CITYWIDE CIRCULATION STUDY

DRAFT REPORT

Prepared for:

CITY OF WILLIAMS

Prepared By

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ENGINEERS · PLANNERS

CITY OF WILLIAMS
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CHAPTER I – EXECUTIVE SUMMARY

To be completed.

CHAPTER II - INTRODUCTION

2.0 – PURPOSE OF STUDY

Planning for a multi-model transportation system that provides safe, efficient, and affordable means of travel, alleviates existing traffic congestion, and supports future development within the City of Williams is the primary focus of the Williams Citywide Traffic Circulation Study.

Growth and development pressures continue within the City's sphere of influence. A definitive plan to programmatically improve the City of Williams transportation system is necessary to correct the existing deficiencies and meet future needs. Additionally, clear coordination needs to be established to blend the local needs of the City with the regional needs of Colusa County and the statewide needs of Caltrans. This study will also assist the City of Williams with their interface with Caltrans to help assure local circulation issues and needs are met within the context of the regional circulation improvements of Interstate 5 (I-5).

The purpose of this report is to quantify the existing and future transportation conditions and facility needs within the City of Williams. Specifically, the study provides solutions to the following transportation related issues within the City of Williams:

- Existing and future capacity deficiencies
- Providing safe and efficient pedestrian and bicycle routes
- Providing enhanced bus and transit opportunities
- Truck routing and parking regulations
- Prioritized improvement plan
- Financing options

Without this comprehensive study, transportation improvements within the City of Williams that would occur over time would be unorganized and without a framework for interconnection. Increased development within the City would create more auto, truck, and pedestrian traffic, all using the existing limited transportation infrastructure.

This study helps provide a planning framework for the necessary transportation improvements. A plan that enables the City to grow and develop in a logical and efficient manner, with infrastructure that emphasizes safety and multi-modal transportation opportunities.

2.1 – STUDY AREA

The overall study area, consisting of the Williams City Limit boundary, and surrounding "sphere of influence", is illustrated on Figure 1. This study provides a comprehensive analysis of all critical transportation facilities specifically within the City of Williams, but also addresses the external linkages to important local, regional, and interregional transportation facilities.

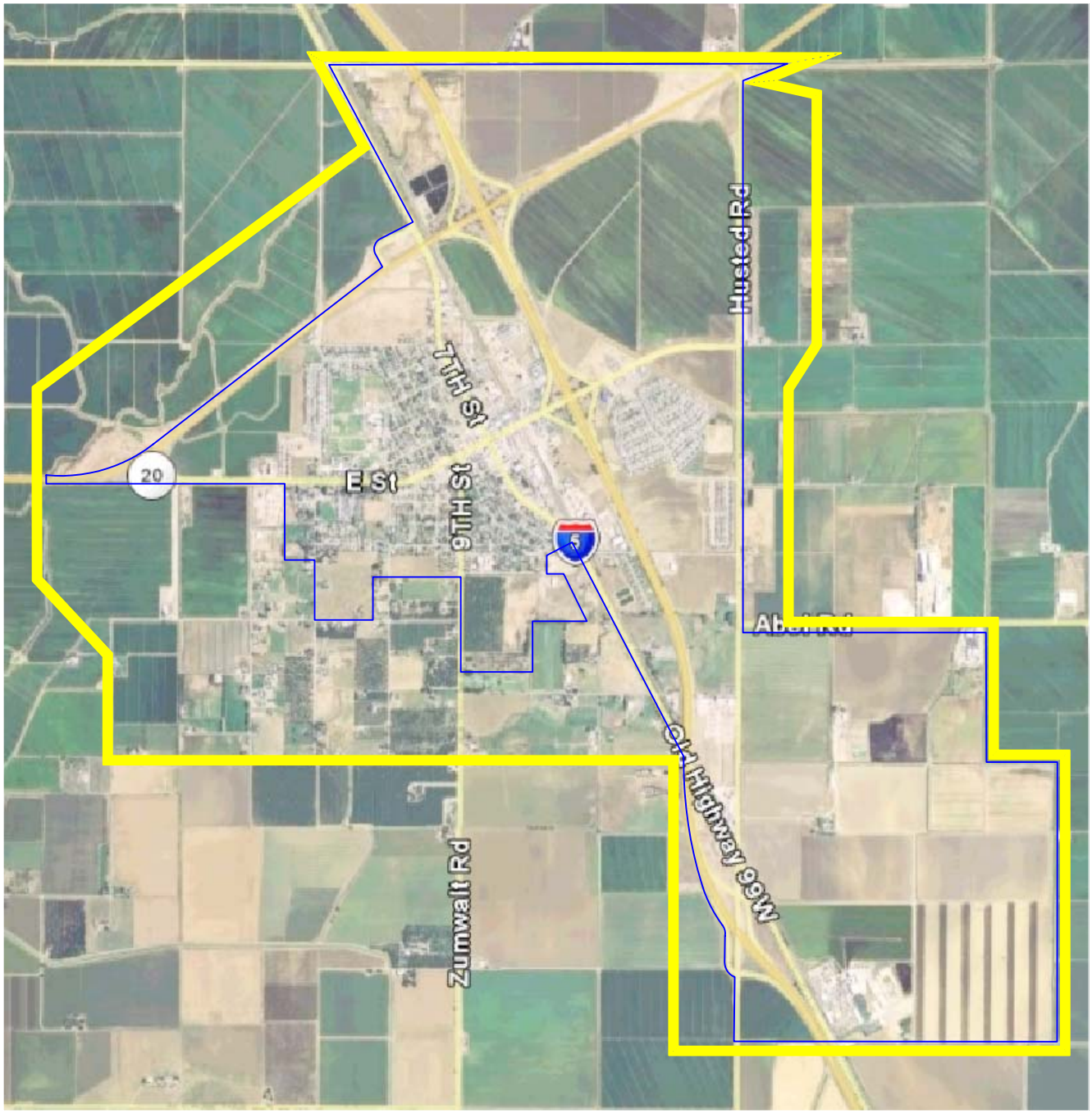
The City of Williams generally lies along I-5 between the Husted Road and State Route 20 (SR 20) interchanges. Three major interchanges along I-5, Husted Road, E Street and SR 20, provide access to City of Williams.

Specific intersections and roadway segments within the planning area have been selected for evaluation as a part of the Citywide Traffic Circulation Study. These intersections are numbered within Figure 1.

2.1.1 – Study Intersections

The following intersections were selected for evaluation in the Citywide Traffic Circulation Study:

1. SR 20/E. Street
2. SR 20/Old Highway 99 West
3. SR 20/I-5 SB Ramps
4. SR 20/I-5 NB Ramps
5. SR 20/Husted Road/Freshwater Road
6. E Street/9th Street North
7. E Street/9th Street South
8. E Street/7th Street
9. E Street/5th Street
10. E Street/I-5 SB Ramps
11. E Street/I-5 NB Ramps
12. E Street/Vann Street
13. E Street/Husted Road
14. Husted Road/Husted Lateral Road
15. Husted Road/Abel Road
16. Husted Road/Crawford Road
17. Husted Road./Old Highway 99 West



LEGEND:

— CITY LIMIT

— SPHERE OF INFLUENCE

City of Williams General Plan Update

Figure 1

Project Vicinity Map

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18. Husted Road/I-5 NB Ramps
19. Husted Road/I-5 SB Ramps

These intersections are illustrated in Figure 2 and were evaluated for both the AM and PM peak hour periods.

2.1.2 - Study Roadway Segments

The following street corridors (segregated as necessary) were selected for evaluation in the citywide traffic circulation study.

- Freshwater Road
- E Street
- SR 20
- Husted Street
- Old Highway 99W (7th Street)
- 9th Street
- 12th Street

The corridors noted above were evaluated on a daily basis. Further detail regarding the analysis methodologies of intersections and roadway segments is provided in the following chapter of this report.

2.2 - RELATED PLANNING DOCUMENTS

An initial review of all pertinent planning documents is first necessary to establish the baseline methodology for which the analyses will be based. The following City of Williams (and/or Colusa County) planning documents provide a general content and structure for this study, as well as specific content when applicable.

2.2.1 – City Of Williams General Plan

The City of Williams General Plan contains a Circulation Element (adopted by the City Council September 1988) that provides the City's current transportation planning goals and objectives. This document contains the following material that directly relates to this study:

- Transit and Bike Transportation
- Level of Service Policies
- Road Standards
- Future Circulation Improvements
- Transportation Policies

2.2.2 – Colusa County General Plan

The Colusa County General Plan contains a Circulation Element (adopted by the Colusa County Council of Governments 1981) that provides the County's current transportation planning goals and objectives. This document will be used in conjunction with the City of Williams General Plan to establish current and future transportation planning strategies for City of Williams Sphere of Influence.

2.2.3 – Colusa County Regional Transportation Plan (RTP)

The Colusa County RTP contains a comprehensive overview the County's twenty-year plan for transportation facilities within Colusa County. The plan includes an assessment of all significant City, County, and State facilities.

2.2.4 – Inter-Regional Transportation Strategic Plan (Caltrans)

The Inter-regional Transportation Strategic Plan was prepared by Caltrans in 1998 to consolidate and communicate key elements of its ongoing long-term and short-term planning. As such, it serves as a counterpart to the Regional Transportation Plans prepared by the 43 Regional Transportation Planning Agencies in California. The document contains general concept planning information for the S.R. 20 corridor.

2.3 - TYPES OF IMPROVEMENTS IDENTIFIED

The following types of multi-modal transportation improvements have been identified and evaluated within this study:

- Roadway lane geometrics
- Intersection lane geometrics
- New roadway alignments
- Bike lanes and bikeways
- Pedestrian walkways and paths
- Bus stops/shelters/kiosks
- I-5/E Street interchange improvements
- Truck routes
- Bus routes
- Truck and large vehicles parking areas

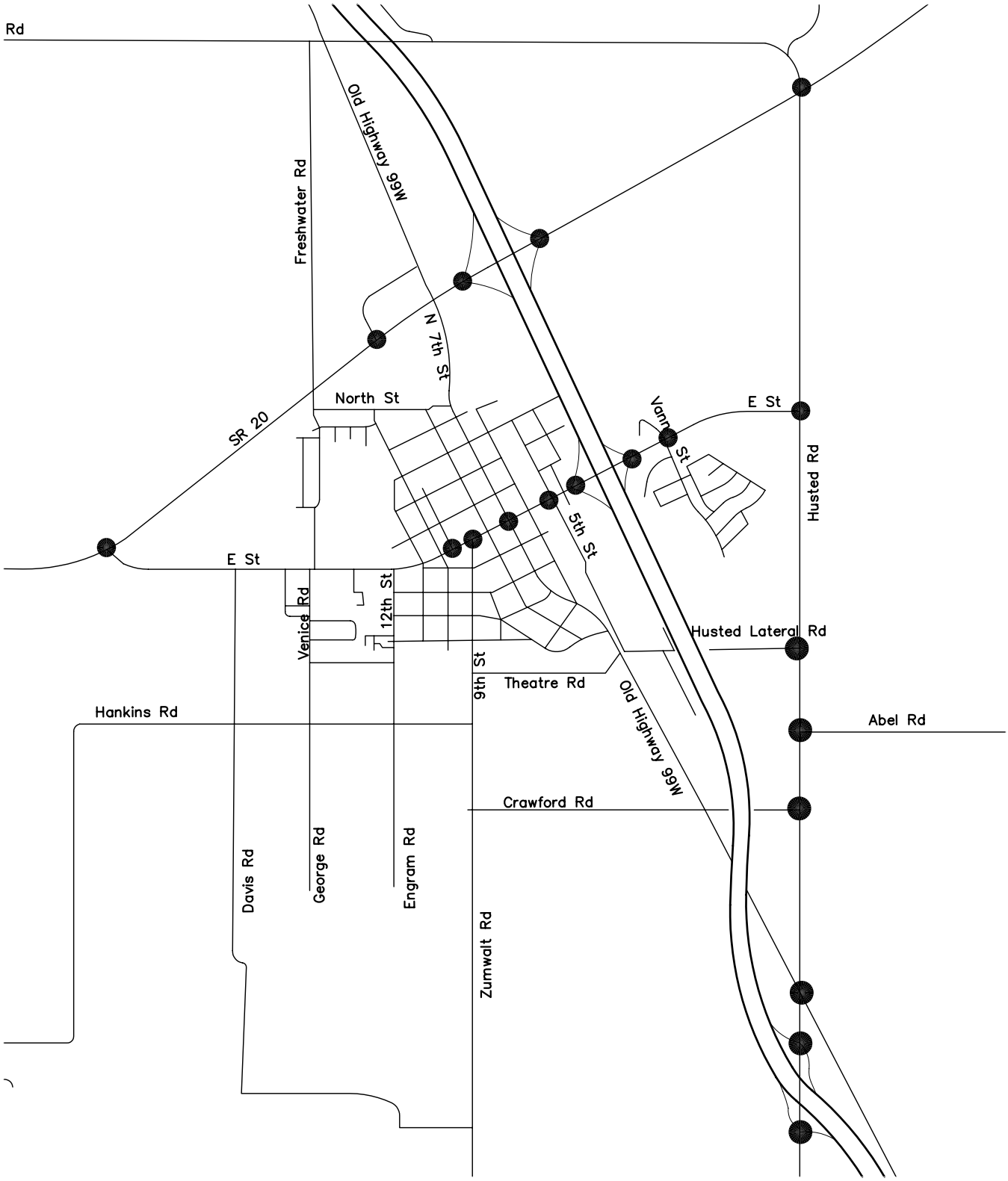
The basis for many of these improvements is contained in a roadway functional classification system. Cross-sections for each class of roadway were identified, which will include; auto/truck travel lanes, turning lanes, bicycle lanes, Class 1 bikeways, pedestrian walkways, and landscape areas.

2.4 - COMMUNITY PARTICIPATION

As part of this study, public workshops, newsletters, and draft versions of the final report will be used to involve the local community in the study process, solicit comments, and incorporate those comments into the final transportation plan. Community outreach will include local residents, school officials, hospital officials, and the local economic development non-profit agency.

2.5 - REVIEW AGENCIES

Along with the City of Williams; Caltrans and Colusa County will provide review and comment on the draft report for this study.



City of Williams General Plan Update

Figure 2

Study Intersections

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CHAPTER III – EXISTING TRANSPORTATION FACILITIES

3.0 - INTRODUCTION

The City of Williams contains many different types of transportation facilities. Each facility within the study area will be covered in this section, with a description of each facility and how these facilities interrelate to one another.

This chapter provides an overview of the existing roadway classification system based on the existing City of Williams Circulation plan element, the existing transportation setting and the performance methodologies used to analyze the City's existing and future transportation system. Any deficient roadway segments are identified and alternative roadway configurations are recommended.

The following topics are covered in this section:

- Roadway Classification
- Existing Transportation Setting
- Level of Service Methodologies and Policies
- Existing Level of Service Conditions

3.1 – EXISTING ROADWAY NETWORK

Interstate* 5 *(I-5) is a four-lane freeway that extends throughout California from Mexico to the Oregon border, providing regional access to the City of Williams from Redding, Sacramento, and the San Francisco Bay Area. The facility has an ADT of approximately 60,000 vehicles. Within the City's sphere of influence, I-5 has interchanges at Husted Road, E Street and SR 20.

State Route 20 (SR 20) is a state highway facility that traverses in the east-west direction through central and northern California connecting Interstate Highway 5 with Interstate Highway 80. Regionally, SR 20 serves as an inter-regional auto and truck travel route that connects the Central Valley with the Cities of Williams, Marysville and Grass Valley, and Nevada City. Within the City's sphere of influence, SR 20 is predominantly a two-lane arterial.

E Street (SR Business 20) is a two-lane roadway that extends east and west from I-5, connecting with SR 20 and Old Highway 99 to the west and Husted Rd. to the east. The posted speed limit on E Street varies from 25 mph to 35 mph. E Street forms all way stop controlled intersections with 7th Street and 5th Street. The facility has half street improvements as it crosses I-5, without any bicycle lanes.

Husted Road is a two-lane roadway that runs north-south and connects I-5, Old Highway 99, E Street, and SR 20. The facility does not have designated bike-lanes and sidewalks.

Old Highway 99 West is a two-lane north south arterial that traverses parallel to I-5, and connects to it via the Husted Road interchange ramps. Old Highway 99 West traverses through a mixed use commercial and residential areas. This roadway is designated as 7th Street between B Street and Theatre Road.

9th Street is a two lane north-south collector which provides connectivity between central Williams and areas south of the City. The roadway is designated as Zumwalt Road south of Theater Road. 9th Street is stop controlled at the intersection with E Street.

12th Street is a two lane north-south residential collector that begins in the south as a cul-de-sac, and then extends north to E Street. The roadway is designated as Engram Road, south of Hankins Road.

Freshwater Road is a two-lane collector facility that traverses in the east-west direction along the northern City Limits of Williams. Freshwater Road is stop controlled at the intersection with SR 20.

Davis Road is a two lane north-south collector that extends from E Street to the north and extends south of Hankins Road changing the orientation to east-west direction before terminating on Zumwalt Road. This roadway serves as a primary access for the residences along the street.

Hankins Road is a two lane east-west collector extends from Zumwalt Road to the east and changes its orientation to north-south beyond the city limit.

Crawford Road is a two lane east-west street and is split into two segments by I-5. This street extends up

to 9th Street/Zumwalt Road to west and Husted Road to east. There are no plans to connect the eastern and western segments with a crossing of I-5 freeway. This street is stop controlled at the intersections with 9th Street and Husted Road.

Abel Road is a two lane east-west street which begins at Husted Road and extends beyond the City limits to east. This street is stop controlled at the intersection with Husted Road.

3.2 - ROADWAY CLASSIFICATION

The term "Roadway Classification" refers to the hierarchy by which streets and highways are grouped according to the type of service they are intended to provide. The following section discusses the roadway classification systems as defined in the City of Williams Transportation and Circulation Element. This document currently is used by the City as a policy document for the City's roadway system.

Arterials are designed to carry traffic between major destinations (i.e., between cities and states).

- I-5 and SR 20 are classified as principal arterials in the Williams area.
- Old Highway 99W, or 7th Street and Husted Road are classified as minor arterials.

Collectors are those roadways that are the primary means for local residents to move in between residences, stores, schools, and the work place. In Williams, the current General Plan classifies E Street (east/west), 9th Street, 12th Street, Freshwater Lateral/Grange Road, North Street, Davis Road and Hankins Road as collectors.

3.3 –LEVEL OF SERVICE METHODOLOGIES/POLICIES

The Citywide Traffic Circulation Study quantifies current and projected future traffic operations through the determination of "level of service" (LOS). Level of service is a qualitative measure of traffic operating conditions, whereby, a letter grade "A" through "F" is assigned to an intersection or roadway segment representing progressively worsening traffic conditions.

The current City of Williams General Plan does not identify a policy for acceptable LOS for transportation facilities. It is proposed to allow following as acceptable standards:

- A LOS D for all the streets except in the downtown area,
- A LOS E for the streets in the downtown area.

The Caltrans published *Guide for the Preparation of Traffic Impact Studies* (dated December 2002) states the following:

> *"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS."*

For the analysis of transportation facilities, consistent with Caltrans, LOS D has been taken as the threshold for acceptable/tolerable operations for all study roadway facilities except in downtown area. LOS E has been taken as the threshold for acceptable/tolerable operations in downtown area.

The City of Williams current General Plan doesn't identify thresholds of significance used to determine if an project impact is significant and requires mitigation. The following thresholds of significance are recommended to be adopted by the City of Williams:

Signalized Intersections: The project is considered to have significant effect if it would:

- Result in a signalized intersection currently operating at an acceptable LOS deteriorate to an unacceptable LOS: or
- Increase the delay by more than 5 seconds at a signalized intersection that is/will operate at an unacceptable LOS without the project.

Unsignalized Intersections: The project is considered to have a significant effect if it would:

- Result in an unsignalized intersection movement/approach currently operating at

an acceptable LOS to deteriorate to an unacceptable LOS: or

- Increase the delay by more than 5 seconds at a movement/approach that is operating at an unacceptable LOS without the project.

The City of Williams current Transportation and Circulation element provides level of service criteria for signalized and unsignalized intersections based on the operating conditions. Table 1 provides City of Williams current General Plan's level of service thresholds for signalized and unsignalized intersections. The City's General Plan doesn't identify LOS thresholds for roadway segments.

The current industry practice is to analyze the roadway segments utilizing the methodologies documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2000*. Table 2 presents the HCM based average daily traffic based roadway level-of-service thresholds. It is recommended to adopt the HCM methodologies and LOS thresholds identified in Table 2 as standards for analyzing roadway segments.

For the peak hour analyses of signalized and unsignalized intersections, it is recommended that the methodologies documented in the *Highway Capacity Manual, Special Report 209, Transportation Research Board, Third Edition, Updated December 2000* be adopted. Specifically, the analysis of signalized intersections should be completed utilizing *2000 HCM Operations* methodologies, and the analyses of un-signalized intersections (both two-way-stop-controlled and all-way-stop-controlled) should be completed utilizing *2000 HCM Un-signalized* methodologies.

LOS definitions for different types of intersection controls are outlined in Table 3, where the peak hour intersection level of service directly corresponds to the average vehicular delay. It is noted that, in this study, HCM standards are used for peak hour intersection capacity and daily roadway segment analysis.

Peak hour intersection and roadway segment level of service calculations will be implemented utilizing micro-simulation software. Specifically, Synchro and SimTraffic software, developed by *TrafficWare* will be utilized to simulate current and projected future traffic conditions for various circulation plan alternatives.

TABLE 1
LEVEL-OF-SERVICE (LOS) DEFINITIONS – CURRENT GENERAL PLAN

LOS	SIGNALIZED INTERSECTIONS	UNSIGNALIZED INTERSECTIONS
A	Uncongested operations, all queues clear in a signal cycle.	Little or no delay
B	Uncongested operations, all queues clear in a signal cycle.	Short traffic delays
C	Light congestion, occasional backups on critical approaches.	Average traffic delays
D	Significant congestion of critical approaches but intersection functional. Cars are required to wait through more than one cycle during short peaks. No long queues formed.	Long traffic delays
E	Severe congestion with some long-standing queues at critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es)	Very long traffic delays, extreme congestion
F	Total breakdown, stop and go operation.	Intersection blocked by external causes

TABLE 2
LEVEL-OF-SERVICE (LOS) CRITERIA FOR ROADWAYS

Roadway Type	Average Daily Traffic (ADT) – Total of Both Directions				
	LOS "A"	LOS "B"	LOS "C"	LOS "D"	LOS "E"
4-Lane Divided Freeway	28,000	43,200	61,600	74,400	80,000
4-Lane Divided Arterial (with left-turn lane)	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial (no left-turn lane)	18,000	21,000	24,000	27,000	30,000
2-Lane Arterial (with left-turn lane)	11,000	12,500	14,500	16,000	18,000
2-Lane Arterial (no left-turn lane)	9,000	10,500	12,000	13,500	15,000
2-Lane Collector	6,000	7,500	9,000	10,500	12,000

Notes: 1 Based On Highway Capacity Manual, Fourth Edition, Transportation Research Board, 2000.
2. All Volume Thresholds Are Approximate And Assume Ideal Roadway Characteristics. Actual Thresholds For Each Los Listed Above May Vary Depending On A Variety Of Factors Including (But Not Limited To) Roadway Curvature And Grade, Intersection Or Interchange Spacing, Driveway Spacing, Percentage Of Trucks And Other Heavy Vehicles, Lane Widths, Signal Timing, On-Street Parking, Volume Of Cross Traffic And Pedestrians, Etc.

TABLE 3
LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	Type of Flow	Delay	Maneuverability	Signalized Delay	Delay/Vehicle (sec) Un-signalized	Delay/Vehicle (sec) All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10.0	≤ 10.0	≤ 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and ≤ 20.0	>10 and ≤ 15.0	>10 and ≤ 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20 and ≤ 35.0	>15 and ≤ 25.0	>15 and ≤ 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35 and ≤ 55.0	>25 and ≤ 35.0	>25 and ≤ 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55 and ≤ 80.0	>35 and ≤ 50.0	>35 and ≤ 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

References: 1. Highway Capacity Manual, Special Report No. 209, Transportation Research Board, Third Edition, Updated December 2000.

3.4 – EXISTING LEVEL OF SERVICE CONDITIONS

Existing AM and PM intersection LOS conditions were determined based upon the *Highway Capacity Manual, Special Report 209, Transportation Research Board, Third Edition, Updated December 2000* methodologies. Specifically, the analysis of signalized intersections was completed utilizing *2000 HCM Operations* methodologies, and the analyses of un-signalized intersections (both two-way-stop-controlled and all-way-stop-controlled) was completed utilizing *2000 HCM Un-signalized* methodologies.

Existing daily roadway segment traffic operations have been quantified utilizing roadway ADT-based LOS thresholds presented in Table 2. Table 4 contains a summary of the existing roadway segment LOS conditions.

As indicated in Table 4, all roadway segments are currently operating at acceptable LOS "D" or better conditions on a daily basis.

Existing AM and PM peak hour intersection turning movement traffic volumes are illustrated in Figure 3. Intersection lane geometrics are illustrated in Figure 4. The existing intersection peak hour delay and LOS values were calculated using the volumes and lane geometrics contained in Figure 3 and Figure 4. Table 5 provides a summary of existing intersection AM and PM LOS and delay values.

As shown in Table 5, all the study intersections are projected to operate at acceptable level of service D or better conditions during both AM and PM peak hour periods under existing conditions.

