

**TOWN OF CHINO VALLEY
SMALL AREA TRANSPORTATION STUDY**

FINAL REPORT



PREPARED BY

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1 INTRODUCTION

1.1 Background

The Arizona Department of Transportation (ADOT) established a Small Area Transportation Planning Process to assist communities outside of the Phoenix and Tucson metropolitan areas in addressing transportation issues and identifying transportation improvements needed to accommodate future growth. Identified projects would then be eligible for future funding. The program has provided an opportunity for many areas in the State to address transportation issues in their communities that would not have had the opportunity had the program not been in place.

ADOT has received public comment that SR 89 from 89A to the Town of Chino Valley needs to have extra capacity, and there has been recent interest to develop a comprehensive strategy to deal with the interaction of land use and transportation along SR 89 through the Town, and in the region. With the planned three-mile widening of SR 89, from Center Street south to the town boundary, there is concern that as SR 89 is improved it will inappropriately bisect the community and lessen access to businesses along this important local and regional thoroughfare and decrease the quality of life that originally attracted the Town's residents.

A concern to residents is how best to plan land use and transportation projects while accommodating Chino Valley's established lifestyle. Also, with growth of an active adult population and greater employment, transit service will become increasingly important, as will preserving and enhancing pedestrian and bicycling options as viable transportation modes.

The purpose of this report is to document existing roadway characteristics and operations, land use and socioeconomic conditions, and other existing transportation modes, and to craft a long-range transportation plan to meet the transportation needs of the Town of Chino Valley. A travel demand model was created to forecast 2030 traffic volumes to assist in identifying the traffic impacts with the anticipated growth in and around the Town. This model was developed to ensure consistency with the Regional Central Yavapai Metropolitan Planning Organization (CYMPO) system.

This study was conducted in cooperation with other agencies including CYMPO and Yavapai County and was jointly funded by the Town of Chino Valley and ADOT. At the onset of the study, a technical advisory committee (TAC) was formed to guide the development of the SATS. Monthly TAC meetings were held in addition to two public open houses.

The study area extends beyond the Town boundaries to take into consideration impacts of surrounding development and also to be consistent with the Regional CYMPO system. FIGURE 1 illustrates the study area.

2 TRANSPORTATION GOALS, OBJECTIVES, AND POLICIES

The primary objective of the SATS program is to develop a transportation plan for the Chino Valley area that will guide multi-modal planning and programming on local roads over a 20-year timeframe. The following goals, objectives and policies, adapted from the Circulation Element of the Town of Chino Valley's 2003 General Plan, provide a framework for this planning.

The goals, objectives and policies were derived from the General Plan, review of existing transportation conditions, and a meeting with City staff. This section is provided to offer guidance and direction to the Town, its residents, and business for planning future transportation facilities.

2.1 *Guiding Principle (from the General Plan)*

The Town of Chino Valley will establish and build a safe and efficient transportation system of roads and multi-use paths that improves the flow of traffic, enhances pedestrian safety, promotes commerce, and provides for alternative modes of transportation.

2.2 *Goals, Objectives, and Policies*

2.2.1 GOAL: *Develop a network of highways and arterial streets within and around the Town of Chino Valley's perimeter that will link the Town of Chino Valley more conveniently and directly to all areas of the growing tri-city region.*

Objective: Plan for and implement improvements to Highway 89.

Policy: Encourage the Arizona Department of Transportation (ADOT) to perform widening and improvements of Highway 89 from Center Street south to the town limits.

Policy: Work with the Del Rio development to ensure the widening and improving of Highway 89 from Road 3 North, north to the town limits.

Objective: Work with the CYMPO to develop timely connections between Chino Valley and regional routes.

Policy: Encourage the CYMPO to plan the construction of a major 4-lane highway connector from the Glassford Hill Road to Highway 89.

2.2.2 GOAL: Provide planned control of Chino Valley traffic with the development and improvement of a major street network intersecting with county and state Highways.

Objective: Develop and adopt street standards for all street classifications throughout the town.

Policy: Categorize proposed streets and improvements with standards set forth in the Town's current or future Street Master Plan street standard guidelines and priorities set forth by the Town Council.

Objective: Designate and ensure the dedication of the necessary streets right-of-way to coordinate with the Town's minimum right-of-way dedication standards.

Policy: Streets located on section lines should be dedicated and improved to major collector standards throughout the town intersecting Highway 89 at signalized intersections.

Policy: Mid-section street alignments should be developed to collector or minor collector standards dependant on development pressure and traffic volumes.

Policy: Budget and improve Road 4 South throughout the town to the same level of improvement as the minimum county arterial street standards.

2.2.3 GOAL: Update the Town's General Plan with a revised Circulation Element.

Objective: Develop an updated Circulation Element with the involvement of a citizen committee, staff, and professional consultants for review by the Planning and Zoning Commission and adoption by the Town Council.

Policy: Continue to develop a 5-year capital improvements budgeting program with yearly increments for major street improvements coordinated with the adopted major street master plan.

2.2.4 GOAL: Encourage non-motorized types of transportation to partially alleviate motorized vehicular traffic problems.

Objective: Design and locate pedestrian and bicycle routes along major and collector streets as a viable alternative transportation system.

Policy: Encourage and obtain major and collector street dedications wide enough to permit a total of 10 feet to accommodate bicycle and pedestrian traffic.

Objective: Develop a trails master plan that identifies and specifies a system of on and off-street trails that circumnavigate the Town and connect to local destinations (such as schools and parks) and regional open space amenities.

- Policy: Identify a network of on and off road trails that can be discussed and revised through a public process.
- Policy: Continue to improve the Peavine Trail for equestrian, bicycle and pedestrian travel.
- Objective: Identify equestrian trails and linkages in the on and off-street trail system.
- Policy: Ensure that there are equestrian trail linkages throughout the planning area adjacent to compatible developments and neighborhoods.
- Policy: Encourage equestrian trails in recreational areas and discourage equestrian trails from major and collector streets to prevent conflict between horses and motorized vehicles, bicyclists and pedestrians.

2.2.5 GOAL: Chino Valley transportation should be augmented by a public transit system aiding commuters within the tri-city area.

- Objective: Encourage development of a joint committee of tri-city and county representatives to develop a regional transit master plan study.
- Policy: The joint committee should work within the CYMPO to apply for grants from Arizona Department of Transportation (ADOT) and other agencies for help to fund the master plan study.
- Objective: Work with the joint committee of tri-city and county representatives in identifying and implementing regional transit solutions.
- Policy: Consider the viability of developing a tri-city shuttle.
- Policy: Encourage existing and new private bus companies to expand and help implement the tri-city area shuttle for commuters and for airport transportation.
- Policy: Consider the possibility of reserving sufficient right-of-way along the Glassford Hill Road extension for future fixed transit routes.

2.2.6 GOAL: Encourage a regional air transportation study that includes the City of Prescott, Prescott Valley, Chino Valley, and Yavapai County to ensure adequate air transportation for future growth in the tri-city area.

- Objectives: Join with all tri-city agencies to request that the Northern Arizona Council of Governments (NACOG) sponsor a regional air traffic study utilizing the Federal Aviation Administration's (FAA) five-year budget funding program.
- Policy: Given approval and majority funding of the study's costs by the FAA of the regional study request identified above, Chino Valley should join the

City of Prescott, Prescott Valley and Yavapai County in funding the remaining costs.

2.2.7 Other Policies

The following policies, taken from the Town Of Chino Valley General Plan, are relevant to the Town's transportation planning, but are not considered appropriate to the Small Area Transportation Plan. They are listed here so that they may be addressed through subsequent planning documents.

- Policy: Develop and implement a major street dedication program, including land surveys of street rights-of-way, aided by strong public education and promotion.
- Policy: Adopt, implement and enforce subdivision regulations and lot-split regulations that require the dedication and improvement of streets in accordance with the proposed street standards.
- Policy: Adopt and implement an off-site improvement ordinance, which requires street dedication and improvements for all commercial, industrial, multifamily and other non-residential developments.
- Policy: Require major residential and commercial developments to pay a "fair share" cost for needed upgrades to existing roads based on proportionate traffic volumes.
- Policy: Adopt and enforce subdivision, lot split, and off-site improvement ordinances that require the dedication and improvement of bicycle lanes and pedestrian pathways in addition to motorized vehicular street improvements.

3 YEAR 2005 TRANSPORTATION SYSTEM CONDITIONS

3.1 Previous and Current Studies

3.1.1 2003 Town of Chino Valley General Plan

The Town of Chino Valley General Plan was adopted by the Town Council on June 26, 2003. As part of the Plan, the circulation element addresses general locations of the existing and proposed transportation system. This includes the Glassford Hill extension; improvements on the existing street system as development occurs; and inclusion of equestrian trails, particularly the Peavine Trail. The General Plan also provides a future land use plan which was utilized in the development of the SATS traffic forecasts. The Town is currently in the process of updating their General Plan.

3.1.2 CYMPO Transportation Study

The CYMPO, which comprises of a partnership of Chino Valley, ADOT, Prescott, Prescott Valley, and Yavapai County, is currently completing the Regional Transportation Plan. This regional study will address the regional 2030 horizon long-range multi-modal transportation issues and needs.

3.1.3 CYMPO Regional Transit Planning Study

This comprehensive transit study which is currently being conducted by the CYMPO will evaluate public transportation needs in the Central Yavapai region that includes the Town of Chino Valley. The study will analyze current and future needs for a public transit system through approximately 2015.

3.2 Existing Roadway Characteristics and Conditions

The existing roadway system in the Town of Chino Valley comprises of various categories of roads from State Route 89 (SR 89) to local streets. SR 89 is the primary artery through the Town that also provides immediate access to the majority of commercial activity. Other collector facilities follow a grid pattern that provides access to the surrounding residential uses. The major existing roadways are briefly described below.

SR 89 is the major north-south roadway that traverses the center of Chino Valley. This facility provides regional access to I-40 to the north and Prescott, and Prescott Valley to the south. SR 89 serves a large proportion of Town residences and Yavapai County population immediately west of the Town by providing access to employment centers in Prescott and Prescott Valley. The primary commercial activity within the Town is adjacent to SR 89. Traffic signals are located along SR 89 at Road 3 N, Road 2 N, and Center Street.

SR 89 varies in number of lanes through the study area. North of Center Street to Road 3 N (the center of town), SR 89 comprises of a 4-lane with center left turn lane. South of Center Street and north of Road 3 N, SR 89 is a two lane with a center turn lane to the Town boundary, reducing to a 2-lane undivided road on the northern and southern limits of the study area. ADOT has programmed in the Five Year Transportation Facilities Construction Program, Fiscal Years 2006-2010, for widening of SR 89 to a four lane with center turn lane south of Center Street to the southern Town boundary.

Road 3 N is a predominant east-west collector west of SR 89 that serves the residential users of the Town and also County. This roadway is two lanes with a traffic signal at its intersection with SR 89.

Road 4 S is a Rural Major Collector outside of the Town as identified in ADOTs adopted Roadway Functional Classification. This two-lane roadway provides the primary regional area access to the west.

3.3 Functional Classification

Roadway functional classifications (arterial, collector and local stratified by urban or rural) are based on the degree of function in regards to accessibility and mobility. The primary purpose of functional classification is to ensure that the system adequately provides mobility, access to adjacent land, and continuity of the street system. The classification system defines the roadway type by function and right-of-way needs.

These classifications establish the function of different types of roadways and the priority placed on access. For example, a major arterial provides regional movement with longer trips and minimal access to abutting land. Conversely, local streets provide a high degree of direct access and accommodate lower traffic volumes with short trip distances. The Town is currently developing roadway standards and corresponding cross-section profiles. Once the roadway standards are established, the Town will develop a functional classification system of existing and proposed roadways.

3.4 Roadway Characteristics

Existing roadway characteristics were collected on the roadway system within the study area. These characteristics included number of lanes, intersection control, surface type, speed limits, and are briefly described below.

3.4.1 Roadway Lanes, Intersection Control, and Speed Limits

Based on field review, the number of travel lanes, type of intersection control, and turn lanes at the signalized intersections are illustrated in FIGURE 2. All roadways, other than SR 89, are 2-lane facilities.

FIGURE 3 shows the posted limits that were collected through field review. Speeds along SR 89 in the urban area of Town are 45 mph and increase up to 65 mph in the rural area. The collector roadways within the Town vary from 25 to 35 mph with slower speeds through school areas.

FIGURE 2 Roadway Lanes and Intersection Control

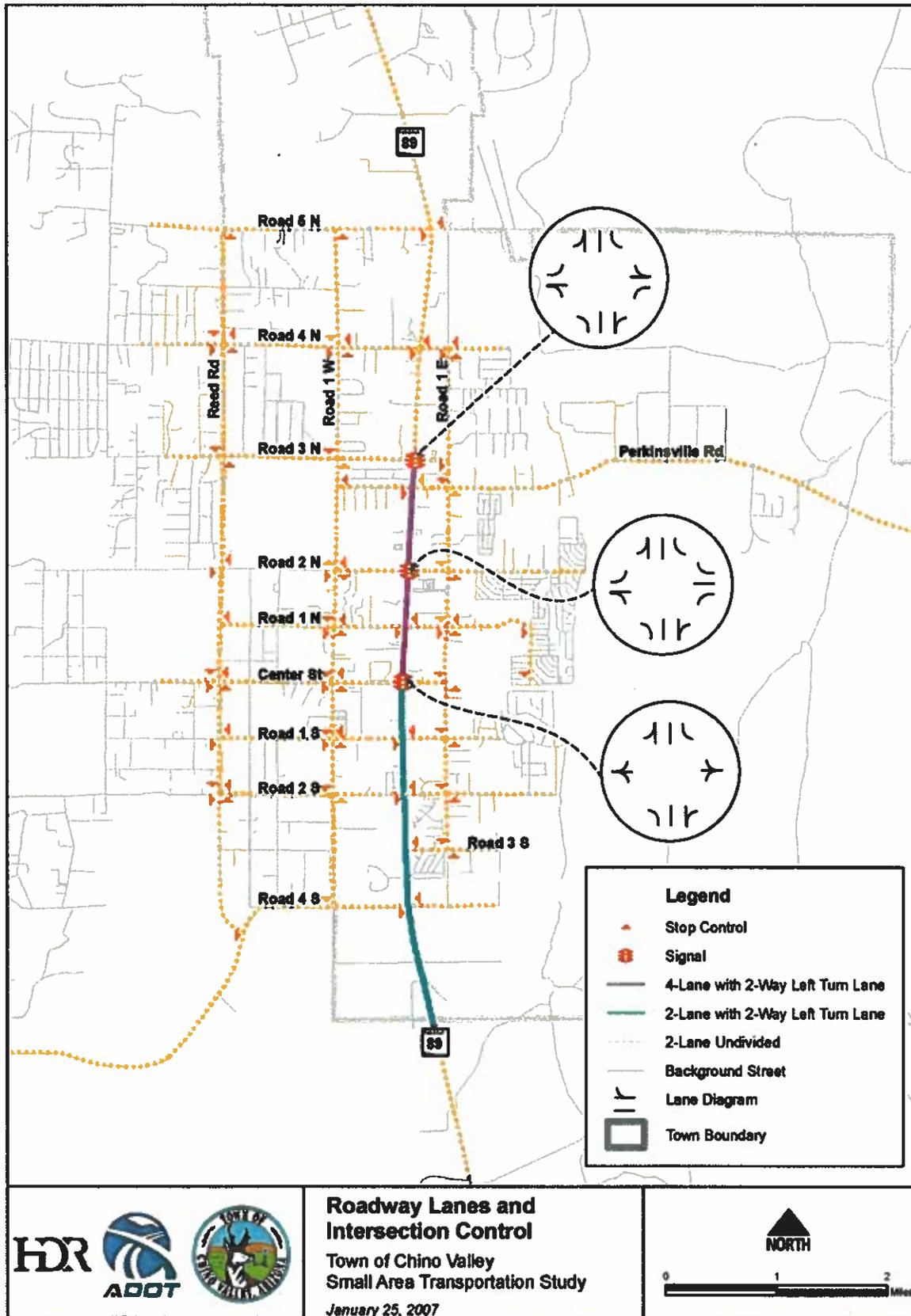
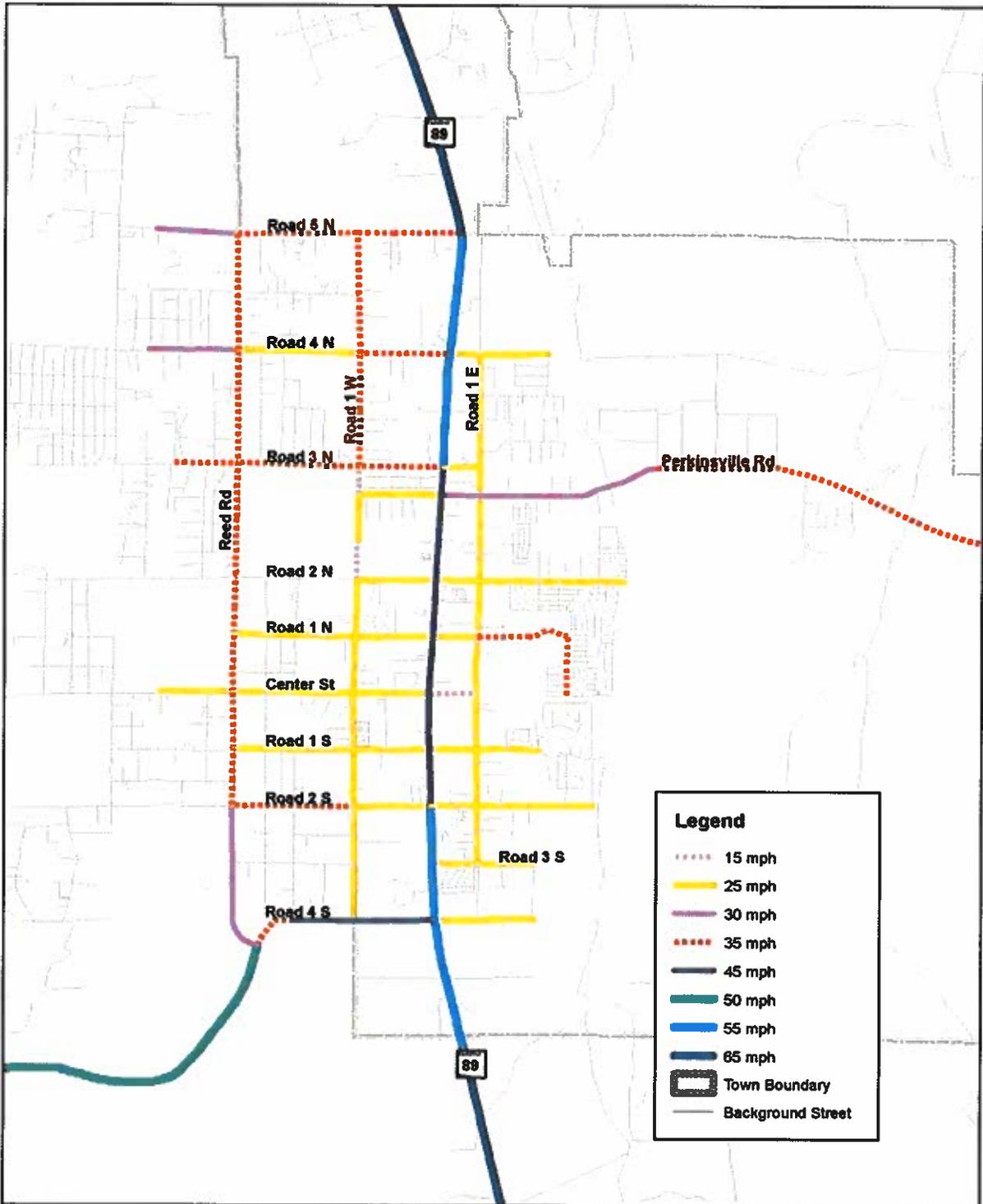


FIGURE 3 Speed Limits



	<p>Speed Limits Town of Chino Valley Small Area Transportation Study January 25, 2007</p>	<p style="text-align: center;">NORTH</p>
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3.5 Existing Traffic Conditions

The first step in analyzing existing conditions involves inventorying existing traffic facilities, their conditions, and other factors affecting them. Available traffic counts were obtained from Yavapai County and ADOT. These counts were summarized and further traffic counts were also collected to provide thorough coverage throughout the Chino Valley area. Both 24-hour and intersection peak hour traffic counts were collected.

