City of Phoenix

Transportation System Plan

Chapter 1

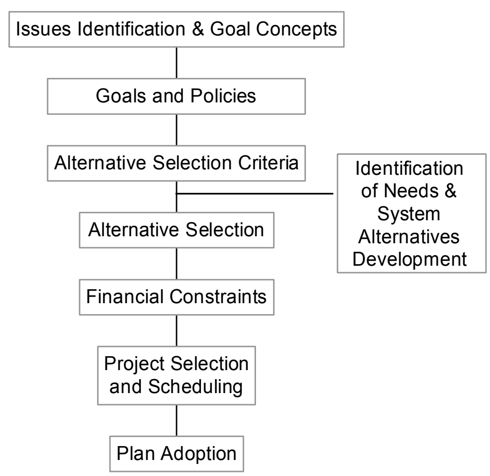
Introduction

The City's Transportation System Plan (TSP) reflects the efforts of citizens working with the City's Planning staff to meet the existing and future mobility needs of the City's residents. Over a period of eleven months, members of the Citizens Public Advisory Committee, Planning Commission members and City Councilors met to aid in the development of the Plan.

Development of a TSP relies upon the completion of a multiplicity of interrelated and dependent tasks. The critical steps or milestones are summarized in Figure 1-1.

FIGURE 1-1

Critical Steps in the TSP Planning Process



The TSP incorporates a wide range of regional and statewide objectives. Conceptually, the City's Plan is one of three transportation plans. Together, they create a transportation system. The system works only as well as any individual plan. Only the local TSP is described here. The other plans include the Rogue Valley Metropolitan TSP, known as the MPO RTP, and modal plans of the Oregon Department of Transportation.

The City's TSP can be largely divided into two major sections; existing system and needs, and future system. The former relies upon extensive inventories of the existing system (Chapter 2). Each relevant travel mode; bicycle, pedestrian, street, and transit is described. Also included in Chapter 2 is an inventory of bridges. The City's land uses are supported and served by the transportation system. Chapter 3 details the City's recent initiative to increase transportation and land use efficiency while bolstering economic development and community livability. Using the information contained within these initial chapters provides a context for assessing and describing the transportation needs. These needs are described in Chapter 4.

The balance of the document is dedicated to describing the function and future changes or system improvements that will be necessary to ensure its function and integrity. Each chapter provides a detailed description of a particular aspect of the transportation system. Chapter 5 is dedicated to detailing the function and classification of the street network and associated supporting land uses. Chapter 6 details the expected revenues that are forecast to be available during the twenty-year planning horizons. Five different strategies, including a no-build alternative, are reviewed and evaluated within Chapter 7. Finally, in Chapter 8, financial constraints are imposed upon the preferred alternative to identify crucial individual projects included in the preferred alternative. Individual modal plans are described in Chapter 9 along with plans for parking, access management, and plan coordination.

Why Plan

Transportation system plans are a required part of local comprehensive plans. TSP's must meet the needs of the community and satisfy established State standards. Meeting both State and local objectives within one plan is difficult but this approach mirrors our own perception of the transportation system. The transportation system functions as a system. People do not expect nor care to observe changes in ownership, function or design as they travel between jurisdictions. In fact, much of the value of the transportation system lies in its connectivity and continuity.

Unfortunately most modes of travel are not supported by a fully functional, continuous network. Only the street network, of the local relevant modes, can be characterized as ubiquitous and well connected. However, its connectivity can only be assured through long-range planning. Too often, individual and isolated decisions can disrupt the continuity and create missing links or miss-aligned links in an otherwise safe, continuous and well connected system (observe the Cheryl Road and Fern Valley Road intersection).

Throughout most of Phoenix's history, transportation facilities and investments have been dedicated to support the expansion of the system of auto travel. "Over the years the automobile has entrenched itself in our economy, in our psyches and in our physical surroundings.[1]" Dependence on a single mode of travel jeopardizes our mobility, community, and economic welfare. Oil shortages (seemingly remote at present but a stark reality of the late 1970's), traffic congestion (seemingly ever present and growing worse), and fouled air (an ever-present concern in a region subject to almost daily temperature inversions) are likely impacts of continued reliance upon the auto mode.

The TSP will ensure that our transportation system becomes more multi-modal. When combined with other comprehensive plan initiatives the community will become more transportation and land use efficient. Residents will enjoy choice of modes and become less dependent upon their automobiles. Auto travel and congestion, none the less, will continue to grow as the city's and region's populations grow.

One measure of the success of the Plan will be the degree to which individuals rely upon their autos for mobility. Will we travel, as individuals, more or less by auto? The TSP

[1] The Elephant in the Bedroom, Stanley Hart & A. Spivak, 1993, p. 149

hopes to foster stability in the vehicle miles of travel per person and achieve a slight decline, five percent, during the twenty-year planning horizon. The Plan envisions that this reduction will be achieved through a variety of changes; shorter auto trips, substitution of walking or bicycling for auto trips, an increasing incidence of people working from their homes (see Economy Element, Goal 5), greater use of public transit, and a higher incidence of carpooling. Utilizing a multitude of strategies will bolster the potential for success, ensure individuals enjoy greater modal choice, and foster improved community livability.

Chapter 2

System Characteristics

The existing transportation system is not multi-modal. The lane miles, frequency of use, miles of travel, number of vehicles, land dedication, maintenance expenditures, and total investment are disproportionately dedicated to the auto mode. The descriptions that follow detail the characteristics of relevant local modes: pedestrian, bicycle, transit, and motor vehicle. The information is based upon extensive inventories that are stored in the City's geographic information system.

Pedestrian

Pedestrian facilities within the City are a series of scattered links that do not constitute a network of facilities. Consequently, pedestrians are compelled to utilize a combination of sidewalks, streets, and paved and unpaved shoulders to go virtually anywhere. That is unless one lives in the Barnum and Meadow View Subdivisions, or along Main Street. A walk trip that has its origin and destination within or along one of these areas can be made on sidewalks. Unfortunately most pedestrians will find that trips cannot be confined to the Barnum or Meadow View Subdivisions, or along Main Street. It's likely some part of the trip must be made along streets without sidewalks. That is also the case for most school-aged children walking to the Elementary School or High School.

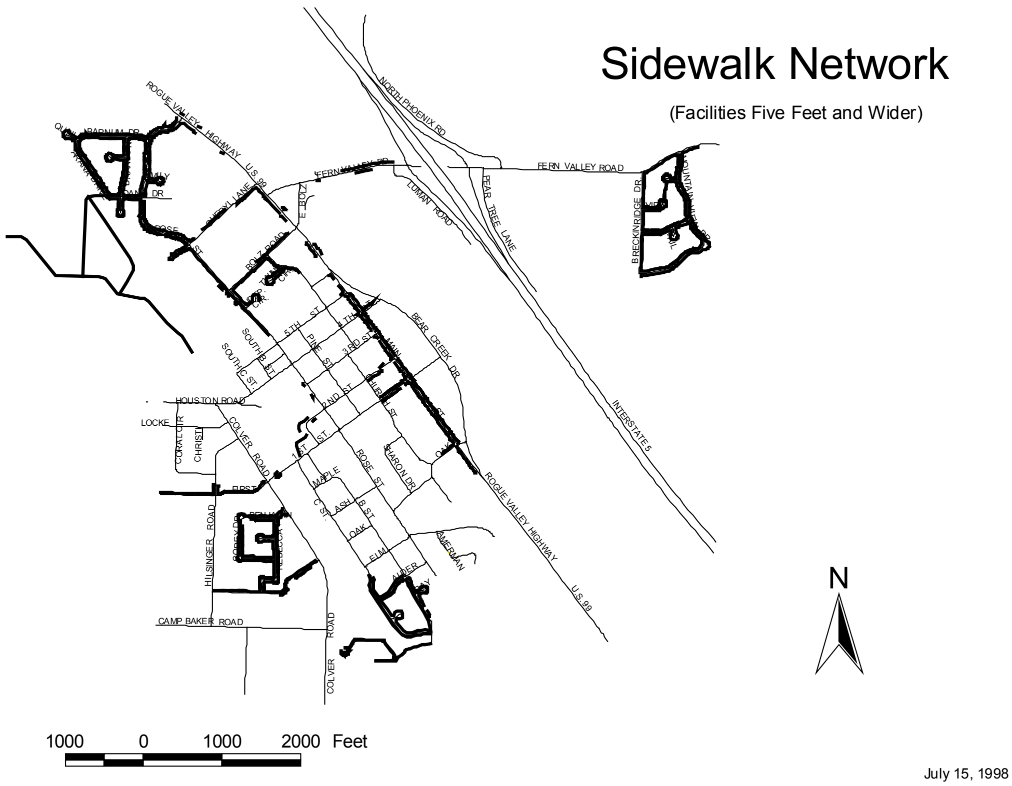
The City's pedestrian system contains almost 11.7 miles of asphalt, concrete and unsurfaced links. Seventy-five percent of the system is composed of five feet wide concrete sidewalks. Almost ten percent of the existing system is four feet or narrower. If all streets in the City had sidewalks on both sides, the system would be almost 36 miles in length.

TABLE 2-1
Distribution of Sidewalks by Width and Surface

By Length (in Feet)	Surface			
Width	Asphalt	Concrete	Unsurfaced	Grand Total
2 Feet	2,396	78	0	2,474
3 Feet	305	1,027	0	1,333
4 Feet	148	1,206	726	2,081
5 Feet	306	46,088	2,383	48,777
6 Feet	0	645	0	645
8 Feet	442	457	2,304	3,203
10 Feet	0	0	2,788	2,788
12 Feet	369	0	0	369
Grand Total	3,967	49,502	8,201	61,669

Figure 2-1 depicts the existing pedestrian network.

FIGURE 2-1
Existing Sidewalk Network



"The minimum width of sidewalks directly adjacent to a motor vehicle lane is 1.8 m (6 feet). Greater sidewalk widths are needed in high pedestrian use areas, such as central business districts.[2] Few sidewalks within the City meet this standard. As noted earlier, typically City sidewalks are five feet in width. This narrower width is appropriate on local streets (not collectors or arterial streets) or where width constraints exist. On higher volume streets, pedestrians require more separation from nearby vehicles. Separation can be achieved by adding planting strips, permitting parking adjacent to the curb, or striping bicycle lanes adjacent to the curb line.

The six-foot wide standard allows two pedestrians to walk side by side, or to pass each other comfortably. It also allows two pedestrians to pass a third without forcing one pedestrian off the sidewalk. Obstructions in the sidewalk area, power poles, signs, fire hydrants, trees, and street lights reduce the effective width of the sidewalk. When obstacles are present, sidewalks should be widened or the obstructions placed in a planter strip.

The relationship of buildings adjoining the sidewalk is another consideration in establishing sidewalk widths. When buildings or shoulder-high retaining walls and fences abut the sidewalk, an additional 0.6 m (2 ft) shy distance (the distance separating

[2] Oregon Bicycle Pedestrian Plan, 1995, p. 91

a pedestrian and the wall) is needed. Similarly, on bridges the standard should be widened to 2.1 m (7 feet) to account for shy distances from the bridge rail.

Unpaved but hard packed, all weather surfaces can be a substitute for paved surfaces in unroaded areas (and a viable interim surface adjacent to City streets without curbs and gutters). The width standards for unpaved walkways are identical to those for paved sidewalks. Existing examples of unpaved ways occur in Colver Road Park, Pioneer Cemetery, and the canal / County property northwest of town. The walkways at Colver are compacted granite and offer all weather paths. Conversely, the graveled path in the Pioneer Cemetery, and the dirt paths in the northeast are poor substitutes for all-weather, smooth, compacted surfaces. Non-paved surfaces require considerably more maintenance because they are susceptible to erosion.

Sidewalks are the most crucial element of the pedestrian network. Additionally, benches, awnings, street trees and other landscaping, water fountains, and public rest rooms make walking more practical and enjoyable: key factors in making walking a viable mode of travel. The addition of pedestrian amenities is particularly important in high volume pedestrian locations such as the City Center or near schools.

Approximately 75 percent of the City's residents live within a quarter mile of existing commercial areas. That distance is considered typical for a walk trip. But without adequate facilities, walk trips to these areas may, out of necessity, be made by auto. Similarly, the majority of school aged children live within walking distance of the schools. But parents often drive their children to school out of concern for safety if children must walk in the travel lane for at least a part of the trip. A complete network of sidewalk facilities is fundamental to ensure that walking is a viable transportation mode.

Bicycle Network

"Network" is not an appropriate term when applied to the City's bicycle facilities. Bicycle paths are widely scattered throughout the City as unlinked isolated segments. Bicyclists and auto drivers must share travel lanes. For mature, experienced daily bicycle commuters that may be tolerable. But for younger, older, or less experienced riders sharing the standard width travel lane, this poses high risks for injury. According to the 1990 U.S. Census only 1.5 percent of all commuters rode bicycles or used other means to get to work. Surprisingly, that compares quite favorably to national averages that show less than one-half of one percent use bicycles to get to work. Table 2-2 compares modes of travel to work by Phoenix residents.

TABLE 2-2

Mode of Commuting to Work (workers 16 years of age and older)

Mode	Number of Residents	Percent of Total
Drove Alone	1,082	84.1
Carpooled	95	7.4
Using Public Transportation	6	0.5
Bicycling and other means	19	1.5
Walked or worked at home	84	6.5

1990 U.S. Census

Approximately 800 bicycle/motor vehicle crashes are reported Statewide each year; including 10 - 15 fatalities (1% - 2%). Overall, fault is shared evenly between auto drivers and bicyclists. Failure to follow rules (often out of ignorance) accounts for most accidents. Table 2-3 describes Statewide accidents and their cause.

Wrong way riding is the leading cause of crashes when bicyclists are at fault. Silly as it may seem, bicyclists have the mistaken belief that riding against the traffic is somehow safer. After all, bicyclists can then observe the behavior of oncoming auto drivers. Unfortunately, doing so lessens the likelihood that auto drivers will see the bicyclist, especially at intersections. Bicyclists riding against the traffic aren't seen by auto drivers as they enter, cross, or leave the roadway because auto drivers look for "traffic" in the opposite direction; wrong-way riders are not noticed. Most wrong way riders are observed where bicycle lanes are lacking and auto vehicle speeds are high.

TABLE 2-3
Bicycle / Motor Vehicle crashes: 1994 Statewide Statistics

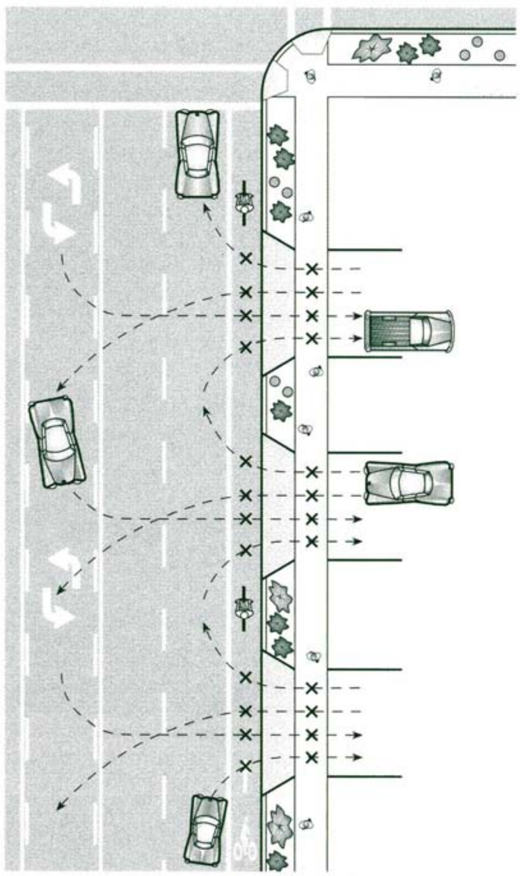
Percent of Total	Percent of Type	Accidents
45		Accidents occurring at Intersections.
	60	Motorist failed to yield to bicyclist at a stop, signal or turn.
	40	Bicyclist failed to yield to motorist at a stop, signal or turn.
20		Accidents occurring at mid-block (driveway or alleyway).
	60	Motorist improperly entered or left the road.
	40	Bicyclist improperly entered or left the road (mostly young riders).
17	100	Bicyclist riding wrong way.
8		Accidents caused by turning or swerving movements.
	62	Bicyclist turned or swerved.
	38	Motorist turned or swerved.
3	100	Accident occurred when cyclist was hit from behind by a motorist
1	100	Motorist opening car doors into path of cyclist.
6	100	Miscellaneous causes.

Source: Oregon Bicycle and Pedestrian Plan, 1995

Lack of designated bike lanes and uncontrolled access along the City's major roadways exponentially increases the risk of accidents. Instead of being exposed to only minimal shy distances bicycle riders are also exposed to autos turning left and right and entering and exiting multiple driveways. Figure 2-2 illustrates the location of potential accidents or points of conflict.

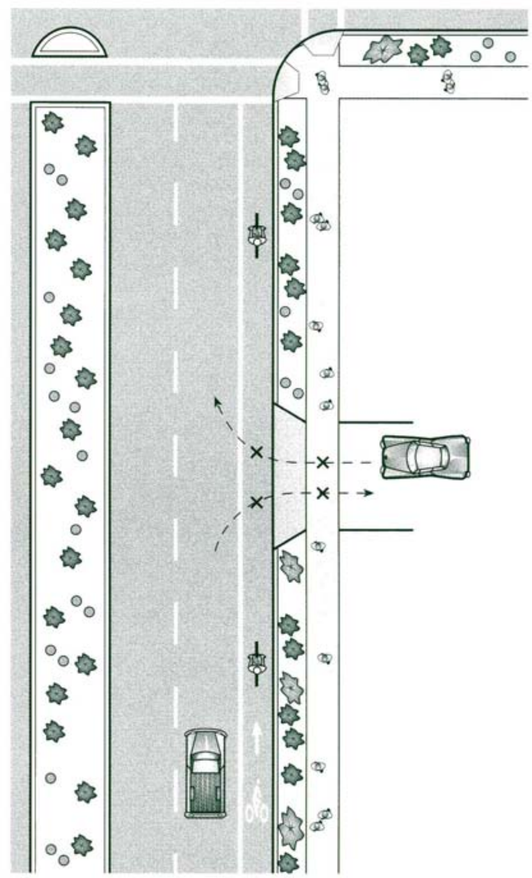
FIGURE 2-2

Potential conflict points



Uncontrolled accesses create 8 potential conflict points at every driveway.

Figure 2.2.A
Uncontrolled accesses
- conflict points-



A raised median and consolidating driveways reduce conflict points.

Figure 2.2.B
A raised median w/
consolidated driveways
- conflict points-

The Rogue Valley Highway north and south of the Bear Creek Drive/Main Street couplet has all the conflicts illustrated on in Figure 2.2.A , except the Highway doesn't include continuous sidewalks. Figure 2.2.B is similar to Fern Valley Road between Luman and Bear Creek Bridge, except this section lacks a median barrier and planting strip.

Table 2-4 details the inventory of existing bicycle facilities. The inventory includes the three-foot wide paved shoulders along the Rogue Valley Highway. Inclusion is intended to illustrate the deficiency; not its sufficiency. This is especially true given the relatively high traffic volumes and vehicle speeds on this facility.

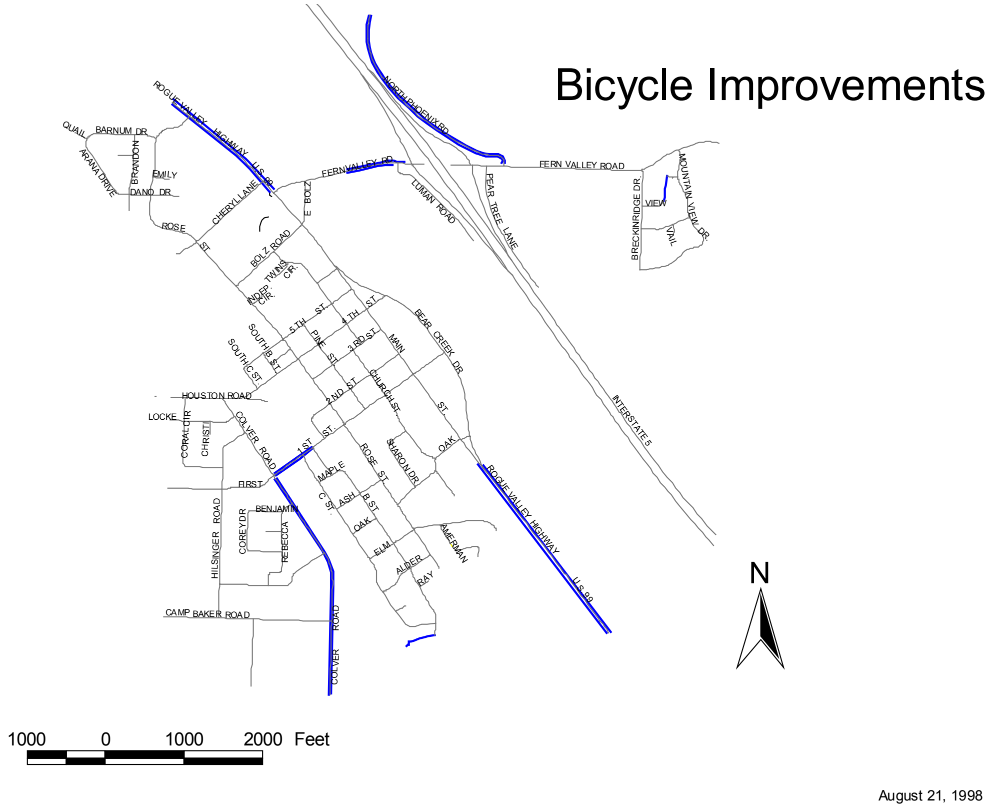
TABLE 2-4
Bicycle Facilities by Length (in feet)

	Type				
Width	**Bike Lane**	**Multi-use Path**	**Pave Shoulder**	**Shoulder Bikeway**	**Grand Total**
3 Feet	0	0	8,256	0	8,256
5 Feet	2,345	0	0	5,553	7,898
6 Feet	0	0	0	5,254	5,254
8 Feet	0	300	0	0	300
12 Feet	0	379	0	0	379
Grand Total	2,345	678	8,256	10,807	22,087

If major roads within the UGB (Rogue Valley Highway, Main, Bear Creek Drive, Fern Valley, 1st, 4th, Rose, and Cheryl Lane, and Colver and Houston) included bike lanes, the system would be roughly 63,250 feet (12 miles) long. Instead, the existing network is roughly one-third this length; almost 75 percent is substandard in width.

Existing bicycle facilities are shown on Figure 2-3. It should be noted that the railroad crossing in the vicinity of Colver Park is not an official crossing. However, the importance of the link between South B and the Park cannot be over emphasized.

FIGURE 2-3
Bicycle Facilities



Again, it should be noted that the three-foot wide paved shoulder on the Rogue Valley Highway is shown to illustrate the importance of the link, not to imply its functional adequacy.

Transit Network

The transit network is important not so much for the facilities within the City but rather the linkages that it offers to the rest of the region. The Rogue Valley Transportation District (RVTD) operates fixed route and paratransit services within its 150 square mile district. Fixed routes are those operated on a **fixed** schedule and over a **fixed** route. Paratransit services are operated on an advanced reservation basis without an established route or schedule. The paratransit services serve pre-qualified, physically or mentally disabled individuals, who cannot physically utilize the fixed route system.

The fixed route service accounts for 86 percent of all ridership. The routes are operated Monday through Saturday and cover approximately 210 daily route miles. The 23 vehicle bus fleet include 10 compressed natural gas buses and 13 diesel vehicles. All are equipped with bike racks which allow passengers to complete multi-modal trips using a bicycle and the District's bus system.

Only one of the District's 10 routes serves Phoenix. But that route is the longest, operates more hours of the day, provides among the highest service frequency, and carries 50 percent of the District's ridership. Bus headways are consistent throughout the day with buses arriving and departing from Phoenix stops every 30 minutes. Consequently, peak headways (the delay between bus arrivals in the early morning and late afternoon) do not shorten as is typical of most transit systems. Buses on the Medford - Phoenix - Ashland route typically provide seating for 45 people, of which only about 15 are occupied during the non-peak period. But during the peak period (rush hour) buses arrive in Phoenix from Ashland and Medford without a single vacant seat available for Phoenix passengers. The average trip distance on Route 10 is approximately 6.5 miles.

The District maintains ten bus stops within the City. They are scattered roughly every quarter mile along the Rogue Valley Highway. Passenger amenities vary but six of the stops are denoted and improved with only a bus stop sign. The remaining four stops have a bus shelter with seating for five adults and trash receptacles. None of the stops include bike racks, park and ride lots, drinking fountains, telephones, rest rooms, etc. and are not associated with transit oriented development. Stops on the southerly and northerly extremes of the City are not served by sidewalks.

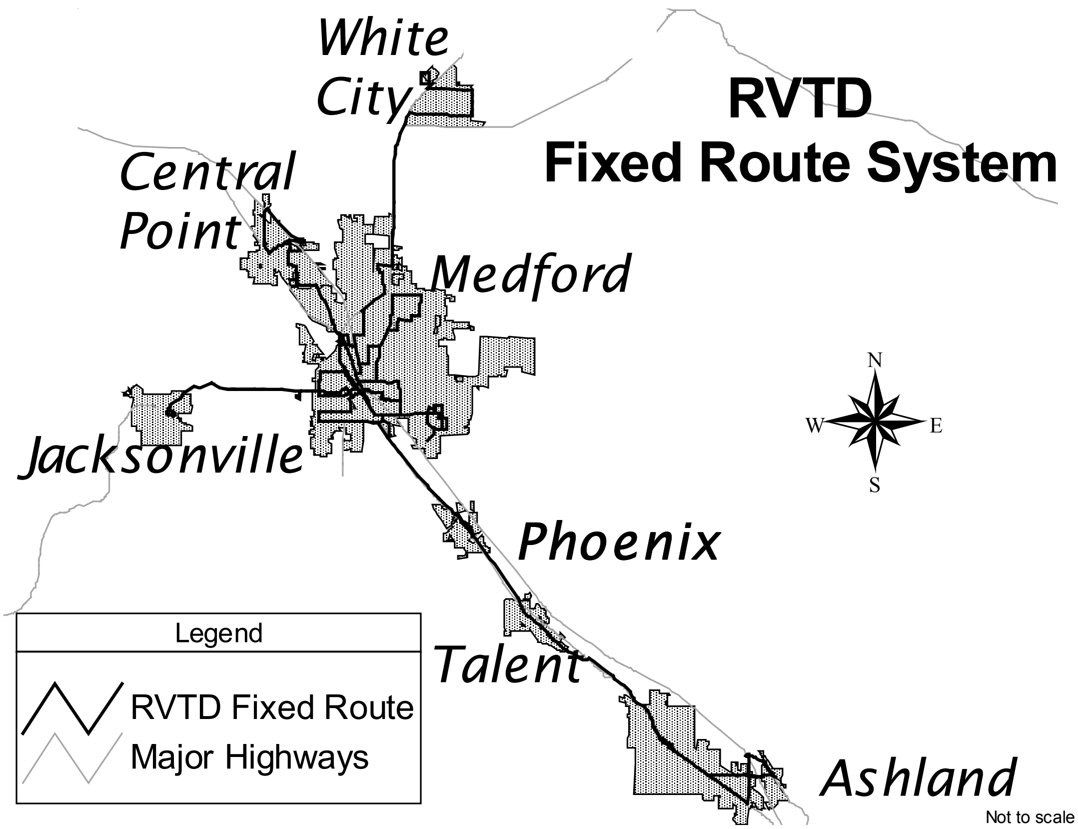
The District's paratransit services are crucial to the independence and quality of life of disabled persons. The program ensures that people who physically cannot use the District's fixed route service, can travel as frequently, at the same time of day, and to the same destinations as a typical bus rider. Technically, origins and destinations must lie within one-quarter mile of a fixed route. Paratransit passengers receive on-demand service through local taxi cabs and need not call in advance.

Geographic scope or spatial distribution are key elements of the District's services. All the major incorporated cities within the Bear Creek Valley and White City are served. Consequently, the majority of the developed areas of the region are accessible using public transit. The system connects major activity centers and corridors throughout the Bear Creek Valley. Figure 2-4 illustrates the RVTD's existing fixed route system.

Despite the wide distribution of the service and the quality of service available within Phoenix, few people actually use transit. According to the 1990 U.S. Census only one-half of one percent of people commuting to work from Phoenix used the Districts' services. Most people, an estimated 91.5 percent, drove alone or carpooled to work. Based upon data compiled by the U.S. Department of Transportation, Urban Mass Transportation Administration, transit in small urban areas typically captures between six to eight percent of work trips in households with two or more vehicles and as many as 55 percent when no vehicles are available.[3]

FIGURE 2-4
RVTD Routes

[3] Analyzing Transit Options for Small Urban Communities, D.H. James, 1978, p. V.91



The District's services are paid for by a combination of property taxes, state and federal grants, advertising revenues, and passenger fares. Passenger fares account for only 25 percent of the total operating costs (those associated with operating the services not the purchase of vehicles and other capital equipment). Since its creation in 1975 and approval of a permanent tax base in 1982, the District has from time to time proposed special levies to enhance its services. All have failed to win voter approval, including the proposed levy in 1996. Nonetheless, at a cost of approximately $75.00 per service hour and considering the tremendous gap between the existing services and those needed, increased revenues are essential. The District has developed a strategy to meet future public transportation needs within its 10 Year Community Transportation Plan.

Increasing service frequencies to 15 minutes, at least at peak times and preferably throughout the day, and the creation of community based van service would substantially improve the quality of transit services within the City. "While there are many factors that contribute to transit ridership, the level and frequency of service on the street is a key element in maintaining and/or attracting a ridership base."[4] The benefits of combining reduced headways with decreased fares has been demonstrated with RVTD's/Southern Oregon University's pass program and in other cities worldwide. Fifteen minute headways ensures that a passenger will wait, on average, no longer than seven and half minutes for a bus. That eliminates the burden of referring to or knowing the bus schedule thus permitting considerably more trip-making flexibility.

[4] RVMPO Regional Transportation Plan 1995 - 2015, January 1997, p. 86

In addition to operations improvements, providing bike racks and other passenger amenities at bus stops would make the service more attractive. Shelters are already installed at four stops within the City. Adding passenger amenities at these locations and upgrading other stops would significantly improve the overall quality of service.

RVTD operates two additional transportation services. The first provides special direct rides by subscription for employee groups and other organizations with "specific purpose/destinations." The second, a carpool program serving Northern California and Jackson and Josephine Counties, is believed to "have excellent potential for expanding this program further by doing extensive marketing and education that sways transportation behavior and attitudes away from dependency on single-occupancy auto trips and encourages cities to support this type of transportation through parking, toll roads, etc." [5]

Street System

The street system carries the vast majority of local travel. In fact, all local modes of travel utilize the street system; sidewalks, bikeways, and transit buses operate within the street right-of-way. The street right-of-way should accommodate all these modes and plus serve a multitude of other uses: recreation, social meeting areas, open space, and community beautification.

The street system is composed of more than 200 individual links. The street segments surround each city block and help create a modified grid system. This network of streets makes travel between virtually any two points within the City convenient with little out of direction or circuitous travel. Dead end streets or cul-de-sacs are relatively rare and those that do exist are short; most less than 300 feet. These streets are limited to areas immediately adjacent to the urban growth boundary, lands lying between Colver Road and the railroad tracks, or on steeply sloping lands.

The most prevalent function of the street system is to provide parking areas and travel lanes for automobiles. With connections to the interstate, state highway, and regional network, the system functions extremely well for this purpose. Interstate 5, Exit 24, provides ready access to regional, statewide, and interstate locations. That's despite the fact, that the interchange and street network in the immediate vicinity is functionally obsolete (remaining virtually unchanged since its construction in 1964).

The Rogue Valley Highway (Oregon Highway 99) parallels Interstate 5 and serves regional travel demands. The Highway provides links to the nearby cities of Talent and Medford and provides linkages (like the interstate) to other State highways within the region. The extent of duplicity in the function of the two facilities is not known. However, it is clear that personal preferences rather than facility function or accessibility account for some of the trips on Highway 99. As congestion on this facility grows and travel times increase, some travelers will choose to use the Interstate rather than tolerate delays.

The balance of the system is composed of a mixture of local and "market roads." The later is County roads originally designed and located to provide farmers access to markets, cities, railroads, and warehouses. While that function remains, the County

[5] Ten-Year Community Transportation Plan, RVTD, 1996, p. 31

roads predominately carry autos between urban services and jobs, and rural or country homes.

Local roads are, almost exclusively, owned and maintained by the City. There is one public road, Cheryl Lane, where the right-of-way has been dedicated to the public but the roadway surface is not maintained by any public entity.

The street system taken as a whole is in fairly good condition. That is, the surfaces are paved and in good shape. That's very important given the dramatic cost differences between maintaining and reconstructing roadways. Table 2-5 details the mileage of the street network by condition. The table includes mileage of all streets within the City by maintenance responsibility/ownership. The Oregon Department of Transportation maintains Interstate 5 including the overpass between the ramp terminals, Rogue Valley Highway, and local roads in the vicinity of the interchange: Luman, North Phoenix Road, and Pear Tree Lane. The County maintains portions of Fern Valley, Coleman, Camp Baker, Hilsinger, North Phoenix and Houston Roads. Phoenix has responsibility for the balance of the network accounting for just over half of the total mileage.

TABLE 2-5
Pavement Condition (in feet)

	RATING						
Ownership	Excellent	Good	Fair	Poor	Very Poor	NA	Grand Total
Jackson Co.	5,631	568	4,460	0	0	0	10,659
ODOT	5,649	5,582	18,860	0	0	11,253	41,344
Phoenix	22,722	6,371	11,966	12,221	1,632	1,431	56,342
Phoenix/Public	0	1,076	0	0	0	0	1,076
Public	0	0	0	0	0	790	790
Grand Total	34,002	13,598	35,286	12,221	1,632	13,473	110,212
Percent of Total	30.9%	12.3%	32.0%	11.1%	1.5%	12.2%	100.0%

Eighty-seven percent of the system mileage is in fair or better condition, if it is assumed that the roadway sections for which condition ratings are not available are in fair or better condition.

Recognizing the importance of maintaining existing roadways, as opposed to allowing their condition to deteriorate to the point that they require reconstruction, motivated the ODOT to adopt specific policies to guide pavement management. ODOT's goal is to increase the amount of roadways paved every year until 90 percent of the state highway mileage is in fair or better condition. Establishing the same goal for roadway mileage within the City is similarly prudent.

Bridges

There are only two "bridges" in the City. Of course there are numerous other box culverts, which are not bridges, but function to carry water under the roadway. The latter, due to their size, are not included in the inventory of bridges. Table 2-6 summarizes the existing ODOT Bridge Management System Inventory.

TABLE 2-6
Bridge Management Inventory

Bridge	Year Built	Design Load	Construction	Length	Deck Width	Sufficiency Rating
Fern Valley @ Bear Creek	1951	3 HS-15	Concrete	252	34.5	34.3 Functionally Obsolete
I5 / Fern Valley Interchange Bridge	1962	5HS-20	Concrete	307	35.0	74.2 Not Deficient

The bridge on Fern Valley at Bear Creek, based upon ODOT's sufficiency rating, warrants replacement. That coupled with the design improvements needed within the Fern Valley Corridor (four lane section with left turn lanes at signals, bike lanes and sidewalks) necessitates the bridge's replacement. The deficiencies in design also apply to the Interstate 5 / Fern Valley Interchange bridge but, in contrast, this bridge is considered to be in good condition.

Other Systems

The following subsections were extracted from the Rogue Valley Metropolitan Planning Organization, Regional Transportation Plan, January, 1997. They are included here for the convenience of the interested reader.

Air Transportation

The Rogue Valley metropolitan planning region is served by the Medford-Jackson County International Airport located north and east of I-5, between Crater Lake Highway and Table Rock Road.

Airport activities have increased recently and show potential for air transportation as an important component of the regional transportation system. The airport and related services offers air passenger and air freight transportation opportunities to the RVMPO planning area residents and businesses. The airport provides a national and international connection to the region.

The *Medford-Jackson County Airport Master Plan Update* serves as the airport's guiding document providing planning assumptions and governing anticipated development of the airport. Key information gleaned from the *Airport Master Plan Update* important to the development of this multi-modal RTP includes forecasts of passenger enplanements (the number of passenger movements by plane), and employment in the developing Foreign Trade Zone (FTZ).

According to the *Airport Master Plan Update,* passenger enplanements are forecast to increase substantially from the 1991 level of approximately 140,000. The baseline growth scenario predicts a 58 percent increase and the high growth scenario predicts a 101 percent increase above 1991 levels.

The FTZ is designed to help the airport develop to its fullest potential and boost the local economy in the southern Oregon region. The FTZ is projected to boost employment in the immediate vicinity of the airport and produce an annual increase in revenue of more than $3 million. Those who work in the FTZ are expected to live throughout the region just as do workers at the Rogue Valley Mall, or any other employer in the region.

These important forecasts of airport characteristics were accounted for in developing the multi-modal RTP. Both the airline passenger traffic forecasts and the increased development in the FTZ were accounted for under future employment assumptions at the airport and the surrounding zones. These employment assumptions are critical inputs into the regional traffic model. The employment assumptions led directly to increased traffic volumes on the airport access road and all the roadways leading to the airport and the Foreign Trade Zone. The roadway traffic increases caused by forecast airport and FTZ activity includes both trips inbound and outbound from the airport and includes destinations in the Rogue Valley region as well as all of southern Oregon.

The impacts of airport-related activities were also evaluated with regard to inter-regional traffic on major facilities such as Interstate 5. The *Airport Master Plan Update* lists airline passenger volumes of approximately 280,000 annually for a high growth scenario. This translates into less than 800 passengers on an average day, which is not significant when compared with forecast daily traffic volumes on I-5 of over 50,000 vehicles at both the north and south study area boundaries. For at least the next few years, air freight movements are unlikely to substitute for a measurable portion of truck freight on the Interstate highway system. Because air freight is currently such a small percentage of total freight movements, predictions based on past trends are not particularly useful for this growing market. For the next few years, the airport and FTZ will likely have a minimal impact on the regional highway system. It will be particularly important to monitor activities related to air freight and the FTZ during the next few years and use that as a basis for updates of the RTP. Additional discussion of the FTZ and freight movements is found in *Section 16.0* of the *RVMPO Regional Transportation Plan*.

The *Medford-Jackson County Airport Master Plan Update* will continue to serve as the airport's guiding document governing anticipated development of the airport, including the on-site facilities.

Rail Transportation

The rail transportation element of the Plan addresses both freight and passenger components. The potential for both freight and passenger service for the Rogue Valley region is greater than present service.

The former Southern Pacific Railroad Siskiyou Line runs from Springfield, Oregon to Black Butte, California with a total length of a little more than 300 miles of which about 250 miles are in Oregon. Steep grades and tight turns limit operating speeds, which mostly fall in the range of 25 to 35 miles per hour. Forty-three miles of track is limited to an operating speed of only ten miles per hour. In recent years, the Southern Pacific carried about 12,000 cars on the Siskiyou Line. According to the *1994 Oregon Rail Freight Plan,* Jackson County accounted for less than one million tons in 1992.

