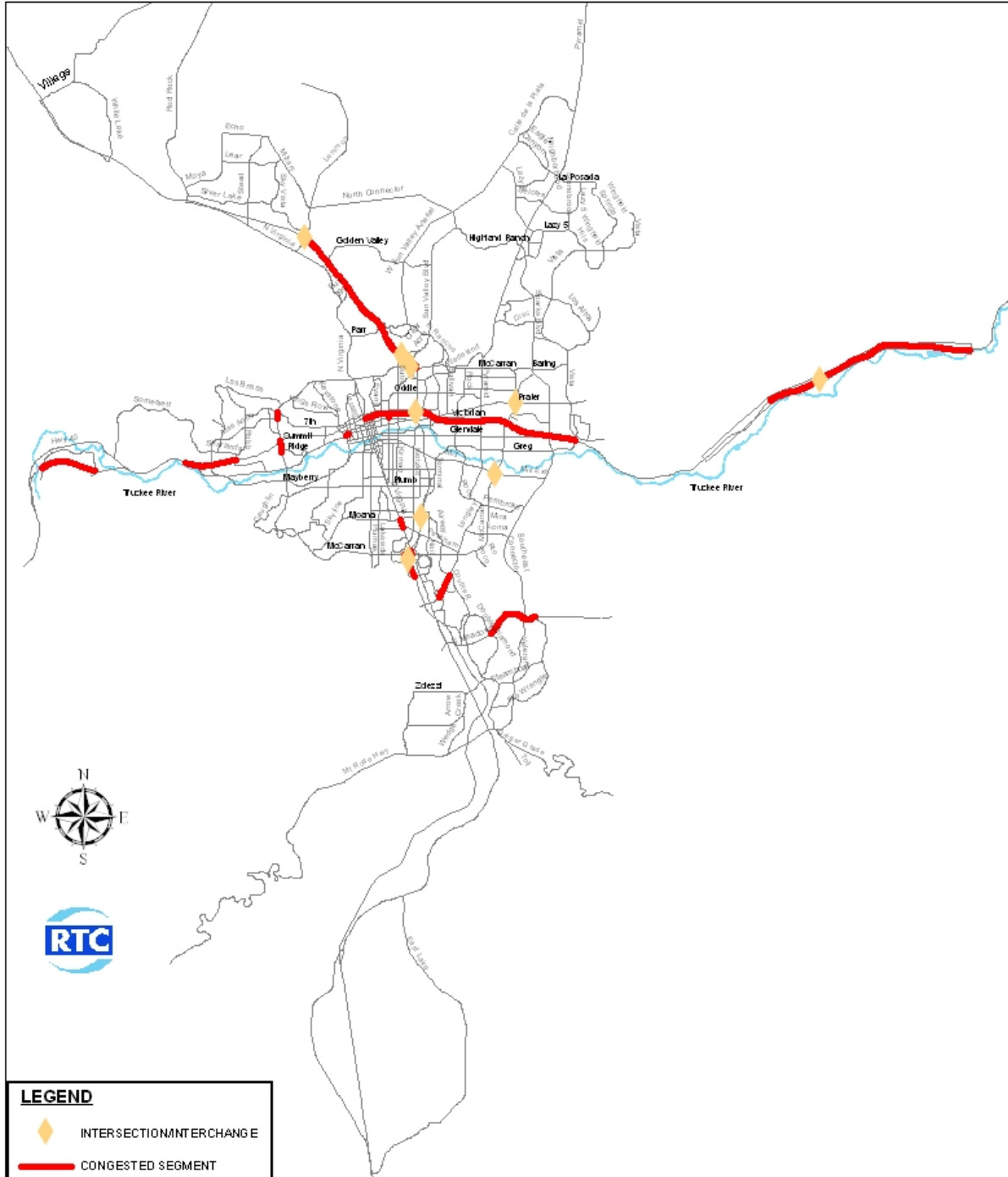


Figure 3-10

**STREET AND HIGHWAY CONGESTED SEGMENTS/NEW ROADS
ILLUSTRATIVE FACILITIES PLAN/CURRENTLY UNFUNDED NEEDS
2031 TO 2040**



Street and Highway Phasing Plan

As the region's population grows from 385,000 today to 790,000 in 2040, street and highway improvements will need to be completed at different times during the plan lifetime. The phasing plan includes the fully funded years of 2008-2018 and 2019-2030 and unfunded needs between 2031 and 2040. Projects may need to be accelerated within the phasing plan due to faster than expected growth in population and/or employment. Projects may also be moved from the unfunded needs to fully funded years if future revenues are implemented which would require a formal amendment to the RTP and a new conformity determination by FHWA/FTA. The plan for fully funded phases of the Street and Highway Element (2008 through 2030) is shown in **Table 3-6**. The plan for the unfunded phase (illustrative facilities plan) of the Street and Highway Element (2031 through 2040) is shown in **Table 3-7**.

**Table 3-6
Phasing Plan—Street and Highway System
Fully Funded Needs**

FREEWAY SYSTEM CONGESTED SEGMENTS/NEW FREEWAYS 2008-2015			
Segment	Limits	Nominal Improvement	Estimated Cost
I-80	@ Patrick Interchange	Improve Interchange	\$6,913,000
I-80(eastbound)	East McCarran to Vista Blvd	Widen to 3 lanes	\$6,000,000
I-80(eastbound)	Rock Blvd to East McCarran (striping only)	Widen to 3 lanes	\$110,000
I-80(eastbound)	Keystone Avenue to US 395 (striping only)	Widen to 4 lanes	\$375,000
US 395	@ Moana Lane	Interchange Improvements	\$4,000,000
