



**Sunterra
Traffic Impact Analysis
City of San Jacinto, California**

Prepared for:
JD PIERCE COMPANY, INC.
**2222 Martin, Suite 100
Irvine, CA 92612**

Prepared by:
TJW ENGINEERING, INC.
**9841 Irvine Center Dr, Suite 200
Irvine, CA 92618**

March 17, 2022



March 17, 2022

TJW ENGINEERING, INC.
TRAFFIC ENGINEERING &
TRANSPORTATION PLANNING
CONSULTANTS

Mr. Peter Kulmaticki,
Project Manager
2222 Martin, Ste 100
Irvine, CA 92612

Subject: Traffic Impact Analysis: Sunterra, City of San Jacinto CA

Dear Mr. Pourkazemi:

TJW ENGINEERING, INC. (TJW) is pleased to present you with this traffic impact analysis for the proposed **Sunterra** the project located on the southwest corner of Sanderson Avenue and Ramona Boulevard the City of San Jacinto.

This traffic study has been prepared to meet the traffic study requirements for the City of San Jacinto and assesses the projected traffic operations associated with the proposed project and its impact on the local street network. This report is being submitted to you for review and forwarding to the City of San Jacinto.

Please contact us at (949) 878-3509 if you have any questions regarding this analysis.

Sincerely,

A handwritten signature in black ink that appears to read "Th. Wheat".

Thomas Wheat, PE, TE
President

Registered Civil Engineer #69467
Registered Traffic Engineer #2565



A handwritten signature in black ink that appears to read "David Chew".

David Chew, PTP
Transportation Planner

A handwritten signature in black ink that appears to read "Daniel Flores".

Daniel Flores, EIT
Project Engineer

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1.0 EXECUTIVE SUMMARY

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed **Sunterra** project located southwest corner of Sunterra and Ramona Boulevard. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of San Jacinto via a scoping agreement (See **Appendix A**) and is pursuant to applicable City of San Jacinto and County of Riverside traffic impact analysis guidelines.

The proposed project consists of 215 single family residential homes. The site is currently zoned as RM and classified as MDR (Medium Density Residential) Land Use in the City of San Jacinto General Plan Land Use Map. The project site is currently vacant. The proposed project land use is permitted in the zone and does not require a zone change or General Plan amendment.

Intersection #4 proposes a deceleration lane heading southbound, the driveway at intersection #4 is proposed to be a right in and right out only.

Intersection #5 proposes a traffic signal, the driveway at intersection #5 is proposed to be a full access driveway.

The proposed project is anticipated to be built and generating trips in 2023. A growth rate of 2% was used to account future traffic volumes.

The proposed project is projected to generate 156 total AM peak hour trips, 209 total PM peak hour trips and 1,992 total daily trips.

The following intersection in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. Sanderson Avenue/Ramona Expressway
2. Sanderson Avenue/Ramona Boulevard
3. Sanderson Avenue/Cottonwood Avenue
4. Sanderson Avenue/North Project Driveway
5. Sanderson Avenue/Ramona Boulevard

County of Riverside Transportation Department Traffic Impact Analysis Preparation Guide (July 2020).

City of San Jacinto Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (June, 16th, 2020).

The study intersections and roadway segments are analyzed for the following study scenarios:

- Existing Project Baseline (2021) Traffic Conditions;
- Opening Year (2023) Without Project Conditions (Existing + Ambient + Cumulative);
- Opening Year (2023) With Project Conditions (Existing + Ambient + Cumulative + Project)

Existing Project Baseline (2021) Traffic Conditions

The study intersections are currently operating at an acceptable LOS during the AM and PM peak hours for *existing* conditions with the exception of the following intersection:

- #1 – Sanderson Avenue/Ramona Expressway (AM Peak Hour).

Opening Year (2023) Without Project Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *opening year (2023) without project* conditions with the exception of the following intersection:

- #1 – Sanderson Avenue/Ramona Expressway (AM Peak Hour).

Opening Year (2023) with Project (OYP) Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *opening year (2023) with project* conditions with the exception of the following intersection:

- #1 – Sanderson Avenue/Ramona Expressway (AM Peak Hour).

Referencing section 2.5.1 City of San Jacinto Signalized Intersection Operating Requirements, intersection #1 Sanderson Avenue/Ramona Expressway has an existing LOS F for the AM peak hour without project traffic. Intersection #1 also does not delay by more than 5.0 or more seconds which does not cause an impact nor a reason to improve the intersection.

1.2 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

Wherever necessary, roadways adjacent to the proposed project site and site access points will be constructed in compliance with recommended roadway classifications and respective cross-sections in the City of San Jacinto General Plan or as directed by the City Engineer.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City sight distance standards at the time of final grading, landscaping and street improvement plans.