In June 1995, the Siskiyou line was taken over by Central Oregon & Pacific (COP). Service has been increased and is now being offered six days per week. Service increases have led to increases in cars to a rate of approximately 28,000 cars per year.

The COP is undertaking an aggressive maintenance program and is seeking to increase operating speeds to 25 miles per hour and to ease some of the height restrictions currently in place on the line. Loan guarantees by the Federal Railway Administration are being sought to help fund maintenance needs.

Rail service provides specific advantages for various bulk commodities or loads longer than those normally permitted on highways. Lumber and other wood products are the principal commodities transported over the Siskiyou Line. Even with recent increases in railroad traffic, the total volume of rail freight is far less than the highway freight tonnage for the region. As indicated in *Technical Memorandum #4,* outlined in Appendix B, the combined highway and rail freight tonnage in the I-5 corridor alone is estimated at 25 million tons annually. The rail freight portion accounts for between 5 and 10 percent of this total in the I-5 corridor.

Rail passenger service is currently not provided between Eugene and Medford. North-south rail passenger service in the California-Oregon-Washington corridor are provided through Klamath Falls, bypassing the Rogue Valley region on the way to Eugene. The *Oregon Rail Passenger Policy and Plan (1992)* proposes Eugene to Roseburg passenger rail service as a “Second Stage” expansion, with Eugene to Medford service as a “Third Stage” addition. Second Stage package improvements are estimated at $32 million and Third Stage package improvements are estimated at $275 million.

The *Oregon Rail Passenger Policy and Plan* identifies two daily round trip passenger runs from Medford to Portland in the Third Stage with travel times of six to eight hours, depending upon the schedule. There is no mention in the *Oregon Rail Passenger Policy and Plan* of service south of Medford, such as destination service to Ashland or to California. Annual operating and maintenance costs for the Eugene-Medford service are estimated to be $15.8 million for the Third Stage. For the Third Stage, ridership projections for the entire segment south of Eugene are estimated to be less than 500 per day.

The *Oregon Rail Passenger Policy and Plan* does not propose timing for any of the stages of passenger rail expansion. Given the competition for scarce resources on a state-wide basis, it is not clear whether the Third Stage proposal from the *Oregon Rail Passenger Policy and Plan* would be implemented within the time frame established for the RTP. It is conceivable that passenger rail service might not be available by the year 2015 for the Rogue Valley region.

Even if one assumes that Third Stage passenger rail service is available by the end of the planning period, the impact on the street and highway system is minimal. Traffic to and from a passenger terminal would be very minor and should not cause or contribute to any significant congestion. Likewise, intercity volumes on I-5 should be unaffected by the minor diversion from auto to train travel.

Locally there has been discussion regarding the need for passenger rail service in the Rogue Valley between Ashland and Grants Pass, then on to Portland as proposed in the Third Stage of the *Oregon Rail Passenger Policy and Plan.* Among the needs or desires expressed are in the areas of tourism and commuter rail options. These may be areas to explore with an economic development or economic vitality theme for the MPO and the surrounding area.

There are limited rail transportation opportunities beyond the capabilities along existing tracks. Light rail is not a viable economic-financial option. Business and tourism could provide a positive impact between tourist centers such as Ashland, Jacksonville, and Medford.

At this stage in the evolution of rail transportation, it is probable that the region is best served by focusing on working with the COP to improve service for existing and potential shippers; to work with the state on state-wide and regional system strategies and plans (including both freight and passenger opportunities); and to retain as many options as possible for consideration in future updates of the regional transportation plan.

Freight Transportation

Freight transportation in the Rogue Valley metropolitan planning region takes place primarily via the highway, but also via rail, air, and pipeline modes. The highway freight transportation element is discussed below; freight transportation via the air and rail modes is also discussed under Air Transportation Element (*Section 14.0 – RVMPO Regional Transportation Plan*) and Rail Transportation Element (*Section 15.0 RVMPO Regional Transportation Plan*), respectively. Freight transportation has often been overlooked as a major contributor in the Rogue Valley. As some of the key roadway links continue to show significant traffic volume increases and capacity constrains, freight impacts are being reviewed.

The keys to providing good freight movement in the region are ensuring that the collector and arterial street systems provide an adequate level of service and continuous connections to intermodal facilities and inter-regional routes, such as the Access Oregon Highways.

Some guidance relative to the standard of performance which should be provided for freight movements is found in the *Oregon Transportation Plan.* The plan suggests that highway freight accessing intermodal truck/rail terminals or moving within Oregon should experience Level of Service(LOS) C or better on Oregon highways during off-peak periods. Logically, one can infer that efficient highway freight transportation requires that most of the designated regional freight routes not be heavily congested during peak hours. The use of LOS D as a peak hour standard for the RVMPO planning area should help ensure that reasonable freight service is maintained in the region.

Highway freight transportation in the metropolitan region is concentrated along designated truck routes. These designated truck routes include I-5, Crater Lake Highway (Highway 62), and Lake of the Woods Highway (Highway 140). I-5 is by far the most important freight link in the region. Not only does it serve freight into the MPO area, but also serves a significant number of trucks passing through the region. Most of the shippers and receivers are located within 1/4 to ½ mile of I-5. Access to I-5 is critical. Currently, the combined volume of freight transported over highway and rail modes in the I-5 corridor through the Rogue Valley metropolitan planning region is estimated at 25 million tons annually. Crater Lake Highway and Lake of the Woods Highway are each estimated to carry between 1.5 and 5 million tons of freight annually by the highway mode. Further information on existing freight movements is contained in RVMPO, Regional Transportation Plan, *Technical Memorandum #4*[6].

Preliminary freight movement information from the RVMPO planning area and information from other regions indicates freight movements do not account for a high proportion of peak hour traffic at any specific location. Furthermore, peak times for freight movement typically do not occur during the same hours as does the peak for automobile traffic.

The following ten arterial street intersections in the RVMPO planning area are estimated to have the highest volumes of truck traffic:

- Rogue Valley Highway (Hwy. 99) and McAndrews Road
- Rogue Valley Highway (Hwy. 99) and Fern Valley Road
- Rogue Valley Highway (Hwy. 99) and Pine Street
- Interstate 5 ramp terminals and Pine Street
- Biddle Road and Table Rock Road
- Crater Lake Highway (Hwy. 62) and Rogue Valley Highway (Hwy. 99)
- Interstate 5 ramp terminals and Crater Lake Highway (Hwy. 62)
- Court Street and Main Street
- Crater Lake Highway (Hwy. 62) and Lake of the Woods Highway (Hwy. 140)
- Biddle Road and Airport Road

Truck traffic at these major arterial street intersections varies between three and five percent of the traffic during the morning and afternoon peak periods, and between five and ten percent of the traffic during the off-peak period. Under the proposed street system element of this Plan, all arterial street intersections are estimated to operate at LOS D or better during the peak periods and a higher LOS during off-peak periods.

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[6] Rogue Valley Council of Governments (RVCOG), *Regional Transportation Plan - Final Technical Memorandum #4: Analysis of Existing Conditions*, March 1994

Chapter 3

Land Use

"Cities are among the most useful developments of all time. They give you access to the diverse talents of hundreds of thousands of people. They let you choose from a richness of economic, educational, cultural and recreational offerings."[7] The invention of the car, in the early part of the current century, was among the most useful. Phoenix, like many cities in the west, have more than half of our 144 year development and history influenced by the auto.

Phoenix "was well-located along the banks of Bear Creek and the main route of travel through southern Oregon."[8] This is where Sam and Huldah Colver built their home which served as a hotel, store, gathering place for settlers, and a community meeting center. The Colver's home, at 150 South Main, took advantage of the excellent exposure adjacent to the most important roadway in southern Oregon. By 1940 "the business district … consisted of a grocery store, service station, and several other businesses strung out along Highway 99."[9] The Rogue Valley Highway remains today an attractive place for businesses and they continue to string out along the Highway locating further and further away from the historic center of the City's commercial district.

The original five block-square town site, which was laid out by the Colvers in 1854 has grown but their main street is no longer a grand street - not in the sense of its width, capacity, character or function. It still passes through the center of town. But its more than 500 cars during a typical rush hour is not considered a particularly high volume of traffic. Still, more cars pass through Phoenix in a single hour than Phoenix had people in 1940. "The sheer proliferation of cars is damaging the viability of cities, and only greater attention to the latter will allow the former to work as they should."[10] That is to say, special care and consideration must be given to ensure that cities continue to be designed around people and not strictly the preferred mode of transportation - automobiles.

The Land Use/Transportation Connection

The **connection** between land use and transportation is reflected in the current land use and transportation systems. Unfortunately, as described in Chapter 2, the City's transportation system is almost exclusively auto-dependent; the City lacks a bicycle or pedestrian network. The City's land use pattern reflects the character, function, and design suitable for auto travel. Key destinations (grocery stores, clothing stores, pharmacies, hardware, office supplies, among others) are most conveniently reached by auto and strung out along Highway 99. In fact, some items such as hardware and office supplies, are not within a practical distance for walking or bicycling.

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[7] The Car and the City, Alan Durning, 1996, prologue
[8] Land in Common, Southern Oregon Historical Society, 1993, p. 146
[9] Ibid, Southern Oregon Historical Society, p. 147
[10] Ibid, Durning, prologue

That approach to community design, taken to its logical ends, would create urban centers suitable for and accessible only by the auto. There are alternatives but balancing the systems will take time, commitment, and money. It will take time for the City Center Plan to become a viable mixed-use center. It will take commitment on the part of City policy makers to maintain policies which will lead to creation of a more balanced transportation system and to bring about greater balance in the jobs/housing ratio. Finally, it will take money to construct the required pedestrian and bicycle facilities to make these modes viable.

These actions are counter to the current trends. Developments are rarely mixed-use. Land use policies favor auto-centric designs through single use zoning, parking, signage, building setbacks and orientation, and vehicle circulation - all ensure that autos receive preference to other modes of travel. Transportation system investments nationwide have been dedicated to development of an extensive network of interstate highways, byways, and roads for the auto. Collectively these actions have ensured the predominance of the auto. Of course its the preferred mode. What other alternative comes close in terms of convenience, speed, cost, and flexibility? Its for this very reason that greater balance is needed in transportation and land use policies. Only by balancing these policies will people truly have a choice in their mode of travel. Furthermore, an alternative is essential for people who can not drive because of age, disability, or income.

The City's adoption of the City Center Plan was the first step to balance the system. The Plan provides for;

1) Mixed land uses. Permitting commercial, office, residential and light industrial uses in combination in a single structure or as independent uses. Including a public plaza and protecting urban open space add to the mix and the area's attractiveness.

2) Pedestrian and bicycle circulation systems on par with those for autos. The pedestrian network includes wide sidewalks, landscaping, and benches for sitting.

3) Adoption of pedestrian scale design standards. These ensure that buildings and their architectural features will create a stimulating environment for walking, browsing, socializing, or just hanging.

4) Requiring building to be adjacent to the sidewalk rather than behind a parking lot.

5) Providing for shared and conveniently located vehicle parking for residents and visitors to the area. Ensuring convenient parking is a part of the concept of balance. That's also the logic of requiring bicycle parking facilities conveniently located to the entries of stores and shops.

The effect will be dramatic. Vehicle miles of travel per household more than double as the pedestrian environment becomes more hostile. Pedestrian friendly features, such as those described in the City Center Plan, make walking a viable and potentially preferred option. The Pedestrian Environment Factor (PFE) "is a composite of four attributes of a neighborhood's natural and built environment - ease of street crossings, sidewalk continuity, local street connections, and topography (slopes)."[11] Using the PFE, a study in Portland found that transforming a pedestrian-hostile neighborhood into one that is pedestrian friendly could result in a 10 percent reduction in vehicle miles of travel. Considering that per capita vehicle miles of travel in Jackson County tops 5,000 miles each year, pedestrian improvements could account for 500 fewer vehicle miles of travel per person living in the affected neighborhood.

The City's recently completed improvements on 1st Street between Main and Bear Creek Drive includes pedestrian, and streetscape improvements. These sidewalks connect with those extending up 1st Street for one block to Church and down Main to as far north as 5th, and south to Bear Creek Drive. These streetscape improvements, including those at the intersection of 2nd and Main Streets, are the beginning and portend a future when pleasant, safe, and effective bicycling and walking environments exist throughout the City.

The concept of transportation balance and the land use connection is pertinent to virtually every area within the community. Multi-family dwellings must provide for bicycle parking - preferably covered if not within lockers. Commercial uses near transit stops should be oriented to the stop and located as close as practical to the sidewalk with parking located behind the structure if not in a shared parking area. Large-scale commercial uses should include a "street like" entry that includes sidewalks and streetscaping similar to a public street. Residential subdivision design should include connections with the adjoining street network whenever possible and avoid dead-end streets and cul-de-sacs.

These simple and low-cost land use/development designs foster the use of alternative modes (bicycling, walking, and transit). Use of alternative modes can potentially stimulate other new developments whose markets include bicyclists, pedestrians, and transit riders. Through several iterations, its possible that additional people will utilize these modes and more businesses will develop oriented to their needs and habits.

Phoenix residents are unlikely to utilize bikes as frequently as people living in Eugene. Nor are they likely to use transit as frequently as Portland residents. The U of O student body boosts bicycle ridership in Eugene, and Portland has a larger more effective transit system. But Phoenix residents could utilize walking to fulfill 5 to 10 percent of their travel needs. Ensuring modal choice through the design of the built environment and the provision of the basic facilities is fundamental to realizing this potential.

Special Transportation Area (STA)

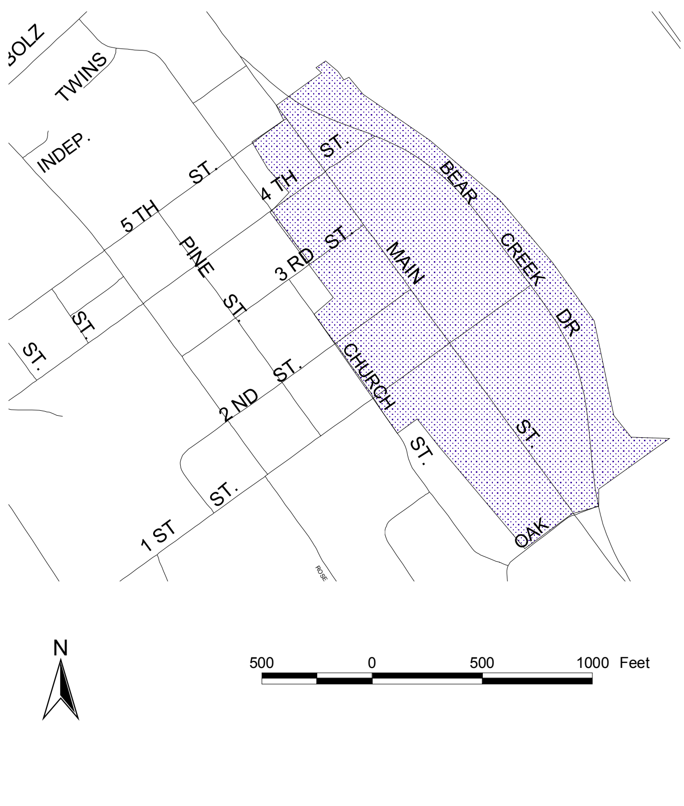
To achieve certain transportation objectives it is sometimes necessary to restrict or require changes to land uses. Similarly, to achieve land use objectives, transportation policies or strategies must be modified. The City Center is one area where increased transportation policy flexibility is needed. "Communities that have commercial development spread out along highways or at interchanges or that have poorly

[11] Making the Connection - Volume 7, Integrating Land-use and Transportation Planning for Livable Communities, 1997; p. 16

developed local street networks create levels of traffic that interfere with the function of state highways to move through traffic and to provide connections between communities. Communities with compact development patterns and good networks of local streets help highways work better; in turn, highways help communities retain their vitality and livability."[12] In acknowledgment of this fact and limited funding to correct capacity deficiencies, ODOT has embarked upon a collaborative approach with local governments to achieve transportation and land use efficiency.

Within Special Transportation Areas (STA's) ODOT may agree to accept a lower travel time or level of service, consider signals that do not meet warrants and relax standards which may include street spacing standards, signal spacing standards, and street treatment standards in order to improve local accessibility and community function. Outside of STA's State highway standards will favor the mobility of through traffic. "ODOT will work with local governments to plan, fund, and develop transportation systems that promote compact Centers."[13] Figure 3-1 illustrates the City Center Special Transportation Area.

FIGURE 3-1
Phoenix Special Transportation Area



[12] 1998 Oregon Highway Plan, January 1998 draft, p. 27
[13] Strategy for Integrating Transportation and Land Use, November 1977 draft, p. 5

The area of the STA coincides with the existing City Center Plan. It is recognized that the geographic scope may be enlarged overtime as the City Center grows and the flexibility offered within the area attracts increasing development interest.

Jurisdictional transfer of Highway 99 within the City Center could achieve similar objectives. However, whether jurisdiction is transferred or a STA is designated, an interagency agreement between ODOT and the City will be required to establish the specific approach. The agreement should compliment other City strategies to: 1) create an attractive pedestrian scale streetscape, 2) ensure continuity of bicycle and pedestrian facilities, 3) provide high quality and frequent transit services, 4) establish frequent and safe pedestrian crossing along the Rogue Valley Highway, 5) minimize building setbacks, 6) create common and shared vehicle parking, 7) orient buildings to pedestrian and transit facilities, and 8) promote pedestrian and bicycle use and manage vehicle movements in a manner consistent with that objective. All of these design features are crucial to creating a viable mixed-use center.

Chapter 4

Transportation System Needs

Introduction

Needs are defined as either deficiencies or failures of the current transportation system based upon existing or forecast travel demand. The needs are categorized as safety, geometric, operations, maintenance, or modal. Some overlap occurs within these categories especially in describing safety, geometric, and operations needs. That's because these needs are almost exclusively confined to the auto mode. A deficiency arises when the transportation system does not operate efficiently.

Oregon Transportation Plan Policy 1.B, Efficiency, states: "It is the policy of the State of Oregon to assure provision of an efficient transportation system. The system is efficient when (1) it is fast and economic for the user; (2) users face prices that reflect the full costs of their transportation choices; and (3) transportation investment decisions maximize the net benefits of the system. (Full benefits and costs include social and environmental impacts, as well as the benefits of mobility to users, and construction, operations and maintenance.)"[14] It is this context in which transportation needs should be considered. The fact that virtually no user pays the full cost of their transportation choices distorts the decision to travel, modal choice, and ultimately investments in the transportation system. "Deaths and injuries from traffic accidents generate medical costs, as do respiratory diseases due to pollution. Traffic accidents also add to the load of the court system and police services. In short, there are many hidden costs of and subsidies to the automobile and the Worldwatch Institute estimates that government subsidies for the automobile in the United States amount to over $300 billion per year. "[15] Other sources estimate the subsidy to be "370 billion per year, or an average of about 17 cents per mile."[16] Costs of road-building, land acquisition, parking structures/lots, traffic congestion, and law enforcement also contribute to the auto subsidy.

Subsidies are not limited to the auto mode. The nations' public transit passengers also receive substantial subsidies. Nationally and locally, transit passenger fares typically cover approximately 25 percent of the operating cost of the transit system (which excludes capital costs such as the purchase of buses or the construction of buildings, light or heavy rail lines, or trains). Similarly, pedestrians and bicyclist don't contribute directly for the construction of transportation facilities.

Roadway pricing (tolls, roadway use fees, variable link-by-link charges, peak-hour pricing, or charges for vehicle miles traveled) offer the potential to internalize travel costs. Such approaches to travel and congestion management are very rare. Consequently, travel at peak hours of the day on some roads, highways, and interstate

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[14] Oregon Transportation Plan
[15] Michael Renner, "Rethinking the Role of the Automobile", Worldwatch Paper #84.

[16] How Much Highway Capacity Does an Urban Area "Need", APA Transportation Planning, Patrick DeCorla-Souza, referring to work by Douglass Lee of the Volpe National Transportation Systems Center, Summer 1995

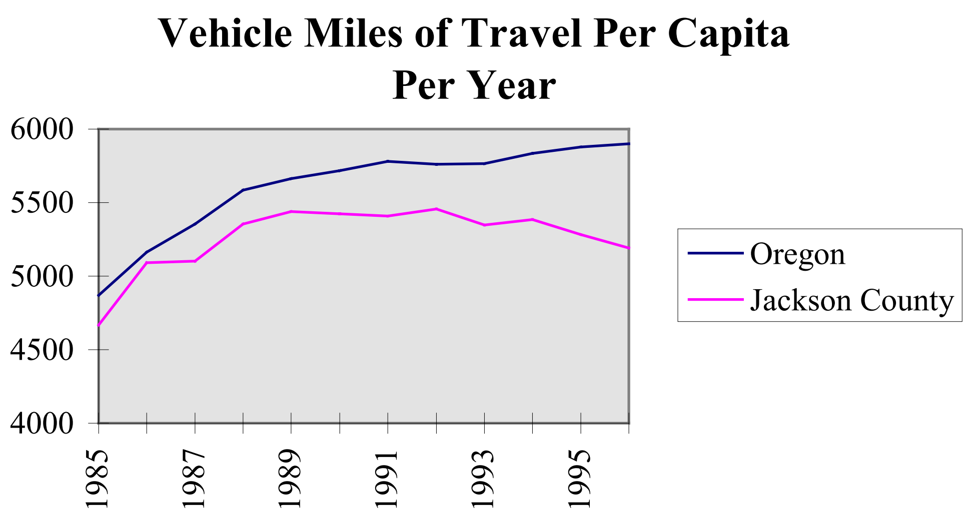
roadways exceeds capacity. Roadway pricing would have the effect of shifting some of this travel to off-peak times or at least to the times immediately preceding or following the peak. Slightly reduced travel demand at the peak hour could significantly reduce delay, fuel consumption, and pollution leading to lower transportation system needs. Plans and transportation investment decisions based upon the assumption that users pay the full costs of transportation would be radically different from those based upon a more conventional transportation "needs" approach.

A Leeds University study, completed in 1996, found that drivers are relatively cost conscious. Even so, it concluded that "the trend towards more travel by car is so strong that just keeping road traffic in British cities to its current level would require petrol prices to be tripled."[17] Trebling the price of gasoline in the U.S. would add about 27 cents to the cost of driving a mile. "Fuel taxes are an economically inefficient way to deal with congestion, because they must be paid by motorists on empty rural roads as well as those who are contributing to jams on busy motorways. Direct charges (i.e. congestion pricing) would be far superior. But the Leeds study does suggest that to have much of an impact on traffic, congestion charges would have to be quite substantial. If charges are too low, 'as you price some traffic out, other traffic will be attracted by lower journey times,' says Anthony Fowkes, one of the authors. Because road systems are complex , and because the behavior of individual drivers is largely unpredictable, the overall impact of a particular pricing scheme is anyone's guess." [18]

What is clear is that traffic growth, or vehicle miles of travel, has grown rapidly throughout the past two decades. Population has grown, households contain fewer people, so the number of households has been rising. Separate households take separate trips for shopping, school, and social events, increasing the number of miles traveled. The growth in two wage earner households generates even more travel (although this effect has probably run its course). Figure 4-1 illustrates the growth of vehicle miles of travel per capita (i.e. per person) for Jackson County and Oregon during the previous decade. Phoenix statistics are unavailable.

[17] The Economist, September 5, 1998, p. 17
[18] IBID, p. 17

FIGURE 4-1
VMT Per Capita



Oregon's vehicle miles of travel (VMT) per capita has grown continually throughout the past decade and consistently exceeded Jackson County's VMT per capita. The rate of increase has begun to slow. County VMT per capita peaked in 1992 and has trended lower since that time.

Phoenix cannot implement congestion pricing or vehicle miles of travel charges independently. These charges require regional or statewide approaches (although, a congestion or peak hour pricing demonstration on Highway 99 through Phoenix could be an interesting test case in the future). That fact, makes identifying needs more difficult. Are the needs simply a consequence of offering a free good or a legitimate transportation need - which would arise with or without pricing? That question will be reviewed throughout the balance of this chapter. Unfortunately, existing regional modeling practices do not support this level of analysis. Consequently, the observations are speculative and not substantive.

Safety

Accidents are a general measure of the safety of a road system. The Oregon Department of Transportation maintains records of all recorded accidents within the City of Phoenix. The City is fortunate in that there have been no fatal accidents recorded over the last ten years. Table 4-1 shows a summary of the recorded accidents in the City of Phoenix over the period from 1995 through 1997. It should be noted that these are only those accidents which have been reported to the Oregon Department of Transportation. A percentage of accidents are not reported, even though it is required by law. Individuals involved in single car accidents and minor fender benders tend not to report these accidents. On the other hand, the more severe the accident, the more likely the accident will be reported by a state or local police officer and not require additional reporting by the individuals involved in the accident.

TABLE 4-1
1995-1997 Accident Summary

Classification & Type of Accident	1995	1996	1997
Fatal Accidents	-0-	-0-	-0-
Non-Fatal Accidents	9	12	12
Property Damage Only	17	19	13
Accidents Total	26	31	25
People Killed	-0-	-0-	-0-
People Injured	12	17	15
Trucks	4	2	3
Dry Surface	19	27	21
Wet Surface	7	4	4
Day	21	28	22
Dark	5	3	3
Intersection	16	18	14
Off-Road	3	2	-0-

A detailed review of the accidents shows that there are no significant recurring accident locations in the City of Phoenix other than along Highway 99 and along Fern Valley Road. Table 4-2 is a summary of the accidents at the highest frequency locations.

The most critical location in the city is along Highway 99 between Fern Valley Road and Cheryl Lane. The significant factors relating to these accidents include the close proximity between Fern Valley Road and Cheryl Lane and the extremely close back-to-back left turn movements between these two locations which often place vehicles wanting to turn left on Fern Valley Road in a head-on situation with vehicles wanting to turn left onto Cheryl Lane. Congestion occurring when vehicles wish to turn left from Highway 99 onto Cheryl Lane has also produced a large volume of rear-end collisions.

TABLE 4-2
1995–1997 High Accident Locations

Location	Number and Type
Highway 99 @ Rose MP 10.86	5 accidents in this area (between Rose Street and MP 10.90) 4 out of the 5 accidents were turning accidents, but no pattern was found
Highway 99 @ Cheryl Lane/ Fern Valley Road	23 accidents in this area (from Cheryl Lane to Fern Valley Road, including all approaches) 11 of these were turning 11 were read-end accidents 1 was 90^o accident
Highway 99 @ 4th Street	3 accidents at this intersection 2 were turning accidents 1 was 90^o accident
Highway 99 @ 1st Street	5 accidents at this intersection 4 were turning accidents 1 was 90^o accident

The rest of the accident locations were scattered.

The accidents at Highway 99 and Fern Valley / Cheryl could be reduced by re-aligning Fern Valley Road to extend directly to Cheryl Lane, or by re-aligning Cheryl so that it extends directly into Fern Valley. A third option would be prohibiting left turns in and out of Cheryl.

The intersection of E. Bolz Road and Fern Valley Road is another high accident location. Half of the accidents relate to collisions involving vehicles turning right from E. Bolz Road onto Fern Valley which collide with vehicles traveling east along Fern Valley Road. Generally accidents of this type are caused when one vehicle, usually the lead vehicle, starts to accelerate and then sees a vehicle on the cross street. The driver puts on the brake and gets hit by a vehicle following closely behind. Accidents of this type can generally be reduced by either signalization or by improving sight distance lines.

There also is a series of accidents involving vehicles coming in and out of driveways colliding with through traffic along Highway 99. These accidents can be reduced by reducing the number of driveways or by implementing turn controls.

There are a number of safety issues observed in the city of Phoenix which do not show up in the accident statistics; however, they form a significant area of concern. Pedestrian safety, especially for school age children, is important. The roads surrounding Phoenix Elementary School and on potential routes to school do not have sidewalks. Cars parked on the dirt shoulders around the school force children to walk in the street. Often the children are hidden by the parked cars, and the potential for accidents is high.

There are no provisions for bicycles on city streets. On low volume residential streets this is not a problem; however, on arterials and collectors, the lack of space for bicycles could result in safety problems. This is particularly a concern along Highway 99 where automobile speeds are significantly higher than those of bicycles.

Geometric Deficiencies

Since the city of Phoenix is generally on level ground, there are not the roadway geometric problems which often occur on more steeply sloping terrain. There are, however, a number of geometric problems which have been identified. These are outlined below.

Houston Road – 4th Street railroad crossing: Houston Road is a county collector which connects with 4th Street. At its connection, the road makes a slight curve. This curve does not contain any banking for eastbound traffic and has resulted in a number of run-off-the-road-accidents. Although these accidents have not been reported, neighbors have verified their occurrence. The solution to this problem, in addition to the recently installed signing and striping by the City, would be to bank this curve.

Fern Valley Interchange: The frontage roads adjacent to I-5 at the Fern Valley interchange have intersections very near the off-ramps of the I-5 interchange. Re-aligning these roads to provide sufficient distance from the interchange will do much to alleviate congestion and accident potential in these areas. The distances separating the ramp terminals from the relocated roadways (as detailed within the City's recently amended Street Network Plan, Figure X-1 of the Transportation Element) will fall short of the standards recently proposed as a part of the ODOT's Highway Plan, draft September 1998. The ODOT standard establishes a minimum 800 meters (2,640 feet) and 400 meters (1,320 feet) separation before the first major intersection on four-lane and two-lane cross streets, respectively.

The City's relocation decisions were based upon extensive analysis, public agency review, landowner needs, and public hearing testimony. The distance separating Luman from the ramps was maximized but constrained by Bear Creek's stream course. Once relocated, Luman will be approximately 750 feet from the west ramp terminals. The relocated North Phoenix Road will be further away but still only approximately 1,250 feet. The preferred siting of this intersection was largely determined by planned land uses south of Fern Valley Road and more particularly the desire for South Phoenix Road (the southerly extension of North Phoenix Road) to serve as a buffer between residential and commercial land uses.

Operations Needs

The performance or how well or poorly a particular intersection functions is measured through an analysis of the intersection's operations. If too many vehicles enter an intersection simultaneously and cause significant vehicle delays, the intersection is termed "failing." Failure occurs when the volume to capacity (V/C) ratio exceeds the established standards. Table 4-3 includes the minimum acceptable volume to capacity ratios within the City throughout the 20-year planning horizon.

TABLE 4-3
V/C ratios (mobility standards)

Roadway Classification	Land Use Area Type	
	STA *	Balance of City
Interstate		0.80
Arterial	0.95 to > 0.95	0.90
Collector	0.95 to > 0.95	0.90
Local	0.95 to > 0.95	0.90

* Special Transportation Area, STA (see Chapter 3, Land Use)

- Interstate facilities are not within the City's STA.
- The STA standards compliment the detailed City Center Plan, adopted December 1997. The STA standards and the designation of the STA itself, is subject to approval through an ODOT / City memorandum of understanding.
- The City Center Plan achieves the objectives of STA's as described within the Oregon Highway Plan. Additionally, mobility improvements in the form of access management and facility design (as described elsewhere within the City's Transportation System Plan are planned for the Highway 99 corridor north and south of the STA.

Volume to capacity evaluations must be based upon the use of the planning methodologies contained within the 1994 Highway Capacity Manual and procedures contained within NCHRP Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design. ODOT's Signal Capacity Analysis program, SIGCAP 2.0, and Unsignalized Intersection Capacity Analysis program, UNSIG10, shall be used to analyze intersections.

Table 4-3 standards are essential to determine needs because they establish thresholds of acceptable operations. Based upon Table 4-3, the Interstate 5 ramp terminals at Fern Valley Road currently exceed acceptable V/C standards. The City is advocating improvements at this location consistent with the Fern Valley Corridor Study. The Rose and Highway 99 intersection is operating at the threshold.

During the planning period, V/C ratio at Rose and Highway 99 will drop into the unacceptable level. Other intersections expected to drop below the Table 4-3 V/C standards based upon forecast 2018 traffic volumes include Fern Valley at Highway 99, 4th Street at Highway 99, the relocated North Phoenix Road at Fern Valley, and the relocated Luman at Fern Valley. Additionally, pedestrians crossing protection at 1st Street and Highway 99, and Oak Street at Highway 99 may justify signals at these locations. However, traffic volumes at these locations are not forecast to warrant signals.

With the exception of Fern Valley at Highway 99, all the other intersections that are expected to fail in the future are unsignalized. Traffic signals are essential to safely accommodate side street traffic entering or crossing high volume facilities, such as Highway 99. Otherwise the minor road vehicles are forced to squeeze between increasingly smaller gaps in the main road's traffic stream. The smaller the gap, the greater the likelihood of accidents, and the longer the delay of side street vehicles. It is unlikely that congestion pricing, alone, could shift travel demand to avoid signalization at these locations. However, at very high peak hour pricing it is conceivable that only essential travel would occur.

Fern Valley/Cheryl at Highway 99 is also forecast to fail given its current lane configuration. But level of service forecasts fall only slightly below the standards specified in Table 4-3. The left turn movement from Fern Valley to Highway 99 is a crucial factor. The addition of double left-hand turn lanes will probably be sufficient to meet Table 4-3 standards. That configuration will compliment a four lane cross-section, with left turn lanes at signalized intersections, on the balance of Fern Valley Road (see Roadway Needs section elsewhere in the Chapter).

Maintenance

The City initiated a formal pavement management program in 1995. Since that time approximately one mile of the City's roads have been repaved. The purpose of pavement management is to ensure that pavement surfaces are renewed and thereby preserve a substantial portion of the original construction investment. In fact, the cost to rebuild a roadway, once deteriorated, is roughly two and one-half times as expensive as maintaining the quality of the pavements through periodic overlay and sealing.

When roadways deteriorate and water penetrates the base it begins an irreversible process leading ultimately to roadway reconstruction. Pavement management can extend pavement life by preventing pre-mature deterioration. It is for this reason that pavement management is a critical component of transportation system management.

Table 4-4 includes the current condition of pavement by jurisdictional responsibility. Phoenix, Jackson County, and the Oregon Department of Transportation all have pavement management responsibilities within the City. Also shown are public roadways. These are roads which are used by the public (and are dedicated to public ownership) but are not maintained by a public roadway agency.

The pavement management need is forecast to remain roughly constant throughout the 20 year planning horizon, growing slowly in response to increasing street system mileage. It is estimated that in order to maintain pavements in fair or better condition, overlays will be needed on local roads at about nine year intervals. The actual timing will vary by volume of traffic, percent of trucks, depth of last overlay, and the lapsed time since original construction. Approximately two miles of overlay would be performed each year if the work were evenly distributed throughout the nine-year cycle. Phoenix, on its own roads, would need to overlay a little more than one mile per year. That is the approximate amount of overlays planned by the City for fiscal year 1998/99.

TABLE 4-4

Pavement Condition by Jurisdiction (length in feet)

		PAVEMENT RATING							
AGENCY		Excellent	Fair	Good	NA	Poor	Very Poor	Not Rated	Grand Total
Jackson Co.	Length	5,631	4,461	568	0	0	0	0	10,659
	% of total	52.8%	41.9%	5.3%	0.0%	0.0%	0.0%	0.0%	100%
ODOT	Length	5,107	19,402	5,582	11,253	0	0	0	41,344
	% of total	12.4%	46.9%	13.5%	27.2%	0.0%	0.0%	0.0%	100%
Phoenix	Length	23,179	11,966	6,371	1,020	12,221	1,175	411	56,342
	% of total	41.1%	21.2%	11.3%	1.8%	21.7%	2.1%	0.7%	100%
Phoenix/Public	Length	0	0	1,076	0	0	0	0	1,076
	% of total	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100%
Public	Length	0	0	0	0	0	0	790	790
	% of total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%	100%
Total		34,002	35,286	13,598	12,273	12,221	1,632	1,201	110,212
Total – Percent		30.9%	32.0%	12.3%	11.1%	11.1%	1.5%	1.1%	100%

Source: Phoenix Pavement Management Inventory and ODOT and Jackson County information

During 1999, pavement conditions on City streets will be re-evaluated. That will be an excellent time to assess the City's pavement management performance and the need to increase transportation utility fees.

Congestion pricing or other demand management strategies would have no effect on pavement management needs. The deterioration of pavement surfaces is largely affected by aging and heavy vehicles.

Bicycle System

The bicycle system has extensive deficiencies stemming from its incomplete network. Key missing segments exist along every major roadway including; Rogue Valley Highway, Fern Valley Road, 1st, 4th, Cheryl, Oak, Colver, Houston, Camp Baker, and Rose. Without these additions, the mode functions poorly.

Availability is one of several key factors in modal choice. The others include: lack of physical barriers, convenient access, and a positive perception of the mode. To the extent that the mode is unavailable, it cannot be accessed. The fact that a bicycle system does not exist precludes the use of a bike except in selected circumstances and clearly not as an option to the auto - when one is available.

The bicycle system's key function is to provide an alternative to the auto for trips of three miles or less in length. The short distance requires that the network be fairly refined and not limited to a single link (such as the Bear Creek Greenway or the Rogue Valley Highway). These long segments will only function if they are connected to other networks or nodes of networks within incorporated cities. Otherwise, the links are inaccessible and will not attract significant use. It is similar to having an interstate transportation system with no on or off-ramps; wonderful if you can find a way to get on it.

Fern Valley Road is the only transportation facility connecting the east and the west halves of town over the Interstate. Consequently, all trip interchanges between the two areas are funneled into a single corridor. Bicyclists riding from the Meadow View Subdivision to the new Phoenix Park, off of Bear Creek Drive, travel roughly two miles on facilities carrying the highest traffic volumes with the most congestion at the highest speeds in the City. As the crow flies the trip would be only one-half mile. The lack of a second interstate over-crossing in the south part of the City represents a significant network need. This is crucial to bicycle and pedestrian travel needs, especially given their sensitivity to out-of-direction travel, hazardous riding conditions, and trip distance.

Pedestrian System

The existing pedestrian system, like the bicycle system, is defined by what it isn't rather than what it is. It isn't a well-connected system of pedestrian paths and sidewalks. It doesn't create a safe place to walk out of the auto travel lane. It does not ensure that major origins and destinations can be reached by walking. Further, it does not afford people with ambulatory disabilities a smooth even surface upon which to use walkers, canes, wheelchairs or to easily maneuver between individual sidewalk sections using sloping ramps.

In order to create a pedestrian system virtually every street must include sidewalks on at least one side. Collectors and arterial streets need sidewalks on both sides. Those adjacent to the travel lane (i.e. not separated by a parking, bicycle, or planting strip) should be at least six feet wide. Within the City Center walks should be eight feet or wider to accommodate high pedestrian use in the future.

The pedestrian system, like bicycle network, needs a new connection between the east and the west halves of town over the Interstate. The link will provide a convenient way for residents to reach a multitude of important destinations; Bear Creek Greenway, commercial areas on the east side of the Interstate, new Phoenix Park, City Center, and friends and relatives living throughout the City.