US 395	Moana Lane to I-80	Add northbound lane	\$70,000,000
US 395	@ Meadowood	Construct Interchange	\$42,310,000
ESTIMATED COST FREEWAY SYSTEM PLAN 2008-2018			\$129,708,000

FREEWAY SYSTEM CONGESTED SEGMENTS/NEW FREEWAYS 2016-2018			
Segment	Limits	Nominal Improvement	Estimated Cost
I-80	W McCarran Blvd to Keystone Avenue	Widen to 6 lanes	\$24,939,000
I-80	Virginia Street to Rock Blvd	Widen to 8 lanes	\$61,684,000
I-80	Sparks Blvd to Vista Blvd	Widen to 8 lanes	\$26,987,000
I-80	Vista Blvd to Lockwood	Widen to 10 lanes*	\$160,224,000
I-80	Lockwood to Mustang	Widen to 8 lanes	\$59,602,000
I-80	Mustang to Patrick	Widen to 6 lanes	\$117,220,000
US 395	Golden Valley Road to Stead Blvd	Widen to 6 lanes	\$78,575,000
US 395	@ Lemmon Drive	Improve Interchange	\$5,517,000
US 395	N Virginia Street to Golden Valley Road	Widen to 8 lanes	\$55,117,000
US 395	N McCarran Blvd to N Virginia Street	Widen to 6 lanes	\$43,451,000
US 395	@ Sutro	New Interchange	\$51,160,000
US 395	S Virginia/Kietzke to N McCarran Blvd	Widen to 10 lanes*	\$153,613,000
US 395	@ Moana Lane	Reconstruct Interchange	\$27,654,000
US 395	Neil Road to S Virginia/Kietzke	Widen to 8 lanes	\$22,131,000
US 395	S Meadows Parkway to Neil Road	Widen to 10 lanes*	\$100,175,000
US 395	S Virginia@Mt Rose to S Meadows Parkway	Widen to 8 lanes	\$67,566,000
US 395/Pyramid Freeway	US 395 to Sparks Blvd	New 6 lane freeway	\$312,812,000
Pyramid Hwy	US 395/Pyramid Freeway to La Posada Drive	Convert to 6 lane freeway	\$345,125,000

US 395/I-580/I-80	System wide ramps and freeways	Freeway Mgmt ITS Project	\$30,000,000
ESTIMATED COST FREEWAY SYSTEM PLAN 2016-2018			\$1,743,552,000

