

TRAFFIC IMPACT ANALYSIS

FOR THE

PANORAMA PD
Shasta County, California

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TRAFFIC IMPACT ANALYSIS FOR THE PANORAMA PD

INTRODUCTION

Project Description. This report documents **KD Anderson & Associates'** analysis of the traffic impacts associated with development of the Panorama PD. The proposed project envisions development of 430 residential lots on a site located east of Interstate 5 near the City of Anderson in Shasta County. The project site is bounded on the west the Locust Road and stretches to Panorama Road on the east. Currently, the site has General Plan designations that would allow development of 130 du's, and agricultural uses exist on the site today. Figure 1 locates the project.

Scope of Analysis. This analysis is intended to describe the impacts of the project and address mitigation requirements for roadways and intersections in the vicinity of the project. Impacts of the project have been considered within the context of existing traffic conditions as well as under future traffic conditions that assume development of other approved projects and long term traffic conditions occurring in the year 2030.

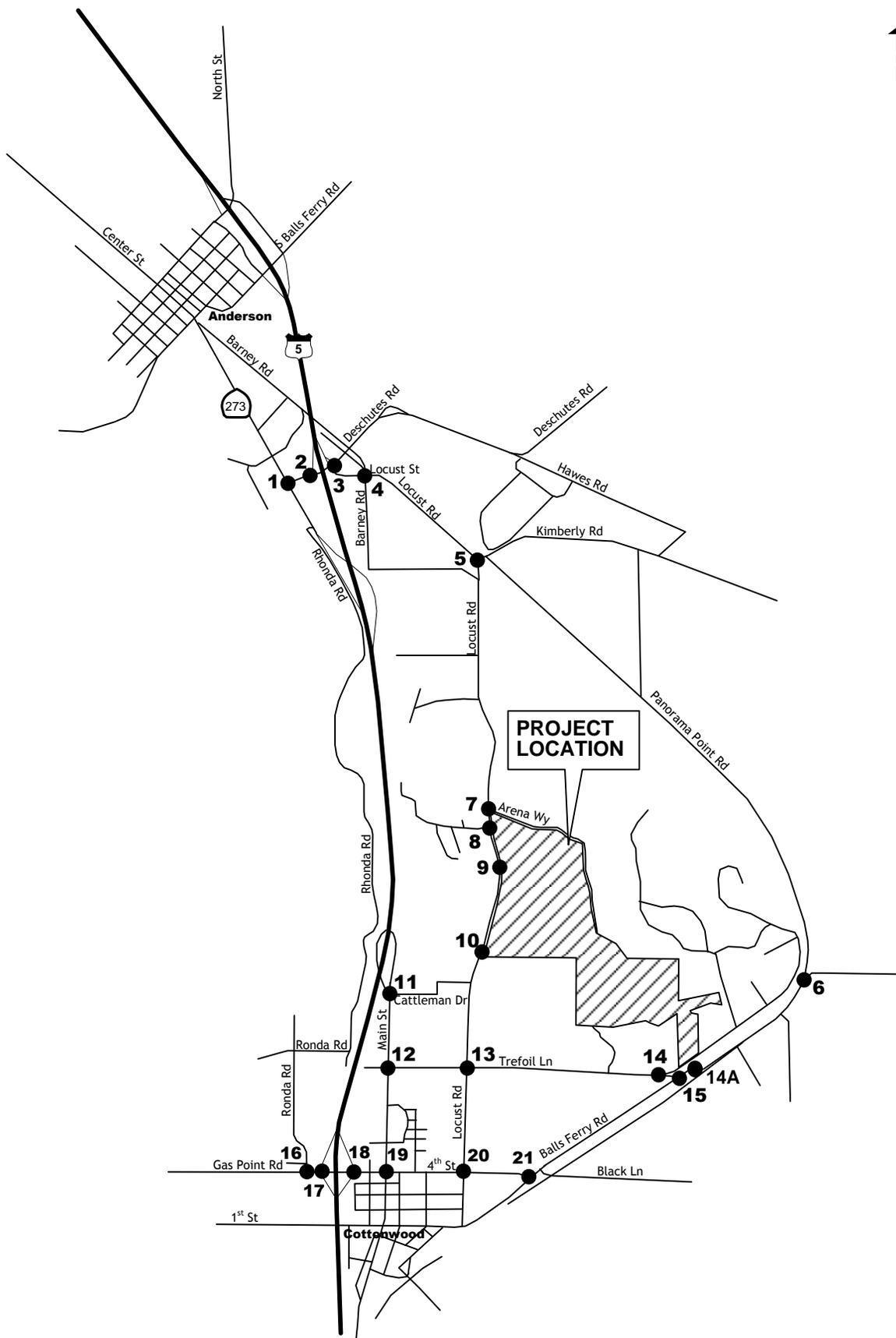
This analysis follows Shasta County direction and Caltrans traffic study guidelines. Toward this end, existing traffic conditions have been evaluated through observation of current weekday daily and a.m. / p.m. peak hour traffic volumes and current operating Levels of Service have been calculated at key intersections on the roads that will be used to access the site. To assess project impacts, probable project trip generation has been estimated by applying appropriate trip generation rates to the project's land use inventory. Utilizing an expected trip distribution derived from the Shasta County regional travel demand forecasting model, project generated traffic was assigned to the study area street system based on recognizable least time travel paths. Resulting "Existing Plus Project" traffic volumes were employed to calculate Levels of Service to determine the anticipated impacts of proposed development on existing traffic conditions.

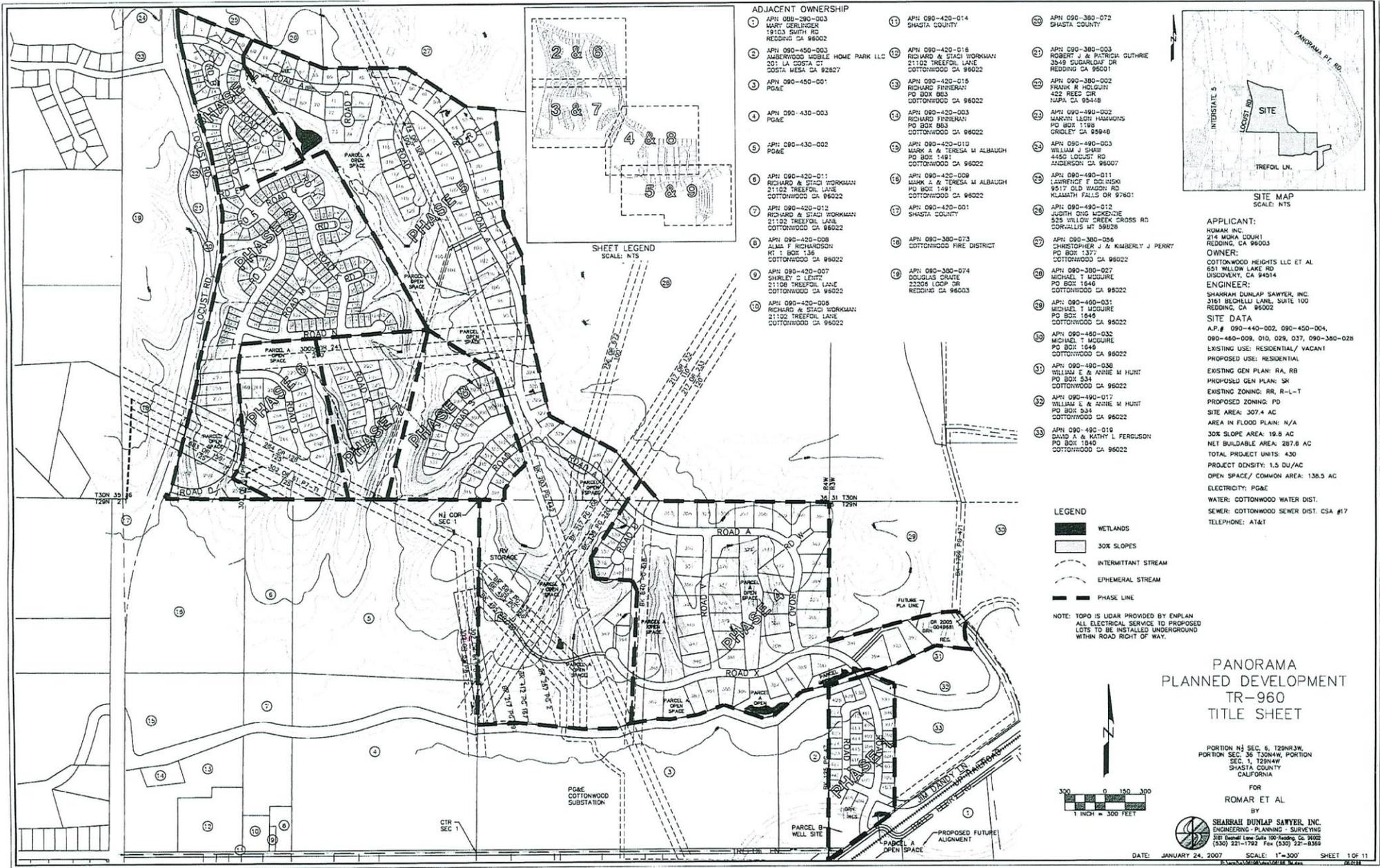
Two future cumulative traffic conditions were assessed first assuming development of "approved" projects and secondly based on Year 2030 traffic volume forecasts based on the regional traffic model. Future traffic conditions with and without the proposed project were investigated.

In each case, operating Levels of Service were compared to adopted minimum standards and measures of significance used by applicable jurisdictions. Shasta County identifies LOS C as the minimum acceptable condition, and the City of Anderson uses LOS D. Caltrans identifies LOS C.

At the direction of City and Caltrans staff, this analysis considers six (6) scenarios:

1. Existing traffic conditions;
2. Existing traffic conditions plus trips generated by the Panorama PD;
3. Short Term future conditions assuming build out of the approved projects, without the proposed project;
4. Short term future conditions with the Panorama PD;
5. Future cumulative traffic conditions in the year 2030 without Panorama PD (i.e., with existing designations), and
6. Future Year 2030 conditions with Panorama PD.





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SITE PLAN

2960-03 REV1.VSD

2/13/2009

figure 2

EXISTING PHYSICAL AND REGULATORY SETTING

Existing Roadways

Traffic conditions on the street and highway system in southern Shasta County are influenced by local and regional commuter travel patterns, access to adjacent businesses and agricultural / commercial traffic. Physical features of roadways providing circulation through the area are presented in the materials which follow.

Regional access to the site is provided by Interstate 5 and its interchanges at Gas Point Road – 4th Street and at Deschutes Road. Local access is via Locust Road, Balls Ferry Road and Panorama Drive.

Interstate 5 (I-5). Interstate 5 is the main north-south facility through Shasta County. The route traverses the state of California and enters Shasta County south of the Gas Point Road interchange and continues north through Anderson and Redding before leaving the county at Dunsmuir. I-5 is a controlled access freeway with four mainline travel lanes. The speed limit on Interstate 5 is 65 mph, and the most recent traffic counts available from Caltrans (2007) reveal that the freeway carries an average daily traffic (AADT) volume of 42,500 vehicles per day at the Tehama County line, 45,500 AADT north of the 4th Street – Gas Point Road interchange and 61,000 AADT north of Deschutes Road. Trucks comprise roughly 14% of the daily traffic on Interstate 5 in southern Shasta County.

State Route 273 (SR 273). SR 273 is a major north south arterial road that runs roughly parallel to I-5 for approximately 20 miles from Anderson through Redding. The highway originates at an interchange on I-5 near the project and continues northerly through both communities before returning to I-5 north of Lake Blvd in Redding. SR 273 carries 10,700 AADT at its southern connection to I-5 and at that point trucks comprise 8% of the daily traffic volume.

Balls Ferry Road. Balls Ferry Road is a two lane arterial road that extends from the Cottonwood area near Interstate 5 northeasterly into the rural area east of the project before turning to the west and returning to Interstate 5 near Anderson. Balls Ferry Road carries approximately 1,500 vehicles per day in the vicinity of the proposed project.

Deschutes Road. Deschutes Road links SR 273 with I-5 in Anderson and continues north easterly across the Sacramento River to an intersection with SR 299 east of Redding. Deschutes Road is constructed as a four lane minor arterial in Anderson west of Interstate 5. While today the road is two lanes wide east of I-5, Deschutes Road is designated a 4 lane arterial in Shasta County General Plan.

Panorama Point Road. Panorama Point Road is a two lane Collector street that links Ball Ferry Road on the south with Locust Road near the I-5 / Deschutes Road interchange. Panorama Point Road is generally 24 feet wide with limited shoulders.

Main Street. Main Street is a four lane Arterial street in the Shasta County General Plan. Main Street links the downtown area of Cottonwood with Interstate 5 east of the project site. Main Street carries approximately 6,400 vehicles per day in the area between downtown Cottonwood and I-5.

Locust Road. Locust Road is a two lane collector street that runs parallel to and east of I-5 from Cottonwood to the I-5 / Deschutes Road interchange. Locust Road is roughly 24 feet in width with limited shoulders, and the road follows the rolling terrain of the project area. Locust Road will provide primary access to the western side of the Panorama project. The volume of traffic on Locust Road varies along its length, with roughly 700 vehicles per day counted in the area from 4th Street to Kimberly Road and 3,200 vehicles per day in the area from Kimberly Road to the Deschutes Road interchange.

4th Street and Gas Point Road. Fourth Street and Gas Point Road provide primary east-west circulation through the community of Cottonwood. Each is a two lane road with left turn lanes. Gas Point Road is designated in the General Plan as a 4 lane arterial road west of Interstate 5, while Main Street is designated a 4 lane arterial road west of Main Street and a two lane arterial road east of Main Street. Gas Point Road carries 13,000 vehicles per day west of Interstate 5, while the volume on 4th Street east of Main Street is 3,050 vehicles per day.

Trefoil Lane. Trefoil Lane is a local east-west road that links Main Street with Balls Ferry Road in the area south of the proposed project. Trefoil Lane is approximately 24 feet wide with limited shoulders. Trefoil Lane carries approximately 650 vehicles per day.

Cattleman Drive. Cattleman Drive is an unpaved two lane local road that connects Main Street near the I-5 ramps with Locust Road.

Jim Dandy Road. Jim Dandy Road is a local road that runs parallel to and west of Panorama Point Road along the UPRR. Jim Dandy Road intersects Trefoil Lane just west of the intersection with Balls Ferry Road.

Arena Way. Arena Way is a minimally improved private road that traverses the project site between Locust Road and Trefoil Lane.

Bicycle Facilities

The *Regional Transportation Plan (2004)* outlines the location and nature of existing bicycle facilities in Shasta County. Bicycle facilities are categorized within three classifications:

- Class I trails or paths that are separated from automobile traffic
- Class II bicycle lanes that are on street but delineated by striping, and
- Class II bicycle routes where bicycles and automobiles share the road.

Today there are no designated bicycle facilities on the rural roads in the immediate vicinity of the project. The closest facilities are on Deschutes Road.

Existing Transit Facilities

Public transportation within Shasta County is provided by the Redding Area Bus Authority (RABA) which offers both fixed route and demand – response transit services. RABA currently operates fixed routes for the cities of Redding, Shasta Lake, and Anderson, and para-transit vehicles for demand response service. All fixed routes operate Monday thru Friday on one hour headways. However, fixed route service is not available to the project site, and the closest stop is on SR 273 near the Deschutes Road – Factory Outlets interchange.

Rail Service

Union Pacific Railroad provides rail service through Shasta County. The Union Pacific single track main line runs parallel to Interstate 5 and carries both passengers and freight. The Shasta County General Plan notes that train movements average 24 per day within the Redding Metropolitan area.

Within the project area there are existing at-grade rail crossings at Balls Ferry Road and at Kimberly / Locust Road. There are additional at-grade crossings near intersections of SR 273 as rails parallel SR 273 from South Street north into the City of Redding. Grade separated crossings are provided at I-5, Deschutes Road and Main Street.

The configuration of existing crossings in the area of the project is unconventional. The Balls Ferry Crossing near Trefoil Lane moves the alignment of Balls Ferry Road from the west side of the railroad to the east side of the rails through a pair of reversing curves. The curve radii are approximately 100' and are shorter than would be considered standard for the design speed of the road. Measures to advise motorists of these curves have been installed on Balls Ferry Road in advance of the crossing. The crossing is controlled by gates in both directions.

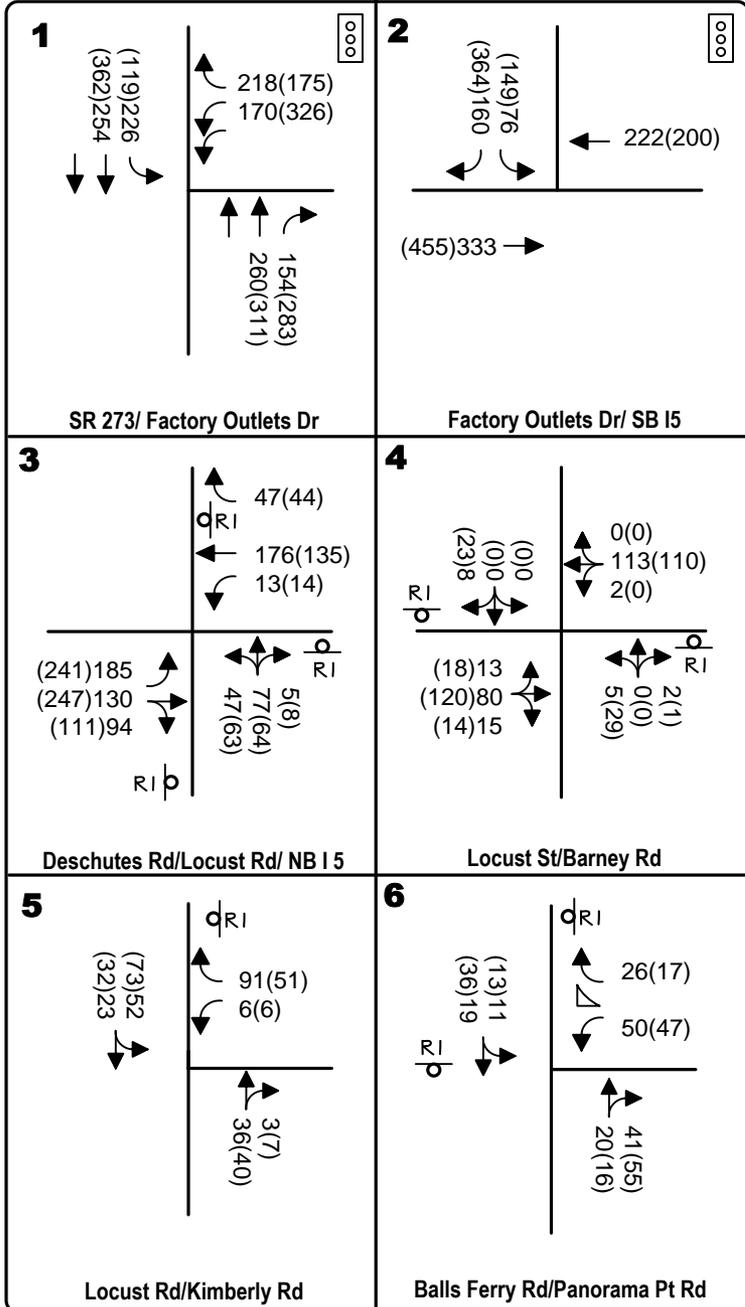
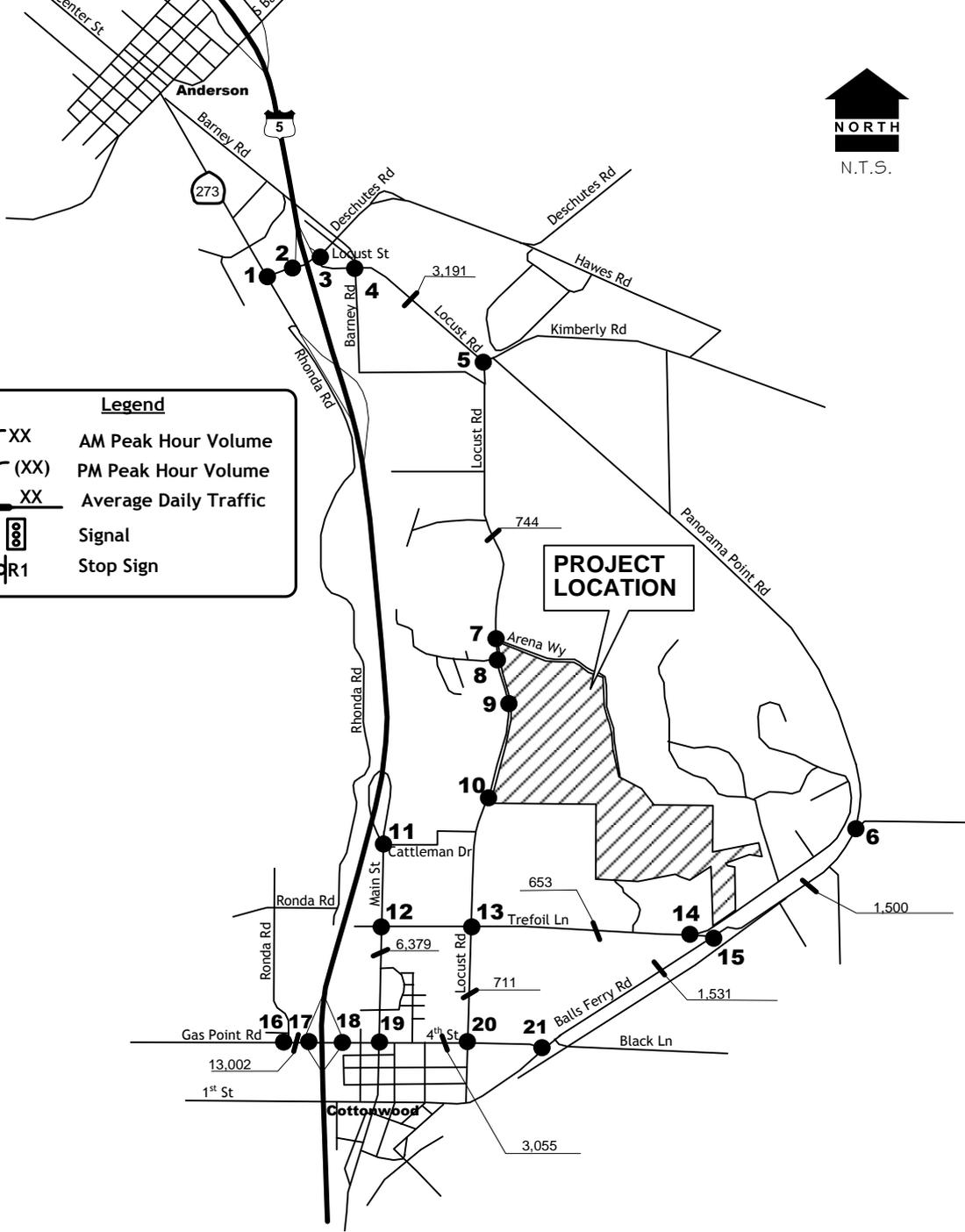
Existing Traffic Conditions

Peak Hour Traffic Volumes. To assess existing traffic conditions, **KD Anderson & Associates** made a.m. and p.m. peak hour turning movement counts at study intersections near the project during February and April 2008 to supplement data presented in the Vineyard DEIR. Figure 3 presents current peak hour traffic volumes and the lane configurations at each intersection.