Τρανσιτ Σψστεμ

The transit system needs are principally related to frequency of service and passenger services/amenities at bus stops. Both improvements are designed to make the existing RVTD system more convenient to use. Route 10, which operates on the Rogue Valley Highway, serves the City as well as Ashland, Talent, and Medford. The route effectively extends intercity bus services to Phoenix through its connections with the Greyhound terminals in Medford and Ashland.

The City does not have any jurisdiction or direct financial responsibility for the operation of the District' bus system. However, the City's advocacy for increased transit system funding would clearly bolster the chances for increased bus frequencies. RVTD's Goal 1, Objective 4 states: "On trunk routes, operate with 30 minute frequency, 17 hours per day, 7 days per week (with additional service added during peak hours) by 2001." [19] Fifteen-minute headways are needed now due to frequent "standing room only" passenger demands on Route 10. High patronage levels are to be expected given that the Route serves the most heavily traveled corridor within the Rogue Valley. Because of these facts Route 10 should be designated as a trunk route and receive preferential treatment in terms of boosting the hours of operation and service frequencies.

The City's site design review process could establish required passenger amenities at bus stops. This may not be necessary if a pending transit oriented design study provides bus stop standards addressing this need and the standards are adopted by RVTD. In that way, future bus stops would be designed and constructed by RVTD, and include the required amenities.

RVTD's Ten-Year Transportation Plan includes an objective (Goal, 2, Objective 20) to "create volunteer programs that help communities reduce costs and customize transportation services." [20] Put into action, the objective would create a volunteer operated mini-van shuttle service. RVTD would, conceptually, provide an RVTD-owned van to volunteers (probably senior citizens) to take ride requests, dispatch, and drive the

[19] Ten-Year Community Transportation Plan, RVTD, 1996, p. 14.
[20] Ibid, RVTD, 1996, p. 17

vehicles. This would provide transportation services "to connect with trains and buses … or to transport them to other points within the city limits" [21] that lie outside the Rogue Valley Highway corridor. The service would meet the needs of people (especially transportation disadvantaged) who can not currently utilize RVTD's fixed route or paratransit services. RVTD has not estimated the demand (need), the effectiveness of this particular service design, or its cost versus the benefits.

Roadway Network

Roadway network or auto mode needs, as used in this section, are limited to the addition of new travel lanes or the modification of existing roadway segments. Of these, the construction of four through travel lanes on Fern Valley Road between the relocated North Phoenix Road location and the Rogue Valley Highway is most urgent. Forecast travel demand within the corridor in 2018 will range from 1,200 to 1,400 vehicles in each direction in the peak hour. Under ideal conditions, the capacity of a two lane rural highway is 2,800 vehicles per hour. Fern Valley road is not a rural highway. It is an urban arterial impacted by entering or turning vehicles and traffic signals. Forecast traffic volumes within the Fern Valley Road corridor will exceed its existing capacity. The resultant congestion would be unacceptable on any link on the system, but at the I-5 interchange it is untenable. A four-lane facility with left turn lanes at intersections will be required within the current planning horizon.

The existing 60-foot wide right of way will need to be widened to 100 feet and individual segments should be secured as opportunities arise. The bridges at Bear Creek and I-5 will also require widening and reconstruction. The Bear Creek bridge is sorely deteriorated (see Chapter 2, System Characteristics, Bridges) and should be reconstructed to a five lane section at the earliest opportunity. The I-5 bridge should be widened coincident with the Fern Valley Road widening project. Federal or State funding should be secured for its construction.

The relocation of North Phoenix Road and Luman Road (discussed in the operations and safety sections of this chapter) is essential to the corridor's function. Without greater separation between the ramp terminals and the Luman and North Phoenix Road / Fern Valley Road intersections, waiting vehicles on Fern Valley Road, stopped by the ramp terminal signals, will backup into these nearby intersections (see Chapter 4, Transportation System Needs, Geometric Needs) causing their failure.

Peak hour pricing could potentially postpone the need for roadway widening within the corridor. However, with existing peak hour volumes nearing 1,000 vehicles in both directions, extensive undeveloped commercial land within the corridor, and high volumes of vehicles turning onto and off the facility, it would seem unlikely that travel demand would not exceed existing capacities.

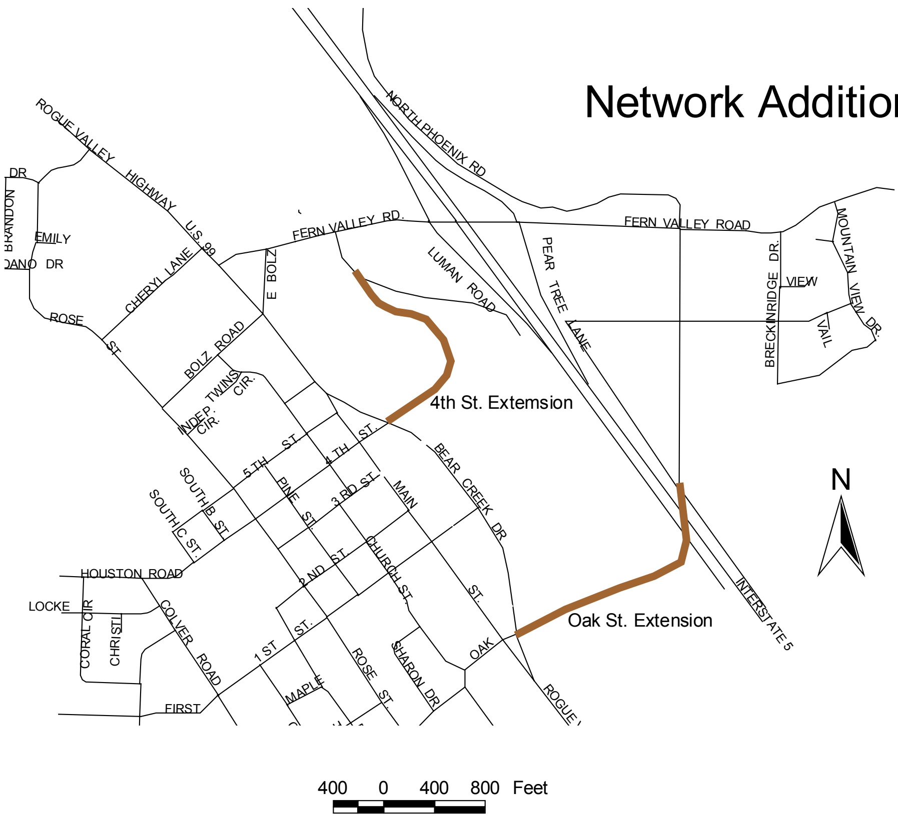
The Interstate and Bear Creek essentially create three separate and distinct areas of the City - interconnected exclusively by Fern Valley Road. These barriers (I5 and Bear Creek) essentially force all trips between these areas onto Fern Valley Road. While planned increases within the Fern Valley corridor will meet the resultant demands, out

[21] Ibid, RVTD, 1996, p. 30

of direction travel and congestion, are two of many adverse consequences of a poorly interconnected roadway network. Additional roadway links between these areas will help redistribute trips and reduce negative impacts.

Two possible new links have been identified. These include the extension of Oak and 4th Streets easterly from their existing termini at the Rogue Valley Highway (see Figure 4-2).

FIGURE 4-2
New Roadway Links



The City Center Plan contains one additional new street segment and the extension of another. The new roadways are vital to providing access to lands within the City Center. The new street segment, illustrated in Figure 4-3, supports all travel modes. Most importantly this segment, along with three small parking lots will provide 350 parking spaces, is essential to the development of the City Center. A view of the parking street is shown in Figure 4-4.

FIGURE 4-3
New Parking Street

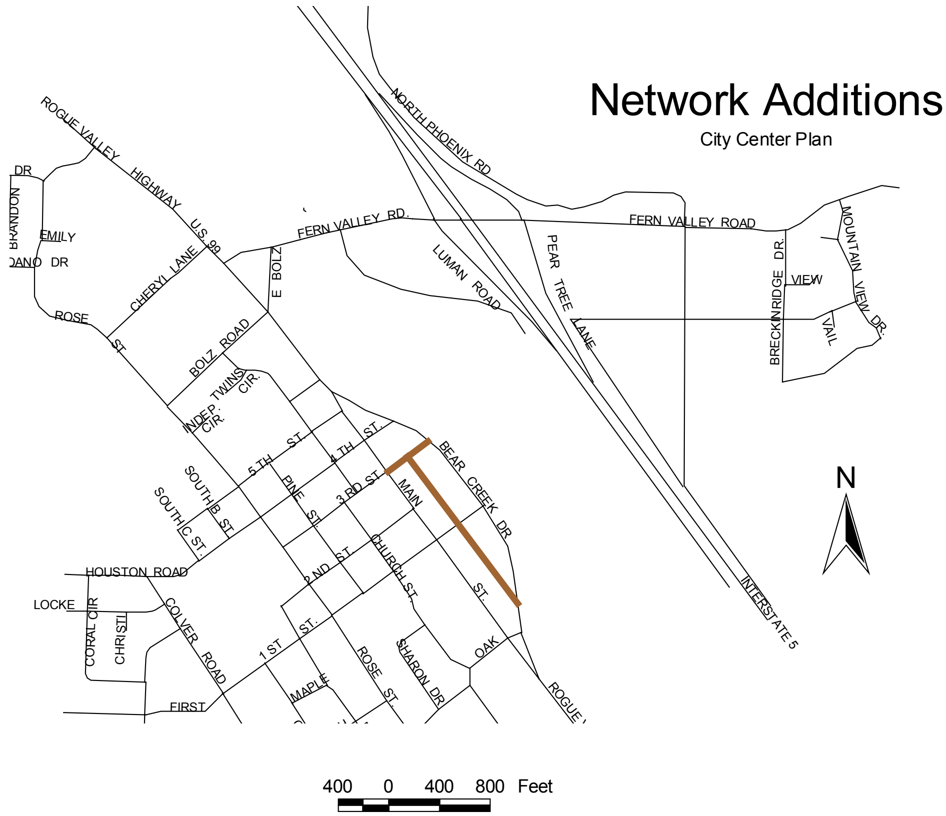


FIGURE 4-4
Illustration of Parking Street

Truck Mode

In the immediate vicinity of the interchange on Fern Valley Road, trucks represent approximately 20 percent of average daily traffic. These volumes are considered high but not atypical. Usually, trucks account for three to five percent of average daily traffic on arterial streets. The truck stop in the immediate vicinity of the interchange attracts an estimated ninety-five percent of the total truck volumes. Their presence creates congestion that can be especially pronounced on winter days when the Siskiyou Summit on Interstate 5 is closed.

Turn radi and roadway cross-slopes must be designed to reflect the unique characteristics of trucks. The existing south bound ramp at Exit 24 has a notable deficiency. Trucks have over-turned at this location due to the tight curve and excessive roadway cross-slope.

The County industrial lands in the northwest quadrant of the City currently do not have access to the transportation system network. Without access, development of the property is impossible. Ensuring access for employees, deliveries, customers, and others is essential. Providing ready access to the State and interstate highway networks (as opposed to more circuitous routing) would improve the relative attractiveness of these lands compared to other vacant industrial lands within the region.

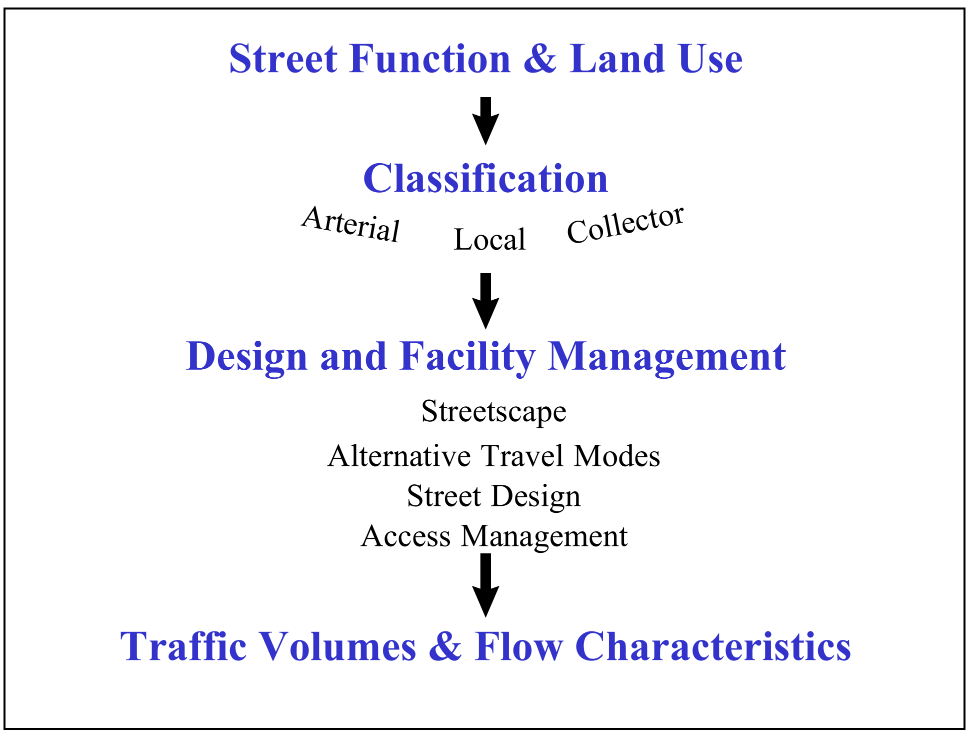
Chapter 5

Street and Land Classification

The classification of streets is intended to achieve consistency in design, function (types of trips and distance), land use, traffic management, and access control. Each should be mutually supportive in order to create consistency and predictability for drivers, bicyclists, pedestrians, and adjoining landowners. When combined with the balance of the City's Comprehensive Plan, classification provides a complimentary tool to facilitate the City's planned urban growth and desired community design.

Existing traffic volumes are a consideration in the classification scheme. However, traffic volumes are an outcome of facility design, land use, and traffic management - not the reverse. Figure 5-1 illustrates the relationship between classification, design and facility management, and street function/land use.

FIGURE 5-1



The scope of this chapter includes a description of the classification system and the associated land use. Also included are generalized design standards pertinent to each classification.

Street Classification System

The classification is composed of four classes: interstate, arterial, collector, and local. Each street within the City's planning jurisdiction is assigned a street class. The classification reflects typical trip distances even though trip length can vary dramatically. Also included are key design features and facility management elements associated with each classification.

The descriptions that follow are intended to provided general planning guidelines. Construction and development may require deviation from the guidelines. Deviation, however, should only occur where necessary to ensure the safe operation of the transportation system.

Interstate

Trip Distances: Provides long distance traffic movement with origins and/or destinations occurring outside the City of Phoenix. Typically trips are regional, inter-regional, or interstate.

Function: Facilities are designed almost exclusively for motor vehicle travel. Use by pedestrians, bicycles and low powered vehicles is permitted but not encouraged.

Access Control: No service to abutting land. Interchanges are three or more miles apart.

Traffic Separation: Opposing traffic flows are physically separated and cross streets are grade- separated.

Traffic Volumes: Over 30,000 average daily traffic (ADT).

Number of Lanes: Two or more travel lanes each direction.

Streetscape: No formal streetscape but landscape design is included at interchanges.

Public Space: The right-of-way is exclusively dedicated to transportation functions with no other public function or purpose.

Arterial

Function: Motor vehicles are the principle mode of travel. Travel by pedestrians, bicycles and low-powered vehicles is explicitly accommodated through facility design. Transit and other multi-modal connections are available at transit oriented development nodes (chiefly within the City Center). Sidewalks and bike lanes are required.

Trip Distances: Provides medium to long distance travel with origins and/or destinations within Phoenix or neighboring cities. Typically trips are local or regional in nature.

Access Control: Limited service to abutting land. Access is controlled through raised medians and the spacing of local street intersections and driveways.

Traffic Separation: Opposing traffic flows are physically separated by a raised median.

Signalization: Traffic signals are coordinated and separated to provide traffic signal progression (except within Special Transportation Area / City Center where signals may occur more frequently).

Number of Lanes: Typically two through lanes in each direction.

Streetscape: Formal streetscape is included in facility design.

Public Space: The right-of-way and associated improvements are a significant part of the City's public spaces. They serve transportation functions and also provide a sense of community identity (through the streetscape), informal meeting places, and open spaces.

Traffic Volumes: 10,000 ADT and above.

Collector

Function: Provide convenient and safe travel for all modes. Travel by pedestrians, bicycles and low-powered vehicles is explicitly accommodated through facility design. Sidewalks and bike lanes are required.

Trip Distances: Provides short distance travel; primarily serves to collect and distribute traffic between local and arterial streets or high volume traffic generators and arterial streets.

Access Control: Abutting land is afforded direct access with some access control provided through raised medians and the spacing and locations of driveways and intersections.

Traffic Separation: Generally unseparated but may have a continuous left-turn lane or medians near intersections with arterial streets.

Signalization: Traffic signals are usually uncoordinated.

Travel Lanes: Typically one through lane in each direction.

Streetscape: Streetscape design is informal. A specific design may be appropriate where a street has or is intended to have a special character.

Public Space: The right-of-way and associated improvements are a significant part of the City's public spaces. They serve transportation functions and also provide a sense of community identity (through the streetscape), informal meeting places, and open spaces. These areas are an extension of the neighborhoods that they serve.

Traffic Volumes: 1,000 to 10,000 ADT.

Local

Function: The right-of-way tends to function as a multi-use public open space. Travel is the chief purpose but other attributes areas are equally important. These areas are a distinct element of the neighborhood, reflecting the economic status, esthetic standards, and pride in the neighborhood of people who live along them. The public street and associated public open space is a chief contributor to the quality of life for the neighborhood. Sidewalks are required.

Trip Distances: Provides short distance travel (usually less than one-half mile) including those made by foot, bike, or auto. Not intended for through trips. Typically auto trips utilize the local street to gain access to higher order streets (collectors and arterials).

Access Control: Provides direct access to abutting land and for traffic movements within neighborhoods.

Traffic Separation: Generally unseparated but may have medians or other turn-movement structures (right-in and right-out pork chops) near intersections with arterial streets.

Signalization: Traffic signals are not required due to low volumes.

Number of Lanes: 1 lane in each direction.

Streetscape: Streetscape design is not typically included but may be appropriate where a street has or is intended to have a special character.

Public Space: The right-of-way and associated improvements are a part of the neighborhood. Often it is the only readily available "neutral" place for residents to chat, and meet informally. The design can facilitate interaction and foster a sense of community. Overly wide neighborhood streets or those which function only for auto use (especially without sidewalks) are often barriers to the kinds of interaction and function that they are intended to serve.

Traffic Volumes: Under 1,000 ADT.

Land Use Classification System

The land use classification, as used in this section, is generalized and does not explicitly relate to the City's Comprehensive Land Use Plan Map. Instead it is intended to describe an overall land use form - intensity and diversity of uses. Land use classes are descriptive. They do not set requirements for development.

Urban Core

- Land Use: Retail, office, light industrial, and multi-family residential.
- Development Form: Concentrated mixed use developments / transit oriented development.
- Building Setbacks: Zero to a maximum of five feet.
- Building Orientation: Toward the street with pedestrian scale features.
- Floor Area Ratios (FAR): Equal to or greater than 2.0.
- Access and Circulation: All modes supported with emphasis on alternative modes (bicycling, walking, and transit) especially for internal circulation.
- Parking: On-street and public parking.
- Through Traffic: Moderate to high volumes.
- Driveways: Prohibited except for access to public parking.

Commercial Limited Access

- Land Use: Retail and office
- Development Form: Individual buildings or self-contained development along the street with some centers having multiple tenants.
- Building Setbacks: 20 to 200 feet.
- Building Orientation: To or away from the street but most often toward shared parking.
- Floor Area Ratios (FAR): Equal to or less than 0.5.
- Access and Circulation: All modes supported but primary access is oriented to the automobile. Businesses focus on attracting street traffic to their building. On-site circulation is carefully designed and coordinated with access management to adjoining public streets.
- Parking: Each development includes its own dedicated parking with no on-street parking. Buildings with multiple tenets share a common lot.
- Through Traffic: High volumes.

- ❖ Driveways: Consolidated wherever possible with a common driveway serving multiple developments.

Commercial Controlled Access

- ❖ Land Use: Retail including outside storage and warehouse.
- ❖ Development Form: Dispersed individual buildings along the street frontage.
- ❖ Building Setbacks: 20 or more feet.
- ❖ Building Orientation: Toward the street.
- ❖ Floor Area Ratios (FAR): Low intensity development with FAR ranging from 0.1 to 0.4.
- ❖ Access and Circulation: Access is oriented almost exclusively to automobiles with only basic pedestrian and bicycle facilities.
- ❖ Parking: Each building has its own parking lot with no on-street parking.
- ❖ Through Traffic: High volumes.
- ❖ Driveways: Consolidated wherever possible with common driveways servicing multiple developments.

Industrial

- ❖ Land Use: Industrial, warehouse, and manufacturing.
- ❖ Development Form: Dispersed individual buildings along the street frontage.
- ❖ Building Setbacks: Usually 30 to 300 feet.
- ❖ Building Orientation: Toward or away from the street with only basic pedestrian and bicycle facilities.
- ❖ Floor Area Ratios (FAR): Low intensity with FAR rarely exceeding 0.2.
- ❖ Access and Circulation: Access is oriented to automobiles and trucks with only basic pedestrian and bicycle facilities. Transit service, including ridesharing, is focused on developments with high numbers of employees.
- ❖ Parking: Each building has its own parking lot with reliance upon on-street parking to meet peak demands.
- ❖ Through Traffic: Moderate to low volumes.
- ❖ Driveways: Each property is served by one or more driveways.

Low Density Residential

- ❖ Land Use: Residential (may include some government or institutional uses)
- ❖ Development Form: Single family.
- ❖ Building Setbacks: 20 - 35 feet.
- ❖ Building Orientation: Toward the street.
- ❖ Access and Circulation: All transportation modes are supported with pedestrian and bicycle modes utilized for neighborhood circulation.
- ❖ Parking: Parking is distributed and not centralized with on-street parking accounting for some of the total.
- ❖ Through Traffic: Low.

Medium and High Density Residential

- ❖ Land Use: Residential
- ❖ Development Form: Townhouses, apartments, and multi-family (including buildings with three or more stories)
- ❖ Building Setbacks: 10 to 60 feet.
- ❖ Building Orientation: Away from or toward the street.
- ❖ Access and Circulation: All transportation modes are supported with emphasis on alternative modes (bicycling, walking, and transit) especially for internal circulation and circulation within neighborhoods.
- ❖ Parking: Distributed or in centralized lots (depending upon the density) with on-street parking.
- ❖ Through Traffic: Low to moderate volumes.

Open Space / Recreational

- ❖ Land Use: Open Space / parks
- ❖ Development Form: Very low intensity uses with few buildings.
- ❖ Access and Circulation: All transportation modes are supported with emphasis on access by pedestrian and bicycle modes. Parks have infrequent but potentially high trip generation in off-peak periods. Few but often large driveways.

Street / Land Use Classification

The street class designation is derived from a unique combination of one street and one land use class. There are 21 possible classes that are shown in Table 5-1. A cell with a dark circle represents a street/land-use functional classification. A blank cell indicates there is no classification because of incompatible street function and land use.

TABLE 5-1
Street - Land Use Functional Classification

Land Classification	Arterial	Collector	Local
Urban Core	●	●	
Commercial - Limited Access	●		
Commercial - Controlled Access	●	●	
Industrial	●	●	●
Medium / High Density Residential		●	●
Low Density Residential		●	●
Open Space / Recreational	●	●	●

Design Features

The detailed design features and policies associated with each street - land use class is described in the City's Street Design Standards. The Standards are included within the City's Subdivision Ordinance and Appendix C of the Local Street Plan.

Chapter 6

Financial Forecasts

Financing is fundamental to operating, maintaining, and constructing a multi-modal transportation system. Adequate funding is a necessity to realize the goals and policies contained within the Transportation System Plan. Money does make the "wheels" go round.

Transportation system financing is more complicated than the transportation system itself. Multiple sources of funding from every level of government with various restrictions or conditions make financing the transportation system a complex process. Additionally, the regimented governmental bidding and contracting process makes it a full time endeavor. The responsibility of financing the system is largely delegated to the Public Works Director. The job is a difficult one, especially when coupled with the ever-changing regional and statewide transportation project priority setting processes, and the extraordinarily keen competition for funds. The City Planner and a City Councilor, serving on the Rogue Valley Metropolitan Planning Organization, have supporting roles.

Existing Funding Sources

There are few sources of revenues that the City directly sets or controls. The majority of existing revenues come from State or Federal sources over which the City has no control. Any revenue increase, other than those which might arise through Federal or State action, are limited to local gas taxes, vehicle registration fees, transportation utility fees, or system development charges, or property taxes (bond measures, local improvement districts, or special levies). Major sources of revenue are reviewed in the following paragraphs.

Gas taxes are the most common and widely understood transportation funding source. The State levies a 24 cents tax per gallon of gasoline sold. The State Legislature has responsibility for setting the State tax rate (except as legislation may be referred to or placed on the ballot through initiative) and the allocation among the State, counties and cities. The current formula provides for funds to be distributed 60%, 24%, and 16% among state, counties, and cities, respectively. Changes in the allocation which would reduce the State share and increase counties and cities share are currently under consideration. (That potential change has not been reflected in this Chapter's assumptions.) The cities' share is allocated to each incorporated city based upon population. State highway fund revenues (gas taxes, vehicle registration fees, and weight mile taxes) "provide approximately 63% of State transportation revenues."[22] In turn, State revenues accounted for 26 percent of the City's 1998 revenues. If federal "pass-through" money used for the reconstruction of 1st Street are ignored, the State gas tax share jumps to 59 percent. Gas taxes are constitutionally dedicated to operation and maintenance activities, and improvements within the road right-of-way.

[22] Draft 1998 Oregon Highway Plan, p 23, January 1998

Historically, **federal gas** taxes have not been used in support of the City's transportation system. The 1st Street improvement between Main and Bear Creek Drive has changed that. Federal funds flow through the State, to the Rogue Valley MPO, and finally to the City. The MPO is guaranteed a fixed amount each year (approximately $650,000 in 1999). Its five member board of local elected officials (one of which is from the Phoenix City Council) determines project priorities consistent with the Regional Transportation System Plan. The Federal Surface Transportation Fund can be used for any transportation purpose including transit, bikeways, transportation demand management, carpools, etc.

The City's **Transportation System Development Charge** (SDC) is a local fee charged to new or expanding development. The fee, in theory, is designed to ensure that new development "pays its own way." SDC's can only be used for capacity additions but are not limited by mode. Funds can be used for: adding a travel new lane, installing a signal, increasing or creating new transit services, adding a bike lane, constructing sidewalks or similar projects. They can not be used for maintenance of the existing system. All SDC improvements must be listed in an adopted capital improvement program.

Transportation Utility Fees, another locally established and administered fee, are dedicated exclusively to the maintenance of the transportation system. The transportation utility fee is designed to equitably distribute the cost of maintenance to all users. Street overlays, a thin layer of asphalt applied on top of a deteriorating pavement surface, are almost the exclusive use of Transportation Utility Fees.

Table 6-1 summarizes the existing sources of funding, the purpose, and 1998 annual revenue. A variety of other funding sources and options are available. These are described within Appendix A.

TABLE 6-1
1998 Transportation System Revenue Sources

Source	Purpose	Estimated 1998 Revenues
Federal Surface Transportation Funds	Maintain, operate, and construct a multi-modal transportation system	$350,000
State Highway Fund	Operation, maintenance and construction of the roadway network	$167,000
State Small Cities Allocation	Maintenance and construction of the roadway network	$25,000
State Bicycle and Pedestrian Program	Bicycle and pedestrian system improvements	$100,000
City Transportation System Development Charge	Addition of transportation system capacity	$35,000
City Transportation Utility Fee	Maintenance of the existing roadway network	$48,000
Total	--	$725,000

Financial Forecasts

Future funding is dependent upon transportation system needs, the ability or willingness of the community to pay for them, and the community's ability to win State and Federal funding. Assumptions about these variables are essential in order to forecast future revenues. Table 6-2 lists the assumptions and their affect on the overall forecast.

TABLE 6-2

Transportation System Revenue Forecast Assumptions

Source	Assumption	Effect [1]
Transportation Utility Fees	The fee will increase at a rate consistent with the engineering Cost Index	3.3% increase per year
System Development Charges	The fee will be unchanged	N.A.
State Highway Fund	Future local gas taxes will grow consistent with the growth in Statewide Highway Funds.	3.5% increase per year
State Bicycle and Pedestrian Program	The City's request will be granted once every three years.	$97,000 every 3rd year
Federal Small Cities Allocation	The City's requests will be granted once in three years	$25,000 every 3rd year
Federal Safety Funds allocated to Oregon	The City will share in ODOT Region 3's forecast revenue consistent with the percentage of State system lane miles within the City – approximately 10.85 lane miles or 0.86 percent of Region 3's total lane miles.	App. $58,000 per decade
Federal Enhancement Program allocated to Oregon	City's share of Region 3 funds consistent with the City's population (0.9 percent of total).	$50,000 every fifth year
Federal Bridge Funds allocated to Oregon	Funds will be available to replace Fern Valley Bridge at Bear Creek	One - time $6,379,000
Federal Congestion and Air Quality Management Funds (CMAQ) allocated to Non-attainment area	The air shed will be designated as non-attainment for ozone and the City will share in the region's allocation consistent with its population - 4.4% of the MPO population.	$35,000 per year
Federal Surface Transportation Program allocated to MPO	The City will secure 20 percent of the annual allocation or equivalent amounts periodically.	$130,000 per year

[1] 1998 dollars.

These assumptions are embodied within the Financial Forecast included in Appendix B.

Financial Needs

Existing transportation deficiencies total $12,549,800 in 1998 dollars. Future needs are forecast to add more than $41,075,200 in 1998 dollars. The existing revenues are not sufficient to meet future needs.

Goals and Policies

The City adopted goals and policies related to public facilities management as a part of the Public Facilities Element of the Comprehensive Plan. These policies emphasize the prudent management and development of city controlled public facility revenue sources.

Chapter 7

Transportation System Alternatives

Introduction

Alternatives, as used in this Chapter, are different combinations of transportation system strategies. The strategies include improvements to modal systems (bicycle, pedestrian, auto, and transit), transportation demand management, and transportation system management programs. The Chapter includes descriptions of six alternatives (no-build, A, B, C, D, and a Recommended Alternative) which are followed, in turn by an evaluation. Each alternative is unique. They are structured to satisfy the transportation system needs identified in Chapter 4.

All alternatives, except the no-build, were designed to address the goal concepts developed through the City's community involvement process and Oregon Transportation Planning Rule standards. Alternatives vary in terms of how well or completely they meet these and the mobility needs of residents and visitors.

Evaluation of transportation system alternatives is generally crude and does not entail extensive analysis (such as those employed in developing an environmental impact statement). This approach is due to the fiscal and time limits placed upon the planning process and the number of projects considered. The evaluation process, however, is an important planning tool as will be illustrated within this Chapter.

Each alternative was evaluated using various criteria. These "measures of effectiveness" are intended to aid in the selection of a preferred alternative. They include:

1) Vehicle miles of travel,
2) Proportion of streets with bicycle lanes,
3) Proportion of streets with sidewalks,
4) Street system connectivity,
5) Cost, and
6) Total travel time on arterial and collector streets.

These measures were selected for a variety of reasons. Vehicle miles of travel and total travel time are direct outputs from the Rogue Valley Metropolitan Planning Organization's computerized model and provide a method of measuring system efficiency. Peak-hour delay is probably a better measure of transportation system performance since it integrates the effects of congestion on travel. Unfortunately, the computerized modeling program does not calculate peak-hours of delay. Further, the model does not vary total trip volume, modal choice, or time of travel based upon the projects included in the alternatives. The model's value lies in forecasting vehicle routing: how many trips will utilize which streets or combinations of streets. Ideally it would do more. But given this limitation, the data, tables, and figures included in this chapter overstate the role of the auto mode. Nevertheless, using this information without adjustment facilitates comparison between street system alternatives which is the chief objective of this Chapter.

The proportion of streets with sidewalks or bicycle lanes is included as a "measure of effectiveness" to gain insights into the breadth and potential effectiveness of the bicycle and pedestrian systems. Like the auto, bicycle and pedestrian modes require specific facilities in order to maximize their contribution toward meeting mobility needs.

Cost is the best understood of the measures. The estimated alternative cost is based upon the sum of individual project costs. These are itemized in Appendix C. Costs are based upon planning level analysis and do not include the costs of right-of-ways. Utility costs were not included except for the Fern Valley / Cheryl Lane realignment options.

Each alternative is composed of unique combinations of the following transportation strategies:

1) Transportation systems management,
2) Transportation demand management,
3) Transit system strategies,
4) Land use strategies,
5) Bicycle and pedestrian system, and
6) Street system improvements.

Transportation system management (TSM) projects are typically low-cost improvements or changes to the transportation system which improve the flow of traffic using existing facilities. Examples include coordinating traffic signals, re-striping lanes, using one-way streets, and channelizing intersections to separate movements without adding travel or turn lanes. These projects are very cost effective and can usually be implemented quickly. Because they don't include new construction, they are the preferred approach to traffic congestion.

The channelization of Bear Creek Drive is an example of a TSM project. The project would "channel" through traffic to the outside lane of Bear Creek Drive between Oak Street and 5th Street (much like traffic on Biddle between McAndrews and Jackson Street in Medford is routed). In this way through traffic is not mixed with vehicles either turning onto, or coming from intersecting streets. This simple technique reduces delay and improves safety.

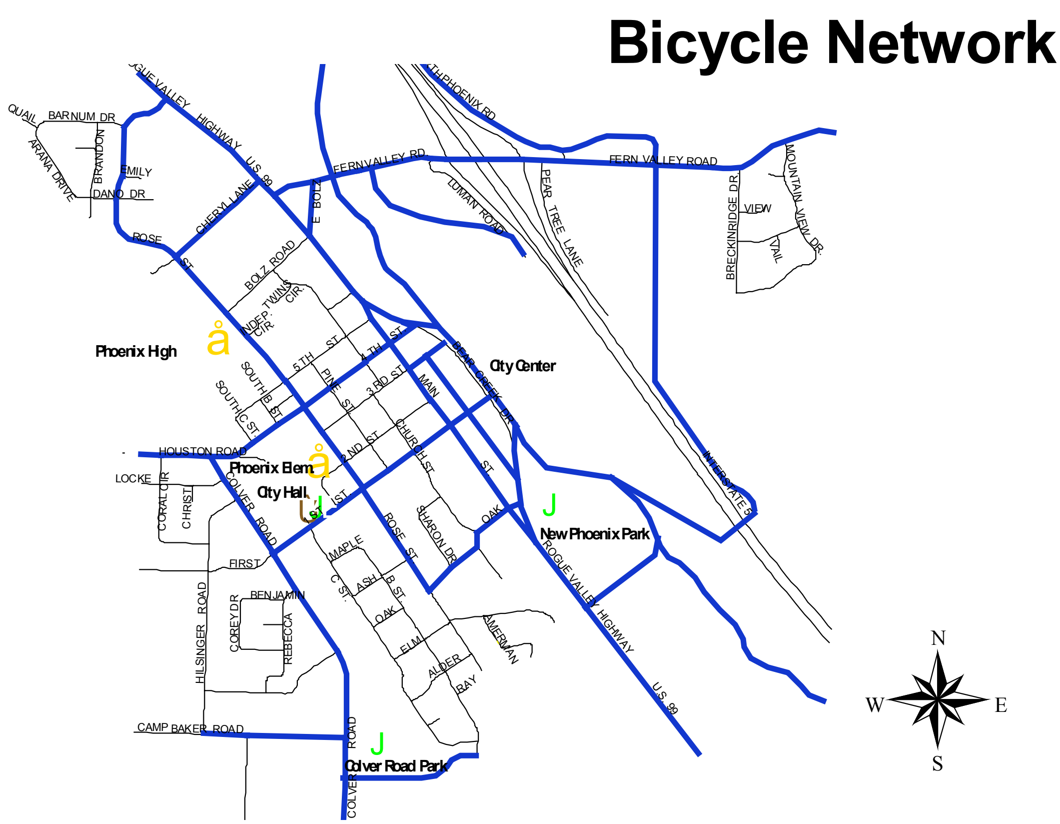
Transportation demand management (TDM) projects are another strategy that does not include the construction of new facilities. They focus on shifting travel demand to non-peak times or to other modes. TDM's usually include direct incentives or promotion of the use of non-auto modes including tele-commuting, carpooling, transit use, staggered work hours, and a four day work week. Transportation demand management can also include disincentives some examples include charging for parking, peak hour tolls or congestion pricing, or charges for vehicle miles of travel.

Transit system strategies are those transportation improvements directed exclusively to public transit operations. Key features include increasing bus frequencies and/or expanding the geographic distribution of transit services.

Land use strategies include provisions for changes in land use or land use intensity/density. These concepts often include the development of mixed-use centers that provide, by their design, shorter trip distances, greater use of bicycle and pedestrian modes, jobs/housing balance, and transit oriented development. The City's recently adopted land use element and City Center Element provide for mixed-use land use development within the City's core. Consequently, the land use strategy simply reflects the existing Land Use Plan.

Bicycle and pedestrian strategies have as their central focus the creation of a safe and ubiquitous bicycle and pedestrian network. Widening and paving existing gravel shoulders, and constructing curbs, gutters, and sidewalks are the types of projects that support this strategy.