Daily Traffic

Weekday daily traffic counts were collected at 16 locations in Chino Valley on November 29 and 30, 2005. Additionally, recent historical counts were also obtained from ADOT and Yavapai County and were adjusted to reflect 2005 conditions. FIGURE 4 summarizes and displays 2005 weekday daily traffic counts. The highest traffic volumes occur along SR 89 and range from approximately 8,000 to over 24,000 vehicles per day.

Peak Hour Intersection Turning Movements

In addition to these daily volume counts, hourly turning volumes were collected at five intersections along SR 89 that include Road 5 N, Road 3 N, Perkinsville Road, Road 2 N, and Center Street. These counts were conducted on November 29, 2005 from 7-9 am and 4-6 pm.

Previous intersection turn volumes were also summarized from the report *SR 89 Center Street to Road 4 S Traffic Study* dated November 2004. From this study, intersection traffic counts had been collected along SR 89 at Road 1 S, Road 2 S, Road 3 S and Road 4 S.

FIGURE 5 illustrates the peak hour intersection turn movements. The morning peak hour was determined to be from 7:30-8:30 am and evening peak from 4:30-5:30 pm. Level of Service (LOS) analyses were performed at these intersections as described in the next section.

3.5.1 Level of Service

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six letter designation levels are defined from A to F, with LOS A representing the best operating conditions and LOS F the worst. Traditionally, a facility is considered to have reached maximum flow rate or capacity at LOS E. Each level of service represents a range of operating conditions and the driver's perception of those conditions.

TABLE 1 provides a description of each of the LOS designation levels.

TABLE 1 Level of Service Definitions

Level of Service	Description
A	Free flow, minimal delays
B	Stable flow, occasional delays
C	Stable flow, periodic delays
D	Restricted flow, regular delays
E	Maximum capacity, extended delays
F	Forced flow, excessive delays

Most planning, design, and operational efforts use LOS C or D to ensure an acceptable quality of service for facility users. Typically, LOS D is acceptable in urban areas, and LOS C is targeted for rural conditions.

Morning and afternoon peak hour intersection capacity analyses were performed at the locations of the existing turn movements. FIGURE 6 illustrates the intersection LOS. The STOP sign controlled intersections along SR 89 south of Center Street operate at an unacceptable LOS. The LOS being reported is for the critical turning movement; typically the left turn onto SR 89.

Roadway LOS was also performed on segments based on the daily traffic flows and roadway capacity. Daily traffic flows were obtained from the 2005 base year travel demand model. Roadway capacities were based on values used in the current CYMPO Transportation Plan and refined as shown in TABLE 2.

TABLE 2 Daily Roadway Capacities

Roadway Classification	Area Type	Daily Lane Capacity
Principal Arterial	Urban	9,000
Minor Arterial		8,000
Collector		6,250
Local		5,000
Principal Arterial	Rural	9,500
Minor Arterial		8,500
Collector		6,500
Local		5,000
Unpaved		500

The roadway LOS is derived using the modeled daily traffic volume over capacity ratio (v/c). The stratification of roadway LOS using v/c ratios was derived from the CYMPO Transportation Plan. TABLE 3 illustrates the LOS and corresponding v/c ratio thresholds. FIGURE 7 shows the LOS roadway segments.

TABLE 3 Roadway Level of Service

Roadway LOS	Volume over Capacity (v/c) Ratio
A-C (Under Capacity)	< 0.75
D (Near Capacity)	0.76 – 0.90
E (At Capacity)	0.91 – 1.00
F (Over Capacity)	>1.00

FIGURE 4 Existing Traffic Conditions

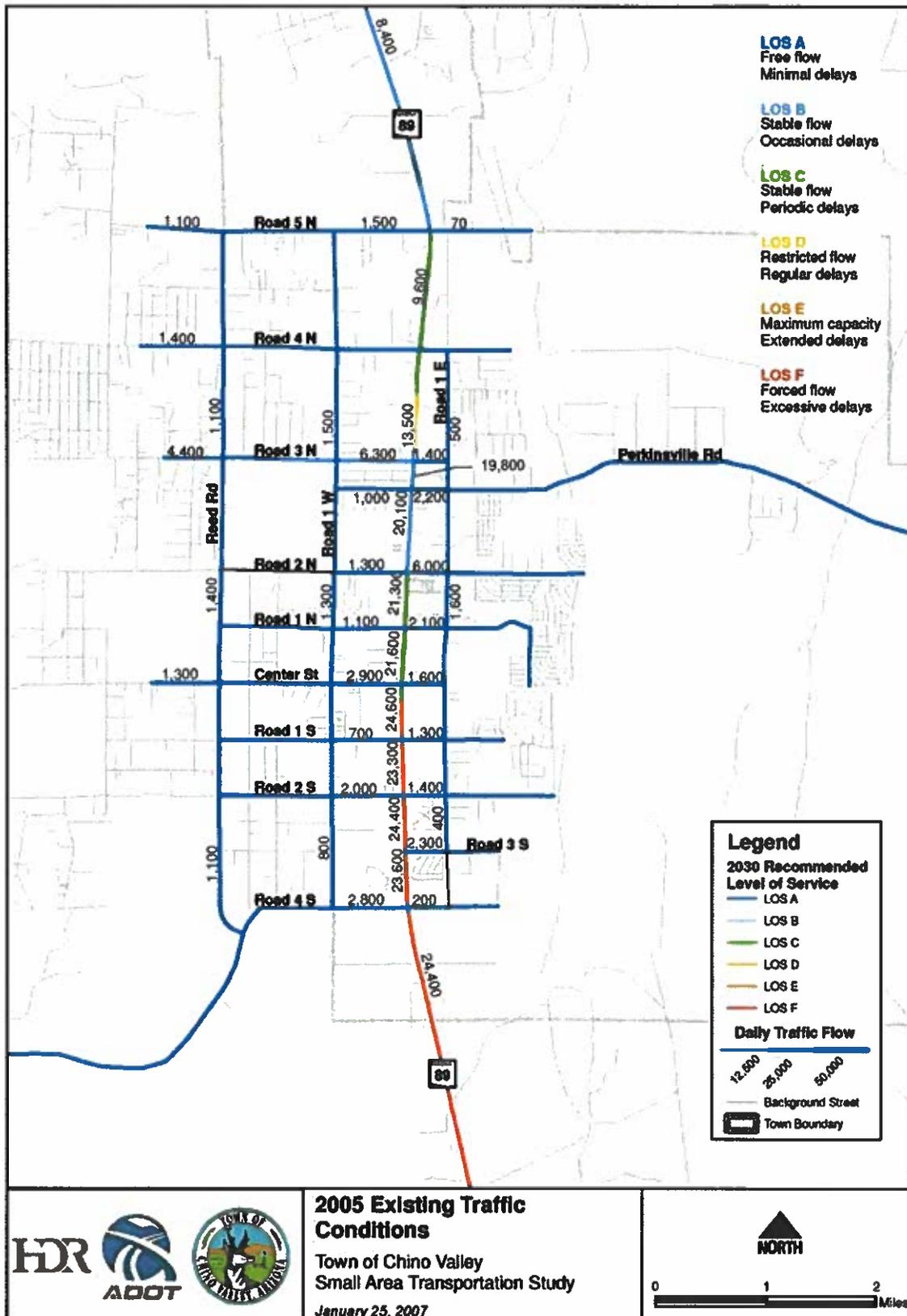


FIGURE 5 Peak Hour Intersection Turning Movements

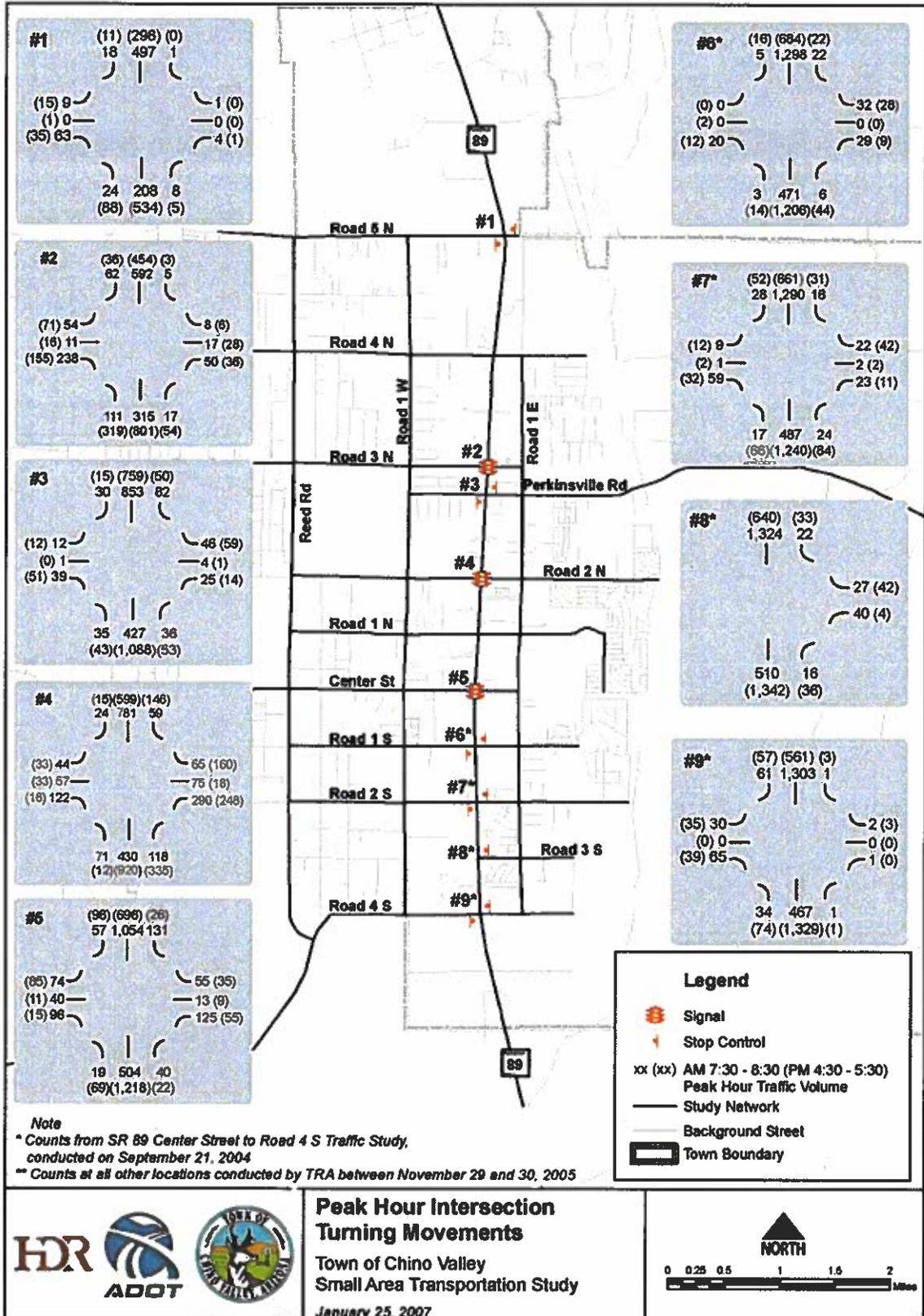
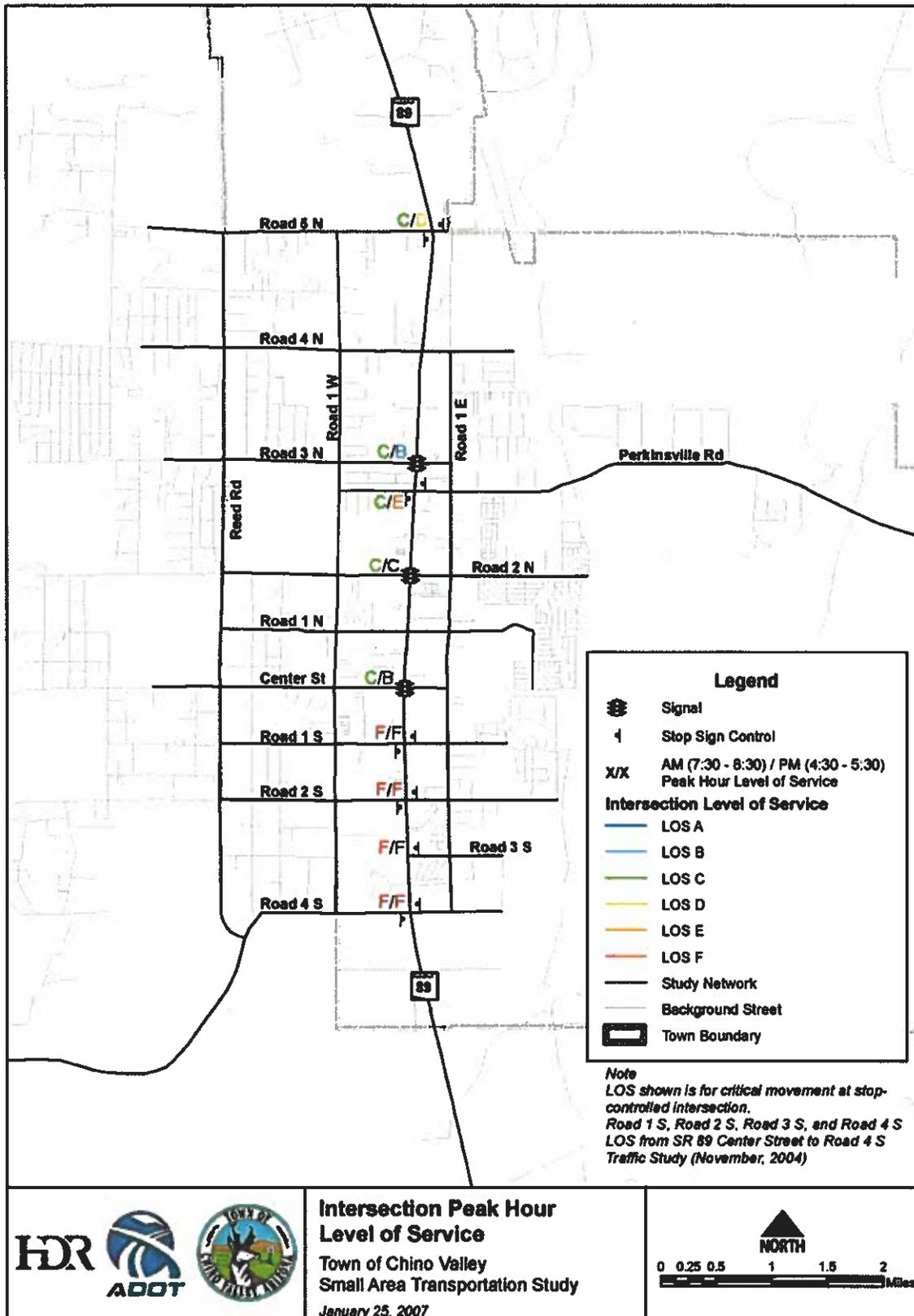


FIGURE 6 Intersection Peak Hour Level of Service



3.6 Crash Data

A crash analysis was conducted in order to identify crash patterns or trends. The purpose of identifying patterns or trends is to determine if there are sections within the study area that should be addressed to improve safety.

3.6.1 Crash Locations

A total of 341 crashes were documented between August 2002 and July 2005. Of the total 341 crashes, 162 crashes (48 percent) occurred on roadway sections, with the remaining 179 crashes (52 percent) occurring at intersections. It is important to note that a crash is considered as an intersection crash if it occurred within the length of a turning movement storage lane, which ranges from 50 feet to 250 feet. TABLE 4 summarizes the number of crashes that occurred along roadway sections and at intersections.

TABLE 4 Crash Classifications by Location

Location	Number of Crashes	Percentage
Section	162	48%
Intersection	179	52%
Total	341	100%

Source: ADOT Traffic Safety Section

Of the 341 total crashes, 321 crashes, or 94 percent, occurred on sections of SR 89 or in the vicinity of SR 89 intersections. The remaining 20 crashes (6 percent) were scattered throughout local streets within the Study Area. Refer to FIGURE 8 for an illustration of the reported crash locations for August 2002 through July 2005.

3.6.2 Crash Classifications

Of the 341 total crashes, there were 4 fatal crashes (1 percent) and 121 resulted in injuries (36 percent). The remaining 216 crashes (63 percent) were classified as property damage crashes. TABLE 5 provides a summary on the crash severity within the Study Area.

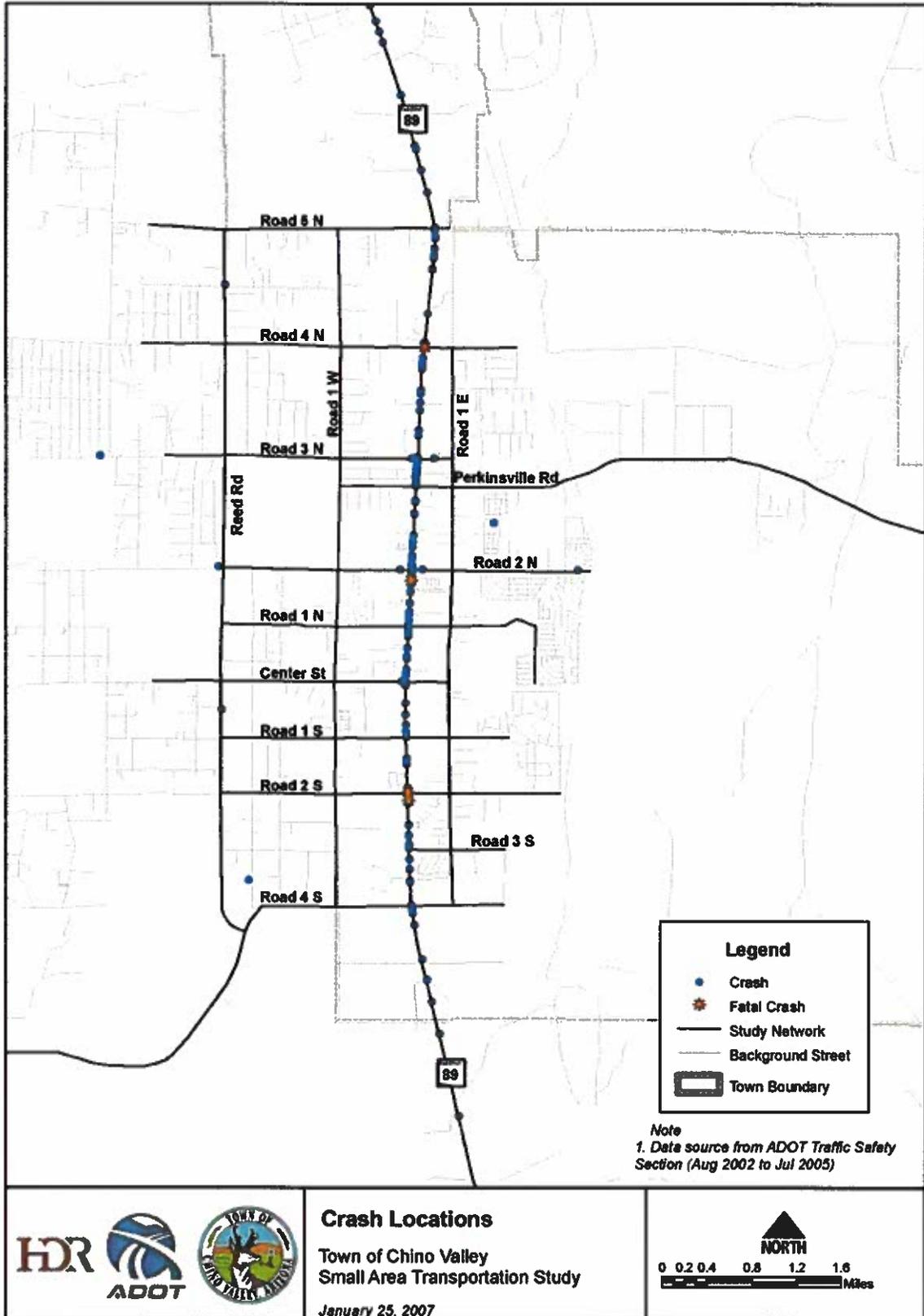
TABLE 5 Crash Classification by Severity

Severity	Number of Crashes	Percentage
Fatal	4	1%
Injury	121	36%
Property Damage	216	63%
Total	341	100%

Source: ADOT Traffic Safety Section

The majority of crashes within the Study Area consisted of rear-end (121 crashes or 36 percent), angle (72 crashes or 21 percent), single vehicle (46 crashes or 13 percent) and left turn (35 crashes or 10 percent), as shown in TABLE 6.