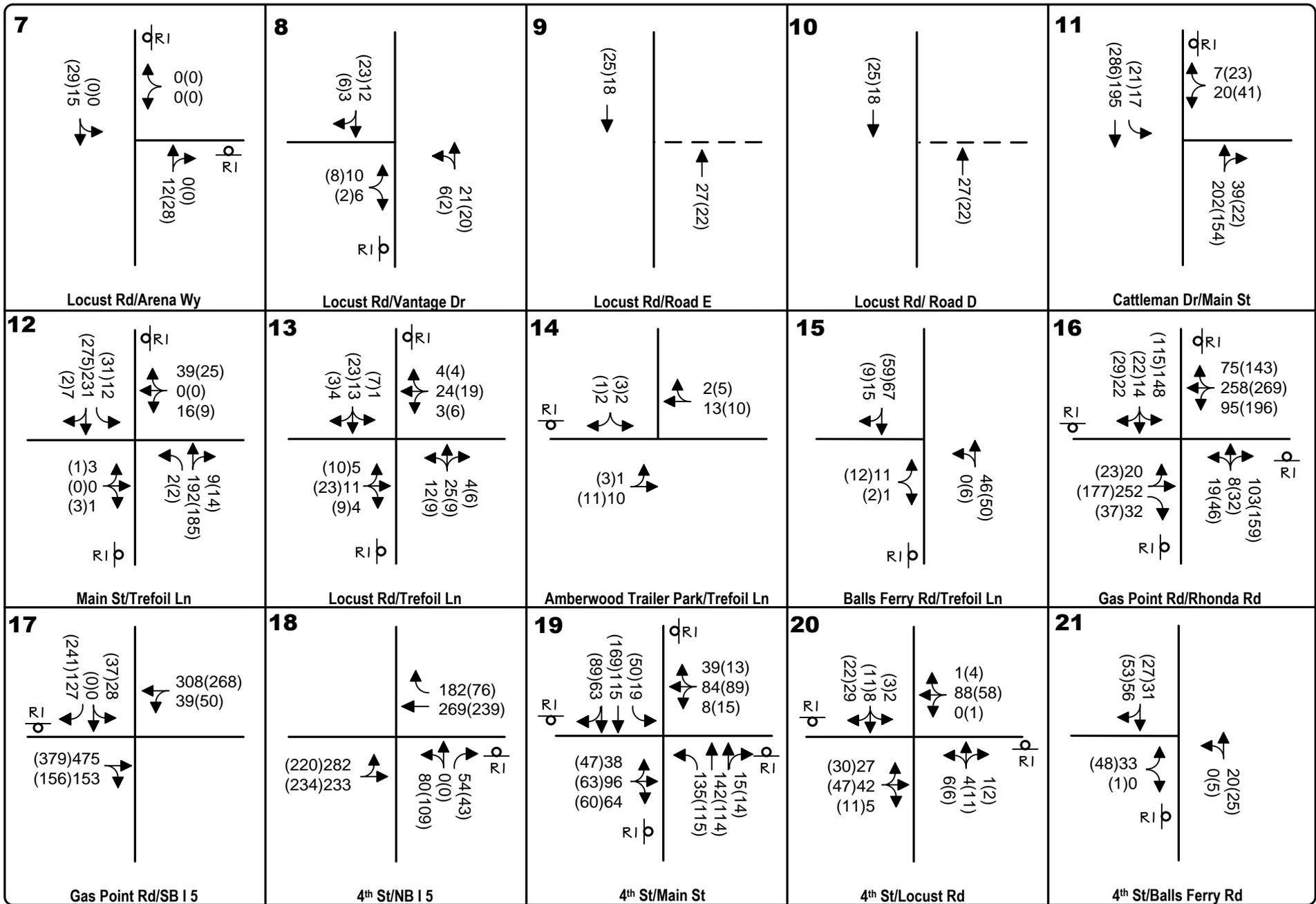
Legend

- AM Peak Hour Volume
- PM Peak Hour Volume
- Average Daily Traffic
- Signal
- Stop Sign



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**EXISTING TRAFFIC VOLUMES
 AND LANE CONFIGURATIONS**



Level of Service - Methodologies

To assess the quality of existing traffic conditions, Levels of Service were calculated at study area intersections and for individual roadway segments. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening traffic operating conditions, is assigned to an intersection or roadway segment. Table 1 presents the characteristics associated with each LOS grade. As shown in Table 1, LOS "A", "B" and "C" are considered satisfactory to most motorists, while LOS "D" is marginally acceptable. LOS "E" and "F" are associated with severe congestion and delay and are unacceptable to most motorists.

Local agencies and Caltrans adopt minimum Level of Service standards for the facilities under their control. The City of Anderson's General Plan identifies LOS D as the minimum standard on City streets. Shasta County has a minimum Level of Service threshold of LOS C. Caltrans minimum Level of Service standard is LOS C.

**TABLE 1
LEVEL OF SERVICE DEFINITIONS**

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on 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). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: 2000 <u>Highway Capacity Manual</u> .			

Level of Service at Intersections. Levels of Service were calculated for different intersection control types using the respective methods presented in the 2000 Highway Capacity Manual. Intersection Levels of Service were calculated using TRAFFIX version 7.9 software.

Level of Service on Roadway Segments. As previously mentioned, a Level of Service may be calculated on a street or roadway segment. In urban areas general roadway Levels of Service can suggest probable peak hour conditions based on application of typical peak hour/daily traffic relationships. Table 2 presents Level of Service thresholds for various streets classifications that have been presented in previous Shasta County traffic studies.

**TABLE 2
ROADWAY SEGMENT DAILY VOLUME LEVEL OF SERVICE THRESHOLDS**

Roadway	No. of Lanes*	Maximum Volume for Given Service Level				
		A	B	C	D	E
Freeway	4	24,000	28,000	32,000	36,000	40,000
Major Arterial	4	22,000	25,000	29,000	32,500	36,000
Major Collector	2	11,000	12,500	14,500	16,000	18,000
Minor Collector	2	9,000	10,500	12,000	13,500	15,000
Local Street	2	2,200	2,600	3,000	3,400	3,800

* Total number of lanes in both directions Source: Shasta Ranch Mining and Reclamation Plan DEIR

In response to Caltrans District 2 request, the Level of Service on Interstate 5 through the study area was evaluated using the procedures contained in the 2000 HCM. These procedures were the basis for Level of Service calculations presented in the Interstate 5 Transportation Concept Report. As noted in Table 3, vehicle density, expressed in terms of cars per lane mile, is the evaluation measure.

**TABLE 3
FREEWAY LEVEL OF SERVICE THRESHOLDS**

Level of Service	Density Range (passenger car / mile / lane)	
	Mainline	Ramp Merge - Diverge
A	0-11	≤ 10
B	11-18	10 – 20
C	18-26	20 – 28
D	26-35	28 – 35
E	35-45	> 35
F	>45	Demand exceeds capacity

The operation of freeway ramps in the immediate vicinity of the point of entry and exit from the mainline has also been evaluated. The procedures for calculating Level of Service at ramp merge/diverge areas on freeways is also presented in the 2000 HCM. As noted in Table 3, vehicle density in the ramp influence area, also expressed in terms of passenger cars per mile per lane, is the evaluation parameter employed to identify Level of Service.

Current Levels of Service

Intersections. Table 4 presents existing Levels of Service at the study intersections. In addition, Table 4 also indicates whether any of the study intersections satisfy Caltrans' peak hour volume warrants for signalization.

As Table 4 indicates, most of the study area intersections operate at LOS C or better, but there are three exceptions. During the p.m. peak hour the **Gas Point Road / Rhonda Road intersection operates at LOS E**. During the a.m. peak hour and the p.m. peak hour motorists waiting at the **NB I 5 off ramp / Gas Point Road intersection** experience delays that are indicative of LOS F and LOS D, respectively. However, Shasta County has plans to signalize one of these intersections shortly, and with the implementation of planned improvements the intersection will operate at LOS C or better. During the a.m. peak hour the **Riverside Avenue / I-5 NB ramp intersection** operates at LOS E.

Roadway Segment Level of Service Based on Daily Traffic Volumes. The current daily traffic volumes reported on Shasta County Roads in the study area suggest that these facilities provide Levels of Service that satisfy the LOS C minimum. As shown in Table 5, the highest volume of traffic is on Gas Point Road west of Interstate 5, and this volume is indicative of LOS C.

Levels of Service on Interstate 5. The Level of Service occurring today on Mainline Interstate 5 is identified in Table 6. These results assume year 2007 daily volumes reported by Caltrans and the analysis methodology contained in the Interstate 5 Transportation Concept Report. As shown, the Levels of Service on Interstate 5 range for LOS C to LOS D. LOS D conditions exceed the LOS C goal adopted by Caltrans.

Levels of Service at Interstate 5 Ramps. Levels of Service at study area ramps have been determined, and the results are identified in Table 7. These results assume mainline peak hour directional volumes identified by Caltrans. Ramp volumes were taken from the traffic counts conducted for this study or from ramp volumes identified in the Anderson Vineyard EIR traffic study. As noted, the ramp merge-diverge areas along Interstate 5 operate at LOS C or better.

**TABLE 4
EXISTING INTERSECTION LEVELS OF SERVICE AND SIGNAL WARRANTS**

Intersection	Control	AM Peak Hour		PM Peak Hour		Warrants Met?
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273 / Factory Outlets	Signal	B	19.9	B	18.5	n.a.
2. Factory Outlet Dr / I-5 SB ramps	Signal	B	11.8	B	15.4c	n.a.
3. Deschutes Road / I-5 NB ramps / Locust Rd	All-Way Stop	B	10.7	B	11.8	No
4. Locust Rd / Barney Rd	NB/SB Stop	B	10.1	B	11.1	No
5. Locust Rd / Kimberly Road	NB/SB Stop	A	8.9	A	8.9	No
6. Balls Ferry Road / Panorama Point Rd	SB Stop	A	9.0	A	9.0	No
7. Locust Road / Arena Way (Road A)	WB Stop	-	-	-	-	-
8. Locust Road / Vantage Dr	EB Stop	A	8.7	A	8.8	No
9. Locust Road / Road E	WB Stop	-	-	-	-	-
10. Locust Road / Road D	WB Stop	-	-	-	-	-
11. Main Street / Cattleman Drive	WB Stop	B	12.2	B	11.9	No
12. Main Street / Trefoil Lane	EB / WB Stop	B	13.3	B	11.0	No
13. Locust Road / Trefoil Lane	EB/ WB Stop	A	9.6	A	9.4	No
14. Jim Dandy Drive / Trefoil Lane	SB Stop	A	8.5	A	8.6	No
15. Balls Ferry Road / Trefoil Lane	EB Stop	A	9.2	A	9.2	No
16. Gas Point Road / Rhonda Road	All-Way stop	C	21.7	E	48.5	yes
	Signal					
17. Gas Point Road / SB I-5 ramps	SB Stop	B	14.0	B	13.3	No
	Signal					
18. 4 th Street / NB I-5 ramps	NB Stop	F	74.3	D	32.5	No
19. 4 th Street / Main Street	All-Way stop	B	10.7	A	9.9	No
20. 4 th Street / Locust Road	NB / SB Stop	B	10.8	B	10.2	No
21. 4 th Street / Balls Ferry Road	EB Stop	A	9.2	A	9.2	No
22. South Street / I-5 SB ramps	Signal	B	14.2	B	16.2	n.a.
23. Balls Ferry Road / I-5 NB ramps	Signal	C	21.7	C	27.9	n.a.
24. Riverside Ave / SB I-5 ramps	SB Stop	C	15.5	C	19.2	No
25. Riverside Ave / NB I-5 ramps	NB Stop	E	42.8	C	16.8	No

Bold is Level of Service in excess of adopted minimum standard

**TABLE 5
EXISTING ROADWAY LEVELS OF SERVICE**

Street	Location	Lanes	Facility Type	Existing Conditions	
				Daily Volume	LOS
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	3,191	A
	Kimberly Road to Vantage Road	2		744	A
	Vantage Road to Trefoil Lane	2		711	A
	Trefoil Lane to 4 th Street	2		711	A
Gas Point Road	Rhonda Road to SB I-5	2	Major Collector	13,002	C
4 th Street	Main Street to Locust Road	2	Major Collector	3,055	A
Main Street	I-5 to 4 th Street	4	Major Collector	6,379	A
Balls Ferry Road	4 th Street to Trefoil Lane	2	Minor Collector	1,531	A
	Trefoil Lane to Panorama Point Drive	2		1,500	A
Panorama Point Drive	Kimberly Road to Balls Ferry Road	2	Minor Collector	800	A
Trefoil Lane	Main Street to Balls Ferry Road	2	Minor Collector	653	A
	Locust Road to Balls Ferry Road	2		653	A

**TABLE 6
MAINLINE INTERSTATE 5 LEVEL OF SERVICE**

Location	Lanes	Existing Conditions		
		Volume	Density (pc/mi/ln)	LOS
South of Gas Point Road	4	42,500	20.4	C
Gas Point Road to Deschutes Road	4	51,000	30.3	D
Deschutes Road to Riverside Ave	4	62,000	27.6	D
Riverside Ave to Knighton Road	4	63,000	23.9	C
Knighton Road to South Bonnyview Drive	4	56,000	21.4	C

**TABLE 7
EXISTING PEAK HOUR RAMP LEVELS OF SERVICE
AT INTERSTATE 5 INTERCHANGES**

Direction	Ramp	Action	AM Peak Hour			PM Peak Hour		
			Volume	Density (pc/mi/ln)	Level of Service	Volume	Density (pc/mi/ln)	Level of Service
<i>I - 5 / Riverside Ave</i>								
Southbound	on ramp	Merge	185	19	B	255	25	C
Northbound	off ramp	Diverge	245	25	C	210	23	C
<i>I-5 / North Street</i>								
Southbound	off ramp	Diverge	375	21	C	555	27	C
Northbound	on ramp	Merge	510	24	C	475	21	C
<i>I-5 / Balls Ferry Road</i>								
Southbound	on ramp	Merge	250	18	B	400	24	C
Northbound	off ramp	Diverge	320	23	C	380	22	C
<i>I-5 / Deschutes Road</i>								
Southbound	off ramp	Diverge	235	20	B	515	26	C
Northbound	on ramp	Merge	310	22	C	350	20	B
<i>I-5 / SR 233</i>								
Southbound	on ramp	Merge	300	19	B	400	23	C
Northbound	off ramp	Diverge	330	24	C	305	21	C
<i>I-5 / Main Street</i>								
Southbound	off ramp	Diverge	215	20	C	310	24	C
Northbound	on ramp	Merge	210	21	C	175	19	B
<i>I-5 / Gas Point Rd - 4th Street</i>								
Southbound	off ramp	Diverge	155	13	B	280	16	B
Northbound	on ramp	Merge	465	18	B	300	16	B
Southbound	on ramp	Merge	195	19	B	205	21	C
Northbound	off ramp	Diverge	135	18	B	155	18	B

Regulatory Setting

California Department of Transportation (Caltrans). Caltrans policies are applicable to 1-5 and SR-273, and are summarized in the Caltrans' Guide for the Preparation of Traffic Impact Studies (State of California Department of Transportation, December 2002). These guidelines identify when a traffic impact study is required, what should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies. Caltrans endeavors to maintain a target service level of LOS C on State highway facilities. However, this may not always be feasible and a lower service level may be acceptable.

Regional Transportation Planning Agency (RTPA)

The **Shasta County Regional Transportation Planning Agency (RTPA)** is the agency responsible for transportation planning for the Shasta County region, including the three cities and the unincorporated area. The planning process is in compliance with the laws and guidelines developed by Caltrans and the Federal Department of Transportation. This responsibility includes development and adoption of transportation policy direction, review and coordination of transportation planning, preparation and endorsement of an Overall Work Program (OWP), a Regional Transportation Plan (RTP), a Regional Transportation Improvement Plan (RTIP), and a Federal Transportation Improvement Plan (FTIP). (RTPA, 2006)

Shasta County General Plan. The Shasta County General Plan Circulation Element sets forth future plans for the transportation system in the County. Policies and implementation programs pertaining to transportation are shown below:

Development Standards and Improvements

Policy C-6a. Future road and street development including future right-of-way shall comply with the adopted County Development Standards.

Policy C-6j New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by residents/occupants in accordance with the Fire Safety Standards.

Policy C-6k- Shasta County shall adopt the following Level of Service (LOS) standards for considering any new roads:

Rural arterials and collectors - LOS C

Urban/suburban arterials and collectors - LOS C

For the purposes of this analysis, LOS C is considered the minimum acceptable Level of Service standard for roadways and intersections under Shasta County jurisdiction.

Policy C-61 - New development, which may result in exceeding LOS E on existing facilities,

shall demonstrate that all feasible methods of reducing travel demand have been attempted to reach LOS C. New development shall not be approved unless traffic impacts are adequately mitigated. Such mitigation may take the form of, but not be limited to the following:

Provision of capacity improvements to the specific road link to be impacted, the transit system, or any reasonable combination;

Provision of demand reduction measures included as part of the project design or project operation or any feasible combination.

Railroads/ Truck Traffic

Policy-C8- To ensure that adequate provision for expanding opportunities for rail transport and trucking service are accommodated in the County's overall transportation plans.

Policy-C8b- Working in conjunction with Caltrans the County shall designate and provide signed truck routes, ensure that adequate pavement depth, lane widths, loading areas, bridge capacities, vertical height of overpasses and utility lines, and turn radii are maintained on the designated truck routes, and prohibit commercial truck traffic from non-truck routes except for deliveries.

Policy-C8c- Adequate truck access to off-street loading areas in commercial and industrial areas shall be provided in all new development applications.

Based on these policies (and Caltrans policies), LOS C is considered the minimum acceptable operating LOS for roadway segment and intersection analysis.

Thresholds of Significance

The County has determined that a project may have significant impacts on traffic and circulation if it does any of the following:

Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections).

Exceed, either individually or cumulatively, a level of service standard established by the Shasta County Public Works for designated roads or highways. Generally these standards are:

Intersections

An intersection that operates acceptably (LOS A, B, or C) without the project is degraded to an unacceptable LOS (D, E, or F) due to the additional traffic from the project.

An intersection that is operating at an unacceptable LOS without the project, experiences an increase of 5 or more seconds of control delay due to the addition of project traffic.

Roadway Segments

A roadway segment that operates acceptably (LOS A, B, or C) without the project is degraded to an unacceptable LOS (D, E, or F) due to the additional traffic from the project.

A roadway segment that operates unacceptably experiences an increase in its daily volume to capacity ratio (V/C) of 0.05 or greater due to the addition of project traffic.

Freeway Ramp Merge, Diverge

A freeway ramp that is operating at an acceptable level (LOS A, B, or C) deteriorates to an unacceptable level (LOS D, E, or F) due to the addition of project traffic.

A freeway ramp that is operating at an unacceptable level experiences an increase of 10 or more passenger car equivalents (PCE's).

Access, Design & Parking

Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Result in inadequate emergency access.

Result in more than 50 left turning vehicles per hour at an intersection without a separate left turn lane.

Result in inadequate parking capacity.

Conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

PROJECT IMPACTS

This report section describes the impacts resulting solely from development of the Panorama GPA. Project impacts have been quantified by estimating the number and directional distribution of project trips, and by superimposing those trips onto current background traffic volumes. Levels of Service were then recalculated for the "Existing Plus Project" conditions (Cumulative impacts resulting from other anticipated development are described later in this report.). The design of access and circulation system improvements accompanying the project has also been reviewed.