FIGURE 7-1
Bicycle Network Improvements (bicycle facilities are in bold)

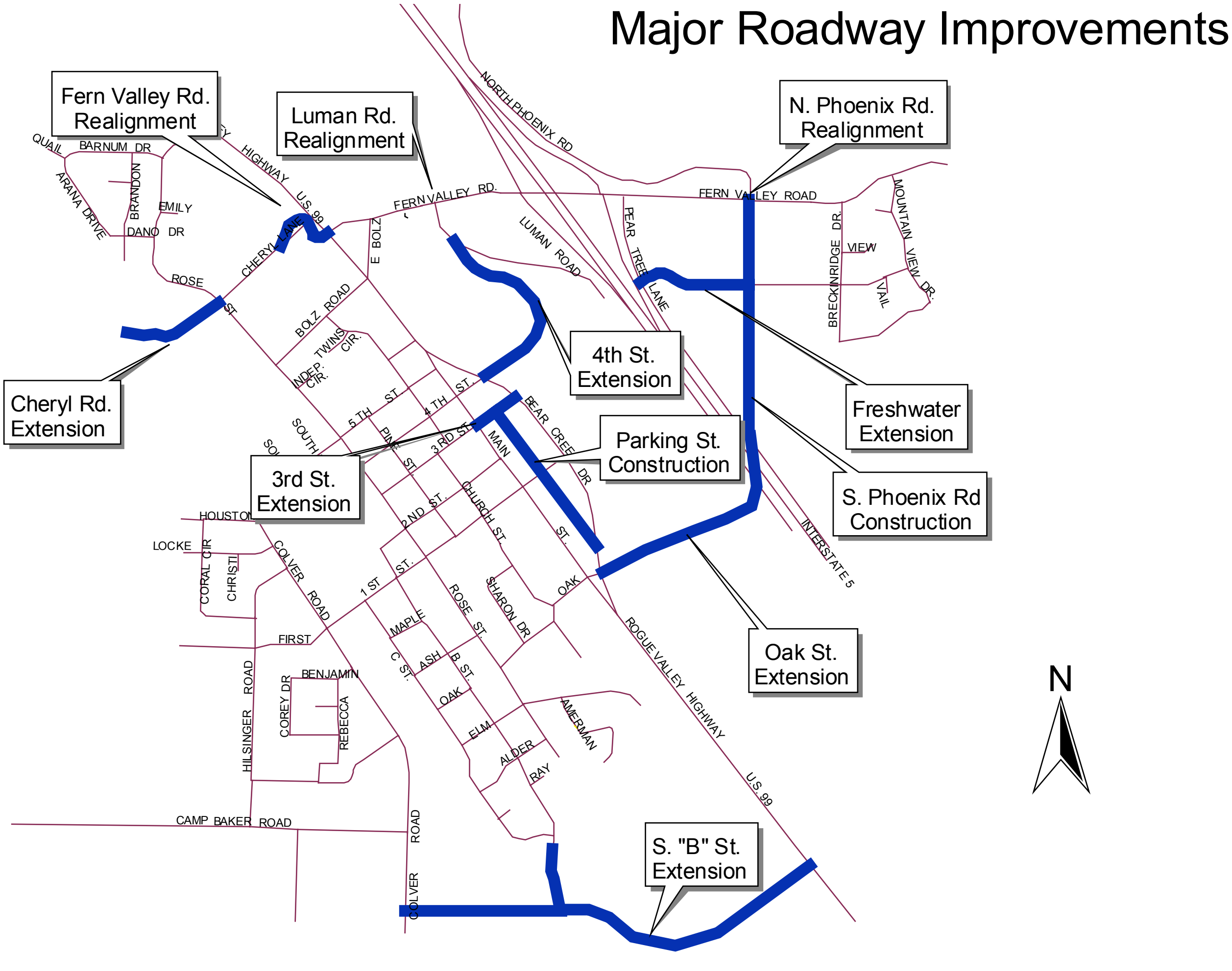


Bicycle improvements are limited to the collector and arterial street system except for the Bear Creek Greenway and a bicycle / pedestrian link connecting the New Phoenix Park (off of Bear Creek Drive) and S. Phoenix Road. Figure 7-1 illustrates the bicycle network embodied within the various alternatives.

Street system improvement concepts include a broad mix of specific improvements to the street network, signals, and widening or constructing new roadways. It is not possible to construct all the roadway projects included in all the alternatives. There will simply not be enough money to construct all of them (see Chapter 6).

Major project and network improvements are shown in Figure 7.2. Appendix C includes a listing of projects, estimated costs, and a detailed (project by project) description of the alternatives.

FIGURE 7-2
Street System Improvements



New roadways or extension of existing roads are planned to include bicycle and pedestrian facilities. New roadways, such as the extension of “B,” 4th or Oak, will extend the bicycle and pedestrian system. These routes are not shown in Figure 7-1.

Alternatives

Each alternative is composed of a unique set of projects. All alternatives, even the no-build scenario, include maintenance and preservation of the existing pavement. Each alternative description also contains a summary of major components, forecast peak-hour traffic volumes, and a review the alternative’s performance relative to the measures of effectiveness.

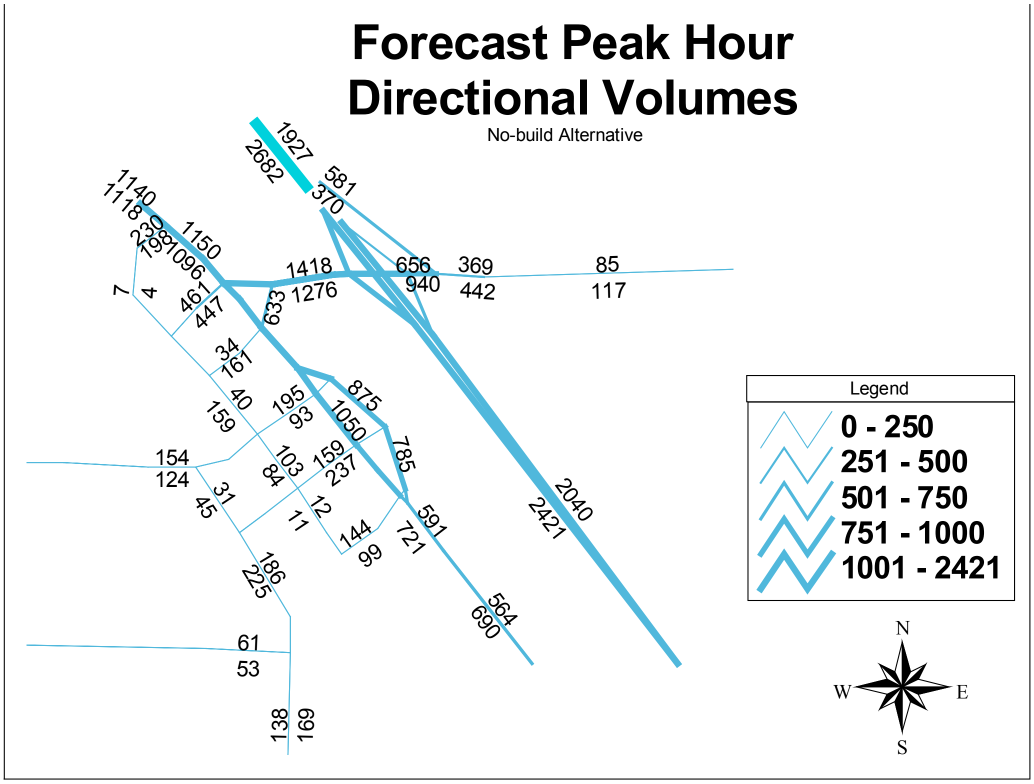
No-Build Alternative

The no-build alternative is easily described: it includes **no new transportation projects** or initiatives. It **does include continued maintenance** of the existing street network through pavement management. The no-build is not so much an alternative but rather a scenario of what will occur if no improvements are made in the existing transportation system.

This alternative's modest cost, just $1,890,000, is offset by the congestion and safety costs imposed upon residents and visitors, and does nothing to create a less auto dependent transportation system. Numerous intersections will fail during peak-hour and congestion on Fern Valley Road between North Phoenix and the Rogue Valley Highway will be extreme. Additionally, the no-build alternative does not provide the types nor the levels of facilities needed to serve land uses identified in the City's Land Use Element. That is especially true in the Fern Valley Corridor where facilities are already operating at unacceptable levels. Figure 7-3 forecasts peak-hour directional traffic volumes based upon the no-build alternative.

The no-build alternative does embody the City's Land Use Element, including the City Center Plan, and contributes to identifying transportation needs.. This is reflected in the model through land use forecasts (employment and housing units). Consequently, the no-build scenario includes a mixed-use development in the City's downtown and creates improvements in the balance of housing and employment. The alternatives that follow attempt to meet the needs that are left unmet through the no-build alternative.

FIGURE 7-3
No-build Alternative – Peak Hour Traffic Volumes (vehicles per hour)



Alternative A

Alternative A increases, more than any other alternative, the extent of the roadway network, adding almost 2.5 miles of new roads (excluding the mileage associated with the relocation of Luman and North Phoenix Roads). It is estimated that Alternative A would cost, in 1998 dollars, almost $50,000,000 to fully implement. New or extended roadways include: **construction of South Phoenix Road, Oak Street extension, Cheryl Lane extension, extension of Freshwater Drive, and the extension of 4th Street**. Additionally, the alternative includes **channelization of Bear Creek Drive** to separate through and local traffic (this project is discussed in greater detail in Alternative B). Table 7-1 highlights the mix of projects and transportation strategies included in Alternative A.

TABLE 7-1
Transportation System Alternative - A

Improvements or Strategies	Extent or Scope	
	Number of Projects	Cost
Signals	10	$2,500,000
Trans. System Management (TSM)	3	N.A.
New Construction	9	$16,639,000

Reconstruction	3	$4,100,000
Bicycle Network	17	$1,802,100
Pedestrian Network	120	$4,432,000
Bridge	2	$21,379,000
Transit Services	0	$0
Maintenance	N.A.	$1,890,000
Grand Total	164	$52,742,000

The output from the computerized transportation model demonstrates the model's sensitivity to network changes. For instance, the **extension of Oak and 4th** combine to reduce total travel time and vehicle miles of travel even when combined with the relocation of Luman and North Phoenix Road. In some ways, this group of projects compliment one another. The relocation of North Phoenix and Luman increase the distance people using these routes must travel and consequently increase the vehicle miles of travel and the total travel time. But these increases are offset by the creation of a more efficient network by extending 4th Street and Oak Streets to Fern Valley.

The explanation, like the rules upon which the model is based, is fairly basic. Imagine you are driving, walking, or biking and are stopped at the intersection of Bear Creek Drive and 4th Street. You are headed for the Outlet Stores located near the interchange. The shortest route by approximately one-tenth of a mile is the 4th Street extension to Fern Valley. The longer, existing route would require taking a left up to E. Bolz where you would take a right onto Fern Valley Road. Due to the shorter trip distance and shorter travel time, you'd likely take the 4th Street extension. Your return trip would probably follow the same path.

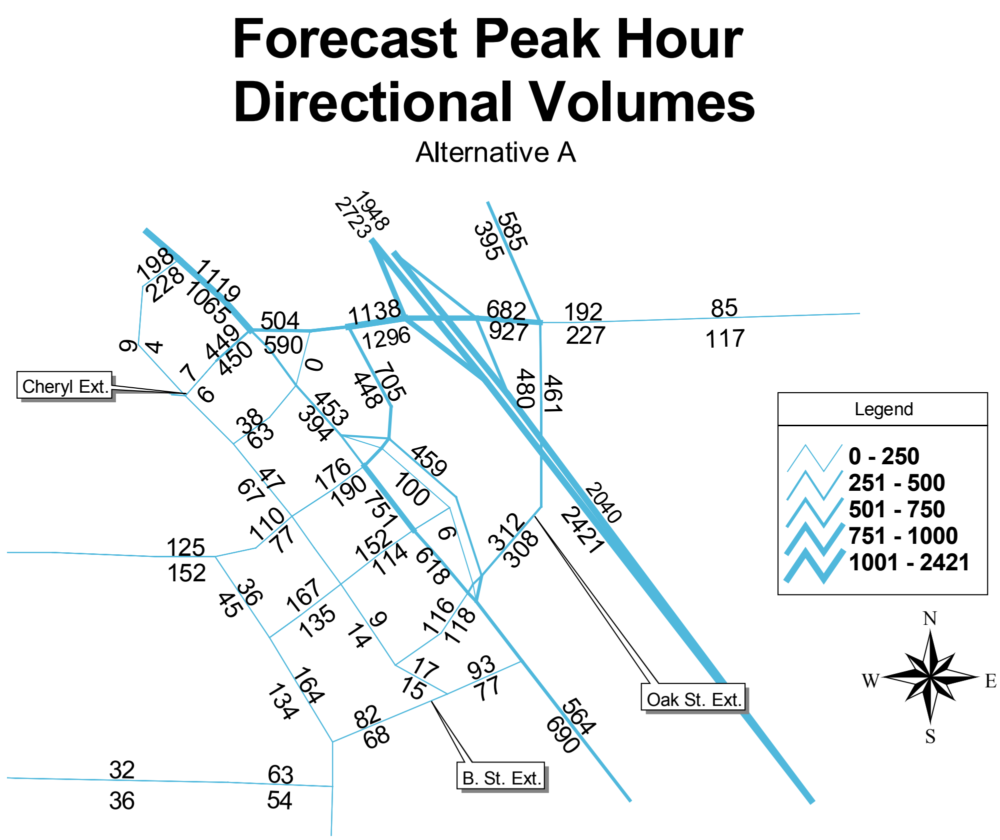
Similarly, someone traveling from Talent/Ashland to East Medford would turn right onto the **Oak Street Extension** to Fern Valley and proceed north on North Phoenix Road. Both the extension of 4th Street and Oak represent connectivity improvements which would reduce mileage and travel time for significant numbers of trips. In fact, they are so effective, travel on East Bolz would drop from 629 vehicles in the "no-build" alternative to practically zero.

Alternative A will provide types and levels of facilities necessary to meet the City's Comprehensive Plan land use objectives. However, **it does not provide any new transit services or park-and- ride lots.** This omission is an important deficiency.

The transit system is a crucial ingredient in meeting the transportation needs of the City and its residents. The function and utility of the Special Transportation Area (see Chapter 3) is contingent upon the provision of high quality bicycle, pedestrian, and transit services. Adding additional peak hour transit services and creating a major transit trunk line along the Rogue Valley Highway between Ashland and Medford is a prerequisite to reducing auto dependency within the corridor. Certainly, reduction in vehicle miles of travel per capita, as the Oregon Transportation Rule provides, will require an efficient and convenient transit system. Alternative A does not contribute the creation of such a system.

Alternative A would **create a pedestrian and bicycle network** within the City where, at present, there is not one. These improvements contribute to a safer walking and bicycling environment for children and adults. Additionally, they make walking or bicycling a viable alternative for short trips where the origin and destination is wholly within the City. Figure 7-4 illustrates the forecast 2018 Alternative A peak hour directional traffic volumes.

Figure 7-4   Alternative A – Peak Hour Traffic Volumes



The figure provides a context, when compared to the no-build alternative (Figure 7-3), for evaluating the relative shifts in traffic volumes with the addition of new network links. The extensions of Oak and 4th have a profound effect on the distribution of trips on the system. These two extensions account for a reduction of approximately 1,325 vehicles on Rogue Valley Highway between Bolz and 4th Street. In contrast, the extension of "B" Street between the Rogue Valley Highway and Colver Road (including a new railroad crossing) has only a modest effect on volumes on Colver between 1st and Camp Baker: roughly 100 vehicles. Similar reductions occur on 1st Street west of Main Street. The extension appears to be relatively unattractive route for trips either generated by or attracted to Rose / Oak neighborhood. Only 32 (15+17) vehicles are forecast to use the link connecting the "B" Street extension with Oak.

The extension of "B" Street would entail an exception to Statewide Planning Goal 3, Agricultural Lands. Exceptions require that other streets cannot reasonably accommodate the use. (See OAR660-04 for a detailed description of the exception standards and criteria). Neither 1st Street nor Colver Road are approaching capacity nor are they high accident locations. These roadways can accommodate the travel demand that would otherwise use the "B" Street extension. At some future date, beyond 2018, an extension of "B" may be warranted and justified.

Table 7-2 summarizes Alternative A based upon the evaluation criteria listed earlier in this Chapter.

TABLE 7-2
Alternative – "A" Evaluation

Evaluation Criteria	Measure of Effectiveness	Change from No-build
Vehicle miles of travel	16,807 miles	2.6% decrease
Proportion of streets with bicycle lanes	50%	455% increase
Proportion of streets with sidewalks (one or both sides)	85%	174% increase
Proportion of streets with sidewalks (both sides)	79%	229% increase
Street system connectivity	N.A.	Improved connectivity
Cost	$52,436,000	$50,546,000
Total peak hour vehicle travel time on arterial and collector streets	467.6 hours	1.9% decrease

It should be noted that the vehicle miles of travel (VMT) and peak-hour vehicle travel time (VHT) are outputs from the RVMPO's computerized transportation model. The computer program only models auto-drivers' behavior. The trips using alternative modes are not integrated into the results. Therefore, travel by pedestrians and bicyclists are not reflected in the above figures and thus reductions in VMT and VHT will be somewhat greater.

Alternative B

Alternative "B" improves upon the no-build scenario but limits the extent of new roadway links; only the **North Phoenix Road and Luman realignments**, and the **projects associated with the development of the City Center** are included. Additionally, pedestrian improvements are limited to those adjacent to arterial or collector roadways. Improvements to the bicycle network are identical to Alternative "A" except a new link crossing both Bear Creek and Interstate 5 is added. The construction of a **park and ride lot** in the vicinity of Highway 99 and Fern Valley Road is also included in this alternative. A major change is excluding of the reconstruction of the Interstate 5 bridge which, under this alternative, would be delayed beyond the planning period. The changes reduce the total cost of transportation improvements by almost 50 percent compared to Alternative "A." Table 7-3 summarizes the projects included in Alternative B.

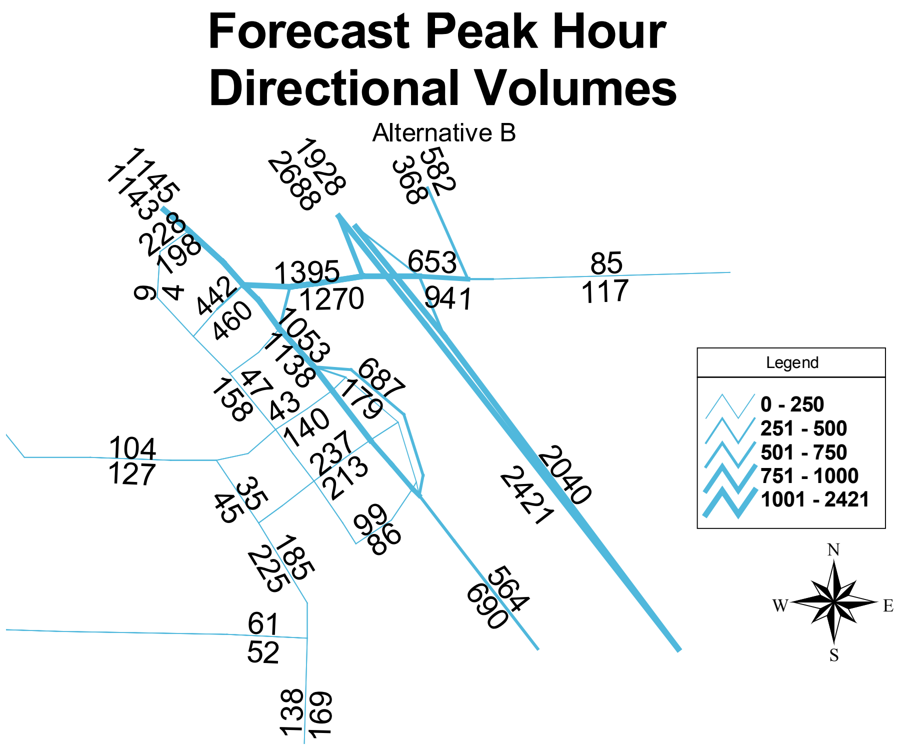
TABLE 7-3
Transportation System Alternative B

Improvements or Strategies	Extent or Scope	
	Number of Projects	Cost
Signals	10	$2,500,000
Trans. System Management (TSM)	3	N.A.
New Construction	3	$3,582,000
Reconstruction	3	$4,100,000
Bicycle Network	18	$1,283,000
Pedestrian Network	50	$2,018,000
Bridge	1	$6,379,000
Maintenance	N.A.	$1,890,000
Transit	1	$300,000
Grand Total	86	$26,585,000

The computerized model shows only minor differences between this alternative and the no-build. Total hour and miles of travel increase due to longer travel distances along the relocated North Phoenix and Luman Roads. Figure 7-5 illustrates the forecast peak hour traffic volumes.

FIGURE 7-5

Alternative B – Peak Hour Traffic Volumes



Alternative B does include, as does Alternative A, **channelization of Bear Creek Drive** as a transportation system management project. This improvement would separate through traffic from local traffic by signage and lane separations (similar to Biddle Road in Medford). The improvement would contribute to less congestion and fewer conflicts between left turn movements at the intersections of 1st and 4th at Bear Creek Drive. These turning movements could be undertaken without delaying through traffic. Similarly, the vehicles turning from 1st Street and 4th Street would have less delay associated with waiting for a gap in the oncoming north-bound traffic.

Alternative B does not include the construction of South Phoenix Road nor the extension of Freshwater Drive. Without these improvements access to and internal circulation within the southeast quadrant of the interchange (Petro) will be dysfunctional. South Phoenix Road and Freshwater will serve to provide a substitute for Pear Tree Lane (see further discussion under Alternative D).

Table 7-4 summarizes the expected impacts of Alternative B.

TABLE 7-4
Alternative – "B" Evaluation

Evaluation Criteria	Measures of Effectiveness	Change from No-build
Vehicle miles of travel	17,357 miles	0.01 decrease
Proportion of streets with bicycle lanes	46%	444% increase
Proportion of streets with sidewalks (one or both sides)	56%	81% increase
Proportion of streets with sidewalks (both sides)	50%	108% increase
Street system connectivity	N.A.	No change in connectivity
Cost	$26,585,000	$24,385,000
Total peak hour vehicle travel time on arterial and collector streets	476.5 hours	No change

Alternative C

This alternative combines the projects included in Alternative B but adds the **extension of 4th Street** over Bear Creek to its intersection with the relocated Luman Road. Additionally, sidewalk improvements are limited to just one side of collector and arterial streets (where they don't currently exist on both sides). Unlike Alternatives A and B, Alternative C includes specific **transit strategies**: decreasing headways (i.e. increasing the frequency of buses during rush hour) during the peak hour to 15 minutes and purchasing a van for use in a volunteer transportation service. Alternative C also drops selected signalization projects. These changes have the effect of reducing cost of the alternative by approximately $1,250,000 compared to Alternative B.

The transit strategies are not, unfortunately, reflected in the transportation system model. Consequently, the benefits associated with these improvements are not reflected in either vehicle miles or hours of travel. Decreasing peak-hour headways helps to make transit a viable option for workers who might otherwise drive. "While there are many factors that contribute to transit ridership, the level and frequency of service on the street is a key element in maintaining and/or attracting a ridership base."[23] The transit system's value for work trips is directly related to the frequency of services offered.

Alternative "C" also excludes several intersection signalization projects. Specifically, 1st Street and 4th Street at Bear Creek Drive and 1st Street and Main would not be signalized under this scenario. The signalization of 4th Street and Bear Creek Drive would be an essential element of the extension of 4th Street to Luman. The 1st Street intersections with Main and Bear Creek Drive may be able to function without signals. But it is just as likely to require signalization considering:

1) The prospective City Center development,

2) Pedestrian and bicycle demands within the area,

[23] RVMPO Regional Transportation Plan 1995 - 2015, January 1997, p. 86

3) The effects of channelization on Bear Creek Drive traffic,

4) The timing of the Oak Street and Bear Creek Drive / Main Street signalization

5) Traffic calming needs emanating from urban development along Bear Creek Drive, and

6) The volume of bicycle and pedestrian trips between the Bear Creek Greenway and the balance of the City.

These factors complicate the issue and make signal needs at these locations impossible to confidently predict at this time. Nonetheless, it appears prudent to assume that the signals will be needed to manage traffic and encourage mixed-use developments. Table 7-5 summarizes the strategies included in Alternative C.

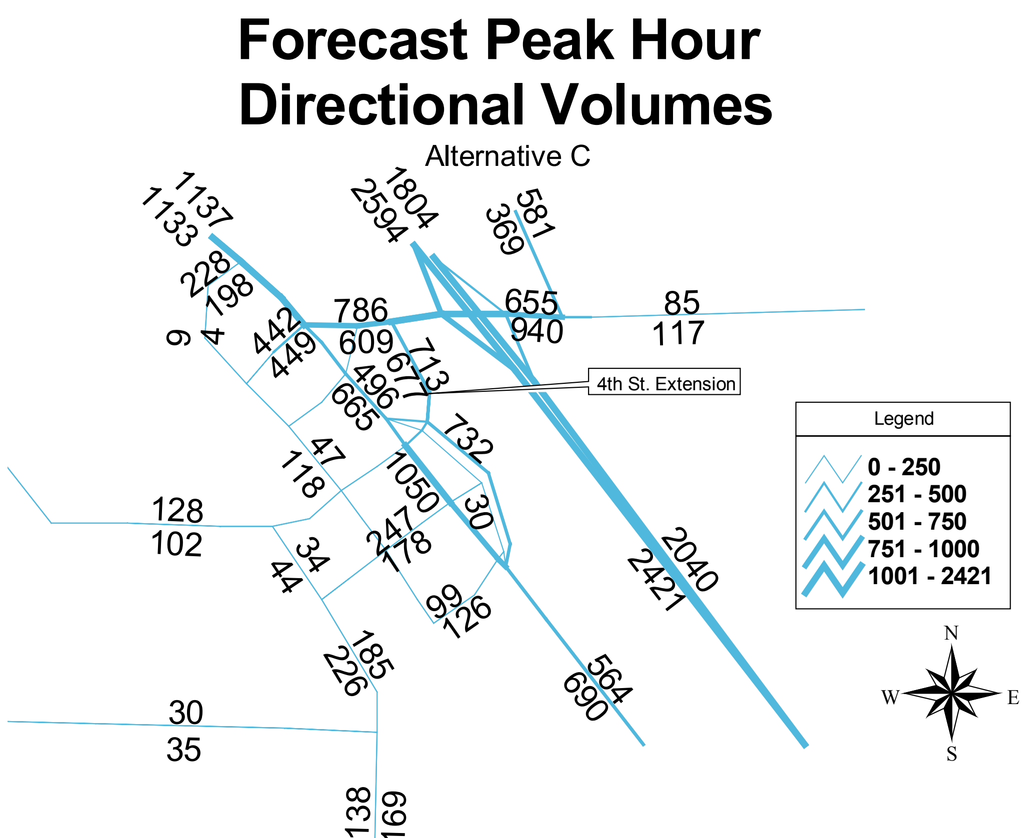
TABLE 7-5
Transportation System Alternative C

Improvements or Strategies	Extent or Scope	
	Number of Projects	Cost
Signals	10	$1,750,000
Trans. System Management (TSM)	3	N.A.
New Construction	4	$5,244,000
Reconstruction	3	$4,100,000
Bicycle Network	17	$1,283,000
Pedestrian Network	50	$1,009,000
Bridge	1	$6,379,000
Maintenance	NA	$1,890,000
Transit	2	$3,055,000
Grand Total	86	$25,229,000

The model outputs demonstrate, again, the merits of improving the connectivity of the street system. The extension of 4th Street substantially reduces volumes on links normally associated with travel between the City Center and the interchange area (similar to Alternative A which includes both extensions of Oak and 4th Streets). In fact, the model forecasts that this alternative would reduce travel on East Bolz to just 29 vehicles in the peak-hour. That compares with more than 600 in the no-build alternative. Unlike Alternative A, the forecast volumes on Fern Valley between the relocated Luman Road and North Phoenix Road are somewhat higher than in the no-build scenario. That is not surprising given that the extension of 4th Street and the relocation of Luman Road create a shorter and faster route between the interchange area and the center of town. Alternative A, through the extension of Oak and 4th Street provided two alternative routes rather than just one.

4th Street west of Main also becomes somewhat more attractive with the extension of 4th Street to its intersection with Luman. Otherwise, the extension of 4th Street has little impact on the system beyond the downtown and Fern Valley corridor. Figure 7-6 illustrates the forecast peak hour volumes for Alternative C.

FIGURE 7-6
Forecast Peak Hour Volumes – Alternative C



The extension of 4th Street also provides a second roadway connection between the area bound by Bear Creek and Interstate 5 with the western half of the community. In that way, it improves the function and continuity of the community. As importantly, it assures residents of Bear Lake Mobile Estates with a second way out. At present there is only one-way in and one-way out for the more than 300 residents living in the area. Some have suggested a hazardous waste spill in the interchange area could make a second outlet life saving.

Figure 7.6 lists the evaluation criteria and the comparison of Alternative C with the base case scenario.

TABLE 7-6
Alternative – "C" Evaluation

Evaluation Criteria	Measure of Effectiveness	Change from No-build
Vehicle miles of travel	17,105 miles	0.8 decrease
Proportion of streets with bicycle lanes	47%	422% increase
Proportion of streets with sidewalks (one or both sides)	57%	56% increase
Proportion of streets with sidewalks (both sides)	28%	27% increase
Street system connectivity	N.A.	Improved connectivity
Cost	$25,229,000	$23,339,000
Total travel time on arterial and collector streets	477.2 hours	0.2% increase

Variation in vehicle miles of travel and total travel time between Alternative C and the no-build alternative are virtually zero; clearly within the range of model error. Of the alternatives considered, Alternative C has the smallest increase in the percentage of streets with sidewalks on both sides.

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Alternative "D" tests the effects of **extending Oak** separate from the extension of 4th Street. Alternative "A" included both while Alternative "C" includes only the extension of 4th Street. The effects are not so dramatic as the extension of 4th Street but significant shifts in travel patterns occur nonetheless; more than 1,000 vehicles in the peak hour would use this route. It relieves congestion throughout the Fern Valley Corridor. As an indication of its effectiveness, it drops the volumes on E. Bolz by more than 50 percent. It has similar reductions, albeit somewhat less, on Bear Creek Drive north of Oak Street. Complimenting the extension of Oak are the **construction of S. Phoenix Road and the extension of Freshwater between S. Phoenix and Pear Tree Lane**. (Note: lands in the Bear Creek Greenway in the vicinity of the Oak extension may require special treatment due to their acquisition with Federal Land and Water Conservation Funds).

The **extension of Freshwater** and its connection with a new South Phoenix Road are essential to provide alternative circulation and access to the developed properties currently using Pear Tree Lane. The intersection of Pear Tree and Fern Valley will be abandoned, limited to right-in and right-out, or Pear Tree Lane will be made one-way. The specific treatment will be determined as a part of the North Phoenix Road realignment project and Interstate 5 ramp signalization development process. In other words, the required information, level of analysis, and consideration of alternatives is beyond the scope of the transportation system plan. It is likely that the development process for this project will ensue within the next two years.

Alternative "D" also includes the **extension of Cheryl** to serve the County owned industrial site west of the Barnum Subdivision. Currently there is no developed access to this property. It is bound by exclusive farm use land to the south, railroad tracks to the east, exclusive farm use land to the west, and undeveloped industrial lands to the north. The industrial lands to the north are

isolated much like County owned property. There is physical access but it is via a private railroad crossing that cannot be used for public purposes. This at-grade crossing is more than one-half mile north of the City's UGB. Without County or City road access, these lands cannot be developed.

The extension of Cheryl Lane like any other at-grade crossing will require approval from the Oregon Department of Transportation (ODOT) and the concurrence of Rail Tex/Central Oregon & Pacific Railroad. New at-grade railroad crossing are discouraged by ODOT. In fact, some suggest that a new at-grade crossing is impossible. However, ODOT's regulations specifically permit crossings at one-quarter mile frequencies within urban growth boundaries. The distance between 4th Street and a new Cheryl crossing is more than one-third mile.

Assuming that a new public at-grade crossing is granted (or a substitute for the private grade crossing), where would it best be located? A number of important factors should be considered: adjacent land uses, access to the interstate and cost of construction.

West Glenwood Road is a public road; the right-of-way is dedicated to the public but no public agency is responsible for the roadway's improvement or maintenance. It is somewhat like a private road in that the people who are served by the roadway are presumed to be responsible for its upkeep and improvement. There are 25 tax lots totaling approximately 80 acres owned by 18 different people that lie west of the railroad tracts. All of these properties are served by West Glenwood and use the private railroad crossing. Approximately 50 of the 80 acres are classified by the County Assessor's office as vacant industrial land and are owned by two people. The remaining 30 acres is classified as residential and is developed with approximately 20 homes. Their homes are a combination of mobile home and conventional houses with an average value of $21,000 (1996 assessment data). The lands east of the railroad tracts are primarily zoned commercial with a small area designated urban residential.

Twenty-one tax lots owned by 17 different landowners front on Cheryl Lane. The properties are zoned commercial and high and medium density residential. The medium density tract is actually the high school. It lies south of and near the existing terminus of Cheryl Lane.

The table 7.7 compares the extension of Cheryl Lane with a hypothetical crossing in the neighborhood of West Glenwood.

TABLE 7-7
Industrial Land – Access Alternatives

Criteria	Cheryl Extension	West Glenwood
Land Uses	Mixed	Mixed
Access to Interstate (from City designated industrial lands)	0.8 miles	2.0 miles

Cost of construction	$214,000	$2 million plus *

* Excludes right-of-way costs.

Alternative D also includes new sidewalks along arterials, collectors and local streets, but similar to Alternative C, would only be constructed on one side of the street. The reconstruction of the **Interstate 5 bridge** is also included in Alternative D. Also under this alternative**, bus headways would be 15 minutes throughout the day**. These two projects by themselves cost almost $39,000,000. Consequently, this alternative is the most expensive of those considered. Alternative D is summarized in the table 7-8.

TABLE 7-8
Transportation System Alternative D

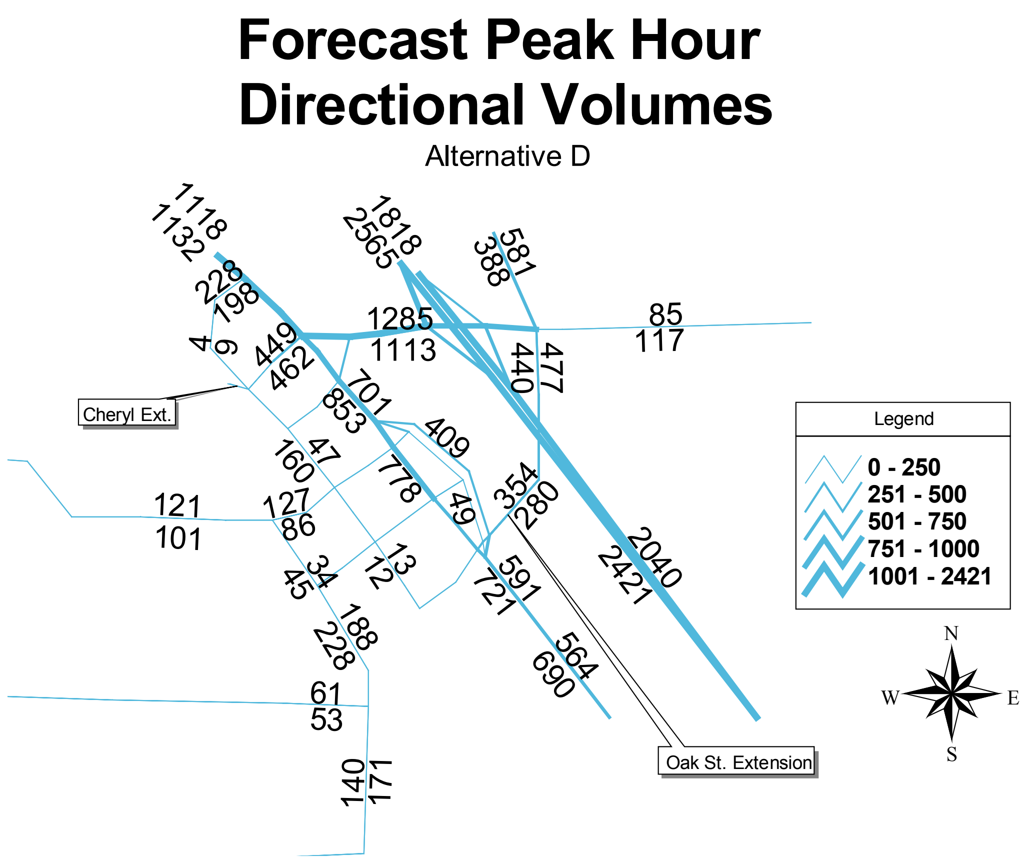
Improvements or Strategies	Extent or Scope	
	Number of Projects	**Cost**
Signals	10	$2,500,000
Trans. System Management (TSM)	3	N.A.
New Construction	6	$14,047,000
Reconstruction	3	$4,129,000
Bicycle Network	17	$1,802,000
Pedestrian Network	117	$2,151,000
Bridge	2	$21,379,000
Maintenance	NA	$1,890,000
Transit	2	$24,262,000
Grand Total	156	$72,160,000

Output from the computerized model illustrates the effectiveness of creating new, faster, and more convenient links between the east and west sides of town. The Oak Street extension would carry approximately 1000 trips during the peak hour. Volumes on alternative routes (Bear Creek Drive, East Bolz, and Fern Valley) are reduced. Because the model does not represent the modal shift (i.e. choice between walking, bicycling, driving, or taking a bus), the addition of 15 minute bus headways does not have any effect on the model's output. Some shift in modes between autos and buses would occur. Figure 7.7 illustrates the model's forecast of peak hour travel.

Alternative D contributes to a slight decline in vehicle miles and hours of travel. That is largely attributable to the more convenient path that the Oak Street extension affords. The forecast reduction is approximately six hours and 261 miles, roughly about 1.5 percent. These numbers help to illustrate that it is virtually impossible to reduce vehicle hours or vehicle miles of travel through the creation of more efficient networks.

Clearly if a community had extensive dead end or cul-de-sac streets, providing connections between them would make a significant difference. Phoenix, fortunately, has few cul-de-sacs and those that do exist are short.

FIGURE 7-7
Peak Hour Volumes – Alternative D



Given this information, holding vehicle miles of travel per capita steady over the next decade and facilitating a slight decline in the decade that follows will require more efficient land use patterns. In other words, patterns of land use which place human convenience over homogeneity and community-centric design over auto utility must be promoted. If it is more convenient to walk or bicycle than to drive, if parents feel confident that their children will be safe riding or walking, and if the distances between residential neighborhoods and everyday destinations are minimized, then people may choose not to drive. Under these circumstances, not driving increases one's quality of life. A short walking trip does not entail finding keys, grabbing a drivers license, opening the garage, starting the car, cooling down or warming up the interior of the vehicle, driving a short distance, finding a parking space, locking the car, and ultimately walking to where you really want to go. Reducing vehicle miles of travel per capita is really about making other modes attractive for selected types of trips; not about making the auto less attractive. The City Center Plan is intended to make a substantial contribution toward these ends. The construction of the parking street downtown and the extension of 3rd Street are central to development of a mixed-use land use pattern in the City Center.

These roadways serve to provide access to the core of the downtown by multiple modes, create parking for vehicles, and contribute to the maintenance of a well connected street network that supports walking and bicycling. These improvements create a basis for development within the area that is mixed-use and conveniently accessed by all modes of travel (walking, bicycling, auto, or bus).

Table 7-9 compares Alternative "D" with the "no-build" Alternative.

TABLE 7-9
Alternative – "D" Evaluation

Evaluation Criteria	Measure of Effectiveness	Change from No-build
Vehicle miles of travel	16,986 miles	1.5% decrease
Proportion of streets with bicycle lanes	48%	433% increase
Proportion of streets with sidewalks (one or both sides)	85%	174% increase
Proportion of streets with sidewalks (both sides)	30%	25% increase
Street system connectivity	N.A.	Improved connectivity
Cost	$71,160,000	$69,270,000
Total peak hour vehicle travel time on arterial and collector streets	470.1	1.3% decrease

Recommended Alternative

The Recommended Alternative is derived from and informed by Alternatives "A" through "D." Unfortunately, it is not necessarily any more affordable than the other alternatives. Transportation needs exceed available revenues (see Chapter 6, Financial Forecasts). Making the hard choices between boosting revenues or delaying projects beyond the planning horizon (for 20 years or more) is described within Chapter 8, Financial Constraints.