TABLE 4
EXISTING CONDITIONS: ROADWAY LEVELS-OF SERVICE

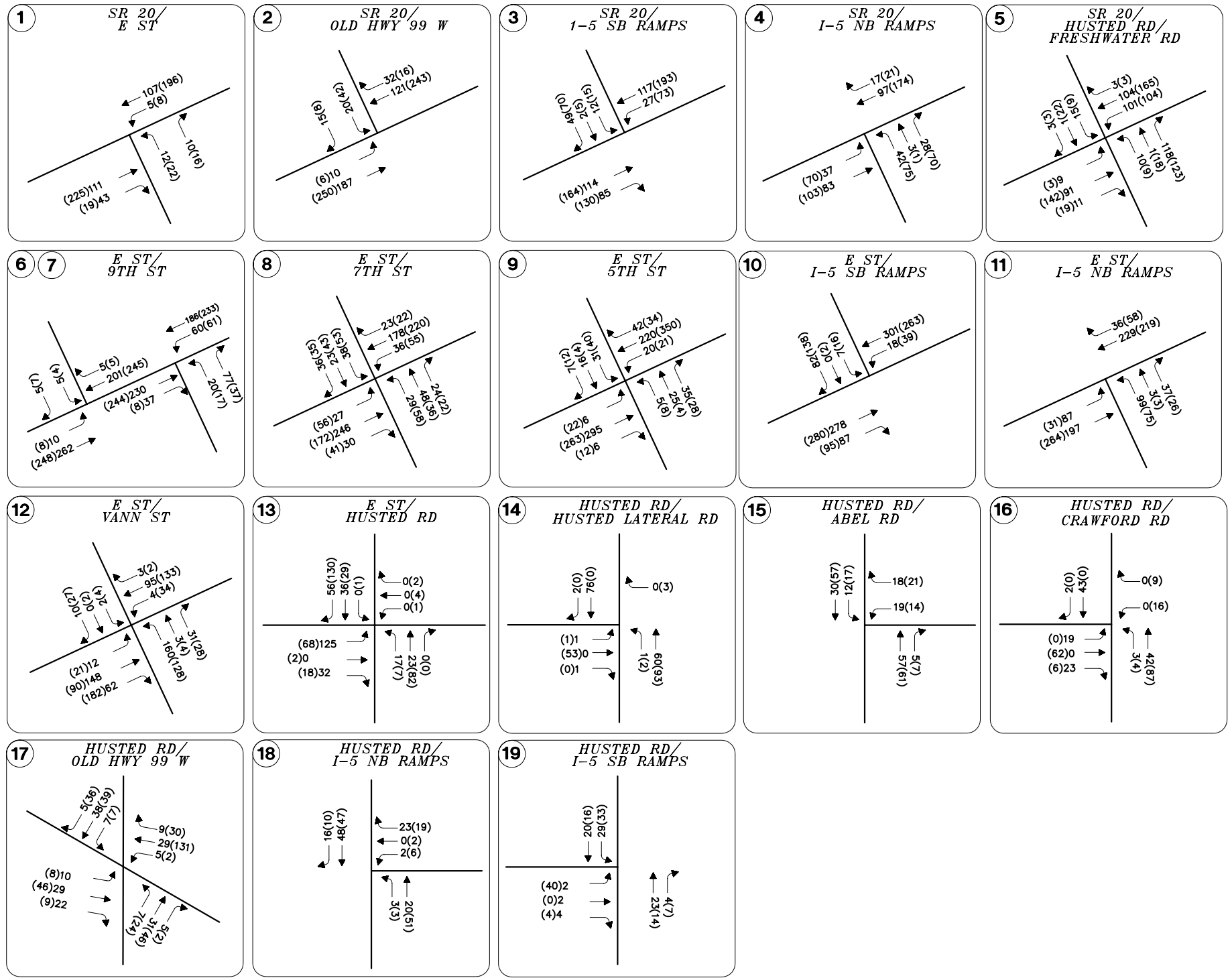
#	Roadway Segment	Capacity Configuration	Acceptable LOS	Average Daily Traffic (ADT)	Estimated LOS
1	Freshwater Road from Freshwater Lateral to Husted Road	Two-Lane Collector	D	500	A
2	Husted Road from Freshwater Road to E Street	Two-Lane Undivided Arterial	D	2730*	C
3	Husted Road from E Street to Abel Road	Two-Lane Undivided Arterial	D	1,370	C
4	Husted Road from Abel Road to I-5 SB Ramps	Two-Lane Undivided Arterial	D	1,660	C
5	E Street from Husted Road to I-5 SB Ramps	Two-Lane Collector	D	2,250	C
6	E Street from I-5 SB Ramps to 6th Street	Four-Lane Undivided arterial	D	6540*	B
7	E Street from 6th Street to 9th Street South (Downtown)	Four-Lane Undivided arterial	D	5440*	A
8	E Street from 9th Street South to SR 20	Two-Lane Collector	D	650	A
9	SR 20 from E Street to I-5 NB Ramps	Two-Lane Undivided Arterial	D	4,450	A
10	SR 20 from I-5 NB Ramps to Husted Street	Two-Lane Undivided Arterial	D	3,410	A
11	Old Highway 99W from SR 20 to E Street	Two-Lane Undivided Arterial	D	2,450	A
12	Old Highway 99W from E Street to Thearter Road	Two-Lane Undivided Arterial	D	2550*	A
13	Old Highway 99W from Theatre Road to Husted Road	Two-Lane Undivided Arterial	D	2540*	A
14	9th Street from Theatre Road to E Street	Two-Lane Collector	D	1,230	A
15	12th Street from Hankins to E Street	Two-Lane Collector	D	800	A

*Notes: * The daily volumes have been estimated from peak hour counts using a 10% peak hour volume factor*

TABLE 5
EXISTING CONDITIONS
INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	SR 20/E. Street	TWSC	C	9.8	A	No	11.4	B	No
2	SR 20/Old Hwy 99W	TWSC	C	10.4	B	No	13	B	No
3	SR 20/I-5 SB Ramps	TWSC	C	9.9	A	No	11.7	B	No
4	SR 20/I-5 NB Ramps	TWSC	C	10.6	B	No	12.9	B	No
5	SR 20/Husted Rd./Freshwater Rd.	TWSC	C	15.1	C	No	16.5	C	No
6	E Street/9th Street North	TWSC	C	11	B	No	10.9	B	No
7	E Street/9th Street South	TWSC	C	11.6	B	No	11.8	B	No
8	E Street/7th Street	AWSC	C	9.0	A	No	9.3	A	No
9	E Street/5th Street	AWSC	C	9.8	A	No	9.8	A	No
10	E Street/I-5 SB Ramps	TWSC	C	11.6	B	No	12.7	B	No
11	E Street/I-5 NB Ramps	TWSC	C	19.4	C	No	16.3	C	No
12	E Street/Vann Street	TWSC	C	12.5	B	No	13.6	B	No
13	E Street/Husted Rd.	TWSC	C	10.4	B	No	10.5	B	No
14	Husted Rd/Husted Lateral Rd	TWSC	C	9.2	A	No	8.7	A	No
15	Husted Rd./Abel Rd.	TWSC	C	9.2	A	No	9.2	A	No
16	Husted Rd/Crawford Rd	TWSC	C	9.0	A	No	9.4	A	No
17	Husted Rd./Old Highway 99W	TWSC	C	10	A	No	11.7	B	No
18	Husted Rd./I-5 NB Ramps	TWSC	C	8.6	A	No	9	A	No
19	Husted Rd./I-5 SB Ramps	TWSC	C	9.1	A	No	9.5	A	No

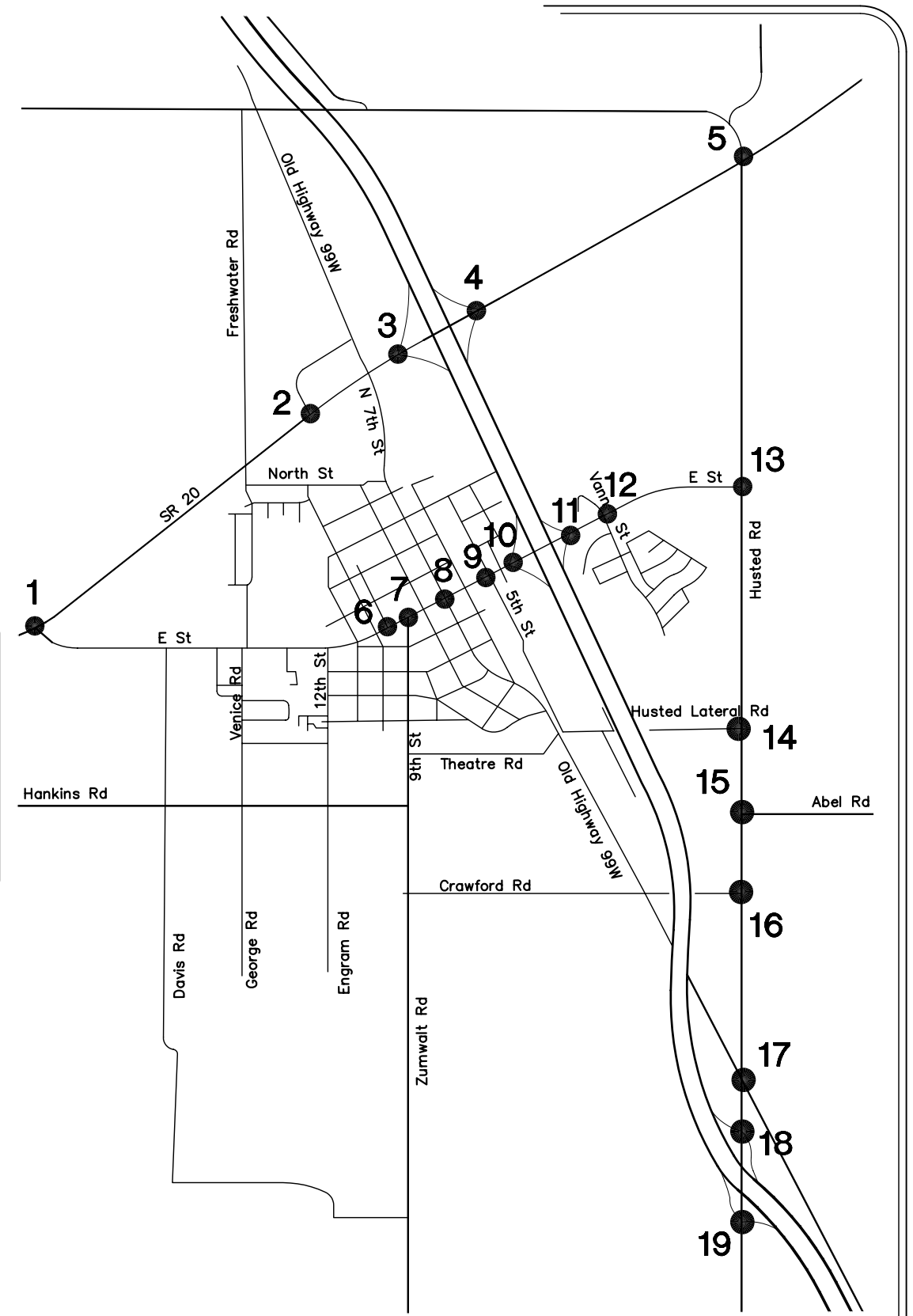
Notes:
TWSC = Two Way Stop Control *AWSC = All Way Stop Control*
LOS = Worst case movement's LOS for TWSC intersections; OVR = overflow
Warrant = Caltrans Peak hour volume based signal warrant



LEGEND:

XX – AM PEAK HOUR VOLUMES

(XX) – PM PEAK HOUR VOLUMES



City of Williams General Plan Update

Figure 3

Existing Peak Hour Intersection Traffic Volumes

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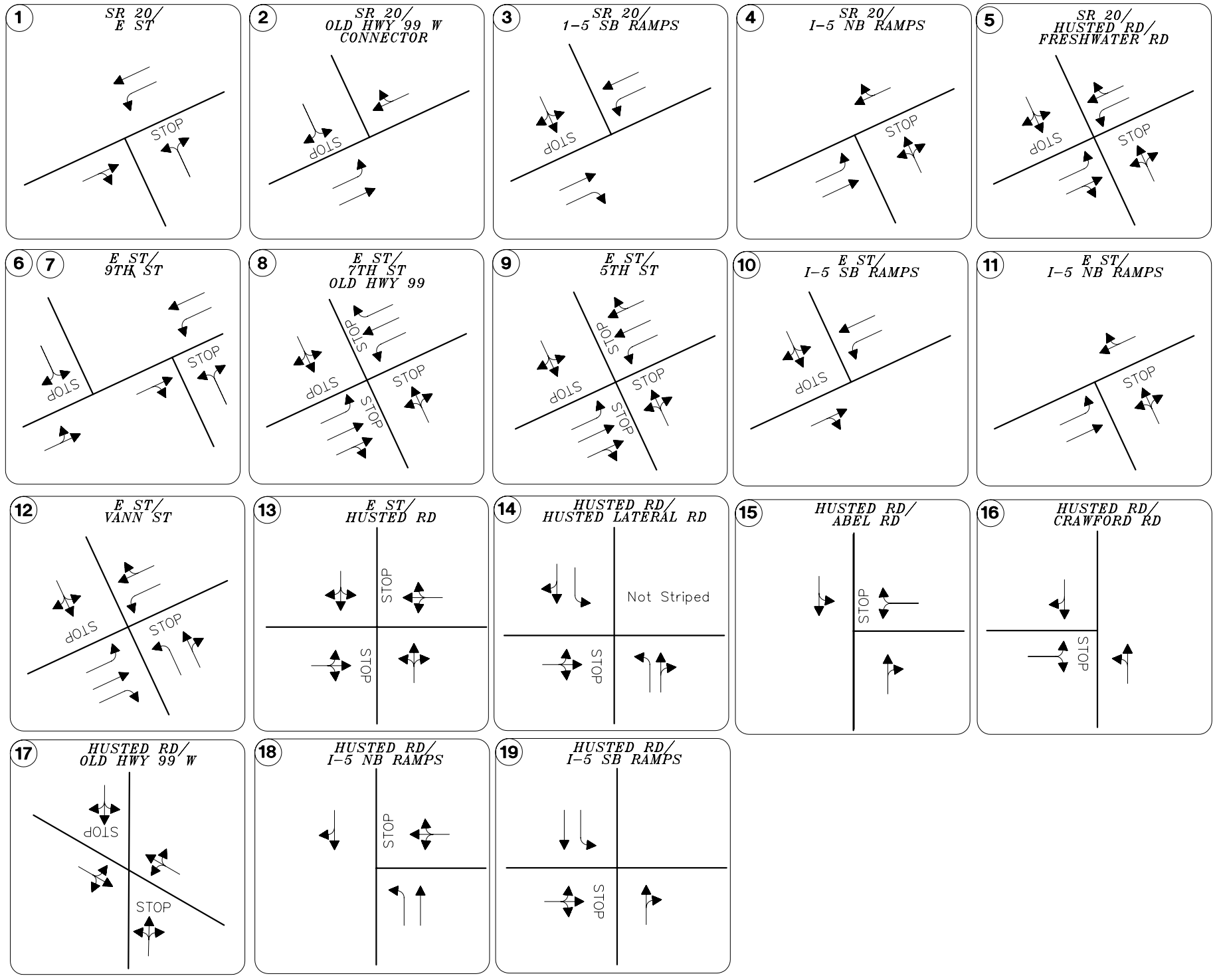

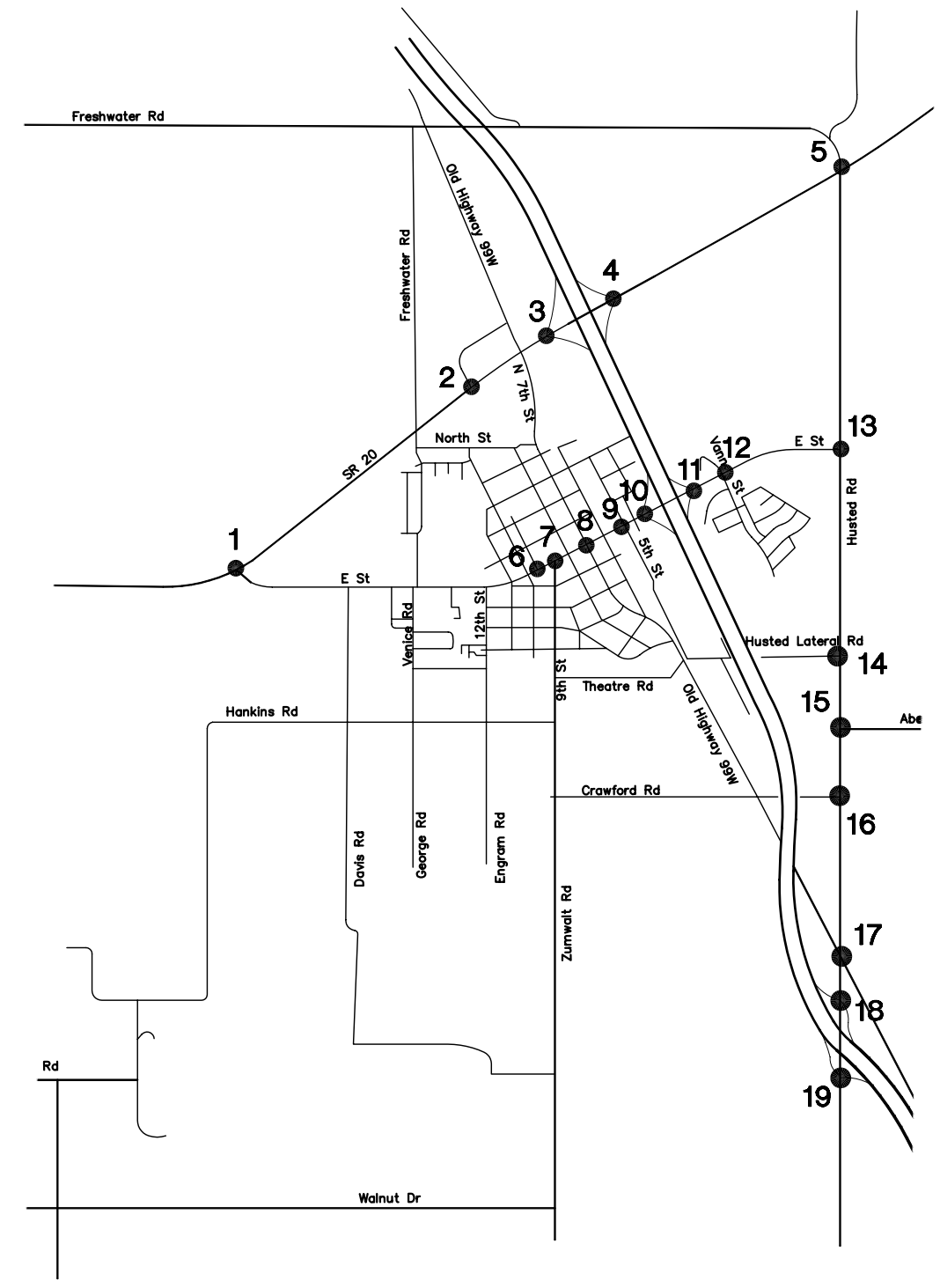

City of Williams General Plan Update

Figure 4

Existing Lane Geometrics and Control

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CHAPTER IV – YEAR 2030 DEVELOPMENT ASSUMPTIONS

4.0 – INTRODUCTION

As development occurs within the City, additional transportation facilities will be required to support this growth. Forecasting how this development will affect existing traffic volumes and distribution patterns is a critical component of this study. Traffic volumes and circulation patterns will change within the City of Williams over the next 25 years due to development within the City and the County.

Forecasting the exact nature of these changes is always challenging. To assist in the process, a Citywide traffic model was developed in order to project traffic volumes on all City streets for Year 2030 conditions and AM and PM peak hour models in order to project peak hour intersection turning movement volumes at study intersections. The travel demand model development methodology is included in Appendix A of this report. This chapter presents future traffic conditions within the City for Year 2030 buildout conditions.

4.1 – GROWTH PROJECTION

Traffic volumes within the City will change dramatically over the next 25 years, primarily due to development within the City. Year 2030 land uses have been projected in consultation with the City of Williams. Table 6 provides growth in land use quantities within the City for Year 2030. As shown in the Table 6, the assumed growth in land uses is 4,654 additional residential units, 700 KSF of commercial use and 500 KSF of industrial use. Figure 5 shows the location of the land uses assumed to be developed within the City for Year 2030.

TABLE 6
CITY OF WILLIAMS YEAR 2030 LAND USE GROWTH SUMMARY

Land Use Type	Quantity	Units
Residential (DU's)	4654	DU
Commercial (KSF)	700	KSF
Industrial (MSF)	500	KSF

DU: Dwelling Unit; KSF: 1,000 square feet

Trip generation has been estimated for growth in *Year 2030* land uses, utilizing trip generation rates contained in the Institute of Transportation Engineers (ITE) Publication *Trip Generation (Seventh Edition)*. ITE land use "Shopping Center" bearing code 820 was used to estimate trips from parcels with commercial zoning. ITE land uses "Single Family Dwelling Unit" bearing code 210, "Light Industrial" bearing code 110, "Heavy Industrial" bearing code 120 and "High School" bearing code 530 were used to estimate trips from residential units, light industrial, heavy industrial and public facility uses respectively. Weighted average rates were used for all the uses to establish trip generation. Table 7 provides Trip Generation summary for the assumed growth in land uses.

As shown in Table 7, the projected growth in land uses is expected to generate about 69,696 net daily trips, of which 4,376 are likely to occur during the AM peak hour, and 7,037 are likely to occur during the PM peak hour.

TABLE 7
EXISTING AND GROWTH FOR YEAR 2030 LAND USE S TRIP GENERATION SUMMARY

Land Use Category (ITE Code)	Unit[1]	Daily Trip Rate/Unit[2]	AM Peak Hour Trip Rate/Unit[3]			PM Peak Hour Trip Rate/Unit[3]		
			Total	In %	Out %	Total	In %	Out %
Residential (ITE 210)	DU	9.57	0.75	25%	75%	1.01	63%	37%
Commercial (ITE 820)	ksf	42.94	1.03	61%	39%	3.75	48%	52%
Industrial Light (110)	ksf	6.97	0.92	88%	12%	0.98	12%	88%
Industrial Heavy (120)	ksf	1.50	0.51	88%	12%	0.68	12%	88%
High School (ITE 530)	ksf	12.89	3.06	71%	29%	0.97	54%	46%
Land Use Description	**Quantity (Units)**	**Daily Trips**	**AM Peak Hour Trips**			**PM Peak Hour Trips**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
*Existing Land Uses**								
Residential	1,184	11,331	888	222	666	1,196	753	442
Commercial	397.000	17,047	409	249	159	1,489	715	774
Industrial Light	359.000	2,502	330	291	40	352	42	310
Industrial Heavy	512.000	768	261	230	31	348	42	306
Public Facility	838.500	10,808	2,566	1,822	744	813	439	374
Internal Trip Reduction (25%)		-5,079	-250	-192	-58	-547	-200	-348
Total		37,377	4,204	2,621	1,583	3,651	1,792	1,859
Growth in Land Uses for Year 2030 Build-Out								
Residential	4,654	44,539	3,491	873	2,618	4,701	2,961	1,739
Commercial	700.000	30,058	721	440	281	2,625	1,260	1,365
Industrial Light	500.000	3,485	460	405	55	490	59	431
Internal Trip Reduction (25%)		-8,386	-295	-211	-84	-779	-330	-449
Total		69,696	4,376	1,506	2,870	7,037	3,950	3,086

ksf = 1000 sq. ft; A 25% internal trip reduction was applied from commercial and industrial uses

** Existing Land use quantities have been estimated using aerial images and zoning*

CHAPTER V – YEAR 2030 CONDITIONS WITHOUT IMPROVEMENTS

5.1 - BUILDOUT TRAFFIC CONDITIONS – ROADWAYS

Using the daily volumes forecasted from the citywide traffic model, roadway conditions anticipated by Year 2030 were determined. Table 8 contains a summary of the daily roadway LOS conditions for Year 2030 conditions.

As indicated in Table 8, all roadway segments are projected to operate at an acceptable LOS D or better conditions on a daily basis except for the following:

- Husted Road from Freshwater Road to E Street.
- Husted Road from E Street to Abel Road.
- Husted Road from Abel Road to I-5 SB Ramps.
- E Street from Husted Road to I-5 SB Ramps.