Project Characteristics

Trip Generation. The number of automobile trips that can be expected to be generated by the project can be estimated through application of rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation, Seventh Edition*. Table 8 presents the trip generation rates for the proposed project, and Table 9 presents the trips generated by the proposed subdivision.

As noted the Panorama PD as proposed would generate 4,115 daily trips, with 323 and 434 trips occurring during the weekday a.m. and p.m. peak hour, respectively. Development of the site under current General Plan designations would permit 130 single family residences and would generate 1,244 daily trips, with 98 and 132 trips during the a.m. and p.m. peak hours, respectively.

**TABLE 8
TRIP GENERATION RATES**

Land Use	Unit	Trips Per Unit						
		Daily	AM Peak Hour			PM Peak Hour		
			inbound	outbound	total	inbound	outbound	total
Single Family Residential	Du's	9.57	0.19	0.56	0.75	0.65	0.36	1.01

**TABLE 9
TRIP GENERATION ESTIMATE**

Land Use	Quantity	Trips						
		Daily	AM Peak Hour			PM Peak Hour		
			inbound	outbound	total	inbound	outbound	total
Panorama	430 du's	4,115	82	241	323	280	155	434
Current GP designation	130 du's	1,244	25	73	98	85	47	132

Trip Distribution. The distribution of trips to and from the project site was determined by based on information developed from the Shasta County regional travel demand forecasting model. Using the “select link” utility it was possible to isolate the trips associated with development on the subject site as part of an overall traffic model forecast. These results were reviewed and refined to account for the location of site access, and Figure 4 and Table 10 presents the trip distribution for project generated traffic. As shown, roughly 1/3 of the site trips are expected to be oriented to the south and 2/3 would be expected to be headed north.

**TABLE 10
PROJECT TRIP DISTRIBUTION**

Direction	Route	Percentage of Total Trips
North	North on I-5 beyond Knighton Rd	25.5%
	Knighton Road east of Interstate 5	2.0%
	Riverside Avenue west of Interstate 5	5.9%
	Balls Ferry Road west of Interstate 5	1.2%
	Balls Ferry Road east of Interstate 5	9.9%
	SR 273 north of Factory Outlets - Deschutes	8.3%
	SR 273 south of factory Outlets - Deschutes	8.0%
East	Deschutes Road east of Locust Road	2.5%
	Kimberly east of Locust	0.6%
	Balls Ferry Road east of Panorama Point Dr	0.8%
	Black Lane east of Balls Ferry Road	0.9%
West	Gas Point Road west of Interstate 5	6.0%
South	Interstate 5 south of Gas Point Road	8.6%
	Cottonwood south of 4 th Street	12.7%
	Cotton wood north of 4 th Street	7.1%
Total		100%

Trip Assignment. Having identified the overall directional orientation of project trips, it was next necessary to assign those trips to the local street system. This assignment required review of the location of project's access and internal circulation system and identification of the “least time path” between various locations on the site and regional destinations. Information in the South Region Transportation Study was also considered.

The proposed plan includes three connections to Locust Road in the area between Cottonwood and Deschutes Road. The on site circulation system will link Locust Road with Balls Ferry Road in the area of the Trefoil Lane intersection. While the overall regional destinations will be the same, because of the scale of the project trips originating towards the western end of the site will choose routes that are different from those made by residences closer to the eastern boundary.

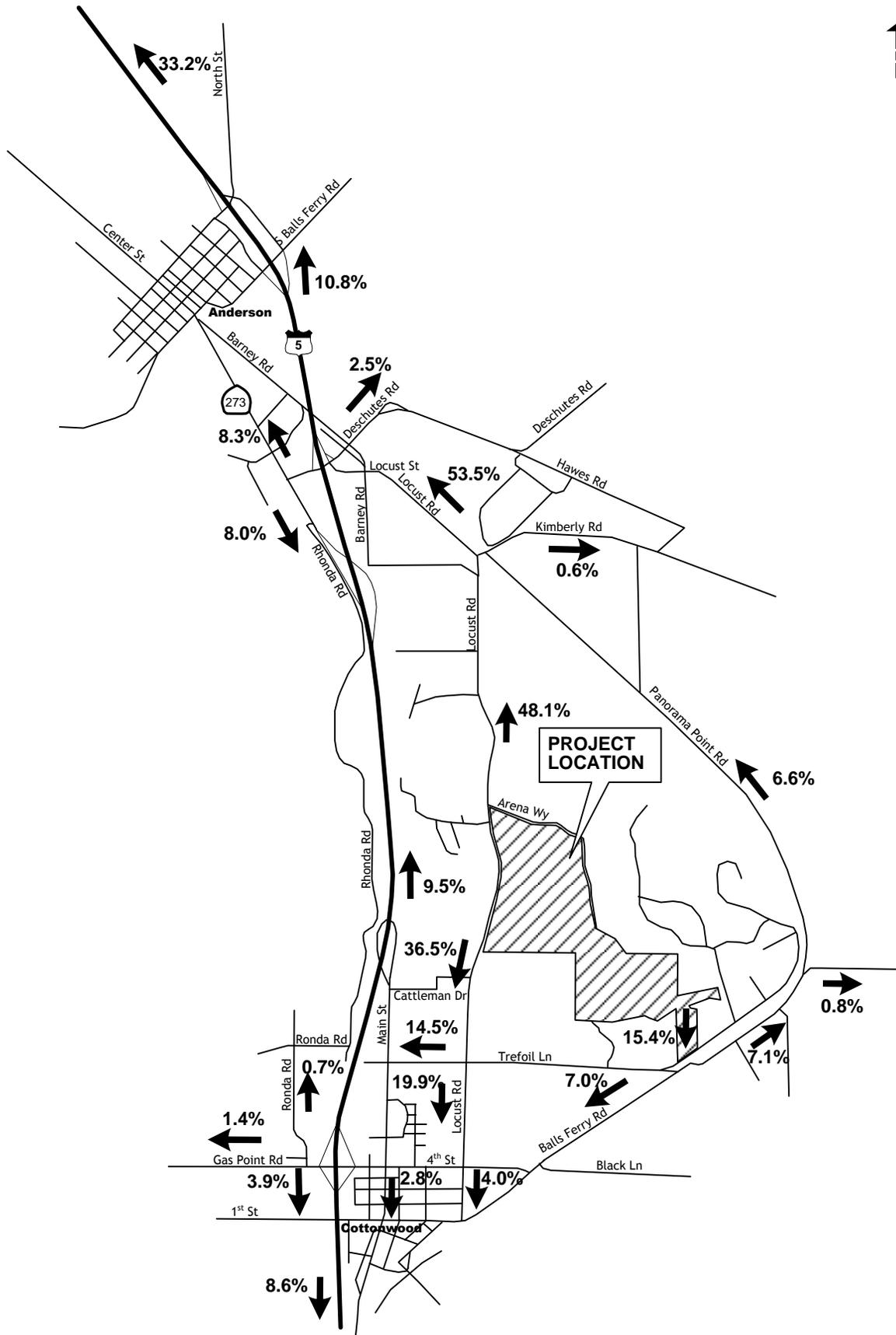


Figure 5 identifies the assignment of project traffic on the study area street system at project build out when all on-site roads have been constructed and the project is fully occupied. Review of this forecast reveals that approximately 85% of the site trips will access the site via Locust Road and 15% will use the access on Balls Ferry Road.

Existing Plus Project Traffic Conditions

Figure 6 presents “Existing plus Project” peak hour traffic volumes created by superimposing project traffic onto existing background conditions. Resulting peak hour intersection Levels of Service were recalculated for this condition, as presented in Table 8. Table 9 compares daily traffic volumes on areas streets with and without the proposed project.

Assumed Improvements. The plus project conditions assume implementation of roadway improvements that are included in the project description. At the south-eastern end of the site, these proposed improvements include re-aligning Jim Dandy Road to intersect Balls Ferry Road in the area between the Trefoil Lane intersection and the railroad crossing.

Level of Service at Intersections. As shown in Table 11, the addition of trips generated by the proposed project will incrementally increase the length of delays experienced at study area intersections. However, the resulting Level of Service at most study intersections will remain within the LOS C or D threshold adopted by Shasta County or the City of Anderson.

There are two exceptions to this conclusion. Development of the project will also increase delays at the **4th Street / NB I-5 ramps intersection** where current conditions are LOS F in the a.m. peak hour and LOS D in the p.m. peak hour. In this case, the incremental increase in delay resulting from the project is 10.9 seconds in the a.m. peak hour and 0.3 seconds in the p.m. peak hour. Because the a.m. value exceeds the 5.0 threshold employed by Shasta County, the project’s *impact to this intersection is significant.*

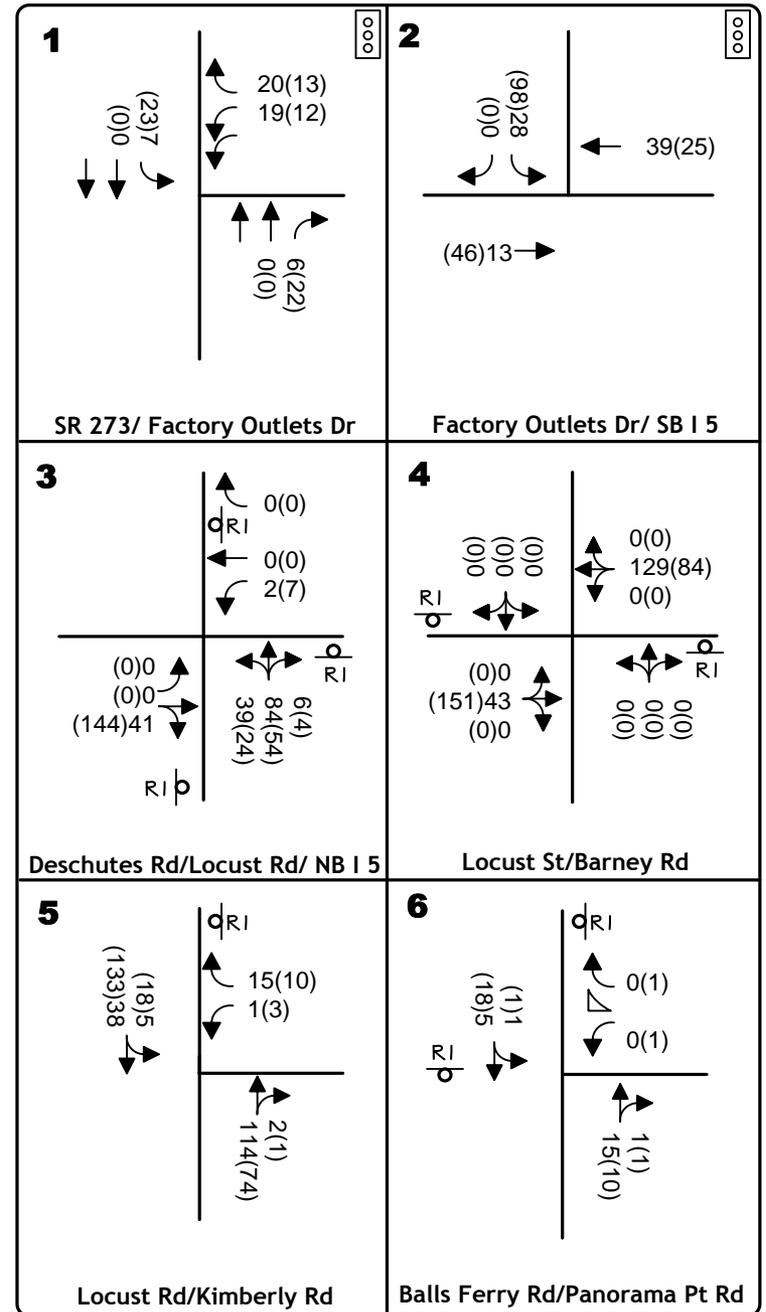
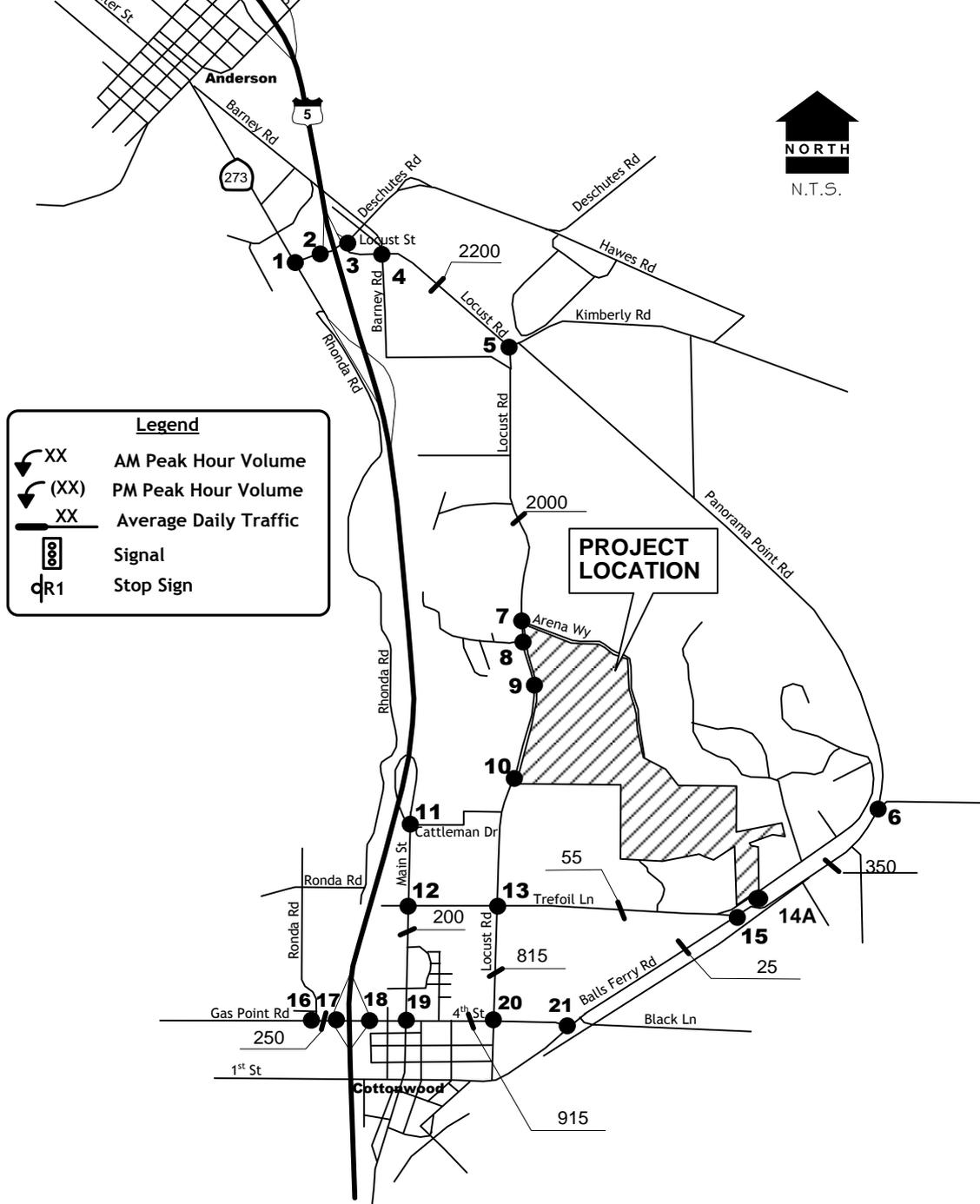
Development of the project will increase the length of delays at the **Riverside Avenue / I-5 NB ramps intersection.** The current Level of Service for side street traffic is LOS E in the a.m. peak hour, and the addition of project trips will reduce the Level of Service to LOS F. As the incremental increase in delay associated with the project (i.e., 7.2 seconds) exceeds the 5.0 second threshold, the *impact to this intersection is significant.*

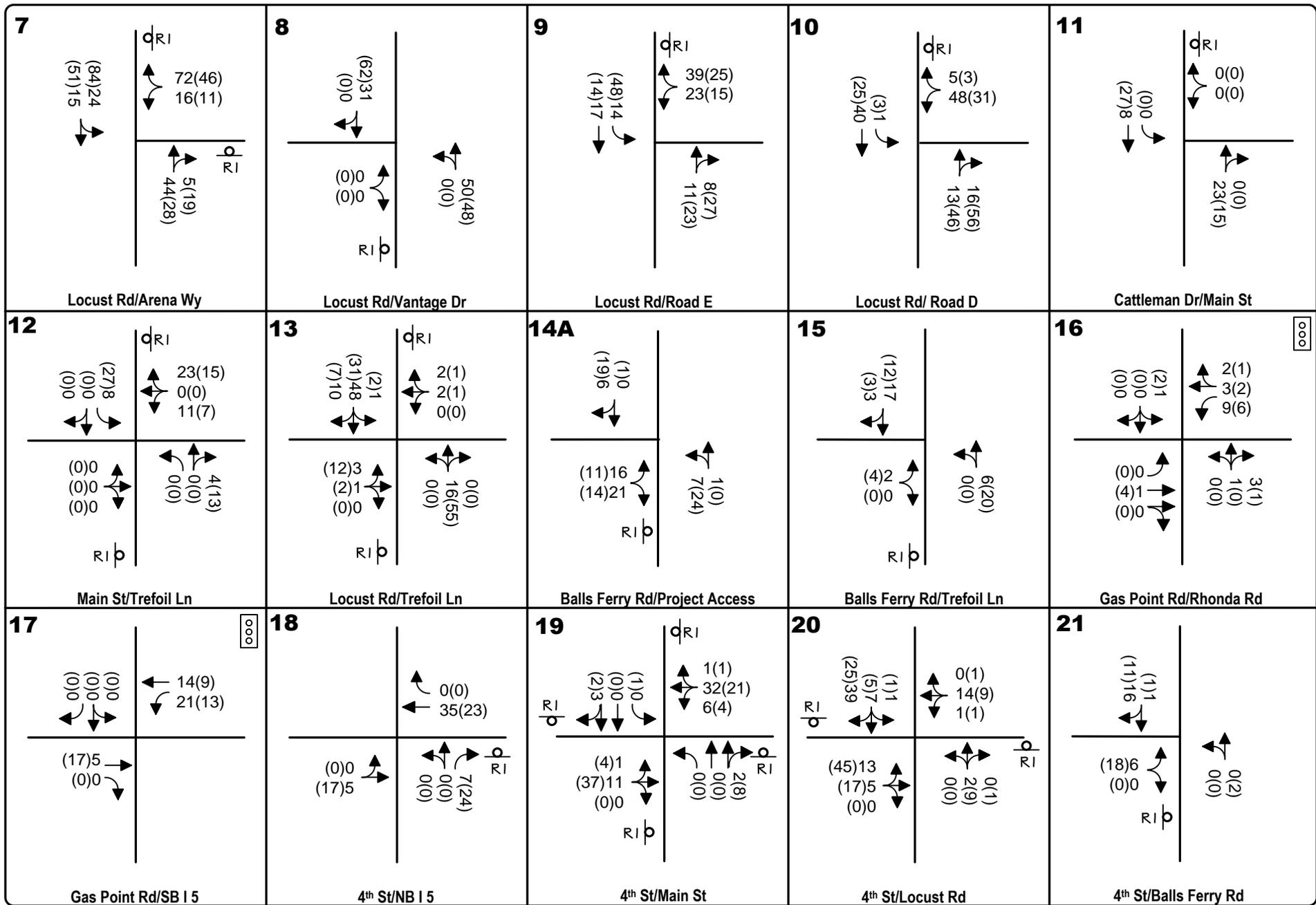
Levels of Service on Roadway Segments. Based on the thresholds of significance adopted by Shasta County, the addition of project traffic will not result in Levels of Service impacts to the roadway segments maintained by the County, as shown in Table 12. Because minimum Levels of Service can be maintained, the project’s *impact to County roads is not significant.*