The process of selecting a preferred alternative is not driven by its low cost but rather by the strategies used in meeting existing and future needs. If the alternative includes too many or expensive projects, some of them will not be constructed within the planning horizon. That fact, doesn't make the need any less real or valid. The community is aware of what it needs and, at the same time, grows to understand what it can afford. But both needs and budget may change overtime; new revenues may arise, grants may become available, or development may legitimately be required to make the improvements.

The strategies included the Recommended Alternative are most similar to Alternative "D." Network improvements include the **extension of 4th, Cheryl, Freshwater, and 3rd Streets, relocation of North Phoenix and Luman Roads, and the construction of South Phoenix Road and the parking street in the City Center**. **Fern Valley Road** would be reconstructed to include four travel lanes and turn bays at intersections. **Houston Road,** just west of the railroad tracks, would be reconstructed to improve safety. **The intersection of the Rogue Valley Highway and Fern Valley Road** would be modified to allow east – west movements and improve safety.

Four possible solutions to **the Fern Valley Road / Cheryl Lane / Rogue Valley Highway intersection** were considered in order to eliminate the off-set and improve safety. Three of the four would realign Cheryl Lane or Fern Valley Road to create a standard four-legged intersection. Each option was designed to have unique characteristics that have varying degrees of impact on the existing situation. But each resulted in the realignment of the intersection. The fourth option considered rerouting Fern Valley Road traffic down East Bolz to its intersection with the Rogue Valley Highway. The recommended alternative realigns both Fern Valley and Cheryl Lane to minimize the project's impact on nearby businesses.

The Recommended Alternative also includes a complete network of bicycle facilities including the Bear Creek Greenway. Bike lanes would be included on all collectors and arterial streets. Sidewalk facilities would be added where they are missing on all local, collector and arterial roadways. Both the Bear Creek and the Interstate 5 bridges would be reconstructed. **Transit services**, under the Recommended Alternative, would include15 minute headways during the peak period, the operation of a volunteer shuttle, and the construction of a park and ride lot in the vicinity of Fern Valley and the Rogue Valley Highway. Figure 7-10 summarizes The Recommended Alternative.

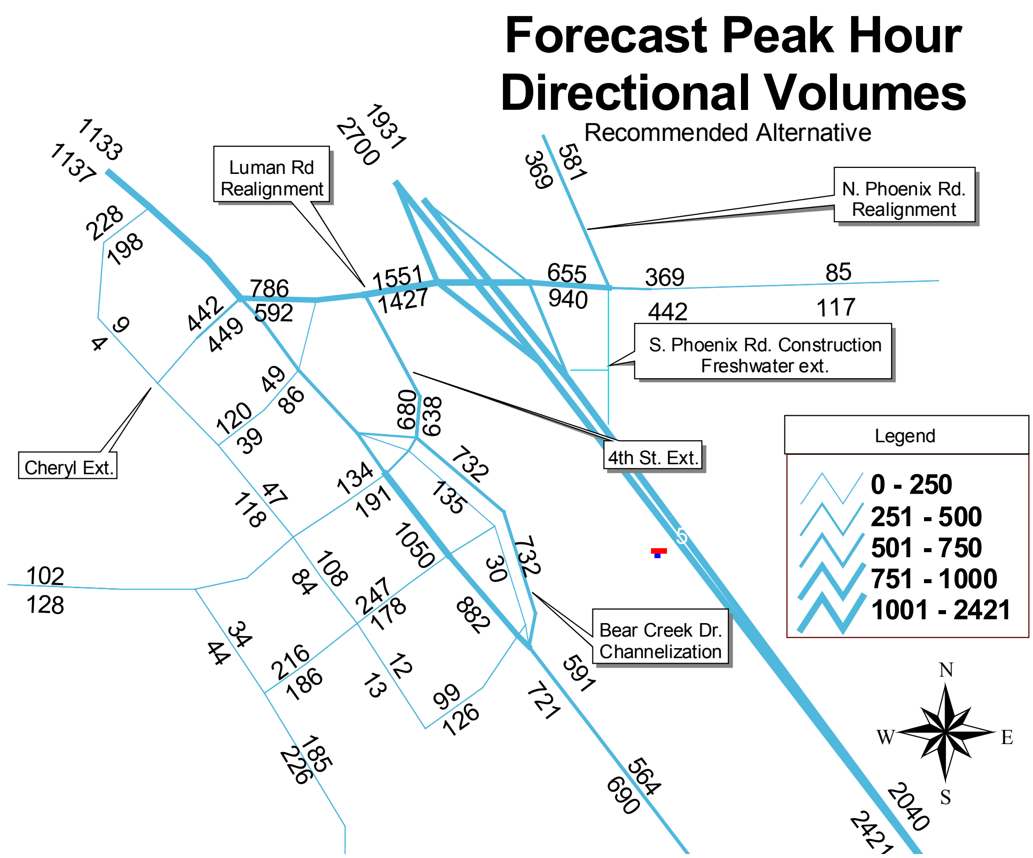
TABLE 7 -10
Transportation System Recommended Alternative

Improvements or Strategies	Extent or Scope	
	Number of Projects	Cost
Signals	8	$1,200,000
Trans. System Management (TSM)	3	$300,000
New Construction	6	$8,908,000
Reconstruction	3	$3,333,000
Bicycle Network	17	$1,802,000
Pedestrian Network	117	$4,432,000
Bridge	2	$14,034,000
Maintenance	NA	$246,000 / year

Transit	3	$3,335,000
Grand Total	156	$44,795,000

Figure 7-8 depicts the Recommended Alternative's forecast peak hour volumes.

FIGURE 7-8
Peak Hour Volumes – Recommended Alternative



The transportation model output is similar to that of other alternatives that included the creation of a new link connecting the interchange area to the west part of town. The forecast volumes are very similar to those shown for Alternative "C."

Application of the evaluation criteria to the Recommended Alternative produced similar results for Alternative C except the measures of effectiveness for the pedestrian system are much improved. That stems from the fact that more miles of the roadway network would include pedestrian facilities on both sides of the street rather than just one. The Recommended Alternative attempts to balance the needs of the various modes considering cost and effectiveness.

Table 7-11 details the evaluation of the Recommended Alternative.

TABLE 7-11
Recommended Alternative Evaluation

Evaluation Criteria	Measure of Effectiveness	Change from No-build
Vehicle miles of travel	17,105 miles	0.8% decrease
Proportion of streets with bicycle lanes	48%	433% increase
Proportion of streets with sidewalks (one or both sides)	85%	174% increase
Proportion of streets with sidewalks (both sides)	79%	229% increase
Street system connectivity	N.A.	Improved connectivity
Cost	$45,685,000	$43,795,000
Total peak hour vehicle travel time on arterial and collector streets	477.2	0.2% increase

Alternative Selection

While having multiple alternatives to consider is important, providing a basis for selecting a preferred alternative is equally crucial to the success of a local TSP. The selection of the preferred alternatives was guided by the worksheet reproduced in Figure 7-9. The ranking sheet was reviewed and approved by the City's Planning Commission and Citizens Planning Commission (PC / CPAC).

FIGURE 7-9
Alternative – Ranking Sheet

		Alternative				
	Point	A	B	C	D	Recom.

		Range					
Contributes to the creation of a more balanced transportation system.							
	Adds facilities or enhances services which support non-auto modes.	0 - 5					
	Improves or contributes to inter-modal functions.	0 - 5					
	Adds to or complements the gridded street network system.	0 - 5					
Improves the safety of the street system.							
	Resolves a traffic accident problem location.	0 - 5					
	Improves the safety for people walking or bicycling.	0 - 5					
Ensures the maintenance of the existing system.							
	Contributes to the maintenance of the existing street network.	0 - 5					
Other Considerations							
	Does the alternative stimulate job creation or retention?	0 - 5					
	Does the alternative compliment the City's land use plan?	0 - 5					
TOTAL POINTS							

The PC / CPAC reviewed, in advance of alternative ranking, several construction options for the Cheryl Lane, Fern Valley, and Rogue Valley Highway intersection. The intersection is the most dangerous within the City (see System Needs, Chapter 4). The Committee was unanimous in their view that some changes were necessary. Options included: 1) realigning the intersection so the off-set between Fern Valley and Cheryl is eliminated, 2) restricting turning movements from and to Cheryl to right-in and right-out, and 3) diverting traffic from Fern Valley east of Bear Creek onto East Bolz and creating a new signalized intersection at its intersection with the Rogue Valley Highway. Each of the options is discussed in greater length below.

Option number one would entail some encroachment on the existing businesses at the intersection. Possible approaches include realigning the roadways to impact either the northern parking area of Ray's Food Place, the Tiger Mart, or both businesses. Realigning Cheryl to align with Fern Valley would require the acquisition of the existing entry into Ray's at the signal and probably the parking area north of the existing driveway. In addition to losing parking (which could be replaced by the purchase of vacant land north of Cheryl and its dedication for parking), Ray's existing loading dock would be impacted. It is located on the north end of the building and separated from the Cheryl Lane right-of-way by less than 50 feet. Reductions in that distance could disrupt delivery trucks.

Another alignment option would align Fern Valley with the existing terminus of Cheryl Lane. This option would likely require the purchase of the Tiger Mart in its entirety.

The third realignment option would optimize the relocation of Fern Valley and Cheryl to minimize impacts on Tiger Mart and Ray's Food Place. There is some question as to how far north Fern Valley can be shifted without impacting the underground gas tanks at the Tiger Mart. Figure 7-10 illustrates the various realignment options for Cheryl and Fern Valley. The figure is conceptual, the actual alignment would be determined through the detailed site specific analysis (which is beyond the scope of the TSP).

The second option simply restricts turns out of or onto Cheryl to those involving a right turn. This would most likely be accomplished through the construction of a median barrier on the Rogue Valley Highway starting at Fern Valley and extending approximately 50 feet north of the existing Cheryl and Rogue Valley Highway intersection.

A third option would reroute Fern Valley Road traffic west of Bear Creek onto East Bolz Road. The East and West Bolz Roads intersection would be realigned and signalized. The existing signal at Fern Valley and Rogue Valley would be removed. West Bolz would permit both right and left-hand turns. This option is illustrated in Figure 7-11.

FIGURE 7-10
Fern Valley / Cheryl Lane / Rogue Valley Highway – realignment options

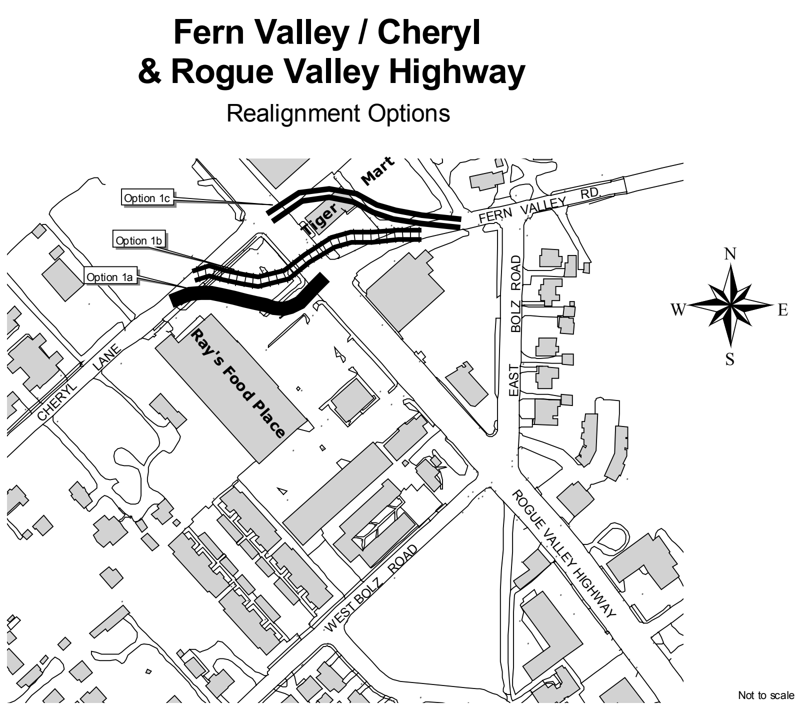


Figure 7-11
Diversion of Fern Valley onto East Bolz Road – realignment option

Fern Valley / East Bolz Road
& Rogue Valley Highway

Realignment Option 3

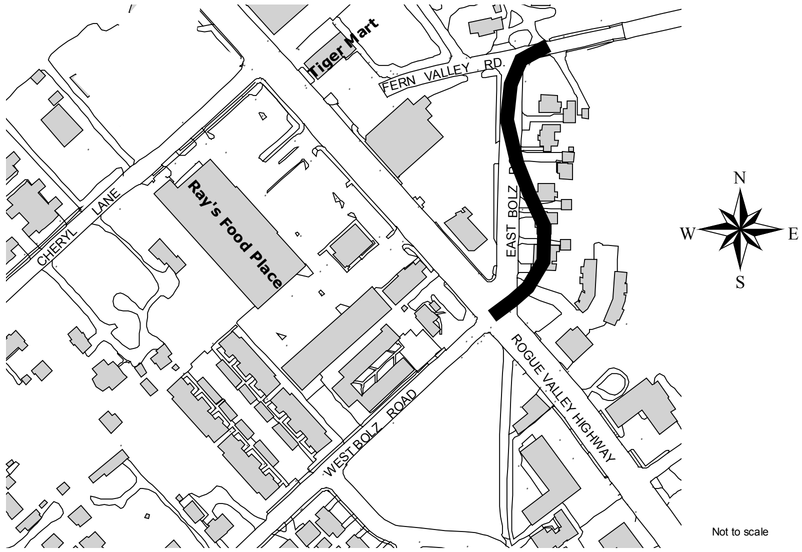


Figure 7-11 does not account for the reconstruction of Bear Creek Bridge. That construction could include its relocation southward which could offer additional alignment options for Fern Valley /East Bolz Road. Again the alignments are only conceptual and would be finalized as a part of the project development / environmental impact process.

Based upon these options the PC / CPAC favored limiting turns at Cheryl to right-in and right-out. It was noted that this choice has the adverse impact of limiting movements from the City north to Medford at only Rose on the north and 4th Street to the south. These roads are more than one-half mile (3,200 feet) apart. That will mean higher volumes on Rose, increased miles of travel for City residents, and higher congestion at 4th and Rogue Valley Highway as well as Rose and Rogue Valley Highway. Further, limiting turns to right-in and right-out will diminish the development potential of the two acre vacant parcel on the northwest corner of Cheryl/Fern Valley/Rogue Valley Highway.

The advantages of limiting turns at Cheryl include limiting impacts on Ray's and Tiger Mart, and not precluding the selection of other alternatives in the future. Cheryl's function would be a local street rather than a collector street. Additionally, turning movement limits would make Cheryl's extension to serve Jackson County's industrial site west of the railroad tracks in the neighborhood of the Barnum Subdivision imprudent (whether served by an at-grade or an overpass railroad crossing).

With this preferred realignment option in mind, the PC / CPAC ranked the alternatives. It was explicitly agreed that all alternatives would be treated as though they included the Committee's realignment preference. In that way, the members' rankings would not be influenced by the alignment options associated with any of the alternatives. Table 7-

12 tabulates the rankings of the PC / CPAC members who participated in the October 1998 meeting and submitted their ranking sheet for inclusion in the tabulation.

TABLE 7-12
PC / CPAC Alternative Ranking

Alternative	Ranking	Total Score
Alternative A	2	114
Alternative B	5	63
Alternative C	4	89
Alternative D	3	95
Recommended Alternative	1	124

Based upon the PC / CPAC ranking the Recommended Alternative is also considered the Preferred Alternative with the change to reflect the PC / CPAC's realignment preference for Fern Valley / Cheryl and Rogue Valley Highway. The Planning Commission determined through their review, as a part of the public hearing and Transportation Element adoption process, that Fern Valley should be realigned per realignment option 3, Figure 7-11. The Commission's recommendation was based in part upon; 1) drivers' frustration associated with the left turn prohibition at West Bolz Road, 2) the increased traffic volumes at this location due to the recent opening of the US Post Office, and 3) the potential disruption of businesses that would occur if Fern Valley Road and Cheryl Lane were realigned.

The City Council affirmed most of the CPAC and PC recommendations. The Council did determine, after carefully considering the public testimony and a lengthy and thoughtful discussion, Fern Valley Road and Cheryl should be realigned (Figure 7-10). The Council did not select a preferred realignment option leaving that decision to a future date when detailed engineering, economic, and environmental analyses are available. The Council's decision reflects their belief that the community and businesses in the area, on the whole, would be better served by the realignment. A key factor in their decision was the existing high accident rate in this area and the need for a protected left turn at Cheryl to provide safe access to the shopping center at the southwest corner of Cheryl and Rogue Valley Highway. It is recognized that future access to this development for vehicles north bound on the Rogue Valley Highway will be from Cheryl (via the relocated signal at Cheryl and OR99).

The Council also added the Oak Street extension to the adopted list of planned transportation improvements. Its addition reflects the Council's view that a second connection across Interstate 5 within the City will serve,

1) Regional Needs. Developments in Southeast Medford and those in southern Jackson County will increase regional travel. Providing convenient and efficient routing for travel between these areas will be crucial to meeting regional travel demand.

2) Improve Connectivity. The east and west parts of the City are poorly connected, served only by Fern Valley Road. Providing an additional connection, especially one that allows convenient access to the new community park at Bear Creek near Oak, will reduce out-of-direction travel for all modes and help to boost the attractiveness of bicycling and walking.

The Oak Street extension will affect development of the City's New Phoenix Park as well as lands along the southern end of Pear Tree Lane. Additionally, the cross-section of South Phoenix Road will need to reflect its future function as a segment of the Oak Street extension. The extension will need to be carefully planned and impacts mitigated including those to properties purchased with Land and Water Conservation funds and Bear Creek's wetlands.

Chapter 8

Financial Constraint

As noted in Chapter 6, money is fundamental to the operation, maintenance , and construction a multi-modal transportation system. The City's existing revenue sources are insufficient to meet all the transportation needs. It is not sufficient for the TSP to simply acknowledge the shortfall. Rather, the TSP must explicitly choose between those projects in the preferred alternative that will are planned for construction as opposed to those that are needed but will go wanting due to limited revenues.

Timing

It is not necessary for the TSP to explicitly determine when a project will be constructed. Segregating projects by general timeframe (short, medium, and long-term) is sufficient. Table 8-1 illustrates the timeframes and the associated total revenues associated with each period.

TABLE 8-1
Forecast Transportation System Revenues – by timeframe

Timeframe	Years	Estimated Revenues (1988 Purchasing Power)
Short-term	1998-2005	$9,344,100
Medium-term	2006-2013	$1,307,300
Long-term	2014-2019	$550,100
Total	-	$11,201,500

Table 8-2 illustrates the effect of financial constraints. All projects included in the Adopted Alternative are shown but only those included in the financially constrained list of projects include a timeframe and cost.

Table 8-2

	Project Description - Adopted				
	Street or Location	**Segment**	**Improvement Type**	**Time Frame for Construction**	**Financially Constrained Projects**
Signals					
	1st St	Main St	Signalize Intersection	Long	
	1st St	Bear Creek Dr	Signalize Intersection	Long	
	4th St	Main St	Signalize Intersection	Long	
	4th St	Bear Creek Dr	Signalize Intersection	Long	
	Oak St	Main St / Bear Creek Dr	Signalize Intersection	Long	
	Rose St	Highway 99	Signalize Intersection	Short	$250,000
	Luman Rd	Fern Valley Road	Signalize Intersection	Long	$250,000
	N. Phoenix Rd	Fern Valley Road	Signalize Intersection	Medium	$250,000
	I5 West ramp terminals	Fern Valley Road	Signalize Intersection	Short	$250,000
	I5 East ramp terminals	Fern Valley Road	Signalize Intersection	Short	$250,000
	Subtotal				$1,250,000
Channelization					
	Bear Creek Drive	Oak to 1st	Channelize through-traffic to outside lane	Medium	$21,000
	Highway 99	Highway 99 @ S. UGB	Turn-about	Medium	
	Subtotal				$21,000
New Construction					
	Relocation of N. Phoenix and Luman	Fern Valley Road		Short	$2,050,000
	Extension of 4th	Existing terminus to realigned Luman Rd		Long	
	Extension of Oak	Existing terminus to S. Phoenix Rd		Long	
	Extension of Freshwater Lane	S. Phoenix Rd to Pear Tree Lane		Short	LID Financed
	S Phoenix Rd	Fern Valley to Freshwater		Short	LID Financed
	S Phoenix Rd	Freshwater to Pear Tree Lane		Short	LID Financed
	Parking Street in City Center	Bear Creek Dr to 3rd St	Note: includes cost of streetscape	Medium	

	Street or Location	Segment	Improvement Type	Time Frame for	Financially
	Extension of 3rd	Existing terminus to Bear Creek Dr	Note: includes cost of streetscape	Medium	
	Subtotal				$2,050,000
Reconstruction					
	Fern Valley Rd	Highway 99 to relocated N. Phoenix Rd	Construct five lane section	Long	
	Realignment of Cheryl and Highway 99	Realign Fern Valley and Cheryl Lane	Reconstruct intersection	Long	$271,500**
	Reconstruct Houston @ 4th St	Railroad tracts to Colver	Bank curve	Medium	
	Cheryl and Highway 99	Right-in, Right-out	Limit turns to right in and right out at Cheryl	Short	$5,000
	Subtotal				$276,500
Bicycle					
	1st St	Canal to Church	Minor widening and pave shoulder (inc. $22,000 for canal bridge widening)	Short	$65,000
	1st St	Church to Bear Creek Dr	Bike lane striping	Medium	$400
	4th St	W. UGB to Bear Creek Dr	Minor widening and pave shoulder	Short	Funded
	Rose	1st to 5th St	Minor widening and pave shoulder	Medium	$58,000
	Rose	5th to Highway 99	Bike lane striping	Medium	$2,000
	Rose	1st to Elm	Bike lane striping	Medium	$1,000
	Bear Creek Greenway	S. UGB to N. UGB	Multi-use trail	Short	
	Cheryl	Rose to Highway 99	Minor widening and pave shoulder	Medium	$50,000
	Colver	1st to Houston	Minor widening and pave shoulder	Long	$52,000
	S Highway 99	Oak to S. UGB	Minor widening and pave shoulder	Medium	$36,000
	Main	5th to Bear Creek Drive	Bike lane striping	Medium	$1,000
	Bear Creek Drive	S. "Y" to N. "Y"	Minor widening (req. fill) and pave shoulder	Medium	$55,000
	N Highway 99	Bear Creek Drive to N. UGB	Bike lane striping	Medium	$1,000
	Oak	Rose to Highway 99	Bike lane striping	Medium	$500
	Fern Valley Rd	E. UGB to Highway 99 (exc. bridges)	Minor widening and pave shoulder	Long	
	E Bolz	Highway 99 to Fern Valley	Bike lane striping	Long	
	Camp Baker	Colver to W. UGB	Minor widening and pave shoulder	Long	
	Subtotal				$322,000

	Street or Location	Segment	Improvement Type	Time Frame for Construction	Financially Constrained Projects
Pedestrian					
	Alder	S "B" St to S. Rose	Sidewalks both sides	Medium	
	Amerman	Elm to South End	Sidewalks both sides	Medium	
	Ash	S. "B" St to S. Rose	Sidewalks both sides	Medium	
	Ash	S "C" St to S. "B" St	Sidewalks both sides	Medium	
	N "B" St	1st St to 2nd St	Sidewalks both sides	Medium	
	Camp Baker	Hilsinger to W. UGB	Sidewalks both sides	Medium	
	Camp Baker	Hilsinger to Hilsinger	Sidewalks both sides	Medium	
	Camp Baker	Colver Rd to Hilsinger	Sidewalks both sides	Medium	
	Cheryl Ln	Highway 99 to N. Rose	Sidewalks both sides	Medium	$67,000
	Christi Ct	South End to Locke Ln	Sidewalks both sides	Medium	
	Church	5th St to 6th St	Sidewalks both sides	Long	$9,500*
	Church	4th St to 5th St	Sidewalks both sides	Long	$9,500*
	Church	3rd St to 4th St	Sidewalks both sides	Medium	$9,000 *
	Church	2nd St to 3rd St	Sidewalks both sides	Medium	$11,500 *
	Church	1st St to 2nd St	Sidewalks both sides	Medium	$9,000 *
	Church	Sharon to 1st St	Sidewalks both sides	Medium	$15,500 *
	Church	Oak St to Sharon	Sidewalks both sides	Long	$16,000 *
	Church	South End to Oak St	Sidewalks both sides	Long	$12,000 *
	Colver Rd	Camp Baker to Pacific Ln	Sidewalks both sides	Long	$26,500 *
	Colver Rd	Colver Rd Park to South UGB	Sidewalks both sides	Short	
	Colver Rd	Camp Baker to Colver Rd Park	Sidewalks both sides	Long	
	Colver Rd	Houston Rd to Locke Ln	Sidewalks both sides	Short	
	Colver Rd	Locke Ln to Hilsinger	Sidewalks both sides	Short	
	Colver Rd	Hilsinger to First St	Sidewalks both sides	Medium	$39,000
	Colver Rd	First St to Rebecca Dr	Sidewalks both sides	Long	$25,000
	Colver Rd	Rebecca Dr to Pacific Ln	Sidewalks both sides	Long	$45,000
	Coral Circle	Hilsinger to Locke Ln	Sidewalks both sides	Medium	

	Street or Location	Segment	Improvement Type	Time Frame for Construction	Financially Constrained Projects
	Coral Circle	Locke Ln to Houston	Sidewalks both sides	Medium	
	E Bolz	Highway 99 to Fern Valley Rd	Sidewalks both sides	Short	
	Elm	Rose to Amerman	Sidewalks both sides	Medium	
	Elm	Amerman to East End	Sidewalks both sides	Medium	
	Elm	S "B" St to Rose	Sidewalks both sides	Medium	
	Elm	S "C" St to S "B" St	Sidewalks both sides	Medium	
	Fern Valley Rd	N. Phoenix Rd to Interchange Ramp	Sidewalks both sides	Short	
	Fern Valley Rd	N. Phoenix Rd to Marigold	Sidewalks both sides	Short	
	Fern Valley Rd	E Bolz to Bear Creek Bridge	Sidewalks both sides	Short	
	Fern Valley Rd	OR99 to E Bolz	Sidewalks both sides	Short	
	Fern Valley Rd	W. I5 ramps to W end of I5 Bridge	Sidewalks both sides	Short	
	Fern Valley Rd	Luman Rd to West I5 ramps	Sidewalks both sides	Short	
	Fern Valley Rd	E Ramps to E end of I5 Bridge	Sidewalks both sides	Short	
	5th St	Church to HWY 99	Sidewalks both sides	Medium	
	5th St	Pine to Church	Sidewalks both sides	Medium	
	5th St	Rose to Pine	Sidewalks both sides	Medium	
	5th St	"C" St to "B" St	Sidewalks both sides	Medium	
	5th St	"B" St to Rose	Sidewalks both sides	Medium	
	5th St	Pine to Church	Sidewalks both sides	Medium	
	5th St	Rose to Pine	Sidewalks both sides	Medium	
	5th St	"B" to Rose	Sidewalks both sides	Medium	
	4th St	Church to Rogue Valley Hwy	Sidewalks both sides	Short	Funded
	4th St	Pine to Church	Sidewalks both sides	Short	Funded
	4th St	Rose to Pine	Sidewalks both sides	Short	Funded
	4th St	"B" St to Rose	Sidewalks both sides	Short	Funded
	4th St	"C" St to "B" St	Sidewalks both sides	Short	Funded
	4th St	Colver Rd to "C" St	Sidewalks both sides	Short	Funded
	Hilsinger Rd	Camp Baker to South end	Sidewalks both sides	Medium	
	Hilsinger Rd	W. First St to Coral Cr	Sidewalks both sides	Medium	

	Street or Location	Segment	Improvement Type	Time Frame for Construction	Financially Constrained Projects
	Hilsinger Rd	Pacific Ln to W. First St	Sidewalks both sides	Medium	
	Hilsinger Rd	Colver Rd to Coral Cr	Sidewalks both sides	Medium	
	Hilsinger Rd	Pacific Ln to Camp Baker	Sidewalks both sides	Medium	
	Houston Rd	Colver Rd to Coral Cr	Sidewalks both sides	Short	
	Houston Rd	Coral Cr to West UGB	Sidewalks both sides	Short	
	Locke Ln	Colver Rd to Cristi Ct	Sidewalks both sides	Medium	
	Locke Ln	Coral Cr to West end	Sidewalks both sides	Medium	
	Locke Ln	Cristi Ct to Coral Cr	Sidewalks both sides	Medium	
	Maple	"C" St to "B" St	Sidewalks both sides	Medium	
	N Phoenix Road	Fern Valley Rd to North UGB	Sidewalks both sides	Short	
	Oak	Sharon to Church	Sidewalks both sides	Short	
	Oak	Rose to Sharon	Sidewalks both sides	Short	
	Oak	"C" St to "B" St	Sidewalks both sides	Short	
	Oak	Rogue Valley Hwy to Bear Cr. Dr.	Sidewalks both sides	Short	
	Pear Tree Ln	Fern Valley to End	Sidewalks both sides	Medium	
	Pine	4th St to 5th St	Sidewalks both sides	Medium	
	Pine	3rd St to 4th St	Sidewalks both sides	Medium	
	Pine	2nd St to 3rd St	Sidewalks both sides	Medium	
	Pine	1st St to 2nd St	Sidewalks both sides	Medium	
	Bear Creek Dr	N "Y" to 4th St	Sidewalks both sides	Medium	$34,000
	Bear Creek Dr	4th St to 1st St	Sidewalks both sides	Medium	$62,000
	Bear Creek Dr	1st St to Oak St	Sidewalks both sides	Medium	$66,000
	Bear Creek Dr	Oak St to South "Y"	Sidewalks both sides	Medium	$24,000
	Rogue Valley Hwy	Rose to Coleman Creek	Sidewalks both sides	Medium	$48,000
	Rogue Valley Hwy	Coleman Creek to Cheryl Ln	Sidewalks both sides	Medium	$25,000
	Rogue Valley Hwy	Cheryl Ln to Fern Valley Rd	East side only	Medium	
	Rogue Valley Hwy	Fern Valley Rd to Bolz Rd	East side only	Medium	$16,000
	Rogue Valley Hwy	Bolz Rd to 6TH ST	Sidewalks both sides	Long	$42,000
	Rogue Valley Hwy	6th St to North "Y"	East side only	Long	$4,000

	Street or Location	Segment	Improvement Type	Time Frame for Construction	Financially Constrained Projects
	Rogue Valley Hwy	South "Y" to South UGB	Sidewalks both sides	Short	
	Rose	Bolz Rd to Cheryl Ln	Sidewalks both sides	Medium	$42,000
	Rose	Fourth St to Fifth St	Sidewalks both sides	Medium	$18,000
	Rose	Third St to Fourth St	Sidewalks both sides	Medium	$18,000
	Rose	Second St to Third St	Sidewalks both sides	Short	$22,000
	Rose	First St to Second St	Sidewalks both sides	Medium	$19,000
	Rose	Ash to First St	Sidewalks both sides	Medium	$50,000
	Rose	Oak St to Ash	Sidewalks both sides	Long	$22,000
	Rose	Elm to Oak St	Sidewalks both sides	Medium	$22,000
	Rose	Alder to Elm	Sidewalks both sides	Medium	$22,000
	Rose	South End to Alder	Sidewalks both sides	Medium	$12,000
	S "B" St	4th ST to 5th St	Sidewalks both sides	Short	
	S "B" St	Maple to 1st St	Sidewalks both sides	Short	
	S "B" St	Ash to Maple	Sidewalks both sides	Short	
	S "B" St	Oak St to Ash	Sidewalks both sides	Short	
	S "B" St	Elm to Oak St	Sidewalks both sides	Short	
	S "B" St	Alder to Elm	Sidewalks both sides	Short	
	S "C" St	Maple to First St	Sidewalks both sides	Short	
	S "C" St	Ash to Maple	Sidewalks both sides	Short	
	S "C" St	Oak St to Ash	Sidewalks both sides	Short	
	S "C" St	Elm to Oak St	Sidewalks both sides	Short	
	S "C" St	Alder to Elm	Sidewalks both sides	Short	
	S "C" St	4th ST to 5th ST	Sidewalks both sides	Short	
	1st St	Canal to Church	Sidewalks both sides	Short	$24,500 *
	2nd St	Church to Main	Sidewalks both sides	Short	$12,000 *
	2nd St	Church to N Pine	Sidewalks both sides	Medium	
	2nd St	N Pine to N Rose	Sidewalks both sides	Medium	
	Sharon	Oak St to Church	Sidewalks both sides	Short	
	6th St	Church to HWY 99	Sidewalks both sides	Short	

	Street or Location	Segment	Improvement Type	Time Frame for Construction	Financially Constrained Projects
	3rd St	Church to HWY 99	Sidewalks both sides	Medium	$9,000 *
	3rd St	Pine to Church	Sidewalks both sides	Long	
	3rd St	Pine to Church	Sidewalks both sides	Short	
	3rd St	Rose to Pine	Sidewalks both sides	Short	
	Pedestrian Bridge	Bear Creek at 1st & Bear Lk. Est.	Bear Creek Crossing	Medium	
	Subtotal				$908,000
Bridge					
	Bear Creek Bridge	Fern Valley Rd at Bear Creek		Short	$6,379,000
	Interstate 5 Bridge (includes interchange upgrade)	Fern Valley Rd at Interstate 5		Long	
	Subtotal				$6,379,000
Maintenance					
	System-wide	Pavement Management – overlays	Cost during planning period (20 years)	Continuous	See Chapter 7
	Subtotal				
Transit					
	Increase Peak-hour Headways to 15 minutes		Cost during planning period (20 years)	Medium	
	Volunteer operated community shuttle service		Cost of one lift-equipped vehicle	Short	
	Construction of a park and ride lot	Highway 99	In the vicinity of Fern Valley Rd	Short	
	Subtotal				$0
Grand Total					**$11,207,000**

* Sidewalks on one side of the street only.

** Maximum funding available (insufficient to construct the entire project).

The project selection and timing were guided by the financial forecasts detailed in Chapter 6. Table 8-3 details the total project cost and budget by time frame. It should be noted that the amounts do not match exactly. That fact demonstrates that the TSP is a planning document based upon assumptions. The small variation is well within the error range of both project costs and forecast revenues

TABLE 8-3
Financial Summary (1998 dollars)

Time Frame	Total Project Costs (Preferred Alternative)	Transportation Modernization Budget	Difference (Budget – Projects)
Short	$9,307,500	$9,344,100	$36,600
Medium	$1,132,900	$1,307,300	$174,400
Long	$766,000	$550,100	- $215,900
Grand Total	$11,206,400	$11,201,500	$4900

The projects are distributed among all modes with the notable exception of transit. Table 8-4 shows the total project costs, by time frame and mode.

TABLE 8-4
Project Costs by Time Frame and Mode (1998 dollars)

Time Frame	Bicycle	Bridge	Channelization	New Construction	Pedestrian	Re-construction	Signals	Transit
Short	$65,000	$6,379,000		$2,050,000	$58,500	$276,500	$750,000	
Medium	$204,900		$21,000		$657,000		$250,000	
Long	$52,000				$192,500		$250,000	
Grand Total	$321,900	$6,379,000	$21,000	$2,050,000	$908,000	$276,500	$1,250,000	$0

It can be readily seen that the majority of future funding ($10 million or 89 percent of the total) will be dedicated to improvements principally supporting the auto mode. While accounting for a little over 10 percent of the total, bicycle and pedestrian system improvements will total $1.2 million during the planning horizon. This information describes only those projects that will be constructed in the future. Those projects that are needed but will not be funded based upon financial constraints are equally important. More than $41,853,500 of projects included in the adopted alternative will not be funded. Table 8-5 includes that information.

TABLE 8-5
Needs not Funded by Mode (1998 dollars)

Mode	Bicycle	Bridge	Channelization	New Construction	Pedestrian	Re-construction	Signals	Transit
Estimated Cost	$1,334,200	$15,000,000	0	$12,795,000	$2,722,000	$3,507,300	$1,250,000	$3,355,000

Most of the unfunded projects ($32.5 million or 81.5 percent of the total) are principally related to the auto mode. The balance of unfunded needs is distributed between transit (8.3 percent), pedestrian (6.8 percent), and the community's bicycle system (3.3 percent).

Chapter 9

Modal Plans and Policies

The City's Transportation System Plan (TSP) is ultimately a collection of inventories, facts, plans, projects, and policies. These together provide a context for transportation system decision-making that, over time, should result in a balanced transportation system. That is not to say that every project or every decision will promote greater balance. But decisions and projects taken together and considered over a five or ten year period, should help to create a multi-modal transportation system that provides modal choice and transportation efficiency.

The sections that follow form the core of the TSP. Each describes a unique aspect or mode of the transportation system. The modal plans and associated policies are intended to conform to the requirements of Statewide Planning Goal 12, Transportation and associated administrative rule - Transportation Planning Rule (OAR 660-12).

Coordination and System

The City's Transportation System Plan must be updated at regular intervals. The TSP should also be consistent with the Rogue Valley Metropolitan Planning Organization's (RVMPO) Transportation System Plan. That Plan is currently under development but is not expected to be ready for resubmission for compliance until late-1999. The City's TSP must therefore provide a mechanism to ensure modification or resolution of differences between the two plans. Phoenix, pursuant to the Transportation Planning Rule (OAR 660-12-015(4), must ultimately adopt the Regional TSP as a part of its Comprehensive Plan. It is, therefore, imperative that the two plans compliment one another and the City's Comprehensive Plan as a whole. Additionally, the City's TSP must also be consistent with the State TSP.

The Phoenix TSP is fully consistent with the adopted elements of the State TSP. The policies contained within this section provide the basis for ensuring that the local TSP is consistent with the regional TSP's.

The RVMPO Technical Advisory Committee (TAC), among other agencies, have been actively involved in development of the City's TSP. Draft chapters were distributed to agency personnel and the City met with the TAC to ensure that regional and state transportation needs were fully accommodated within the City's TSP.

The City believes that fostering long-term coordination between the City, Rogue Valley Transportation District, Jackson County, RVMPO and the Oregon Department of Transportation is crucial to creation of an integrated and seamless system. Specific policies are included below to achieve this objective.

Goal 1: The City shall ensure that the TSP is consistent with the Rogue Valley Metropolitan Planning Organization's Regional Transportation Plan.

Policy 1.1 The City shall participate in the MPO Technical Advisory Committee and the MPO Policy Committee. Through this role, the City will actively engage in the development of the revised Regional TSP and ensure that the local and regional TSP's are consistent.