ADDITIONAL FREEWAY SYSTEM CONGESTED SEGMENTS/NEW FREEWAYS 2019-2030			
Segment	Limits	Nominal Improvement	Estimated Cost
I-80	Garson Road to West 4 th Street	Widen to 6 lanes	\$79,749,000
I-80	@ Garson Road	Improve Interchange	\$34,567,000
I-80	Robb Drive to West McCarran Blvd	Widen to 6 lanes	\$20,287,000
I-80	Keystone Avenue to Virginia Street	Widen to 8 lanes	\$22,287,000
I-80	Rock Blvd to Sparks Blvd	Widen to 8 lanes	\$103,953,000
I-80	Lockwood to East Truckee Canyon/Spanish Springs Connector	Widen to 10 lanes*	\$124,947,000
I-80	@ Tracy Clark	Construct Interchange	\$34,567,000
US 395	Stead Blvd to Cold Springs	Widen to 6 lanes	\$175,062,000
US 395	Golden Valley Road to Lemmon Drive	Widen to 8 lanes	\$29,396,000
US 395	Damonte Ranch Parkway to S Meadows Parkway	Widen to 10 lanes	\$37,639,000
East Truckee Canyon/Spanish Springs Connector	I-80 to US 395/Pyramid Freeway	New 6 lane freeway	\$624,938,000
US 395/I-580/I-80	System wide ramps and freeways	Freeway Mgmt ITS Project	\$18,000,000
ESTIMATED COST FREEWAY SYSTEM PLAN 2019-2030			\$1,305,392,000

*Note: A 10 lane segment is considered the maximum feasible improvement for the freeway system. The following segments will still not meet policy LOS at 10 lanes and will need to be addressed in a future RTP.

- I-80 US 395 to Rock Blvd
- I-80 East McCarran Blvd to the East Truckee Canyon/Spanish Springs Connector
- US 395 North McCarran Blvd to South Virginia/Kietzke
- US 395 Neil Road to South Meadows Parkway

REGIONAL ROAD SYSTEM CONGESTED SEGMENTS/NEW ROADS 2008-2015			
Segment	Limits	Nominal Improvement	Estimated cost
Lemmon Drive	Memorial Drive to US 395	New 2 lane road	\$3,364,000
McCarran Blvd	Greg Street to Longley Lane	Widen 4 to 6 lanes	\$36,391,000
McCarran Blvd	I-80 to 7 th Street	Widen 4 to 6 lanes	\$14,817,000
Moana Lane	S Virginia Street to US 395	Widen 4 to 6 lanes	\$15,862,000
Pyramid Highway	@McCarran Blvd	Intersection Improvements	\$71,000,000
Vista Blvd	Los Altos Parkway (north) to Wingfield Parkway	Widen 2 to 4 lanes	\$6,976,000
ESTIMATED COST REGIONAL ROAD SYSTEM PLAN 2008-2013			\$148,410,000

REGIONAL ROAD SYSTEM CONGESTED SEGMENTS/NEW ROADS 2016-2018			
Segment	Limits	Nominal Improvement	Estimated cost
4 th Street	I-80 to Mayberry Drive	Widen 2 to 4 lanes	\$382,000
4 th Street	Washington Street to Arlington Avenue	Widen 4 to 6 lanes	\$8,254,000
4 th Street	Virginia Street to Center Street	Widen 4 to 6 lanes	\$6,296,000