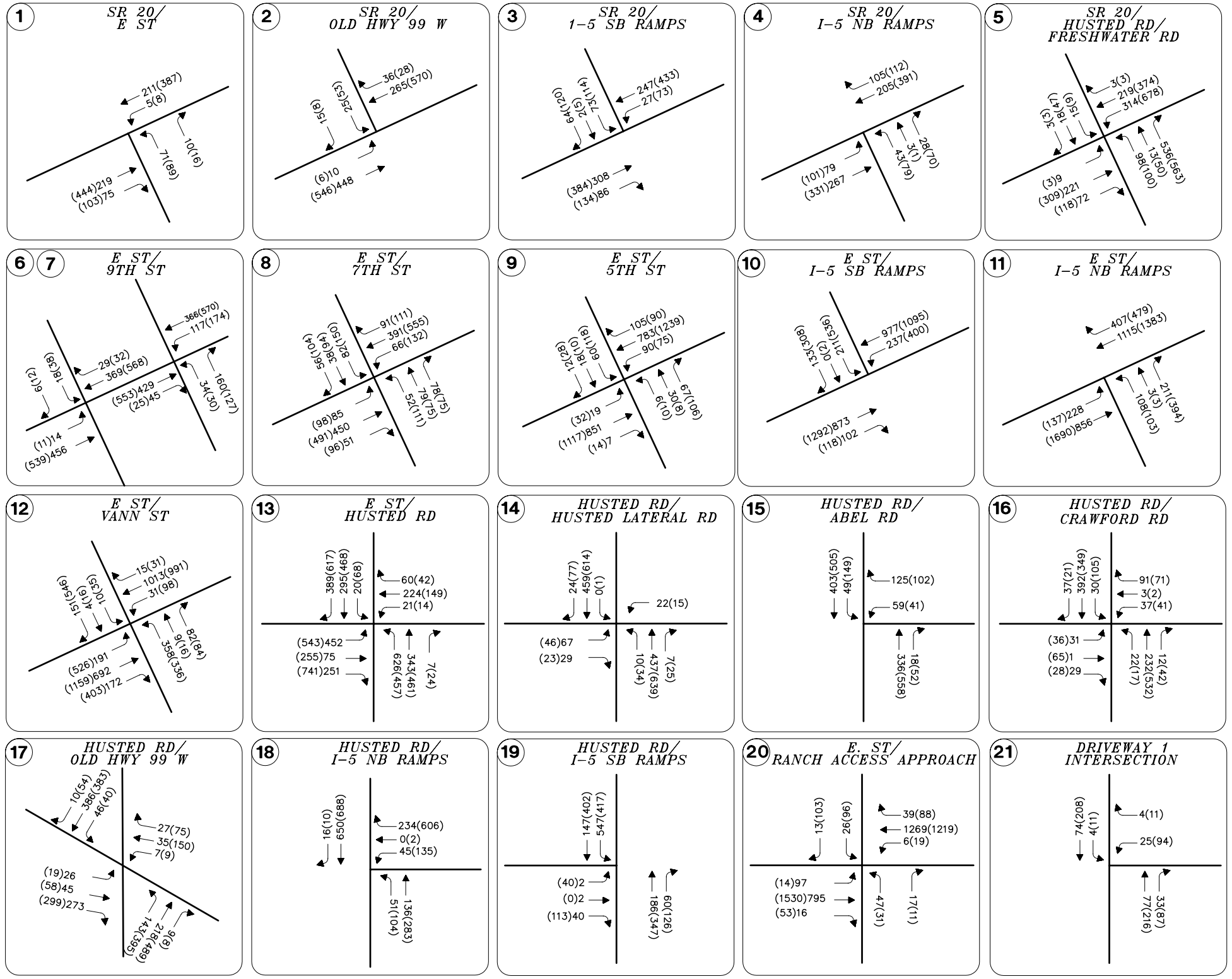
5.2 - BUILDOUT TRAFFIC CONDITIONS – INTERSECTIONS

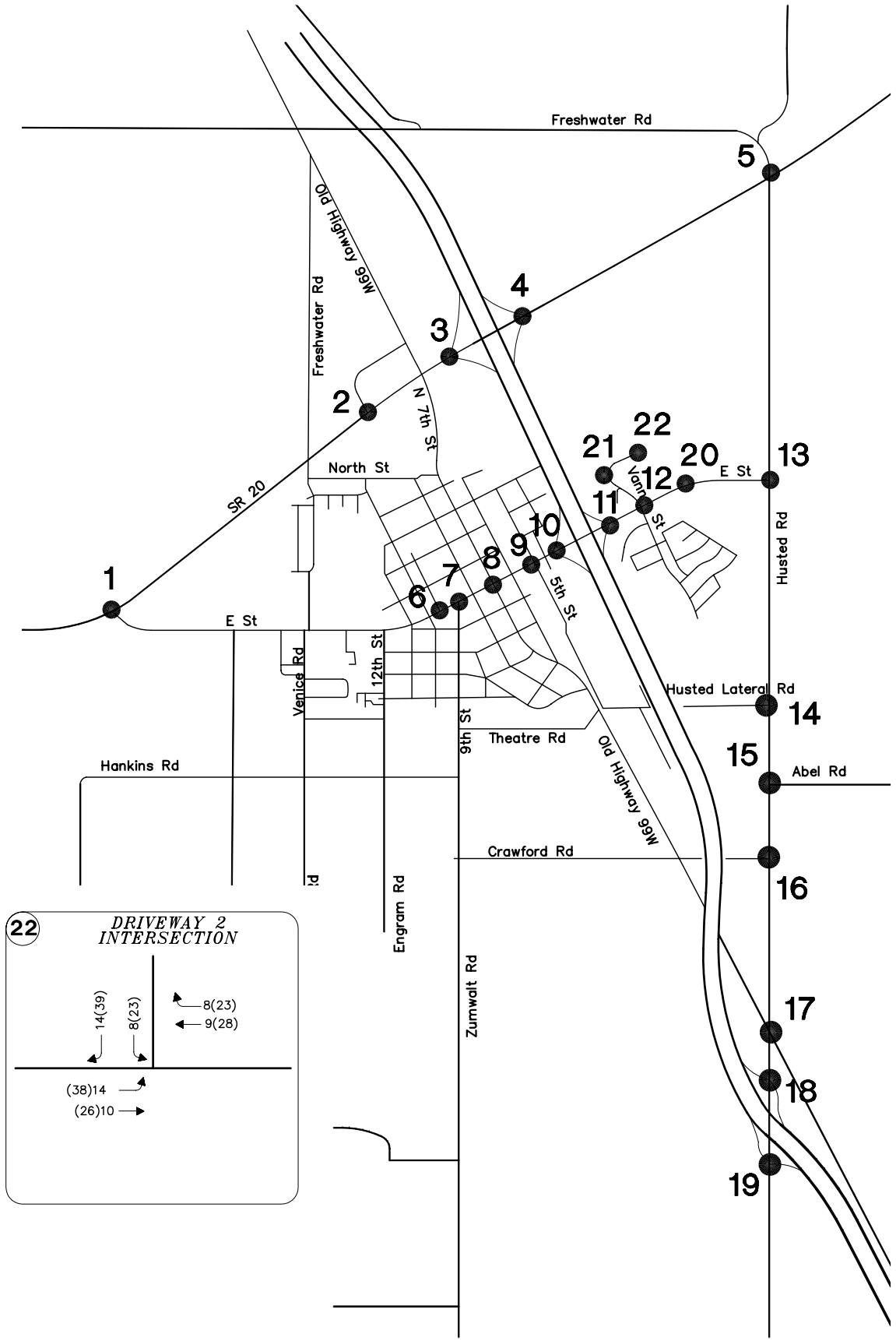
Year 2030 AM and PM peak hour intersection turning movement traffic volumes are illustrated on Figure 5. The buildout intersection peak hour delay and LOS values were calculated using the volumes illustrated on Figure 5 and existing lane geometrics as no improvements beyond the existing conditions are assumed. Table 9 provides a summary of buildout year 2030 intersection AM and PM LOS and delay values.

As shown in Table 9, the following study intersections are projected to operate at unacceptable level of service during at least one of the peak hour periods under buildout conditions.

- SR 20/I-5 SB Ramps
- SR 20/I-5 NB Ramps
- SR 20/Husted Road/Freshwater Road
- E Street/7th Street
- E Street/5th Street
- E Street/I-5 SB Ramps
- E Street/I-5 NB Ramps
- E Street/Vann Street
- E Street/Husted Road
- Husted Road/Husted Lateral Road
- Husted Road/Abel Road.
- Husted Road/Crawford Road
- Husted Road/Old Highway 99W
- Husted Road./I-5 NB Ramps
- Husted Road/I-5 SB Ramps

Several of the intersections projected to operate at unacceptable LOS are found to meet the peak hour signal warrant criteria.





LEGEND:

XX – AM PEAK HOUR VOLUMES

(XX) – PM PEAK HOUR VOLUMES

City of Williams General Plan Update

Figure 5

Year 2030 Traffic Volumes

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TABLE 8
YEAR 2030 BUILDOUT CONDITIONS: ROADWAY LEVELS-OF-SERVICE

#	Roadway Segment	Capacity Configuration	Target LOS	Average Daily Traffic (ADT)	LOS
1	Freshwater Road from Freshwater Lateral to Husted Road	Two-Lane Collector	D	1,630	A
2	**Husted Road from Freshwater Road to E Street**	**Two-Lane Undivided Arterial**	**D**	**19,870**	**F**
3	**Husted Road from E Street to Abel Road**	**Two-Lane Undivided Arterial**	**D**	**13,870**	**E**
4	**Husted Road from Abel Road to I-5 SB Ramps**	**Two-Lane Undivided Arterial**	**D**	**13,800**	**E**
5	**E Street from Husted Road to I-5 SB Ramps**	**Two-Lane Collector**	**D**	**22,700**	**F**
6	E Street from I-5 SB Ramps to 6th Street	Four-Lane Undivided arterial	D	24,330	D
7	E Street from 6th Street to 9th Street South (Downtown)	Four-Lane Undivided arterial	D	23,150	C
8	E Street from 9th Street South to SR 20	Two-Lane Collector	D	6,860	B
9	SR 20 from E Street to I-5 NB Ramps	Two-Lane Undivided Arterial	D	8,094	A
10	SR 20 from I-5 NB Ramps to Husted Street	Two-Lane Undivided Arterial	D	6,957	A
11	Old Highway 99W from SR 20 to E Street	Two-Lane Undivided Arterial	D	6,100	A
12	Old Highway 99W from E Street to Thearter Road	Two-Lane Undivided Arterial	D	5,590	A
13	Old Highway 99W from Theatre Road to Husted Road	Two-Lane Undivided Arterial	D	9,570	B
14	9th Street from Theatre Road to E Street	Two-Lane Collector	D	4,670	A
15	12th Street from Hankins to E Street	Two-Lane Collector	D	2,690	A

TABLE 9
BUILDOUT YEAR 2030 CONDITIONS INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	SR 20/E. Street	TWSC	D	13.3	B	No	25.4	D	No
2	SR 20/Old Hwy 99W	TWSC	D	14.6	B	No	31.6	D	No
3	**SR 20/I-5 SB Ramps**	**TWSC**	**D**	17.1	C	No	**99.2**	**F**	**No**
4	**SR 20/I-5 NB Ramps**	**TWSC**	**D**	16.6	C	No	**37**	**E**	**No**
5	**SR 20/Husted Rd./Freshwater Rd.**	**TWSC**	**D**	**818**	**F**	**Yes**	**OVR**	**F**	**Yes**
6	E Street/9th Street North	TWSC	E	17.1	C	No	27.5	D	No
7	E Street/9th Street South	TWSC	E	22.3	C	Yes	42.9	E	No
8	**E Street/7th Street**	**AWSC**	**E**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
9	**E Street/5th Street**	**AWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
10	**E Street/I-5 SB Ramps**	**TWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
11	**E Street/I-5 NB Ramps**	**TWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
12	**E Street/Vann Street**	**TWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
13	**E Street/Husted Rd.**	**TWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
14	**Husted Rd/Husted Lateral Rd**	**TWSC**	**D**	28.2	D	No	**65.7**	**F**	**No**
15	**Husted Rd./Abel Rd.**	**TWSC**	**D**	18.9	C	No	**46.7**	**E**	**No**
16	**Husted Rd/Crawford Rd**	**TWSC**	**D**	20.6	C	No	**131.1**	**F**	**No**
17	**Husted Rd./Old Highway 99W**	**TWSC**	**D**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
18	**Husted Rd./I-5 NB Ramps**	**TWSC**	**D**	17.7	C	No	**OVR**	**F**	**Yes**
19	**Husted Rd./I-5 SB Ramps**	**TWSC**	**D**	16.6	C	No	**254.1**	**F**	**Yes**

Notes:
TWSC = Two Way Stop Control *AWSC = All Way Stop Control*
LOS = Worst case movement's LOS for TWSC intersections; OVR = overflow
Warrant = Caltrans Peak hour volume based signal warrant

CHAPTER VI – YEAR 2030 TRANSPORTATION IMPROVEMENTS

6.1 ROADWAY CLASSIFICATION SYSTEM

Currently, the City of Williams Transportation and Circulation Element do not have cross-sections or construction standards for the roadway facilities. It is recommended that the following roadway classification and cross-sections be adopted by the City of Williams:

Freeway – Characterized by high speeds and limited controlled access, freeways primarily serve regional and long distance travel. I-5 is the only freeway through the City of Williams.

Expressway – A highway with restricted driveway access, but with a mix of grade-separated interchanges and at-grade intersections. SR 20 is the only expressway in Williams.

Major Arterial – These streets are generally higher speed, higher capacity transportation corridors that link the community with highways and freeways.

Minor Arterial – Medium speed and medium capacity, these roads are principally for travel between larger land uses within the community.

Major Collector (Industrial Street) – Facilities that may be upgraded to an arterial in the future and usually limit on-street parking to maintain smooth flow.

Collector Street – Relatively low speed and low capacity, collector streets are generally two lanes connecting neighborhoods with other neighborhoods as well as with the arterial system.

Local Street – Local Streets are low speed, low capacity street that provide direct access to adjacent land uses and are typically meant only for local, as opposed to through traffic.

This classification system is consistent with national standards, and provides a good framework for the planning of a citywide, or areawide transportation systems. The Freeways and Expressways fall under the jurisdiction of Caltrans and hence their construction standards are dictated by the policies and standards of Caltrans. Additional definitions for Local Streets, Collector Streets, and Industrial Streets are summarized below:

Local Street – A local street provides access for not more than 100 residential dwelling units. It is a two-lane street with the following characteristics:

- Right-of-Way width of 52 feet
- Curb face to curb face dimension is 34 feet.
- Sidewalk shall be placed adjacent to the gutter and shall be 4 feet in width.
- Traffic index for design purposes shall be 5.5.
- Maximum Grade 15%, minimum grade 0.4%.
- Curb return radius 20 feet minimum.

Collector Street – A collector street serves abutting property and carries traffic to and from the higher street classifications. It is a two-lane street with the following characteristics:

- Right-of-Way width of 58 feet.
- Curb face to curb face dimension is 38 feet.
- Sidewalk shall be 5 feet in width normally placed adjacent to the gutter.
- Traffic index for design purposes shall be 6.0.
- Maximum Grade 10%, minimum grade 0.4%.
- Curb return radius 20 feet minimum.
- Pavement markers and striping shall be provided in accordance with the Standard Plan details.
- When required left-turn pockets shall allow for a minimum of three vehicle stacking.

Industrial Street – An industrial street serves traffic within an industrial development and has the following characteristics:

- Right-of-Way width minimum of 70 feet.
- Curb face to curb face dimension is 50 feet.
- Radius of cul-de-sac 50 feet (face to curb).
- Traffic index for design purposes shall be 7.0.
- Maximum Grade 8%, minimum grade 0.4%.
- Curb return radius 25 feet minimum.

Figure 6 illustrates the recommended roadway classification for the City's roadway network. The figure also illustrates construction of new roadways which will be discussed in the subsequent section. Upon approval by the Board of Supervisors, the road classification and construction standards (cross-section) will be incorporated into the City of Williams General Plan Circulation Element. Table 10 provides the functional classification system for the City's roadways. Figures 7 shows schematics with cross-sections for the roadway facilities discussed above.

6.2 ROADWAY IMPROVEMENTS

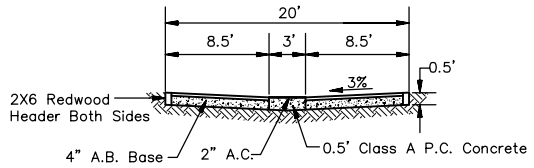
This section presents recommended improvements at the study roadway segments, developed based on the findings from the analyses presented in the prior sections of this report.

E Street (between I-5 SB Ramps and Husted Road)
E Street between I-5 SB Ramps and Husted Road, which is about 0.77 miles, is projected to operate at unacceptable LOS F based on HCM levels of service under buildout conditions. It is recommended that this two lane collector road be expanded to a four-lane major arterial in order to mitigate the unacceptable level of service to acceptable levels. This also includes widening the I-5 bridge overcrossing.

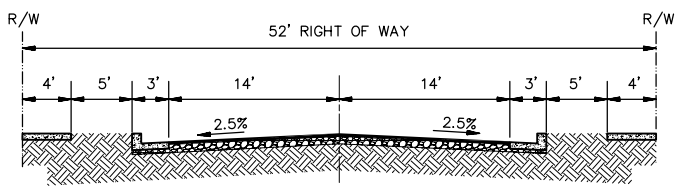
TABLE 10
FUNCTIONAL CLASSIFICATION SYSTEM FOR ROADWAYS

Functional Classification	Roadway	From	To
Freeway			
	I-5	Northern City Limits	Southern City Limits
Expressway			
	SR 20	Western City Limits	Eastern City Limits
Minor Arterial			
	Husted Road	SR 20	Southern City Limits
	E Street	6th Street	Husted Road
Major Collector			
	E Street	SR 20	12th Street
	Old Highway 99w	Northern City Limits	Husted Road (Old Highway 99 W Extension West Of I-5)
	Walnut Drive	Western City Limits	Husted Road
Collector			
	Freshwater Road	Western City Limits	Husted Road
	Hankins Road	Western City Limits	9th Street
	Hill Road	Hankins Road	Walnut Drive
	Davis Road	E Street	Walnut Drive
	Freshwater Lateral Road	Freshwater Road	SR 20
	Virginia Way	SR 20	E Street
	Venice Boulevard	E Street	Hankins Road
	George Road	Hankins Road	New Street (Connecting Hankins Road to 9th Street)
	12th Street	E Street	New Street (Connecting Hankins Road to 9th Street)
	9th Street	Theatre Road	Southern City Limits
	Theatre Road	9th Street	Old Highway 99 W
	Crawford Road	9th Street	Old Highway 99 W
	Abel Road	Husted Road	Eastern City Limits
	Old Highway 99W	Crawford Road	Southern City Limits

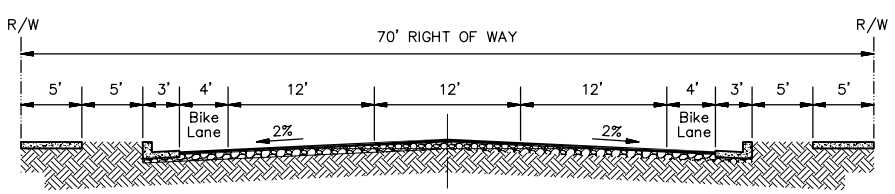
Note: Roadways not listed are considered "residential collectors".



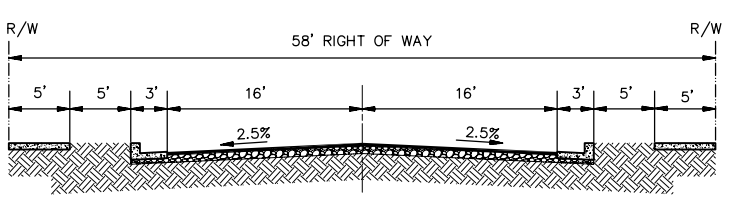
Alley Detail



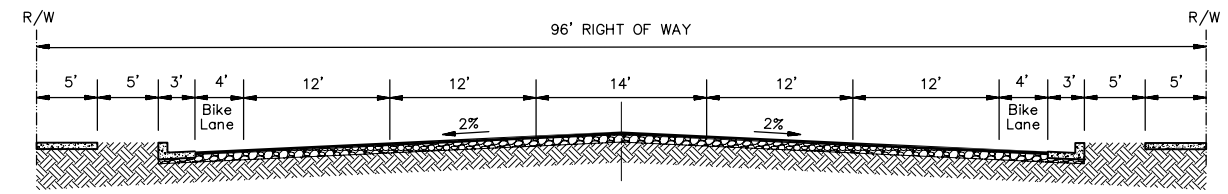
Local Street (Residential)



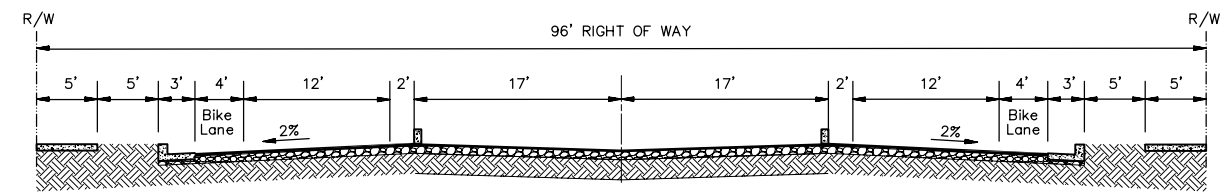
Major Collector (Industrial Street)



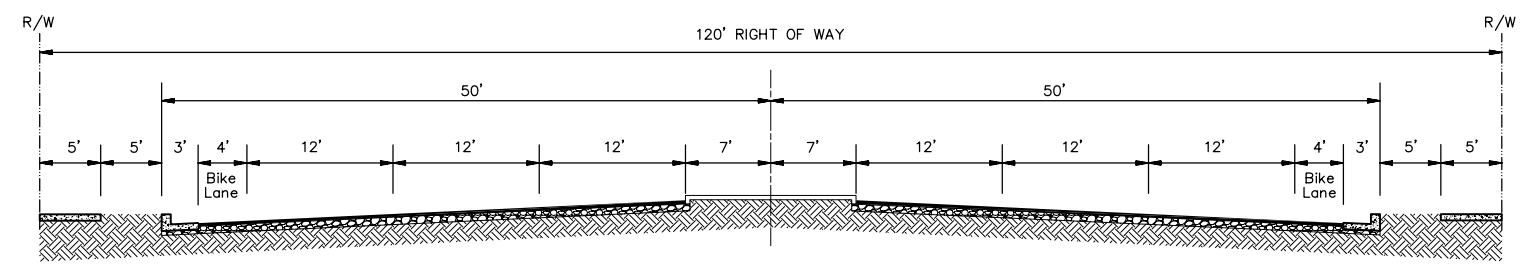
Minor Collector



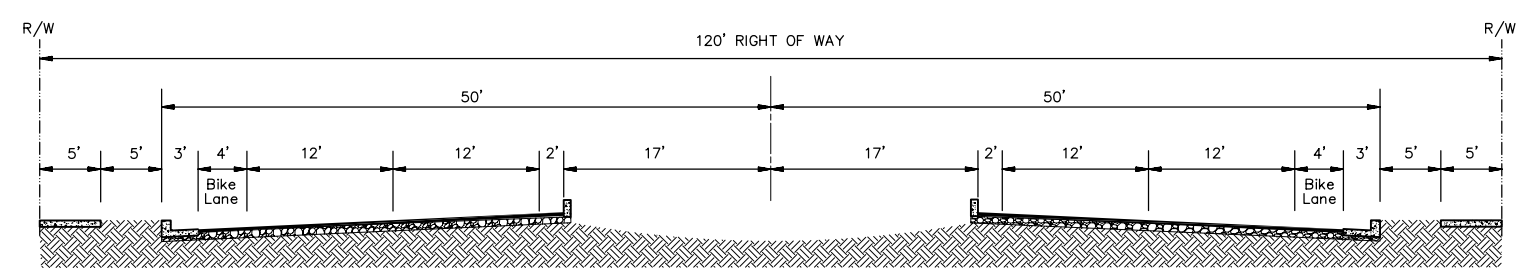
Minor Arterial (Full Width)



Minor Arterial (Partial Width)



Major Arterial (Full Width)



Major Arterial (Partial Width)

City of Williams General Plan Update

Figure 6

Roadway Functional Classifications

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Husted Road (between Freshwater Road and E Street)
About 1.0 miles of roadway segment on Husted Road north of E Street is projected to operate at unacceptable LOS F under buildout conditions. In order to mitigate the level of service to acceptable conditions, it is recommended that this section of the roadway be widened from one lane in each direction to two lanes in each direction.

Husted Road (between E Street and City's southern limits)
About 2.77 miles of roadway segment on Husted Road, south of E Street is projected to operate at unacceptable LOS F based on HCM standards under buildout conditions. It is recommended that this roadway segment be improved to provide a center left turn lane, curb, gutter, side walk and bike lanes.

6th Street Improvements
The City of Williams has indicated that it would like to maintain downtown like character along E Street from 6th Street to 9th Street. To reduce traffic on this section of E Street and provide alternative access to the motorists living South of E Street, it is proposed to designate 6th street as major north-south access.

New Roadways
The City's southwest region is forecasted to be built out with residential uses. To provide connectivity for these residential dwelling units with E Street and I-5/Husted interchange, it is proposed to:

- Construct a new east-west roadway connecting Hankins Road with 9th Street/Zumwalt Road
- Extend Old Highway 99 W on the west side of I-5 to connect to Husted Road south of I-5/Husted Road interchange.
- Extend Davis Road south to Walnut Drive.
- Extend Hankins Road in the east-west direction to connect to Old Highway 99 W extension.
- Extend Walnut Drive to connect to Husted Road.

6.3 INTERSECTION IMPROVEMENTS

This section presents recommended improvements at the study intersections, developed based on the findings from the analyses presented in the prior sections of this report. The design concepts for the improvements recommended are included in Appendix B.

SR 20/I-5 SB Ramps
This unsignalized intersection of SR 20/I-5 SB Ramps is projected to operate at an unacceptable LOS F during PM peak hour, under *Year 2030* conditions. This intersection does not meet the peak hour signal warrant under *Year 2030* conditions. The following improvement is recommended:

- Widen the southbound approach (I-5 SB Off-Ramp) to provide an exclusive left turn lane; with this improvement the southbound approach will include one left turn only lane and one shared through right-turn lane.

This improvement is forecasted to yield acceptable LOS. Figure B3 in the Appendix B shows the design concept for this improvement.

SR 20/I-5 NB Ramps
This unsignalized intersection of SR 20/I-5 NB Ramps is projected to operate at an unacceptable LOS E during PM peak hour, under *Year 2030* conditions. This intersection does not meet the peak hour signal warrant under *Year 2030* conditions. The following improvement is recommended:

- Widen the northbound approach (I-5 NB Off-Ramp) to provide an exclusive left turn lane; with this improvement the northbound approach will include one left turn only lane and one shared through right-turn lane.

This improvement will yield acceptable LOS. Figure B4 in the Appendix B shows the design concept for this improvement.

SR 20/Husted Road/Freshwater Road
This unsignalized intersection of SR 20/Husted Road/Freshwater Road is projected to operate at an unacceptable LOS F during both the AM and PM peak hours respectively, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection.
- Widen the westbound approach (SR 20) to provide a second left turn lane; with this

improvement the westbound approach will include two left turn only lanes, and one shared through-right turn lane.
- Widen the northbound approach (Husted Road) to provide an exclusive right turn lane; with this improvement the northbound approach will include one shared left-through lane and one right turn only lane.

These improvements are forecasted to yield acceptable LOS. Figure B5 in the Appendix B shows the design concept for this improvement.

E Street/7th Street

This unsignalized intersection of E Street/7th Street is projected to operate at an unacceptable LOS F during PM peak hour, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The City of Williams has indicated that one of the goals of General Plan Update will be to provide parallel parking and maintain downtown like character along E Street from 6th Street to 9th Street. The following improvements have been proposed in view of the above goal:

- Signalize the intersection
- Eastbound (E Street): One left only lane, one shared through right-turn lane.
- Westbound (E Street): One left only lane, one through lane and one right only lane.
- Northbound (7th Street): One left only lane and one shared through right-turn lane.
- Southbound (7th Street): One left only lane and one shared through right-turn lane.

These improvements are forecasted to yield acceptable LOS. Figure B7 in the Appendix B shows the design concept for this improvement.

E Street/5th Street

This unsignalized intersection of E Street/5th Street is projected to operate at an unacceptable LOS F during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvement is recommended:

- Signalize the intersection.

This improvement will yield acceptable LOS. Figure B7 in the Appendix B shows the design concept for this improvement.