FIGURE 8 Crash Locations



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TABLE 6 Crash Classification by Collision Manner

Collision Manner	Number of Crashes	Percentage
Rear-End	121	35%
Angle	72	21%
Single Vehicle	46	13%
Left-Turn	35	10%
Sideswipe (same)	27	8%
Other	16	5%
Sideswipe (opposite)	9	3%
Head-On	6	2%
Backing	5	1%
U-Turn	3	1%
Non-Contact (mc)	1	0%
Total	341	100%

Source: ADOT Traffic Safety Section

Collisions with other motor vehicles represent the majority of crashes (292 crashes or 85 percent), followed by collisions with fixed objects (26 crashes or 8 percent), with the remaining 14 crashes (4 percent) not involving another object. TABLE 7 identifies the number of crashes by the objects that were first collided with.

TABLE 7 Crash Classification by Object First Collided With

Object First Collided With	Number of Crashes	Percentage
Motor Vehicle	292	86%
Fixed Object	26	8%
Other	14	4%
Pedestrian/Bicyclist	6	2%
Animal	3	1%
Total	341	100%

Source: ADOT Traffic Safety Section

3.6.3 Crash Frequency

Crash frequency was calculated per year for roadway section and intersection crashes. FIGURE 9 shows roadway sections with a crash frequency of more than one crash per year. SR 89, between Road 3 N and Center Street had the highest section crash frequency with more than 10 crashes per year and the intersection of SR 89 and Road 2 N had the highest intersection crash frequency with more than 10 crashes per year. TABLE 8 identifies the primary collision manners of the crashes at these crash frequency locations.

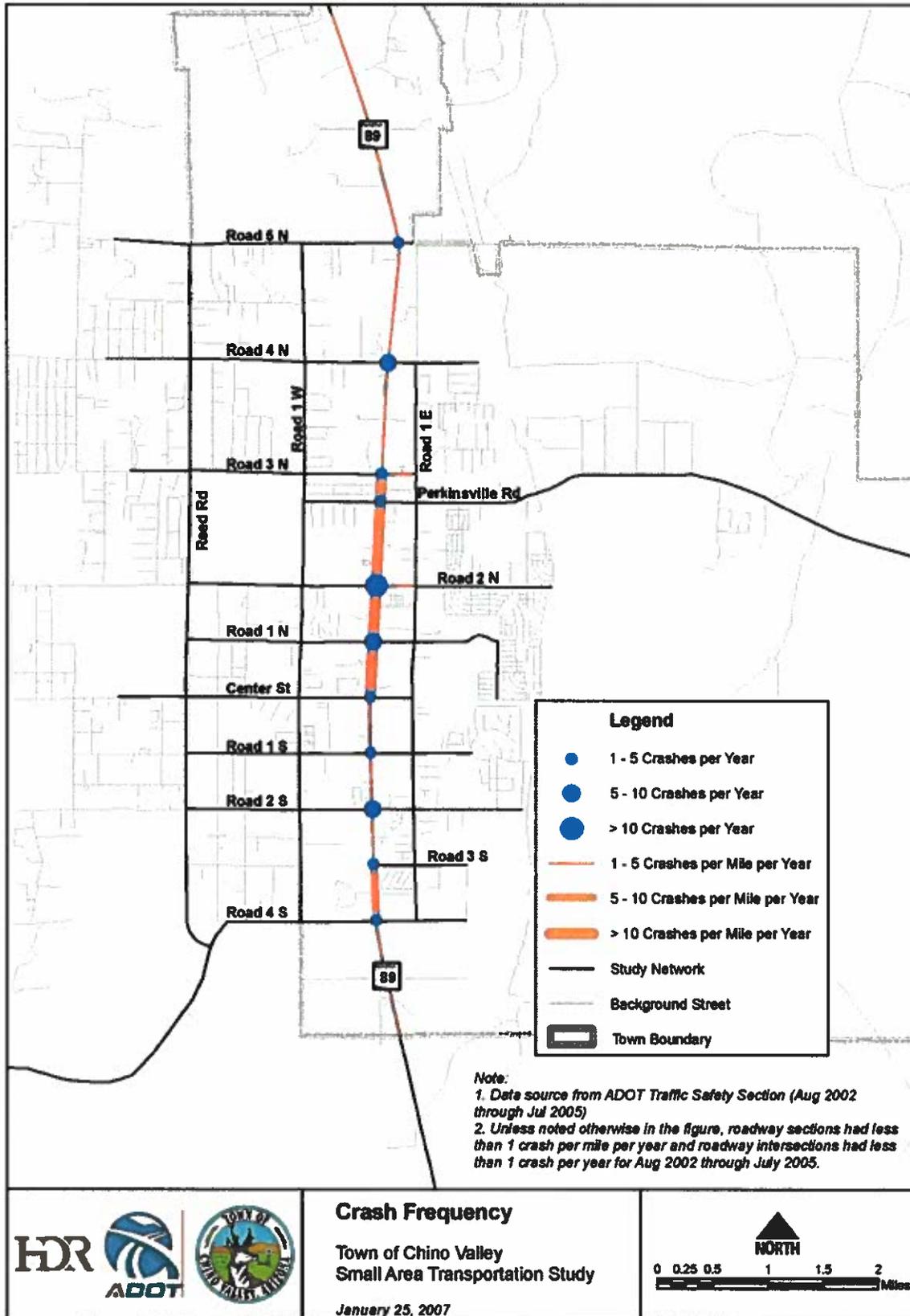
TABLE 8 Primary Collision Manners for Locations with High Crash Frequency

Location	Rear End	Angle	Sideswipe (Same Direction)	Single Vehicle	Left-Turn	Other	Total
<i>Roadway Section</i>							
SR 89 between Road 3 N and Center Street	37%	22%	11%	11%	8%	11%	100%
<i>Roadway Intersection</i>							
SR 89 and Road 2 N	45%	28%	4%	4%	11%	8%	100%

Source: ADOT Traffic Safety Section

The crashes that most frequently occurred at these locations included rear end, angle, sideswipe (same direction), single vehicle and left turn. These five types of crashes consisted of approximately 90 percent of the total crashes that occurred at each of the two locations.

FIGURE 9 Crash Frequency



3.7 Transit and Non-Motorized

3.7.1 Transit

At present there is no transit service offered in Chino Valley or the greater study area. There are ongoing discussions regarding developing a regional transit system serving the Chino Valley, Prescott, and Prescott Valley areas.

A goal of the Town of Chino Valley General Plan is that Chino Valley transportation should be augmented by a public transit system aiding commuters within the tri-city area. The SATS includes additional recommendations regarding transit.

There are several private companies that offer fee for service transportation in the Chino Valley area. Long distance bus service, airport ground transportation, taxicab companies and other private transportation modes are located in Prescott and Prescott Valley. Long distance bus service and taxi service is available in the Town of Chino Valley.

An initiative of MoveAZ, the ADOT long-range transportation plan is the development of public transportation and transit services. The study reports that the entire (Yavapai County) region has an interest in mobility; however, the critical mass (population base) has not been established in the region to justify full-scale public transportation. That is changing as the population growth and congestion becomes an important issue that must be addressed.

This initiative is particularly applicable to two subregions, the Sedona/Oak Creek and the tri-city area of Chino Valley, Prescott, and Prescott Valley. The City of Sedona is currently working with Coconino County to implement its transit system. Chino Valley is a member of the recently formed Central Yavapai Metropolitan Planning Organization (CYMPO), which is looking into public transportation for the region.

3.7.2 Non-Motorized Transportation

The Town of Chino Valley's scenic setting and mild climate are extremely conducive to pedestrian, equestrian, and bicycling activities.

The Town currently has no designated bicycle lanes. Pedestrian sidewalks are limited to the commercial corridor along SR 89 in central Chino Valley. The Town has one designated equestrian trail, the Peavine Trail, located on the former Atchinson Topeka & Santa Fe Railroad right-of-way, which runs roughly parallel and east of SR 89. This abandoned railroad right-of-way spans from the City of Prescott north to the Prescott National Forest in Paulden. The portion of the Peavine Trail located within the Town of Chino Valley is approximately 10 miles long.

4 LAND USE AND SOCIOECONOMIC CONDITIONS

4.1 Land Use

The Town of Chino Valley is situated in the Chino Valley, a broad flat valley extending from Prescott Valley to the South to Seligman to the north. The Town is largely bordered to the east and west by National Forest lands. The incorporated area of the Town of Chino Valley is approximately 62 square miles.



The region is characterized by numerous mountain ranges separated by several basins including Chino Valley, shown here. (Photo credit: Chris Murray)

4.1.1 Existing Land Use

The majority of the Town of Chino Valley is currently open range land and agricultural land. Much of this land (approximately two-thirds) is zoned for residential use. A majority of the agriculturally zoned land contains rural single-family residential property. The densest development in the community is centered on SR 89, with a number of master planned communities with small residential lots located east of the commercial corridor.

4.1.2 State Trust Land

There exist approximately 4,800 acres of State Trust lands within the Town of Chino Valley limits. The beneficiary categories for these lands include common schools, normal schools, and county bond. Potential future classifications for these lands include low-density residential, medium density residential, commercial/employment and open space.

4.1.3 Future Land Use

The Town of Chino Valley 2003 General Plan includes a land use map that identifies future land use for the town (refer to FIGURE 10).

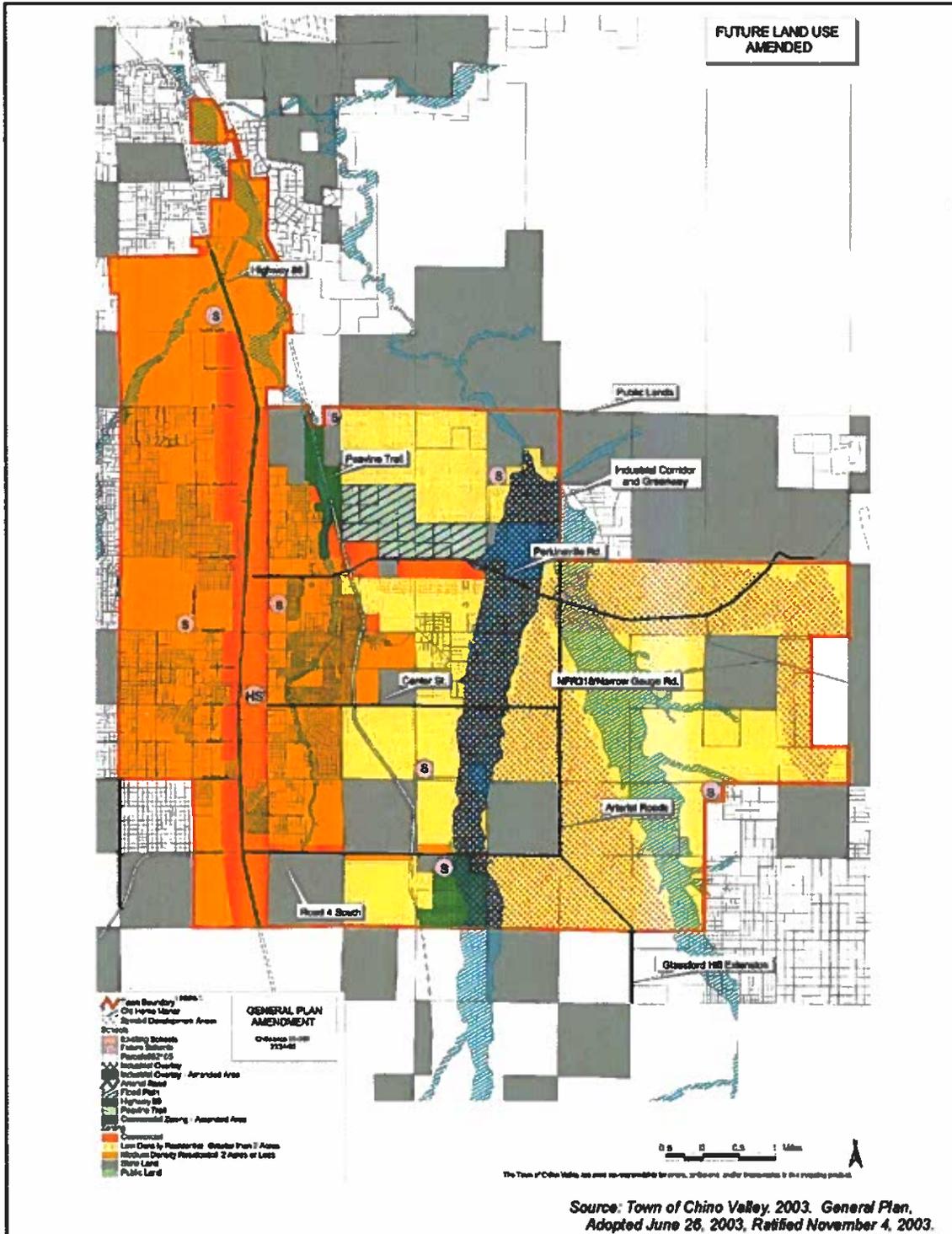
The General Plan for the community identifies SR 89 as the primary commercial corridor through the town, extending from Road 6 North to the Town boundary to the south. All of the land west of this is planned for medium density residential (two acres or less); with much of it subdivided into two to five acre lots (excluding State Land parcels). Smaller lot developments are found east of the commercial corridor and west of the Peavine Trail. East of the Peavine Trail is planned for largely low density residential (greater than two acres) with large areas of State Land, flood plains, and "Special Development Areas" which identify areas for future development opportunities (the type and timing of which is largely dependant on future road alignments and infrastructure improvements).

Development Plans

In addition to the Town's General Plan land use map, there are several development plans that were considered in the development of the SATS for the purposes of projecting population and employment. Two of these developments are large residential subdivisions and are specifically noted here:

1. The Bright Star Subdivision consists of 391 acres with a proposed 1,200 residential dwelling units.
2. The Del Rio Springs Subdivision consists of 2,958 acres with a maximum allowance of 3,863 residential units.

FIGURE 10 Town of Chino Valley General Plan Future Land Use Map



Town of Chino Valley
Small Area Transportation Study
Town of Chino Valley
General Plan

4.2 Socioeconomic Data

Population and employment for the area derived for the SATS represent a snapshot of the study area's demographics for July 1, 2005. This information is used to establish a baseline for future projections, and to calibrate the transportation model (further discussed in Chapter 6, Transportation Plan). Data from the Central Yavapai Metropolitan Planning Organization Transportation Plan – 2025 (CYMPO Plan) concurrently under development by Yavapai County was used in developing this baseline estimate. The CYMPO Plan information (which used 2004 as its baseline) was further refined to account for growth and verified by the TAC. Demographic information for the 2005 Base-year is summarized in TABLE 9.

4.2.1 Traffic Analysis Zones

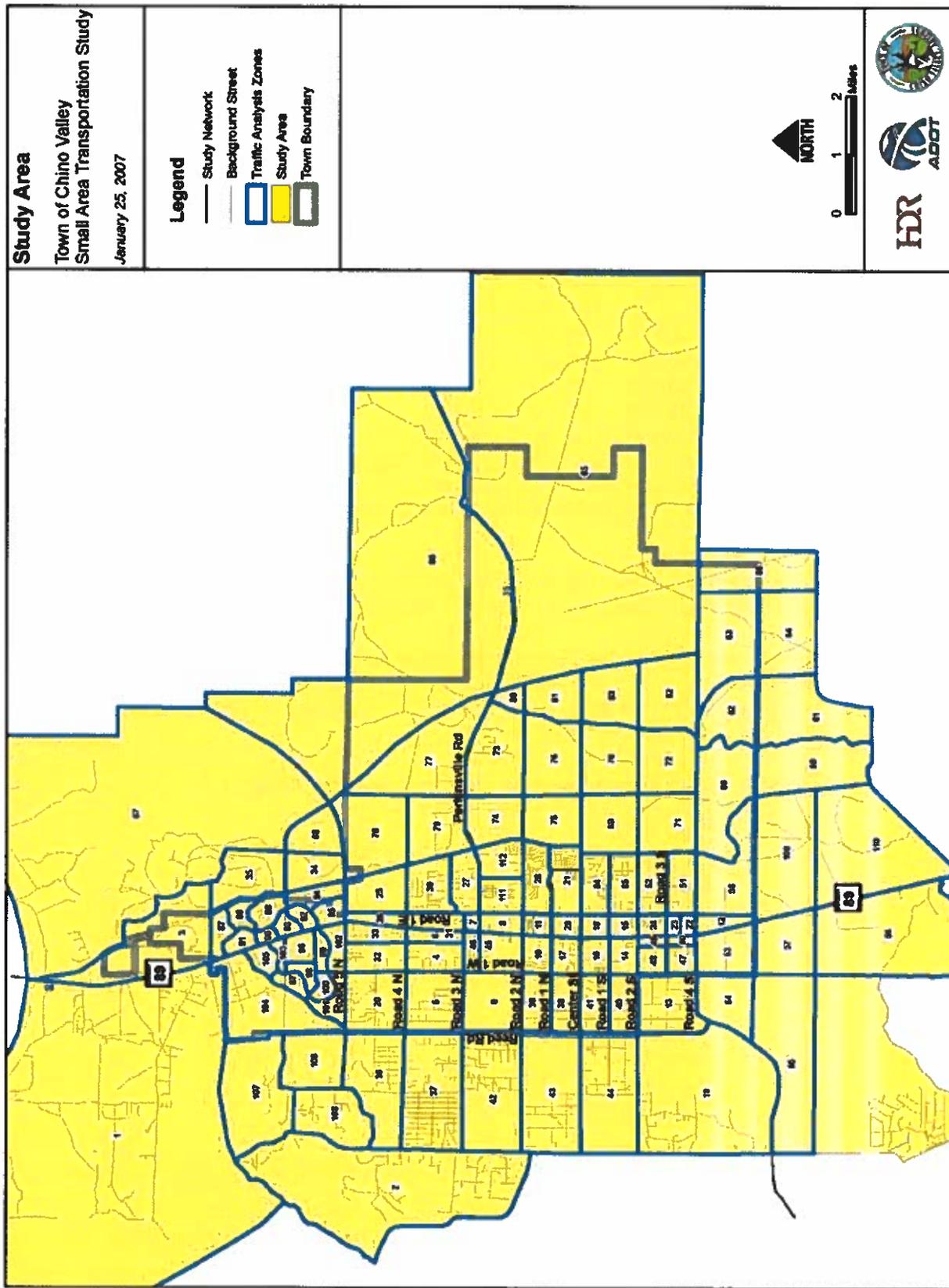
Traffic analysis zones (TAZ) are areas that are generally bounded by roadway network, political boundaries, or geographical constraints such as rail lines or major washes. Socioeconomic data is collected by these TAZ boundaries and with the model; traffic is generated by each land use within the TAZ, distributed, and then assigned to the roadway network. Subsequently, using assumed 2030 projected land use data, traffic forecasts can then be derived.

Traffic analysis zones were refined based on the regional CYMPO Transportation Study modeling effort to ensure consistency between the transportation systems. The regional TAZ's were subdivided in order to provide a finer level of detail in the Chino Valley area. The land use categories were also retained from the regional model for consistency. The socioeconomic data was then reviewed and refined by TAZ for each of the land use categories for 2005 and 2030 conditions.

The land use categories and socioeconomic variables are shown below. FIGURE 11 presents the TAZ structure in which the socioeconomic data was collected. A listing of the 2005 and 2030 socioeconomic data by TAZ is provided in Appendix A.

- Population (Persons)
- Residential (Dwelling Units)
- Commercial Retail (Employees)
- Service (Employees)
- Office (Employees)
- Public Office (Employees)
- Industrial (Employees)
- Manufacturing (Employees)

FIGURE 11 Traffic Analysis Zones for the Small Area Transportation Study



4.2.2 Base Year (2005) Population and Employment Data

Population estimates for Chino Valley and the SATS area and Yavapai County are shown in TABLE 9 Base Year Population Information of Chino Valley, the Study Area, Surrounding Jurisdictions and Yavapai County. The project study area extends beyond the incorporated area of the Town; population numbers for the study area differ somewhat from the estimates for the Town.

TABLE 9 Base Year Population Information of Chino Valley, the Study Area, Surrounding Jurisdictions and Yavapai County.

Jurisdiction	2000	2004 Estimate	2005 Estimate	Annual Compounded Growth Rate ('00-'05)
Chino Valley	7,835	9,530 ³	12,325	7.8%
Prescott	33,938	40,225	40,770	3.1%
Prescott Valley	23,535	30,590	33,575	6.1%
Study Area ¹	12,988	16,331 ²	17,041	4.6%
Yavapai County	167,517	196,720	205,105	3.4%

Source: Arizona Department of Economic Security (2004); U.S. Census Bureau (2000).