Calico Hills Road	Copper Canyon Parkway to #4 roundabout	New 2 lane road	\$2,625,000
Copper Canyon Parkway	Vista Blvd to Silver Stream Road	New 2 lane road	\$2,197,000
Damonte Ranch Parkway	Veterans Parkway to Rio Wrangler Parkway	New 2 lane road	\$5,859,000
Delores Drive	Lazy 5 Parkway (west) to Lazy 5 Parkway (east)	New 4 lane road	\$6,697,000
Double R Blvd	Double Diamond Parkway to Longley Lane	Widen 4 to 6 lanes	\$14,823,000
Eastern Slope Road	Loop Road to Copper Canyon Parkway	New 2 lane road	\$16,508,000
ETC/TRIC Frontage Roads	Mustang Interchange to USA Parkway	New 4 lane roads	\$96,497,000
Glendale Avenue	Rock Blvd to Industrial Way	Widen 4 to 6 lanes	\$8,559,000
Greg Street	Deming Way to I-80	Widen 4 to 6 lanes	\$22,988,000
Keystone Avenue	4 th Street to 7 th Street	Widen 4 to 6 lanes	\$7,121,000
Kietzke Lane	Moana Lane to Grove Street	Widen 4 to 6 lanes	\$10,147,000
Kiley Ranch Road	Lazy 5 Parkway to Henry Orr Parkway	New 2 lane road	\$4,854,000
Kirman Avenue/Sutro Street	2 nd Street to 4 th Street	Widen 4 to 6 lanes	\$9,445,000
Kirman Avenue	Mill Street to 2 nd Street	Widen 2 to 4 lanes	\$6,296,000
Lazy 5 Parkway	David Allen Parkway to Wingfield Hills	New 2 lane road	\$3,772,000
Lazy 5 Parkway	Pyramid Highway to David Allen Parkway	New 4 lane road	\$1,084,000
Lazy 5 Parkway	West Sun Valley Arterial to Pyramid Highway	New 4 lane road	\$23,655,000
Lemmon Drive	Lumber Pine Drive to Deodar Way	Widen 2 to 4 lanes	\$6,618,000
Lemmon Drive	US 395 to Sky Vista Parkway	Widen 4 to 6 lanes	\$1,843,000
Longley Lane	McCarran Blvd to Peckham Lane	Widen 4 to 6 lanes	\$6,296,000
Longley Lane	S Virginia Street to Maestro Drive	Widen 4 to 6 lanes	\$10,744,000
Loop Road	Vista Blvd to Eastern Slope Road	New 2 lane road	\$3,973,000
McCarran Blvd	Entire Length	6 Grade-Separated Intersections	\$169,000,000
McCarran Blvd	El Rancho Drive to Pyramid Highway	Widen 4 to 6 lanes	\$12,750,000
McCarran Blvd	Prater Way to Greg Street	Widen 6 to 8 lanes	\$22,320,000
McCarran Blvd	Smithridge Drive to S Virginia Street	Widen 6 to 8 lanes	\$7,201,000
McCarran Blvd	Kietzke Lane to Talbot Lane	Widen 6 to 8 lanes	\$8,143,000
McCarran Blvd	Lakeside Drive to Manzanita Lane	Widen 4 to 6 lanes	\$20,901,000
McCarran Blvd	Plumb Lane to Mayberry Drive	Widen 4 to 6 lanes	\$8,587,000
Mill Street Extension	McCarran Blvd to Southeast Connector	New 4 lane road	\$11,311,000
Mira Loma Drive	McCarran Blvd to Southeast Connector	Widen 2 to 4 lanes	\$5,269,000
North Connector	Lemmon Dr to Sun Valley Blvd	New 2 lane road	\$22,650,000
N Virginia Street	I-80 to 11 th Street	Widen 4 to 6 lanes	\$7,885,000
N Virginia Street	Sierra Street to Parr Blvd	Widen 4 to 6 lanes	\$7,116,000
Neighborhood Way	Eagle Canyon Drive to North Project Boundary	New 2 lane road	\$2,572,000
Neil Road	Model Way to Moana Lane	Widen 2 to 4 lanes	\$3,365,000
Pyramid Highway	Egyptian Drive to Calle de la Plata Drive	Widen 2 to 4 lanes	\$7,315,000
Pyramid Highway	McCarran Blvd to US 395/Pyramid Freeway	Widen 4 to 6 lanes	\$3,148,000
Rio Wrangler Parkway	Damonte Ranch Parkway to Veterans Parkway	New 2 lane road	\$4,340,000
Robb Drive Extension	4 th Street to I-80	New 2 lane road	\$8,783,000
S Virginia Street	Center Street to California Avenue	Widen 2 to 4 lanes	\$7,742,000
S Virginia Street	Plumb Lane to Mt Rose Street	Widen 4 to 6 lanes	\$11,018,000