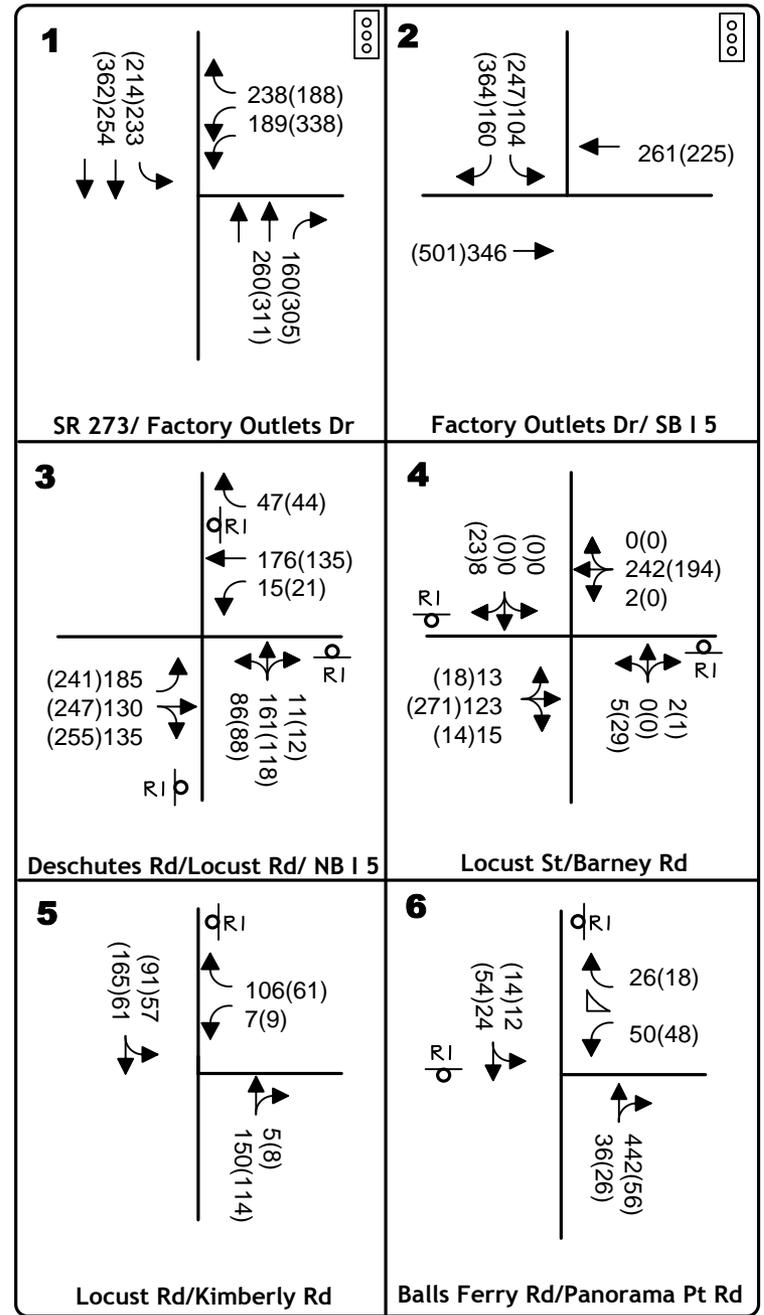
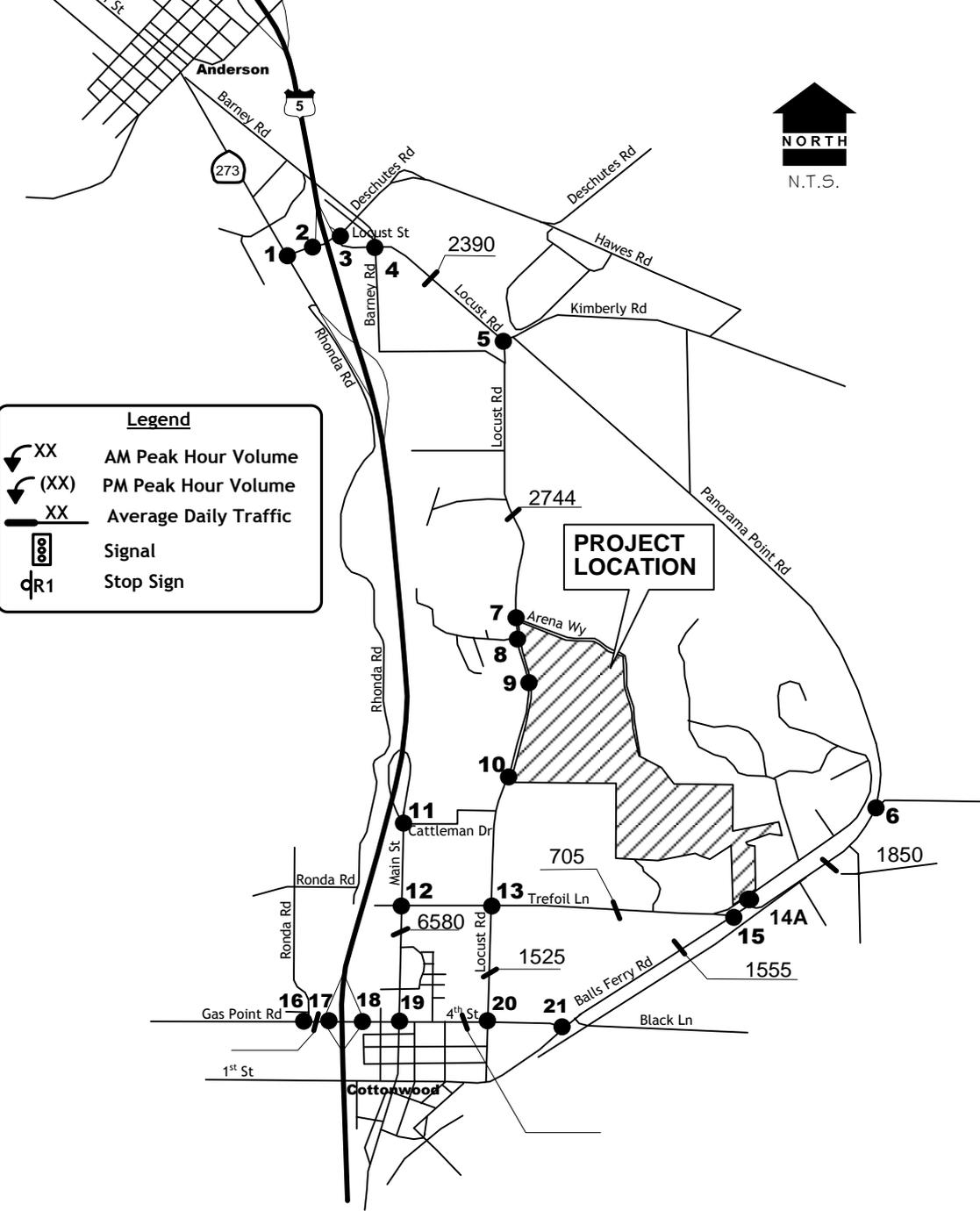
Levels of Service on Mainline Interstate 5. The addition of project traffic may exacerbate the LOS D conditions already occurring on mainline Interstate 5, as noted in Table 13. However, the amount of traffic added by the proposed project in relation to the ultimate capacity of the highway (i.e., v/c) is less than the 0.05 threshold employed to determined significance when conditions

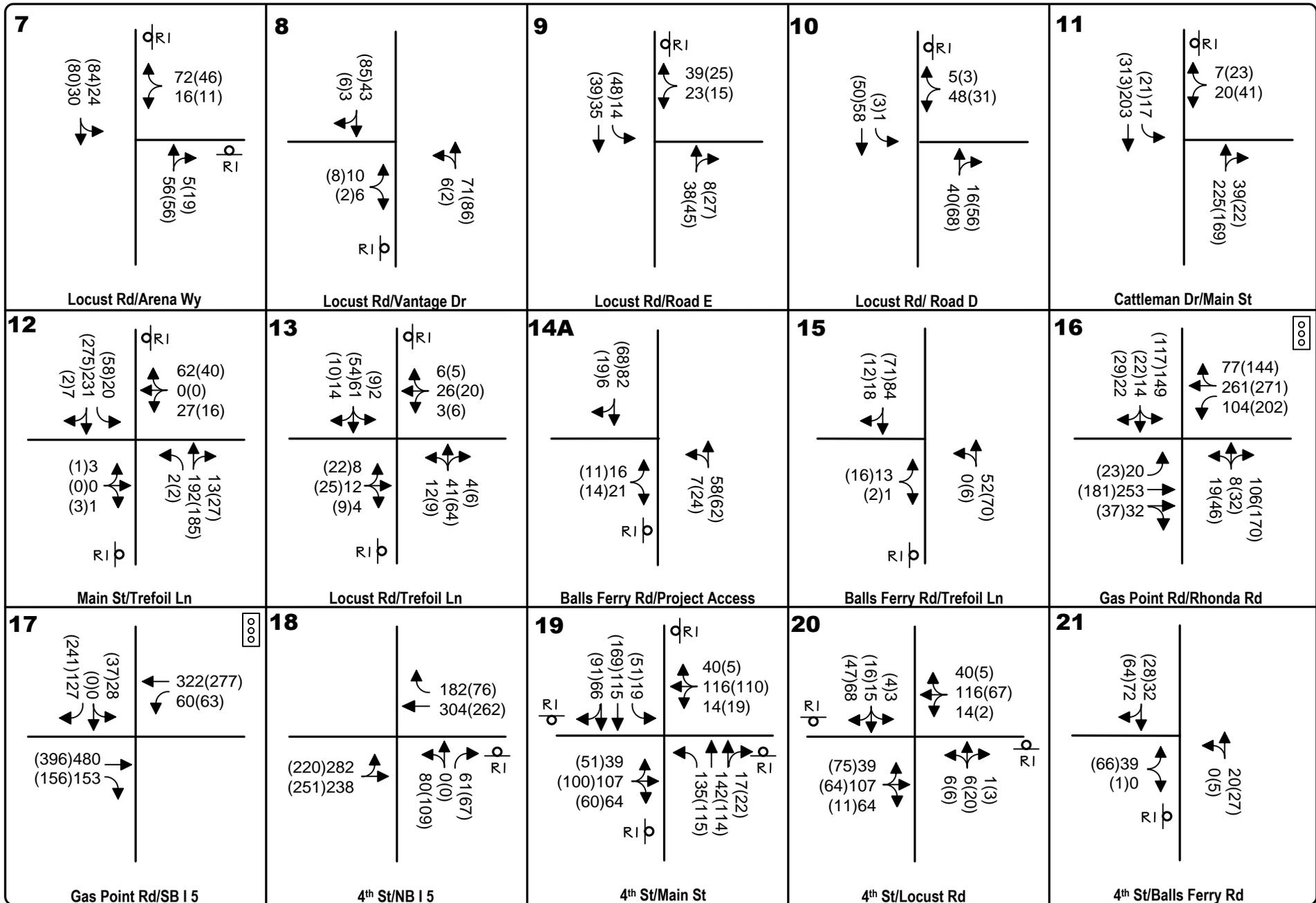
already exceed the LOS C minimum. Thus, the project's *impact to mainline Interstate 5 is not significant*.

Level of Service at Interstate 5 ramps. As shown in Table 14, the addition of project traffic will increase vehicle density in the area of Interstate 5 ramps. Project traffic will result in the Level of Service on southbound Interstate 5 deteriorating to LOS D in the area of the **North Street southbound off ramp**. This exceeds the LOS C minimum and is a *significant impact*.









**TABLE 11
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour				PM Peak Hour				Warrants Met?
		Existing		Ex Plus Project		Existing		EX plus Project		
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273 / Factory Outlets	Signal	B	19.9	C	20.2	B	18.5	B	19.0	n.a.
2. Factory Outlet Dr / I-5 SB ramps	Signal	B	11.8	B	11.9	B	15.4c	B	15.7	n.a.
3. Deschutes Rd / I-5 NB ramps / Locust Rd	All-Way Stop	B	10.7	B	13.1	B	11.8	C	17.3	No
4. Locust Rd / Barney Rd	NB/SB Stop	B	10.1	B	11.7	B	11.1	B	14.2	No
5. Locust Rd / Kimberly Road	NB/SB Stop	A	8.9	A	9.9	A	8.9	A	9.6	No
6. Balls Ferry Road / Panorama Point Rd	SB Stop	A	9.0	A	9.2	A	9.0	A	9.0	No
7. Locust Road / Arena Way (Road A)	WB Stop	-	-	A	9.2	-	-	A	9.3	No
8. Locust Road / Vantage Dr	EB Stop	A	8.7	A	9.1	A	8.8	A	9.3	No
9. Locust Road / Road E	WB Stop	-	-	A	9.1	-	-	A	9.2	No
10. Locust Road / Road D	WB Stop	-	-	A	9.4	-	-	A	9.5	No
11. Main Street / Cattleman Drive	WB Stop	B	12.2	B	11.5	B	11.9	B	12.2	No
12. Main Street / Trefoil Lane	EB / WB Stop	B	13.3	B	13.3	B	11.0	B	11.6	No
13. Locust Road / Trefoil Lane	EB/ WB Stop	A	9.6	B	10.2	A	9.4	B	10.2	No
14. Jim Dandy Drive / Trefoil Lane	SB Stop	A	8.5	A	8.6	A	8.6	-	-	No
14A Balls Ferry Road / Access	EB Stop	-	-	A	9.3			A	9.0	No
15. Balls Ferry Road / Trefoil Lane	EB Stop	A	9.2	A	9.4	A	9.2	A	9.4	No
16. Gas Point Road / Rhonda Road	Signal	C	26.5	C	26.8	C	28.1	C	28.5	n.a.
17. Gas Point Road / SB I-5 ramps	Signal	B	10.9	B	11.7	B	15.9	B	16.2	n.a.
18. 4 th Street / NB I-5 ramps	NB Stop	F	74.3	F	85.2	D	32.5	D	32.7	No
19. 4 th Street / Main Street	All-Way stop	B	10.7	B	11.3	A	9.9	B	10.6	No
20. 4 th Street / Locust Road	NB / SB Stop	B	10.8	B	11.9	B	10.2	B	11.6	No
21. 4 th Street / Balls Ferry Road	EB Stop	A	9.2	A	9.3	A	9.2	A	9.4	No
22. Balls Ferry Rd / SB I-5 ramps	Signal	B	14.2	B	14.2	B	16.2	B	16.2	n.a.
23. Balls Ferry Road . NB I-5 ramps	Signal	C	21.7	C	21.9	C	27.9	C	28.2	n.a.
24. Riverside Ave / I-5 SB ramps	SB Stop	C	15.5	C	15.9	C	18.7	C	19.2	No
25. Riverside Drive / I-5 NB ramps	NB Stop	E	42.8	F	50.0	C	16.3	C	16.8	No

Bold is Level of Service in excess of adopted minimum standard. **Highlighted** conditions are significant.

**TABLE 12
EXISTING PLUS PROJECT ROADWAY LEVELS OF SERVICE**

Street	Location	Lanes	Facility Type	Existing Conditions		Existing Plus Project		
				Daily Volume	LOS	Daily Volume		LOS
						Project Only	Total	
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	3,191	A	2,210	5,401	A
	Kimberly Road to Road A	2		744	A	1,900	2,644	A
	Road A to Road D			711	A	1,040	1,751	A
	Road D to Trefoil Lane	2		711	A	1,415	2,126	A
	Trefoil Lane to 4 th Street	2		711	A	810	1,521	A
Gas Point Road	Rhonda Road to SB I-5	2	Major Collector	13,002	C	250	13,252	C
4 th Street	Main Street to Locust Road	2	Major Collector	3,055	A	670	3,725	A
Main Street	Interstate 5 to 4 th Street	4	Major Collector	6,379	A	400	6,779	A
Balls Ferry Road	4 th Street to Trefoil Lane	2	Minor Collector	1,531	A	300	1,831	A
	Trefoil Lane to Access	2		1,500	A	350	1,850	A
	Access to Panorama Point Drive	2		1,500	A	280	1,780	A
Panorama Point Dr	Kimberly Rd to Balls Ferry Rd	2	Minor Collector	800	A	280	1,080	A
Trefoil Lane	Main Street to Locust Road	2	Minor Collector	653	A	600	1,253	A
	Locust Road to Balls Ferry Road	2		653	A	40	693	A

**TABLE 13
EXISTING PLUS PROJECT MAINLINE INTERSTATE 5 LEVEL OF SERVICE**

Location	Lanes	Existing Conditions			Existing Plus Project				
		Daily Volume	Density (Pc/)	LOS	Daily Volume			Density (pc/mi/ln)	LOS
					Project Only	Total	Net v/c		
South of Gas Point Road	4	42,500	20.4	C	355	42,855	<0.010	20.9	C
Gas Point Road to Main Street	4	51,000	30.3	D	0	51,000	<0.010	30.3	D
Main Street to SR 273	4	51,000	30.3	D	400	51,400	≤0.010	30.7	D
SR 273 to Deschutes Road	4	51,000	30.3	D	400	51,400	<0.010	30.7	D
Deschutes Road to Balls Ferry Road	4	62,000	27.6	D	1,840	63,840	0.023	28.8	D
Balls Ferry Rd to North Street	4	62,000	27.6	D	1,380	63,380	0.017	28.5	D
North Street to Riverside Ave	4	62,000	27.6	D	1,380	63,380	0.017	28.5	D
Riverside Ave to Knighton Road	4	63,000	23.9	C	1,135	64,135	0.014	24.9	C
Knighton Rd to South Bonnyview Drive	4	56,000	21.4	C	1,050	57,050	0.013	21.8	C
Capacity of 4 lane assumed to be 80,000 ADT at LOS E									

**TABLE 14
EXISTING PLUS PROJECT PEAK HOUR RAMP LEVELS OF SERVICE AT INTERSTATE 5 INTERCHANGES**

Direction	Ramp	Action	AM Peak Hour							PM Peak Hour						
			Existing			Ex Plus Project				Existing			Ex Plus Project			
			Vol	Den	LOS	Volume		Den	LOS	Vol	Den	LOS	Volume		Den	LOS
						Project Only	Total						Project Only	Total		
<i>I-5 / Riverside Ave</i>																
Southbound	on ramp	Merge	185	19	B	5	190	19	B	255	25	C	17	272	26	C
Northbound	off ramp	Diverge	245	25	C	14	259	26	C	210	23	C	9	219	23	C
<i>I-5 / North Street</i>																
Southbound	off ramp	Diverge	375	21	C	0	375	21	C	555	27	C	0	555	28	D
Northbound	on ramp	Merge	510	24	C	0	510	25	C	475	21	C	0	475	22	C
<i>I-5 / Balls Ferry Road</i>																
Southbound	on ramp	Merge	250	18	B	9	259	18	B	400	24	C	31	431	25	C
Northbound	off ramp	Diverge	320	23	C	27	347	24	C	380	22	C	17	402	22	C
<i>I-5 / Deschutes Road</i>																
Southbound	off ramp	Diverge	235	20	B	28	263	20	C	515	26	C	98	613	27	C
Northbound	on ramp	Merge	310	22	C	84	394	23	C	350	20	B	54	404	21	C
<i>I-5 / SR 273</i>																
Southbound	on ramp	Merge	300	19	B	0	300	19	B	400	23	C	0	400	23	C
Northbound	off ramp	Diverge	330	24	C	0	330	24	C	305	21	C	0	305	21	C
<i>I-5 / Main Street</i>																
Southbound	off ramp	Diverge	215	20	C	8	223	20	C	310	24	C	27	337	25	C
Northbound	on ramp	Merge	210	21	C	23	233	21	C	175	19	B	15	190	19	B
<i>I-5 / Gas Point Rd – 4th Street</i>																
Southbound	off ramp	Diverge	155	13	B	0	155	13	B	280	16	B	0	280	16	B
Northbound	on ramp	Merge	465	18	B	0	465	18	B	300	16	B	0	300	16	B
Southbound	on ramp	Merge	195	19	B	21	216	19	B	205	21	C	13	218	21	C
Northbound	off ramp	Diverge	135	18	B	7	142	18	B	155	18	B	24	179	18	B

Impacts to Alternative Transportation Modes

Transit. Development of the project could increase the need for transit services and alternative transportation modes to serve the Cottonwood - South County area. However, development of this project alone would not result in an increase in demand that would create a significant impact that would necessitate changing current transit operations.

Pedestrians / Bicyclists. With development of the project additional pedestrian and bicycle traffic could be created on the roads that link the site with Cottonwood and with the retail opportunities west of Interstate 5. Conflicts could result between automobiles and pedestrians in those areas where shoulders are limited and sidewalks or bike lanes are not provided.

CUMULATIVE IMPACTS

This report section describes the cumulative impacts of other development in Shasta County and the City of Anderson, regional through traffic growth and implementation of area wide circulation system improvements in the City of Anderson and surrounding Shasta County. Two future scenarios have been considered. The first scenario is conditions occurring with development of other approved projects. Data for this “Existing Plus Approved Projects” scenario is based on a list of known development projects provided by Shasta County and the City of Anderson. The other scenario involves long term future conditions in the year 2030. For this scenario Information provided by the RTPA regional travel demand forecasting model has been used to supplemental information drawn from the City of Anderson’s Vineyard EIR.

Existing Plus Approved Pending Projects

Assumptions. This study scenario considers the ramifications of the proposed project within the context of conditions occurring with development of other known projects.

Background Development. City of Anderson and Shasta County staff was asked to identify other approved development projects in the study area. Table 15 identifies the projects addressed under this scenario.

TABLE 15
APPROVED / PENDING BACKGROUND PROJECTS

Jurisdiction	Name	Description
City of Anderson	Vineyards at Anderson.	242 single-family dwelling units
	Pleasant Hills.	179 single-family dwelling units, 50 have been finalized. Located at the north end of the Vineyards development
	Campbell Estates	28 single-family dwelling units near 3 rd St.
		A heavy commercial/light industrial development east of Hwy 273 and south of Alexander Ave. 12 lots.
	Homewood	South of heavy commercial/light industrial development. 124 single-family dwelling units, 40 have been finalized.
	Willow Glen	42 duplexes south end of East Street.
	Townhouse planned development.	71 dwelling units. Southwest corner of Stingy Lane and North Street
	Commercial development	Car wash, coffee shop, and a few thousand square feet of commercial. Northeast corner of Stingy Lane and North Street
	River Point.	184 single-family dwelling units. Stingy Lane and Balls Ferry Road
	Silvergate.	192 units, duplexes and four-plexes on 62 lots at southern terminus of Gateway Drive
Shasta County	Shasta Ranch Mining and Reclamation Plan	Gravel mine located east of Balls Ferry Road near Kimberly Road
	Tract 1905	Shasta Ranch 35 lots
	Tract 1903	Wisteria Estates 26 lots
	Tract 1891	Seale Court 71 lots
	Tract 1951	Raccit Lane 14 lots
	Tract 1968	Emerald Terrace 11 lots
	Tract 1934	Jordan Manor 39 lots
	Tract 1887A	Kittridge 9 lots
	Tract 1864	Manor Crest 6 lots
	Tract 1932	Oak Ranch Estates 144 lots
	Tract 1942	Locust Street 36 lots
	Rural parcels	44 various parcels
	Alexander Re-Zone	Equestrian Facility

The trip generation and distribution characteristics associated with these projects have been identified from their respective traffic studies or from ITE rates. New trips associated with each project were assigned to the study area street system based on information in the respective traffic study or based on the regional distribution characteristics implied by the SCTPC model.