¹The study area is the TAZ approximated with Census blocks

²This is the population derived from the CYMPO Transportation Plan - 2025

³Economy.com, Inc.

Chino Valley's compounded annual growth rate between 2000 and 2005 was 7.8 percent, higher than the overall study area rate of 4.6 percent.

Using information obtained from the Town staff, aerial imagery, and the 2000 US Census, information from the CYMPO Plan was used to estimate the distribution of population and employment for the study area. The results are shown in TABLE 10. This information is also show in FIGURES 12 through 15.

TABLE 10 Study Area Population and Employment Estimates

Population	17,041
Dwelling Units	6,501
Employment	
Retail	958
Service	531
Office	243
Public Office	389
Industrial	353
Manufacturing	327
Employment Total	2,801

Source: CYMPO Transportation Plan – 2025, amended by HDR to current conditions (July 2005)

Projections for the 2030 planning horizon anticipate a study area population of 79, 621 and an employment projection of 8,824; which translate to compounded annual growth rates of 6.4 percent for population and 4.7 percent for employment. FIGURES 13 and 15 graphically represent the 2030 population (dwelling units) and employment, respectively.

FIGURE 13 Town of Chino Valley 2030 Dwelling Unit Density.

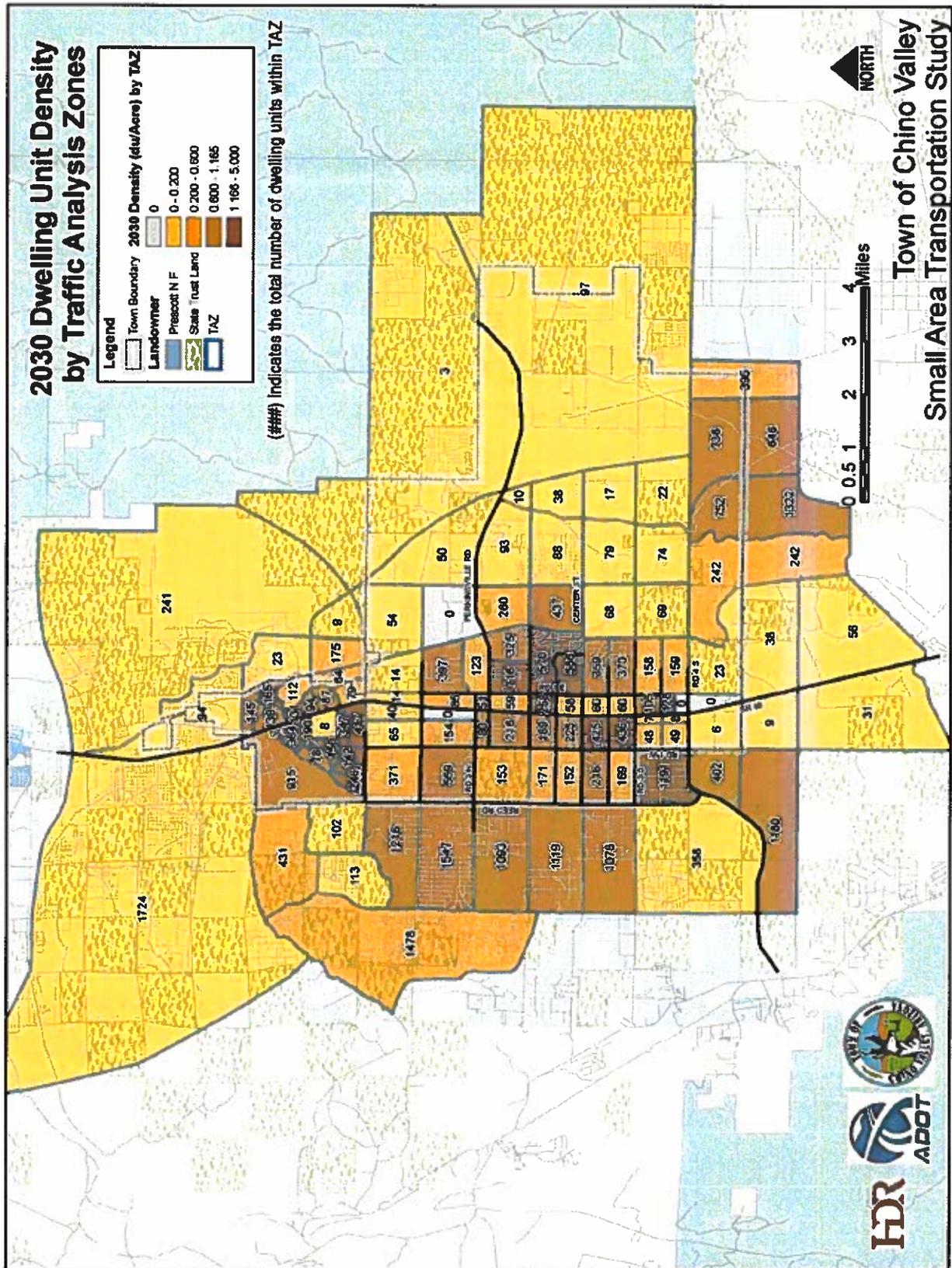


FIGURE 14 Town of Chino Valley 2005 Total Employment Density.

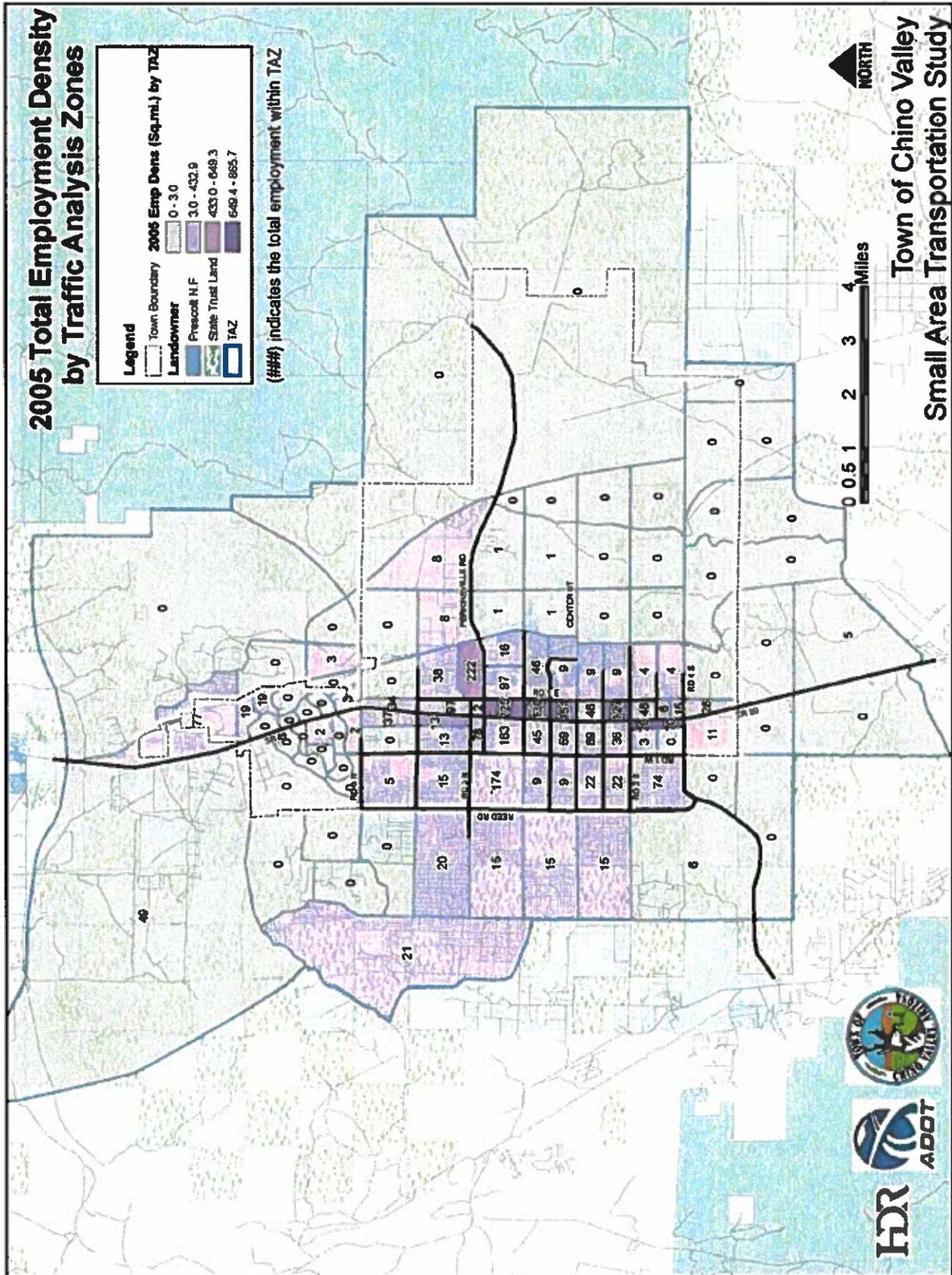
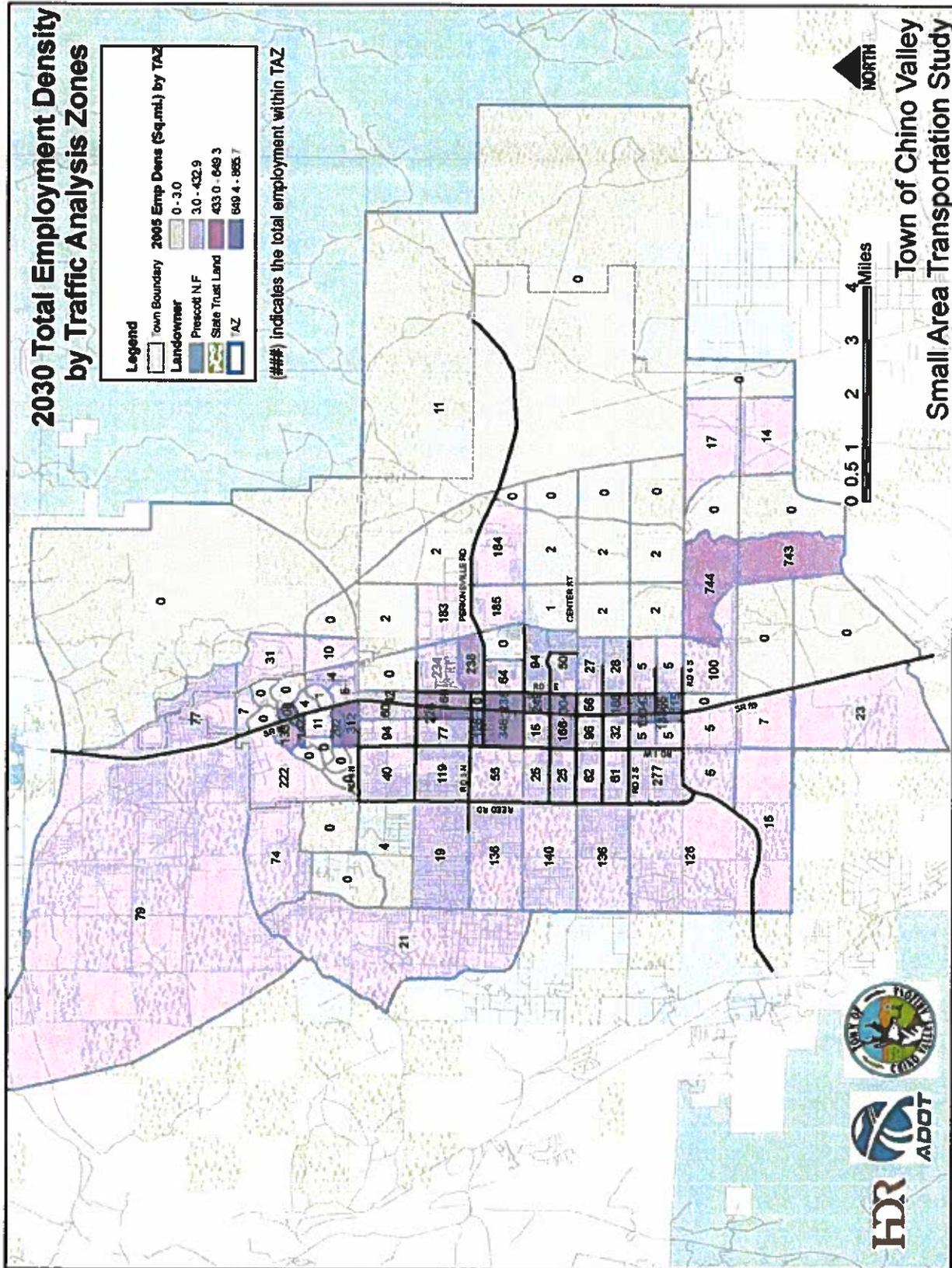


FIGURE 15 Town of Chino Valley 2030 Total Employment Density.



4.2.3 Demographics

Chino Valley and the study area do not differ substantially from the ethnic composition of Yavapai County as a whole. It is worth noting that Yavapai County has a significantly lower minority population than the state of Arizona, as shown in Table 11.

TABLE 11 Minority Population within the Study Area, Chino Valley and Affected Jurisdictions

	Chino Valley	Study Area	Yavapai County	Arizona
Total Population ¹	7,835	13,716	167,517	5,130,632
Minority Populations	12.4%	13.9%	13.4%	36.2%
Hispanic or Latino	9.8%	8.1%	9.8%	25.3%
Black or African American	0.2%	0.2%	0.4%	2.9%
American Indian or Alaskan Native	0.8%	1.0%	1.4%	4.5%
Asian	0.2%	0.2%	0.5%	1.7%
Native Hawaiian or Other Pacific Islander	0.1%	0.1%	0.1%	0.1%
Some Other Race	0.1%	2.5%	0.1%	0.1%
More than One Race	1.3%	1.8%	1.3%	1.5%

Source: Arizona Department of Economic Security (2000); U.S. Census Bureau (2000).

¹Based on US Census Table P4: Hispanic or Latino, and Not Hispanic or Latino by Race

In addition to minority populations the following populations were identified to consider the affect of transportation projects on them. TABLE 12 shows that the percentage of each of these populations in the study area is consistent with that of Yavapai County overall.

Table 12 Environmental Justice Populations within the Study Area, Chino Valley and Affected Jurisdictions

	Chino Valley	Study Area	Yavapai County	Arizona
2000 Census Population ¹	7,835	13,716	167,517	5,130,632
Poverty	15.5%	13.6%	11.9%	13.9%
Age 65 and Older	16.2%	15.5%	22.0%	13.0%
Female Head of Household	6.5%	5.3%	4.8%	6.8%
Disability	20.8%	15.2%	19.6%	16.6%
Vehicle Availability	4.7%	3.0%	4.8%	7.4%

Source: State, county, and city figures are from the Arizona Department of Economic Security (2000); U.S. Census Bureau (2000).

¹The 2000 Census remains the most current and comprehensive source of demographic data available. When appropriate and available, other more recent socioeconomic information is cited. Table 9 shows 2005 population estimates for Chino Valley and surrounding areas

The age of residents plays an important role in the transportation needs of a community. School children rely on others to meet their transportation needs beyond the range of walking and bicycling. When they are bicycling and walking, they are invariably doing so along rural roads without sidewalks and bicycle lanes. While elderly adults often have access to automobiles, high traffic routes present a separate set of challenges. In addition, retirees might opt for transit if such options were available.

There are several areas of Chino Valley where the percentage of school age children (Age 17 and under) is high. The discussion concerning student safety on Road 2 North was raised in 2004 by the Chino Valley School District Board. Concerns discussed included the number of students and peak times for students traveling by foot and bicycle on Road 2 North. One suggestion was to re-route students to Perkinsville Road and down Road 1 West where there is a pedestrian/bike trail already. Busing was another option that was discussed. A recommendation of the SATS is to consider developing a *Safe Routes to School* program to address the need for identifying safe, non-vehicular routes to the Town's schools and other youth destinations (parks and recreation facilities).

EPA defines Environmental Justice (EJ) as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies." There are three fundamental environmental justice principles: avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and, prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The Chino Valley SATS project would benefit all socioeconomic groups within the study area equally. The recommendations for improved local and regional mobility described in the SATS improve roadway level fostering economic development and increasing opportunities for local employment. In addition, the recommendations for transit and conceptual trails plan provide for alternative modes of travel which would directly benefit low-income residents. Implementation of transit and a trails system has the advantage of benefiting all residents by reducing roadway congestion and offering options for both non-driving residents (e.g., children and the elderly) and those who would prefer to use alternative modes.

5 YEAR 2030 TRANSPORTATION SYSTEM CONDITIONS

5.1 *Traffic Demand*

A travel demand model for the Chino Valley area was developed to evaluate the long-range traffic impacts based on anticipated land use and development. The transportation planning model is a representation of the study area roadway facilities and the travel patterns associated with these facilities. The Chino Valley model was developed with the most recent release of TransCAD 4.8 travel demand software program.

The Chino Valley model accounts for not only land use development within the Town but also the traffic impacts from the surrounding area. Coordination with the CYMPO Transportation Study was critical to ensure consistency between the regional system and Chino Valley. Incorporated into the Chino Valley model is the CYMPO regional planning model, used to determine the number of trips that travel to/from and also through Chino Valley.

The model base year is reflective of 2005 daily traffic conditions. Traffic forecasts were then derived based on a year 2030 planning horizon. The following describes the model process and 2030 traffic forecasts.

5.1.1 *Travel Demand Modeling Process*

The transportation planning model utilizes socioeconomic data to estimate the roadway system travel demand and represent the transportation network. Together with the socioeconomic data, simulated roadway network, and other mathematical travel parameters, the model is calibrated and validated to replicate the base year travel patterns, making it possible to project future traffic flow.

Before traffic forecasts can be derived, the 2005 base year model was calibrated and validated to simulate existing travel patterns and traffic flow on the roadway network. Model data collected for this time period includes socioeconomic data, traffic counts, and other roadway network data such as number of lanes, roadway capacity, and speeds. The transportation model was calibrated and validated to existing conditions against traffic counts. This was accomplished by comparing the estimated model traffic volumes against the ground counts to ensure the model's ability to replicate reasonable traffic conditions. The model was considered validated based on a number of performance measures including root mean square error, coefficient of determination, and Federal Highway Administration (FHWA) guidelines for allowable errors.

5.2 2030 Traffic Forecast

Traffic forecasts were developed for the 2030 horizon year, incorporating projected socioeconomic growth and roadway network improvements projected for that planning horizon. This horizon year was chosen to provide 1) a 25-year long-range forecast and 2) to be consistent with the 2030 CYMPO long-range plan.

The CYMPO Regional model was utilized in developing the Town's 2030 forecasts. In addition to the land use and socioeconomic forecast assumptions as described in Chapter 4, the regional model was used to develop the amount of external traffic that would influence travel within and through the Town's study area. For example, the amount of vehicle trips that would be using the new Glassford Hill extension to the south and Center Street to the west was incorporated from the regional model into the Town's transportation model.