E Street/I-5 SB Ramps

This unsignalized intersection of E Street/I-5 SB ramps is projected to operate at an unacceptable LOS "F" during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following two alternative improvements are recommended:

Alternative 1:
- Signalize the intersection.
- Widen the eastbound approach (E Street) to provide a second through lane and an exclusive right turn lane; with this improvement the eastbound approach will include two through lanes and one right turn only lane.
- Widen the westbound approach (E Street) to provide a second through lane and a second left turn lane; with this improvement the westbound approach will include two left turn only lanes and two through lanes.
- Widen the southbound approach (I-5 SB Off-Ramp) to provide two left turn lanes; with this improvement the southbound approach will include two left turn only lanes, one shared through right-turn lane.

Alternative 2:
- A modern roundabout

These improvements are forecasted to yield acceptable LOS. Figure B7 in the Appendix B shows the design concept for the improvement recommended in Alternative 1.

E Street/I-5 NB Ramp

This unsignalized intersection of E Street/I-5 NB ramps is projected to operate at an unacceptable LOS F during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following two alternative improvements are recommended:

Alternative 1:
- Signalize the intersection

- Widen the eastbound approach (E Street) to provide a second through lane; with this improvement the eastbound approach will include one left turn only lane and two through lanes.
- Widen the westbound approach (E Street) to provide a second through lane and an exclusive right turn lane; with this improvement the westbound approach will include two through lanes and a right turn only lane.
- Widen the northbound approach (I-5 NB Off-Ramp) to provide an exclusive left turn lane; with this improvement the northbound approach will include one left turn only lane and one shared through right-turn lane.

Alternative 2:
- A modern roundabout

These improvements are forecasted to yield acceptable LOS. Figure B8 in the Appendix B shows the design concept for this improvement.

E Street/Vann Street
This unsignalized intersection of E Street/Vann Street is projected to operate at an unacceptable LOS F during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following Alternative improvements are recommended:

Alternative 1:
- Signalize the intersection
- Widen the eastbound approach (E Street) to provide a second through lane and a second left turn lane; with this improvement the eastbound approach will include two left turn only lanes, two through lanes and one right turn only lane.
- Widen the westbound approach (E Street) to provide a second through lane and an exclusive right turn lane; with this improvement the westbound approach will include one left turn only lane, two through lanes, and one right turn lane.
- Widen the northbound approach (Vann Street) to provide a second left turn lane; with this improvement the northbound approach will include two left turn lanes and a shared through right-turn lane.
- Widen the southbound approach (Vann Street) to provide an exclusive left turn lane and an exclusive right turn lane; with this improvement the southbound approach will include one left turn only lane, one shared through right-turn lane and one right turn only lane.

Alternative 2:
- A modern roundabout

These improvements are forecasted to yield acceptable LOS. Figure B9 in the Appendix B shows the design concept for this improvement.

E Street/Husted Road
This unsignalized intersection of E Street/Husted Road is projected to operate at an unacceptable LOS F during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection
- Widen the eastbound approach (E Street) to provide two exclusive left turn lanes and an exclusive right turn lane; with this improvement the eastbound approach will include two left turn lanes, one through lane and one right turn lane.
- Widen the northbound approach (Husted Road) to provide two left turn lanes; with this improvement the northbound approach will include two left turn lanes and a shared through right-turn lane.
- Widen the southbound approach (Husted Road) to provide an exclusive left turn lane and an exclusive right turn lane; with this improvement the southbound approach will include one exclusive left turn lane, one through lane and one right turn only lane.

These improvements are forecasted to yield acceptable LOS. Figure B10 in the Appendix B shows the design concept for this improvement.

Husted Road/Husted Lateral Road
This unsignalized intersection of Husted Road/Husted Lateral Road is projected to operate at

an unacceptable LOS F during PM peak hour conditions, under *Year 2030* conditions. This intersection does not meet the peak hour signal warrant under *Year 2030* conditions. The following improvement is recommended:

- Signalize the intersection

This improvement is forecasted to yield acceptable LOS. Figure B11 in the Appendix B shows the design concept for this improvement.

Husted Road/Abel Road
This unsignalized intersection of Husted Road/Abel Road is projected to operate at an unacceptable LOS E during PM peak hour conditions, under *Year 2030* conditions. This intersection does not meet the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Widen the westbound approach (Abel Road) to provide an exclusive left turn lane; with this improvement the westbound approach will include one left turn only lane and one right turn only lane.
- Widen the southbound approach (Husted Road) to provide an exclusive left turn lane; with this improvement the northbound approach will include one left turn only lane and one through lane.

These improvements are forecasted to yield acceptable LOS. Figure B12 in the Appendix B shows the design concept for this improvement.

Husted Road/Crawford Road – This unsignalized intersection of Husted Road/Crawford Road is projected to operate at an unacceptable LOS F during PM peak hour conditions, under *Year 2030* conditions. This intersection does not meet the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection.

These improvements are forecasted to yield acceptable LOS. Figure B13 in the Appendix B shows the design concept for this improvement.

Husted Road/Old Highway 99W
This unsignalized intersection of Husted Road/Old Highway 99W is projected to operate at an unacceptable LOS "F" during both AM and PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection
- Widen the eastbound approach (Old Highway 99W) to provide an exclusive right turn lane; with this improvement the eastbound approach will include one shared left-through lane and one right turn only lane.
- Widen the northbound approach (Husted Road) to provide two left turn lanes; with this improvement the northbound approach will include two left turn lanes and one through right-turn lane
- Widen the southbound approach (Husted Road) to provide an exclusive left turn lane; with this improvement the southbound approach will include one left turn lane and one shared through right-turn lane.
- Realign the Old Highway 99W to intersect Husted Road at a right angle.

These improvements are forecasted to yield acceptable LOS. Figure B14 in the Appendix B shows the design concept for this improvement.

Husted Road/I-5 NB Ramps
This unsignalized intersection of Husted Road/I-5 NB ramps is projected to operate at an unacceptable LOS D and F during both AM and PM peak hour conditions respectively, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection.
- Widen the westbound approach (I-5 NB Off-Ramp) to provide an exclusive right turn lane; with this improvement the westbound approach will include one shared through-left turn lane and one right turn only lane.

These improvements are forecasted to yield acceptable LOS. Figure B15 in the Appendix B shows the design concept for this improvement.

Husted Road/I-5 SB Ramps

This unsignalized intersection of Husted Road/I-5 NB ramps is projected to operate at an unacceptable LOS F during PM peak hour conditions, under *Year 2030* conditions. This intersection meets the peak hour signal warrant under *Year 2030* conditions. The following improvements are recommended:

- Signalize the intersection
- Widen the northbound approach (Husted Road) to provide an exclusive right turn lane; with this improvement the northbound approach will include one through lane and one right turn lane.

These improvements are forecasted to yield acceptable LOS. Figure B16 in the Appendix B shows the design concept for this improvement.

CHAPTER VII – CAPITAL IMPROVEMENTS PROGRAM

7.0 – INTRODUCTION

The Capital Improvement Program (CIP) presented in this chapter is a multi-modal program to provide a twenty-five year transportation project and financial plan for capital improvements to City of Williams transportation network. Improvements included in the CIP are designed to improve the safety and efficiency of the existing road network, accommodate future growth in traffic volumes and accommodate alternative transportation modes. Implementation of the CIP enables the City to grow and develop in a logical and efficient manner, with infrastructure that emphasizes safety and multi-modal transportation opportunities.

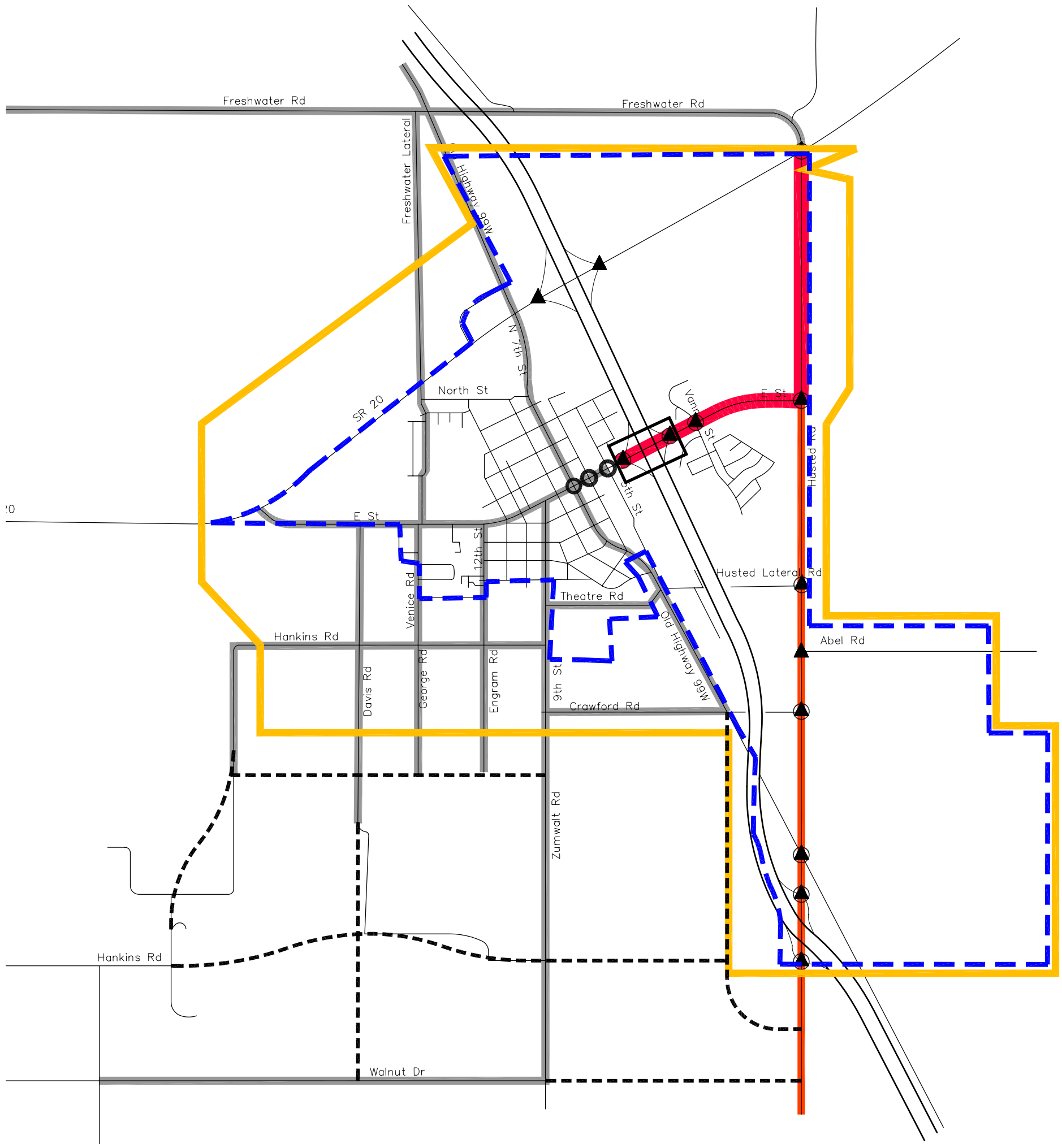
7.1 – TRANSPORTATION IMPROVEMENTS

This section presents extremely rough planning level cost estimates associated with the improvements noted in previous chapter.

Figure 7 presents a transportation infrastructure buildout scheme that maintains most of the existing roadway alignments, improves these existing roadways, and adds additional intersection improvements such as traffic controls and widening of intersections. This plan assumes the widening of the E Street/I-5 over crossing to accommodate two lanes in each direction.

During the preparation of this document, the City indicated that it would like to maintain downtown like character along E Street from 6th Street to 9th Street North. The improvements in the previous chapter have been recommended in view of this goal.

Based on improvements presented in previous chapter of this report, capital improvements and planning level cost estimates for the improvements are presented in Table 11. The unit cost data worksheet that was used in the calculation of cost estimates for the improvements is attached in Appendix C of this report. As shown in Table 11, improving the City's transportation facilities to ensure that roadway operations are at acceptable levels would cost approximately $151.3 million. Appendix C includes detailed cost estimates for each improvement.



LEGEND

- Resurface
- Widen to 4 Lane Arterial
- Widen to 2 Lane Divided Arterial
- Major Interchange Modification
- Install Traffic Signal
- Intersection Widening
- Install Traffic Signal & Intersection Widening
- Proposed Future Roadway

Williams General Plan Update

Figure 7

City of Williams Capital Improvements

File: T1125TG21.DWG(15MAY07) 25-1731-01

TABLE 11
CITY OF WILLIAMS CAPITAL IMPROVEMENTS (CIP) LIST

	Intx #	Name	Improvement	Total Construction Area (Sq ft)	Cost
Interchanges	*I-5/E Street Interchange*				
	-	Bridge Structure(E Street Overcrossing)	Earthwork (Ramps and Structure), demolition of Existing Structure, widen to four-lane Major Arterial standards	161,200	$12,440,000
	-	E Street, I-5 NB Ramps to I-5 SB Ramps (Roadway Segment)	Widen to City of Williams four lane divided arterial standards	115,200	$3,984,000
	10	E Street/I-5 SB Ramps	Install Traffic Signal, add 1 exclusive EBR, add 2nd exclusive WBL, add 2 exclusive SBL, widen SB ON-Ramp	23,400	$1,036,000
	11	E Street/I-5 NB Ramps	Install Traffic Signal, add 1 exclusive WBR, add 1 exclusive NBL, realign I-5 NB off-ramp approach	15,600	$743,000
			Total cost for I-5/E Street interchange improvements =		***$18,203,000***
	I-5/ SR 20 Interchange				
	3	SR 20/I-5 SB Ramps	Add an exclusive SBL	4,560	$139,000
	4	SR 20/I-5 NB Ramps	Add an exclusive NBL	4,560	$139,000
			Total cost for I-5/SR 20 interchange improvements =		***$278,000***
	I-5/ Husted Road Interchange				
	18	Husted Road/I-5 NB Ramps	Install Traffic Signal, add 1 exclusive WBR	4,800	$360,000
	19	Husted Road/I-5 SB Ramps	Install Traffic Signal, add 1 exclusive NBR	4,800	$360,000
			Total cost for I-5/Husted Road interchange improvements =		***$720,000***
Roadway Segments	#	Segment Name	Improvement	Total Construction Area (Sq ft)	Cost
	1	Husted Road, from Freshwater Road to E Street	Widen to City of Williams four lane divided arterial standards	511,200	$17,679,000
	2	Husted Road, from E Street to Abel Road	Widen to City of Williams two lane divided arterial standards (center left turn lane)	190,800	$6,996,000
	3	Husted Road, from Abel Road to I-5 SB Ramps	Widen to City of Williams two lane divided arterial standards (center left turn lane)	240,300	$8,811,000
	4	E Street, Husted Road to I-5 NB Ramps	Widen to City of Williams four lane divided arterial standards	273,600	$9,462,000
	5	Old Highway 99W (Extension West of I-5), Crawford Road to Husted Road	Construct to City of Williams two lane arterial standards	400,000	$18,000,000
	6	New Street, Hankins Road to 9th Street	Construct to City of Williams two lane collector standards	268,000	$11,390,000
	7	Hankins Road, Beauchamp Road to Old Highway 99 W Extension	Construct to City of Williams two lane collector standards	488,000	$20,740,000
	8	Davis Road, South of Hankins Road to Walnut Drive	Construct to City of Williams two lane collector standards	270,000	$11,475,000
			Total Cost for Roadway Improvements =		***$104,553,000***
Intersections	Intx #	Name	Improvement	Total Construction Area (Sq ft)	Cost
	1	SR 20/E Street	No Improvements Recommended	0	$0
	2	SR 20/Old Hwy 99W	No Improvements Recommended	0	$0
	5	SR 20/Husted Road/Freshwater Road	Install Traffic Signal, add 2nd exclusive WBL, add 1 exclusive NBR, realign the southbound approach	18,600	$933,000
	6	E Street/9th Street North	No Improvement	0	$0
	7	E Street/9th Street South	No Improvement	0	$0
	8	E Street/7th Street	Install Traffic Signal, restriping		$210,000
	9	E Street/5th Street	Install Traffic Signal		$210,000
	12	E Street/Vann Street	Install Traffic Signal, add 2nd exclusive EBL, add 1 exclusive WBR, add 2nd exclusive NBL, add 1 exclusive SBL, add 1 exclusive SBR, add 2nd SB receiving lane	15,000	$773,000
	13	E Street/Husted Road	Install Traffic Signal, add 2 exclusive EBL, add 1 exclusive EBR, add 2 exclusive NBL, add 1 exclusive SBR, add 1 exclusive SBL	15,600	$721,000
	14	Husted Road/Husted Lateral Road	Signalization		$250,000
	15	Husted Road/Abel Road	add 1 exclusive WBL, add 1 exclusive SBL	2,400	$100,000
	16	Husted Road/Crawford Road	Signalization		$250,000
	17	Husted Road/Old Highway 99W	Install Traffic Signal, add 1 exclusive EBR, add 2 exclusive NBL, add 1 exclusive SBL, realign the intersection	22,200	$975,000
	20	E Street/6th Street	Install Traffic Signal, add 2nd exclusive EBL, add 1 exclusive NBR	2,400	$300,000
			Total Cost for intersection Improvements =		***$4,722,000***
Resurfacing	#	Name	Improvement	Total Construction Area (Sq ft)	Cost
	1	Freshwater Road, from Western City Limits to Husted Road	Resurfacing with 6 inch AC	222,000	$3,330,000
	2	Freshwater Lateral Road, from Freshwater Road to SR 20	Resurfacing with 6 inch AC	115,200	$1,728,000
	3	Virginia Way, from SR 20 to E Street	Resurfacing with 6 inch AC	78,000	$1,170,000
	4	George Road, from E Street to New Street (New Street connects Hankins Road to 9th Street)	Resurfacing with 6 inch AC	127,200	$1,908,000
	5	Davis Road, from E Street to 1350 ft south of New Street	Resurfacing with 6 inch AC	159,600	$2,394,000
	6	12th Street, from E Street to New Street (New Street connects Hankins Road to 9th Street)	Resurfacing with 6 inch AC	127,200	$1,908,000
	7	9th Street/Zumwalt Road, from E Street to City's Southern Limits	Resurfacing with 6 inch AC	316,800	$4,752,000
	8	Theatre Road, form 9th Street to 7th Street	Resurfacing with 6 inch AC	62,400	$936,000
	9	Crawford Road, from 9th Street to 7th Street	Resurfacing with 6 inch AC	87,600	$1,314,000
	10	Hankins Road, from 9th Street to New Street (New Street connects Hankins Road to 9th Street)	Resurfacing with 6 inch AC	223,200	$3,348,000
			Total Cost for Resurfacing =		***$22,788,000***
			Total Cost for all CIP Improvements =		**$151,264,000**

CHAPTER VIII – TRAFFIC IMPACT FEE

8.1 – TRAFFIC IMPACT FEE: CALCULATION AND JUSTIFICATION

The financing mechanism for these transportation improvements would be a traffic impact fee. Otherwise known as a development impact fee, a traffic impact fee is a monetary exaction other than a tax or special assessment that is charged by a local governmental agency to an applicant in connection with approval of a development project for the purpose of defraying all or a portion of the cost of public facilities related to the development project.

The legal requirements of development impact fee program are referred to as "AB 1600 requirements". AB 1600 (Cortese, 1987) requires that all public agencies satisfy the following requirements when establishing, increasing or imposing a fee as a condition of approval for a development project:

1. Identify the purpose of the fee.
2. Identify the specific use of the fee.
3. Determine that there is a reasonable relationship between the fees and the type development on which the fee is being imposed.
4. Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed.
5. Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.

Transportation Impact fee calculations are usually based upon anticipated peak hour traffic generation for future development. The variable used to quantify the impacts of this new development on the transportation system is trip generation. This analysis uses the PM peak hour trip generation to calculate the impacts of new development. PM peak hour periods are observed to be the busiest period of the day. Therefore the usage of the PM peak hour trip rates accounts for the heightened level of usage of the transportation facilities.

The amount of fee that can be justified for each development type is calculated by dividing the total cost of transportation improvements by the equivalent number of dwelling units. The equivalent number of dwelling units is calculated based on the PM peak hour trip generation for the single family-dwelling units. One PM peak hour trip is equivalent to one dwelling unit. The number of equivalent dwelling units within Williams is equal to the total number of additional PM peak hour trips, which has been estimated as 7,037 PM peak hour trips.

Based on these cost estimates, the cost per EDU is computed to be $151.3 million /7,037 = $21,496. This is the minimum fee that can be expected to be levied per EDU. This calculation doesn't include other funding sources such as State Transportation Improvement Program (STIP) money or the improvements made by the developments to improve the access to their project site.

8.2 FEE IMPLEMENTATION AND ANNUAL ADMINISTRATIVE DUTIES

FEE IMPLEMENTATION

According to California Government Code, prior to levying a new fee or increasing an existing fee, an agency must hold at least one open and public meeting. At least 10 days prior to this meeting, the agency must make data on infrastructure costs and funding sources available to the public. Notice of the time and place of the meeting, and a general explanation of the matter, are to be published in accordance with Section 6062a of the Government Code, which states that publication of notice shall occur, for 10 days in a newspaper regularly published once a week or more. The County may then adopt the new fees at the second reading.

The updated traffic fees should be adopted through a City ordinance or resolution. Any future increases to the traffic fee resulting from annual inflation or minor adjustments can be tied to an inflation adjustment factor or could be adopted annually by resolution. Once the updated traffic fees are adopted by the City Council, they shall become effective no sooner than sixty days later, unless an urgency

measure is adopted. An urgency measure is an interim authorization that waives the sixty-day waiting period and allows the new fees to be collected immediately if a finding of a current and immediate threat to the public health, welfare and safety can be demonstrated. The interim authorization requires a four-fifths vote of the City Council and stays in effect for thirty days; no more than two extensions of the authorization can be granted.

ANNUAL ADMINISTRATIVE DUTIES

The Government Code requires the agency to report every year and every fifth year certain financial information regarding the fees. The agency must make available within 180 days after the last day of each fiscal year the following information for the prior fiscal year:

(a) A brief description of the type of fee in the account or fund.
(b) The amount of the fee.
(c) The beginning and ending balance in the account or fund.
(d) The amount of the fee collected and the interest earned.
(e) An identification of each public improvement for which fees were expended and the amount of expenditures.
(f) An identification of an approximate date by which time construction on the improvement will commence if it is determined that sufficient funds exist to complete the project.
(g) A description of each interfund transfer or loan made from the account and when it will be repaid.
(h) Identification of any refunds made once it is determined that sufficient monies have been collected to fund all fee-related projects.

The agency must make this information available for public review and must also present it at the next regularly scheduled public meeting not less than 15 days after this information is made available to the public.

For the fifth fiscal year following the first deposit into the account or fund, and every five years thereafter, the agency must make the following findings with respect to any remaining funds in the fee account, regardless of whether those funds are committed or uncommitted:

(1) Identify the purpose to which the fee is to be put.
(2) Demonstrate a reasonable relationship between the fee and the purpose for which it is charged.
(3) Identify all sources and amounts of funding anticipated to complete financing any incomplete improvements.
(4) Designate the approximate dates on which funding in item (3) above is expected to be deposited into the fee account

As with the annual disclosure, the five-year report must be made public within 180 days after the end of the agency's fiscal year and must be reviewed at the next regularly scheduled public meeting. These findings must be made by the agency otherwise the law requires that the agency refund the money to the then current record owners of the development projects on a prorated basis.

INTERFUND TRANSFERS

It is recommended that the City adopt a policy that will allow for the transfer of fee revenues between fee funds. This will provide greater funding flexibility and facilitate the timely phasing of improvements by allowing fees to be combined and used as necessary. All interfund transfers must be repaid with interest.

INFLATION ADJUSTMENTS

All fees calculated in this report are reflected in year 2005 dollars. These fees should be adjusted in future years to reflect revised facility standards, receipt of additional funding from alternative sources (i.e., state or federal grants), revised replacement costs, or changes in demographics or the City's land use plan. In addition to such periodic adjustments, the fees should be inflated each year by a predetermined index, such as the Engineering News Record 20-City Construction Cost Index.

FEE CREDITS OR REIMBURSEMENTS

The City may provide fee credits or possibly

reimbursements to developers who dedicate land or construct facilities that are shown in fee program as being fee-funded. Fee credits or reimbursements may be provided up to the cost of the improvement included in the fee program, subject to periodic inflation adjustments, or the actual cost paid by the developer, whichever is lower. For construction cost overruns, only that amount shown in the fee program, subject to periodic inflation adjustments, should be credited or reimbursed. The City will evaluate the appropriate fee credit or reimbursement based on the value of the dedication or improvement. Credits or reimbursements may be repaid based on the priority of the capital improvements, as determined by the City. In some cases, repayment for constructed facilities that have low priority, may be postponed. Fee credits and reimbursements will be determined by the City on a case-by-case basis.

PROJECT COSTS

Actual costs for a particular project may be more or less than the fee portion calculated for that project. It is expected that on average, the amount collected will be appropriate for financing the planned projects. Fee adjustments will need to be made during periodic updates to the fee program for differences based on actual costs incurred on project work completed and revised cost estimates for remaining projects.

CHAPTER IX – CIRCULATION ELEMENT

9.0 – INTRODUCTION

The purpose of the City's General Plan Circulation Element is to guide the growth and expansion of transportation and circulation facilities within the City's planning area. The intent of the Element is to coordinate the expansion of the City's circulation system with the land use changes and growth of the community over the next 25 years to maintain acceptable travel flow conditions.

9.1 - PURPOSE AND LEGISLATIVE AUTHORITY

The following is an excerpt from the General Plan Guidelines published by the Office of Planning and Research, 1982.

> *Government Code Section 65302(b): "A Circulation Element consisting of the general location and extent of existing and proposed major thorough-fares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element of the General Plan."*

Since the Circulation Element was first required by State law in 1955, transportation technology and needs in California have changed greatly, with the emphasis today on the development of a balanced, multi-modal transportation system. The policies and plan proposals of the Circulation Element should:

1. Coordinate the transportation and circulation system with planned land uses;
2. Promote the efficient transport of goods and the safe and effective movement of all segments of the population;
3. Make efficient use of existing transportation facilities; and
4. Protect environmental quality and promote the wise and equitable use of economics and natural resources.