Policy 1.2 The City, working collaboratively with the Rogue Valley MPO, shall identify any inconsistencies between the regional and local TSP within six months of the MPO's adoption of the revised Regional TSP. In the succeeding six months the City and RVMPO will attempt to resolve conflicts, if any, pursuant to OAR 660-12-015(7). Once consistency is ensured, the City shall schedule the Regional TSP for adoption through the City's Comprehensive Plan amendment process.

Goal 2. The City shall coordinate its transportation decision-making with other land use planning decisions and with public agencies providing transportation services or facilities.

Policy 2.1 Update the TSP at regular intervals, but no less frequently than every other periodic review, to ensure consistency with local transportation needs, RVMPO's Regional TSP, and the State's Transportation Planning Rule.

Policy 2.2 Provide notice of land use applications including subdivision, partitions, applications affecting private roads, and all other applications requiring a public hearing.

Policy 2.3 Encourage interagency cooperation and coordination in planning, design, construction, operation, and maintenance of transportation facilities and services.

Transportation System Management

Transportation system management (TSM) is a collection of strategies directed at improving the efficiency, operation, safety, or capacity of the transportation system without increasing the facility size. Probably the most common among these is installation of intersection signals while the rarest is peak-hour congestion pricing. Others include the installation of medians, removal of parking, access management (see Access Management in this Chapter), ramp metering, and restriping for high occupancy vehicles. TSM strategies are among the most cost effective of all transportation system improvements – not so much due to the amount of capacity that they create but rather due to their relatively low cost to implement.

Most of TSM strategies are logical solutions to relatively easily identifiable problems; too much congestion at an intersection or numerous unsafe mid-block turns into driveways. None the less, they require detailed traffic engineering studies and are only pursued if clearly justified. In fact, signals on State highways must meet a variety of warrants (or pre-conditions) prior to construction. These are detailed within the Manual on Uniform Traffic Control Devices (MUTCD).

Once problems are clearly identified TSM projects can then be developed (usually requiring two or more years to design, fund, and construct). While this approach ensures that money is not wasted on projects that are not needed, it also means that safety, operational, and capacity problems exist for several years before they are resolved. Put another way, TSM projects are "quick" fixes to operational and safety problems – once they exist. Planning 10 to 20 years ahead to avoid these conditions does not have an appreciable affect on construction timing.

That advanced planning is crucial to ensure that money is available when TSM projects can be justified. Due to their cost effectiveness, TSM projects are essential to meeting transportation needs during fiscally constrained periods. Consequently, many TSM projects are included in the City's fiscally constrained TSP. Table 9-1 includes the City's TSM projects. More project details, including general construction timing – short, medium or long-term, are included in Appendix 8-5.

TABLE 9-1
Transportation System Management – Projects

Project Location	Cross Street	Project Description
Fern Valley Rd	West I5 ramp terminals	Signalize Intersection
Fern Valley Rd	East I5 ramp terminals	Signalize Intersection
1st St	Main St	Signalize Intersection
1st St	Bear Creek Dr	Signalize Intersection
4th St	Main St	Signalize Intersection
4th St	Bear Creek Dr	Signalize Intersection
Oak St	Main St / Bear Creek Dr	Signalize Intersection
Rose St	Highway 99	Signalize Intersection
Luman Rd	Fern Valley Rd	Signalize Intersection
N. Phoenix Rd	Fern Valley Rd	Signalize Intersection
Bear Creek Drive	Oak to 4^{th} Street	Channelize through-traffic to outside lane
N. and S. OR99 exclusive of City Center	Highway 99 except @ collectors & arterials	Construction of landscaped median
Highway 99	Highway 99 @ S. UGB	Turn-about

Goal 3 Utilize the volume to capacity standards specified in Table 4-3 to determine transportation facility adequacy.

> **Policy 3.1** Manage the transportation systems and pursue facility improvements consistent with the specified performance standards.
>
> **Policy 3.2** Actively pursue, as signal warrants are met, timely implementation of all TSM projects listed in Table 9-1

Transportation Demand Management

Transportation Demand Management (TDM) is a complimentary strategy to TSM's but focuses on transportation demand rather than capacity supply. Like TSM, they offer a cost-effective strategy to improve the performance of the transportation system with little lead-time and low cost. Typically, these strategies embrace a range of demand reducing programs: ride-sharing, vanpool programs, carpool matching services, and trip reduction ordinances. With the exception of the later, the Rogue Valley Transportation District has responsibility for these programs.

Tele-commuting , home offices, and modified workweek have proven to be effective strategies in the TDM portfolio. These strategies focus on reducing the frequency of work trips by eliminating the need for or reducing the frequency of commuting trips. They have proved very effective when enforced through mandatory trip reduction ordinances adopted by local government. Where adopted, trip reduction ordinances compel large employers (usually larger than 50 employees) to reduce, by a specified percentage, their peak-hour trip demand. No local employer has 50 or more employees except for the Phoenix-Talent School District and their work shift and peak demand (including student transportation) does not occur at the same time as the "peak hour."

Other employer sponsored TDM strategies include compressed workweek, staggered work hours, and employee flextime. Each requires employer flexibility; in management, operation, and scheduling.

The City has experimented with several of these strategies for selected employees – with excellent success. Specifically, the City Planner and Comprehensive Plan Update Planner have utilized a combination of tele-commuting and modified work week. The approach has actually boosted employee productivity due to reduced interruptions and distractions associated with traditional office settings. However, extending the program to other employees may be problematic. The City's Planners have unique work responsibilities; focused on review, research, and writing, and work less than full-time. Larger employers or those with a high percentage of professional staff without responsibilities for supervision or customer services could derive, like the City, financial or productivity benefits.

Goal 4 Support the use and deployment of transportation demand strategies.

Policy 4.1 The City shall consider and implement, as appropriate, transportation demand management strategies for City employees which are believed, or can be shown, to have a positive or neutral affect on employee productivity. Such strategies may include, but are not limited to, compressed workweek, staggered work hours, and employee flextime.

Policy 4.2 Mandatory demand management strategies may be required as a condition of development for large employers where and in such locations as roadway capacity additions are either unavailable or untimely, or where the employer shows that TDM is cost effective and will achieve comparable effectiveness to the construction alternative. This Policy may be utilized in conjunction with Policy 4.1 of the Economy Element.

Policy 4.3 Include standards requiring the provision of preferential carpool and vanpool parking within the City's commercial and industrial site design standards.

Policy 4.4 The City shall consider the adoption of a mandatory TDM program for large employers when such ordinance is a part of a multi-jurisdictional, metropolitan transportation strategy.

Access Management

Access management is essential to ensure that transportation facilities are preserved for their intended purposes. Access management balances "access to developed land while ensuring movement of traffic in a safe and efficient manner, through reusing, reclaiming and restoring existing roadways, and properly planning new roadways. Different roads serve different purposes."[24] Chapter 5, Classification, details the specific function of interstate, arterial, collectors, and local roads. Roadway and land use classification provides a framework to balance property access and transportation system function.

Access management ensures that the roadways are managed consistent with their classification. If access to adjoining lands is the key function, as with local roads, then access management may not be needed. But if transportation is the chief function of the roadway, as with arterial roads, then access management can ensure that this function is maintained.

Access management:

1) "Makes our roadways safer. Access management projects in other states have reduced accident rates by as much as one-third,
2) "Reduces the need for major road widening to meet increasing demands by prolonging the usefulness of existing roadways,
3) "Maintains the statewide movement of goods and services necessary for economic prosperity,
4) "Produces a more constant travel flow, while helps to limit congestion, reduce fuel consumption and improve air quality,
5) "Provides increased safety and options for pedestrians and cyclists, and improvement travel time for transit,
6) "Encourages the coordination of land use and transportation decision which can: a) stabilize land use patterns and help preserve private investments, and b) support and maintain livable communities, and
7) "Establishes uniform standards and ensures fair and equal application for neighboring property owners."[25]

These benefits are off-set, at least from the adjoining property owners view, by reduced quality or restricted access to the roadway network. Figure 9-1 illustrates the relationship between access and traffic flow. Most often the benefits of access management are presumed to benefit through traffic. But the benefits extend to bicyclists and pedestrians. By reducing the frequency of driveway accesses or providing

[24] Oregon Transportation Plan, September 1998, p. 139
[25] IBID, p. 140

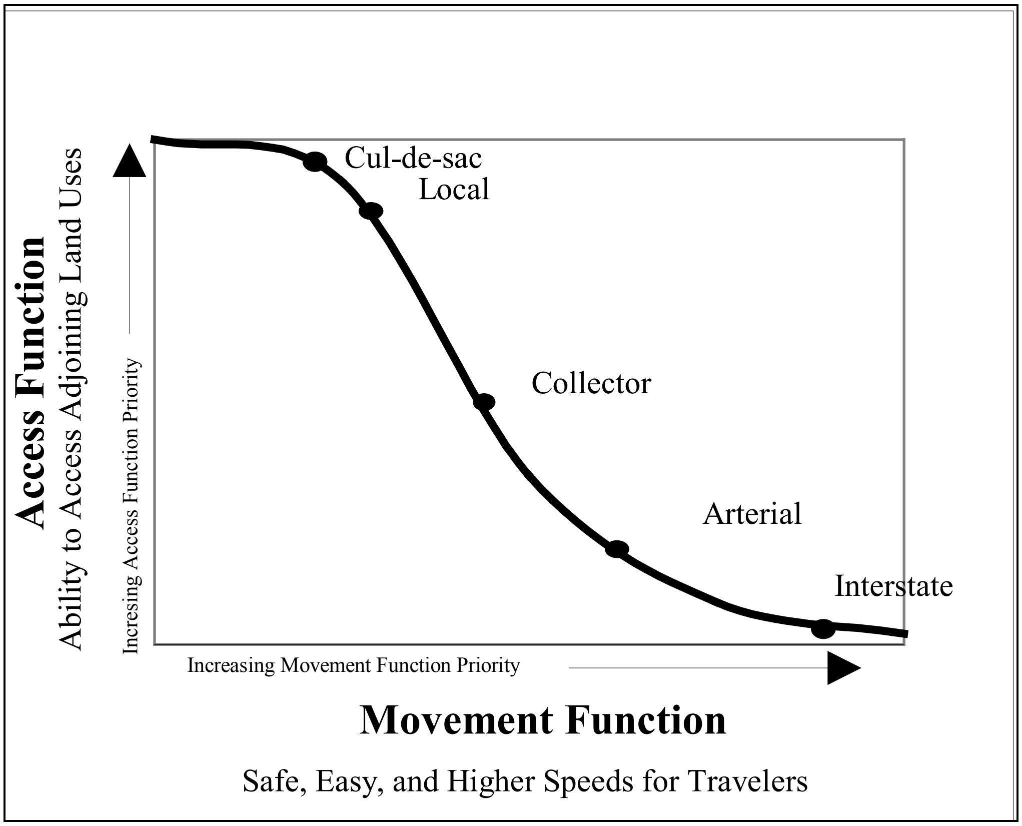
for their consolidation, access management improves the safety of these other modes (see Figure 2-2, System Characteristics).

The classification of roadways (Chapter 5) and this Plan compliment one another. Together they help protect existing investments in the City's transportation system and ensure transportation functions are preserved.

The access management strategies rely extensively upon nontraversible medians. These structures, by their design, physically discourage or prevent vehicles from crossing opposing lanes of traffic except at designated openings that are designed for turning or crossing movements. Landscaping is often an integral element of medians. "It has been demonstrated that the installation of a nontraversible median results in a substantial reduction in the number of crashes together with a reduction in the associated social and economic costs of death, injuries, and property damage. Other benefits may include time savings and reduced fuel consumption. By improving traffic flow and reducing idling delay, air quality improvements can be obtained through reduced emissions.[26]

FIGURE 9-1
Access and Movement Relationships

[26] 1998 Oregon Highway Plan, p. 154, September 1998



Goal 5 Preserve the function and value of transportation facilities consistent with their classification. More restrictive access policies shall apply to higher level streets (i.e. arterials as opposed to locals that can have less restrictive policies).

Policy 5.1 The City shall develop and enforce access management through its review of subdivisions, partitions, site plan review, and other land use actions.

Policy 5.2 The City's access management standards shall be no less restrictive than those set forth within the Oregon Highway Plan, 1999.

Policy 5.3 It is the City's policy to manage requests for deviations from adopted access management standards and policies through an application and appeals process.

Transit System

The Rogue Valley Transportation District operates the local transit system. As a special district, it levies local property taxes and uses state and federal transportation funds to operate its Bear Creek Valley wide services. The region's relatively low population density coupled with moderate to fast population growth has made the District's efforts to maintain, much less expand, general service fixed route services impossible. The District's services for disabled persons which, under federal law, must compliment fixed-route services has garnered increasing shares of the District's budget.

Increasing frequencies on Route 10 serving Ashland, Talent, Phoenix, and Medford is not possible without drastic cuts elsewhere in the system given the existing fiscal constraints. Boosting transit service revenues is essential to increasing service levels. The City of Ashland, in response, has contributed directly to the District's operations in the City. This approach is impossible in Phoenix. The off-setting reductions in existing City services that would be necessary make such a strategy untenable.

Transit services are not available beyond the Rogue Valley Highway corridor. The Transit District's complimentary paratransit services for disabled persons extend ¼ mile on each side of the corridor. That distance also represents the typical maximum distance transit passengers walk to access the bus. If areas within a ¼ mile of the Rogue Valley Highway are considered served and those beyond that distance are unserved, roughly 60 percent of the community is served. Creating a fixed route service for the unserved area is not practical due to costs and low ridership levels. However, a volunteer van program could provide service to these areas and require little financial outlay. Linking such a service to the District's Route 10 serving Ashland, Talent, Phoenix and Medford could dramatically improve mobility and accessibility for City residents living in these areas including the transportation disadvantaged.

The City's City Center mixed-use land use strategy is a key element in boosting the effectiveness of transit services. Providing a variety of uses and activities in close proximity to transit stops boosts the convenience and utility of transit services. Coupled with high frequencies, a mixed-use development helps to make transit a viable alternative to the auto.

The Rogue Valley Highway corridor between Ashland and South Medford represents a unique opportunity for transit. The corridor already accounts for 50% of the District's existing ridership, offers high travel speeds, and low traffic congestion. Reducing the number of stops by creating an express route or bus rapid transit, would make this route even more attractive. But ultimately, such strategies are constrained by the District's meager funding – relative at least to the potential cost of a fully functional, optimized transit system.

Goal 6. Support the Rogue Valley Transportation District's efforts to secure adequate funding to ensure that the City's and region's public transportation needs are met.

Policy 6.1 The City's support for enhanced transit funding is linked to the provision of enhanced transit services within the Rogue Valley Highway corridor.

Goal 7. Create a mixed-use center within the City's downtown that supports all travel modes while encouraging travel by walking, bicycling, and transit.

Policy 7.1 Require transit facilities and surrounding development within the City Center to integrate design elements that are pedestrian in scale, create an attractive and interesting pedestrian environment, and support alternative modes.

Policy 7.2 The City Council shall adopt design standards specific to the City Center that achieve the above goal including provision for the development of transit oriented development.

Policy 7.3 Designate Route 10 as a transit trunk route and work with RVTD and other communities in the region to boost frequencies and hours of operation.

Policy 7.4 Bus stops within the City Center in the vicinity of 4th Street shall be considered major transit stops.

Goal 8. Support the District's initiatives to establish more effective public transportation services.

Policy 8.1 Support RVTD's initiative to create volunteer van services within the City.

Policy 8.2 Provide through zoning and subdivision codes for developer construction of transit related facilities (including the transit stops on site, or direct connection thereto, along transit trunk routes) when requested by RVTD and when the development is considered major.

Roadway Plan

The roadway plan builds upon the City's existing largely gridded network. This pattern of interconnected streets helps to ensure that travel is reasonably direct with little out of direction travel. While no empirical evidence demonstrates that a gridded network reduces overall vehicle miles of travel per capita, it would appear that its contribution is positive compared to a less well connected system. Clearly, a gridded network reduces out of direction travel that is of paramount importance to walking and bicycling modes.

The primary focus of this modal plan is on the auto mode, recognizing however that all modes utilize the street right-of-ways. The Roadway Modal Plan establishes a framework for the continued development of this network.

As noted earlier, the City's existing network is largely interconnected and gridded. There are notable exceptions. Interstate 5, Bear Creek, and the railroad each interrupt the grid and effectively create four separate networks; east of I5, between I5 and Bear Creek, Bear Creek and the railroad, and west of the Railroad. The lack of connectivity limits the travel path and concentrates trips into one or two corridors.

Projects addressing several of these short falls were included in various transportation system alternatives. The adopted alternative includes a new link across Bear Creek, extending 4th Street to the relocated Luman Road and an Oak Street extension over both Bear Creek and I5.

The preferred alternative does not include a new crossing over the railroad. This is particularly significant in terms of access to the industrially planned area northeast of town near Dano Drive and Cheryl Lane. The five parcels totaling 38 acres are landlocked with no public road access. The Public Facilities Element includes a project that would extend Cheryl. Without this project or a less desirable extension of Dano (due to the impacts on residences and associated local street segments) the tract will have to be served either from the north or the south from 4th Street. Either option has substantial drawbacks. The northerly access will require an upgrade to a roughly half-mile long private dirt driveway, and securing a public at-grade crossing or construction of a railroad overpass. (The existing substandard private railroad crossing is not suitable for public use). The southerly access would require exceptions to Statewide Land Use Planning Goal 3, Agricultural Lands. With either of these options access to the properties is somewhat circuitous. Given the importance of the industrial lands to the City's overall economic development strategy and Oregon Administrative Rules requiring a five year supply of served industrial land, the resolution of access to these lands cannot be left unresolved.

Consideration of access options beyond the Cities' UGB is the responsibility of Jackson County Public Works Parks and Planning Department. No facts relating to these alternatives are available other than those cited here and within the Transportation Needs Chapter, Truck Mode section. Jackson County must develop additional facts to allow a thorough and informed review of the alternatives.

This needed information will not be available prior to July, 1999; the TSP adoption deadline. Further, a coordinated approach to resolving the issues has not been formulated. For these reasons, resolution of the access issues has been deferred.

The decision to defer the general location for the access does not impact the balance of the TSP. The adopted alternative includes realignment of Cheryl and Fern Valley Road at Rogue Valley Highway. Additionally, Cheryl is classified as a collector.

Goal 9: The City shall resolve access problems to the industrially designated lands in the northeast portion of the UGB.

Policy 9.1 The City, in coordination with Jackson County, shall review and resolve the access issues to the northeast industrial lands within 18 months of the adoption of this Element.

Policy 9.2 Amend, as necessary, the Public Facilities and Transportation Elements to reflect the preferred access option.

Goal 10: Ensure streets are designed, developed, reconstructed, and maintained consistent with their classification.

Policy 10.1 Figure 9-2 is the City's official Street Classification Map.

Policy 10.2 The City's street standards, as specified within the City's subdivision ordinance, shall reflect the following design objectives:

- **a)** minimize right-of-way and pavement widths consistent with functional classifications and adjoining land uses,
- **b)** include sidewalks on all streets,
- **c)** include bicycle lanes on collector and arterial streets, and
- **d)** provide on-street parking when rights-of-way allow and adjoining land uses warrant their construction.

Policy 10.3 To facilitate pedestrian and bicycle travel at street intersections consider integrating design features such as, but not limited to: curb extensions; colored, textured and/or raised crosswalks; minimum necessary curb radii; pedestrian crossing push buttons; left and right bike turning lanes; and signal loop detectors in bike lanes or bike crossing push buttons.

Policy 10.4 Use traffic calming tools to create a safe, convenient and attractive pedestrian and bicycle environment to slow vehicle speeds, reduce street widths, and interrupt traffic as appropriate consistent with the street function and the planned land use.

Policy 10.5 The City shall acquire or control parcels of land that are needed for future transportation purposes through sale, donation, or land use action.

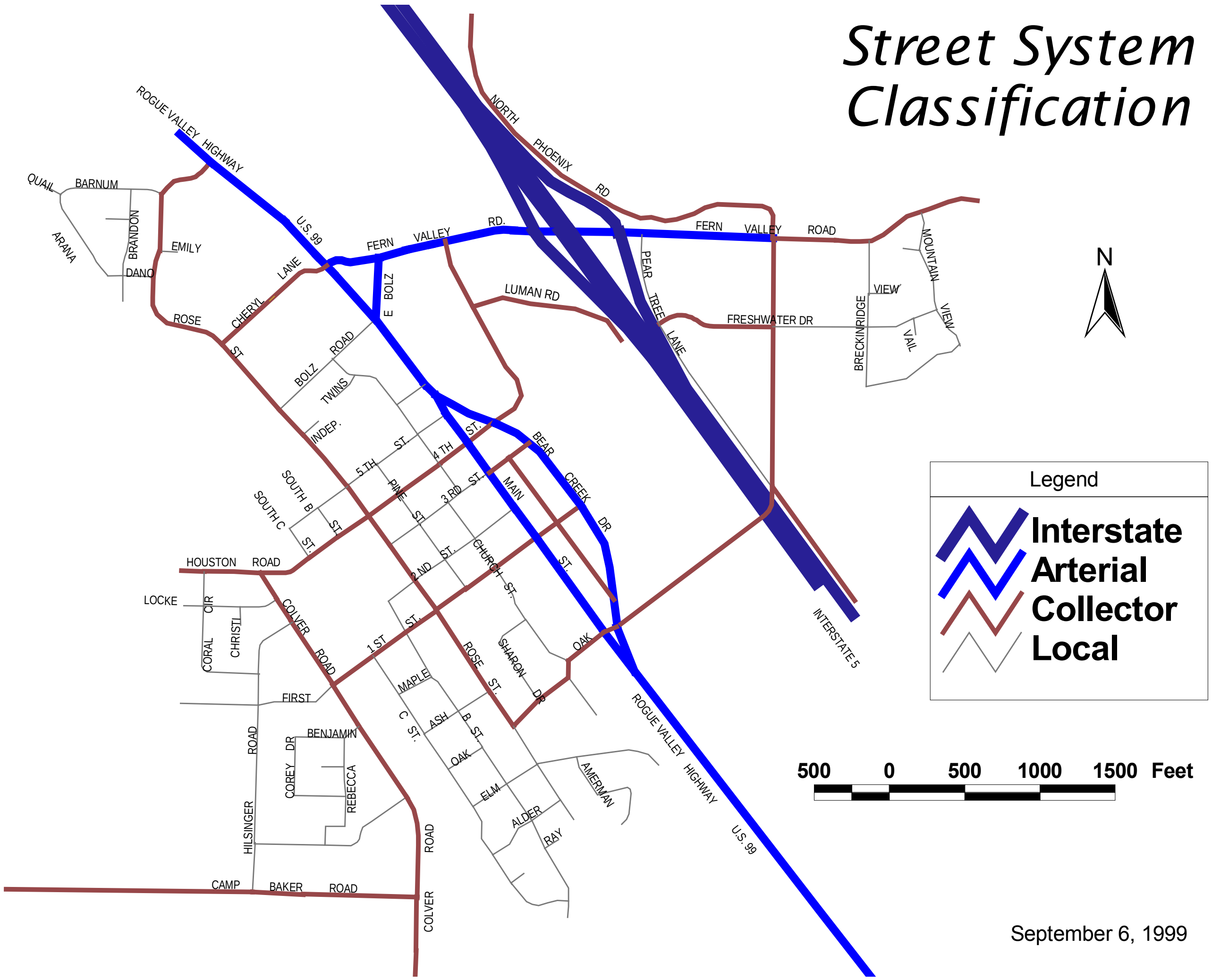
Policy 10.6 Street dedication and improvement shall be a condition of land development. Improvements may, at the City's discretion, be postponed subject to the execution of a Deferred Improvement Agreement.

Goal 11: Ensure that the cost for construction, reconstruction, and maintenance is distributed to the individual household or transportation consumer, general public, new development, Jackson County, and State, consistent with the benefits of the project.

Policy 11.1 Review, as a part of the annual budget process, transportation revenues and their associated transportation purpose. Adjust revenue schedules or fees to ensure direct correlation between costs and benefits.

Policy 11.2 Consider new fees, taxes, or exactions consistent with their opportunity to improve the correlation between benefits and costs.

FIGURE 9-2



Street System Classification
Legend
Interstate
Arterial
Collector
Local
500 0 500 1000 1500 Feet
N
September 6, 1999
ROGUE VALLEY HIGHWAY
U.S. 99
FERN VALLEY RD.
FERN VALLEY ROAD
NORTH PHOENIX RD
LUMAN RD
FRESHWATER DR
PEAR TREE LANE
BEAR CREEK DR
MAIN ST.
INTERSTATE 5
HOUSTON ROAD
COLVER ROAD
CAMP BAKER ROAD

Bicycle Plan

A multi-modal transportation system requires a system that supports multiple modes. In order for bicycle transportation to function as a mode, appropriate facilities must be present to support travel by that mode. Given that "bicycles are found in most American households,"[27] the availability of the bicycle (as a machine) is not in question. It is the supporting public infrastructure upon which the bicycle can be easily, safely, and efficiently ridden. "The bicycle offers a real alternative to the automobile, if we are prepared to recognize and grasp the opportunities by planning our living and working environment in such a way as to induce the use of these humane machines. The possible inducements are many: cycleways to reduce the danger to cyclists from automobile traffic, bicycle parking stations, facilities for the transportation of bicycles by rail and bus, and public bicycles for 'park and peddle' service. Already bicycling is often the best way to get around quickly in city centers."[28]

Several of these strategies are already in place: bike racks on buses and bicycle parking in selected locations. Yet bicycle lanes or wide paved shoulders are rare and widely dispersed. Bike lanes along all the City's major roadways are essential to improve the function and safety of bicycle travel.

Bike lanes along the irrigation district canals were considered. The canals within the City largely parallel other street network links. Their addition to the bicycle system, given the liability and construction expense, were ultimately found to be unnecessary. However, one link connecting the City's new park near Bear Creek and South Rose near its intersection with Elm via the canal may be an important future link.

Goal 12 Extend and improve the bicycle network through the construction of bicycle lanes along the City's collector and arterial street network, Bear Creek Greenway, and other selected links where they would improve connectivity.

> **Policy 12.1** The City shall place equal importance on the construction of bicycle facilities as may be placed on improvements for other modes.
>
> **Policy 12.2** Bicycle lane construction shall be an integral part of the City's Transportation System Development Charge, Capital Improvement Program.
>
> **Policy 12.3** Ensure that bicycle facilities are provided out of, within or between new developments when such access-ways would provide more direct routes or avoid conflicts with automobile traffic, and would likely be used by bicyclists and pedestrians.
>
> **Policy 12.4** Bicycle facilities shall be constructed when off site or frontage roadway improvements are required as a condition of development approval and the affected roadways are a part of the official Bicycle System Network , Figure 9-3.
>
> **Policy 12.5** Figure 9-3 is the City's official Bicycle System Network Map.

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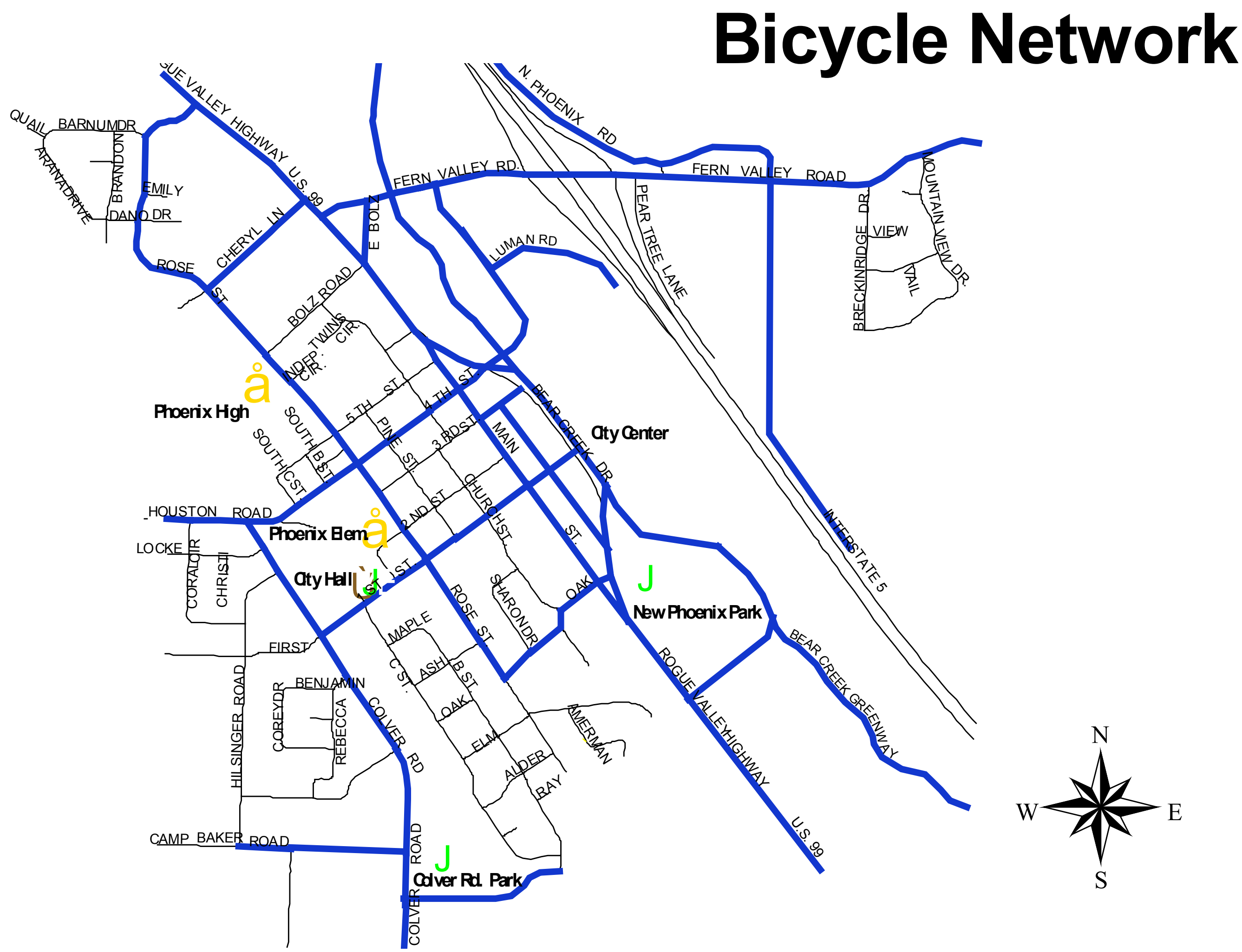
[27] Oregon Bicycle and Pedestrian Plan, June 1995, p. 3
[28] Scientific American, Bicycle Technology, March 1973, p. 91

Goal 13 Stimulate the use and safety of bicycle transportation.

Policy 13.1 Incorporate bicycle parking standards into the City's residential, commercial, and industrial site design standards.

Policy 13.2 Support bicycle safety education through community policing. Ensure that police officers are aware of and sensitive to the factors that contribute to safe cycling.

FIGURE 9-3
Bicycle Network



Pedestrian Plan

The creation of separate pedestrian walkways, as opposed to part of the vehicle travel lane, is vital to the elevation of walking to a transportation mode. Adults place themselves in jeopardy when walking either on an unpaved road shoulder or within the travel lane of a street except on low volume local streets. It is even more hazardous for children, seniors, and disabled persons. In the case of the later, a trip walking (or in a wheelchair) may be impossible without sidewalks irrespective of the traffic volumes.

People do walk for any number of purposes; recreation, exercise, to work, school, or to shop despite the lack of facilities. Can you imagine how much more attractive and safe this mode might be if a trip could be made entirely on sidewalks. The pedestrian plan provides for this outcome.

Adding sidewalks in older neighborhoods will be complicated by the desire of some residents to retain the character of the original development. This coupled with the presence of drainage and irrigation ditches along the edge of the roadway makes sidewalk construction more expensive. Moreover, the lack of a storm water management plan causes storm drain facility decisions to be piecemeal.

Goal 14: Provide for the creation of a convenient, safe, cost effective and continuous pedestrian sidewalk system.

> **Policy 14.1** The City shall place equal importance on the construction of sidewalks as may be placed on improvements for other modes.
>
> **Policy 14.2** Sidewalk construction shall be an integral part of the City's Transportation System Development Charge, Capital Improvement Program.
>
> **Policy 14.3** Sidewalk facilities shall be constructed when off site or frontage roadway improvements are required as a condition of development approval and the affected roadways are a part of the official Pedestrian System Network, Figure 9-3.
>
> **Policy 14.4** Figure 9-4 is the City's official Pedestrian System Network Map.

Goal 15: Ensure the creation of an attractive, high quality pedestrian environment through the construction of a streetscape (including landscaping, pedestrian scale lighting, and fine textured sidewalk surfaces).

> **Policy 15.1** The City shall expand, over time, the area and number of streets that include streetscape improvements. Where the City has adopted a streetscape plan, improvements consistent with the plan shall be a condition of development approval. Such plans should be refined to identify areas needing pedestrian and bicycle amenities (rest rooms, benches, pocket parks, and drinking fountains). Plans shall be incorporated into the City's capital improvement program.
>
> **Policy 15.2** Establish a street tree program and require street tree plantings adjacent to the right-of-way as a condition of development approval.

Goal 16: Provide for the continuation of relevant modes into driveways serving major developments.

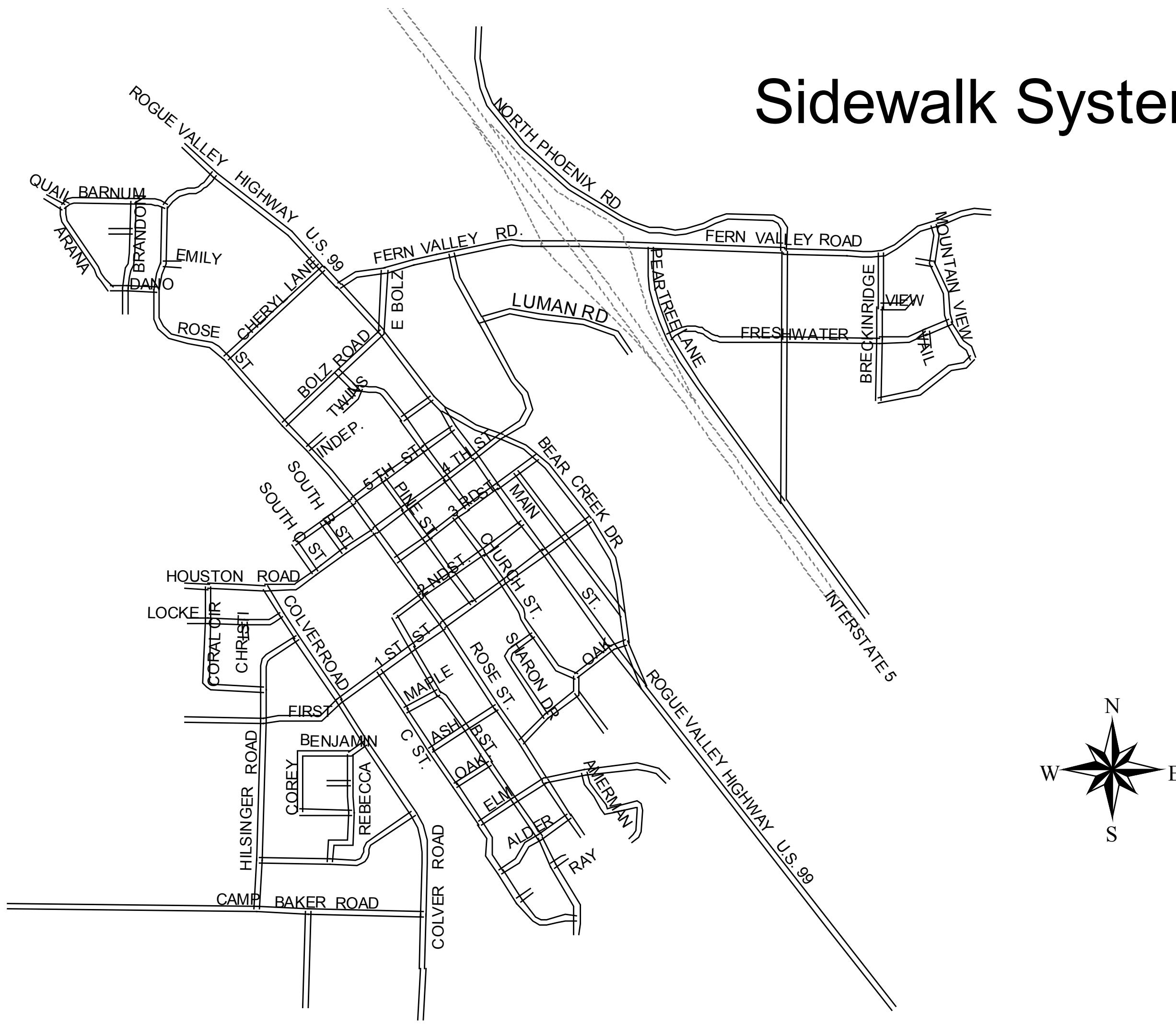
Policy 16.1 Driveways serving major developments that intersect arterial streets shall include sidewalks and bicycle lanes. Streetscape improvements shall also be required where the Council has adopted a streetscape plan for the arterial street.

Goal 17: Ensure sidewalk improvements in the City's oldest neighborhoods are sensitive to and integrate the historic character of the area.

Policy 17.1 Amend the Street Standards (Appendix C & D of the Local Street Network Plan) to include a unique local street cross-section design for the historic residential area between First and Fifth Streets west of Main. The cross-section shall compliment the character of the area while ensuring continuous hard-surfaced walkways.

FIGURE 9-4

Sidewalk System



Parking Plan

State law requires that parking supply per capita be reduced during the planning period. That means the number of spaces for each man, woman, and child should decline. The Metropolitan Planning Organization, Regional Transportation Plan estimates there were 76,200 on and off-street parking spaces within the region in the mid-1990's. The region's population was not much different than the number of parking spaces; 73,640 in 1990 or roughly one parking space per person.

The Regional Plan also estimated that the City had approximately 1,100 spaces. Based upon these figures and the City's 1995 population of 3,615, the City's parking spaces per capita was approximately three tenths of a space, or 30% of the Region's rate. If the City were to reduce its parking per capita by 10% during the planning period, the spaces per person would need to fall by a few hundredths of a space to roughly one-quarter of a space per person.

Assuming each community in the MPO reduced its equivalent per capita parking rate by 10 percent, the City could only add another 338 spaces during the 20 year planning period. That is roughly the number of spaces available in the Pear Tree Factor Outlet Store. The Store's have 305 spaces. (Note: the development exceeds the City's parking requirements by 83 spaces, or 25 percent).

The prospect of limiting parking growth to just 338 spaces over the next 20 years appears ludicrous. While it is within the City's powers to do so, it does not appear prudent or desirable. That number would be easily surpassed by the parking requirements for the vacant business commercial lands in and around the interchange and parking planned as a part of the City Center. Fortunately, State law offers an alternative to a straight 10% reduction per capita. This alternative is described in the form of Goal 17 and associated policies.