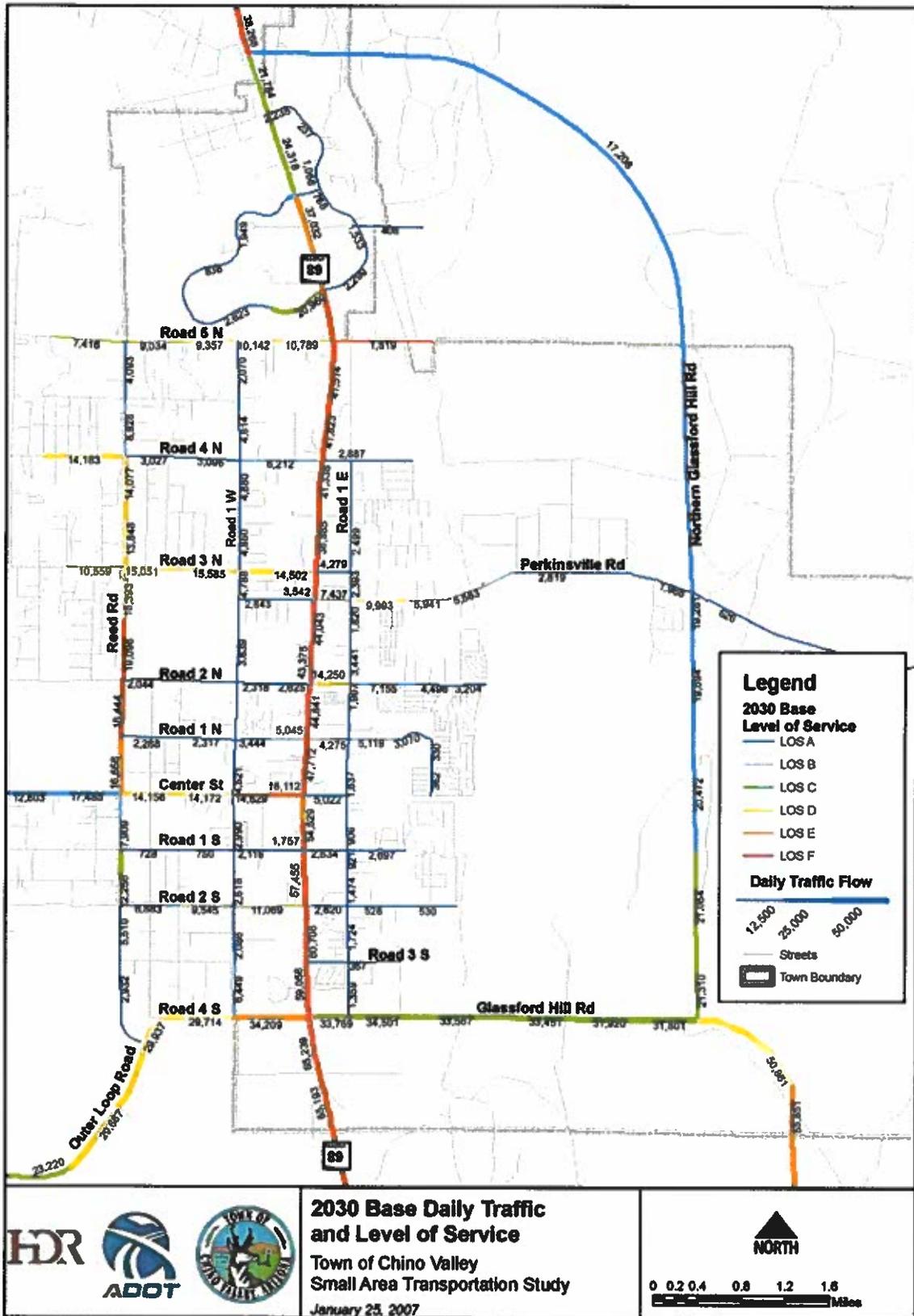
A **2030 Base** horizon year condition was created including projected land use, socioeconomic data, funded local roadway improvements, and recommended CYMPO regional roadway network improvements. This 2030 Base is reflective of a no-build condition without additional local street facilities. The 2030 Base included the following regional improvements:

- SR 89 widened (6-Lanes) south of Center Street to the southern study limits.
- SR 89 widened (4-Lanes) north of Road 3 N to the Chino Valley extension.
- Chino Valley extension (4-Lanes) to SR 89.
- Glassford Hill extension (6-Lane) on the Road 4 S alignment east of SR 89.
- Outer Loop Road widened (4-Lanes) west of SR 89 to the western study limits.
- Center Street extension (4-Lanes) west of Reed Road to the western study limits (Williamson Valley)

FIGURE 16 illustrates the 2030 Base daily traffic forecasts and corresponding roadway level of service.

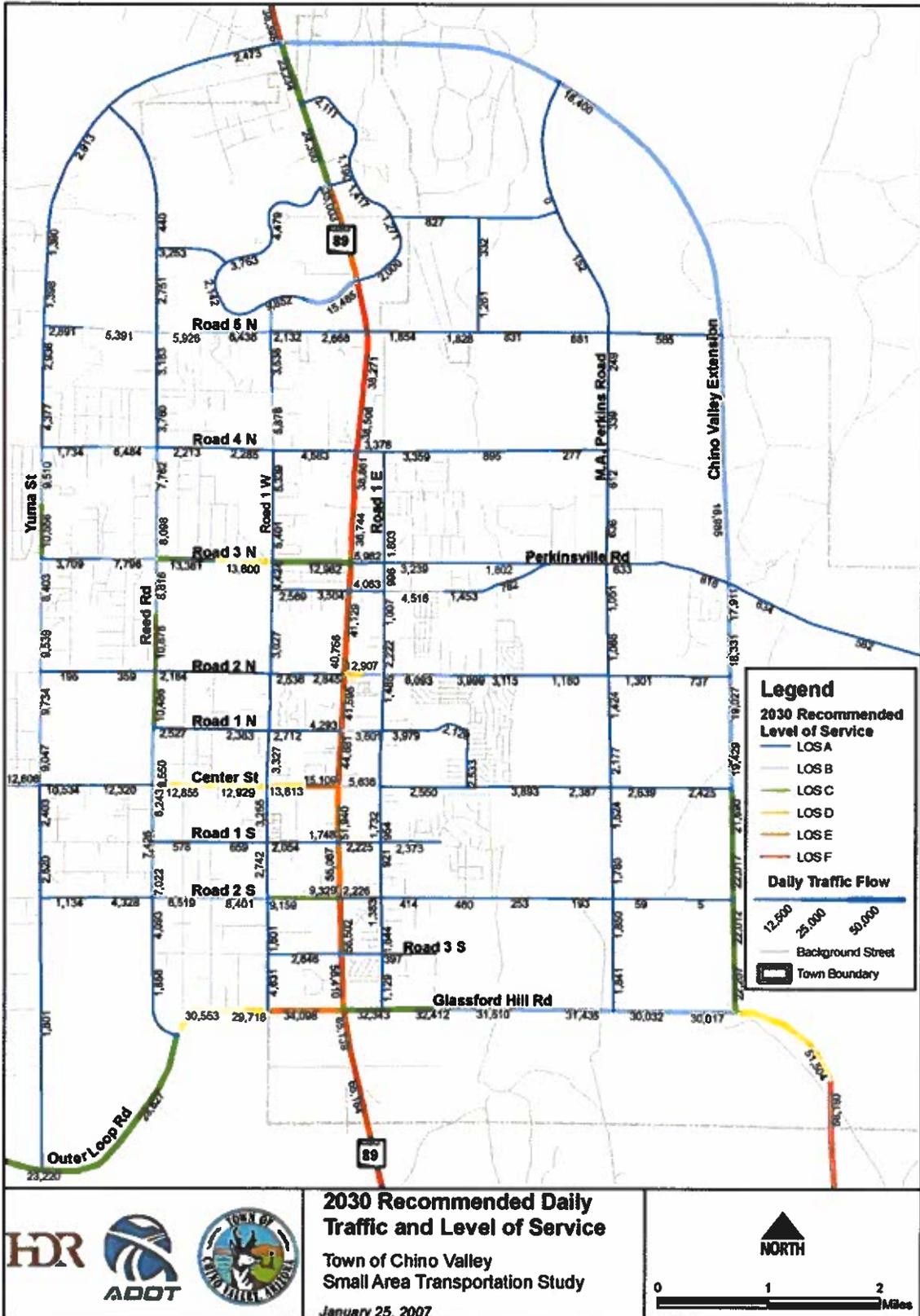
A **2030 Recommended** model forecast was then developed which was based on the 2030 Base condition. This included the regional roadway improvements in addition to localized roadway facilities. These include providing street continuity with the east-west and north-south facilities and a continuous outer loop road. The 2030 Recommended daily traffic forecasts and level of service are shown on FIGURE 17.

FIGURE 16 2030 Base Daily Traffic and Level of Service



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FIGURE 17 2030 Recommended Daily Model Traffic Volumes and Level of Service



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6 YEAR 2030 TRANSPORTATION PLAN

6.1 Roadway Plan

6.1.1 Roadway Framework Plan

Successful long-range transportation plans and economic development are predicated on the considered interaction between roadway infrastructure and land use, as well as the role of alternative modes including transit and multi-use trail systems.

A Roadway Framework for future roadway facilities is based on planned regional roadways, mobility, forecasted roadway deficiencies, access to planned land uses, integration with the other travel modes and provides for continuity of the existing street network.

This Chino Valley Roadway Framework is based on the currently adopted land use plan, approved development plans, and regional land use allocation assumptions. This includes a number of known factors: approved development plans including the Del Rio and Bright Star developments; and, planned regional roadway projects. Major regional roadway improvement assumptions include the Glassford Hill extension (the Town has discussed both Road 4 South and one mile further south as possible alignments), widening of SR 89, extension of Center Street west to provide additional connectivity with the Williamson Valley area, the Chino Valley extension, and widening of Outer Loop Road. Figure 18 shows the recommended year 2030 Roadway Framework.

The need to update the General Plan land use was recognized during the development of the forecast land use allocations. This update will likely consider changes to employment land use (now focused primarily along SR 89) and high-density residential land use to locations that help to achieve the Town's long range plan. Additional changes include revising western area projections to reflect existing platting and development patterns; and addressing the higher than currently planned residential density likely for the eastern area. Such changes would directly impact the forecasted traffic flow volumes and travel patterns.

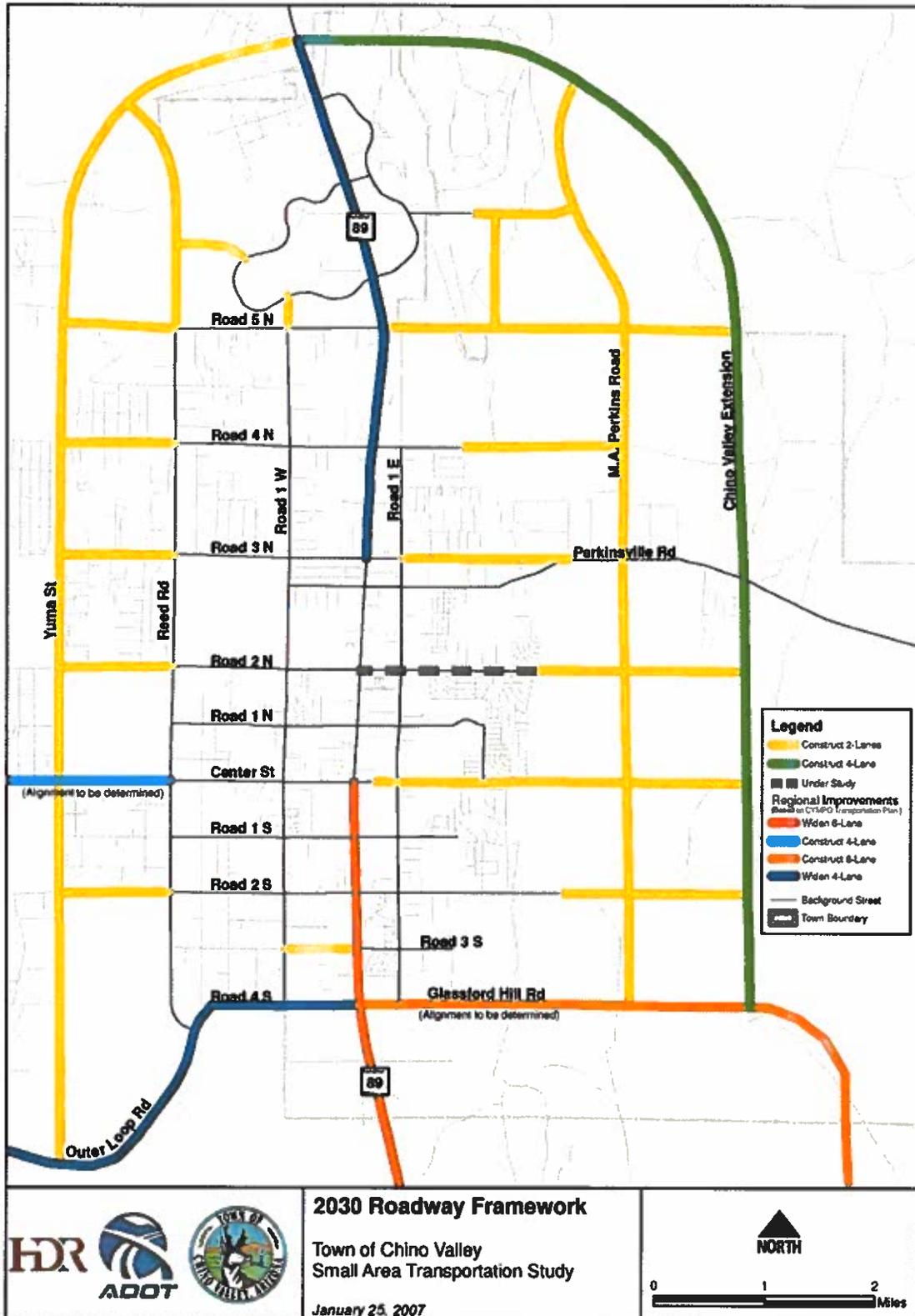
When the General Plan is updated, the local and regional roadway improvements that are identified in the SATS will have a significant influence on the updated land uses. It is recommended that the SATS be updated subsequent to the General Plan update.

6.1.2 Roadway Functional Classification

Roadway functional classification is based on a grouping of classes, or systems, according to the character of the service they are intended to provide. The primary purpose of functional classification is to ensure that the system adequately provides mobility, access to adjacent land, and continuity of the street system. The classification system defines the roadway type by function and right-of-way needs.

At such time as functional standards and a roadway functional classification system is adopted for the Town of Chino Valley, the existing roadway network should be assessed to determine what improvements may be needed to bring the roads up to these standards.

FIGURE 18 2030 Roadway Framework



6.1.3 Truck Route System

The movement of goods and delivery of services is critical to the economic well being for Chino Valley. This movement of goods, or freight, through the Town can create negative impacts including road damage, noise, pollution, and traffic operations. Designating truck routes helps assure that trucks travel on roadway facilities designed for heavy loads and to minimize noise impacts to residents. It is also important that the truck system is compatible with adjacent land uses. FIGURE 19 illustrates the designated truck route system.

Truck traffic on local streets shall be discouraged by posting sidestreets with truck access restrictions such as roadway weight limits or truck length restrictions.

6.2 Transit Element

The transit element is one component of the Chino Valley Small Area Transportation Study (SATS). Much like the other communities in central Yavapai County, the Town of Chino Valley is experiencing rapid population growth that is transforming this rural community. With this growth comes a number of challenges, including the ability to provide transit service that is part of a multi-modal transportation system. This section will address how Chino Valley can provide a transit network that balances local and regional needs while fitting into an overall long range (2030) transportation system.

Forecasted growth and development, decreased land availability to construct new transportation corridors, and anticipated increases in transit-dependent populations make it evident that alternative transportation strategies are needed to provide a transportation system that effectively serves the residents of Chino Valley. The goal of the transit element is to develop information in sufficient detail so that citizens, elected officials, agency staff, and other study participants can make informed decisions on the appropriate level of future transit investments in Chino Valley.

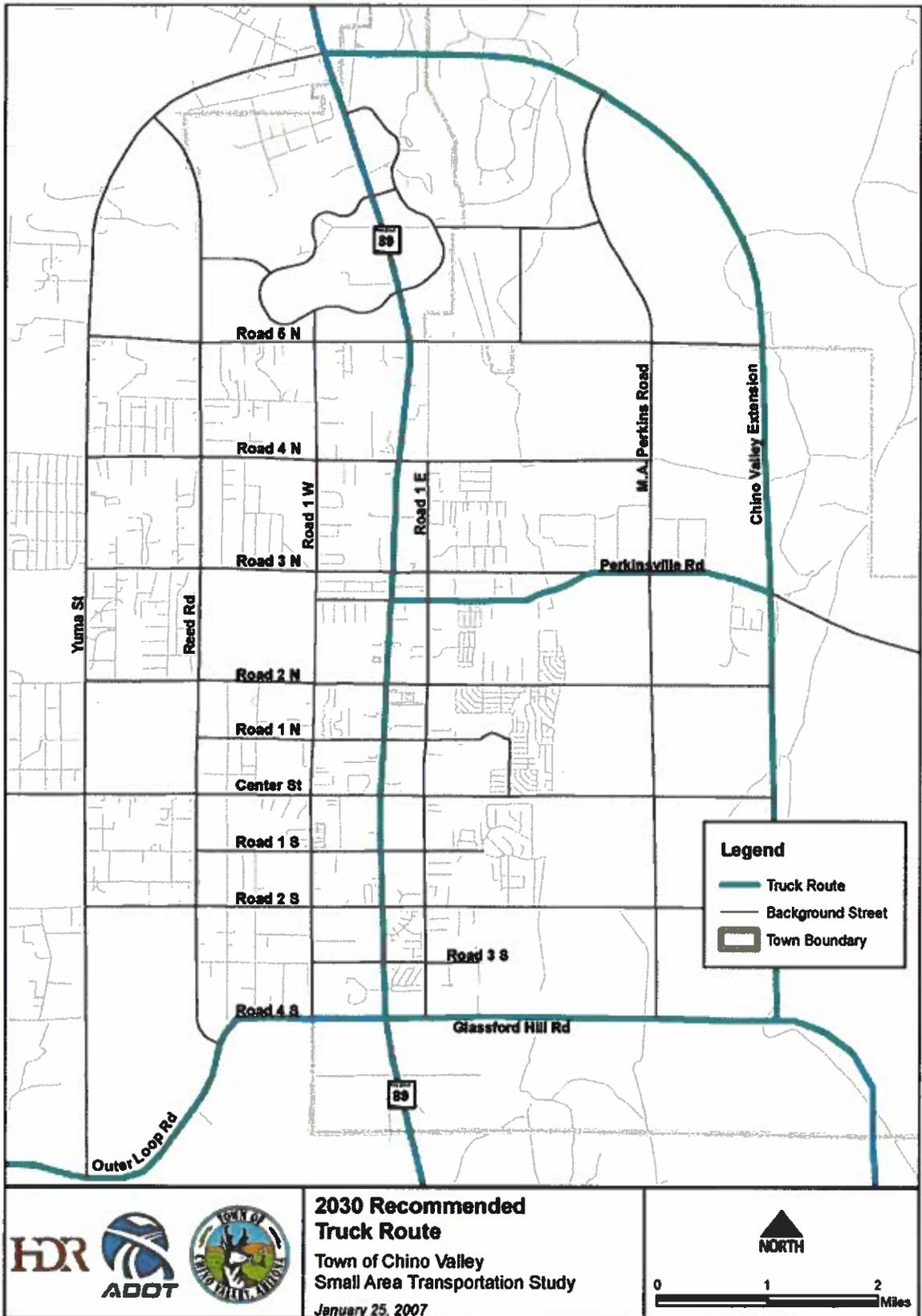
6.2.1 Transit Technologies

Currently, there is no existing transit service in Chino Valley. A variety of transit technologies, which range from demand response bus service to fixed-route bus service, could be incorporated into the 2030 transit network. The following provides a brief definition each transit technology.

Paratransit

Paratransit is a form of demand response bus service does not follow a specific route but rather picks up and drops off at specific destinations by request. It is often used in rural communities that do not have the population density to support fixed route bus service. It is also used in urban areas to provide transportation for passengers unable to access traditional fixed route bus service, such as seniors and passengers with disabilities. The American with Disabilities Act (ADA) requires that complementary paratransit service be provided in all areas within three-fourths of a mile of fixed route bus service.

FIGURE 19 2030 Recommended Truck Route



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Local Bus

Local bus is the most common form of bus service. It uses standard size transit vehicles (usually 40-foot buses) and is generally characterized by buses operating along major streets. The buses make frequent stops and typically serve areas with the highest population density. Local bus stops often include passenger amenities such as shelters and seating.

Regional Bus

Regional bus is a form of express bus service that provides direct connections between cities within a geographic area. It can also operate as commuter service during the peak hour and connect outlying areas with central business districts. Regional bus routes usually operate as point-to-point service with fewer stops. When appropriate, consideration of a transfer station in the central part of Town should be made.

Neighborhood Circulators

Neighborhood circulators are a form of fixed route bus service that focus on serving a common geographic area with frequent, all-day service. The buses are small and enable passengers to connect to a wider transit network from residential neighborhoods and activity centers. Neighborhood circulators vary in how they pick up and drop off passengers; some serve specific bus stops only while others can be waved down by passengers anywhere along the route.

6.2.2 Transit Improvement Options

Transit improvement options for the Chino Valley SATS are described below and correlate to the 2030 transportation system. These improvements will need to be phased over time based on need and available funding. The future transit improvements in Chino Valley are characterized by the following types of transit service:

- Paratransit service that provides demand response bus service within Chino Valley
- Local bus service that primarily operates on major streets within Chino Valley
- Regional bus service that connects to Prescott, Prescott Valley, and central Yavapai County
- Neighborhood circulators that serve specific geographic areas within Chino Valley

The Central Yavapai Metropolitan Planning Organization (CYMPO) is currently conducting a Regional Transit Planning Study that is addressing existing and future needs through 2015. The CYMPO Regional Transit Planning Study will be the primary document for addressing regional transit improvements. The transit element of the Chino Valley SATS will address regional connections in terms of how they specifically relate to Chino Valley.