S Virginia Street	Carano Lane to Plumb Lane	Widen 6 to 8 lanes	\$15,493,000
S Virginia Street	Kietzke Lane to Carano Lane	Widen 4 to 6 lanes	\$23,413,000
S Virginia Street	Neil Road to S McCarran Blvd	Widen 4 to 6 lanes	\$12,150,000
S Virginia Street	US 395 (@ Patriot) to Longley Lane	Widen 4 to 6 lanes	\$6,706,000
Sierra Street	College Drive to Putnam Drive	Widen 2 to 4 lanes	\$5,129,000
Silver Stream Road	Copper Canyon Parkway to eastern terminus	New 2 lane road	\$5,939,000
Somersett Parkway	Old US 40 to Somersett Parkway	New 2 lane road	\$9,496,000
South Meadows Parkway	Veterans Parkway to Sunny Hills Town Center	New 4 lane road	\$15,686,000
Southeast Connector	South Meadows Parkway to Greg Street	New 6 lane road	\$175,000,000
Sparks Blvd	Baring Blvd to Shadow Lane	Widen 4 to 6 lanes	\$5,566,000
Sparks Blvd	I-80 to Lincoln Way	Widen 4 to 6 lanes	\$7,057,000
Stonebrook Parkway	Delores Drive to La Posada Drive	New 2 lane road	\$8,665,000
Sun Valley Blvd	7 th Avenue to Highland Ranch Parkway	Widen 2 to 4 lanes	\$10,813,000
Sun Valley Blvd	US 395/Pyramid Freeway to 2 nd Avenue	Widen 4 to 6 lanes	\$7,386,000
Sutro Street Extension	Sunvilla Blvd to Clear Acre Lane	New 2 lane road	\$11,878,000
Sutro Street	McCarran Blvd to Sunvilla Blvd	Widen 2 to 4 lanes	\$8,248,000
Terminal Way	Plumb Lane to Mill Street	Widen 4 to 6 lanes	\$10,026,000
Veterans Parkway	Geiger Grade to Rio Wrangler Parkway	New 4 lane road	\$3,148,000
Village Parkway	White Lake Parkway to Cold Springs Drive	Widen 2 to 4 lanes	\$8,188,000
Vista Blvd/Sparks Blvd Connector	Sparks Blvd to Vista Blvd	New 6 lane road	\$7,073,000
Wells Avenue	6 th Street to I-80	Widen 4 to 6 lanes	\$6,296,000
Wells Avenue	Mill Street to Kuenzli Street	Widen 4 to 6 lanes	\$9,783,000
Wells Avenue	Vassar Street to Ryland Street	Widen 2 to 4 lanes	\$8,169,000
West Sun Valley Arterial	Dandini Blvd to Eagle Canyon	New 4 lane road	\$42,485,000
Winnemucca Ranch Road	Spring Mountain Town Center to Pyramid Hwy	New 2 lane road	\$69,968,000
Traffic Signals	Systemwide		\$154,274,000
ESTIMATED COST REGIONAL ROAD SYSTEM PLAN 2016-2018			\$1,286,984,000

ADDITIONAL REGIONAL ROAD SYSTEM CONGESTED SEGMENTS/NEW ROADS 2019-2030			
Segment	Limits	Nominal Improvement	Estimated cost
4 th Street	Ralston Street to Arlington Avenue	Widen 6 to 8 lanes	\$1,650,000
4 th Street	Vine Street to Washington Street	Widen 4 to 6 lanes	\$825,000
4 th Street	Mayberry Drive to Summit Ridge Road	Widen 2 to 4 lanes	\$20,329,000
4 th Street	Mesa Park Road to Mayberry Drive	Widen 4 to 6 lanes	\$2,633,000
Arrowcreek Parkway	Wedge Parkway to Zolezzi Lane	Widen 2 to 4 lanes	\$5,382,000
Geiger Grade	Rim Rock Road to Toll Road	Widen 2 to 4 lanes	\$9,131,000
Geiger Grade	S Virginia Street to Veterans Parkway	Widen 4 to 6 lanes	\$3,419,000
Glendale Avenue	Galletti Way to Rock Blvd	Widen 4 to 6 lanes	\$6,763,000
Greg Street	Southeast Connector to I-80	Widen 6 to 8 lanes	\$17,699,000
Keystone Avenue	4 th Street to I-80	Widen 6 to 8 lanes	\$2,475,000
Lazy 5 Parkway	Delores Drive to Wingfield Hills Drive	Widen 2 to 4 lanes	\$4,973,000
Lemmon Drive	Sky Vista Parkway to Military Road	Widen 4 to 6 lanes	\$5,052,000
Lemmon Drive	US 395 to Sky Vista Parkway	Widen 6 to 8 lanes	\$2,118,000
Longley Lane	Double R Blvd to McCarran Blvd	Widen 6 to 8 lanes	\$9,495,000