Existing Plus Approved / Pending Projects Traffic Volumes. Background “Existing Plus Approved Projects” traffic volumes are presented in Figure 7, while volumes with the completion of the proposed Panorama PD are presented in Figure 8. These forecasts have been employed to identify the Levels of Service occurring at study area intersections, on roadway segments and on Interstate 5.

Level of Service at Intersections. As shown in Table 16, the addition of trips generated by other approved / pending projects and the Panorama PD will incrementally increase the length of delays experienced at study area intersections, and two locations will operate with Levels of Service that exceed the LOS C minimum. These intersections are:

4th Street / I-5 NB ramps
Riverside Avenue / I-5 NB ramps

The Level of Service at these two intersections exceeds LOS C with and without the project. The incremental increase in delay associated with the additional traffic from the Panorama PD is greater than the 5.0 second threshold employed to identify significance at locations where minimum Level of Service is exceeded without the proposed project. Thus, the project’s *impact to the 4th Street I-5 NB ramps and Riverside Avenue / I-5 NB ramps intersection is significant.*

Levels of Service on Roadway Segments. Development of other approved pending projects and the Panorama PD will increase the volume of traffic on County roads. However, based on the thresholds of significance adopted by Shasta County, the addition of project traffic will not result in Levels of Service impacts to the roadway segments maintained by the County, as shown in Table 17. Because the minimum Level of Service can be maintained, the project’s *impact to county roads is not significant.*

Levels of Service on Mainline Interstate 5. The addition of project traffic may exacerbate the LOS D conditions already occurring on mainline Interstate 5, as noted in Table 18. However, the amount of traffic added by the proposed project in relation to the ultimate capacity of the highway (i.e., v/c) is less than the 0.05 threshold employed to determine significance when conditions already exceed the LOS C minimum. The addition of project traffic will however result in the level of service dropping to LOS D on the segment from Riverside Ave to Knighton Road. Thus, the project’s *impact to mainline Interstate 5 in that area alone is significant.*

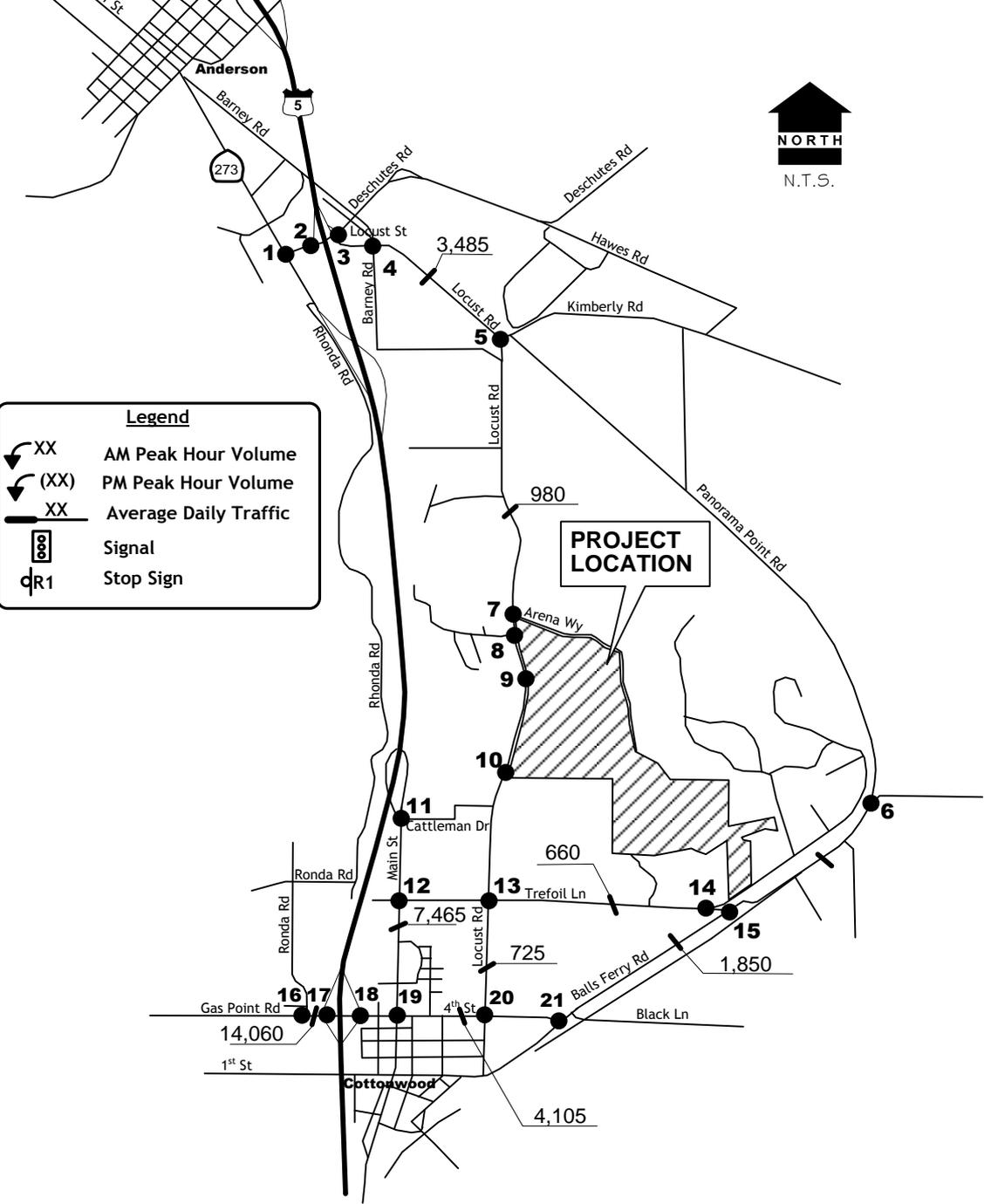
Level of Service at Interstate 5 ramps. As shown in Table 19, the addition of project traffic and trips from other approved pending projects will increase vehicle density in the area of Interstate 5 ramps and will result in two locations operating with a Level of Service in excess of the minimum standard. These locations are:

SB off ramp to North Street (LOS D in p.m. peak hour)

SB off ramp to Deschutes Road (LOS D in p.m. peak hour)

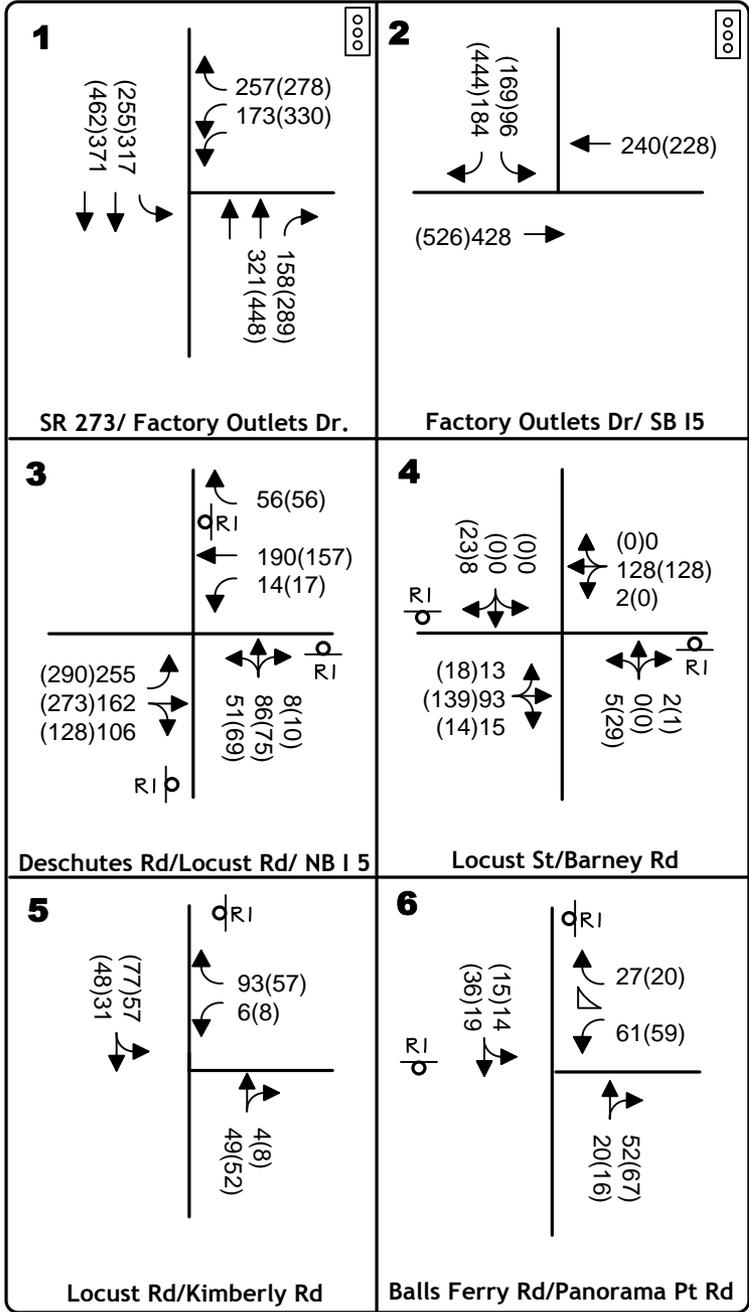
The significance of the project's contribution to each location has been determined based on adopted policies. At the North Street off ramp, development of the project results in fewer than 10 additional vehicles on the ramp. Thus, the project's ***impact to this diverge area is not significant.***

At the Deschutes Road off ramp, the project's traffic will result in an acceptable Level of Service dropping to an unacceptable condition (i.e., LOS C dropping to LOS D). Therefore, the project's ***incremental impact to the SB Deschutes Road off ramp is a significant impact.***



Legend

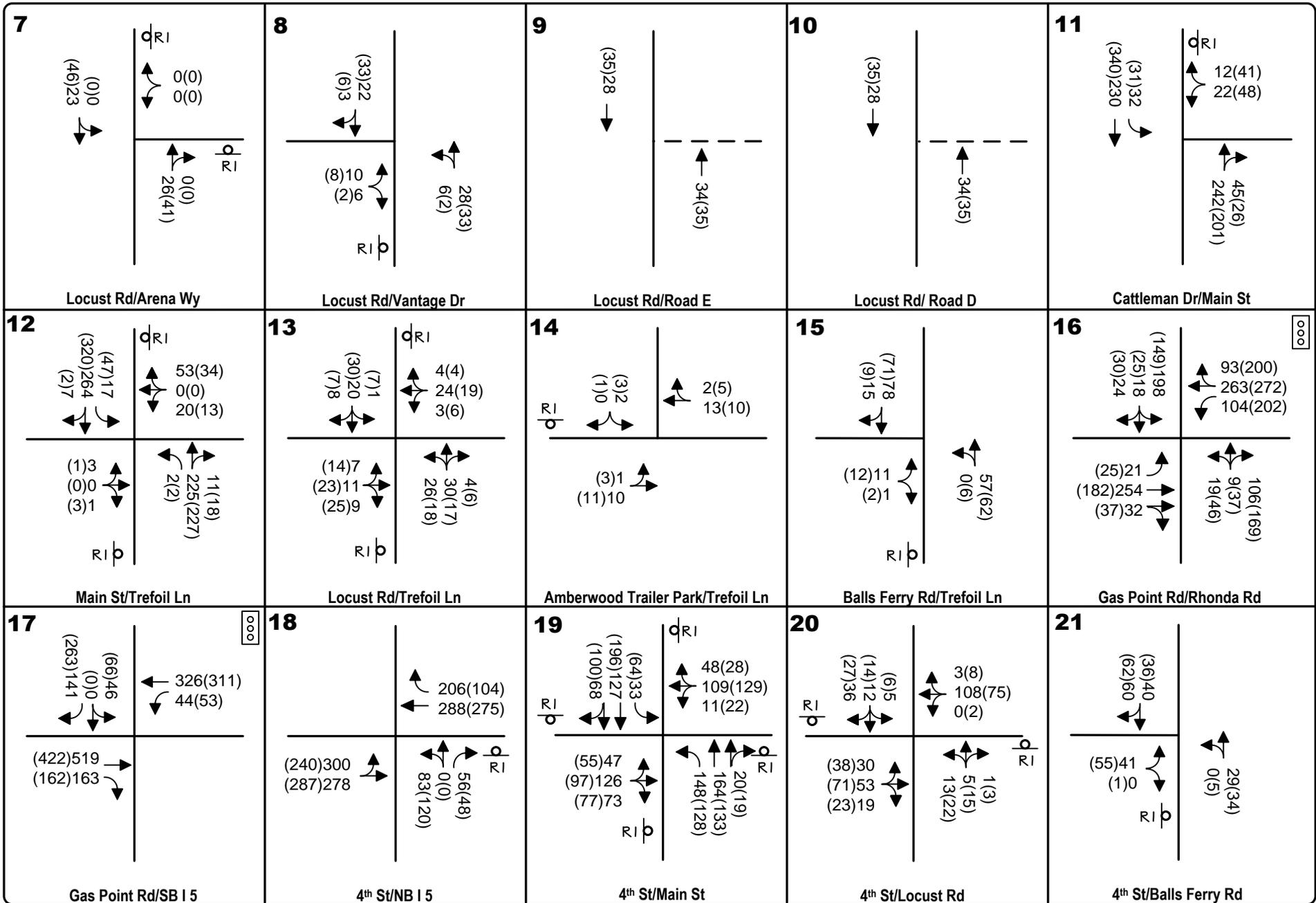
- ↙ XX AM Peak Hour Volume
- ↘ (XX) PM Peak Hour Volume
- XX Average Daily Traffic
- ◻ Signal
- qR1 Stop Sign



**EXISTING PLUS APPROVED PENDING PROJECTS
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS**

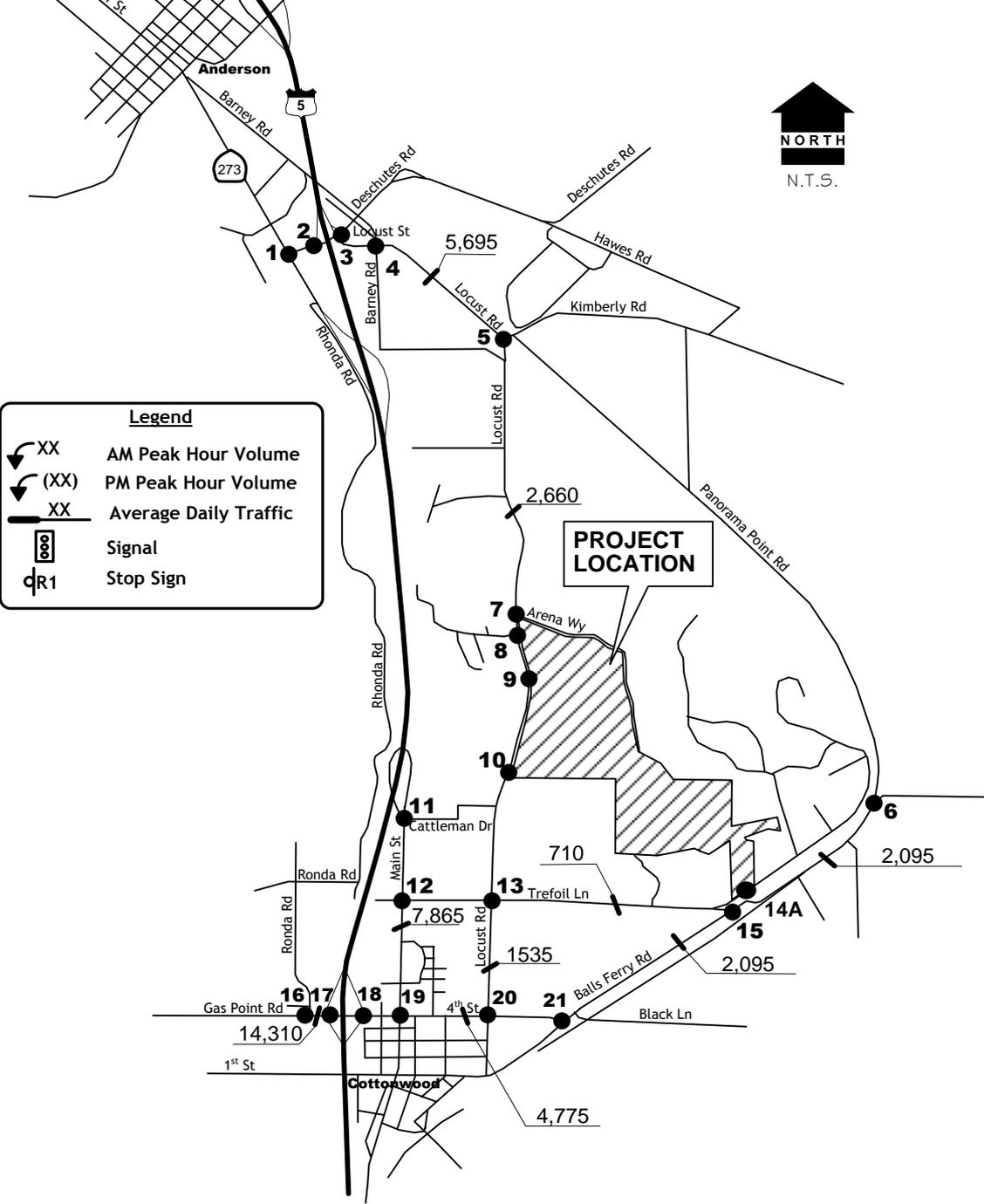
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Transportation Engineers

figure 7



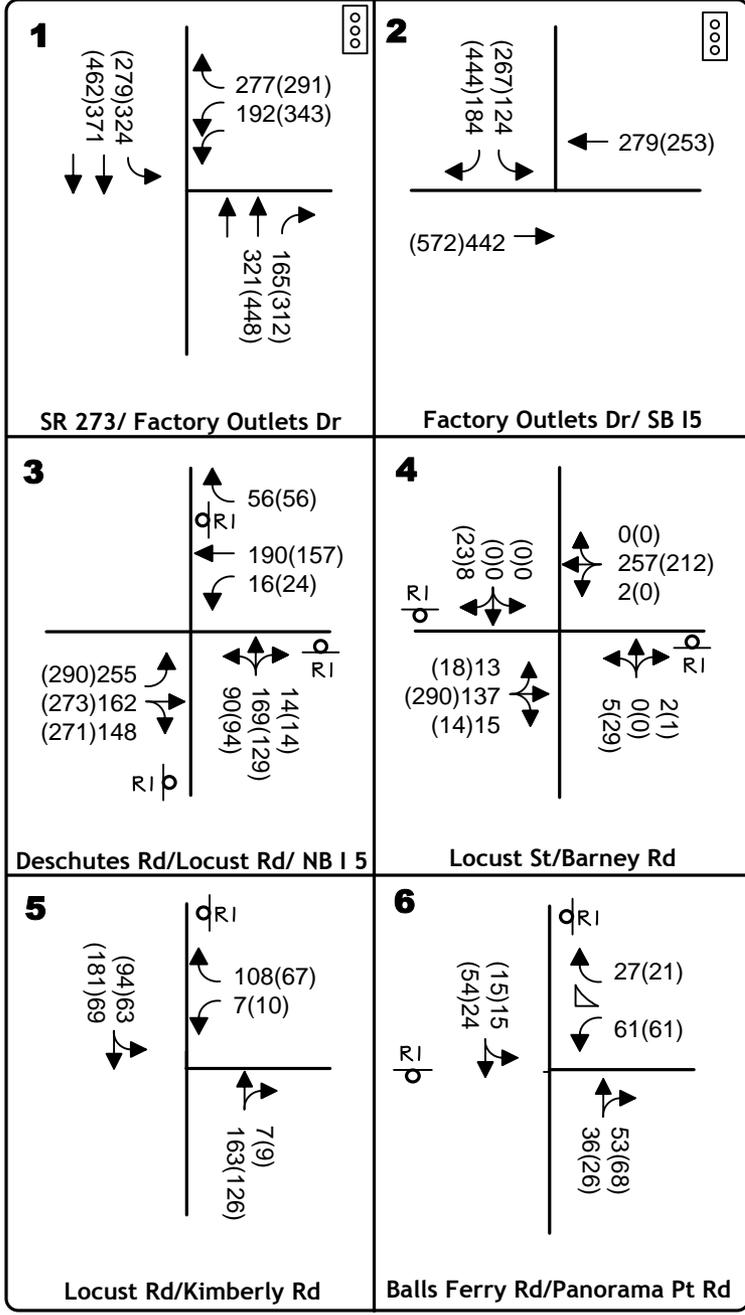
EXISTING PLUS APPROVED PENDING PROJECTS
 TRAFFIC VOLUMES
 AND LANE CONFIGURATIONS