9.1.1 Relationship to Other General Plan Elements

The Circulation Element is most closely related to the Land Use Element of the General Plan. An effective Circulation Element attempts to coordinate estimated increases in the intensities of land uses with improvements in the circulation system to provide sufficient capacity for the resulting increases in travel demand. Roadway improvements should be planned well in advance of anticipated where significant traffic increases.

Since traffic levels on the circulation system is one of the major generators of noise, the Circulation Element is also related to the Noise Element of the General Plan. Traffic safety is an important concern of the Circulation Element; it is also related to the Safety/Seismic Safety Element. Factors of safety and seismic safety affect the location and design of circulation infrastructure, both in terms of structural safety and the need for evacuation and emergency routes.

The Circulation Element is also directly related to the social and economic development of the City. Economic activities require access for the movement of materials, products, customers, and employees. Thus, the economic health of a community is influenced by the effectiveness and efficiency of the circulation system.

9.2 - CIRCULATION ELEMENT ORGANIZATION

This Circulation Element includes all the State required topics that must be included in a Circulation Element in addition to identification of issues of concerns and potential solutions to address them. This Element is divided into the following four sections or parts and a Technical Appendix.

Part A – Goals, Policies, and Programs
Part B – Primary Circulation System
Part C – Secondary Circulation System
Part D – Circulation Issues of Concern

9.3 - GOALS, POLICIES, AND PROGRAMS

The City's Circulation Element goals will provide the overall direction the City desires in planning and

implementing the expansion of their circulation system to meet the changing travel demands of their community. The circulation policies will establish the link between the adopted goals and the implementing programs, and guide how the programs will actually be implemented. The programs, themselves, are the specific action items that will accomplish the improvement or plan that will meet and serve the expanded community need.

Goals

1. Provide Safe and Efficient Vehicular Movement.
2. Coordinate Policies for Land Development and Circulation.
3. Promote Alternative Travel Modes, Including Transit, Pedestrian, Bicycle, and Rail Systems.
4. Coordinate Local Transportation Planning and Administration with the Activities of Other Government Agencies and Concerns of Local Citizens and Businesses.
5. Design And Implement The Circulation System To Protect Natural Features and Conserve Energy.

Policies and Programs

Circulation Goals are provided with the groupings of Policies and Programs to readily connect the link between the above goals and their Policies and Programs.

Goal 1: Provide Safe and Efficient Vehicular Movement

Policy 1.1: Create/Update Citywide Circulation Master Plan.

Program 1.1.1: The City shall maintain the Citywide Traffic Model to help forecast future travel, identify circulation deficiencies and recommend improvements.

Program 1.1.2: The City shall update, as a necessary, the Circulation Master Plan to define and guide the future expansion of the circulation system (Figure 19).

Program 1.1.3: The City shall pursue funding to construct improvements identified in the Circulation Master Plan, including seeking Federal and State grants and updating the traffic impact fee program on a timely basis.

Policy 1.2: Monitor the operation and performance of the street system.

Program 1.2.1: The City shall maintain and update a functional classification of the street system (Figure 9) that reflects land use and traffic patterns.

Program 1.2.2: The City shall establish a data collection program for the street system to include a physical inventory, traffic volumes and accident reports. A summary of such information could be posted on the City's website and updated as appropriate.

Program 1.2.3: The City shall maintain a minimum traffic operating Level of Service of "D" for all the streets except in the downtown area, and LOS E for the streets in the downtown area.

Program 1.2.4: The City shall strive to control traffic levels in residential neighborhoods to not exceed a threshold of 3,500 ADT on any given residential street segment. If such threshold is exceeded, alternative traffic calming strategies shall be considered and implemented as resources permit.

Policy 1.3: Maintain roadways and traffic signals in good condition.

Program 1.3.1: The City shall develop a priority system for physical improvements based on demonstrated needs according to the collected data on physical conditions, traffic volumes and safety reports.

Program 1.3.2: The City shall respond quickly to traffic signal breakdowns and sign damages and losses.

Policy 1.4: Improve traffic capacities of streets.

Program 1.4.1: The City shall create a Capital Improvement Program to construct, pursuant to available funding and priority, improvements that are consistent with the City's Circulation Master Plan.

Program 1.4.2: The City shall control and coordinate with adjacent jurisdictions major access points.

Program 1.4.3: The City shall consider restriction of on-street parking on major and secondary arterials when needed to provide additional street capacity.

Program 1.4.4: The City shall optimize traffic signal performance to increase traffic flow and reduce hazardous emissions. Every effort will be made to coordinate this effort with adjacent jurisdictions.

Policy 1.5: Improve traffic safety.

Program 1.5.1: The City shall review the location and frequency of accidents and develop specific site improvements.

Program 1.5.2: The City shall consider changes in speed limits, parking and turning restrictions to enhance safety.

Policy 1.6: Provide for truck and emergency vehicle traffic.

Program 1.6.1: The City shall designate by ordinance truck routes to direct trucks to routes that maintain sufficient carrying capacity and to discourage truck traffic on local residential streets.

Program 1.6.2: The City shall identify primary emergency vehicle routes and links between the hospital, fire, and police stations.

Program 1.6.3: Design standards for local streets will provide adequate access for fire and police department services. The design of cul-de-sac streets will be discouraged in industrial zoned areas.

Program 1.6.4: Implementation of traffic calming measures shall consider potential impacts to response times for emergency service vehicles.

Program 1.6.5: The City shall upgrade traffic signal installations to include "opticom" emergency vehicle pre-emption to enhance emergency response safety.

Goal 2: Coordinate Policies for Land Development and Circulation

Policy 2.1: The planning, alignment and improvement of the street network will reflect the proposed land use pattern of the General Plan.

Program 2.1.1: The functional classification of streets will identify street purpose and the standards of improvement necessary to accommodate anticipated traffic demand.

Program 2.1.2: In establishing priorities for street improvements, the potential for effects on land use and traffic patterns will be evaluated.

Program 2.1.3: Through-traffic will be discouraged in residential neighborhoods without adversely inhibiting the movement of residents. This may be accomplished by implementing traffic calming measures and other strategies including, but not limited to, traffic diversions, or street design and/or alignment modifications.

Program 2.1.4: A system of collector streets will continue to be expanded to provide easy access from local streets to commercial centers, schools and other high-traffic generators.

Program 2.1.5: The City shall adopt new street plan lines (street alignments) for arterials and collectors to protect rights-of-way for future street improvements.

Policy 2.2: Review the impact of land use proposals on the circulation system.

Program 2.2.1: Development proposals shall be reviewed according to the provisions of the zoning and subdivision ordinance to ensure that adequate access, on-site circulation, parking, and loading areas are provided.

Program 2.2.2: The City shall require developers to provide mitigations to potential adverse impacts of development on the existing street system. This may include necessary street improvements, traffic signs, or signals.

Program 2.2.3: Roads created in subdividing or land parceling will be designed to tie into existing and anticipated road systems.

Program 2.2.4: Development review will analyze of visibility at intersections.

Policy 2.3: Integrate the circulation system as a positive element of community design.

Program 2.3.1: In the development review process, the City shall include consideration of the visual aspects of a development for roadways. Aesthetic consideration shall include architectural compatibility and landscaping.

Program 2.3.2: The City shall continue implementation of the utility undergrounding program.

Program 2.3.3: The City shall consider the construction of landscaped medians on commercial thoroughfares to help slow traffic flows and to help provide for a more scenic roadway.

Program 2.*3.4:* The City shall consider integrating residential street features that calm traffic, increase safety and are aesthetic amenities to neighborhoods. Additionally, reduction in residential street width shall also be considered as a traffic calming option. If such street width reduction is recommended and implemented, consideration for reduction of public right of way should also be included.

Goal 3: Promote Alternative Travel Modes, Including Transit, Pedestrian, Bicycle, Rail Systems

Policy 3.1: Provide for desirable and safe alternative access to schools, parks, and shopping areas from residential areas within the City.

Program 3.1.1: The City shall plan and require construction of bikeways, sidewalks, and pedestrian accessways to all major destination points within the City.

Program 3.1.2: The City shall maximize the involvement of public agencies and the private sector in the provision of transit services and alternative access.

Policy 3.2: Encourage the continued development and expansion of local and regional public transit systems.

Program 3.2.1: The City shall review and comment on proposed changes to the Colusa County Transit Authority (CCTA) bus system.

Policy 3.3: Encourage bicycle transportation.

Program 3.3.1: The City shall maintain and update a Bikeway Master Plan to guide the orderly provision of bikeway facilities throughout the City.

Program 3.3.2: The City shall integrate local bikeway planning with regional plans.

Program 3.3.3: The City shall encourage the provision of bicycle support facilities at major bicycle destination points.

Program 3.3.4: The City shall continue and expand bicycle safety education programs within the local schools.

Program 3.3.5: The City shall seek State Bicycle Lane Account funds and other funding to help pay for the completion of a comprehensive bikeway system within in the City.

Policy 3.4: Improve and maintain the system of sidewalks and crosswalks to promote a pedestrian-friendly community

Program 3.4.1: The City shall identify and prioritize major sidewalk improvements.

Program 3.4.2: The City shall comply with the American Disabilities Act (ADA) and construct improvements to enhance accessibility.

Program 3.4.3: The City shall provide crosswalks at signalized intersections.

Program 3.4.4: The City shall require sidewalks along public frontage for new public and private developments.

Policy 3.5: Promote rail transportation.

Program 3.5.1. The City shall coordinate with the Colusa County regarding the potential for commuter rail service.

Goal 4: Coordinate Local Transportation Planning and Administration with the Activities of Other Government Agencies and Concerns of Local Citizens and Businesses

Policy 4.1: Publicize major transportation issues and solicit public input.

Program 4.1.1: The City shall provide timely notification to the public through press releases, public service radio announcements, television, and contact with local organizations.

Program 4.1.2: The City shall conduct public hearings on proposed major actions and notify the public through mandated public notices.

Program 4.1.3: The City shall convene for a duration as needed, a Traffic Committee to address specific transportation issues and concerns as they arise within the City.

Policy 4.2: Coordinate transportation planning with regional and local plans.

Program 4.2.1: The City shall coordinate compatibility of proposed actions with transportation plans of adjacent cities and Colusa County.

Program 4.2.2: The City shall evaluate regional impacts of proposed local improvements.

Program 4.2.3: The City shall coordinate with Caltrans District 3 and the Federal Highway Administration (FHWA) on improvement plans to State/Federal facilities within the City's planning area and its vicinity.

Goal 5: Design and Implement The Circulation System To Protect Natural Features And Conserve Energy.

Policy 5.1: Designate local scenic routes and enhance and protect their scenic qualities.

Program 5.1.1: The City shall control the quality of improvements through design standards and review.

Program 5.1.2: The City shall investigate public or private agency acquisition of land, development rights or open space easements for areas of outstanding scenic value.

Policy 5.2: Protect natural features.

Program 5.2.1: The City shall strive to minimize the loss of prime agricultural land to road construction.

Program 5.2.2: The City shall investigate public or private agencies' acquisition of land, development rights, or open space easements for agricultural areas.

Program 5.2.3: The City shall strive to minimize grading for new roads and improvements, conserve prominent land forms and minimize tree removals.

Program 5.2.4: The City shall comply with the Clean Air Act.

Program 5.2.5: The City shall evaluate circulation improvements and traffic control as to their effect on air and noise pollution.

Policy 5.3: Conserve energy.

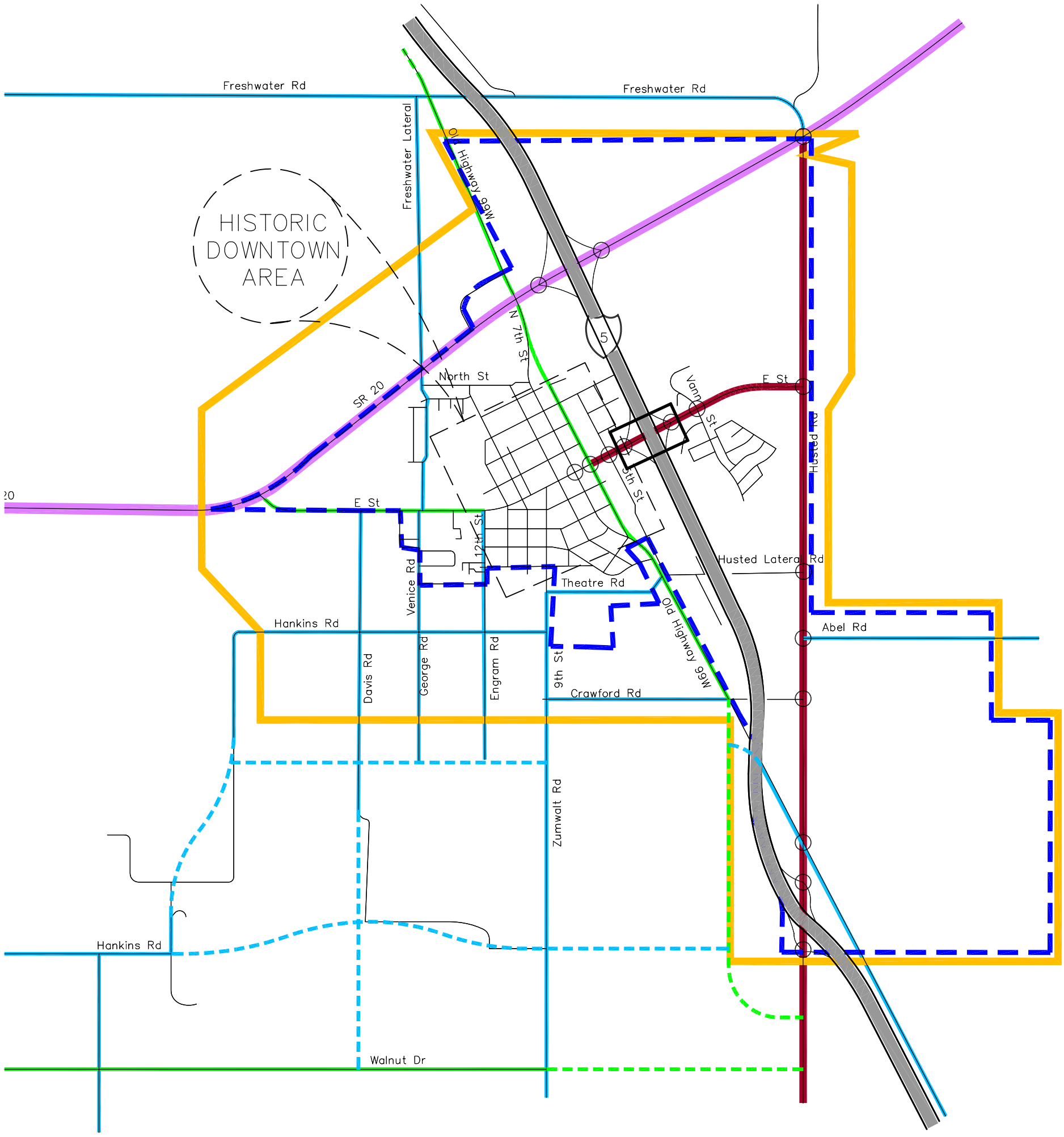
Program 5.3.1: The City shall provide for bikeways, pedestrian ways, and public transit as energy conserving, non-polluting alternatives to auto travel.

Program 5.3.2: The City shall strive to provide for smooth traffic flow and a compact urban pattern to maximize efficient movement between residential, commercial, and public areas.

9.4 CIRCULATION MASTER PLAN AND STREET CLASSIFICATION

In response to the first circulation goal, a Circulation Master Plan has been created to guide the future expansion of the City's circulation system and to define the functional classification of the system to meet the travel needs of the community. Shown on Figure 8 is the City's Circulation Master Plan.

Functional classification designates all streets and highways within the City's planning area and vicinity into several broad categories. These categories include Freeway, Highway, Arterial (Major and Minor), Major Collector, Collector, and Local streets. Each classification has specific standards and criteria through which design and route are developed.



LEGEND

- FREEWAY
- EXPRESSWAY
- MAJOR ARTERIAL
- MINOR ARTERIAL
- PROPOSED FUTURE
- MAJOR COLLECTOR
- COLLECTOR
- LOCAL (RESIDENTIAL)
- CITY LIMIT
- SPHERE OF INFLUENCE
- MAJOR INTERCHANGE MODIFICATION
- INTERSECTION IMPROVEMENT

Williams General Plan Update

Figure 8

Circulation Master Plan

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These criteria include:

1. Existing and potential development and land use intensities;
2. Expected peak traffic loads;
3. Potential physical improvements such as road widening; and
4. Special designations such as scenic routes.

Below are the standard street right-of-way widths for each classification used in the City of Williams.

Street Classification	Standard ROW Width
Major Arterial	120' Minimum
Minor Arterial	96' Minimum
Major Collector	70' Minimum
Minor Collector	58' Minimum
Local	52' Minimum

Freeway – Characterized by high speeds and limited controlled access, freeways primarily serve regional and long distance travel. I-5 is the only freeway through the City of Williams.

Expressway – A highway with restricted driveway access, but with a mix of grade-separated interchanges and at-grade intersections. SR 20 is the only expressway in Williams.

Major Arterial – These streets are generally higher speed, higher capacity transportation corridors that link the community with highways and freeways.

Minor Arterial – Medium speed and medium capacity, these roads are principally for travel between larger land uses within the community. Husted Road and E Street between Husted Road and 6th Street are the minor arterials.

Major Collector (Industrial Street) – Facilities that may be upgraded to an arterial in the future and usually limit on-street parking to maintain smooth flow.

Collector Street – Relatively low speed and low capacity, collector streets are generally two lanes connecting neighborhoods with other neighborhoods as well as with the arterial system.

Local Street – Local Streets are low speed, low capacity street that provide direct access to adjacent land uses and are typically meant only for local, as opposed to through traffic.

This classification system is consistent with national standards, and provides a good framework for the planning of a citywide, or areawide transportation systems. The Freeways and Expressways fall under the jurisdiction of Caltrans and hence their construction standards are dictated by the policies and standards of Caltrans. Additional definitions for Local Streets, Collector Streets, and Industrial Streets are summarized below:

Local Street – A local street provides access for not more than 100 residential dwelling units. It is a two-lane street with the following characteristics:

- Right-of-Way width of 52 feet
- Curb face to curb face dimension is 34 feet.
- Sidewalk shall be placed adjacent to the gutter and shall be 4 feet in width.
- Traffic index for design purposes shall be 5.5.
- Maximum Grade 15%, minimum grade 0.4%.
- Curb return radius 20 feet minimum.

Collector Street – A collector street serves abutting property and carries traffic to and from the higher street classifications. It is a two-lane street with the following characteristics:

- Right-of-Way width of 58 feet.
- Curb face to curb face dimension is 38 feet.
- Sidewalk shall be 5 feet in width normally placed adjacent to the gutter.
- Traffic index for design purposes shall be 6.0.
- Maximum Grade 10%, minimum grade 0.4%.
- Curb return radius 20 feet minimum.
- Pavement markers and striping shall be provided in accordance with the Standard Plan details.
- When required left-turn pockets shall allow for a minimum of three vehicle stacking.

Industrial Street – An industrial street serves traffic within an industrial development and has the following characteristics:

- Right-of-Way width minimum of 70 feet.
- Curb face to curb face dimension is 50 feet.
- Radius of cul-de-sac 50 feet (face to curb).
- Traffic index for design purposes shall be 7.0.
- Maximum Grade 8%, minimum grade 0.4%.
- Curb return radius 25 feet minimum.

The following streets are designated as major collector streets:

1. Freshwater Road
2. Hankins Road
3. Hill Road
4. Davis Road
5. Freshwater Lateral Road
6. Virginia Way
7. Venice Boulevard
8. George Road
9. 12th Street
10. 9th Street
11. Theatre Road
12. Crawford Road
13. Abel Road
14. Old Highway 99W
15. Crawford Road

Local Streets: Local streets carry traffic between collector streets and the actual traffic-generating land uses (residential, commercial, industrial etc. in nature). Local streets provide direct driveway access to public/private property. Local streets are not intended to carry through traffic except in instances where they are located in commercial or industrial areas. To carry as little traffic as possible, local streets are often designed to turn, curve or *cul-de-sac*. The use of signage, signals, speed bumps, street striping and other "traffic calming" measures are all valid ways to discourage through traffic on local streets.

The purpose of local streets is to provide direct access to/from adjacent property. Local streets serving residential areas should ideally carry small volumes of traffic so that neighborhood residents' "livability" thresholds are not exceeded. The City may also consider implementing physical traffic calming measures and/or enforcing ordinance measures to restrict through truck traffic on local streets serving residential areas. Local streets should exhibit sound design qualities and should provide easy access to all emergency vehicles. City standards for the design of local streets should be strictly adhered to. At specific locations, the City may prohibit the design of *cul-de-sac* local streets, from a fire and emergency access standpoint.

In establishment of a "livability" threshold for the City of Williams is important to maintain healthy residential communities. Typical thresholds for neighborhoods in other communities range between 1,000 to 4,000 average daily trips (ADT) on a local residential street. Setting the "livability" threshold too low would encourage potentially unwarranted traffic calming measures. Implementation of those measures on any given neighborhood street within a "grid" street system, would only force traffic to the adjacent neighborhood street, creating or aggravating a traffic volume and speeding problems. Therefore, for Williams, a threshold of 3,500 ADT was established.

Future Street Improvement Projects

The future street improvement projects to be constructed within the City are as follows:

Downtown Revitalization Improvements – In order to improve downtown traffic circulation, modifications to the E Street, 6th Street and other downtown streets are anticipated, which will be the focus of the "Downtown Revitalization Improvements".

I-5 Interchange Improvements – Modifications to the E Street interchange to increase the capacity.

Davis Road – Extension of Davis Road up to Walnut Drive.

Old Highway 99W – Extension of Old Highway 99W up to Husted Road on the west side of I-5.

New Street – Construct a New Street parallel to Hankins Road and connecting 9th Street with Hankins Road.

Hankins Road – Extension of Hankins Road parallel to Walnut Drive up to Old Highway 99W extension.

6th Street – Improve 6th Street as a primary north-south route

Davis Road – Extension of Davis Road up to Walnut Drive.

9.5 TRAFFIC CONTROLS

Traffic can be controlled using various methods. Signal lights, signs, and striping are all effective ways of directing and controlling traffic. The design of the circulation system, in itself, can also help control traffic. The width of the roadway, hills, and corners are all ways in which the design of the road system influences traffic movement.

It is essential that the design of a roadway reflect the intended speed of the traffic the roadway will carry. If the operational speed of traffic on the roadway is intended to be relatively low, say 25 m.p.h., then the roadway width should be kept relatively narrow and the use of curves should be considered. If the intended operational speed of the traffic is higher, say 40 or 45 m.p.h., then a wider, straighter roadway should be used.

Studies have shown that over 80% of drivers exceed the speed limit at some time in their lives. As a safety factor, roads are currently designed to carry traffic at operational speeds 10-20% higher than the posted speed shown on speed limit signs. This is to ensure that, in the event that people do speed, they won't lose control of their vehicle and injure themselves and others. The relative safety that a driver feels influences the actual driving speed at least as much as the posted speed limit. Many people speed consciously, risking a speeding citation because they feel the posted speed is too low or they are just in a hurry. The majority of people will not drive faster than a speed at which they feel safe, regardless of the posted speed limit. The City shall consider implementation of traffic calming measures and additional traffic control measures as potential ways to control traffic speeding.

At present, there are no traffic signals located within the City of Williams. All the intersections are controlled by two way or all-way "Stop" signs or "Yield" signs.

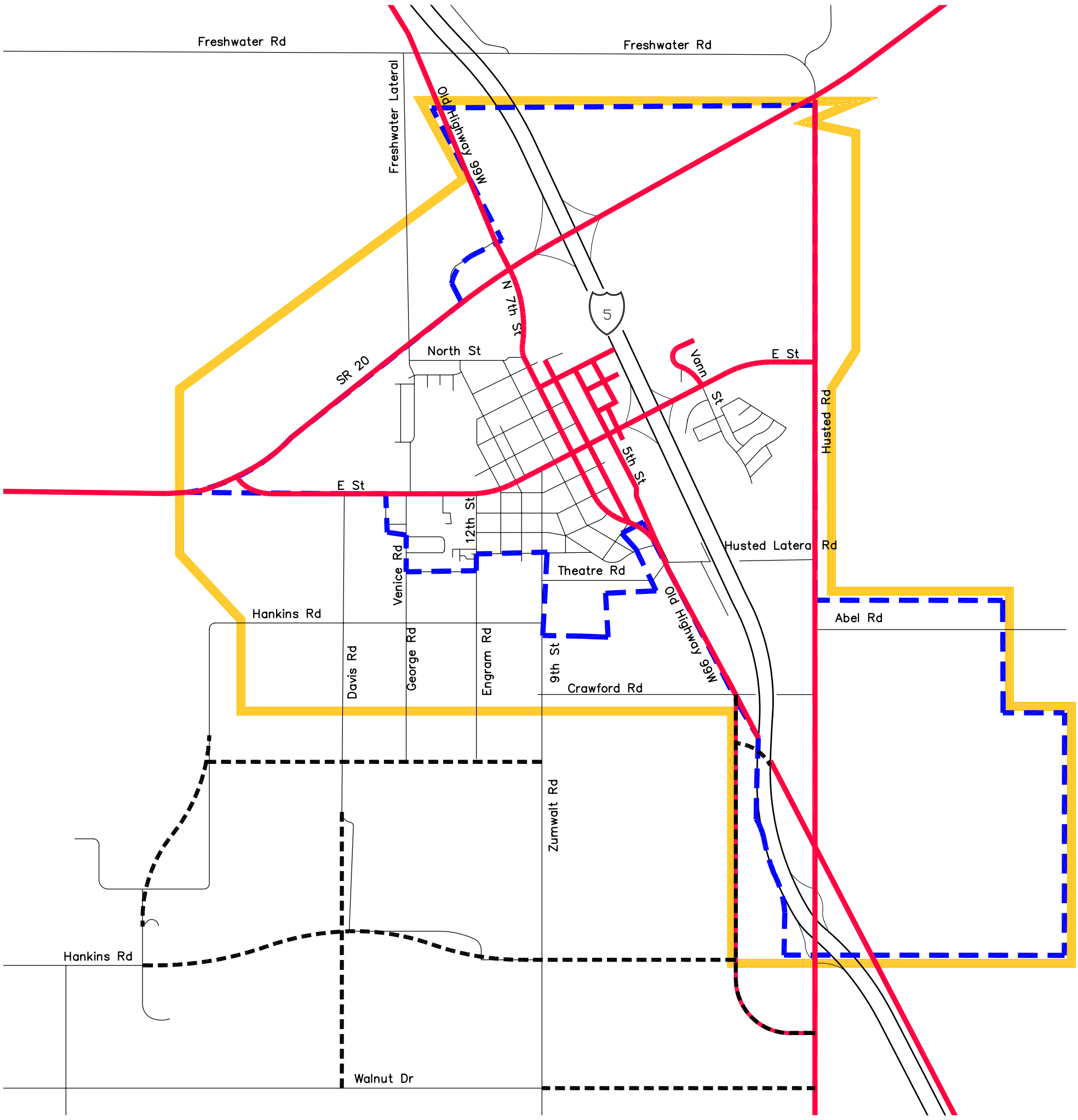
Over the next 20 years, the life span of a General Plan Element, traffic signals will be needed to ensure the continued flow of traffic on the City's major streets. Based on Citywide traffic projections, additional signals and widening improvements, as shown on Figure 19 may be needed on the City's street system as determined from traffic signal warrant analysis based on the *Caltrans' Traffic Manual.*

Obviously, land use decisions, growth trends and funding capabilities can and will play a major factor in the timing of these improvements.