Signing/striping should be implemented in conjunction with detailed construction plans for the project site.

1.3 SUMMARY OF VEHICLES MILES TRAVELED ANALYSIS (VMT)

Consistent with the new metric of VMT for analysis of transportation impacts, this analysis follows VMT guidelines set forth by the *City of San Jacinto Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (June, 16st, 2020)*. *VMT is to be determined.*

2.0 INTRODUCTION

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed **Sunterra** project located southwest corner of Sunterra and Ramona Boulevard. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of San Jacinto via a scoping agreement (See **Appendix A**) and is pursuant to applicable City of San Jacinto and County of Riverside traffic impact analysis guidelines.

2.1 PROJECT DESCRIPTION

The proposed project consists of 215 single family residential homes. The site is currently zoned as RM and classified as MDR (Medium Density Residential) Land Use in the City of San Jacinto General Plan Land Use Map. The project site is currently vacant. The proposed project land use is permitted in the zone and does not require a zone change or General Plan amendment.

Intersection #4 proposes a deceleration lane heading southbound, the driveway at intersection #4 is proposed to be a right in and right out only.

Intersection #5 proposes a traffic signal, the driveway at intersection #5 is proposed to be a full access driveway.

The proposed project is anticipated to be built and generating trips in 2023. A growth rate of 2% was used to account future traffic volumes.

Exhibit 1 shows the proposed project site plan.