Goal 17 Manage parking supply, location and use to ensure maximization of urban land, avoid the construction of extensive non-impervious surfaces, and the creation of monotonous surfaces adjacent to the street frontage.

Policy 17.1 Modify the City's parking standards, as necessary, to:

a) Reduce minimum off-street parking requirements for all non-residential uses from those set forth within the 1990 parking regulations,

b) Allow on-street parking, long-term lease parking, and shared parking to meet minimum off-street parking requirements,

c) Exempt structured parking and on-street parking from parking maximums,

d) Require parking lots fronting on any arterial or collector street serving a commercial or industrial use to provide street-like features along major driveways (including curbs, sidewalks, and street trees or planting strips). Parking areas visible from the street shall not take up more than 1/3 of block frontage,

e) Establish a maximum parking rate to compliment the minimum parking standard cited in 17.1(a),

f) Allow existing parking areas to be redeveloped consistent with the lower parking standards, and to less than the standard when the proposed development is: 1) transit oriented and includes transit oriented facilities including bus stops, pullouts, bus shelters, park and ride lots, or similar facilities, or 2) for transit related facilities as described in 15.1,

g) Prohibit off-street parking within the Special Transportation Area except within public lots,

h) Encourage the use of shared off-street parking by adjoining, nearby, and future businesses through parking space requirement reductions that provide incentives for joint use,

i) Require effective landscaping within and surrounding paved parking areas to increase shading, screening, buffering, aesthetics, and storm water run-off retention,

j) Require the design and construction of large parking lots to separate pedestrians from auto traffic,

k) Require bicycle parking standards for new multi-family developments, new retail, office, institutional developments, transit transfer stations, and park and ride lots,

l) Require the installation of bike lockers at major transit stops and bike racks at all bus stops, and

m) Require new developments to provide preferential parking for employee carpools and vanpools.

Policy 17.2 The City shall designate residential parking districts, prohibiting parking by non-residents, if commercial or industrial parking demands intrude into residential neighborhoods.

Transportation Element

Appendices

NOTE: The Appendices are supplemental to the Element

but

should not be construed as establishing City Goals or Policies.

Appendix C

Alternative

and

Project Listing

CITY OF PHOENIX

COMPREHENSIVE LAND USE PLAN

TRANSPORTATION ELEMENT

City Council

October 4, 1999

Phoenix City Council
Larry Parducci, Mayor
Otto Caster
Dale Draper
Allen Harris
Mary Jane Koelle
Diana Rasmussen
Pat Burton

Phoenix Planning Commission
Bea Reisinger, Chair
Matt Fawcett
Micki Summerhays
Dorothy Rachor
Sandra Christiansen
Roger Seaman
Russ Schweikert

Phoenix City Staff
Denis Murray, City Planner
Gary Shaff, Comprehensive Plan Update Planner
Judy Ryan, Secretary / Planning Aide
Jim Wear, Public Works Director

JRH | Engineers, Planners, & Project Managers
1580 Valley River Drive, Suite 160
Eugene, OR 97401

727 S. Central, Suite 207
Medford, OR 97501

This project is partially funded by a grant from the Oregon Department of Transportation.

APPENDIX D

TECHNICAL APPENDIX

APPENDIX E

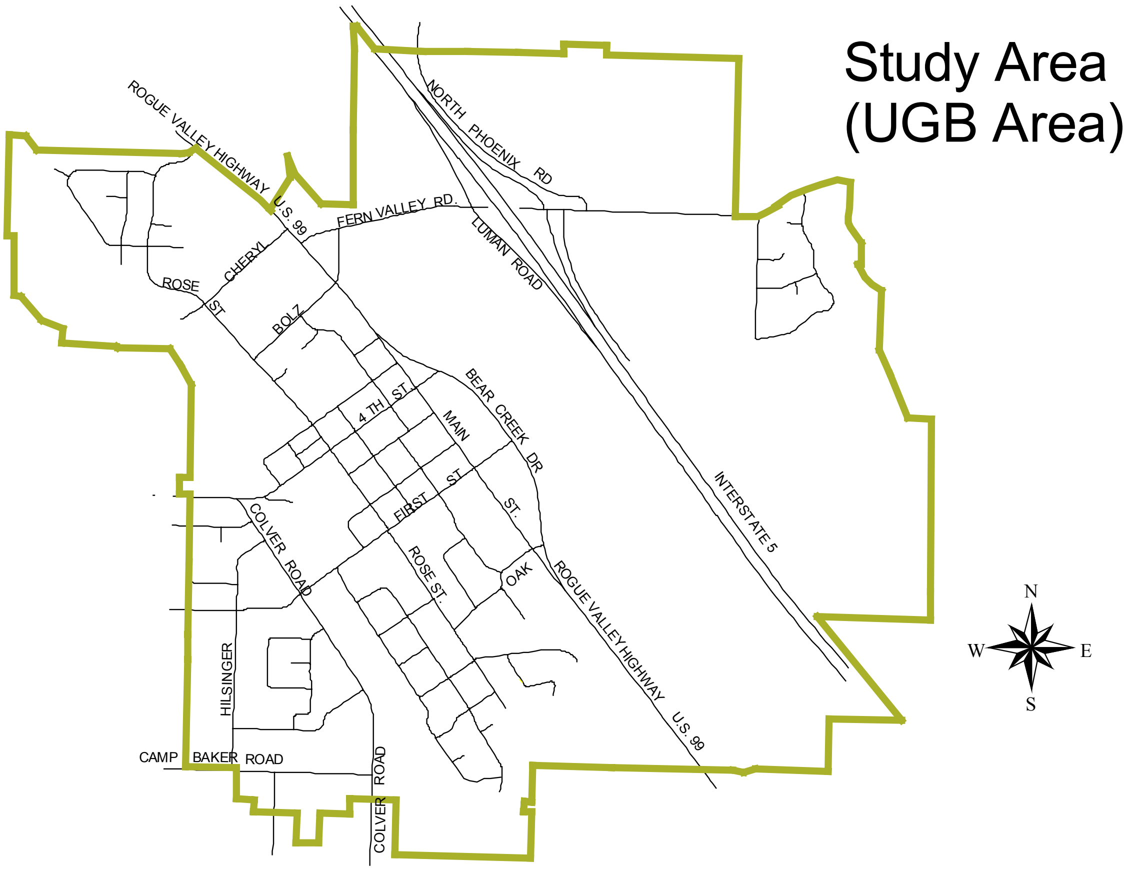
STREET NETWORK PLAN

Introduction

The Technical Appendix is a supporting document to the City of Phoenix Transportation System Plan. The data, inventories and information reflects calendar year 1998 information. This data was used in formulating the City's TSP but is not formally considered a part of that document.

The sections are organized, like the Plan, by transportation mode. The summary data that is included in this document was derived from the City's extensive transportation system inventories that are a part of the City's Geographic Information System. Interested persons are encouraged to review these documents at City Hall or request the Transportation System Inventories. The inventories encompass the area within the City's Urban Growth Boundary, Figure 1.

Figure 1
Phoenix Urban Growth Boundary



Population and Employment Forecasts

The City adopted a revised Comprehensive Land Use Plan, Population Element in September 1996. The adopted forecast is distributed along with forecast employment throughout the City. The sub-areas coincide with the Rogue Valley Metropolitan Planning Organization's Transportation Analysis Zone (TAZ). Figure 2 shows the TAZ's that were used to model forecast travel demand using the RVMPO's computerized EMME-2 transportation model. Table 1 shows the employment forecast and Table 2 the housing forecast by TAZ.

Figure 2
TAZ Boundaries

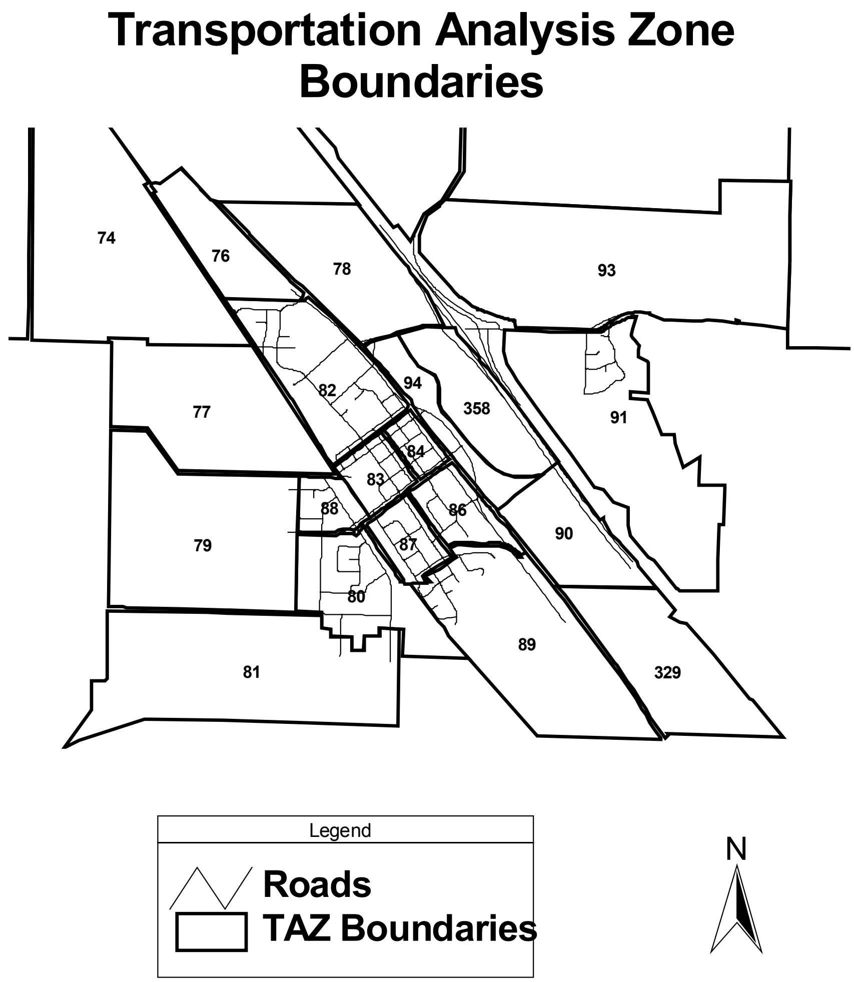


Table 1
Employment Forecast by TAZ (City of Phoenix – only)

TAZ		Agric.	Constr.	Fed. Gov.	Fin.Ins. Real Est.	Local Gov	Manuf.	Non-class	Retail	Services	Trans, Com, Util	Whole-sale	Grand Total
74	2018 Forecast						31						31
77	2018 Forecast											56	56

78	2018 Forecast				20				245	57			322
79	2018 Forecast												
81	2018 Forecast												
80	2018 Forecast							72					72
81	2018 Forecast												
82	2018 Forecast		10	0	15	75		20	97	35	20	5	277
83	2018 Forecast					90			75	35			200
84	2018 Forecast				10				33	20		10	73
86	2018 Forecast		10	5	25			34	50	35	10		169
87	2018 Forecast	88					10	27					125
88	2018 Forecast							18		18			36
89	2018 Forecast					7			23	10		43	83
90	2018 Forecast		25					12	15	20	20	30	122
91	2018 Forecast							60	175	85			320
93	2018 Forecast				0				462	210			672
94	2018 Forecast				59				225	125			409
329	2018 Forecast								17				17
358	2018 Forecast								120	23			143
Total	2018	88	45	5	129	172	41	243	1537	673	50	144	3127

Table 2

Dwelling Unit Forecast (includes City and surrounding rural area)

TAZ			
		1995	2018
74		N.A.	N.A.
77		11	14
78		N.A.	N.A.
79		63	83
81		73	81
80		127	440
81		73	81
82		454	582
83		100	100
84		67	105
86		136	173
87		69	83
88		80	92
89		166	224
90		31	69
91		55	268
93		23	33
94		20	219
329		77	80
358		210	276
Total		1835	3003

These forecasts were developed using the City's Comprehensive Land Use Plan Map (which shows planned land uses within the City's UGB – see Figure 4) and are coordinated with the Rogue Valley Metropolitan Planning Organization's (RVMPO) and Jackson Couty. The RVMPO transportation demand model (EMME2) was then employed to identify and quantify transportation system needs within the City of Phoenix. Supplementing this analysis were the experience and insights of local residents and City staff. The documentation transportation system needs and analysis of system of transportation alternatives to meet these needs is contained within Chapter 4 and 7, respectively, of the City's Comprehensive Plan, Transportation Element.

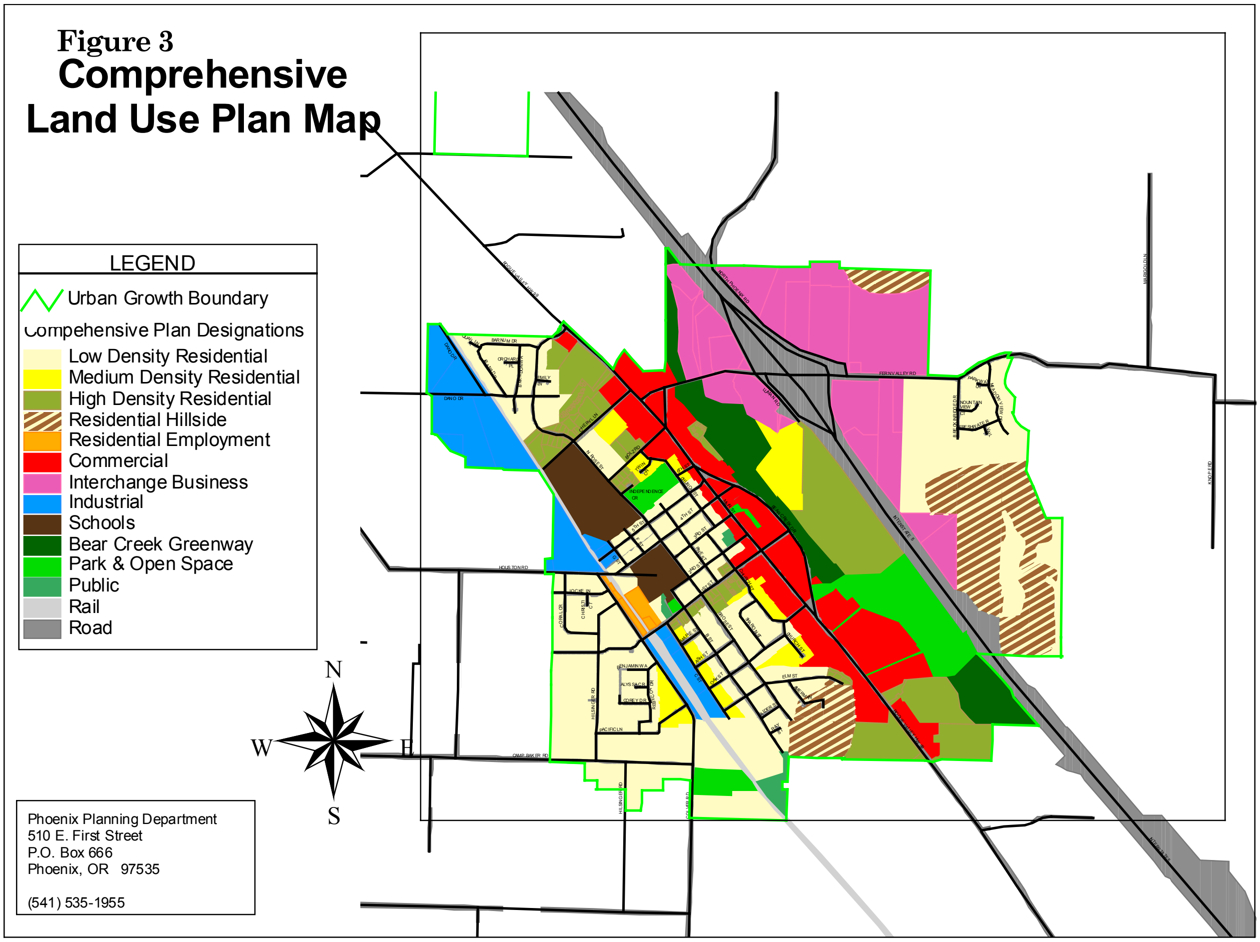


Figure 3
Comprehensive Land Use Plan Map

Street Condition

The City initiated its pavement management program in 1995. The inventory coupled with those compiled with the Oregon Department of Transportation and Jackson County details the characteristics or condition of the paved surface. This information is shown in Table 3. Due to the reliance upon multiple data sources, certain data fields are blank. The complete inventory, including a wide variety of pavement features not included here, is available at the City of Phoenix, Planning Department.

Table 3
Pavement Management Rating

CLASS	ROAD #	OWNERSHIP	NAME	FROM	TO	LENGTH	WIDTH	RATING	ROW	LANES	MEDIANWIDTH	ROW RANGE
Arterial	10001 10	ODOT	ROGUE VALLEY HWY	N CITY LIMITS	ROSE	354	48	Good	70	4	14	
Arterial	10001 20	ODOT	ROGUE VALLEY HWY	ROSE	COLEMAN CREEK	771	48	Good	70	4	14	
Arterial	10002 40	ODOT	ROGUE VALLEY HIG	OAK ST	COUPLET	391	24	Excellent	80	2	0	
Arterial	600 30	ODOT	FERN VALLEY ROAD	W RAMPS	CENTER OF BRIDGE	308	26	NA	NA	2	0	
Arterial	600 20	ODOT	FERN VALLEY ROAD	LUMAN	W RAMPS	172	26	NA	NA	2	0	
Arterial		ODOT	FERN VALLEY ROAD	E RAMPS	CENTER OF BRIDGE	406	NA	NA	NA	2	0	
Arterial	1850 0048	Jackson Co.	FERN VALLEY RD	N. PHOENIX	Interchange Ramp	1285	24	Excellent	60	2	0	
Arterial	600 10	Phoenix	FERN VALLEY	BEAR CREEK	LUMAN RD.	698	52	Poor	60	2	0	
Arterial	10001 30	ODOT	ROGUE VALLEY HWY	COLEMAN CREEK	CHERYL LN	398	48	Good	70	4	14	
Arterial	1850 1000	Jackson Co.	FERN VALLEY RD	OR99	BEAR CR BRIDGE	211	32	Excellent	60	2	0	
Arterial	1850 1000	Jackson Co.	FERN VALLEY RD	OR99	BEAR CR BRIDGE	237	32	Excellent	60	2	0	
Arterial	1850 1000	Jackson Co.	FERN VALLEY RD	OR99	BEAR CR BRIDGE	405	32	Excellent	60	2	0	
Arterial	10001 40	ODOT	ROGUE VALLEY HWY	CHERYL LN	FERN VALLEY RD	192	50	Good	70	4	14	
Arterial	500 10	Phoenix	E BOLZ	HWY 99	FERN VALLEY	509	43	Fair	50	2	0	
Arterial	10001 50	ODOT	ROGUE VALLEY HWY	FERN VALLEY RD	BOLZ RD	517	50	Good	70	4	14	
Arterial	10001 60	ODOT	ROGUE VALLEY HWY	BOLZ RD	6TH ST	673	50	Good	70	4	14	
Arterial	10001 70	ODOT	ROGUE VALLEY HWY	6TH ST	COUPLET	134	50	Good	70	4	14	
Arterial	10001 80	ODOT	ROGUE VALLEY HWY	COUPLET	5TH ST	174	24	Fair	60	2	0	
Arterial	10002 10	ODOT	ROGUE VALLEY HIG	COUPLET	4TH ST	542	24	Fair	80	2	0	
Arterial	10001 90	ODOT	ROGUE VALLEY	5TH	5TH	294	24	Fair	60	2	0	

			HWY									
Arterial	10001 100	ODOT	ROGUE VALLEY HWY	4TH ST	3RD ST	301	24	Fair	60	2	0	
Arterial	10002 20	ODOT	ROGUE VALLEY HIG	4TH ST	1ST ST	997	24	Excellent	80	2	0	
Arterial	10001 110	ODOT	ROGUE VALLEY HWY	3RD ST	2ND ST	362	24	Fair	60	2	0	
Arterial	10001 120	ODOT	ROGUE VALLEY HWY	2ND ST	1ST ST	306	24	Fair	60	2	0	
Arterial	10002 30	ODOT	ROGUE VALLEY HIG	1ST ST	OAK ST	1062	24	Excellent	80	2	0	
Arterial	10001 130	ODOT	ROGUE VALLEY HWY	1ST ST	OAK ST	958	24	Fair	60	2	0	
Arterial	10001 140	ODOT	ROGUE VALLEY HWY	OAK ST	COUPLET	408	24	Fair	60	2	0	
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Arterial	10001 150	ODOT	ROGUE VALLEY HWY	COUPLET	S. CITY LIMITS	2544	46	Good	70	2	0	
Collector	1230 150	Phoenix	ROSE	BARNUM	HIGHWAY 99	499	40	Poor	0	2	0	60 - 70
Collector	1230 140	Phoenix	ROSE	EMILY	BARNUM	466	40	Excellent	60	2	0	
Collector	3660 9000	ODOT	N. PHOENIX RD	CAMPBELL	FERN VALLEY RD	2658	34	Excellent	0	2	0	
Collector	1850 0050	Jackson Co.	FERN VALLEY RD	N. PHOENIX	MARIGOLD	519	24	Excellent	60	2	0	
Collector	1850 0050	Jackson Co.	FERN VALLEY RD	N. PHOENIX	MARIGOLD	1259	24	Excellent	60	2	0	
Collector	1230 130	Phoenix	ROSE	DANO	EMILY	222	40	Excellent	60	2	0	
Collector	1230 120	Phoenix	ROSE	CHERYL	DANO	925	40	Excellent	60	2	0	
Collector	1230 110	Phoenix	ROSE	BOLZ	CHERYL	718	32	Excellent	60	2	0	
Collector	1230 100	Phoenix	ROSE	INDEPENDENCE	BOLZ	282	35	Excellent	60	2	0	
Collector	630 60	Phoenix	FOURTH	CHURCH	HWY. 99	287	40	Excellent	60	2	0	
Collector	1230 90	Phoenix	ROSE	FIFTH	INDEPENDENCE	556	32	Good	50	2	0	
Collector	630 50	Phoenix	FOURTH	PINE	CHURCH	422	22	Fair	60	2	0	
Collector	630 40	Phoenix	FOURTH	ROSE	PINE	300	22	Fair	60	2	0	
Collector	1230 80	Phoenix	ROSE	FOURTH	FIFTH	294	21	Fair	60	2	0	
Collector	620 80	Phoenix	FIRST	HWY. 99	BEAR CR. DR.	458	21	Excellent	0	2	0	60 - 70
Collector	630 30	Phoenix	FOURTH	"B" STREET	ROSE	301	22	Fair	60	2	0	
Collector	1230 70	Phoenix	ROSE	THIRD	FOURTH	294	21	Fair	60	2	0	

Collector	630 20	Phoenix	FOURTH	"C" STREET	"B" STREET	296	22	Poor	60	2	0	
Collector	2490 0020	Jackson Co.	HOUSTON	CORAL CR	WEST	191	19	Fair	60	2		
Collector	620 70	Phoenix	FIRST	CHURCH	HWY. 99	422	35	Good	60	2	0	
Collector	620 60	Phoenix	FIRST	PINE	CHURCH	302	21	Fair	60	2	0	
Collector	2490 0010	Jackson Co.	HOUSON	COLVER	CORAL	464	19	Fair	60	2	0	
Collector	630 10	Phoenix	FOURTH	COLVER	"C" STREET	444	22	Very Poor	60	2	0	
Collector	1230 60	Phoenix	ROSE	SECOND	THIRD	356	21	Fair	60	2	0	
Collector	1730 10	Phoenix	COLVER RD	HOUSTON RD	LOCKE LANE	252	22	Fair	60	2	0	
Collector	620 50	Phoenix	FIRST	ROSE	PINE	305	21	Fair	60	2	0	
Collector	1230 50	Phoenix	ROSE	FIRST	SECOND	300	21	Poor	60	2	0	
Collector	1730 20	Phoenix	COLVER RD	LOCKE LANE	HILSINGER	222	22	Fair	60	2	0	
Collector	620 40	Phoenix	FIRST	"B"	ROSE	308	21	Fair	60	2	0	
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Collector	1300 1030	Phoenix	OAK	CHURCH	HWY. 99	379	36	Fair	50	2	0	
Collector	620 30	Phoenix	FIRST	COLVER	"B"	742	23	Excellent	60	2	0	
Collector	1730 30	Phoenix	COLVER RD	HILSINGER	FIRST ST	632	22	Poor	60	2	0	
Collector	1230 40	Phoenix	ROSE	ASH	FIRST	808	36	Fair	0	2	0	50 - 60
Collector	1300 1020	Phoenix	OAK	SHARON	CHURCH	449	36	Fair	60	2	0	
Collector	1300 1010	Phoenix	OAK	ROSE	SHARON	294	36	Fair	60	2	0	
Collector	1230 30	Phoenix	ROSE	OAK	ASH	348	36	Good	60	2	0	
Collector	1730 40	Phoenix	COLVER RD	FIRST ST	REBECCA DR	399	24	Excellent	60	2	0	
Collector	1730 50	Phoenix	COLVER RD	REBECCA	PACIFIC LN	722	24	Excellent	60	2	0	
Collector	0770 30	Jackson Co.	CAMP BAKER	HILSINGER	CALHOUN	2037	19	Fair	60	2	0	
Collector	0770 20	Jackson Co.	CAMP BAKER	HILSINGER	HILSINGER	421	19	Fair	60	2	0	
Collector	1070 0060	Jackson Co.	COLVER	CAMP BAKER	PACIFIC	850	32	Excellent	60	2	0	
Collector	0770 10	Jackson Co.	CAMP BAKER	COLVER	HILSINGER	942	19	Fair	40	2	0	
Collector	1070 0050	Jackson Co.	COLVER	CAMP BAKER	PIONEER	442	32	Excellent	60	2	0	
Collector	1070 0050	Jackson Co.	COLVER	CAMP BAKER	PIONEER	424	32	Excellent	60	2	0	
Collector	630 70	Phoenix	FOURTH	HWY. 99	BEAR CR. DR.	277	21	Poor	60	2	0	
Collector	1300 1040	ODOT	OAK	HWY 99	BEAR CR. DR.	119	32	Fair	0	2	0	In ODOT

												ROW
Interstate	I5S NofFV	ODOT	INTERSTATE 5			4790	26	Fair				
Interstate	I5 S Off-	ODOT	INTERSTATE 5			1129	26	NA	0	1	0	
Interstate	I5 N On-	ODOT	INTERSTATE 5			1527	26	NA	0	1	0	
Interstate	I5 S On-	ODOT	INTERSTATE 5			1419	27	NA	0	1	0	
Interstate	I5 N Off-	ODOT	INTERSTATE 5			1397	26	NA	0	1	0	
Interstate	I5N NofFV	ODOT	INTERSTATE 5			3628	24	Fair	150	2	60	
Interstate	I5S SofFV	ODOT	INTERSTATE 5			3595	26	Fair	150	2	0	
Interstate	I5N SofFV	ODOT	INTERSTATE 5			3926	26	Fair	150	2	0	
Local	200 10	Phoenix	BARNUM	ARANA	ROSE	865	36	Good	50	2	0	
Local	1500 10	Phoenix	QUAIL LN	WEST END	BARNUM	173	36	Fair	50	2	0	
Local	230 20	Phoenix	BRANDON	BRANDON	S. END	210	36	Good	50	2	0	
Local	1310 10	Phoenix	ORCHARD PL	W. END	BRANDON	185	36	Good	50	2	0	

CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Local	230 10	Phoenix	BRANDON	DANO	BARNUM	721	36	Good	50	2	0	
Local	520 10	Phoenix	EMILY	N. ROSE	E. END	145	36	Excellent	50	2	0	
Local	400 20	Phoenix	DANO	BRANDON	ROSE	251	36	Fair	50	2	0	
Local	130 10	Phoenix	ARANA	BARNUM	DANO	786	36	Good	50	2	0	
Local	Luman	ODOT	Luman Rd	Fern Valley	End	1353	28	NA	0	2	0	
Local	1910 20	Phoenix	BOLZ	CHURCH	HWY. 99	470	30	Poor	40	2	0	
Local	1220 90	Phoenix	CHURCH	SIXTH	BOLZ	697	36	Fair	60	2	0	
Local	1810 10	Phoenix	TWIN CIRCLE	W. END	CHURCH	246	36	Fair	40	2	0	
Local	1760 10	Phoenix	SIXTH	CHURCH	HWY. 99	288	23	Good	40	2	0	
Local	Pear Tree	ODOT	Pear Tree Ln	Fern Valley	End	3542	28	NA	0	2	0	
Local	1910 10	Phoenix	BOLZ	ROSE	CHURCH	619	30	Fair	40	2	0	
Local	900 10	Phoenix	INDEPENDENCE	N. ROSE	E. END	173	36	Poor	40	2	0	
Local	0610 50	Phoenix	FIFTH	CHURCH	HWY 99	292	21	Poor	60	2	0	
Local	1220 80	Phoenix	CHURCH	FIFTH	SIXTH	304	21	Fair	60	2	0	
Local	1220 70	Phoenix	CHURCH	FOURTH	FIFTH	304	21	Fair	60	2	0	
Local	0610 40	Phoenix	FIFTH	PINE	CHURCH	425	21	Very Poor	60	2	0	

Local	0610 30	Phoenix	FIFTH	ROSE	PINE	306	21	Poor	60	2	0	
Local	1410 40	Phoenix	PINE	FOURTH	FIFTH	297	20	Poor	60	2	0	
Local	1800 30	Phoenix	THIRD	CHURCH	HWY.99	296	20	Poor	60	2	0	
Local	1220 60	Phoenix	CHURCH	THIRD	FOURTH	292	21	Poor	60	2	0	
Local	1800 20	Phoenix	THIRD	PINE	CHURCH	114	20	Poor	60	2	0	
Local	1800 20	Phoenix	THIRD	PINE	CHURCH	305	20	Poor	60	2	0	
Local	1410 30	Phoenix	PINE	THIRD	FOURTH	303	20	Poor	60	2	0	
Local	0610 10	Phoenix	FIFTH	"C" STREET	"B" STREET	286	21	Poor	60	2	0	
Local	1740 10	Phoenix	SECOND	HWY. 99	CHURCH	413	34	Excellent	60	2	0	
Local	1220 50	Phoenix	CHURCH	SECOND	THIRD	365	21	Poor	60	2	0	
Local		Phoenix	S "B" ST	4th ST	5th ST	292	20	NA		2	0	
Local	1800 10	Phoenix	THIRD	ROSE	PINE	296	20	Poor	60	2	0	
Local	1740 20	Phoenix	SECOND	CHURCH	N. PINE	309	20	Poor	60	2	0	
Local	1410 20	Phoenix	PINE	SECOND	THIRD	358	20	Poor	60	2	0	
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Local	n.a	Phoenix	S "C" ST	4th ST	5th ST	293		Excellent				
Local	1220 40	Phoenix	CHURCH	FIRST	SECOND	292	21	Poor	60	2	0	
Local	1740 30	Phoenix	SECOND	N. PINE	N. ROSE	302	20	Poor	60	2	0	
Local	1410 10	Phoenix	PINE	FIRST	SECOND	299	20	Fair	60	2	0	
Local	1740 40	Phoenix	SECOND	N. ROSE	N. "B" STREET	278	20	Poor	60	2	0	
Local	1220 30	Phoenix	CHURCH	SHARON	FIRST	501	36	Good	0	2	0	45 - 60
Local	1000 10	Phoenix	LOCKE LN	COLVER ST	CRISTI COURT	317	35	Poor	60	2	0	
Local	330 10	Phoenix	CORAL CIRCLE	HILSINGER	LOCKE LANE	281	35	Poor	60	2	0	
Local	1000 30	Phoenix	LOCKE LN	CORAL CIRCLE	TO WEST END	165	35	Fair	60	2	0	
Local	1000 20	Phoenix	LOCKE LN	CRISTI CT	CORAL CIRCLE	303	35	Poor	60	2	0	
Local	Na	Phoenix	B ST	1st ST	2nd ST	292	30	NA				
Local	320 10	Phoenix	CHRISTI CT.	S. END	LOCKE LANE	145	35	Poor	60	2	0	
Local	1220 20	Phoenix	CHURCH	OAK	SHARON	505	36	Good	60	2	0	
Local	Na	Phoenix	B ST	MAPLE	1st ST	435	0	NA		0	0	
Local	330 20	Phoenix	CORAL CIRCLE	LOCKE LANE	HOUSTON	991	35	Poor	60	2	0	
Local	1220 10	Phoenix	CHURCH	S.END	OAK	391	36	Fair	60	2	0	

Local	2402 0005	Jackson Co.	HILSINGER RD	COLVER	CORAL CR	568	15	Good	0	2	0	40 - 50
Local	1100 10	Phoenix	MAPLE	"C" STREET	"B" STREET	303	23	Excellent	80	2	0	
Local	1710 40	Phoenix	S "C" ST	MAPLE	FIRST	388	22	Excellent	60	2	0	
Local	620 20	Phoenix	FIRST	HILSINGER	COLVER	669	33	Poor	60	2	0	
Local	1750 10	Phoenix	SHARON	OAK	CHURCH	857	36	Good	50	2	0	
Local	140 20	Phoenix	ASH	S. "B" STREET	S. ROSE	296	25	Excellent	60	2	0	
Local	1700 60	Phoenix	S "B" ST	ASH	MAPLE	361	23	Excellent	60	2	0	
Local	820 20	Phoenix	HILSINGER	W. FIRST	CORAL CIRCLE	257	36	Fair	60	2	0	
Local	620 10	Phoenix	FIRST	W. END	HILSINGER	645	33	Fair	60	2	0	
Local	140 10	Phoenix	ASH	S "C" STREET	S. "B" STREET	342	16	Poor	60	2	0	
Local	1710 30	Phoenix	S "C" ST	ASH	MAPLE	393	22	Excellent	60	2	0	
Local	1700 50	Phoenix	S "B" ST	OAK	ASH	352	38	Excellent	60	2	0	
Local	510 30	Phoenix	ELM	ROSE	AMERMAN	331	35	Excellent	50	2	0	
Local	1230 20	Phoenix	ROSE	ELM	OAK	360	36	Excellent	60	2	0	
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Local	1300 10	Phoenix	OAK	"C" STREET	"B" STREET	325	16	Excellent	60	2	0	
Local	1710 20	Phoenix	S "C" ST	OAK	ASH	351	22	Excellent	60	2	0	
Local	510 40	Phoenix	ELM	AMERMAN	E. END	724	35	Fair	50	2	0	
Local	510 20	Phoenix	ELM	S. "B" STREET	ROSE	301	24	Excellent	60	2	0	
Local	1700 40	Phoenix	S. "B" ST	ELM	OAK	371	38	Excellent	60	2	0	
Local	1230 10	Phoenix	ROSE	S. END	ELM	356	36	Excellent	60	2	0	
Local	510 10	Phoenix	ELM	S. "C" STREET	S. "B" STREET	334	23	Excellent	60	2	0	
Local	1710 10	Phoenix	S "C" ST	ELM	OAK	376	22	Excellent	60	2	0	
Local	1230 10	Phoenix	ROSE	S. END	ELM	197	36	Excellent	60	2	0	
Local	1920 10	Phoenix	PACIFIC LN	COLVER RD	REBECCA	849	27	Excellent	50	2	0	
Local	100 10	Phoenix	ALDER	S. "B" STREET	S. ROSE	293	23	Excellent	60	2	0	
Local	1700 30	Phoenix	S "B" ST	ALDER	ELM	370	38	Excellent	60	2	0	
Local	120 10	Phoenix	AMERMAN DR.	ELM	S. END	959	24	Fair	50	2	0	
Local	1600 10	Phoenix	RAY	"B" STREET	E. END	137	36	Fair	50	2	0	
Local	1700 20	Phoenix	S. "B" ST	RAY	ALDER	248	38	Excellent	60	2	0	
Local	820 10	Phoenix	HILSINGER	PACIFIC LANE	W. FIRST	1137	15	Poor	50	2	0	

Local	1920 20	Phoenix	PACIFIC LN	REBECCA	HILSINGER	576	27	Excellent	50	2	0	
Local	1710 06	Phoenix	S "C" ST	ALDER ST	ELM ST	450	22	Excellent	50	2	0	
Local	2402 0110	Jackson Co.	HILSINGER RD	PACIFIC	CAMP BAKER	406	15	Fair	50	2	0	
Local	1700 10	Phoenix	S. "B" ST	S. END	RAY	354	38	Excellent	60	2	0	
Local	400 10	Phoenix	DANO	ARANA	BRANDON	128	36	Good	50	2	0	
Local	5030 30	Phoenix	BRECKENRIDGE	MOUNTAIN VIEW CT	FERN VALLEY RD	446	36	Excellent	60	2	0	
Local	5040 10	Phoenix	MOUNTAIN VIEW CT	EAST END	BRECKINRIDGE	294	36	Excellent	50	2	0	
Local		Phoenix		BRECKINRIDGE	MOUNTAIN VIEW	876	36	Excellent	50	2	0	
Local	5030 20	Phoenix	BRECKENRIDGE	FRESHWATER DR	MOUNTAIN VIEW CT	269	36	Excellent	50	2	0	
Local	5030 10	Phoenix	BRECKENRIDGE	SOUTH END	FRESHWATER DR	503	36	Excellent	60	2	0	
Local	1400 10	Phoenix	PARKWAY CIRCLE	W. END	MEADOWVIEW	138	36	Excellent	50	2	0	
Local	5050 10	Phoenix	FRESHWATER DR	BRECKENRIDGE DR	VAIL CT	392	36	Excellent	50	2	0	
Local	5050 20	Phoenix	FRESHWATER DR	VAIL CT	MOUNTAIN VIEW DR	226	36	Excellent	50	2	0	
Local	5010 10	Phoenix	VAIL CT	SOUTH END	FRESHWATER DR	133	36	Excellent	50	2	0	
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**LENGTH**	**WIDTH**	**RATING**	**ROW**	**LANES**	**MEDIANWIDTH**	**ROW RANGE**
Local	5060 30	Phoenix	MEADOW VIEW DR	PARKWAY CIRCLE	FERN VALLEY RD	310	36	Excellent	50	2	0	
Local	5060 20	Phoenix	MEADOW VIEW DR	FRESHWATER DR	PARKWAY CIRCLE	519	36	Excellent	50	2	0	
Local	5060 10	Phoenix	MEADOW VIEW DR	SOUTH END	FRESHWATER DR	356	36	Excellent	50	2	0	
Local	1710 04	Phoenix	S "C" ST	C CT	ALDER ST	289	22	Excellent	50	2	0	
Local	1710 02	Phoenix	S "C" ST	B ST	C CT	549	22	Excellent	50	2	0	
Local		Phoenix	C" Court	S "C"	to end	132	22	Excellent		2		
Local	1930 40	Phoenix	REBECCA	COREY	PACIFIC LN	563	36	Excellent	50	2	0	
Local	1930 30	Phoenix	REBECCA	ALYSSA	COREY DR	247	36	Excellent	50	2	0	
Local	1950 10	Phoenix	ALYSSA	REBECCA	TO WEST END	183	36	Excellent	50	2	0	
Local	1940 10	Phoenix	BENJAMIN	REBECCA	COREY DR	892	36	Excellent	50	2	0	
Local	1960 10	Phoenix	COREY DR	BENJAMIN	REBECCA	424	36	Excellent	50	2	0	
Local	1930 20	Phoenix	REBECCA	BENJAMIN	ALYSSA	237	36	Excellent	50	2	0	
Local	1930 10	Phoenix	REBECCA	COLVER	BENJAMIN WAY	152	36	Excellent	50	2	0	

Local	0610 20	Phoenix	FIFTH	"B" STREET	ROSE	305	21	Very Poor	60	2	0	
Local		Phoenix	ALDER	"B" STREET	"C" STREET	445	22	Excellent		2		
Local	310 10	Phoenix & Public	CHERYL LN	HIGHWAY 99	N. ROSE	1076	32	Good	60	2	0	
		Public	HELSINGER	CAMP BAKER	TO S END	790						

Substandard Streets

Most of the City's streets, with the exception of arterial streets, have a rural character; lacking curbs, gutters, bike lanes, and sidewalks and instead employing graveled shoulders. These characteristics do not have a significant impact on their capacity to carry vehicle traffic except where the lanes are too narrow to accommodate two-way traffic. Table 4 details those roadways with widths less than 21 feet.