9.6 TRUCK ROUTES

The California Vehicle Code, Section 35701 grants local agencies the authority (by ordinance) to establish Truck Routes. Many communities have established truck routes as a means of reducing conflicts between incompatible uses. By prohibiting or restricting trucks from some residential streets, the noise, safety, and structural pavement deterioration problems caused by trucks can be eliminated or minimized. At the same time, it is essential to ensure adequate truck access to all commercial and industrial locations.

It must be understood that trucks play an important role in the movement of goods and the delivery of services. Regulations establishing truck routes must not be so strict that they prohibit efficient movement of trucks within and through the City. On the other hand, as the City and neighboring communities continue to grow, the need for regulations prohibiting trucks from interfering with residential livability will also continue to grow. Therefore, in establishing a system of truck routes, careful balance between focusing trucks to primary routes that minimized community impacts and maintain reasonable truck accessibility was needed. Proposed truck routes within and through the City include Old Highway 99W, 6th Street, 5th Street, 4th Street, Vann Street north of E Street and Husted Road are the north-south truck routes. B Street, C Street and D street east of 7th Street/Old Highway 99W, SR 20 and E Street are other major east-west truck routes within the City. Figure 9 shows the recommended truck route within the City of Williams.



LEGEND:

- CITY LIMIT
- SPHERE OF INFLUENCE
- PROPOSED FUTURE ROADWAY
- TRUCK ROUTES

City of Williams General Plan Update

Figure 9

Truck Routes

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The most widely used system of establishing truck routes is to install signs indicating the streets that trucks are allowed to use. Usually, ordinances regarding truck routes are worded to allow "reasonable access" to all businesses requiring the use of trucks. "Reasonable access" usually means that trucks are allowed to deviate from designated routes in order to reach a destination that is not located along a truck route.

9.7 TRANSIT/BUS

9.7.1. Colusa County Transit Agency

The Colusa County Transit Agency (CCTA) provides a General Public Paratransit service to the County of Colusa. It operates a fleet of 5 ADA compliant vehicles, with seating capacity of 19 passenger and 2 wheelchair positions. Currently, CCTA operates a Dial-a-Ride service Monday thru Friday, 7:00 AM to 5:00 P.M. They travel to Williams 10 times a day, and they serve the general population. Customers may be assured of a ride by calling before 5.00 PM the previous day, as well as calling in the same day.

Fares for CCTA buses are as follows, children up to age 2 ride free, children ages two to five years pay $1.00 for local trips and $1.25 for trips within the county, and children ages six and above and adults pay full fare which is $1.25 for each local stop and $1.75 for trips within the county.

CCTA began operation in 1979 with two vehicles and it has grown to five 19-passenger vehicles for daily Transit service and one 7-passenger w/2 wheelchair positions van for Non-emergency Out-of-County medical transportation.

Transportation Agency meetings are held each month and are open to the public. CCTA also has an "Unmet Needs" advisory meeting, which is held in December of each year to provide input for possible changes that are reasonable to meet. This group is made up of service providers and passengers that represent different groups in the community.

CCTA is funded by Local Transportation Funds (LTF), Transportation Development Act (TDA) and State Transit Assistance (STA). At this time service is limited to Dial-a-Ride. If there is any expansion to service there will have to be additional on going operational funding provided.

In Williams the Migrant Camp is a heavy user of CCTA, with the passengers coming to Colusa for services and shopping and with the Williams locals using the daycare center year round.

Passengers leaving Colusa to go to the Williams/Arbuckle areas are commuting to work at the local restaurants, tomato plants, rice mills, and motels.

At this time Williams only provides school bus service to school in the morning and does not provide transportation home. All age groups are able to ride the bus to school. CCTA have reported an increase in transit services for both local and county rides from the Valley Ranch residents.

As the City of Williams grows, increased transit service for employment, shopping, recreation, and medical appointments will continue to increase. Currently CCTA is experiencing longer wait times and late buses caused by the increase demand for service.

Looking in to the future at the long range plan commuter service may be needed and additional trips to all communities within the county.

To ensure that the existing and future transit needs for the City of Williams are addressed, City staff should have involvement and coordinate with CCTA in finding additional funding sources to provide a full time bus in the City of Williams.

9.8 BICYCLE CIRCULATION

For the past 50 years the extensive road networks constructed to serve the automobile-based transportation system have included only marginal provisions for bicycle use. However, a resurgence of the bicycle as a vital mode of transportation is occurring as a result of automobile-oriented transportation difficulties, economics, recreation, leisure time availability, physical fitness needs and concern for the environment. This interest is reflected in increasing public pressure for pathways and routes where bicycles can be ridden in relative safety.

Senate Bill 277 (Statutes of 1975} established the California Bikeways Act. The Act included

provisions requiring the State Department of Transportation to establish "recommended minimum general design criteria for the development, planning, and construction of bikeways..."

Safety is one of the most important aspects to consider when planning bicycle facilities. Most bikeway-related accidents occur because of unsafe or illegal practices by bicyclists, which are usually compounded by poor road conditions, and motorists who are not aware of bicyclists. The leading violations of bicyclists are: 1) riding on the wrong side of the road, 2) failure to yield when entering the roadway, 3) failure to obey traffic signs and signals; and 4) riding at night without lights.

Bikeway Designations: The term "Bikeway" is used to define all facilities that explicitly provide for bicycle travel. The Department of Transportation has developed different definitions that are used to systematically categorize different types of bicycle facilities. Bikeways, then, can be anything from fully grade-separated facilities to, simply, signed streets. The three classes of bikeways are Bike Paths (Class I), Bike Lanes (Class II), and Bike Routes (Class III).

1. Bike Paths (Class I): Class I Bike Paths are completely separated right-of-ways designated for the exclusive use of bicycles. Cross-flows by pedestrians and motorized vehicles are minimized.
2. Bike Lanes (Class II): Class II Bike Lanes are restricted right-of-ways designated for the exclusive or semi-exclusive use of bicycles. Travel by motor vehicles or pedestrians is not allowed; however, vehicle parking may be allowed if there is sufficient space available for both the bicycle lane and the parking lane. Cross flows by motorists are allowed, for example, to gain access to parking facilities or adjacent land uses. In most cases, Class II Bikeways require a lane of at least four feet of well-maintained pavement for the cyclist to ride on.
3. Bike Routes (Class III): Class III Bike Routes are shared right-of-ways either on the street or on the sidewalk, and are designated by signs placed on vertical posts or markings stenciled on the pavement. Any bikeway which shares a through-traffic right-of-way with motor vehicles and pedestrians is considered a Class III bikeway.

Currently there are no bike paths in the City. The current General Plan identifies to consider developing bike paths along north –south corridors (9th – 12th Streets) into potentially developing areas. It also identifies that bike trails may be appropriate on east/west collectors to the industrial area and along Husted Road.

Figure 10 shows the recommended bike circulation through the City of Williams.

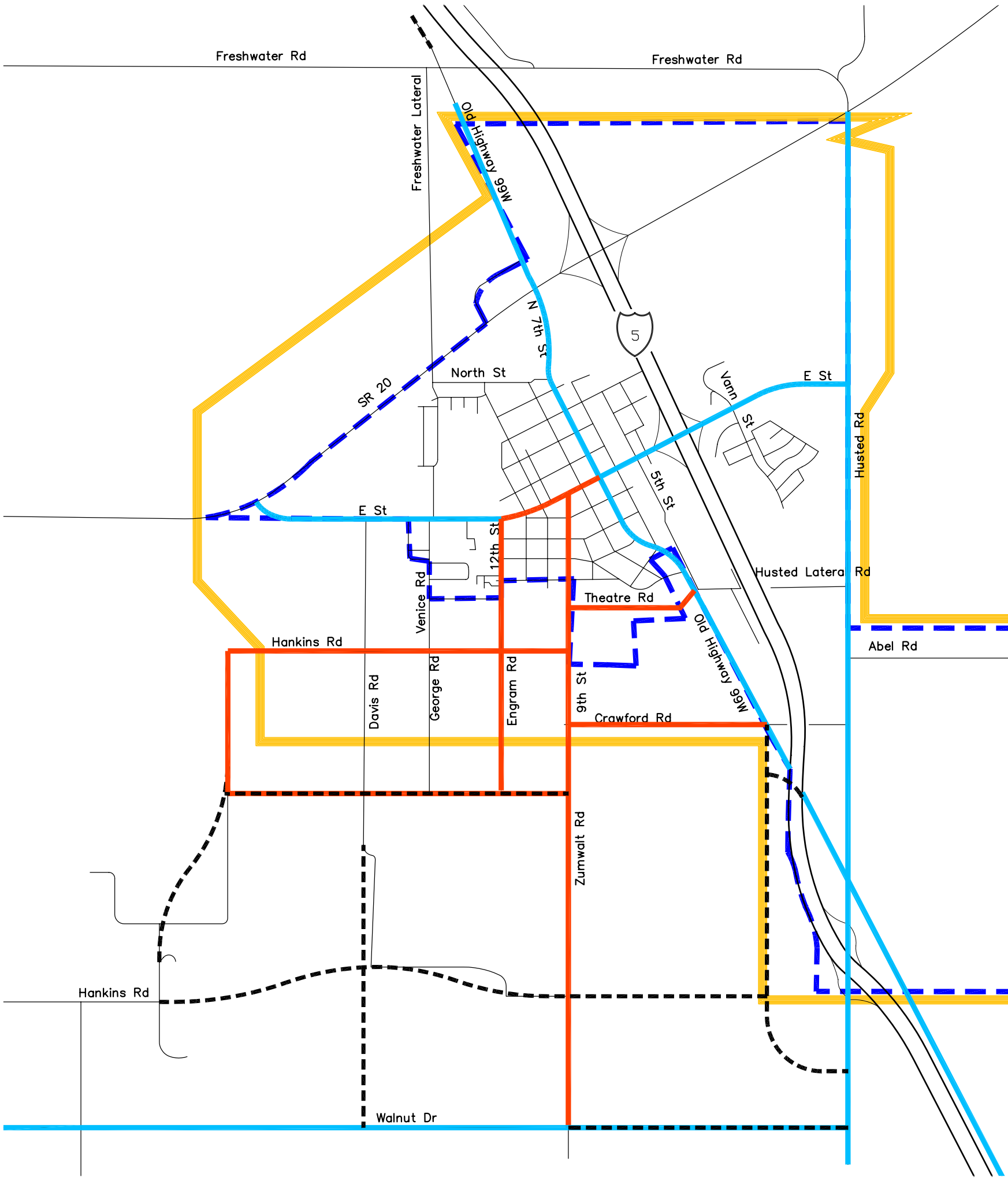
The City shall maintain and update a Citywide Bicycle Master Plan in conformance with these standards.

9.9 PEDESTRIAN CIRCULATION

Providing a safe and convenient system for pedestrian circulation is an important concern of the Circulation Element. Sidewalks provide a relatively safe area for pedestrian movement because they are separated from most other forms of transportation. Consistent with recent legislation under the American Disabilities Act (ADA), all existing and planned pedestrian improvements should allow access to all people and comply with the design guidelines as set forth within the Act.

The first priority access for sidewalk improvements should be near schools and school bus stops. Sidewalk improvements should be constructed in these areas first if capital improvement projects are undertaken by the City or if assessment districts are formed. Assessment districts and capital improvement projects for other purposes, such as street widening, may include the installation of curbs, gutters, and sidewalks.

The second priority areas for sidewalk improvements shall be in commercial districts. A considerable network of sidewalks exists in commercial areas of the City. To further encourage and enhance pedestrian circulation, conditional approval of any development proposal by the Planning Commission and City Council needs to include a requirement that the applicant install curbs, gutters and sidewalks where they do not currently exist. To provide for



LEGEND

- CITY LIMIT
- SPHERE OF INFLUENCE
- PROPOSED FUTURE ROADWAY
- CLASS I BIKE PATHS
- CLASS II BIKE LANES
- CLASS III BIKE ROUTES

City of Williams General Plan Update

Figure 10

Bicycle Circulation Plan

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easier access for wheelchairs, City standards, consistent with ADA requirements, call for ramps at all street corners.

9.10 RAIL TRANSPORTATION

Currently there are no passenger or freight services through the City of Williams. A freight train passes through Williams twice a day.

Making the rail-transit link an effective part of the transportation corridor between the Williams area and the Bay area can facilitate the long-term economic growth of the area. Rail transit also offers the potential for more comfortable and expedient alternatives for the movement of people and products between the Williams and the Bay area.

9.11 AVIATION

Colusa County airport located in the City of Colusa is about 20 minutes from the City of Williams. The county owns and operates the airport. The airport was permitted by the state as an operating airport in 1961. There is one runway that is 3,000 feet by 60 feet with a parallel taxiway that is 3,000 feet by 40 feet. The airport serves all general aviation activities including crop dusters, business/commercial aircraft, emergency aircraft, law enforcement aircraft besides personnel use aircraft. There are long term plans to extend the runway another 700 feet for safety purposes. The closest commercial airport is located less than an hour south on I-5 in Sacramento.

9.12 CIRCULATION ISSUES OF CONCERN

The following are circulation issues of concern obtained from the community within the City of Williams (through Public Workshops, communications with City of Williams Citizens, and City staff meetings). A brief discussion describing each circulation issue and potential solutions/concepts, strategies, suggestions and recommendations has also been included, where applicable.

- **To be determined**

APPENDICES

APPENDIX A - TRAVEL DEMAND MODEL DEVELOPMENT

APPENDIX B - DESIGN CONCEPTS FOR THE RECOMMENDED IMPROVEMENTS

APPENDIX C - UNIT COST ESTIMATION

APPENDIX D - INTERSECTION LOS REPORTS

APPENDIX A

TRAVEL DEMAND MODEL DEVELOPMENT

APPENDIX A – TRAVEL DEMAND MODEL DEVELOPMENT

A.0 – INTRODUCTION

Appendix A presents a technical discussion of the process used to create the City of Williams Citywide Travel Demand Model. A study area traffic model was developed using *Traffix 7.8* software developed by Dowling Associates to provide basis for existing and future traffic volume forecasts.

A.1 - DATA SOURCES

The travel demand model is based on land use information at parcel level. The City provided parcel shape file along with AutoCAD drawing files for the General Plan land use and zoning maps. A high resolution aerial image was obtained from ENPLAN.

A.2 - CREATION OF TAZ MAP

The first modeling step was the creation of a land use database that can be utilized by the model. The land use information is organized into discrete traffic-generating units referred to as "Traffic Analysis Zones" (TAZ's). A TAZ is defined as a geographical area that comprises of contiguous land development (parcels, subdivisions etc.) aggregated into a "traffic shed" for modeling purposes. Each TAZ would have one or more "connectors" feeding traffic generated from that TAZ on to the adjacent street system at logical but schematic access points. The TAZ definitions were developed using closed boundaries contained within natural geographic barriers as well as "man-made" barriers like major street right-of-ways etc., and taking into account how traffic generated from localized development would logically "shed" to the adjacent street system.

The travel demand model "study area" consists of the City of Williams Sphere of Influence as well as parcels immediately next to the City of Williams Sphere of Influence boundary. Utilizing the study area parcel mapping database (in GIS format), a "TAZ Map" that consists of a system of TAZ's for the City of Williams model area was developed using *AutoCAD Map* and *ArcView GIS* programs. For the entire City of Williams model area, a total of fifty six (56) TAZ's were defined.

Figure A1 shows the City of Williams Travel demand model's TAZ Map with the TAZ numbers posted.

A.3 – EXISTING AND UNDEVELOPED LAND USE SUMMARY

Existing land use summary was compiled using aerial image and parcel layer. The developed parcels were identified and associated with respective zoning. The acreage of the vacant parcel was determined using GIS tool ArcToolbox. A standard FAR (Floor Area Ratio) of 0.25 was used to estimate the GFA (Gross Floor Area) for the parcel. The resulting existing land use summary is shown in Table A1.

TABLE A1 EXISTING LAND USE SUMMARY

Land Use Type	Quantity	Units
Residential Units	1,184	du's
Commercial Development	397	KSF
Industrial Development	871	KSF

KSF:1000 Square Feet

Undeveloped land use was estimated by identifying vacant parcels and associating them with respective zoning. The GFA for the parcel was estimated using standard FAR and ArcToolbox. The resulting land use summary is shown in Table A2.

TABLE A2 UNDEVELOPED LAND USE SUMMARY

Land Use Type	Quantity	Units
Residential Units	5,884	du's
Commercial Development	178 /1.94	Acres/MSF
Industrial Development	528 /5.75	Acres/MSF

DU's: Dwelling Units; MSF: Million Square Feet

A.4 – TRAVEL DEMAND MODEL NETWORK CREATION

A street network system consisting of all the major streets within City of Williams sphere of influence, TAZ's, gates, intersections and centroid connectors was developed in Traffix. The first step in the process was creation of a street network consisting of major streets that the model would utilize to distribute and assign trips generated by the zonal land uses. The model's street network consists of nodes and links. Each "node" in the network represents an intersection or some other intermediate

point on the street system. Each "link" in the network represents a roadway segment connecting between two nodes.

Using an "overlay" of the TAZ Map on top of the street network, "Zones", "Gates" and additional links that represent "centroid connectors" were defined. A "Zone" is a logical point within a TAZ where all land development contained within that TAZ may be assumed to be concentrated, for traffic modeling purposes. The centroid connectors are schematic links that carry traffic (in both directions) between the "Zone" and the adjacent street system. Special zones known as "Gates" were also coded which represents the terminal points for the zones and the external points. In all, the model system had a total of 56 traffic-generating zones and 77 gates.

Figure A2 shows the *Traffix* street network used in the City of Williams travel demand model.

4.4.1 Trip Generation

The trip generation rates were obtained using standard reference source Institute of Transportation Engineers (ITE) Publication *Trip Generation (Sixth Edition)* Manual. The land use quantities already summarized by TAZ were multiplied by appropriate trip generation rates to obtain an estimate of AM and PM peak hour trip generation by TAZ. Trip Generation from commercial and industrial uses was reduced by 25% to account for internal trip matching. The trip generation estimates for existing and future land uses were manually coded into *TRAFFIX*

4.4.2 Trip Distribution and Pathing

A generalized trip distribution pattern was established based on knowledge of the existing traffic flow patterns, demographics, etc.

- 26% of the total trips were assumed to travel south on I-5
- 22% of the total trips were assumed to travel north on I-5
- 14% of the total trips were assumed to travel east via Husted Road and then onto SR 20.
- 2% were assumed to travel west on SR 20
- 36% of the trips were assumed to have destinations within the City

Two different trip distribution patterns were established for the internal trips based on the understanding of existing land uses for residential and commercial/industrial land uses.

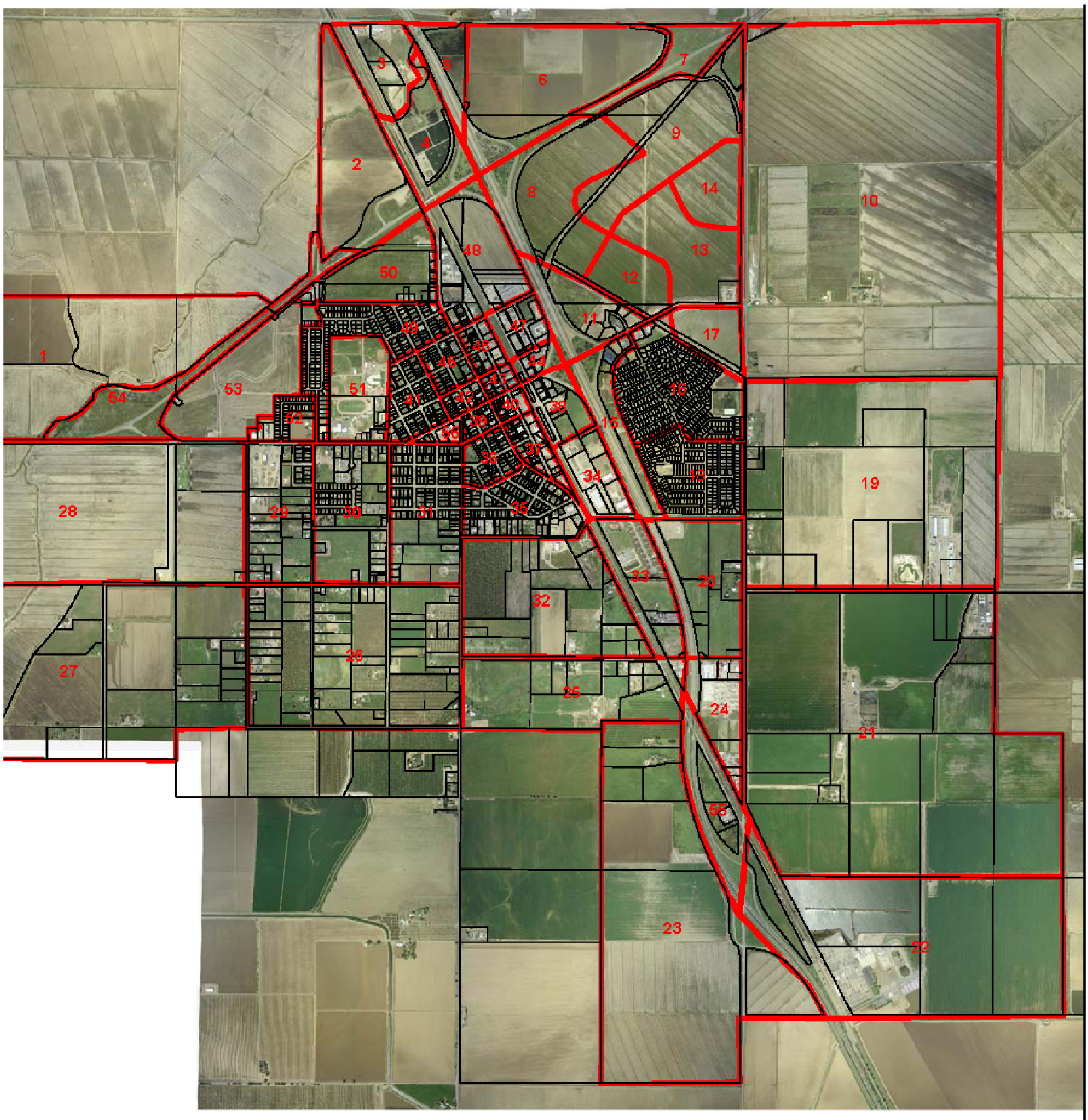
Figure A3 and Figure A4 shows the trip distribution for residential and commercial/industrial land uses.

The trip distribution for each zone was manually coded into traffix.

All the fifty six TAZ's were aggregated into nine regions. Figure A5 shows the map with nine regions. The pathing of trips from each region to a destination was based on shortest travel time.

Figures A6 to A14 show the traffic assignment for each of the regions.

The *TRAFFIX'S* software allows for pathing from each zone to a gate.