Paratransit

The 2030 transit network assumes there will be fixed route bus service in place so the primary purpose of paratransit will be to provide transportation for passengers unable to access traditional fixed route bus service, such as seniors and passengers with

disabilities. Paratransit in Chino Valley will need to be expanded in conjunction with fixed route transit improvements. ADA requires that complementary paratransit service be provided in all areas with three-fourths of a mile of fixed route transit service. For the purpose of the Chino Valley SATS, it is assumed there will be paratransit coverage throughout the town limits. Paratransit may serve more of a role in the short term prior to the implementation of fixed route bus service.

Local Bus

Future local bus service focuses on establishing a grid of transit service within Chino Valley. The goal is to meet the regional standard of service which will be identified in the CYMPO Regional Transit Planning Study. For the purposes of the Chino Valley SATS, it is recommended that local bus service operate every 15 minutes in the peak and 30 minutes in the off-peak from 6 a.m. to 10 p.m. Future local bus improvements are constrained by the by the future roadway network. The future local bus network for Chino Valley is described below:

- **SR 89 Route:** This is the primary local bus route through Chino Valley that will travel the length of the corridor through town from the Del Rio community to Road 4 S. The SR 89 route will serve designated bus stops located approximately 1/8 to 1/4 mile apart. Every other trip along this route will continue as regional service to Prescott, Prescott Valley, and central Yavapai County. This regional route is discussed in the next section.
- **Loop Route:** This is a loop route that serves the perimeter of town and operates on Road 3 N, Perkinsville Road, Center Street, Road 1 E, Road 4 S, Road 2 S, and Reed Road. This route will connect with all other bus service at SR 89 and Road 3 N and again with the SR 89 routes (local and regional) at Road 3 S and Road 4 S.

Regional Bus

Future regional bus service will include a connection to Prescott, Prescott Valley, and central Yavapai County. Similar to the local bus improvements, the goal is to meet the regional standard of service which will be identified in the CYMPO Regional Transit Planning Study. For the purposes of the Chino Valley SATS, it is recommended that regional bus service operate every 30 minutes in the peak and 60 minutes in the off-peak from 6 a.m. to 10 p.m. The future regional bus network for Chino Valley includes the regional bus route described below:

- **SR 89 Route:** This route will connect with Prescott, Prescott Valley, and central Yavapai County via SR 89. It will be an extension of the local SR 89 local bus route that operates through Chino Valley. Every other SR 89 local bus trip will continue south as regional service. The routing south of Road 4 S will be determined in subsequent regional transit planning efforts.

Neighborhood Circulator

The 2030 transit network includes a neighborhood circulator that the serves areas to the east and west of SR 89. The neighborhood circulator emphasizes coverage as opposed to travel time, and will be refined based on future growth patterns. Frequency is the key to neighborhood circulators so it is recommended the route operate with 15 minute frequency from 6 a.m. to 10 p.m. The implementation of the neighborhood circulator will

be dependent on a number of factors, including connections to local and regional bus service and the future roadway network. The neighborhood circulator is described below:

- **Neighborhood Circulator:** This route will connect the central business district along SR 89 with important destinations to the east and west, including the Chino Valley civic facilities, Chino Valley High School, and the Chino Valley recreation center. This route will serve addition commercial and residential areas along Road 3 N, Road 1 W, Road 1 E, Center Street, and Road 2 N.

Transit Facilities

Transit facilities for the 2030 transit network focus on bus stops. These facilities include bus shelters and corresponding passenger amenities (seating, trash receptacles, bicycle racks, and other amenities) that enhance the safety and comfort of transit patrons. Special consideration should be given to improving passenger amenities high transfer locations where multiple bus routes converge. As service and ridership increase, new amenities such as electronic display boards and real-time passenger information should be introduced. Bus bays should also be considered at some bus stop locations, specifically along SR 89.

The 2030 transit network should include a transit center to provide a central transfer point between bus services in Chino Valley. It can be assumed that this facility should be located along SR 89 near Road 3 N. This location is the intersection point for the SR 89 Route (local and regional), the Loop Route, and the Neighborhood Circulator. The transit center should be developed to include the following amenities:

- Bus bays
- Bus loading platform
- Shelters and seating
- Bicycle and pedestrian access
- Bicycle storage
- Ticket sales and information
- Restrooms
- Landscaping and lighting
- Opportunities for joint development

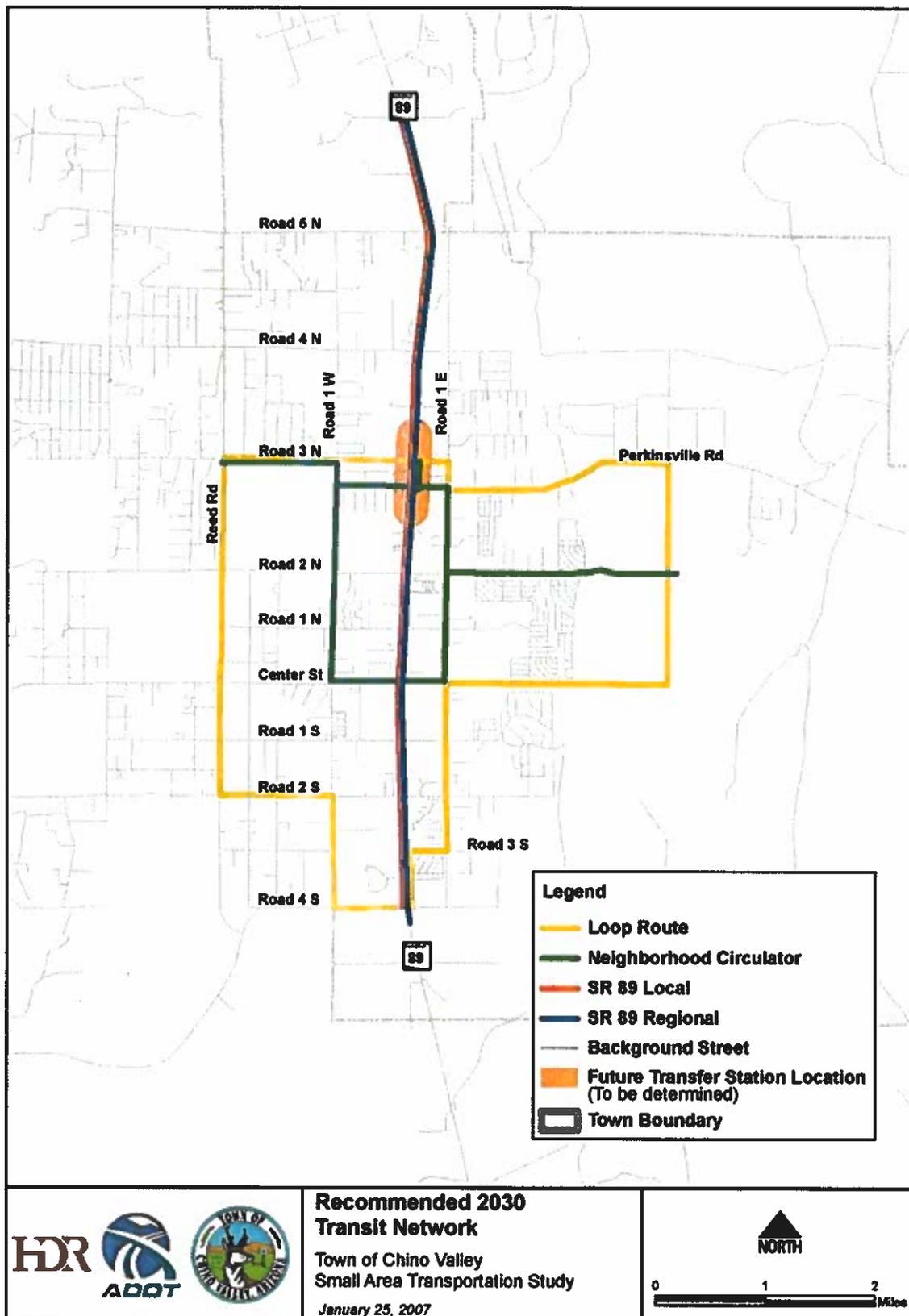
6.2.3 Summary

The transit element of the 2030 transportation system for the Chino Valley SATS is summarized in Table 13 and illustrated in Figure 19.

Table 13 2030 Transit Network

Route	Improvement	Headway (Peak/Off-Peak)
Local Bus		
SR 89 Local	Local bus route on SR 89 between Del Rio community and Road 4 S. Every other trip will continue as regional service to Prescott, Prescott Valley, and central Yavapai County.	15/30
Loop Route	Loop route serving the perimeter of town, including Road 3 N, Perkinsville Road, Center Street, Road 1 E, Road 4 S, Road 2 S, and Reed Road. Connects with all other bus service at SR 89 and Road 3 N and again with the SR 89 route (local and regional) at Road 3 S and Road 4 S.	15/30
Regional Bus		
SR 89 Regional	Regional route that will connect with Prescott, Prescott Valley, and central Yavapai County via SR 89. It will be an extension of the local SR 89 local bus route (every other SR 89 local bus trip will continue south as regional service).	30/60
Neighborhood Circulator		
Neighborhood Circulator	Neighborhood circulator connecting the central business district along SR 89 with destinations to the east and west, including the Chino Valley civic facilities, Chino Valley High School, and the Chino Valley recreation center. This route will serve addition commercial and residential areas along Road 3 N, Road 1 W, Road 1 E, Center Street, and Road 2 N.	15

FIGURE 20 2030 Transit Network



6.3 Non-Motorized Transportation

The Town of Chino Valley's scenic setting and mild climate are extremely conducive to pedestrian, equestrian, and bicycling. Non-motorized transportation is not limited to walking or bicycling. Other modes include wheelchairs, horses, skateboards, scooters, and skates. In addition, new technologies are emerging (such as the Segway) and the Town should continue to explore how these emerging trends can be accommodated on existing facilities or explore the feasibility of developing new facilities for them.



The Peavine Trail, a multi-modal trail that runs north-south through the Town serves as the central spine of the non-motorized trail system.

Several of the roadway functional classifications currently being considered by the Town of Chino Valley include sidewalks and or shared-use pathways (i.e. "trails"). The inclusion of non-motorized routes in the Town is increasingly important as development occurs to lessen on road conflicts and to ensure that pedestrians, bicycles and other non-motorized modes are accommodated.

In addition to sidewalks, development of a non-motorized transportation system in Chino Valley should include several other types of trails:

- Multi-purpose Paved Trail – to connect pedestrian use areas, designed for high traffic and good accessibility
- Multi-purpose Unpaved Trail – for medium-traffic, compacted crushed rock (gravel) surface
- Limited Purpose Unpaved Trail – for low traffic path, surfaced with compacted crushed rock (gravel) or other material, as appropriate

Bicycles are an important component of the non-motorized transportation system. Some of the bicycle conflicts currently being reported in the Town occur due to their use on streets with inadequate right-of-way for bicycles and motor vehicles. To alleviate this conflict, three types of bicycle facilities should be considered in the Town:

- Shared Use Trail – a facility that is separated from a roadway and intended for shared use by pedestrians, equestrians, and cyclists. The Chino Valley SATS identifies two types of shared use pathways, paved trails and multi-purpose unpaved trails.

The improved section of the Peavine Trail is an example of a shared use unpaved trail.

- **Bike Lane** – a portion of a roadway designated for the exclusive use of cyclists by signs and pavement markings.

A bike lane is recommended along Perkinsville Road, due to the regional nature of Old Home Manor and the use of the route by touring cyclists.

- **Shared Roadway** – lower traffic volume and slower speed residential street designated for non-motorized transportation use that does not have pavement markings or signage. Many of the rural roads in Chino Valley serving as local streets are appropriate for shared roadway designation.

A recommended route for a *signed shared roadway* is Road 1 East between Road 3 South and Road 4 North, alleviating bicycle traffic from SR 89.

A recommendation of the SATS is to “develop a trails master plan that identifies and specifies a system of on and off-street trails that circumnavigate the Town and connect to local destinations (such as schools and parks) and regional open space amenities.” The SATS 2030 Conceptual Trails Plan, creates a framework to begin a non-motorized system of trails (refer to FIGURE 20).

6.3.1 Peavine Trail

The Peavine Trail is the Town’s one designated multi-purpose trail. Located on the former Atchinson Topeka & Santa Fe Railroad right-of-way, which runs roughly parallel to SR 89, this abandoned railroad right-of-way spans from the City of Prescott north to the Prescott National Forest in Paulden. The portion of the Peavine Trail located within the Town of Chino Valley is approximately 10 miles long.

The Peavine Trail provides a central spine to a future non-motorized transportation system that links all areas of the community to local and regional destinations. The Conceptual Trails Plan shows the

6.3.2 Recommended Standards for Trails

Until such time as a *trails master plan* is developed for the Town, it is recommended that in the interim trails built or dedicated to the Town meet minimum standards. Suggested guidelines are provided below.

Multi-purpose Trail (Paved or Unpaved)

A Shared Use Path is a trail physically separated from motorized vehicular traffic for the principal use of bicycles and pedestrians. The minimum width is 12 feet. The shoulders should be a minimum of two feet and graded as close to two percent as possible. Separation between Shared Use Paths and adjacent roads should be a minimum of five feet. If this separation cannot be achieved, the path must include a physical divider such as a concrete barrier, fence, or a hedge. Specific dimensions for such barriers are described in the AASHTO guide. Steeper grades of 5 - 10 percent can be tolerated for short segments up to approximately 500 feet. A cross slope of two percent is recommended for proper drainage.

Bike Lanes

A *Bike lane* is a portion of a roadway that is designated with signs and/or pavement markings for the preferential use of cyclist. Bike lanes are one-way facilities only and are designed with or without adjacent parking along the road. The more desirable configuration is to have the bike lane without parking, eliminating potential conflicts (e.g., opening car doors). In either case, the bike lane width should be 5 feet at a minimum. Four-inch wide solid white foglines should be used along the traffic and parking sides of the lane and bike lane symbols should be stenciled on the pavement every 200 to 300 feet.

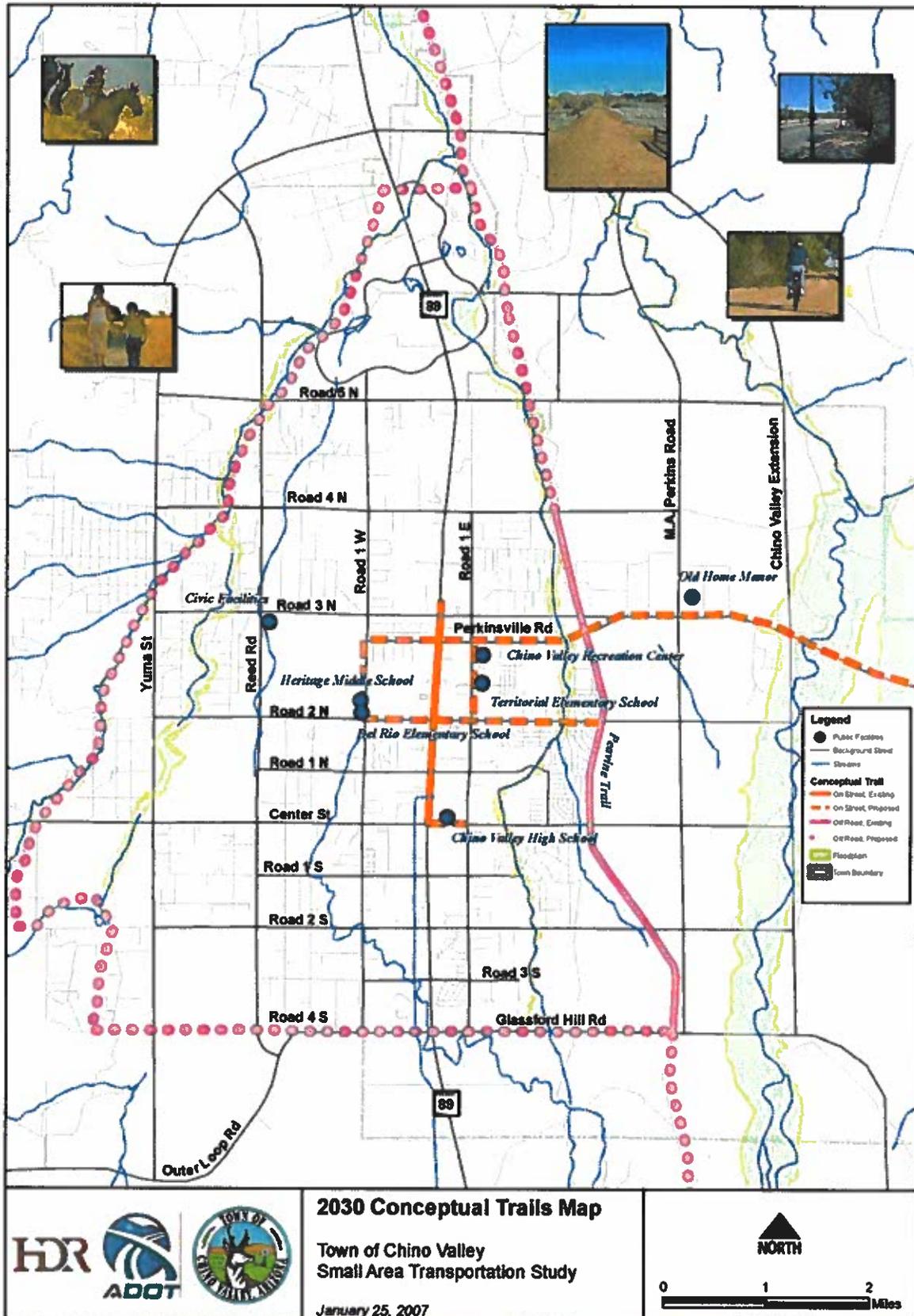
Signed Shared Roadways

A *signed shared roadway* (sometimes referred to as bicycle route) is a roadway shared by bicycles and motor vehicles with a wide shared curb lane or paved shoulder and signage designating the roadway as an appropriate route for comfortable bicycling. Signed shared roadways serve either to provide continuity to other bicycle facilities or to designate preferred routes through high bicycle-demand corridors. As with bike lanes, designation of these routes is an indication to cyclists that there are particular advantages to using these routes as compared with alternative routes.

Shared Roadways

A *shared roadway* is an unmarked, unsigned street that is fully adequate for safe and efficient bicycle travel. Signing and striping on these bikeways are considered unnecessary due to low traffic volumes and speeds, good sight distance, and adequate roadway width.

FIGURE 21 2030 Conceptual Trails Plan



7 IMPLEMENTATION PLAN

Based on the recommended improvements identified in Chapter 6 - Transportation Plan, cost estimates, funding plan, and an action plan were developed for the 2030 long-range transportation plan. In addition, information is provided on access management guidelines and traffic impact procedures.

7.1 Cost Estimates

Cost estimates were developed for the various projects. These costs should be used only for planning and programming purposes and do not include costs related to acquisition of right-of-way. Additionally, these estimates are for new or widened roadway facilities and do not include the costs for upgrading existing roads to current design standards. Table 14 presents the cost estimates for each of the projects. Listed below are the assumed unit costs (2006-dollars) that area based on the latest ADOT bid tabulations. It is emphasized that these estimates are reported in 2006-dollars and do not include items such as traffic signals, municipal utilities (sanitary sewer or water line) and roadway enhancements (landscaping) as they can vary for each project. ADOT has been experiencing approximately 30 percent annual cost increases for construction over the past several years.

- One mile widening of 2-Lane to 4-Lane: \$4,000,000
- One mile widening of 4-Lane to 6-Lane: \$4,500,000
- One mile new construction of 2-Lane: \$2,500,000
- One mile new construction of 4-Lane: \$3,400,000
- One mile new construction of 6-Lane: \$4,900,000

The projects are listed by item number in TABLE 14 and are also identified on FIGURE 21.