Table 4
Substandard Street Widths

CLASS	OWNERSHIP	NAME	FROM	TO	LENGTH	WIDTH	ROW
Local	Phoenix	B ST	MAPLE	1st ST	435	0	
Local	Jackson Co.	HILSINGER RD	COLVER	CORAL CR	568	15	40-50
Local	Phoenix	HILSINGER	PACIFIC LANE	W. FIRST	1137	15	50
Local	Jackson Co.	HILSINGER RD	PACIFIC	CAMP BAKER	406	15	50
Local	Phoenix	ASH	S "C" STREET	S. "B" STREET	342	16	60
Local	Phoenix	OAK	"C" STREET	"B" STREET	325	16	60
Collector	Jackson Co.	HOUSTON	CORAL CR	WEST	191	19	60
Collector	Jackson Co.	HOUSON	COLVER	CORAL	464	19	60
Collector	Jackson Co.	CAMP BAKER	HILSINGER	CALHOUN	2037	19	60
Collector	Jackson Co.	CAMP BAKER	HILSINGER	HILSINGER	421	19	60
Collector	Jackson Co.	CAMP BAKER	COLVER	HILSINGER	942	19	40
Local	Phoenix	PINE	FOURTH	FIFTH	297	20	60
Local	Phoenix	THIRD	CHURCH	HWY.99	296	20	60
Local	Phoenix	THIRD	PINE	CHURCH	114	20	60
Local	Phoenix	THIRD	PINE	CHURCH	305	20	60
Local	Phoenix	PINE	THIRD	FOURTH	303	20	60
Local	Phoenix	S "B" ST	4th ST	5th ST	292	20	
Local	Phoenix	THIRD	ROSE	PINE	296	20	60
Local	Phoenix	SECOND	CHURCH	N. PINE	309	20	60
Local	Phoenix	PINE	SECOND	THIRD	358	20	60
Local	Phoenix	SECOND	N. PINE	N. ROSE	302	20	60
Local	Phoenix	PINE	FIRST	SECOND	299	20	60
Local	Phoenix	SECOND	N. ROSE	N. "B" STREET	278	20	60

Hilsinger Road is scheduled soon for reconstruction following the formation of a local improvement district. Houston and Camp Baker, the only collectors with less than 21 foot pavements widths, are under Jackson County jurisdiction but could be upgraded as a part of the City's acceptance of jurisdiction for these roadways.

Roadway Link Capacity

Another important aspect of the roadway system is their capacity to carry forecast vehicle traffic. The volume of traffic compared to the roadway's capacity or the V/C ratio is frequently employed. It is a technical term used to characterize how congested particular roadway links may become. Volume is the number of vehicles using the street. The capacity (or more specifically the design capacity) is measured by the number of lanes, posted speed limit, and operating characteristics (e.g presence/absence of traffic signals, turn lanes, driveways, etc.). A V/C ratio of .70 means the roadway is carrying 70 percent of its maximum design capacity. Table 5 details the characteristics of different V/C ratios.

Table 5
Volume to Capacity Relationships

Ratio of Traffic Volume to Roadway Capacity	Description of Conditions	Level of Service (LOS)
Less than 0.40	Free flowing traffic conditions with no delays for motorists	A
0.41 to 0.66	Acceptable traffic conditions with minor and / or infrequent delays for motorists	B
0.67 to 0.80	Moderate traffic flow, acceptable conditions with relatively minor and / or short tem delays for motorists	C
0.81 to 0.90	Generally stable traffic conditions with moderate and / or occasional delays for motorists – Standard used for all areas except the City's downtown	D
0.91 to 0.99	Moderate to serious traffic condition with frequent delays for motorists – Standard used in the City's downtown	E
Greater than 1.00	Serious traffic condition, unstable traffic flow, and lengthy delays for motorists	F

Table 6 details the current and forecast operating conditions (with the preferred alternative) of the City's collector and arterial streets. It should be noted that existing and forecast capacities are based upon rather conservative estimates. The table relies upon the average lane capacity per hour at a signalized intersection as opposed to the capacity at mid-block capacity. Typical lane capacity at a signalized intersection is 1,800 per lane per hour. Typically, mid-block capacities are higher and range up to approximately 2,000 vehicles per lane per hour. The forecast volumes are based upon outputs from the Rogue Valley Metropolitan Traffic Forecasting Model, EMME-2.

Table 6

Existing and Future Vehicle to Capacity Ratios (collector and arterial streets only)

CLASS	ROAD #	OWNERSHIP	NAME	FROM	TO	Existing Capacity	Existing Peak Hour Traffic *	Existing V / C Ratio	Future Capacity	Forecast Peak Hour Traffic **	Forecast V / C Ratio
Arterial	10001 10	ODOT	ROGUE VALLEY HWY	N CITY LIMITS	ROSE	3600	1898	0.53	3600	2270	0.63
Arterial	10001 20	ODOT	ROGUE VALLEY HWY	ROSE	COLEMAN CREEK	3600	1794	0.50	3600	2255	0.63
Arterial	10002 40	ODOT	ROGUE VALLEY HIG	OAK ST	COUPLET	3600	628	0.17	3600	906	0.25
Arterial	600 30	ODOT	FERN VALLEY RD	W RAMPS	CENTER OF BRIDGE	1800	1350	0.75	3600	2035	0.57
Arterial	600 20	ODOT	FERN VALLEY RD	LUMAN	W RAMPS	1800	1190	0.66	3600	2978	0.83
Arterial	600 40	ODOT	FERN VALLEY RD	E RAMPS	CENTER OF BRIDGE	1800	1260	0.70	3600	2035	0.57
Arterial	1850 0048	Jackson Co.	FERN VALLEY RD	N. PHOENIX	Interchange Ramp	1800	1365	0.76	3600	1594	0.44
Arterial	600 10	Phoenix	FERN VALLEY	BEAR CREEK	LUMAN RD.	1800	996	0.55	3600	2978	0.83
Arterial	10001 30	ODOT	ROGUE VALLEY HWY	COLEMAN CREEK	CHERYL LN	3600	1690	0.47	3600	2142	0.60
Arterial	1850 1000	Jackson Co.	FERN VALLEY RD	OR99	BEAR CR BRIDGE	1800	1047	0.58	3600	1395	0.39
Arterial	10001 40	ODOT	ROGUE VALLEY HWY	CHERYL LN	FERN VALLEY RD	3600	1440	0.40	3600	N.A.	
Arterial	500 10	Phoenix	E BOLZ	HWY 99	FERN VALLEY	1800	298	0.17	1800	17	0.01
Arterial	10001 50	ODOT	ROGUE VALLEY HWY	FERN VALLEY RD	BOLZ RD	3600	1272	0.35	3600	1181	0.33
Arterial	10001 60	ODOT	ROGUE VALLEY HWY	BOLZ RD	6TH ST	3600	1779	0.49	3600	1161	0.32
Arterial	10001 70	ODOT	ROGUE VALLEY HWY	6TH ST	COUPLET	3600	1350	0.38	3600	1161	0.32
Arterial	10001 80	ODOT	ROGUE VALLEY HWY S.	COUPLET	5TH ST	3600	1170	0.33	3600	748	0.21
Arterial	10002 10	ODOT	ROGUE VALLEY HWY N.	COUPLET	4TH ST	3600	772	0.21	3600	579	0.17
Arterial	10001 90	ODOT	ROGUE VALLEY HWY S.	5TH	4TH	3600	865	0.24	3600	748	0.21
Arterial	10001 100	ODOT	ROGUE VALLEY HWY S.	4TH ST	3RD ST	3600	775	0.22	3600	1050	0.29

CLASS	ROAD #	OWNERSHIP	NAME	FROM	TO	Existing Capacity	Existing Peak Hour Traffic	Existing V / C Ratio	Future Capacity	Forecast Peak Hour Traffic	Forecast V / C Ratio
Arterial	10002 20	ODOT	ROGUE VALLEY HWY N.	4TH ST	1ST ST	3600	798	0.22	3600	870	0.24
Arterial	10001 110	ODOT	ROGUE VALLEY HWY S.	3RD ST	2ND ST	3600	630	0.18	3600	1050	0.29
Arterial	10001 120	ODOT	ROGUE VALLEY HWY S.	2ND ST	1ST ST	3600	540	0.15	3600	1050	0.29
Arterial	10002 30	ODOT	ROGUE VALLEY HIG N.	1ST ST	OAK ST	3600	634	0.18	3600	762	0.21
Arterial	10001 130	ODOT	ROGUE VALLEY HWY S.	1ST ST	OAK ST	3600	557	0.16	3600	882	0.25
Arterial	10001 140	ODOT	ROGUE VALLEY HWY S.	OAK ST	COUPLET	3600	526	0.15	3600	906	0.25
Arterial	10001 150	ODOT	ROGUE VALLEY HWY S.	COUPLET	S. CITY LIMITS	3600	1320	0.37	3600	1312	0.36
Collector	1230 150	Phoenix	ROSE	BARNUM	HIGHWAY 99	1800	206	0.11	1800	426	0.24
Collector	1230 140	Phoenix	ROSE	EMILY	BARNUM	1800	180	0.10	1800	426	0.24
Collector	3660 9000	ODOT	N. PHOENIX RD	CAMPBELL	FERN VALLEY RD	1800	567	0.32	1800	950	0.53
Collector	1850 0050	Jackson Co.	FERN VALLEY RD	N. PHOENIX	MARIGOLD	1800	221	0.12	1800	202	0.11
Collector	1230 130	Phoenix	ROSE	DANO	EMILY	1800	162	0.09	1800	13	0.01
Collector	1230 120	Phoenix	ROSE	CHERYL	DANO	1800	147	0.08	1800	13	0.01
Collector	1230 110	Phoenix	ROSE	BOLZ	CHERYL	1800	153	0.09	1800	18	0.01
Collector	1230 100	Phoenix	ROSE	INDEPENDENCE	BOLZ	1800	162	0.09	1800	165	0.09
Collector	630 60	Phoenix	FOURTH	CHURCH	HWY. 99	1800	225	0.13	1800	191	0.11
Collector	1230 90	Phoenix	ROSE	FIFTH	INDEPENDENCE	1800	174	0.10	1800	165	0.09
Collector	630 50	Phoenix	FOURTH	PINE	CHURCH	1800	225	0.13	1800	223	0.12
Collector	630 40	Phoenix	FOURTH	ROSE	PINE	1800	228	0.13	1800	223	0.12
Collector	1230 80	Phoenix	ROSE	FOURTH	FIFTH	1800	153	0.09	1800	736	0.41
Collector	620 80	Phoenix	FIRST	HWY. 99	BEAR CR. DR.	1800	315	0.18	1800	163	0.09
Collector	630 30	Phoenix	FOURTH	"B" STREET	ROSE	1800	180	0.10	1800	190	0.11
Collector	1230 70	Phoenix	ROSE	THIRD	FOURTH	1800	126	0.07	1800	192	0.11

Collector	630 20	Phoenix	FOURTH	"C" STREET	"B" STREET	1800	180	0.10	1800	192	0.11
Collector	2490 0020	Jackson Co.	HOUSTON	CORAL CR	WEST	1800	180	0.10	1800	223	0.12
Collector	620 70	Phoenix	FIRST	CHURCH	HWY. 99	1800	315	0.18	1800	410	0.23
Collector	620 60	Phoenix	FIRST	PINE	CHURCH	1800	315	0.18	1800	410	0.23
Collector	2490 0010	Jackson Co.	HOUSON	COLVER	CORAL	1800	185	0.10	1800	279	0.16
Collector	630 10	Phoenix	FOURTH	COLVER	"C" STREET	1800	180	0.10	1800	222	0.12
Collector	1230 60	Phoenix	ROSE	SECOND	THIRD	1800	120	0.07	1800	42	0.02
Collector	1730 10	Phoenix	COLVER RD	HOUSTON RD	LOCKE LANE	1800	130	0.07	1800	78	0.04
Collector	620 50	Phoenix	FIRST	ROSE	PINE	1800	309	0.17	1800	424	0.24
Collector	1230 50	Phoenix	ROSE	FIRST	SECOND	1800	98	0.05	1800	42	0.02
Collector	1730 20	Phoenix	COLVER RD	LOCKE LANE	HILSINGER	1800	119	0.06	1800	78	0.04
CLASS	**ROAD #**	**OWNERSHIP**	**NAME**	**FROM**	**TO**	**Existing Capacity**	**Existing Peak Hour Traffic**	**Existing V/ C Ratio**	**Future Capacity**	**Forecast Peak Hour Traffic**	**Forecast V / C Ratio**
Collector	620 40	Phoenix	FIRST	"B"	ROSE	1800	270	0.15	1800	446	0.25
Collector	1300 1030	Phoenix	OAK	CHURCH	HWY. 99	1800	133	0.07	1800	247	0.14
Collector	620 30	Phoenix	FIRST	COLVER	"B"	1800	270	0.15	1800	402	0.22
Collector	1730 30	Phoenix	COLVER RD	HILSINGER	FIRST ST	1800	225	0.13	1800	78	0.04
Collector	1230 40	Phoenix	ROSE	ASH	FIRST	1800	81	0.05	1800	25	0.01
Collector	1300 1020	Phoenix	OAK	SHARON	CHURCH	1800	108	0.06	1800	224	0.12
Collector	1300 1010	Phoenix	OAK	ROSE	SHARON	1800	90	0.05	1800	224	0.12
Collector	1230 30	Phoenix	ROSE	OAK	ASH	1800	69	0.04	1800	25	0.01
Collector	1730 40	Phoenix	COLVER RD	FIRST ST	REBECCA DR	1800	354	0.20	1800	411	0.23
Collector	1730 50	Phoenix	COLVER RD	REBECCA	PACIFIC LN	1800	360	0.20	1800	411	0.23
Collector	0770 30	Jackson Co.	CAMP BAKER	HILSINGER	CALHOUN	1800	90	0.05	1800	64	0.04
Collector	0770 20	Jackson Co.	CAMP BAKER	HILSINGER	HILSINGER	1800	90	0.05	1800	64	0.04
Collector	1070 0060	Jackson Co.	COLVER	CAMP BAKER	PACIFIC	1800	363	0.20	1800	410	0.23
Collector	0770 10	Jackson Co.	CAMP BAKER	COLVER	HILSINGER	1800	96	0.05	1800	113	0.06
Collector	1070 0050	Jackson Co.	COLVER	CAMP BAKER	PIONEER	1800	296	0.16	1800	306	0.17
Collector	630 70	Phoenix	FOURTH	HWY. 99	BEAR CR. DR.	1800	225	0.13	1800	736	0.41
Collector	1300 1040	ODOT	OAK	HWY 99	BEAR CR. DR.	1800	135	0.08	1800	14	0.01
Interstate	I5S NofFV	ODOT	INTERSTATE 5			3600	1687	0.47	3600	2700	0.75

Interstate	I5 S Off-	ODOT	INTERSTATE 5			1800	540	0.30	1800	925	0.51
Interstate	I5 N On-	ODOT	INTERSTATE 5			1800	540	0.30	1800	477	0.27
Interstate	I5 S On-	ODOT	INTERSTATE 5			1800	540	0.30	1800	752	0.42
Interstate	I5 N Off-	ODOT	INTERSTATE 5			1800	540	0.30	1800	713	0.40
Interstate	I5N NofFV	ODOT	INTERSTATE 5			3600	1687	0.47	3600	1931	0.54
Interstate	I5S SofFV	ODOT	INTERSTATE 5			3600	1609	0.47	3600	2421	0.67
Interstate	I5N SofFV	ODOT	INTERSTATE 5			3600	1609	0.47	3600	2040	0.57

* Based upon 9 percent of the EMME2 transportation model average forecast daily traffic

** Based upon modeled PM peak hour traffic

Intersection Capacity

Intersection capacity, like mid-block capacity, is based upon a comparison of volume to capacity. Table 7 illustrates the relationship between level of service (LOS) and the relevant ratio of volume to capacity (V/C) ratio.

Table 7
Intersection Volume to Capacity Relationships (for Metro areas 20,000 to 100,000)

Ratio of Traffic Volume to Roadway Capacity	Level of Service (LOS)
Less than 0.50	A
0.51 to 0.61	B
0.62 to 0.71	C
0.72 to 0.75	C - D
0.76 to 0.84	D
0.85 to 0.88	D – E
0.89 to 0.97	E
0.98 to 0.99	E – F
Greater than 1.00	F

Table 8 includes a listing of the major intersections within the City and the existing and forecast level of service (LOS) and volume to capacity (V/C) ratios. The analyses were performed in accordance with the practices specified within NCHRP Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design. This publication, specifically Chapter 4, outlines various methods for the analysis of future year intersection turning movements. Because turning movements from travel demand models have been found to be unreliable, it was necessary to refer to this publication to perform the required analysis.

As per NCHRP 255, future year turning movements from the model were reviewed for reasonableness and then factored using the base year turning movement counts. These factors were then analyzed using ODOT's Signal Capacity Analysis program, SIGCAP 2.0, and Unsignalized Intersection Capacity Analysis program, UNSIG10 to produce future year volume to capacity and level of service estimates included in the Table 8. SIGCAP and UNSIG10 are distributed and supported by ODOT.

Table 8
Major Intersections – Existing and Forecast Volume to Capacity Relationship (for Metro areas 20,000 to 100,000)

Intersection	Existing V/C (LOS)	Forecast V/C (LOS) (w/ planned imp.)
Fern Valley Road / Lumen	0.51 – 0.61 (B)	0.66 (C)
Fern Valley Road / North Phoenix	0.62 – 0.71 (C)	0.72 (C-D)
Fern Valley Road / S. Bound I5	>1.0 (F)	0.80 (D)
Fern Valley Road / N. Bound I5	>1.0 (F)	0.61 (B)
Highway 99 / Fern Valley Road	0.63 (C)	0.77 (D)
Highway 99 / 4th Street	0.43 (A)	0.39 (A)
Highway 99 / 1st Street	0.62 – 0.71 (C)	0.55 (B)
Highway 99 / Cheryl	0.76 – 0.84 (D)	See OR99 & Fern V.
Highway 99 / Rose Street	0.89 – 0.97 (E)	0.66 (C)
Rose / 4th Street	0.18 (A)	NA
Rose / 1st Street	0.20 (A)	NA
Rose / Cheryl	0.10 (A)	NA

ACCIDENTS

Safety

Accidents are a general measure of the safety of a road system. The Oregon Department of Transportation maintains records of all recorded accidents within the City of Phoenix. The City is fortunate in that there have been no fatal accidents recorded over the last ten years. Table 9 shows a summary of the recorded accidents in the City of Phoenix over the period from 1995 through 1997. It should be noted that these are only those accidents that have been reported to the Oregon Department of Transportation. A percentage of accidents are not reported, even though it is required by law. Individuals involved in single car accidents and minor fender benders tend not to report these accidents. On the other hand, the more severe the accident, the more likely the accident will be reported by a state or local police agency and not require reporting by the individuals involved in the accident.

Table 9
1995-1997 Accident Summary

	1995	1996	1997
Fatal Accidents	-0-	-0-	-0-
Non-Fatal Accidents	9	12	12
Property Damage Only	17	19	13
Accidents Total	**26**	**31**	**25**
People Killed	-0-	-0-	-0-
People Injured	12	17	15
Trucks	4	2	3
Dry Surface	19	27	21
Wet Surface	7	4	4
Day	21	28	22
Dark	5	3	3
Intersection	16	18	14
Off-Road	3	2	-0-

A detailed review of the accidents shows that there are no significant recurring accident locations in the City of Phoenix other than along Highway 99 and along Fern Valley Road. Table 10 is a summary of the accidents at the highest frequency locations.

The most critical location in the city is along Highway 99 between Fern Valley Road and Cheryl Lane. The critical items relating to these accidents include the close proximity between Fern Valley Road and Cheryl Lane and the extremely close back-to-back left turn movements between these two locations which often place vehicles wanting to turn left on Fern Valley Road in a head-on situation with vehicles wanting to turn left onto Cheryl Lane. Congestion occurring when vehicles wish to turn left from Highway 99 onto Cheryl Lane has also produced a large volume of rear-end collisions.

Table 10
1995–1997 High Accident Locations

Location	Number and Type
Highway 99 @ Rose MP 10.86	5 accidents in this area (between Rose Street and MP 10.90) 4 out of the 5 accidents were turning accidents, but no pattern was found
Highway 99 @ Cheryl Lane/ Fern Valley Road	23 accidents in this area (from Cheryl Lane to Fern Valley Road, including all approaches) 11 of these were turning 11 were read-end accidents 1 was 90^o accident
Highway 99 @ 4^{th} Street	3 accidents at this intersection 2 were turning accidents 1 was 90^o accident
Highway 99 @ 1st Street	5 accidents at this intersection 4 were turning accidents 1 was 90^o accident

The rest of the accident locations were scattered.

These accidents could be reduced by re-aligning Fern Valley Road to extend directly to Cheryl Lane, or by re-aligning Cheryl so that it extends directly into Fern Valley. A third option would be prohibiting left turns in and out of Cheryl.

The intersection of Bolz Road and Fern Valley Road is another high accident location. The majority of these accidents appear to be involved with vehicles turning onto or off of Bolz Road. Half of these accidents relate to collisions involving vehicles turning right from Bolz Road onto Fern Valley which collide with vehicles also turning right onto Bolz Road. Generally accidents of this type are caused when one vehicle, usually the lead vehicle, starts to accelerate and then sees a vehicle on the cross street. The driver puts on the brake and gets hit by a vehicle following closely behind. Accidents of this type can generally be reduced by either signalization or by improving sight distance lines.

There also is a series of accidents involving vehicles coming in and out of driveways hitting through traffic along Highway 99. These accidents can be reduced by reducing the number of driveways or by implementing turn controls.

There are a number of safety issues observed in the city of Phoenix which do not show up in the accident statistics; however, they form a significant area of concern. Pedestrian safety, especially for school age children, is important. The roads surrounding Phoenix Elementary School and on potential routes to school do not have sidewalks. Cars parked on the dirt shoulders around the school force children to walk in the street. Often the children are hidden by the parked cars, and the potential for accidents is high.

There are no provisions for bicycles on city streets. On low volume residential streets this is not a problem; however, on arterials and collectors, the lack of space for bicycles could result in safety problems. This is particularly a concern along Highway 99 where automobile speeds are significantly higher than those of bicycles.

Geometric Deficiencies

Since the city of Phoenix is generally on level ground, there are not the roadway geometric problems that often occur on more severe terrain. However, a number of geometric problems have been identified. These are outlined below:

Houston Road – 4th Street railroad crossing

Houston Road is a county collector which connects with 4th Street. At its connection, the road makes a slight curve. This curve does not contain any banking for eastbound traffic and has resulted in a number of run-off the road accidents. Although these accidents have not been reported, neighbors have verified their occurrence. The solution to this problem, in addition to the recently installed signing and striping by the City, would be to bank this curve.

Fern Valley Interchange

The frontage roads adjacent to I-5 at the Fern Valley interchange have intersections very near the off-ramps of the I-5 interchange. Re-aligning these roads to provide sufficient distance from the interchange will do much to alleviate congestion and accident potential in these areas.

Pedestrian System

The inventory shown in Figure 3 was compiled through use of Citywide planimetric mapping and a supplemental on-site inventory to gather sidewalks widths. The inventory includes all sidewalks; along local, collector, and arterial streets. It is obvious upon review of the Figure 2, that the existing system does not connect major generators of pedestrian traffic (schools, parks, downtown, post office, or City Hall) and the surrounding residential area.

The inventory was out of date as soon as it is collected. The City requires new subdivisions and commercial development to make sidewalk improvements along the street frontage as a condition of development approval. Additionally, the City is continuously making improvements to the system. Of note is the City's recent addition of sidewalks along 1st Street between Bear Creek Drive and Main Street. New sidewalks will be constructed soon in the vicinity of the Rogue Valley Transportation District stop on Bear Creek Drive at 4th Street including the addition of sidewalks along the west side of Main Street between 4th and East Bolz Road where they are currently missing. Future funded projects include the extension of the existing sidewalks on 1st in front of City Hall down to Rose and construction of walks along 4th from Bear Creek Drive to Houston.

All sidewalks are in good or better condition. The paths in the northwest corner of the Urban Growth Boundary and the path in the Cemetery are dirt and graveled, respectively. All others are asphalt or concrete. (see Street Construction Standards, Local Street Network Plan, Appendix C & D for sidewalk construction standards – these conform to ADA standards).

Bicycle System

The inventory shown in Figure 4 was compiled through an on-site inventory. The inventory includes all bikeways and formal multi-use paths within the City. The current network does not provide links to schools, parks, downtown, or City Hall and the surrounding residential areas. The shoulder along the Rogue Valley Highway is far too narrow to be classified as a bike lane. However, it is included here to illustrate the deficiency rather than to suggest its adequacy. Shoulder bike lanes should be six feet in width and may be narrowed to five feet where inadequate right-of-way exists (see Street Standards – Local Street Network Plan, Appendix C & D – these conform to the standards included within the Oregon Bicycle and Pedestrian Plan).

The following definitions were used to compile the inventory and are identical to those included within the Oregon Bicycle and Pedestrian Plan.

Bike Lane: A portion of the roadway designated for preferential use by bicyclists.

Multi-use Path: A facility separated from the motor vehicle traffic by an opens space or barrier, either within the roadway right-of-way or within an independent right-of-way.

Shoulder Bike Lane: Paved roadway shoulders on rural roadways.

The multi-use path within Colver Park is decomposed granite. All other bike facilities are asphalt including the multi-use path in the Meadow View Subdivision (northeast corner of the City).

The City has secured funding through the Oregon Department of Transportation for several system additions. These include the extension of the existing bike lanes on 1st in front of City Hall to Rose and construction of bike lanes along 4th from Bear Creek Drive to Houston.

All bike facilities are in good or better condition.

Figure 4
Pedestrian System Inventory

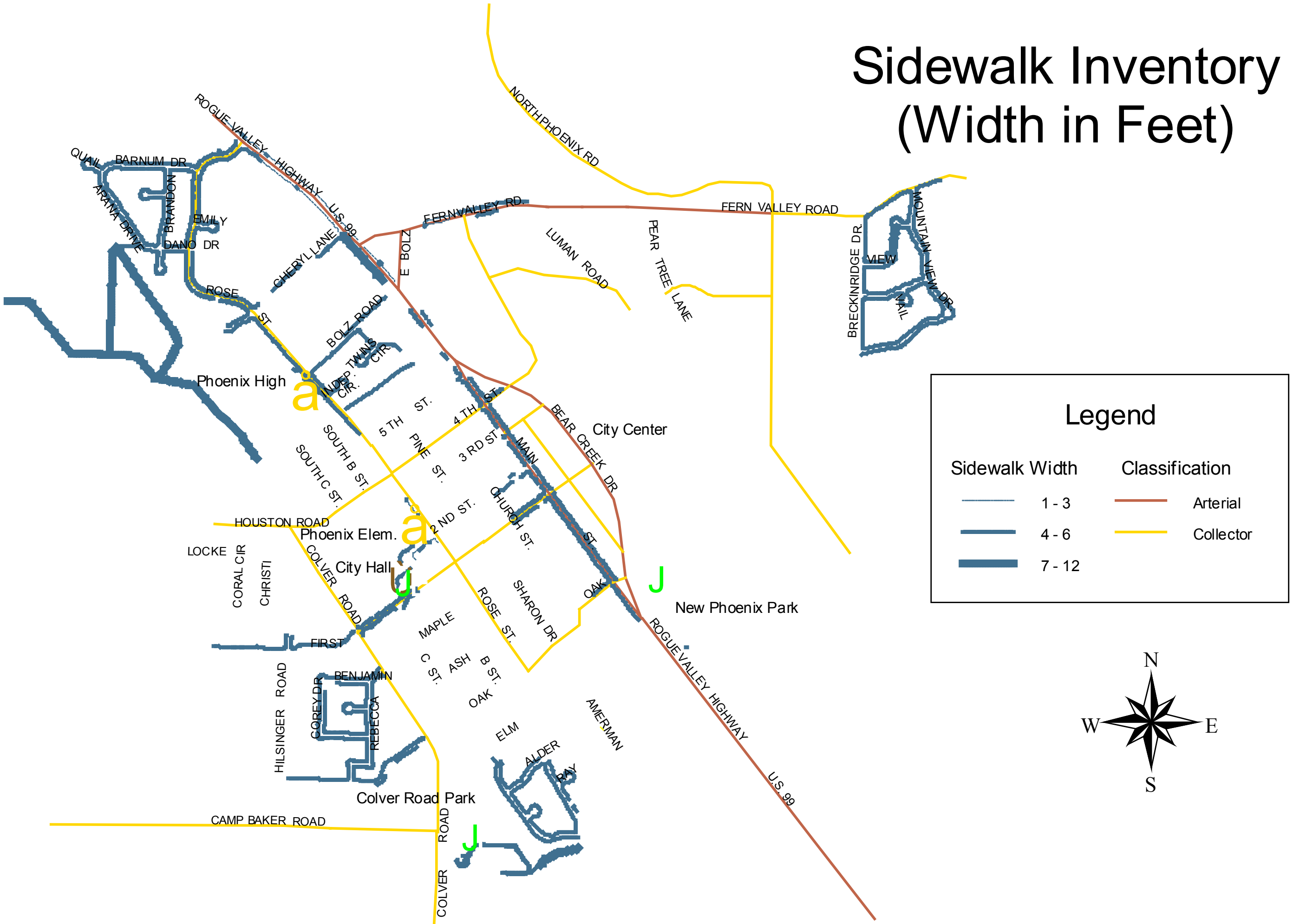
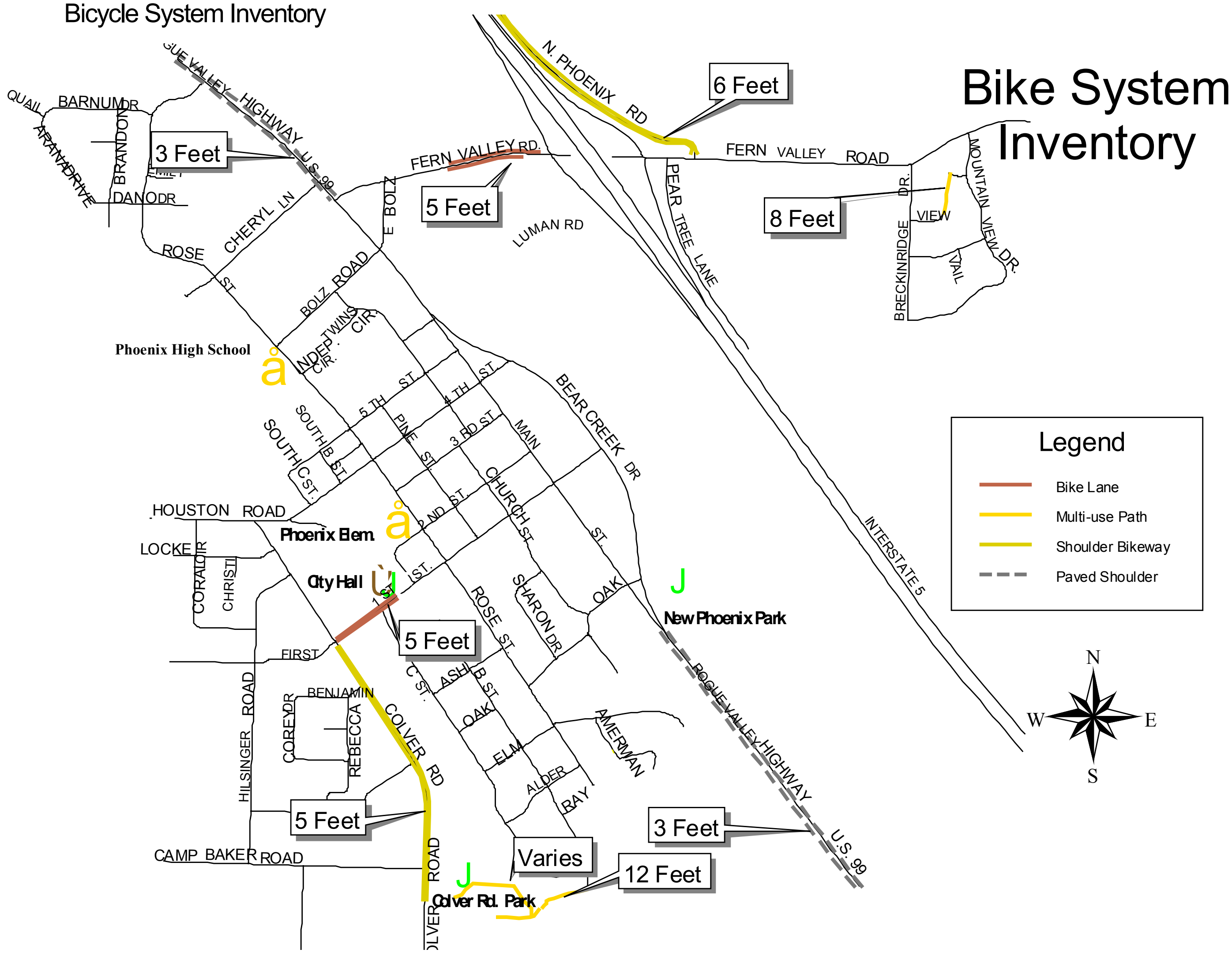


Figure 5
Bicycle System Inventory



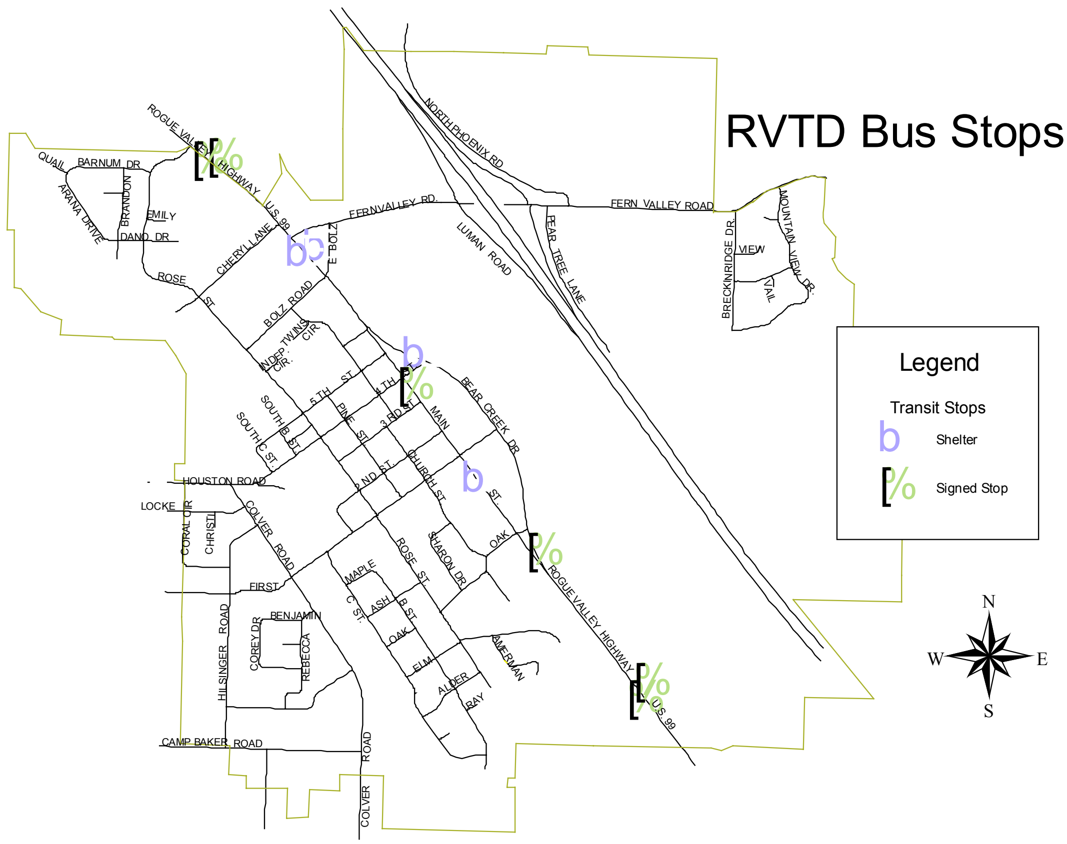
Transit

Rogue Valley Transportation District serves the City of Phoenix with transit services by its Route 10. The route starts at 5:00 am from Front Street in Medford and ends at 6:00 pm from Front Street each weekday (there is currently no weekend service) The first bus to serve Phoenix in the morning arrives at 5:12 am with the last leaving Phoenix at 7:26. Route 10 operates on 30 minute frequencies. Consequently, the City receives 27 round trips each day. Approximately, 250 people board or get off the bus in Phoenix daily. There are 8 south bound and 6 north bound stops with 4 shelters, 2 in each direction. Figure 3 shows the location of bus stops in Phoenix.

It is estimated that RVTD's service to the City costs approximately $90,000 per year based upon the mileage traveled annually in Phoenix and RVTD's operations cost per mile of service. This figure does not include the cost of the paratransit services nor capital costs.

Future plans, pending passage of RVTD's Spring 1999 proposed special levy, include increased hours of service and restoration of Saturday services. RVTD will make, independent of the levy's outcome, unspecified improvements to the stops within Phoenix. Five new stops or the replacement of exisitng stops could occur. A total of $25,000 is budgeted for the project. Possible improvements could include; shelters, bike racks, landscaping (trees for shade). These improvements are scheduled for construction in the summer of 1999.

Figure 6
RVTD Bus Stops



All existing shelters and signs are in good condition. There are no known capacity limitations at shelters, stops, or buses (if standing room capacity is considered).