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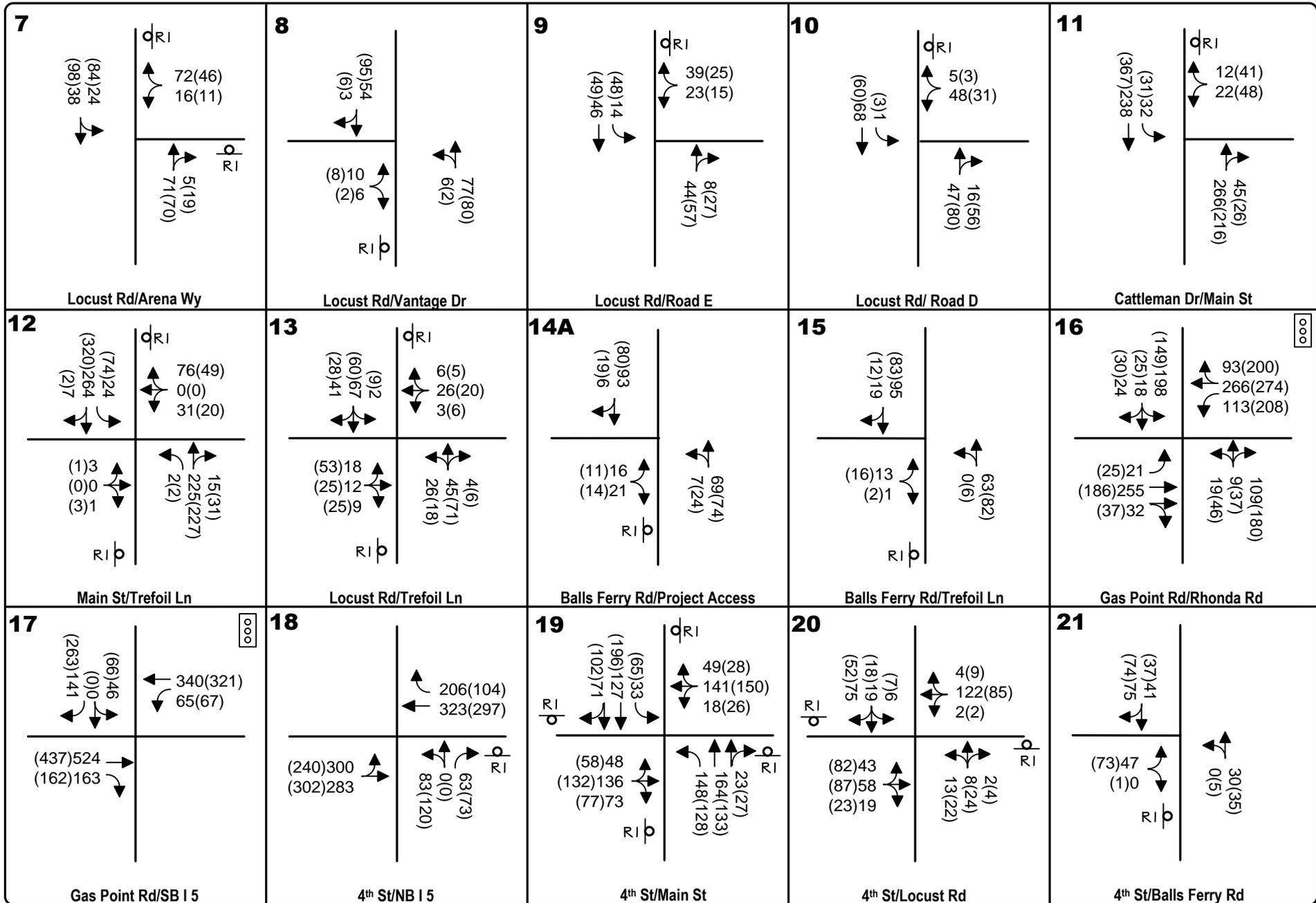
- ↙ XX AM Peak Hour Volume
- ↘ (XX) PM Peak Hour Volume
- XX Average Daily Traffic
- ◻ Signal
- qR1 Stop Sign



**EXISTING PLUS APPROVED PENDING PROJECTS
PLUS PANORAMA TRAFFIC VOLUMES
AND LANE CONFIGURATIONS**

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figure 8



**EXISTING PLUS APPROVED PENDING PROJECTS
 PLUS PANORAMA TRAFFIC VOLUMES
 AND LANE CONFIGURATIONS**

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**TABLE 16
EPAPP PLUS PROJECT INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour				PM Peak Hour				Warrants Met?
		EPAPP BASE		EPAPP Plus Project		EPAPP BASE		EPAPP plus Project		
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273 / Factory Outlets	Signal	B	20.2	B	20.5	B	19.6	C	20.2	n.a.
2. Factory Outlet Dr / I-5 SB ramps	Signal	B	12.1	B	12.2	B	17.2	B	17.6	n.a.
3. Deschutes Rd / I-5 NB ramps / Locust Rd	All-Way Stop	B	12.3	B	15.5	B	13.4	C	22.1	No
4. Locust Rd / Barney Rd	NB/SB Stop	B	10.3	B	12.0	B	11.5	B	14.8	No
5. Locust Rd / Kimberly Road	NB/SB Stop	A	9.1	B	10.0	A	9.0	A	9.8	No
6. Balls Ferry Road / Panorama Point Rd	SB Stop	A	9.2	A	9.4	A	9.1	A	9.2	No
7. Locust Road / Arena Way (Road A)	WB Stop	-	-	A	9.3	-	-	A	9.5	No
8. Locust Road / Vantage Dr	EB Stop	A	8.8	A	9.2	A	8.9	A	9.5	No
9. Locust Road / Road E	WB Stop	-	-	A	9.2	-	-	A	9.3	No
10. Locust Road / Road D	WB Stop	-	-	A	9.5	-	-	A	9.7	No
11. Main Street / Cattleman Drive	WB Stop	B	13.3	B	13.8	B	13.2	B	13.7	No
12. Main Street / Trefoil Lane	EB / WB Stop	B	14.9	C	15.9	B	11.9	B	12.9	No
13. Locust Road / Trefoil Lane	EB/ WB Stop	B	10.0	B	10.9	A	9.7	B	10.8	No
14. Jim Dandy Drive / Trefoil Lane	SB Stop	A	8.5	A	8.6	A	8.6	-	-	No
14A Balls Ferry Road / Access	EB Stop	-	-	A	9.5			A	9.4	No
15. Balls Ferry Road / Trefoil Lane	EB Stop	A	9.3	A	9.5	A	9.3	A	9.6	No
16. Gas Point Road / Rhonda Road	Signal	C	28.4	C	28.7	C	30.9	C	31.4	n.a.
17. Gas Point Road / SB I-5 ramps	Signal	B	11.7	B	12.5	B	16.2	B	16.6	n.a.
18. 4 th Street / NB I-5 ramps	NB Stop	F	135.2	F	154.8	F	55.9	F	61.7	No
19. 4 th Street / Main Street	All-Way stop	B	12.4	B	13.3	A	11.5	B	12.5	No
20. 4 th Street / Locust Road	NB / SB Stop	B	11.8	B	13.3	B	11.1	B	12.9	No
21. 4 th Street / Balls Ferry Road	EB Stop	A	9.4	A	9.5	A	9.4	A	9.6	No
22. South St / I-5 SB ramps	Signal	B	14.5	B	14.5	B	16.9	B	16.9	n.a.
23. Balls Ferry Rd / I-5 NB ramps	Signal	C	22.8	C	22.9	C	30.5	C	30.9	n.a.
24. Riverside Ave / I-5 SB ramps	SB Stop	C	16.6	C	17.0	C	22.2	C	23.0	No
25. Riverside Ave / I-5 NB ramps	NB Stop	F	62.4	F	75.6	C	18.8	C	19.5	No

Bold is Level of Service in excess of adopted minimum standard. **Highlighted** conditions are significant project impacts.

**TABLE 17
EPAPP PLUS PROJECT ROADWAY LEVELS OF SERVICE**

Street	Location	Lanes	Facility Type	EPAPP Conditions		EPAPP Plus Project		
				Daily Volume	LOS	Daily Volume		LOS
						Project Only	Total	
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	3,485	A	2,210	5,695	A
	Kimberly Road to Road A	2		980	A	1,900	2,880	A
	Road A to Road D			875	A	1,040	1,915	A
	Road D to Trefoil Lane	2		885	A	1,500	2,385	A
	Trefoil Lane to 4 th Street	2		1,045	A	810	1,855	A
Gas Point Road	Rhonda Road to SB I-5	4	Major Collector	14,060	C	250	14,310	C
4 th Street	Main Street to Locust Road	2	Major Collector	4,105	A	670	4,775	A
Main Street	I-5 to 4 th Street	4	Major Collector	7,465	A	400	7,865	A
Balls Ferry Road	4 th Street to Trefoil Lane	2	Minor Collector	1,850	A	300	3,900	A
	Trefoil Lane to Access	2		1,815	A	350	2,165	A
	Access to Panorama Point Drive	2		1,815	A	280	2,095	A
Panorama Point Dr	Kimberly Rd to Balls Ferry Rd	2	Minor collector	850	A	280	1,130	A
Trefoil Lane	Main Street to Locust Road	2	Minor Collector	965	A	600	1,565	A
	Locust Road to Balls Ferry Road	2		965	A	40	1,005	A

**TABLE 18
EPAPP PLUS PROJECT MAINLINE INTERSTATE 5 LEVEL OF SERVICE**

Location	Lanes	EPAPP Conditions			EPAPP Plus Project				
		Daily Volume	Density (Pc/)	LOS	Daily Volume			Density (pc/mi/ln)	LOS
					Project Only	Total	Net v/c		
South of Gas Point Road	4	43,325	21.1	C	355	43,680	<0.010	21.3	C
Gas Point Road to Main Street	4	52,460	31.7	D	0	52,460	<0.010	31.7	D
Main Street to SR 273	4	54,500	33.9	D	400	54,900	<0.010	34.3	D
SR 273 to Deschutes Road	4	52,530	31.8	D	400	52,930	<0.010	32.2	D
Deschutes Road to Balls Ferry Road	4	65,060	29.6	D	1,840	66,900	0.023	30.9	D
Balls Ferry Rd to North Street	4	64,390	29.1	D	1,380	65,770	0.017	30.1	D
North Street to Riverside Ave	4	64,650	29.3	D	1,380	66,030	0.017	30.2	D
Riverside Ave to Knighton Road	4	65,780	25.7	C	1,135	66,815	0.014	26.2	D
Knighton Road to South Bonnyview Drive	4	58,620	22.5	C	1,050	59,670	0.013	22.9	C
Bold exceeds LOS C. Highlighted conditions are significant impact.									

**TABLE 19
EPAPP PLUS PROJECT PEAK HOUR RAMP LEVELS OF SERVICE AT INTERSTATE 5 INTERCHANGES**

Direction	Ramp	Action	AM Peak Hour							PM Peak Hour						
			EPAPP			EPAPP Plus Project				EPAPP			EPAPP Plus Project			
			Vol	Den	LOS	Volume		Den	LOS	Vol	Den	LOS	Volume		Den	LOS
						Project Only	Total						Project Only	Total		
<i>I – 5 / Riverside Ave</i>																
Southbound	on ramp	Merge	202	20	B	5	207	20	B	303	26	C	17	320	27	C
Northbound	off ramp	Diverge	259	27	C	14	273	28	C	236	24	C	9	245	24	C
<i>I-5 / North Street</i>																
Southbound	off ramp	Diverge	386	22	C	0	386	22	C	590	29	D	0	590	30	D
Northbound	on ramp	Merge	542	25	C	0	542	26	C	497	23	C	0	497	23	C
<i>I-5 / Balls Ferry Road</i>																
Southbound	on ramp	Merge	289	19	B	9	298	19	B	462	25	C	31	493	27	C
Northbound	off ramp	Diverge	369	24	C	27	396	26	C	438	23	C	17	455	24	C
<i>I-5 / Deschutes Road</i>																
Southbound	off ramp	Diverge	279	21	C	28	307	21	C	615	28	C	98	713	29	D
Northbound	on ramp	Merge	398	23	C	84	482	24	C	422	21	C	54	476	23	C
<i>I-5 / SR 273</i>																
Southbound	on ramp	merge	386	20	B	0	386	20	B	497	24	C	0	497	25	C
Northbound	off ramp	Diverge	398	25	C	0	398	25	C	415	23	C	0	415	23	C
<i>I-5 / Main Street</i>																
Southbound	off ramp	Diverge	284	22	C	8	292	22	C	438	26	C	27	365	27	C
Northbound	on ramp	merge	312	23	C	23	335	23	C	232	21	C	15	247	21	B
<i>I-5 / Gas Point Rd – 4th Street</i>																
Southbound	off ramp	Diverge	187	14	B	0	187	14	B	321	17	B	0	321	17	B
northbound	on ramp	merge	507	19	B	0	507	19	B	348	17	B	0	348	17	B
southbound	on ramp	Merge	210	19	B	21	231	19	B	214	21	C	13	227	21	C
northbound	off ramp	diverge	140	19	B	7	147	19	B	231	19	B	24	255	19	B
Bold is conditions in excess of standard. Highlighted value is significant impact.																

2030 Long Term Cumulative Conditions

Approach to Developing Traffic Volume Forecasts. In Shasta County long term future traffic conditions are identified by the regional travel demand forecasting model maintained by the Shasta County RTPA. This tool has been employed to develop traffic volume forecasts for the EIR's prepared for projects throughout the County and in the cities of Anderson and Redding. As requested by Caltrans District 2, the most current version of the model has been employed for this cumulative analysis.

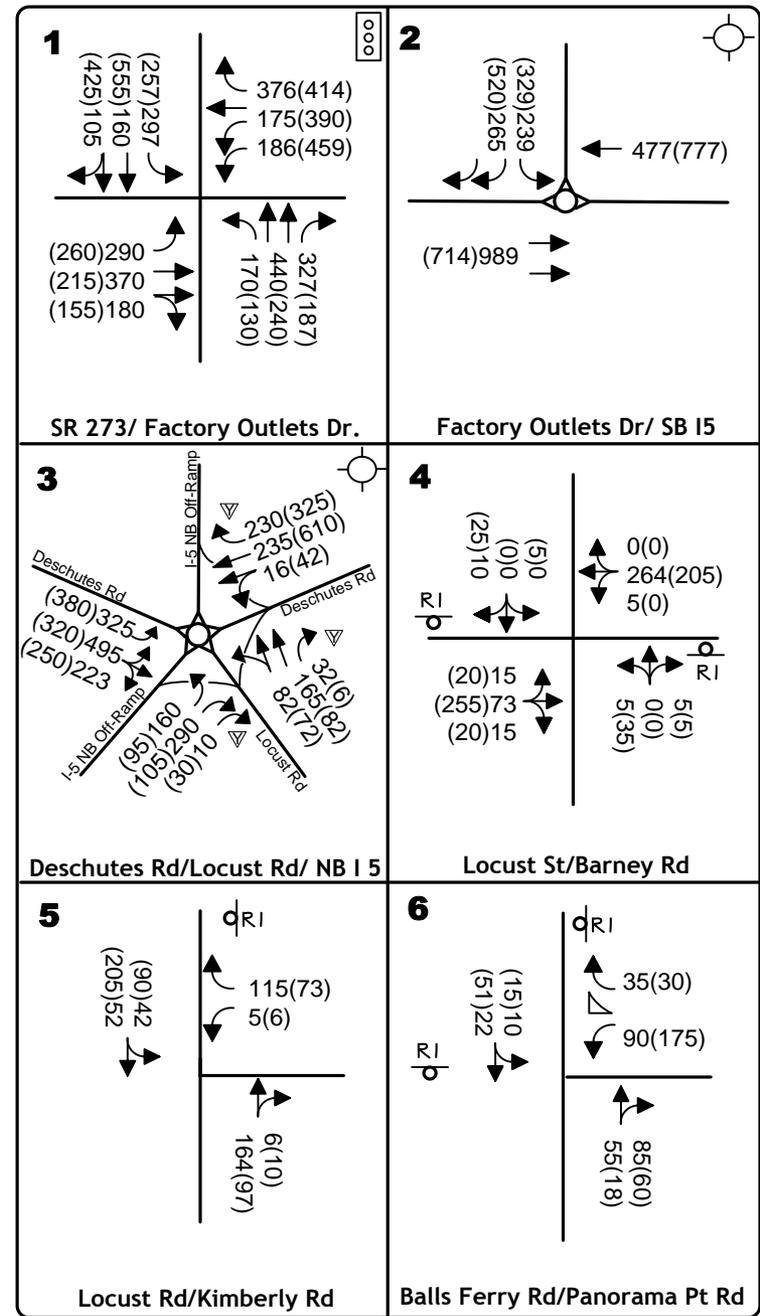
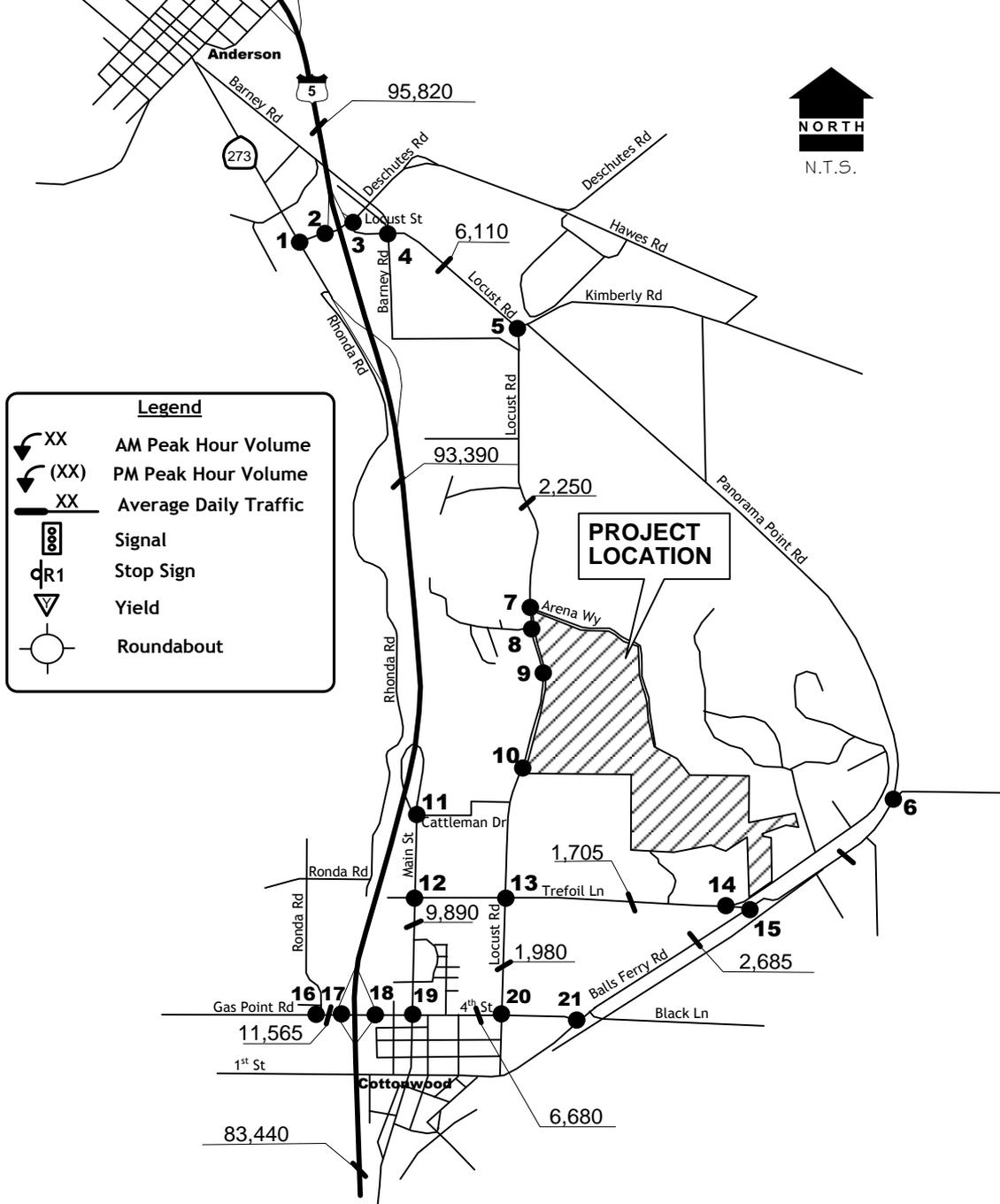
While the model maintained by Shasta County RTPA is the applicable regional planning resource, modifications to the model have been made in order to address the specific impacts of development proposals in the southern part of the County. In this case, the Vineyard project west of Interstate 5 in Anderson will result in substantial changes to land uses planned in the South County area and will result in new circulation system elements. For this analysis, all of the Vineyard area development included in the model's post 2030 land use set has been assumed to be developed.