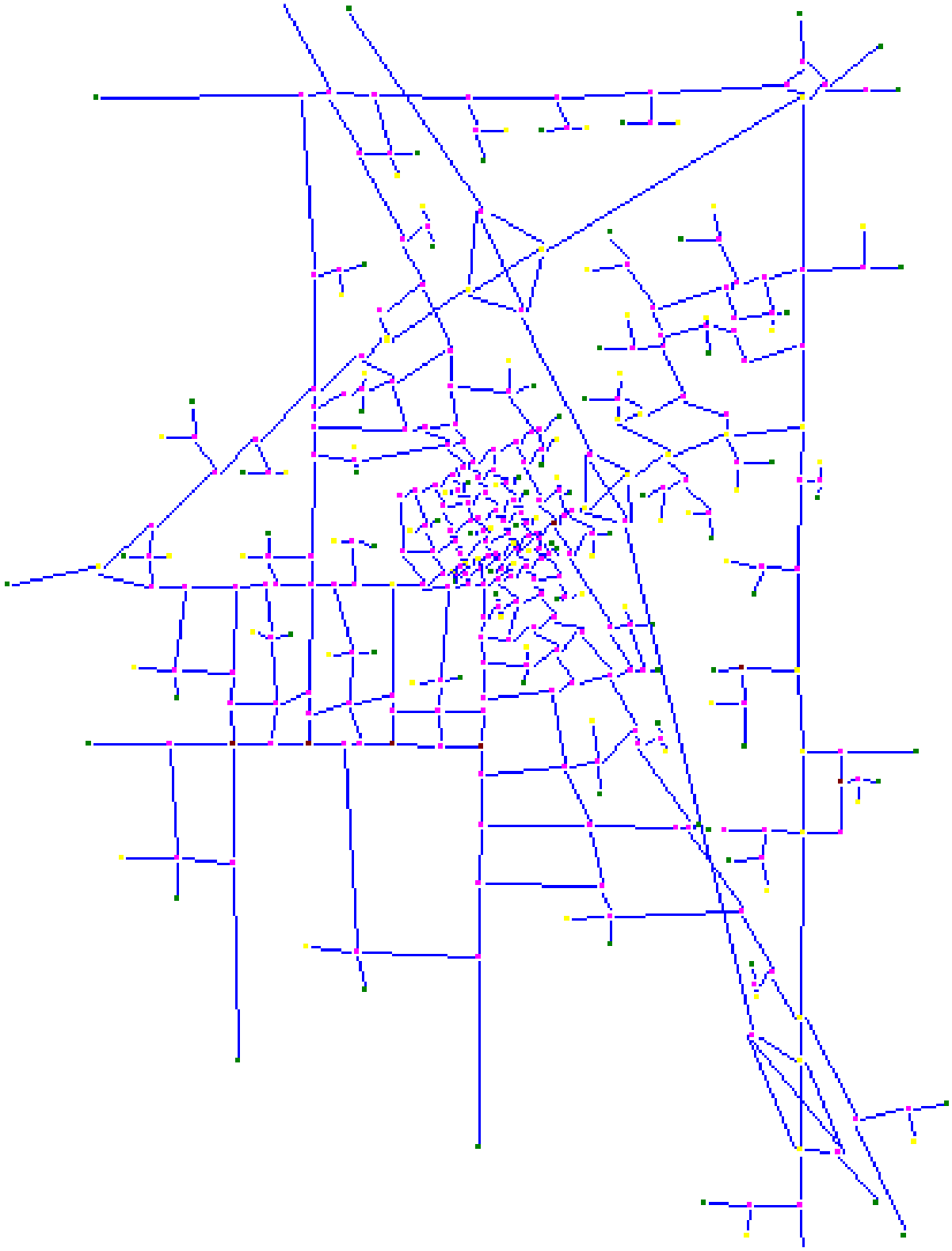


City of Williams General Plan Update

Figure A1

TAZ Map

T1125TG17.DWG (01MAY07) 25-1731-01

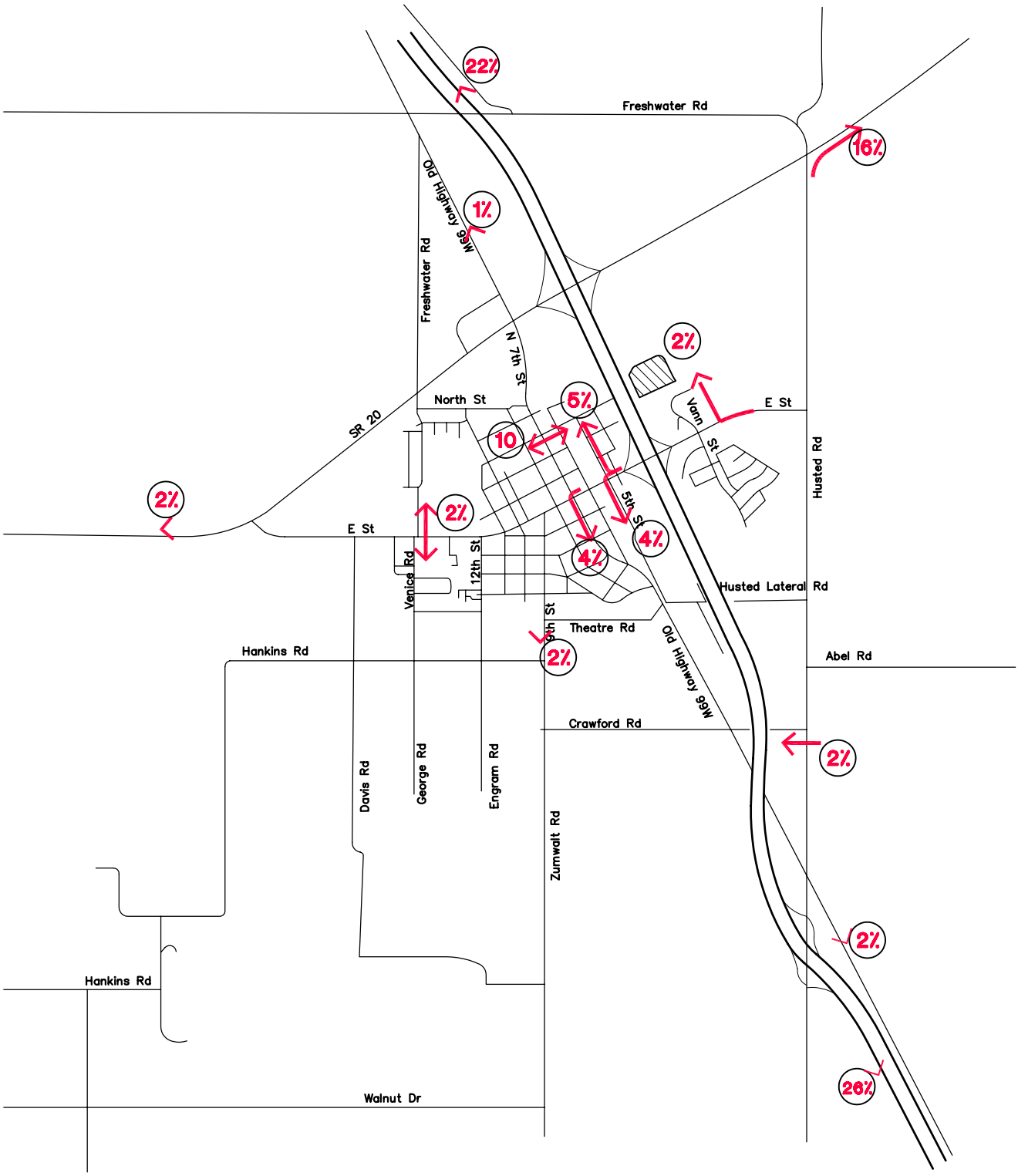


City of Williams General Plan Update

Figure A2

Traffix Street Network

T1125TG15.DWG (01MAY07) 25-1731-01

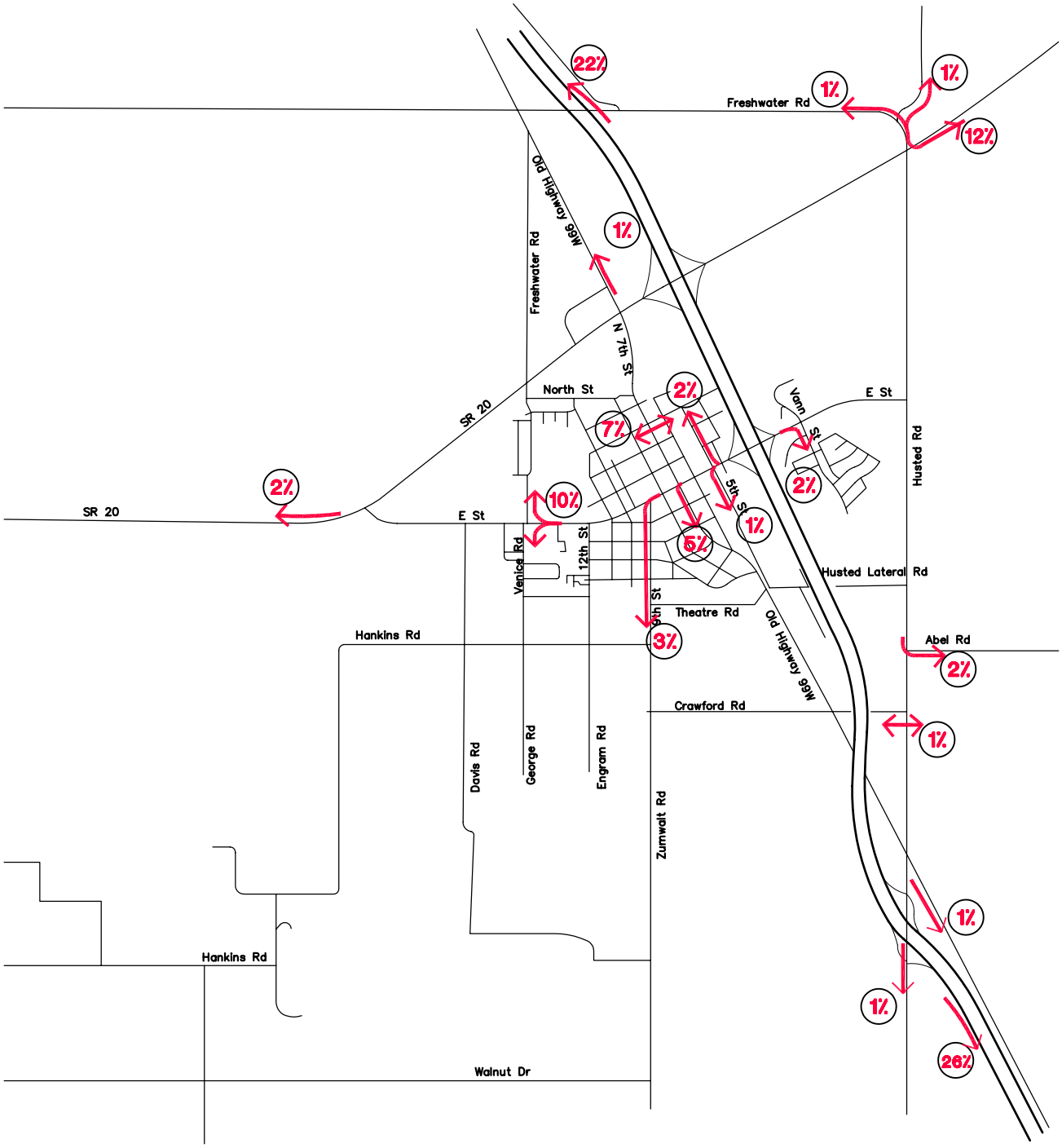


City of Williams General Plan Update

Figure A3

Residential Trip Distribution

File: T1125TG14.DWG(15MAY07) 25-1731-01

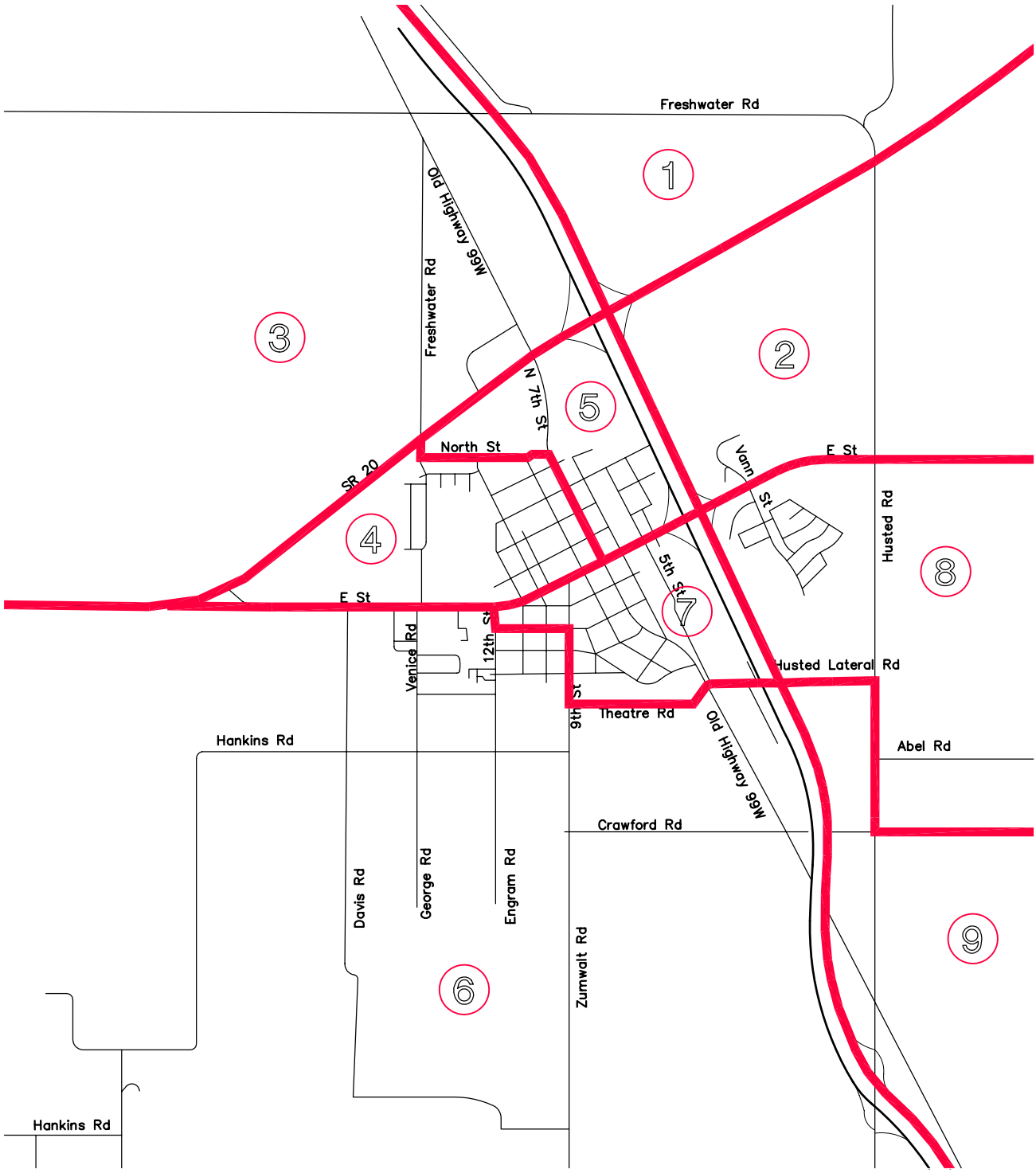


City of Williams General Plan Update

Figure A4

Commercial Trip Distribution

File: T1125TG029.DWG(06SEPT07) 25-1731-01



LEGEND:

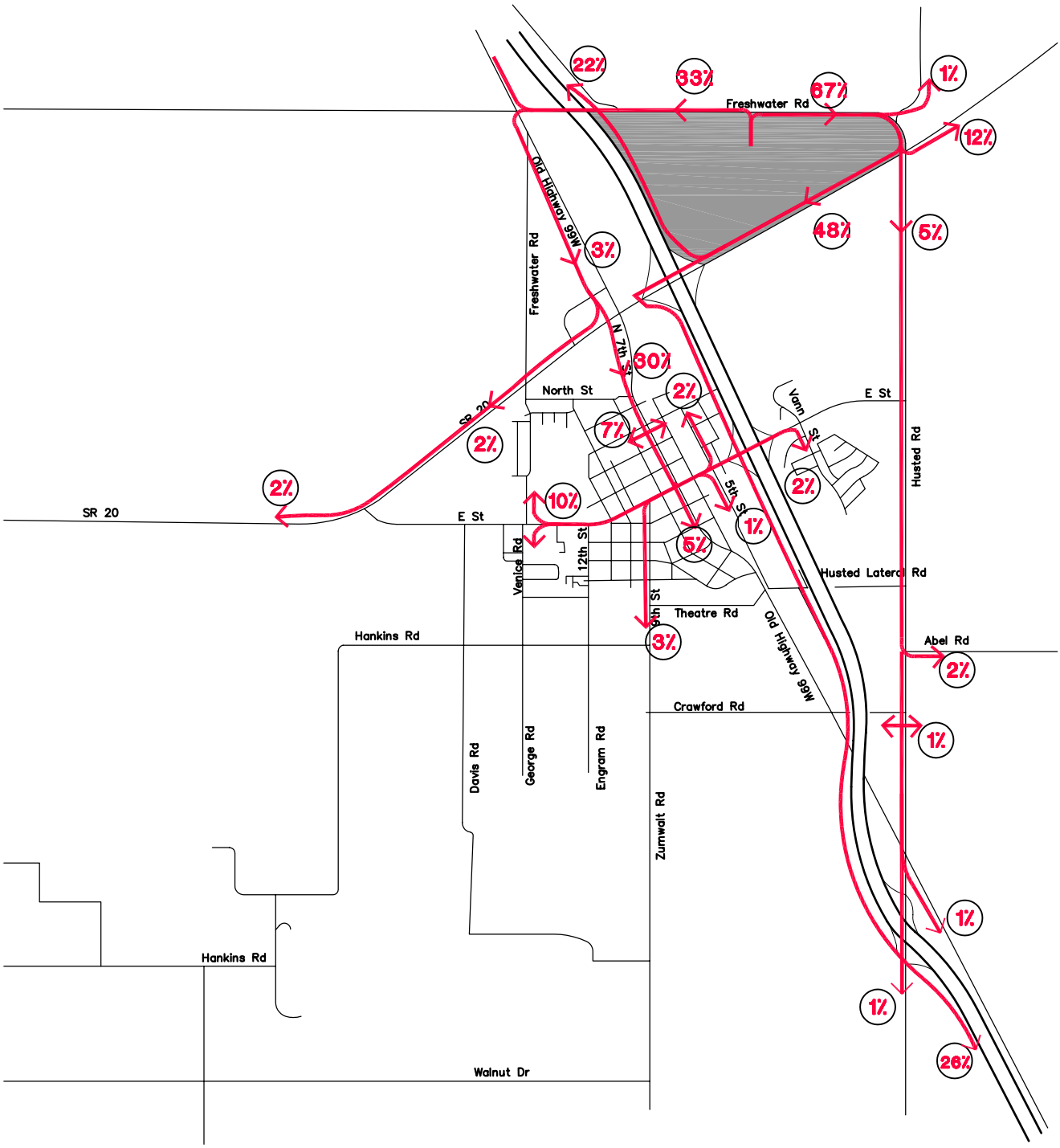
1 – REGION NUMBER

City of Williams General Plan Update

Figure A5

Traffic Regions (Aggregated TAZ's)