Longley Lane	S Virginia Street to East Huffaker Lane	Widen 6 to 8 lanes	\$7,420,000
McCarran Blvd	Entire Length	3 Grade Separated Intersections	\$120,000,000
McCarran Blvd	I-80 to Mae Anne Avenue	Widen 6 to 8 lanes	\$4,055,000
McCarran Blvd	7 th Street to N Virginia Street	Widen 4 to 6 lanes	\$29,867,000
McCarran Blvd	US 395 to El Rancho Drive	Widen 6 to 8 lanes	\$10,717,000
McCarran Blvd	Greg Street to Longley Lane	Widen 6 to 8 lanes	\$27,286,000
McCarran Blvd	Neil Road to Smithridge	Widen 6 to 8 lanes	\$5,640,000
McCarran Blvd	Talbot Lane to Plumas Street	Widen 6 to 8 lanes	\$5,059,000
Mill Street	US 395 to Terminal Way	Widen 4 to 6 lanes	\$9,372,000
Moana Lane	Kietzke Lane to US 395	Widen 6 to 8 lanes	\$8,704,000
N Virginia Street	Parr Blvd to Business 395	Widen 4 to 6 lanes	\$4,335,000
N Virginia Street	Sierra Street to Parr Blvd	Widen 6 to 8 lanes	\$5,618,000
Neil Road	Marvel Way to McCarran Blvd	Widen 2 to 4 lanes	\$3,156,000
Parr Blvd	N Virginia Street to US 395	Widen 2 to 4 lanes	\$4,500,000
Pyramid Highway	Calle de la Plata Drive to Winnemucca Ranch Rd	Widen 2 to 4 lanes	\$47,088,000
Pyramid Highway	Egyptian Drive to Calle de la Plata	Widen 4 to 6 lanes	\$6,806,000
Pyramid Highway	McCarran Blvd to US 395/Pyramid Freeway	Widen 6 to 8 lanes	\$22,260,000
Pyramid Highway Extension	Mill Street to Nugget Avenue	New 4 lane road	\$31,999,000
Red Rock Road	Moya Blvd to Evans Ranch Access	Widen 2 to 4 lanes	\$21,096,000
S Virginia Street	Mt Rose Street to California Avenue	Widen 4 to 6 lanes	\$19,118,000
S Virginia Street	Plumb Lane to Wells Avenue	Widen 6 to 8 lanes	\$3,148,000
S Virginia Street	Moana Lane to Carano Lane	Widen 6 to 8 lanes	\$13,866,000
S Virginia Street	South Hills Drive to Longley Lane	Widen 6 to 8 lanes	\$25,836,000
S Virginia Street	Geiger Grade to US 395	Widen 6 to 8 lanes	\$8,837,000
Sierra Street	I-80 to College Drive	Widen 2 to 4 lanes	\$14,506,000
Sky Vista Parkway	Silver Lake Road to Lemmon Drive	Widen 2 to 4 lanes	\$15,107,000
South Meadows Pkwy Ext	Veterans Parkway to Rio Wrangler Parkway	Widen 4 to 6 lanes	\$12,998,000
Village Parkway	US 395 to White Lake Parkway	Widen 2 to 4 lanes	\$9,115,000
Vista Blvd	Wingfield Hills Drive to Wingfield Springs Drive	Widen 2 to 4 lanes	\$2,879,000
Vista Blvd	I-80 to Prater Way	Widen 4 to 6 lanes	\$8,374,000
Wells Avenue	Ryland Street to Mill Street	Widen 4 to 6 lanes	\$3,148,000
Wells Avenue	S Virginia Street to Vassar Street	Widen 2 to 4 lanes	\$1,170,000
White Lake Parkway	US 395 to Crystal Canyon Blvd	Widen 2 to 4 lanes	\$13,645,000
Winnemucca Ranch Road	Spring Mountain Town Center to Pyramid Highway	Widen 2 to 4 lanes	\$35,764,000
Winnemucca Ranch Road	California State Line to Spring Mountain Town Center	New 2 lane road	\$57,015,000
Traffic Signals	Systemwide		\$77,137,000
ESTIMATED COST REGIONAL ROAD SYSTEM PLAN 2019-2030			\$788,585,000