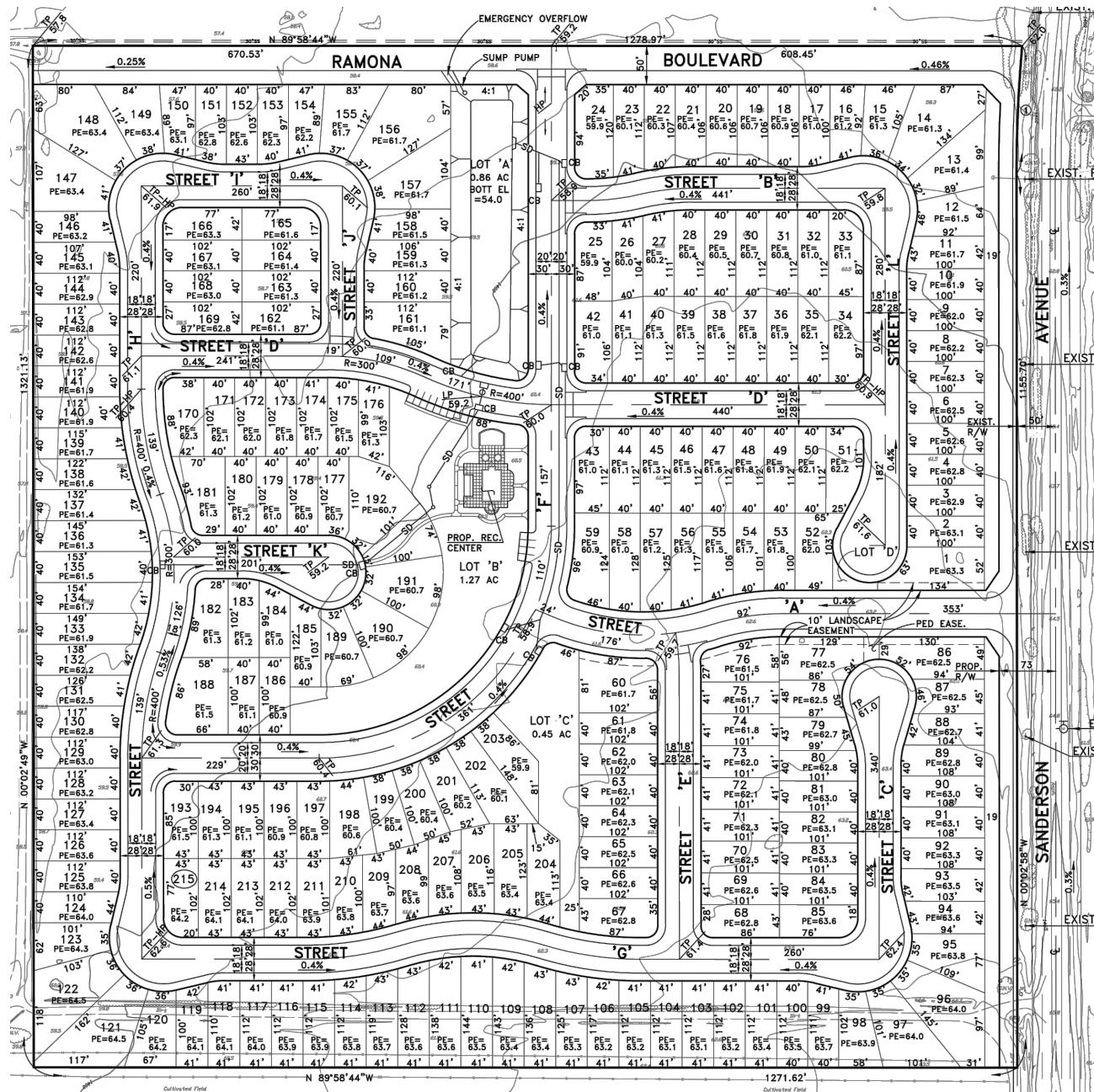


Exhibit 1: Proposed Project Site Plan

Sunterra Traffic Impact Analysis



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2.2 STUDY AREA

The following intersection in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. Sanderson Avenue/Ramona Expressway
2. Sanderson Avenue/Ramona Boulevard
3. Sanderson Avenue/Cottonwood Avenue
4. Sanderson Avenue/ South Project Driveway
5. Sanderson Avenue/Ramona Boulevard

County of Riverside Transportation Department Traffic Impact Analysis Preparation Guide (July 2020).

City of San Jacinto Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (June, 16th, 2020).

The study intersections and roadway segments are all located within the City of San Jacinto.

Exhibit 2 shows the location of the study intersections which are analyzed for the following study scenarios:

- Existing Project Baseline Year (2021) Traffic Conditions;
- Opening Year (2023) Without Project Conditions (Existing + Ambient + Cumulative);
- Opening Year (2023) With Project Conditions (Existing + Ambient + Cumulative + Project)

Traffic operations are evaluated for the following time periods:

- Weekday AM Peak Hour occurring within 7:00 AM to 9:00 AM; and
- Weekday PM Peak Hour occurring within 4:00 PM to 6:00 PM.

2.3 ANALYSIS METHODOLOGY

2.3.1 *Intersection Analysis Methodology*

Level of Service (LOS) is commonly used to describe the quality of flow on roadways and at intersections using a range of LOS from LOS A (free flow with little congestion) to LOS F (severely congested conditions). The definitions for LOS for interruption of traffic flow differ depending on the type of traffic control (traffic signal, unsignalized intersection with side street stops, unsignalized intersection with all-way stops). The *Highway Capacity Manual (HCM) 6* (Transportation Research Board, 2016) methodology expresses the LOS of an intersection in terms of delay time for the intersection approaches. The HCM methodology utilizes different procedures for different types of intersection control.

The City of San Jacinto traffic study guidelines require signalized intersection operations be analyzed utilizing the HCM 6th Edition methodology. Intersection LOS for signalized intersections is based on the intersections average control delay for all movements at the intersection during the peak hour. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.



Legend:

- Project Site
- (#) Study Intersection Location

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Exhibit 2: Project Location

Sanderson Ranch Traffic Impact Analysis



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Table 1 describes the general characteristics of traffic flow and accompanying delay ranges at signalized intersections.

Table 1:
HCM – LOS & Delay Ranges – Signalized Intersections

Level Of Service	Description	Delay (in seconds)
A	Very favorable progression; most vehicles arrive during green signal and do not stop. Short cycle lengths.	0 – 10.00
B	Good progression, short cycle lengths. More vehicles stop than for LOS A.	10.01 – 20.00
C	Fair progression; longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, though many vehicles still pass through without stopping.	20.01 – 35.00
D	Progression less favorable, longer cycle length and high flow/capacity ratio. The proportion of vehicles that pass through without stopping diminishes. Individual cycle failures are obvious.	35.01 – 55.00
E	Severe congestion with some long standing queues on critical approaches. Poor progression, long cycle lengths and high flow/capacity ratio. Individual cycle failures are frequent.	55.01 – 80.00
F	Very poor progression, long cycle lengths and many individual cycle failures. Arrival flow rates exceed capacity of intersection.	> 80.01

Source: Transportation Research Board, *Highway Capacity Manual*, HCM6 Edition (Washington D.C., 2016).

Collected peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. It is a common practice in LOS analysis to conservatively use a peak 15-minute flow rate applied to the entire hour to derive flow rates in vehicles per hour that are used in the LOS analysis. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume. $\text{PHF} = [\text{Hourly Volume}] / [4 * \text{Peak 15-Minute Volume}]$. The use of a 15-minute PHF produces a more detailed and conservative analysis compared to analyzing vehicles per hour. Existing PHFs, obtained from the existing traffic counts have been used for all analysis scenarios in this study.