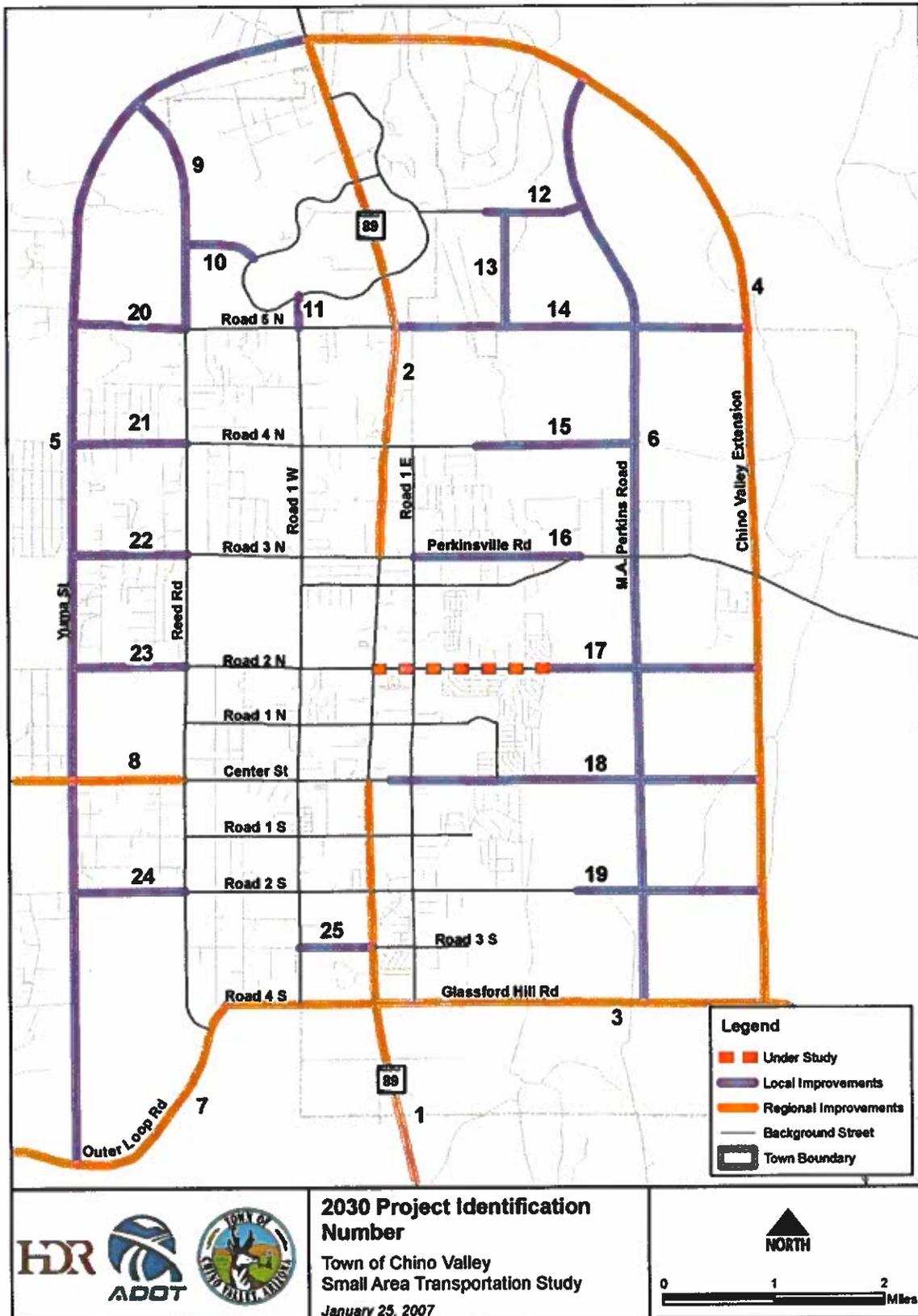
Table 14 2030 Transportation Improvement Program Cost Estimates (2006-Dollars)

Item Number	Location	Improvement Type	Length (miles)	Cost (millions)	Responsible Agency
1	SR 89 between Center St and southern study limits	Widen 6-Lane	5.0	\$22.5	ADOT
2	SR 89 between Road 3 N and Chino Valley Extension	Widen 4-Lane	4.7	\$18.8	ADOT
3	Glassford Hill Extension between SR 89 and southern study limits	Construct 6-Lane	5.6	\$27.4	Yavapai County/Chino Valley
4	Chino Valley Extension between SR 89 and Glassford Hill Extension	Construct 4-Lane	11.5	\$39.1	Yavapai County/Chino Valley
5	Yuma Rd between Outer Loop and SR 89	Construct 2-Lane	11.3	\$28.3	Yavapai County/Chino Valley
6	M.A. Perkins Rd between Glassford Hill Extension and Chino Valley Extension	Construct 2-Lane	8.5	\$21.3	Yavapai County/Chino Valley

Town of Chino Valley Small Area Transportation Study

Item Number	Location	Improvement Type	Length (miles)	Cost (millions)	Responsible Agency
7	Outer Loop Road between SR 89 and western study limits	Widen 4-Lane	4.5	\$18.0	Yavapai County/Chino Valley
8	Center St between Reed Road and western study limits	Construct 4-Lane	2.0	\$6.8	Yavapai County
9	Reed Road Extension between Road 5 N and Yuma Rd	Construct 2-Lane	2.2	\$5.5	Yavapai County/Chino Valley
10	Del Rio Connection to Reed Road Extension	Construct 2-Lane	0.7	\$1.8	Chino Valley
11	Del Rio Connection to Road 5 N	Construct 2-Lane	0.3	\$0.8	Chino Valley
12	Eastern Del Rio Connection to M.A. Perkins Extension	Construct 2-Lane	1.0	\$2.5	Yavapai County
13	Eastern Del Rio Connection to Road 5 N	Construct 2-Lane	1.0	\$2.5	Yavapai County
14	Road 5 N between SR 89 and Chino Valley Extension	Construct 2-Lane	3.2	\$8.0	Yavapai County/Chino Valley
15	Road 4 N between Arizona Trail and Chino Valley Extension	Construct 2-Lane	1.5	\$3.8	Chino Valley
16	Road 3 N between Road 1 E and Perkinsville Rd	Construct 2-Lane	1.5	\$3.8	Chino Valley
17	Road 2 N between Mohave Rd and Chino Valley Extension	Construct 2-Lane	2.0	\$5.0	Chino Valley
18	Center St between Road 1 E and Chino Valley Extension	Construct 2-Lane	3.2	\$8.0	Chino Valley
19	Road 2 S between Liana Dr and Chino Valley Extension	Construct 2-Lane	2.2	\$5.5	Chino Valley
20	Road 5 N between Reed Rd and Yuma Dr	Construct 2-Lane	1.0	\$2.5	Yavapai County
21	Road 4 N between Reed Rd and Yuma Dr	Construct 2-Lane	1.0	\$2.5	Yavapai County
22	Road 3 N between Reed Rd and Yuma Dr	Construct 2-Lane	1.0	\$2.5	Yavapai County
23	Road 2 N between Reed Rd and Yuma Dr	Construct 2-Lane	1.0	\$2.5	Yavapai County
24	Road 2 S between Reed Rd and Yuma Dr	Construct 2-Lane	1.0	\$2.5	Yavapai County
Total				\$241.6	

FIGURE 22 2030 Project Identification Number



E:\GISDATA\Projects\AZC\Chino_Valley\SAAT\Map_documents\None\Paper_0001009.mxd

7.2 Funding Plan

Development of the recommended multi-modal plan necessitates a challenge with the current roadway infrastructure and anticipated planned growth. New development on the existing roadway system will require an increased funding to maintain and upgrade current facilities to new design standards.

7.2.1 Revenue Sources

The following section describes and summarizes the revenue sources that are currently available for funding transportation projects, including public transportation. It should be noted that in the current environment the funding of significant transportation projects is complex and in most cases requires multiple sources. Also, transportation funding is dynamic and there is a need to continuously monitor the existing sources and new sources that may become available as state and federal legislation changes. Innovation has become the mainstay of successful transportation funding.

Local/Regional

Development Impact Fees

The Town of Chino Valley currently has a Roads Impact Fee for both residential and commercial development. Development impact fees are one time payments for public facilities based on a pro-rata share of costs incurred for facilities needed to accommodate new development. Development fees relate to only capital facility expansions benefiting new development and are not to be utilized for rehabilitation efforts or operating expenses.

County Regional Area Road Fund

Yavapai County currently levies a county transportation excise tax for roads. State law currently allows counties with population of four hundred thousand or less to impose a transportation excise tax with approval of a majority of the qualified electors voting at a countywide special election, or a majority of the qualified electors voting on the ballot proposition at a general election. The net revenues collected under this section within a county shall be deposited in the county's regional area road fund. Funds shall be distributed from the monies in the county's regional area road fund to the individual county and to the individual cities and towns in the county in the manner that is determined by the board of supervisors. The jurisdiction receiving the revenues may only use the revenues for street and highway purposes or for transportation projects included in the regional transportation plan of the county as prepared by the county regional planning agency.

Bonding

The issuance of bonds against town revenues can be used to accelerate project construction. While not a direct funding source, bonding can be used to mitigate the immediate impacts of significant capital improvement projects and spread the costs over the useful life of the project. Though interest costs are incurred, the judicious use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future citizens and businesses that will benefit from the projects.

Improvement Districts

Improvement districts are authorized by the state legislature for the construction of a wide range of public works facilities. They are formed to fund repaving projects, construction of roadways or sidewalks, installation of landscaping and other public improvements within a defined geographic area. The districts are initiated by property owners who combine resources with the town to finance the improvements. Property owners are assessed over a several year time frame to repay their share of the cost of the improvement.

State Funds

Highway User Revenue Funds (HURF)

HURF represents the most significant source of transportation funds in the state of Arizona. Funds are derived primarily from motor vehicle fuel taxes and vehicle license taxes. HURF funds are shared with and allocated through ADOT and distributed as an entitlement to cities, towns and counties based on population.

Highway Extension Expansion and Loan Program (HELP)

HB 2488, enacted into law on August 21, 1998, established a comprehensive loan and financial assistance program for eligible highway projects in Arizona. The program designated as Highway Expansion and Extension Loan Program or HELP provides the state and communities in Arizona a new financing mechanism to stretch limited transportation dollars and bridge the gap between the needs and available revenues. The HELP Program provides the state and its communities with an innovative financing mechanism to accelerate the funding of road construction projects and has proven to be a significant tool for financing the construction of highway projects throughout the State.

Greater Arizona Development Authority (GADA)

The Greater Arizona Development Authority (GADA) was created by the Arizona State Legislature to assist local and tribal governments and special districts with the development of public infrastructure. GADA leverages its funds to lower the costs of financing and help accelerate project development for public facilities owned, operated and maintained by a political subdivision, special district or Indian tribe. GADA has both financial and technical assistance programs

Local Transportation Assistance Fund (LATF)

LTAf I

LTAf 1 is funded from state lottery proceeds up to \$23 million per year and the funds are distributed to cities and towns on the basis of population. The funds can be used for public transportation and transportation purposes depending on the jurisdiction's population.

LTAf II

The 1998 Legislature passed HB 2565 to provide additional statewide transit and transportation funding to incorporated cities and towns as well as the counties. In 2000, additional legislation was passed making the use of LTAf II funds "transit use only" (public transportation sponsored by a local government entity or special needs transportation) for jurisdictions allocated more than \$2,500. The LTAf II funding is in the form of multi-state lottery game and instant bingo game monies along with a portion of

the State Highway Fund's Vehicle License Tax monies. The Arizona Department of Transportation administers the LTAF II and the State Treasurer's Office distributes the funds to the Regional Public Transportation Authority (RPTA), Metropolitan Planning Organizations (MPOs), and cities, towns and counties not represented by a RPTA or MPO.

Federal Funds

On August 6, 2005 the six year, \$286.4 billion, Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the largest investment in surface transportation in the nation's history was signed into law. This act provides numerous ways for local government to fund transportation including non-motorized as well as roads and public transportation.

Federal Highway Administration (FHWA) Funds

Surface Transportation Program (STP)

The Surface Transportation Program provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the National Highway System, bridge projects on any public road, transit capital projects, and intra-city and intercity bus terminals and facilities.

Highway Safety Improvement Program (HSIP)

The purpose of the program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. Each State's apportionment of HSIP funds is subject to a set aside for construction and operational improvements on high-risk rural roads. High-risk rural roads are roadways functionally classified as rural major or minor collectors or rural local roads with a fatality and incapacitating injury crash rate above the statewide average for those functional classes of roadways; or likely to experience an increase in traffic volume that leads to a crash rate in excess of the average statewide rate.

Bridge Program (BR)

Provides funding for replacement of a structurally deficient or functionally obsolete highway bridge or rehabilitate the structural integrity of a bridge.

Railway-Highway Crossings

The program purpose is to reduce the number of fatalities and injuries at public highway-rail grade crossings through the elimination of hazards and/or the installation/upgrade of protective devices at crossings.

National Highway System (NHS) Program

The program provides funding for improvements to rural and urban roads that are part of the NHS, including the Interstate System and designated connections to major intermodal terminals. Under certain circumstances, NHS funds may also be used to fund transit improvements in NHS corridors.

Safe Routes to School Program

The program purpose is to enable and encourage children, including those with disabilities, to walk and bicycle to school; to make walking and bicycling to school safe

and more appealing; and to facilitate the planning, development and implementation of projects that will improve safety, and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

Transportation, Community and System Preservation Program (TCSP)

The TCSP Program is intended to address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve those relationships.

Transportation Enhancement Program (TE)

Program purpose is to strengthen the cultural, aesthetic, and environmental aspects of the nation's intermodal transportation system. Funding is derived from a set-aside from the state's annual STP apportionment. The program provides funding for facilities such as pedestrian walkways and bicycle paths, acquisition of scenic easements, restoration of scenic or historic sites, landscaping and other scenic beautification.

Federal Transit Administration (FTA) Funding

Section 5311 (Transit)

This program provides funds to support costs associated with transportation in non-urbanized areas. Funds are allocated to each state on a formula basis and then the state allocates to eligible recipients, that include public bodies and private, non-profit organizations. Both capital and operating costs are eligible expenses.

7.3 Action Plan

The following action items have been identified through the SATS process. Items are identified as “short-term” (0-5 years), “medium-term” (5-10 years), or “long-term” (10+ years). TABLE 15 summarizes the Action Plan and responsible agency.

Table 15 Action Plan

ACTION	ENTITY
SHORT TERM (0-5 Years)	
Widen and improve Highway 89 from Center Street south to the town limits	ADOT
Widen and improve Highway 89 from Road 3 North, north to the Chino Valley Extension. <i>(note: the time frame for this action item may change as warranted by Del Rio development activity)</i>	ADOT
Develop and adopt street standards for all street classifications throughout the town and a roadway functional classification system.	Town of Chino Valley
Plan to construct a major 4 lane highway connector from the Glassford Hill Road to Highway 89; Chino Valley Extension (Design Concept Report).	Yavapai County/Town of Chino Valley
Ensure the dedication of the necessary streets right-of-way to coordinate with the Town’s minimum right-of-way dedication standards.	Town of Chino Valley
Update the Town’s General Plan with a revised Circulation Element.	Town of Chino Valley
Monitor and update the Transportation Plan as necessary to reflect General Plan revisions.	Town of Chino Valley
Continue to develop a 5-year capital improvements budgeting program with yearly increments for major street improvements coordinated with the adopted major street master plan.	Town of Chino Valley
MEDIUM TERM (5-10 Years)	
Continue to improve the Peavine Trail for equestrian, bicycle and pedestrian travel.	Town of Chino Valley
Develop a trails master plan that incorporates design standards.	Town of Chino Valley
Act on the recommendations that come out of the regional transit master plan study (in progress).	Town of Chino Valley
Conduct a “downtown” circulation study.	Town of Chino Valley
LONG TERM (10+ Years)	
Plan to construct the Center Street connection to Williamson Valley (Design Concept Report).	Yavapai County/Town of Chino Valley
Work with the City of Prescott, Prescott Valley, and Yavapai County to develop a regional air transportation study.	Town of Chino Valley (and others)

7.4 Access Management Guidelines

7.4.1 Purpose

Access management is the systematic control, location, spacing, design, and operation of: driveways and street connections, medians, median openings, turn lanes, traffic signals, and interchanges. The purpose is to provide (or improve upon the existing) access to land development while at the same time preserving the ever-constant flow of

traffic on surrounding roadways; keeping crucial factors such as speed, safety and capacity needs, in mind. ADOT defines access management as the control of the location and design of all vehicular approaches to the state highway system including driveways and public and private roads. This control includes the option to deny a direct highway connection when it is appropriate.

In ADOT's Prescott District, the *Access Management Plan* is to have all state highways designated with classifications.

7.4.2 Key Category Access Factors

- Intersection Spacing
- Traffic Signal Spacing
- Allowing direct access or require to obtain alternative access
- Proof of access necessity
- Scope of access improvement, such as requiring auxiliary lanes, (deceleration and acceleration lanes)
- Defining the levels of allowable access and spacing for different kinds of roads.
- Providing a mechanism for granting variances in cases where reasonable access to adjacent roadways cannot be provided. In general property owners have the right of reasonable access to an adjacent roadway but sometimes this may be restricted by governments in order to enhance public safety or where it is of public interest to do so. Private rights of abutting landowners to access their property tend to be subservient to those of the public i.e. their rights to free and safe use of the public street system.

- Establishing a means of enforcing standards (red light or speeding cameras as an example)

The challenge of access management is making the effort towards creating and maintaining a balance between land development plans and this functional integrity of the roadways that serve these developments and the region.

7.4.3 Legal Issues of Access Control

All private property rights including access rights are subservient to the state and its jurisdiction and also always subject to reasonable regulation through the police force of the local government or the state for the for the public health, safety and welfare. The right of access is one of reasonable access, not a private one of direct access. However, once a direct access has been provided to a non-controlled access highway then the property owner has an access easement. Any destruction or unreasonable restriction of said access will require compensation.

Local governments and the state have the power to regulate traffic on the highway including restricting driveway location, spacing, size and design, restricting traffic movement to one direction of travel and striping a highway or even constructing a median divider which permanently limits property ingress and egress to one direction.

Different types of roads are administered by different authorities or entities, including the state and the county, and it is important for them to understand the relationship between land use and the functionality of the road that passes through it.

Subdivision Regulations

State legislation gives the cities and counties authority to regulate subdivisions. Subdivisions can be regulated with regard to the following access management techniques:

- Control the number of access points in relation to road deceleration and acceleration lanes to avoid conflict points;
- Ensure design of adequate driveway throat length to avoid a conflict with the flow of off-site traffic;
- Provide adequate driveway spacing requirements, corner clearance, and joint and cross access configurations;
- Orient lots, buildings, and access points to local streets and not to high-traffic-volume arterials; and
- Require reverse frontage to ensure that lots abutting the roadway obtain access from a local road.

A city or county site plan review process can require documentation of all access points and the internal circulation system. Intersection controls, medians and on-site circulation controls can be required to ensure that access and design standards for roadways are followed, and that lots are not configured in a manner that encourages inadequate spacing between access points.

On state highways, what constitutes “legal” access is a determination by ADOT. Since ADOT has adopted access standards, engineering requirements and a regulatory permitting program, legal access to a state highway may only be determined by ADOT under the authority of the Director, not by county or city officials. Absent an ADOT determination of legal sufficiency, the property deed should note that the property does not have legal access established.

Zoning Ordinance

To promote effective access management, the Town of Chino Valley zoning ordinance can: require larger minimum lot frontages; adopt minimum spacing standards for driveways; encourage joint and cross access; require complete on-site circulation; and promote activity centers rather than strip development.

General Plan

The Town of Chino Valley General Plan Update should identify access issues and problems; establish goals, objectives and policies regarding access; identify access management approaches; and designate key transportation corridors for special treatment.

7.4.4 Methods of controlling access

Access management, as an important means for maintaining mobility, encompasses a set of techniques that are available for use to the state and local governments to control access to highways, major arterials and other roads. These include the following:

- Access Spacing: increasing the distance between traffic signals can reduce

congestion and improve traffic flow on major arterials, it can also raise the standard of air on heavily traveled roads. Subdivision regulations such as lot split regulations can ensure correct and safe spacing between access points, and these regulations can orient said access points away from high traffic volume arterials, for example.

- Driveway spacing: fewer driveways that are spaced further apart would allow for more orderly merging of traffic and would present fewer challenges for drivers.

Related to driveway spacing is generally land division where lot dimensions are concerned, also driveway lengths. Control can be taken of this through minimum lot size and lot frontage and so on.

- Safe Turning Lanes: dedicated left- and right-turn, indirect left-turns and U-turns, and roundabouts keep through-traffic flowing. Roundabouts represent an opportunity to reduce an intersection with many conflict points or a severe crash history (T-bone crashes) to one that operates with fewer conflict points and less severe crashes (sideswipes) if they occur.
- Median Treatments: two-way left turns and non-traversable raised medians are two of the most effective ways to regulate access and reduce crashes
- Right of Way Management: this pertains to R/W reservation for future widening, good sight distance, access location, and other access-related issues.