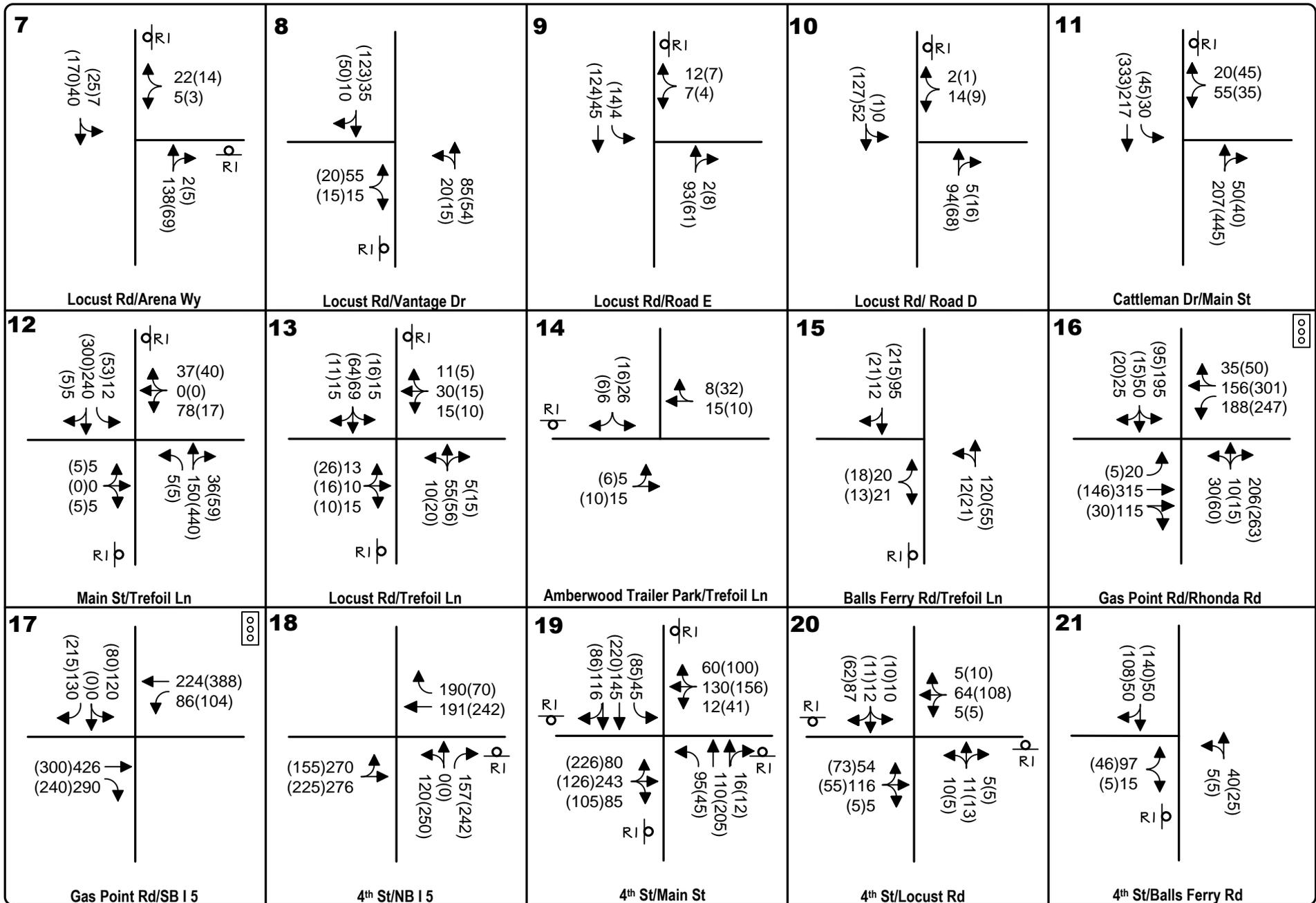
The approach taken to prepare background traffic volume forecasts for this analysis makes use of data from the current version of the Shasta County regional traffic model. Peak hour intersection turning movement forecasts have been created for the baseline condition using the procedures outlined in Transportation Research Board's (TRB's) NCHRP report 255, Highway Data for Urbanized Area Project Planning and Design. For this analysis it has conservatively been assumed that the 130 dwellings permitted under current land use designations are not yet in the model.

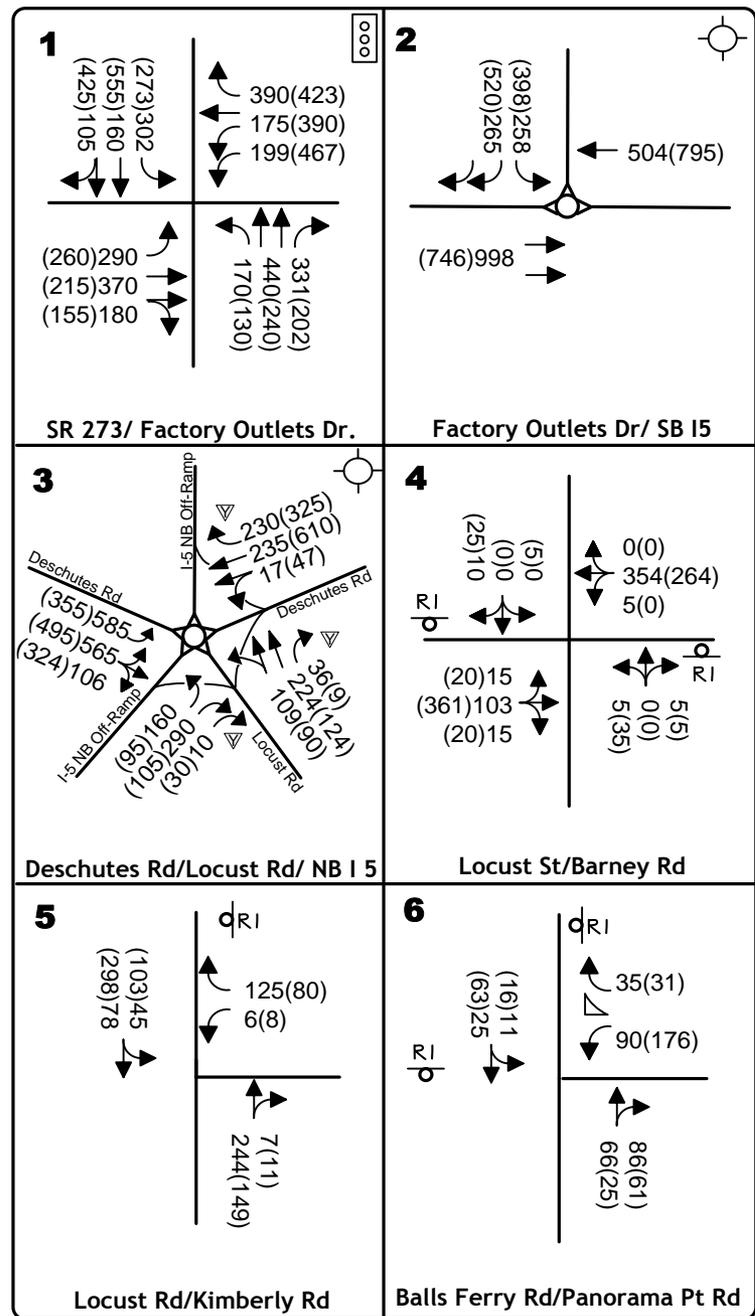
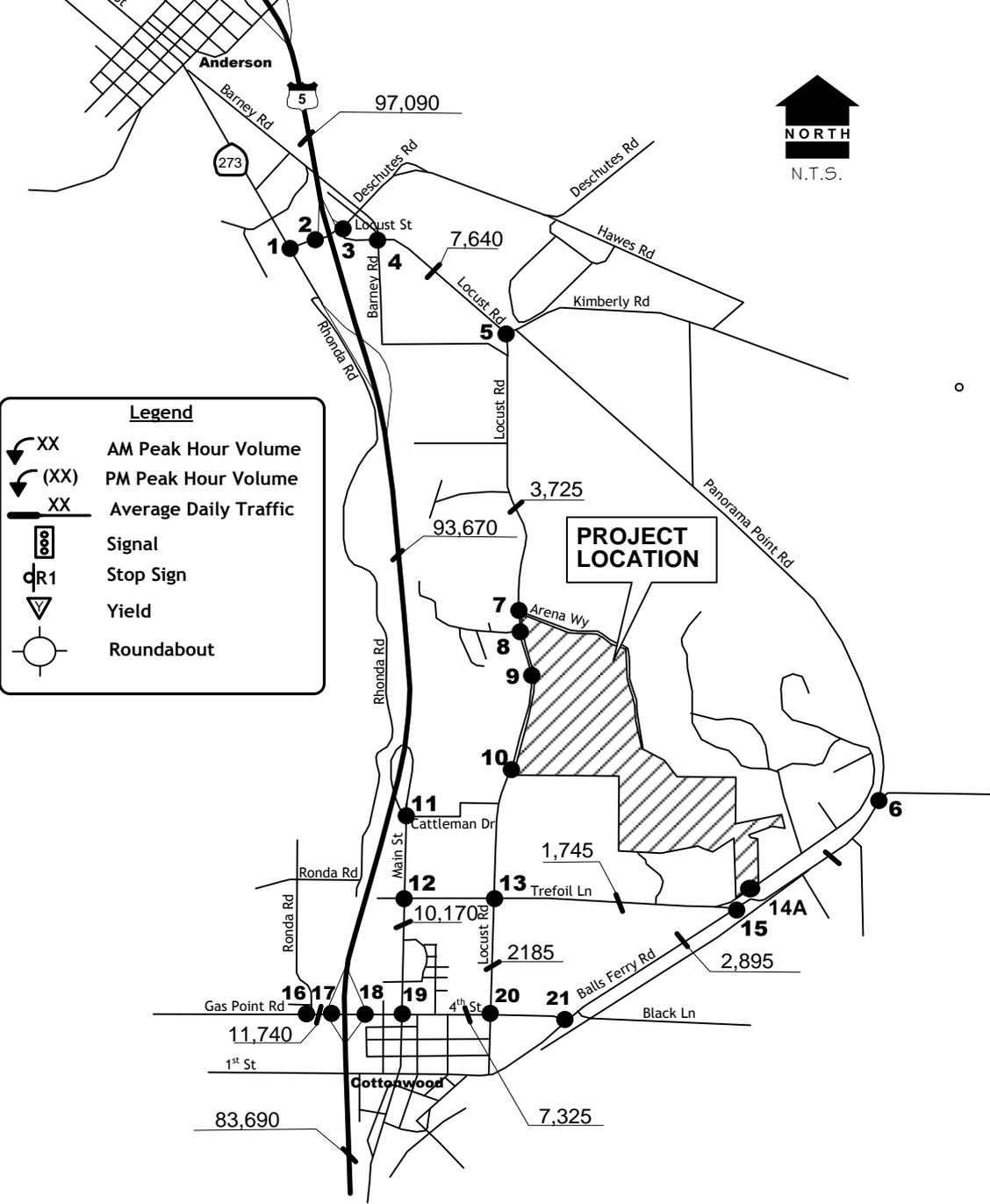
Because the project involves a GPA, the analysis of long term future traffic conditions assesses the incremental impact of the land use change. A total of 130 dwelling units could be developed on the project site under current land use designations, and that level of development is assumed under the "Long Term Cumulative no Project" condition. The Future Cumulative Plus Project" conditions addresses the incremental impact of adding 310 du's in this area.

Traffic Volume Forecasts. Figure 7 identifies background Cumulative traffic volumes assuming site development under current land use designations. No formal plan exists for such development, and the locations of roads service the site under this scenario are unknown. This assessment assumes that the internal circulation system planned for the Panorama PD will still be constructed, but that south access would be maintained via the Jim Dandy Road connection to Trefoil Lane.

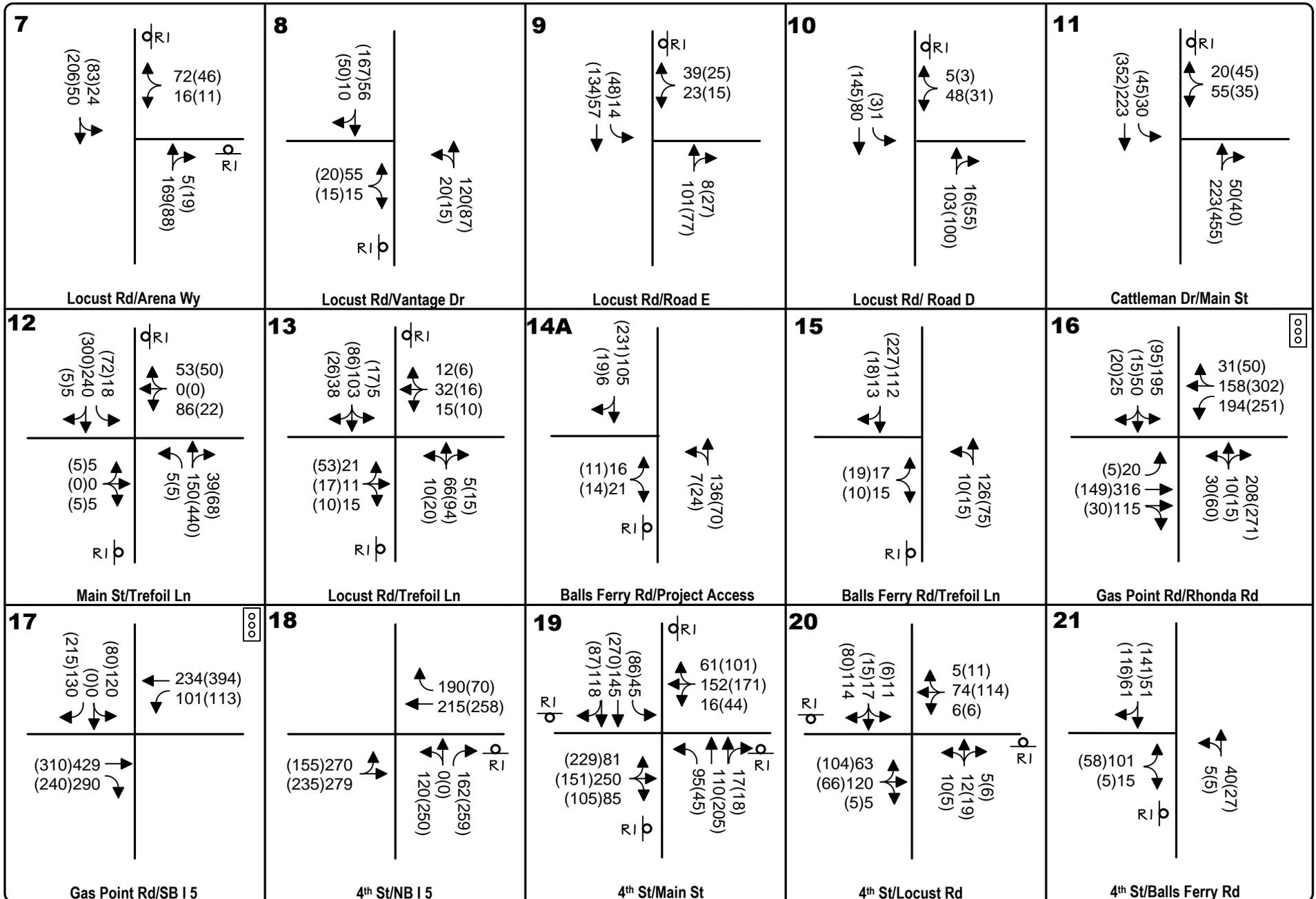
Figure 10 presents traffic volume forecasts assuming the Panorama PD is constructed with access as proposed.







CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS



**CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES
AND LANE CONFIGURATIONS**

KD Anderson & Associates, Inc.
Transportation Engineers

Road Improvements. The following long range improvement project has been assumed to be in place under cumulative conditions:

- Construct new I-5 NB off ramp to Deschutes Road (City of Anderson 2008)
- Widen Gas Point Road west of Rhonda Road to 4 lanes (Shasta County RTPA 2010)
- Connect I-5 / Main Street interchange to west side of freeway and install roundabout intersections (Shasta County RTPA 2010)

Level of Service at Intersections. As shown in Table 20, the addition of trips generated by cumulative development and by the Panorama PD will incrementally increase the length of delays experienced at study area intersections, and five (5) locations will operate with Levels of Service that exceed the LOS C minimum. These intersections are:

4th Street / I-5 NB ramps
4th Street / Main Street
Balls Ferry Road / I-5 NB ramps
Riverside Avenue / I-5 SB ramps
Riverside Avenue / I-5 NB ramps

The significance of the Panorama PD's incremental impact to each location has been assessed.

At the 4th Street / NB Interstate 5 ramps intersection the addition of project traffic results in increases in peak hour delay of 4.4 seconds to 5.0 seconds. These increases reach the 5.0 second threshold used to determine significant. Thus, the project's ***impact to the 4th Street / I-5 NB ramps intersection is significant.***

At the 4th Street / Main Street intersection, the incremental increase in delay is 7.9 seconds. Because this value exceeds the 5.0 second threshold, the project's ***impact to the 4th Street / Main Street intersection is significant.***

At the Balls Ferry Road / NB Interstate 5 ramp intersection, the incremental increase in delay associated with project traffic is 1.0 seconds. Because this value is less than the 5.0 second threshold, the project's ***impacts to the Balls Ferry Road / I-5 NB ramp intersection are not significant.***

The incremental increase in delay resulting from project traffic at the two study intersections on Riverside Avenue ranges from 16.1 to 26.6 seconds. Because these values exceed 5.0 seconds, project ***impacts to the Riverside Avenue / I-5 SB ramps intersection and the Riverside Avenue / I-5 NB ramps intersections are significant.***

Levels of Service on Roadway Segments. Development of other cumulative projects and the Panorama PD will increase the volume of traffic on County roads, as noted in Table 21. Based on the thresholds of significance adopted by Shasta County, the forecast traffic volumes on all study area roads will remain within the LOS C threshold with and without this project.

Levels of Service on Mainline Interstate 5. As shown in Table 22, background cumulative traffic volumes will greatly exceed the capacity of the existing 4 lane freeway, and LOS F conditions would be expected with and without the proposed project. However, while project traffic will exacerbate the poor conditions projected for Interstate 5, the amount of traffic added by the proposed project in relation to the ultimate capacity of the highway (i.e., v/c) is less than the 0.05 threshold employed to determine significance when conditions already exceed the LOS C minimum. Thus, the project's *impact to mainline Interstate 5 is not significant.*

Level of Service at Interstate 5 ramps. As shown in Table 23, the addition of project traffic and trips from other cumulative projects will increase vehicle density in the area of Interstate 5 ramps and will result in nearly every location operating with a Level of Service in excess of the minimum LOS C standard. This conclusion is consistent with the overall Level of Service for mainline Interstate 5 (i.e. LOS F for 4 lanes).

Under conditions where the minimum LOS standard is exceeded without the project, the amount of peak hour traffic added to the ramp is the measure of significance. The addition of 10 or more vehicles is deemed to be significant. The following ramps will operate at LOS D or worse and will carry more than 10 project trips:

- SB on ramp from Riverside Avenue (pm peak hour)
- NB off ramp to Riverside Avenue (a.m. peak hour)
- SB on ramp from South Street – Balls Ferry Road (p.m. peak hour)
- NB off ramp to Balls Ferry Road (a.m. and p.m. peak hours)
- SB off ramp to Deschutes Road (p.m. peak hour)
- NB on ramp from Deschutes Road (a.m. and p.m. peak hours)
- SB off ramp to Main Street (p.m. peak hour)
- NB on ramp from Main Street (a.m. and p.m. peak hours)
- SB on ramp from Gas Point Road (p.m. peak hour)
- NB off ramp to 4th Street (p.m. peak hour)

The project's *impact to these Interstate 5 merge-diverge areas is significant.*

**TABLE 20
CUMULATIVE PLUS PROJECT INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour				PM Peak Hour				Warrants Met?
		Cumulative Base		Cumulative Plus Project		Cumulative Base		Cumulative Plus Project		
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273 / Factory Outlets	Signal	C	34.6	C	34.8	C	32.6	C	32.8	n.a.
2. Factory Outlet Dr / I-5 SB ramps	Roundabout	A	2.7	A	2.9	A	6.7	A	8.4	n.a.
3. Deschutes Rd / I-5 NB ramps / Locust Rd	Roundabout	B	12.2	B	13.5	A	6.0	A	6.4	n.a.
4. Locust Rd / Barney Rd	NB/SB Stop	B	10.4	B	11.2	B	14.14	C	17.4	No
5. Locust Rd / Kimberly Road	NB/SB Stop	A	9.9	B	10.7	A	9.4	B	10.0	No
6. Balls Ferry Road / Panorama Point Rd	SB Stop	A	9.5	A	9.6	A	9.9	B	10.0	No
7. Locust Road / Arena Way (Road A)	WB Stop	A	9.3	B	10.0	A	9.1	A	9.8	No
8. Locust Road / Vantage Dr	EB Stop	A	9.7	B	10.1	A	9.8	B	10.3	No
9. Locust Road / Road E	WB Stop	A	9.1	A	9.5	A	9.1	A	9.7	No
10. Locust Road / Road D	WB Stop	A	9.4	A	9.9	A	9.7	B	10.4	No
11. Main Street / Cattleman Drive	WB Stop	B	12.9	B	13.1	C	17.1	B	17.6	No
12. Main Street / Trefoil Lane	EB / WB Stop	B	13.2	B	13.6	C	17.0	B	18.2	No
13. Locust Road / Trefoil Lane	EB/ WB Stop	B	10.4	B	10.9	B	10.4	B	11.6	No
14. Jim Dandy Drive / Trefoil Lane	SB Stop	A	8.8	-	-	A	8.8	-	-	No
Balls Ferry Road / Access	EB Stop	-	-	A	9.6			B	10.4	No
15. Balls Ferry Road / Trefoil Lane	EB Stop	A	9.7	A	9.8	B	10.4	B	10.6	No
16. Gas Point Road / Rhonda Road	Signal	C	32.3	C	32.5	C	28.1	C	28.4	n.a.
17. Gas Point Road / SB I-5 ramps	SB Stop	B	14.4	B	14.8	B	17.4	B	17.5	n.a.
18. 4 th Street / NB I-5 ramps	NB Stop	E	45.7	F	50.1	E	50.0	F	55.0	Yes
19. 4 th Street / Main Street	All-Way stop	C	15.7	C	16.7	D	28.9	E	36.8	Yes
20. 4 th Street / Locust Road	NB / SB Stop	B	11.6	B	12.2	B	11.5	B	12.7	No
21. 4 th Street / Balls Ferry Road	EB Stop	A	9.8	A	9.9	B	10.2	B	10.4	No
22. South St / I-5 SB ramps	Signal	B	21.0	C	21.2	C	27.5	C	28.1	n.a.
23. Balls Ferry Rd / I-5 NB Ramps	Signal	C	30.1	C	30.4	D	41.6	D	42.6	n.a.
24. Riverside Ave / I-5 SB ramps	SB Stop	D	28.5	D	29.3	F	860.6	F	886.6	Yes
25. Riverside Ave / I-5 NB ramps	NB Stop	F	186.0	F	202.1	F	533.4	F	555.6	Yes

Bold is Level of Service in excess of adopted minimum standard. **Highlighted** are significant impacts.