File: T1125TG13.DWG(15MAY07) 25-1731-01

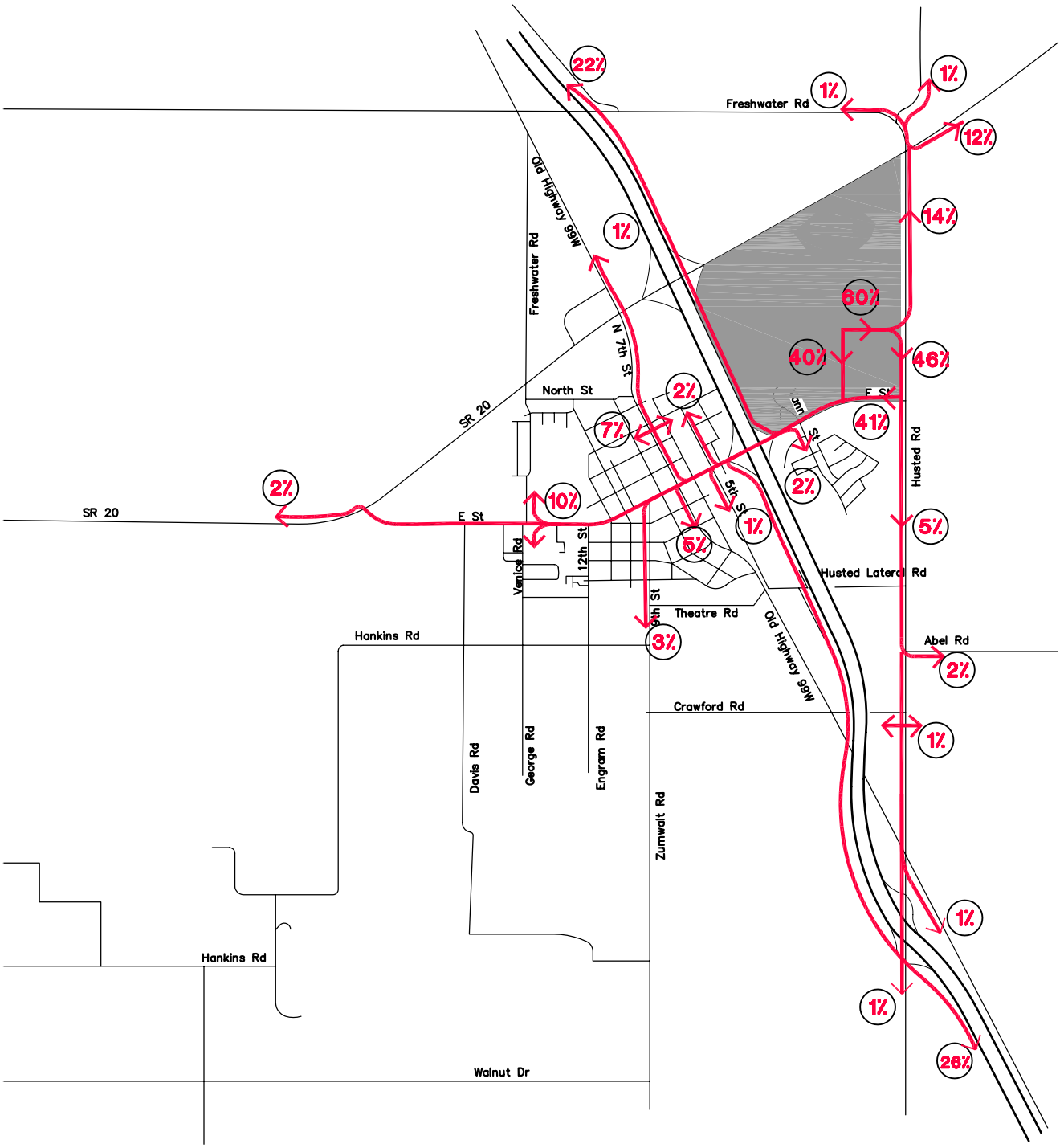


City of Williams General Plan Update

Figure A6

Zone 1 Trip Distribution

File: T1125TG04.DWG(15MAY07) 25-1731-01

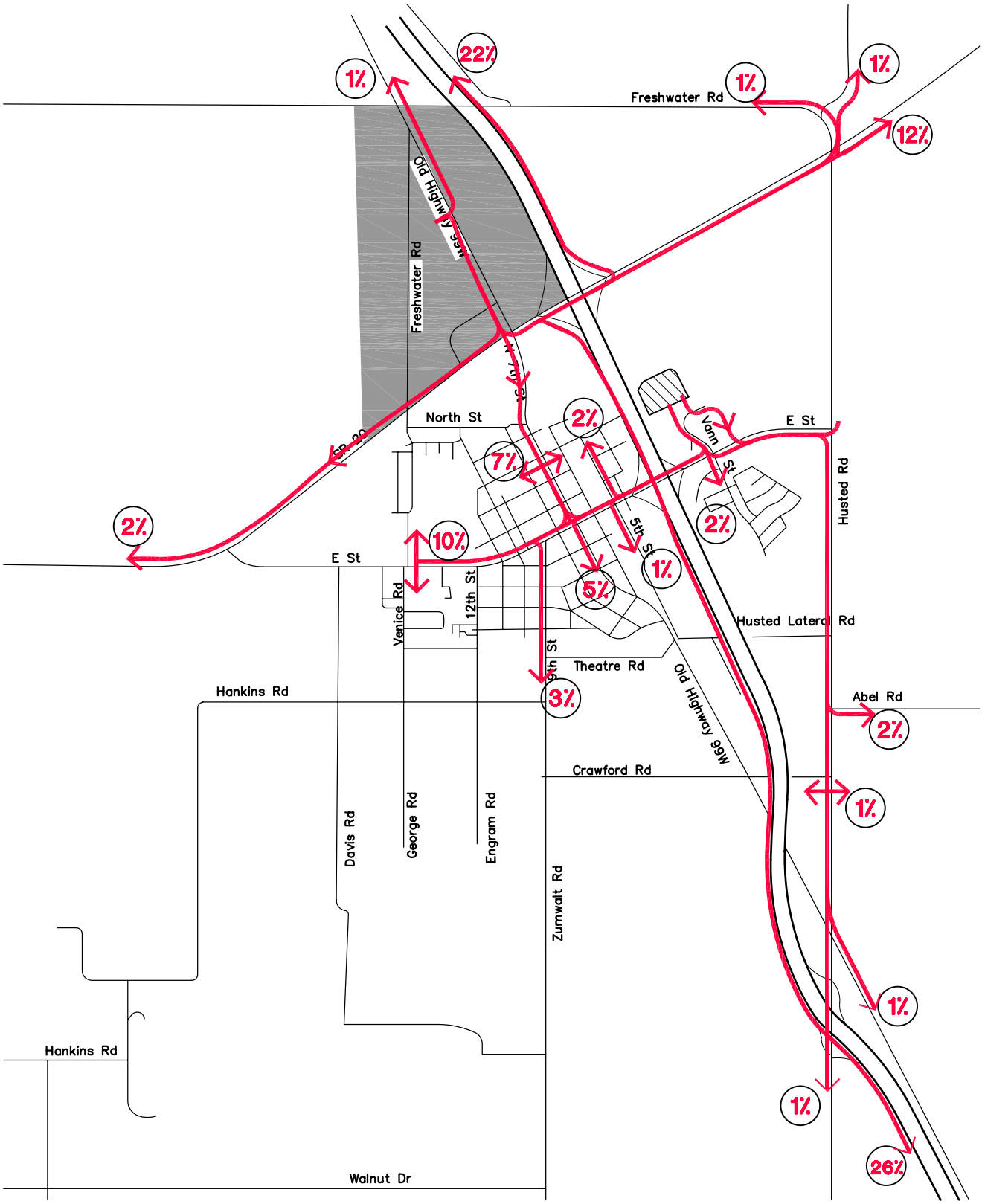


City of Williams General Plan Update

Figure A7

Zone 2 Trip Distribution

File: T1125TG05.DWG(15MAY07) 25-1731-01

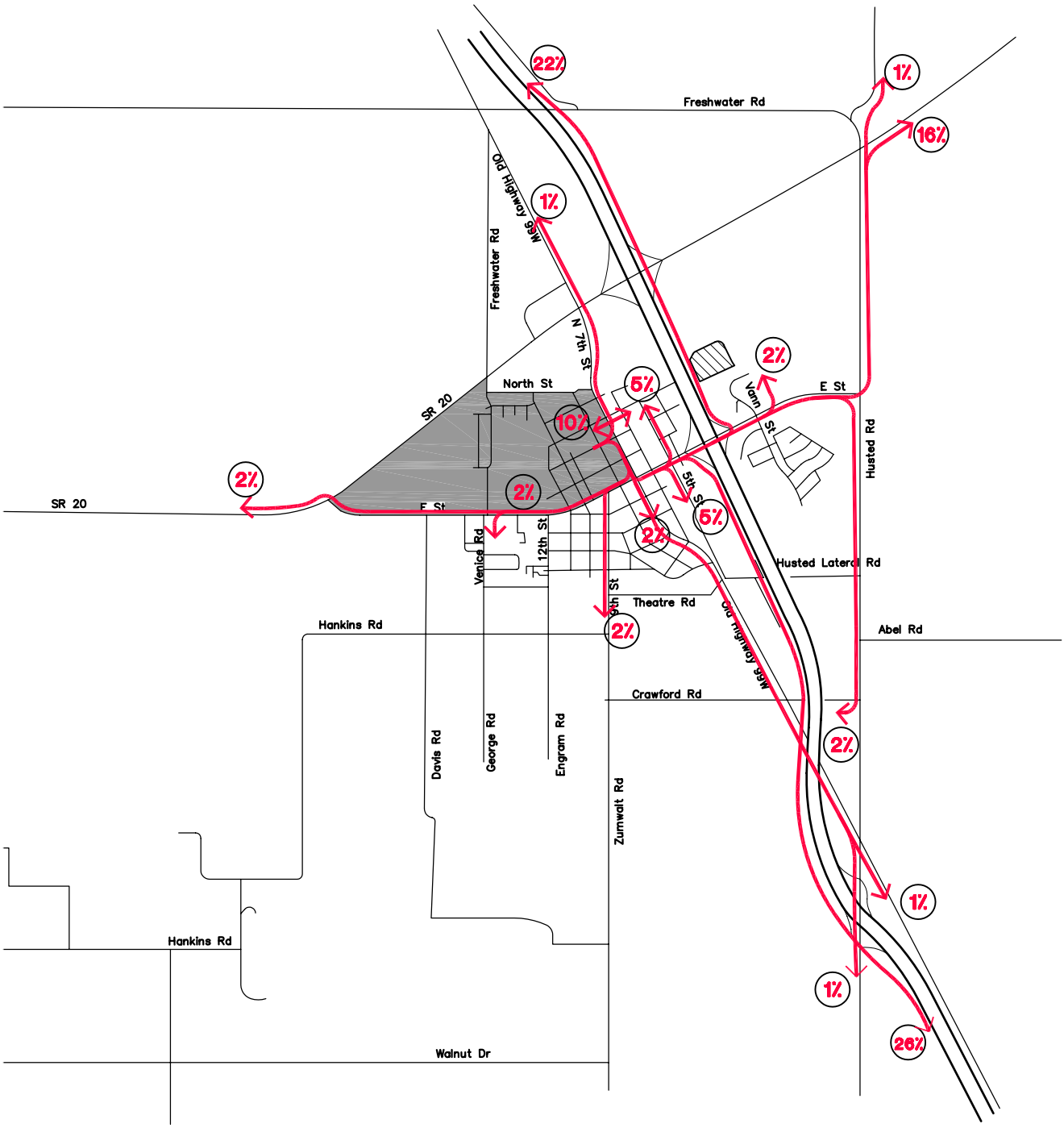


City of Williams General Plan Update

Figure A8

Zone 3 Trip Distribution

File: T1125TG06.DWG(15MAY07) 25-1731-01



City of Williams General Plan Update

Figure A9

Region 4 Trip Distribution

File: T1125TG07.DWG(15MAY07) 25-1731-01

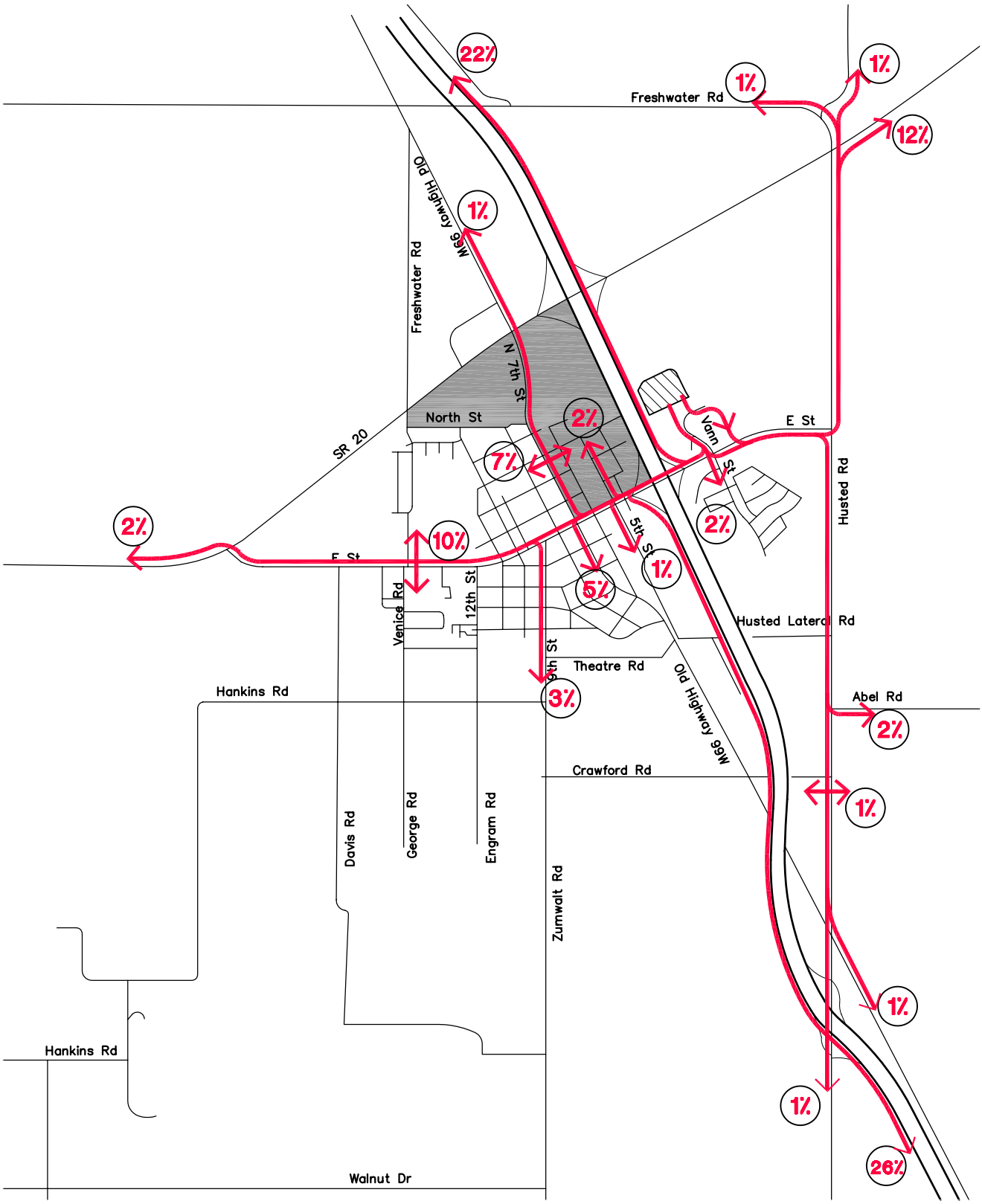


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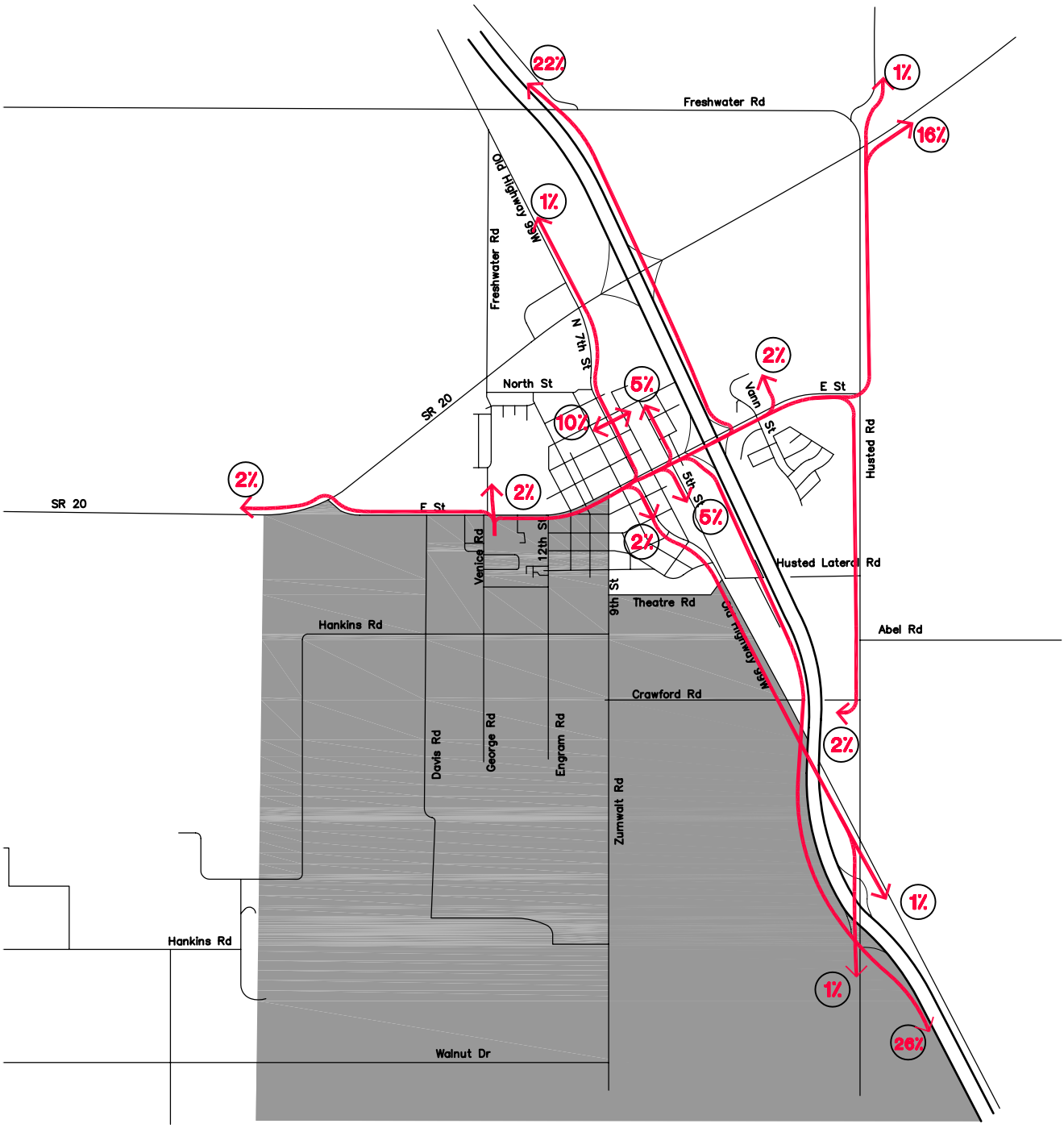
Figure A10

Region 5 Trip Distribution

File: T1125TG08.DWG(15MAY07) 25-1731-01

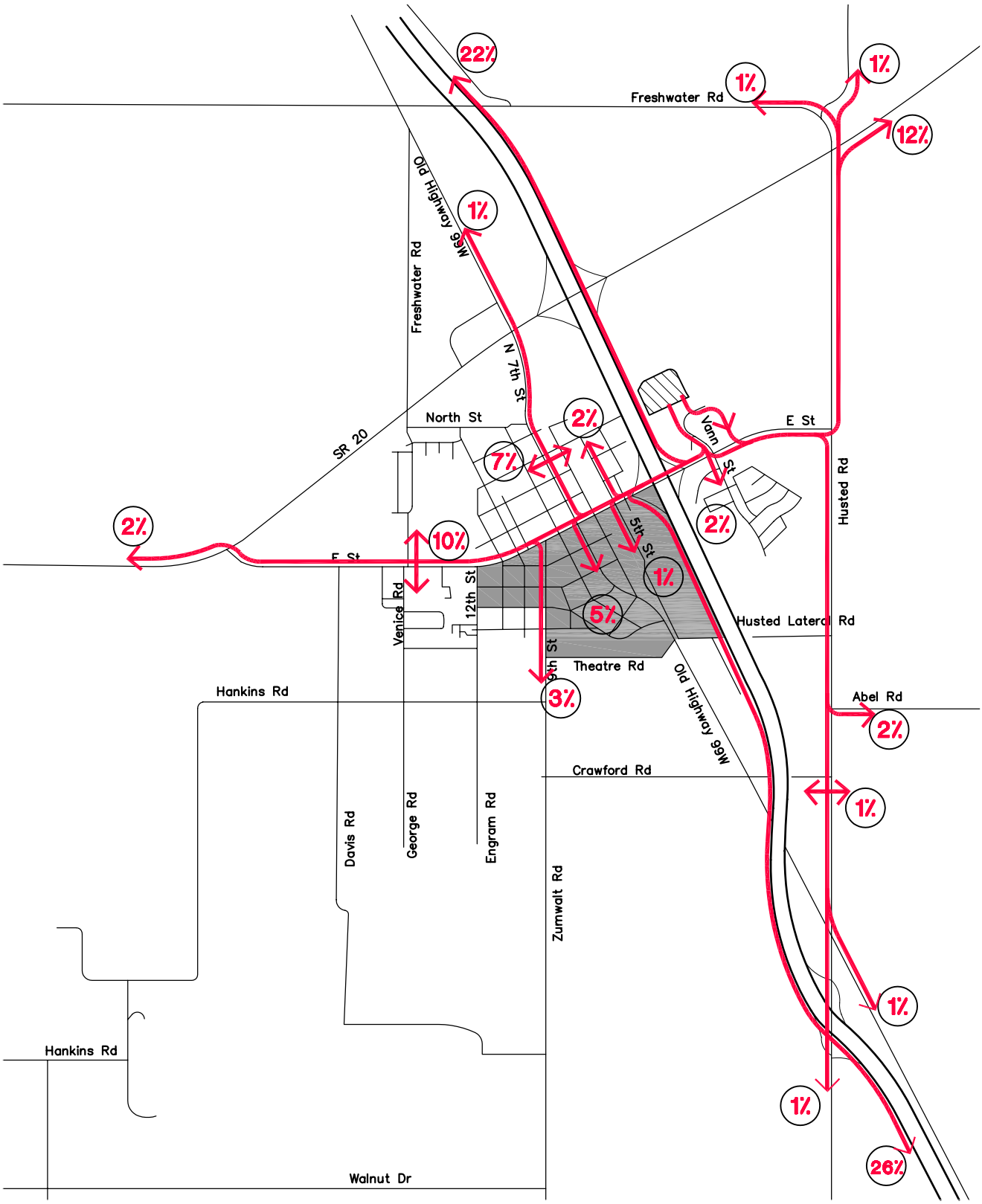


City of Williams General Plan Update

Figure A11

Region 6 Trip Distribution

File: T1125TG09.DWG(15MAY07) 25-1731-01

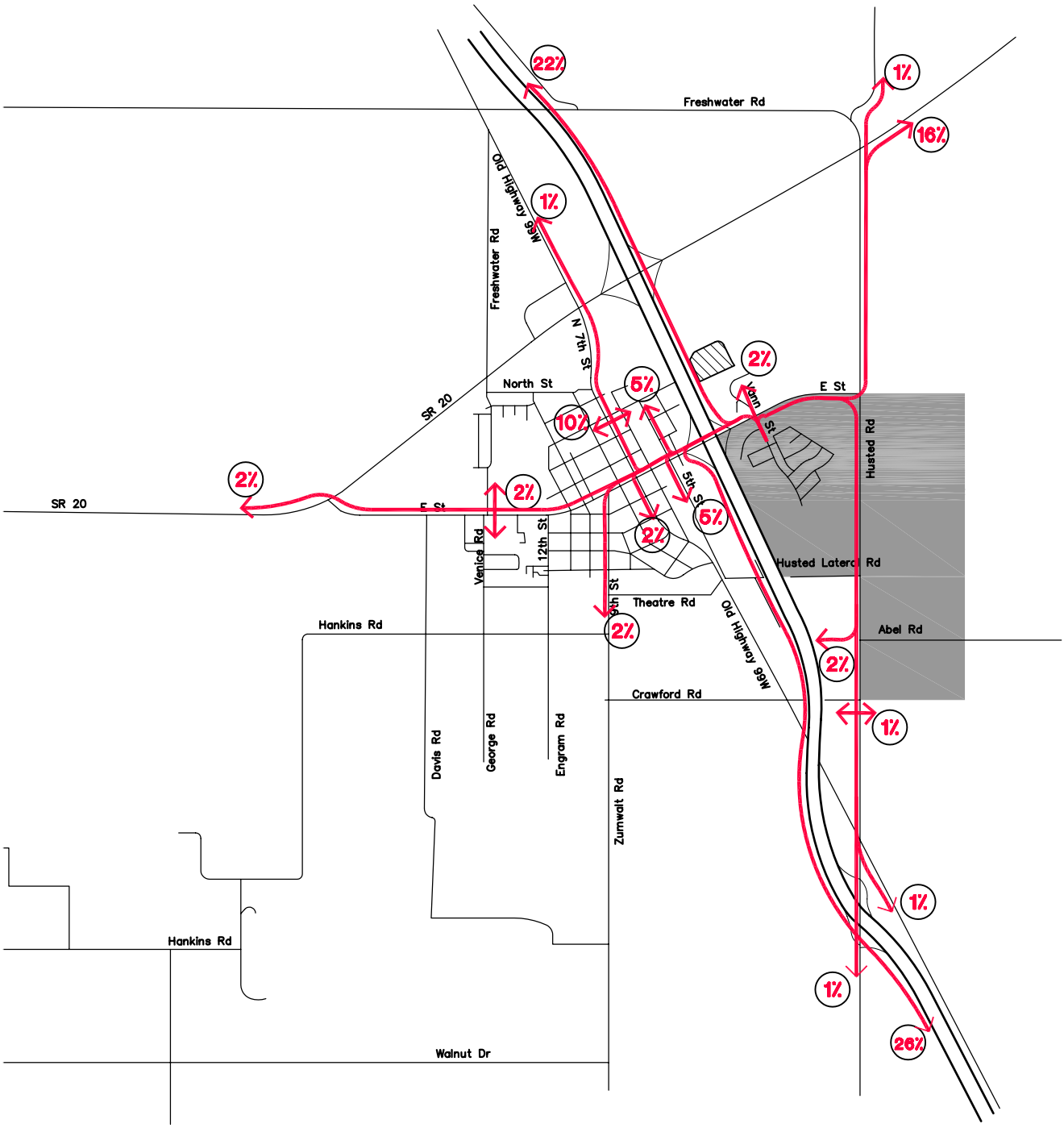


City of Williams General Plan Update

Figure A12

Region 7 Trip Distribution

File: T1125TG10.DWG(15MAY07) 25-1731-01

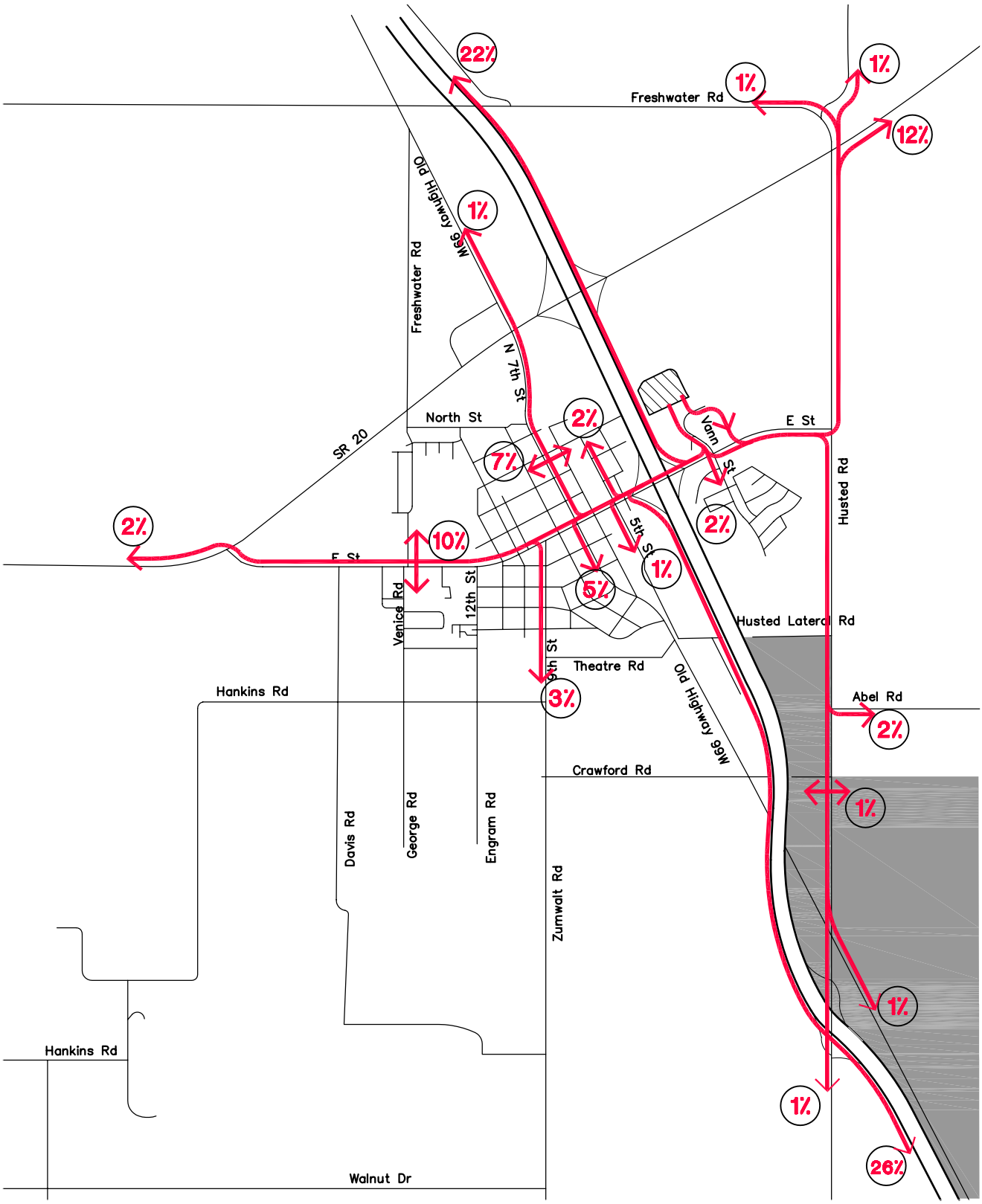


City of Williams General Plan Update

Figure A13

Region 8 Trip Distribution

File: T1125TG11.DWG(15MAY07) 25-1731-01



City of Williams General Plan Update

Figure A14

Region 9 Trip Distribution

File: T1125TG12.DWG(15MAY07) 25-1731-01

APPENDIX B

DESIGN CONCEPTS FOR THE RECOMMENDED IMPROVEMENTS

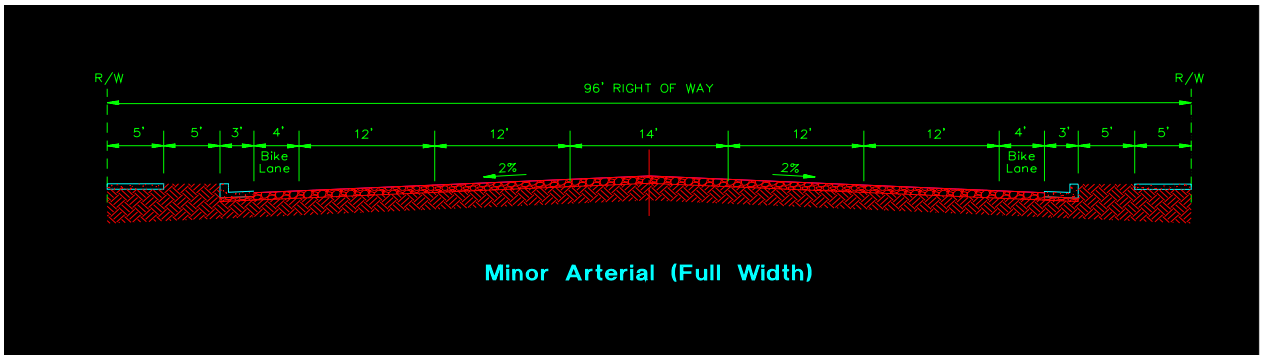
APPENDIX C

UNIT COST ESTIMATION

Planning Level Opinion of Cost
Unit Cost Determination

20-Sep-06

Cross Section:



Segment Length (feet) =	***100***
Right-of-Way Width (feet) =	***96***
Pavement Width (feet) =	***70***
Number of Lanes =	***5***
Asphalt Section (inches) =	***3***
Asphalt Density (lb/cf) =	***150***
Aggregate Base Section (inches)	***6***
Sidewalk Width (feet) =	***10***
Landscape Width (ft) =	***15***

Description	Quantity	Units	Unit Cost	Total Cost
Excavation	267	CY	$30.00	$8,000
AC Paving	131	Ton	$80.00	$10,500
Aggregate Base	130	CY	$40.00	$5,185
Curb & Gutter	200	LF	$40.00	$8,000
Sidewalk	1,000	SF	$10.00	$10,000
Median Curb	200	LF	$30.00	$6,000
Landscaping	1,500	SF	$6.00	$9,000
Street Lighting	1	EA	$3,000.00	$1,500
Drainage	1	LS	$5,000.00	$2,500
Subtotal Construction	100	LF		$60,685
Utility Relocation		LS	$10,000	$10,000
ROW - Undeveloped	4,800	SF	$5.00	$24,000
SubTotal Right-of-Way				$34,000
Engineering and Inspection			20%	$18,937
Mobilization			5%	$3,034
Contingency			50%	$47,343
Segment Total	100	LF		**$163,999**
Cost per Mile		LM		**$8,659,151**
Cost Per Mile (including signals)	1	LS	$200,000.00	**$8,859,151**
Cost Per Lane Mile				**$1,731,830**
Cost Per Lane Mile (including signals)				**$1,771,830**
Cost Per Square Foot (excluding signals)				**$17.08**
Cost Per Square Foot (excluding signals and R/W)				**$14.58**

Bridge/Culvert Structure Cost Per Square Foot			**$125.00**
Developed Riight-of-Way Cost (Sq. Ft.)			**$15.00**

APPENDIX D

INTERSECTION LOS REPORTS