7.4.5 Access Planning and Design

Access planning and design should aim to coordinate the three components of the access system – the public roadway, the private roadway and the activity center or land development itself. The elements that must be taken into account surrounding these components are 1) limiting the number of conflict points, 2) separating conflict areas (e.g., through traffic signals), 3) reducing acceleration and deceleration impacts at access points, 4) removing vehicles from through traffic lanes, 5) spacing major intersections to facilitate progressive travel speeds along arteries and 6) providing adequate on-site storage.

7.4.6 Permitting Considerations

- Allow some variation from spacing standards at an administrative level.
 - Distinguish between major and minor deviations from spacing standards.
 - Require more vigorous review of major deviations.
- Establish permit conditions.
 - Type and volume of traffic
 - Interim access until alternative access is obtained.
- Address when existing access must be brought into confirmatory.
 - Substantial enlargements or improvements.
 - Significant change in trip generation.
 - Beyond any specific permit term or condition.
 - If use is discontinued.
- Need to be clearly defined.

7.4.7 Additional Resources

ADOT is currently developing a Statewide Access Management Plan in accordance with the policies of the State Transportation Board. This plan is to develop an access management classification system for the State Highways and also a manual to guide the uniform application of access management throughout the state. Current general guidance for access management criteria may be found in *Roadway Design Guidelines and Traffic Engineering Policies, Guidelines and Procedures* (see: http://www.azdot.gov/Highways/RdwyEng/RoadwayDesign/ManualsGuidelines/PDF/new_rdg.pdf)

7.5 Traffic Impact Procedures/Traffic Signal Location Guidelines

A Traffic Impact Study (TIS) is an important tool in the overall development planning process (residential, commercial, industrial, etc.) within the Town of Chino Valley. The TIS provides information which identifies impacts of proposed developments on the existing, short range and long range roadway system. It also identifies mitigation measures for the identified traffic impacts.

7.5.1 Requirements for Traffic Impact Study

Some development applications may require Traffic Impact Studies. A TIS will be required on all new developments that generate 500 or more daily two-way trips. New developments on State Highways must be conducted in accordance with the ADOT Traffic Impact Analyses.

This ensures that projects which are anticipated to create traffic impacts will be required to mitigate those impacts, while those smaller projects are not unduly burdened with a requirement to perform a traffic study. If it is determined by the Town that a TIS is required, the applicant and Town Engineer must obtain agreement on the specific requirements. A meeting may be held prior to the initiation of the TIS on the following items:

- TIS Guidelines will be discussed to ensure understanding by both the City and TIS applicant. The Town has the final decision on the TIS requirements;
- Study area limits;
- Locations and type (AM, PM, and/or Midday, Daily) traffic counts will be identified;
- Identifications of intersections to be evaluated;
- Study horizon years; and
- Any additional project specific requirements.

The applicant of the TIS must also coordinate with ADOT and Yavapai County as appropriate.

The TIS will be prepared under the supervision of a registered Arizona Professional Engineer (Civil). The report will be sealed and signed.

Traffic volumes generated by the proposed development will use the latest edition of the Institute of Transportation Engineers Trip Generation manual. Other rates may be used

with prior approval by the Town Engineer in cases where Trip Generation may not include specific land use category rates, limited data, or local rates may differ. Capacity analysis methodology will be based on the most current edition of the Highway Capacity Manual, Special Report 209, Transportation Research Board.

7.5.2 TRAFFIC STUDY OUTLINE

The following outline provides guidance for the topics that should be addressed when a traffic study is warranted.

- 1 Executive Summary**
 - a. Project Description
 - b. Existing Conditions
 - c. Probable Impacts of the Project (No-Build and Build Conditions)
 - d. Traffic Operations Analysis (Existing, No-Build and Build Conditions)
 - e. Mitigation Measures/Recommendations
 - f. Conclusions
- 2 Introduction**
 - a. Project Description
 - b. Site Location and Plan
 - c. Study Area
 - d. Site Accessibility
- 3 Existing Conditions**
 - a. Geometric and Traffic Control
 - b. Traffic Volumes
 - c. Level of Service
 - d. Safety
- 4 No-Build Condition (Forecasted Traffic Without Proposed Development)**
 - a. Background Traffic Volumes
 - i. Annual Growth
 - ii. Site Specific Development (Other approved developments located within the designated study area scheduled for completion prior to proposed project)
 - b. Planned Roadway Improvements
- 5 Build Condition (Forecasted With Proposed Project)**
 - a. Trip Generation
 - b. Trip Distribution and Trip Assignment
 - c. Phasing of Project
 - d. Build Traffic Volumes
- 6 Traffic Operations Analysis**
 - a. Methodology
 - b. Analysis Results
 - i. No-Build Condition
 - ii. Build Condition
- 7 Special Analyses/Issues**
 - a. Traffic Signal Warrants
 - b. Others, as appropriate

- 8 Mitigation Measures/Recommendations
 - a. Off Site Improvement Needs
 - b. Proposed Site Access
 - c. Traffic Safety
- 9 Conclusions
- 10 Appendix
 - a. Traffic Count Data
 - b. Capacity Analysis Summary Sheets
 - c. Crash Data and Summaries

Socioeconomic Data

Table A1 2005 Base Year Estimates

TAZ	Area (Sq Mi)	CYMPO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
1	24.64	5	859	323	5	3	8	0	31	2	49
2	6.14	8	193	86	0	3	1	0	17	0	21
3	2.32	6	286	100	11	8	0	0	0	58	77
4	0.50	21	357	137	12	0	0	0	0	1	13
5	1.02	20	994	367	1	6	0	2	3	3	15
6	0.22	22	0	0	65	30	13	0	6	17	131
7	0.08	30	102	37	2	0	0	0	0	0	2
8	0.26	32	76	30	151	51	18	0	5	0	225
9	1.02	28	0	0	0	0	0	174	0	0	174
10	0.32	35	131	46	35	10	0	0	0	0	45
11	0.19	36	348	217	69	46	0	0	15	0	130
12	0.24	62	5	2	26	2	0	0	0	0	28
13	1.06	49	504	180	6	2	9	0	57	0	74
14	0.32	44	158	64	27	2	6	0	1	0	36
15	0.19	45	34	13	5	0	53	0	69	0	127
16	0.32	42	217	92	14	27	26	0	2	0	69
17	0.32	38	343	140	30	20	7	0	0	2	59
18	0.19	43	58	19	21	15	0	0	10	0	46
19	4.83	48	98	37	0	0	0	0	6	0	6
20	1.08	15	345	131	0	0	2	0	1	2	5
21	0.63	40	1,299	443	0	4	4	0	1	0	9
22	0.09	54	0	0	15	0	0	0	0	0	15
23	0.09	53	260	130	0	2	0	0	0	4	6
24	0.19	52	267	110	25	15	5	0	3	0	48
25	0.73	18	6	2	0	0	0	0	0	0	0
26	0.22	17	0	0	27	5	0	0	2	0	34
27	0.50	31	203	74	8	11	0	0	3	200	222
28	0.57	37	1,238	431	30	4	0	0	12	0	46
29	0.20	39	31	13	12	23	11	93	12	0	151

Table A1 2005 Base Year Estimates

TAZ	Area (Sq Mi)	CYMO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
30	0.70	24	84	30	11	8	9	0	10	0	38
31	0.29	23	126	46	71	11	2	10	3	0	97
32	0.53	16	40	15	0	0	0	0	0	0	0
33	0.33	16	41	15	23	3	9	0	2	0	37
34	0.58	13	9	3	3	0	0	0	0	0	3
35	0.99	11	0	0	0	0	0	0	0	0	0
36	1.64	14	817	304	0	0	0	0	0	0	0
37	2.08	14	1,661	637	0	15	5	0	0	0	20
38	0.50	34	240	81	0	4	0	0	5	0	9
39	0.50	34	246	100	0	4	0	0	5	0	9
40	0.49	41	248	87	1	18	2	0	2	0	23
41	0.51	41	231	87	1	18	2	0	2	0	23
42	2.09	27	515	192	2	4	2	0	8	0	16
43	2.14	27	386	156	2	4	2	0	8	0	16
44	2.06	27	437	156	2	4	2	0	8	0	16
45	0.49	29	192	93	66	30	22	42	21	2	183
46	0.18	29	239	93	28	13	9	18	9	1	78
47	0.25	50	0	0	0	0	0	0	0	0	0
48	0.24	50	103	40	3	0	0	0	0	0	3
49	0.08	51	1	1	52	13	5	0	0	0	70
50	0.09	51	1	1	52	13	5	0	0	0	70
51	0.53	55	162	66	0	2	0	0	3	0	5
52	0.53	55	162	66	0	2	0	0	3	0	5
53	0.77	61	0	0	11	0	0	0	0	0	11
54	0.89	60	0	0	0	0	0	0	0	0	0
55	2.60	60	0	0	0	0	0	0	0	0	0
56	3.67	61	0	0	0	0	0	0	0	0	0
57	1.08	61	0	0	0	0	0	0	0	0	0
58	1.36	63	0	0	0	0	0	0	0	0	0

Table A1 2005 Base Year Estimates

TAZ	Area (Sq Mi)	CYMPO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
59	1.62	64	0	0	0	0	0	0	0	0	0
60	1.63	64	0	0	0	0	0	0	0	0	0
61	1.79	65	0	0	0	0	0	0	0	0	0
62	1.02	65	0	0	0	0	0	0	0	0	0
63	1.67	66	0	0	0	0	0	0	0	0	0
64	1.47	66	0	0	0	0	0	0	0	0	0
65	25.92	57	4	2	0	0	0	0	0	0	0
66	16.50		10	4	0	0	0	0	0	0	0
67	16.64		250	88	0	0	0	0	0	0	0
68	0.61		0	0	0	0	0	0	0	0	0
69	1.01		0	0	0	0	0	0	0	0	0
70	1.18		0	0	0	0	0	0	0	0	0
71	1.03		0	0	0	0	0	0	0	0	0
72	1.10		0	0	0	0	0	0	0	0	0
73	1.37		68	23	0	1	0	0	0	0	1
74	0.79		0	0	0	1	0	0	0	0	1
75	0.86		177	58	0	1	0	0	0	0	1
76	1.31		68	23	0	1	0	0	0	0	1
77	2.15		1	1	5	3	0	0	0	0	8
78	1.57		0	0	0	0	0	0	0	0	0
79	1.10		1	1	5	3	0	0	0	0	8
80	0.19		0	0	0	0	0	0	0	0	0
81	0.71		0	0	0	0	0	0	0	0	0
82	1.27		0	0	0	0	0	0	0	0	0
83	1.00		0	0	0	0	0	0	0	0	0
84	0.51		456	178	1	5	2	0	1	1	10
85	0.52		385	149	1	5	2	0	1	1	10
86	1.43		105	40	0	0	0	0	0	0	0
87	0.26	11	14	5	2	3	0	0	1	14	20

Table A1 2005 Base Year Estimates

TAZ	Area (Sq MI)	CYMO TAZ	Population	Dwelling Units	Retail (Emp)	Services (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
88	0.29	11	12	4	0	0	0	0	0	0	0
89	0.20	11	21	8	2	3	0	0	1	14	20
90	0.08	11	0	0	0	0	0	0	0	0	0
91	0.19	11	0	0	0	0	0	0	0	0	0
92	0.15	11	0	0	0	0	0	0	0	0	0
93	0.15	11	0	0	0	0	0	0	0	0	0
94	0.29	13	0	0	0	0	0	0	0	0	0
95	0.22	13	17	6	0	3	0	0	0	0	3
96	0.26	12	24	8	2	0	0	0	1	0	3
97	0.17	12	0	0	0	0	0	0	0	0	0
98	0.16	12	0	0	0	0	0	0	0	0	0
99	0.15	12	0	0	0	0	0	0	0	0	0
100	0.15	12	0	0	0	0	0	0	0	0	0
101	0.29	12	0	0	0	0	0	0	0	0	0
102	0.27	12	0	0	1	0	0	0	0	0	1
103	0.10	10	0	0	0	0	0	0	0	0	0
104	1.72	10	5	2	0	0	0	0	0	0	0
105	0.22	10	3	1	0	0	0	0	0	0	0
106	1.02	9	0	0	0	0	0	0	0	0	0
107	2.07	9	66	25	0	0	0	0	0	0	0
108	1.12	9	63	26	0	0	0	0	0	0	0
109	2.21	63	0	0	0	0	0	0	0	0	0
110	3.30	63	15	6	3	2	0	0	0	0	5
111	0.45	33	779	297	8	34	0	50	2	4	98
112	0.48	33	144	53	3	11	0	0	1	1	16
TOTAL			17,041	6,501	958	531	243	389	353	327	2,801

Table A2 2030 Projections

TAZ	Area (Sq Mi)	CYMO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
1	24.64	5	4,137	1,724	25	13	8	0	31	2	79
2	6.14	8	3,177	1,478	0	3	1	0	17	0	21
3	2.32	6	273	94	11	8	0	0	0	58	77
4	0.50	21	402	154	52	0	0	0	0	25	77
5	1.02	20	1,515	559	51	46	0	2	10	10	119
6	0.22	22	0	0	82	39	25	0	36	46	228
7	0.08	30	141	51	0	0	0	0	0	0	0
8	0.26	32	150	59	152	54	15	0	15	0	236
9	1.02	28	398	153	0	0	0	55	0	0	55
10	0.32	35	542	189	10	5	0	0	0	0	15
11	0.19	36	671	258	158	76	0	0	15	0	249
12	0.24	62	0	0	0	0	0	0	0	0	0
13	1.06	49	3,155	1,191	100	80	40	0	57	0	277
14	0.32	44	1,077	436	0	30	1	0	1	0	32
15	0.19	45	158	60	15	0	78	0	95	0	188
16	0.32	42	999	425	30	10	46	0	10	0	96
17	0.32	38	551	225	65	56	20	0	0	25	166
18	0.19	43	184	60	12	24	0	0	20	0	56
19	4.83	48	867	358	50	50	20	0	6	0	126
20	1.08	15	976	371	0	35	2	0	1	2	40
21	0.63	40	1,717	586	25	15	0	0	10	0	50
22	0.09	54	0	0	55	35	25	0	0	0	115
23	0.09	53	256	128	25	15	15	0	0	10	65
24	0.19	52	255	105	75	43	15	0	10	0	143
25	0.73	18	38	14	0	0	0	0	0	0	0
26	0.22	17	38	14	35	5	0	0	2	0	42
27	0.50	31	246	123	38	24	0	0	105	71	238
28	0.57	37	1,638	570	45	25	0	0	24	0	94
29	0.20	39	138	58	156	78	35	0	35	0	304
30	0.70	24	1,092	397	28	15	5	0	115	71	234

Table A2 2030 Projections

TAZ	Area (Sq Mi)	CY/MPD TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
31	0.29	23	235	85	93	22	10	25	10	0	160
32	0.53	16	173	65	60	9	16	0	9	0	94
33	0.33	16	109	40	38	6	10	0	6	0	60
34	0.58	13	535	175	7	0	0	0	0	3	10
35	0.99	11	67	23	2	5	0	0	1	23	31
36	1.64	14	2,943	1,216	0	4	0	0	0	0	4
37	2.08	14	3,743	1,547	0	19	0	0	0	0	19
38	0.50	34	449	152	5	5	0	0	15	0	25
39	0.50	34	421	171	5	5	0	0	15	0	25
40	0.49	41	462	169	7	44	5	0	5	0	61
41	0.51	41	570	216	8	45	5	0	5	0	63
42	2.09	27	2,732	1,093	66	33	29	0	8	0	136
43	2.14	27	2,796	1,119	68	34	30	0	8	0	140
44	2.06	27	2,694	1,078	66	33	29	0	8	0	136
45	0.49	29	479	216	144	36	45	88	26	7	346
46	0.18	29	178	80	53	14	17	32	9	3	128
47	0.25	50	125	49	5	0	0	0	0	0	5
48	0.24	50	122	48	5	0	0	0	0	0	5
49	0.08	51	19	7	77	42	11	0	0	0	130
50	0.09	51	20	8	78	43	12	0	0	0	133
51	0.53	55	390	159	0	5	0	0	0	0	5
52	0.53	55	387	158	0	5	0	0	0	0	5
53	0.77	61	18	6	2	0	1	0	2	0	5
54	0.89	60	901	402	1	0	1	0	2	1	5
55	2.60	60	2,643	1,180	4	1	3	0	5	2	15
56	3.67	61	84	31	7	2	3	0	10	1	23
57	1.08	61	25	9	2	1	1	0	3	0	7
58	1.36	63	46	23	21	39	20	0	10	10	100
59	1.62	64	532	242	0	0	380	0	363	0	743
60	1.63	64	533	242	0	0	380	0	364	0	744
61	1.79	65	2,909	1,322	0	0	0	0	0	0	0

Table A2 2030 Projections

TAZ	Area (Sq Mi)	CYMO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
62	1.02	65	1,654	752	0	0	0	0	0	0	0
63	1.67	66	1,915	736	17	0	0	0	0	0	17
64	1.47	66	1,678	646	14	0	0	0	0	0	14
65	25.92	57	195	97	0	0	0	0	0	0	0
66	16.50		8	3	7	4	0	0	0	0	11
67	16.64		599	241	0	0	0	0	0	0	0
68	0.61		22	9	0	0	0	0	0	0	0
69	1.01		201	68	0	2	0	0	0	0	2
70	1.18		234	79	0	2	0	0	0	0	2
71	1.03		205	69	0	2	0	0	0	0	2
72	1.10		219	74	0	2	0	0	0	0	2
73	1.37		273	93	13	5	0	0	95	71	184
74	0.79		670	260	13	6	0	0	95	71	185
75	0.86		1,328	437	0	1	0	0	0	0	1
76	1.31		261	88	0	2	0	0	0	0	2
77	2.15		129	50	1	0	0	0	0	0	1
78	1.57		138	54	1	1	0	0	0	0	2
79	1.10		0	0	14	3	0	0	94	72	183
80	0.19		26	10	0	0	0	0	0	0	0
81	0.71		97	36	0	0	0	0	0	0	0
82	1.27		57	22	0	0	0	0	0	0	0
83	1.00		45	17	0	0	0	0	0	0	0
84	0.51		924	359	5	7	5	0	5	5	27
85	0.52		950	370	5	8	5	0	5	5	28
86	1.43		869	395	0	0	0	0	0	0	0
87	0.26	11	437	145	0	0	0	0	0	7	7
88	0.29	11	340	112	0	0	0	0	0	0	0
89	0.20	11	426	165	0	0	0	0	0	0	0
90	0.08	11	339	131	57	38	13	0	0	0	108
91	0.19	11	358	139	0	0	0	0	0	0	0
92	0.15	11	226	87	0	0	0	0	1	0	1

Table A2 2030 Projections

TAZ	Area (Sq Mi)	CYMPO TAZ	Population	Dwelling Units	Retail (Emp)	Service (Emp)	Office (Emp)	Public Office (Emp)	Industrial (Emp)	Manufacturing (Emp)	Total Employees
93	0.15	11	243	94	0	0	0	0	1	2	3
94	0.29	13	166	64	0	0	0	0	1	2	3
95	0.22	13	221	79	0	0	0	0	3	2	5
96	0.26	12	24	8	0	0	0	0	11	0	11
97	0.17	12	200	78	0	0	0	0	0	0	0
98	0.16	12	387	150	0	0	0	0	0	0	0
99	0.15	12	894	347	137	91	61	0	2	0	291
100	0.15	12	366	142	0	0	0	0	0	0	0
101	0.29	12	634	246	0	0	0	0	0	0	0
102	0.27	12	1,075	417	165	110	37	0	0	0	312
103	0.10	10	490	190	75	50	17	0	0	0	142
104	1.72	10	2,360	915	118	78	26	0	0	0	222
105	0.22	10	1,069	364	70	47	16	0	0	0	133
106	1.02	9	220	102	0	0	0	0	0	0	0
107	2.07	9	1,145	431	8	6	5	0	50	5	74
108	1.12	9	242	113	0	0	0	0	0	0	0
109	2.21	63	75	38	0	0	0	0	0	0	0
110	3.30	63	113	56	0	0	0	0	0	0	0
111	0.45	33	1,880	716	8	56	0	0	0	0	64
112	0.48	33	863	325	0	0	0	0	0	0	0
TOTAL			79,621	31,792	2,847	1,757	1,544	202	1,862	612	8,824