**TABLE 21
CUMULATIVE PLUS PROJECT ROADWAY LEVELS OF SERVICE**

Street	Location	Lanes	Facility Type	Year 2030 Conditions with Current Designations		Year 2030 Plus Panorama Project		
				Daily Volume	LOS	Daily Volume		LOS
						Project Increment Only	Total	
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	6,110	A	1,530	7,640	A
	Kimberly Road to Road A	2		2,250	A	1,375	3,725	A
	Road A to Road D	2		1,670	A	725	2,395	A
	Road D to Trefoil Lane	2		1,600	A	1,045	2,645	A
	Trefoil Lane to 4 th Street	2		1,980	A	565	2,545	A
Gas Point Road	Rhonda Road to SB I-5	2	Major Collector	11,565	B	175	11,740	B
4 th Street	Main Street to Locust Road	2	Major Collector	6,680	A	465	7,325	A
Main Street	I-5 to 4th Street	4	Major Collector	9,890	A	280	10,170	A
Balls Ferry Road	4 th Street to Trefoil Lane	2	Minor Collector	2,685	A	210	2,895	A
	Trefoil Lane to Access	2		2,420	A	250	2,670	A
	Access to Panorama Point Drive	2		2,420	A	195	2,615	A
Panorama Point Dr	Kimberly Rd to Balls Ferry Rd	2	Minor Collector	2,295	A	195	2,490	A
Trefoil Lane	Main Street to Locust Road	2	Minor Collector	1,705	A	420	2,125	A
	Locust Road to Balls Ferry Road	2		1,705	A	40	1,745	A

**TABLE 22
CUMULATIVE PLUS PROJECT MAINLINE INTERSTATE 5 LEVEL OF SERVICE**

Location	Lanes	Cumulative Base Conditions			Cumulative Plus Project				
		Daily Volume	Density (Pc/)	LOS	Daily Volume			Density (pc/mi/ln)	LOS
					Project Only	Total	Net v/c		
South of Gas Point Road	4	83,440	>45	F	250	83,690	<0.010	>45	F
Gas Point Road to Main Street	4	79,470	>45	F	0	79,470	<0.010	>45	F
Main Street to SR 273	4	93,390	>45	F	280	93,670	<0.010	>45	F
SR 273 to Deschutes Road	4	80,650	>45	F	280	80,930	<0.010	>45	F
Deschutes Road to Balls Ferry Road	4	95,820	>45	F	1,270	97,090	0.016	>45	F
Balls Ferry Rd to North Street	4	78,760	42.9	E	960	79,520	0.012	43.9	E
North Street to Riverside Ave	4	94,330	>45	F	960	95,290	0.012	>45	F
Riverside Ave to Knighton Road	4	90,805	>45	F	790	91,595	0.010	>45	F
Knighton Road to South Bonnyview Drive	4	93,010	>45	F	730	93,740	<0.010	>45	F

**TABLE 23
CUMULATIVE PLUS PROJECT PEAK HOUR RAMP LEVELS OF SERVICE AT INTERSTATE 5 INTERCHANGES**

Direction	Ramp	Action	AM Peak Hour							PM Peak Hour						
			Cumulative Base			Cumulative Plus Project				Cumulative Base			Cumulative Plus Project			
						Volume		Den	LOS				Volume		Den	LOS
			Vol.	Den	LOS	Project Only	Total			Project Only	Total	Den	LOS			
<i>I – 5 / Riverside Ave</i>																
Southbound	on ramp	Merge	340	22	C	4	344	22	C	700	43	F	12	712	43	F
Northbound	off ramp	Diverge	570	44	F	10	580	45	F	430	33	D	6	436	34	D
<i>I-5 / North Street</i>																
Southbound	off ramp	Diverge	560	25	C	0	560	25	C	720	47	F	0	720	47	F
Northbound	on ramp	Merge	720	41	F	0	720	41	F	800	31	D	0	800	31	D
<i>I-5 / Balls Ferry Road</i>																
Southbound	On ramp	Merge	590	22	C	6	596	23	C	740	43	F	22	762	44	F
Northbound	Off ramp	Diverge	710	44	F	19	729	45	F	560	31	D	12	572	32	D
<i>I-5 / Deschutes Road</i>																
Southbound	off ramp	Diverge	500	25	C	20	520	25	C	830	48	F	68	898	49	F
Northbound	Off ramp	diverge	460	39	E	0	460	39	E	230	26	C	0	230	26	C
Northbound	on ramp	Merge	980	40	F	58	1,038	41	F	730	28	D	37	767	29	D
<i>I-5 / SR 273</i>																
Southbound	on ramp	merge	680	24	C	0	680	24	C	800	43	F	0	800	43	F
Northbound	off ramp	Diverge	490	44	F	0	490	44	F	610	32	D	0	610	32	D
<i>I-5 / Main Street</i>																
Southbound	off ramp	Diverge	110	26	C	6	116	26	C	750	48	F	19	769	48	F
Northbound	on ramp	merge	530	40	F	16	546	40	F	260	29	D	11	271	29	D
<i>I-5 / Gas Point Rd – 4th Street</i>																
Southbound	off ramp	Diverge	250	19	B	0	250	19	B	280	35	F	0	280	35	F
Northbound	on ramp	merge	460	34	D	0	460	34	D	220	26	C	0	220	26	C
Southbound	on ramp	Merge	380	25	C	14	394	25	C	240	38	E	9	249	38	E
Northbound	off ramp	diverge	280	37	E	5	285	37	E	460	32	D	17	477	32	E

Bold is Level of Service in excess of adopted minimum standard. **Highlighted** are significant impacts.

INTERNAL CIRCULATION / ACCESS DESIGN / OTHER CEQA

To complete the traffic impact analysis the adequacy of the project's internal circulation system and access has been considered. Mandatory issues identified under CEQA guidelines, such as parking and safety impacts are also considered.

Issues Relating to Access

New Balls Ferry Road Access. As indicated in the current site plan / tentative map, a new intersection is to be created on Balls Ferry Road in the area between Trefoil Lane and the UPRR railroad crossing. This access would be approximately 180 feet from the Trefoil Lane intersection and 80 feet from the beginning of the short radius curve on Balls Ferry Road that turns across the railroad.

The feasibility of developing access at this location without modifying other parts of Balls Ferry Road would be dependent on factors such as sight distance at the new location, speed of traffic on Balls Ferry Road, the amount of traffic turning at the adjoining Trefoil Lane intersection and the effect on the existing UPRR crossing. Because the terrain in the area along Balls Ferry Road is relatively level, adequate sight distance will be available looking to the south. Looking north, motorists should be able to see southbound traffic on the other side of the UPRR. Because of the tight curves, the speed of traffic on this portion of Balls Ferry Road is constrained as the curves have a comfortable speed of only 15 mph (HDM Table 203.2). The volume of traffic turning off of and onto Trefoil Lane is low (i.e., fewer than 15 vehicles per hour).

The new Road A intersection is roughly 180 feet north of the existing Trefoil Lane intersection. Local agencies typically adopt standards for minimum distance between offset intersections in order to reduce conflicts between turning vehicles. These standards range from 150 feet on local / collector roads to 250 feet on higher speed arterials. In this case the distance between Road A and Trefoil Lane could be a concern under high speed conditions, but would be adequate for slowly moving traffic.

The effect of the new intersection on the UPRR crossing would relate to the possibility of vehicles queuing on the crossing in conflict with a train. Assuming the new intersection had stop control on the Road A approach, southbound vehicles should not be stopped at the intersection and would not be queuing back towards the tracks. Northbound traffic may occasionally be stopped by traffic waiting to turn left, but this would not affect the crossing.

Overall, the addition of a new intersection may add a degree of confusion to a location that is unconventional at best. Because the current road alignment slows traffic, it would be feasible to add this closely spaced intersection. However, to address the additional turning traffic it would be beneficial to widen Balls Ferry Road to provide a left turn lane at the new access. Left turning volume is less than the County's 50 vph threshold.

Location of new intersections on Locust Road. The Road A intersection is roughly 200 feet north of the existing Vantage Road intersection, and the new Road E intersection will be roughly 1,000 feet south of that intersection. Local agencies typically adopt standards for minimum distance between offset intersections in order to reduce conflicts between turning vehicles. These standards range from 150 feet on local / collector roads to 250 feet on higher speed arterials. In this case due to the speed on Locust Road. The distance between Road A and Vantage Road could be a concern, and the subdivision should either be re-configured to align these intersections or a continuous two-way left turn lane should be developed between the intersections.

Other Site Design Issues

Left turn lanes at new Intersections. The need for left turn lanes at the new access intersections has been evaluated based on the County's 50 vph threshold. This criteria was compared to the cumulative traffic volumes anticipated at the project access intersections to determine if left turn lanes could be needed. At the Road A (Arena Way) intersection on Locust Road the left turn volume is 84 vph, and at the Road E intersection on Locust Road the p.m. peak hour left turn volume is projected to be 48 vph. Southbound left turn lanes would be needed at each location. The number of left turns at the Road D intersection on Locust road would be minimal, and non of the internal intersections within the subdivision are expected to have left turning volumes that would justify left turn lanes.

Internal Circulation

The volume of traffic occurring on internal project streets has been estimated. Highest volumes are expected on Road A near the project's western limits where a count of 1,500 vehicles per day is expected. The volume on Road A drops at locations to the east, with 1,150 vehicles per day east of the Road C intersection and 500 vehicles per day in the area of Road T. The projected daily traffic volume on Road D through the western residential area will range from 500 to 1,000 vehicles per day. These volumes can be accommodated by the two lane roads planned through the site, and direct residential frontage can be accommodated.

MITIGATION MEASURES

The extent to which off-site roadway improvements or transportation programs are needed to mitigate the impacts of the proposed project are described in the text which follows. In many cases the proposed project is expected to contribute its “fair share” to the cost of improvements, and the fair share percentage has been calculated based on the methodology identified in Caltrans Traffic Study Guidelines. Caltrans guidelines bases responsibility of project trips in relation to the “net” new traffic expected over the long term. In this case, net new traffic is the difference between year 2030 + project forecasts and current traffic volumes. Resulting fair share percentages are shown in Table 24.

Existing and Planned Improvement Programs

The following programs

South Region Transportation Planning Study and Traffic Impact Fee Program

The Shasta County Regional Transportation Planning Agency has commissioned the preparation of a comprehensive review of circulation needs and improvement options in the South County area. That study investigated alternatives for new arterial routes west of Interstate 5 and identified options of improving the Interstate 5 interchanges at Gas Point Road – 4th Street and at Main Street. The total cost of identified improvements is \$52 million.

With regards to the locations impacted by the Panorama PD, the South Region study identified the following improvement projects:

1. ***Interim Improvements to the I-5 / Gas Point Road – 4th Street interchange.*** This project would widen Gas Point Road to the extent feasible without widening the existing overcrossing. Resulting intersection geometry would include left turn lanes on Gas Point Road at the SB and NB ramp intersections and at the Rhonda Road intersection. These intersections would also be signalized. This improvement has an estimated cost of \$3.7 million.
2. ***Main Street Interchange Improvements.*** This project would create a connection to the area west of Interstate 5 and construct roundabout intersections at the ramp terminals. The estimated cost of these improvements is \$9.8 million, of which \$4.8 million would be borne locally
3. ***Ultimate Improvements to the I-5 Gas Point Road – 4th Street interchange.*** The ultimate project would widen the structure over Interstate 5 and relocate the southbound ramp intersection to provide greater separation from Rhonda Road. The estimated cost of this improvement is \$12.2 million, of which \$7.2 million would be borne locally.

Deschutes Interchange Fee Program

Shasta County and the City of Anderson collect fees towards improvements to the I-5 / Deschutes interchange from a local area that lies on both sides of the freeway but is generally north of the Panorama PD. The southern limit of the County area that contributes to the cost of interchange improvements lies immediately north of the Panorama PD site.

Fix 5 Partnership

Caltrans District 10, Shasta County RTPA, Tehama County Transportation Commission as well as Shasta County, Tehama County and their incorporated cities are engaged in a process to identify and fund long term improvements to the 61 mile long Interstate 5 corridor through Shasta and Tehama counties. The focus of the partnership has been creation of a third travel lane in each direction on mainline Interstate 5. The nexus study prepared for corridor improvements estimated the cost of a 6 lane Interstate 5 at \$546 million and identified an accompanying impact fee that would be assigned to new development. However, the impact fee has not yet been adopted by the local agencies who would have to agree to participate in the fee program.

Mitigation Required with Development of the Project

Impact 1 Peak Hour LOS at 4th Street / I-5 NB ramps intersection. This intersection would need to be signalized to deliver adequate Level of Service, and signalization is included in the South Region fee program. The project should contribute its fair share to the cost of this improvement by paying adopted fees. However, this action does not guarantee that the signal will be installed by the time that the Panorama PD project adds traffic to the intersection. The intersection cannot be signalized without installing a portion of the interim I-5 / Gas Point Road interchange improvement project, and the total cost of this improvement is (i.e., \$3.7 million). Because Shasta County is proceeding to make improvements to the west side of the interchange, improvements to the east side of the interchange are judged to be within the capability of the project proponents with reimbursement for costs beyond the project's fair share. Thus, ***this impact can be mitigated to a less than significant level.*** The project proponent shall signalize the intersection when Caltrans and Shasta County determine the signal warrants are satisfied.

Impact 2 Peak Hour LOS at Riverside Avenue / I-5 NB ramps. This intersection needs to be signalized in order to deliver adequate Level of Service. The City of Anderson is currently creating an improvement district to fund improvements to the I-5 / Riverside Avenue interchange. The project proponents should contribute the project's fair share to the cost of signalizing the intersection. However, while a fair share contribution is applicable there are factors that may render the mitigation ineffective. As no formal mechanism exists to ensure that the improvement is installed, the project proponents would have to be responsible for the entire cost of the traffic signal to ensure its implementation. However, neither the project proponents nor Shasta County have jurisdiction over this intersection, and there is no guarantee that Caltrans will agree to signalize the intersection. Thus, ***this impact will remain significant and unavoidable.***

Impact 3 Peak Hour LOS in the SB I-5 / North Street off ramp Diverge Area. This portion of Interstate 5 would need to be modified to provide LOS C conditions, either by widening the mainline highway to provide three southbound lanes or by creating an auxiliary lane in advance of the off ramp. The project proponents should contribute the project's fair share to the cost of this improvement. The Fix 5 fee program may eventually provide a mechanism for making these improvements, but the program has not been adopted. Shasta County does not have jurisdiction in this area, and as a result there is no guarantee that improvements will be made. Thus, while the project can contribute its fair share to the cost of this improvement, *this impact will remain significant and unavoidable.*

Mitigation Required with Development of the Project Under EPAPP Conditions

Impact 4 Peak Hour LOS at 4th Street / I-5 NB ramps intersection. This impact and mitigation is the same as Impact 1. *As noted, if project proponents signalize the intersection this impact can be mitigated to a less than significant level.*

Impact 5 Peak Hour LOS at Riverside Avenue / I-5 NB ramps intersection. This impact and mitigation is the same as Impact 2. *This impact will remain significant and unavoidable.*

Impact 6 Peak Hour LOS in the SB I-5 / Deschutes Road off ramp Diverge area. This portion of Interstate 5 would need to be modified to provide LOS C conditions, either by widening the mainline highway to provide three southbound lanes or by creating an auxiliary lane in advance of the off ramp. The project proponents should contribute the project's fair share to the cost of this improvement. The Fix 5 fee program may eventually be adopted and provide a mechanism for locally funding mainline I-5 improvement, but that program has not been adopted. *This impact will remain significant and unavoidable.*

Mitigation Required Under Long Term Cumulative Conditions.

Impact 7 Peak Hour LOS at the Gas Point Road – 4th Street intersections near Interstate 5. To accommodate long term growth and the proposed project at an adequate Level of Service, the “ultimate” I5 / Gas Point Road improvement project anticipated in the South Region Fee Program will need to be implemented. The project proponents should contribute their fair share to the cost of this improvement by paying adopted fees. *With mitigation this impact is not significant.*

Impact 8 Peak Hour LOS at the Main Street / 4th Street intersection. A traffic signal is needed to deliver adequate Level of Service at this location. The project proponents should contribute their fair share to the cost of this improvement. However without a mechanism for funding the balance of the cost of this improvement, this impact would remain significant and unavoidable. *This impact will remain significant and unavoidable.*

Impact 9 Peak Hour LOS at the I-5 ramp intersections on Riverside Avenue. Traffic signals would be needed to deliver adequate Level of Service at the two ramp intersections. Project proponents should contribute their fair share to the cost of these signals either as a fair share contribution based on traffic utilization or through the pending Anderson Fee Program. However, as noted under Impact 2, *This impact will remain significant and unavoidable.*

Impact 10 Peak Hour Level of Service in I-5 ramp merge-diverge areas. The project will impact the following ramp junctions:

- SB on ramp from Riverside Avenue (pm peak hour)
- NB off ramp to Riverside Avenue (a.m. peak hour)
- SB on ramp from South Street – Balls Ferry Road (p.m. peak hour)
- NB off ramp to Balls Ferry Road (a.m. and p.m. peak hours)
- SB off ramp to Deschutes Road (p.m. peak hour)
- NB on ramp from Deschutes Road (a.m. and p.m. peak hours)
- SB off ramp to Main Street (p.m. peak hour)
- NB on ramp from Main Street (a.m. and p.m. peak hours)
- SB on ramp from Gas Point Road (a.m. peak hour)
- NB off ramp to 4th Street (p.m. peak hour)

To mitigate this impact it will be necessary to widen mainline Interstate 5. If the Fix 5 fee program is adopted development in Panorama PD could contribute to the cost of improving the freeway. However, as the program has not been adopted there is no existing mechanism for the Panorama PD to contribute to the cost of long term improvements. Thus, *these impacts remain significant and unavoidable.*

Mitigation Required to address Site Access / Circulation / Safety

Impact 11 Potential Conflicts near Balls Ferry Road UPRR crossing. Widen Balls Ferry Road to provide a northbound left turn lane at the new access.

Impact 12 Peak Hour traffic volume at Locust Road / Road A intersection and Proximity to Vantage Drive intersection. Locust Road should be widened to provide a left turn lane at the Road A intersection. Road A should be moved to align with Vantage Drive or a TWLT lane should be constructed between the two intersections.

Impact 13 Peak Hour traffic volume at Locust Road / E Street intersection. Locust Road should be widened to provide a left turn lane at the Road E intersection.

**TABLE 24
FAIR SHARE PERCENTAGES**

	PM Peak Hour Traffic			Fair share %
	Existing	Year 2030 Total	Project only	
4 th Street / NB I-5 ramps intersection	921	1,227	62	20.3%
Riverside Ave / I-5 NB ramps intersection	947	1,911	9	0.7%
SB I-5 / North Street Diverge – total	2,575	4,813	94	4.2%
SB I-5 / North Street off ramp	555	720	0	0.0%
SB I-5 / Deschutes Road Diverge – total	2,637	4,861	125	5.6%
SB I-5 / Deschutes Road off ramp	515	898	98	25.5%
4 th Street / Main Street intersection	838	1,512	77	11.4%
Riverside Avenue / I-5 SB ramps intersection	1,178	2,265	26	1.2%
SB I-5 / Riverside Ave Merge – total	2,575	4,816	94	4.2%
SB I-5 / Riverside Ave on ramp	255	712	17	3.7%
NB I-5 / Riverside Ave Diverge – total	2,085	3,296	52	4.3%
NB I-5 / Riverside Ave off ramp	210	436	9	4.0%
SB I-5 / South Street merge – total	2,425	4,859	125	5.1%
SB I-5 / South Street on ramp	400	762	31	8.6%
NB I-5 / Balls Ferry Road Diverge - total	1,990	3,100	69	6.2%
NB I-5 / Balls Ferry Off Ramp	380	572	17	8.9%
NB I-5 / Deschutes Road Merge – total	1,990	3,096	69	6.2%
NB I-5 / Deschutes Road on ramp	350	767	54	13.0%
SB I-5 / Main Street Diverge – total	2,210	4,793	27	1.1%
SB I-5 / Main Street off ramp	310	769	27	5.9%
NB I-5 / Main Street merge – total	1,945	3,164	15	1.1%
NB I-5 / Main Street on ramp	175	271	15	15.6%
SB I-5 / Gas Point Road merge – total	1,925	3,967	13	0.6%
SB I-5 / Gas Point on ramp	205	249	13	29.6%
NB I-5 / 4 th Street Diverge – total	1,770	3,151	24	1.7%
NB I-5 / 4 th Street off ramp	155	477	24	7.5%

APPENDIX