**Table 3-7
Phasing Plan—Street and Highway System
Illustrative Facilities Plan - Currently Unfunded Needs****

FREEWAY SYSTEM CONGESTED SEGMENTS/NEW FREEWAYS 2031-2040			
Segment	Limits	Project	Estimated Cost
I-80	Crystal Park Road to Garson Road	Widen to 6 lanes	\$45,379,000
I-80	West 4 th Street to Robb Drive	Widen to 6 lanes	\$41,495,000
I-80	Virginia Street to US 395	Widen to 10 lanes	\$44,262,000
I-80	US 395 to Rock Blvd	Widen to 10 lanes*	\$34,845,000
I-80	Rock Blvd to East McCarran Blvd	Widen to 10 lanes	\$40,713,000
I-80	East McCarran Blvd to Vista Blvd	Widen to 10 lanes*	\$58,987,000
I-80	East Truckee Canyon/Spanish Springs Connector to Patrick	Widen to 10 lanes	\$90,619,000
I-80	Patrick to USA Parkway	Widen to 6 lanes	\$107,860,000
US 395	N Virginia Street to Lemmon Drive	Widen to 10 lanes	\$73,490,000
US 395	N McCarran Blvd to N Virginia Street	Widen to 8 lanes	\$45,910,000
US 395	Neil Road to S Virginia/Kietzke	Widen to 10 lanes	\$22,131,000
US 395/I-580	@ I-80	Reconstruct Interchange	\$194,299,000
US 395/I-580/I-80	System wide ramps and freeways	Freeway Mgmt ITS Project	\$12,000,000
ESTIMATED COST FREEWAY SYSTEM PLAN 2031-2040			\$811,989,000

*NOTE: A 10-lane segment is considered the maximum feasible improvement for the freeway system. The following segments will still not meet policy LOS at 10 lanes and will need to be addressed in a future RTP.

- I-80 US 395 to Rock Blvd
- I-80 East McCarran Blvd to the East Truckee Canyon/Spanish Springs Connector
- US 395 North McCarran Blvd to South Virginia/Kietzke
- US 395 Neil Road to South Meadows Parkway

REGIONAL ROAD SYSTEM CONGESTED SEGMENTS/NEW ROADS 2031- 2040			
Segment	Limits	Project	Estimated Cost
4 th Street	Keystone Avenue to Vine Street	Widen 4 to 6 lanes	\$3,973,000
Longley Lane	East Huffaker Lane to Double R Blvd	Widen 6 to 8 lanes	\$1,650,000
McCarran Blvd	Entire Length	3 Grade-Separated intersections	\$120,000,000
McCarran Blvd	S Virginia Street to Kietzke Lane	Widen 6 to 8 lanes	\$7,007,000
McCarran Blvd	Sky Mountain Drive to I-80	Widen 4 to 6 lanes	\$3,733,000
McCarran Blvd	Mae Anne Avenue to 7 th Street	Widen 6 to 8 lanes	\$4,149,000
S Virginia Street	Peckham Lane to Moana Lane	Widen 6 to 8 lanes	\$8,206,000
South Meadows Parkway	Veterans Parkway to Rio Wrangler Parkway	Widen 6 to 8 lanes	\$14,449,000
South Meadows Parkway	Double Diamond Parkway to Veterans Parkway	Widen 4 to 6 lanes	\$18,882,000
Wells Avenue	6 th Street to I-80	Widen 6 to 8 lanes	\$6,297,000
Traffic Signals	Systemwide		\$77,137,000
ESTIMATED COST REGIONAL ROAD SYSTEM PLAN 2031-2040			\$265,483,000

** The RTP for federal air quality and financial conformity purposes goes through the year 2030. The Plan also contains for illustrative purposes additional unfunded improvements and needs analysis through the year 2040.

Long, Long-Range Planning

The RTC is in the process of developing a planning effort termed “the Long, Long-Range Plan”. This process will identify future transportation corridors in a post-RTP time frame. Upon completion of this process, the results will be incorporated into the RTP.