The City of San Jacinto traffic study guidelines also require unsignalized intersection operations be analyzed utilizing the HCM 6th Edition methodology. Intersection operation for unsignalized intersections is based on the weighted average control delay expressed in seconds per vehicle.

At a two-way or side-street stop-controlled intersection, LOS is calculated for each stop-controlled minor street movement, for the left-turn movement(s) from the major street, and for the intersection as a whole. For approaches consisting of a single lane, the delay is calculated as the average of all movements in that lane. For all-way stop-controlled intersection, LOS is computed for the intersection as a whole.

This analysis utilizes *PTV Vistro 2021* analysis software for the signalized intersection. Vistro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis specified in Chapter 16 of the HCM. The level of service and capacity analysis performed within Vistro takes the optimization and coordination of signalized intersections within a network into consideration.

2.3.2 Vehicle Miles Traveled (VMT) Analysis

Senate Bill (SB) 743 was adopted in 2013 requiring the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts. For land use projects, OPR has identified Vehicle Miles Traveled (VMT) as the new metric for transportation analysis under CEQA. The regulatory changes to the CEQA guidelines that implement SB 743 were approved on December 28th, 2018 with an implementation date of July 1st, 2020 as the new metric.

Consistent with the new metric of VMT for analysis of transportation impacts, this analysis follows the VMT guidelines set forth by the *City of San Jacinto Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (June 16st, 2020)*.

2.4 PERFORMANCE CRITERIA

2.4.1 Level of Service (LOS) Criteria

The City of San Jacinto has established level of service "D" or better as acceptable LOS for all intersections that are adjacent to freeway on/off ramps and/or adjacent to employment generating land uses. The City of San Jacinto has established level of service "D" or better as acceptable LOS for all other intersections along the designated street and highway system in the General Plan Traffic/Circulation Element. For the purposes of the project study area, level of service "D" is considered acceptable LOS.

2.5 THRESHOLDS OF SIGNIFICANCE

According to guidelines, a project is considered to cause a significant impact to a transportation system if it:

- Conflicts with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel.
- Conflicts with an applicable congestion management program (CMP), including, but not limited to level of service standards, travel demand measures, or other standards established by the County Congestion Management Agency for roadways or highways.

Conflicts with adopted policies or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

2.5.1 City of San Jacinto Signalized Intersection Operating Requirements

- Any signalized study intersection operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

The applicant will participate in the funding or construction of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of the Transportation Uniform Mitigation Fees (TUMF), City of San Jacinto Development Impact Fees (DIF), or a fair share contribution as directed by the City. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with projected population increases. With regard to guidelines, the above fees will address the project's fair share toward infrastructure improvements designed to alleviate the cumulative impact.

3.0 EXISTING PROJECT BASELINE (2021) CONDITIONS

3.1 EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS

The characteristics of the roadway system in the vicinity of the proposed project site are described in **Table 2**.

Table 2:
Roadway Characteristics Within Study Area

Roadway	Classification ¹	Jurisdiction	Direction	Existing Travel Lanes	Median Type ²	Speed Limit (mph)	On-Street Parking
Sanderson Avenue	Urban Arterial	San Jacinto	North-South	4	TWLTL	55	No
Ramona Expressway	Highway	San Jacinto	East-West	6	TWLTL	65	No
Ramona Boulevard	Secondary	San Jacinto	East-West	2	TWLTL	45	No
Cottonwood Avenue	Arterial	San Jacinto	East-West	2-4	RM, NM	45	No

1: Sources: City of San Jacinto General Plan (2006)

2: TWLTL = Two-Way Left-Turn Lane, RM = Raised Median, NM = No Median.

Exhibit 3 shows existing conditions study area intersection and roadway geometry. City of San Jacinto roadway classifications and cross sections are contained in **Appendix A**.

3.2 CITY OF SAN JACINTO GENERAL PLAN

The proposed project site is located within the City of San Jacinto. **Appendix A** contains the current City of San Jacinto General Plan street classifications and roadway cross sections.

3.3 EXISTING BICYCLE AND PEDESTRIAN FACILITIES

Class I on-street bicycle lanes exist on Ramona Expressway and Class II on-street bicycle lanes exist on Sanderson Avenue and Cottonwood Avenue.

Pedestrian facilities exist on Lyon Avenue on the opposite side of the project frontage. There are marked crosswalks at the intersection. The City of San Jacinto Bicycle Master Plan is contained in **Appendix A**.

3.4 EXISTING PUBLIC TRANSIT SERVICES

The City of San Jacinto is served by the Riverside Transit Agency (RTA) which provides local and regional bus service throughout Riverside County. The nearest transit bus stop is located southwest of the proposed project on Cottonwood Avenue approximately two and a half a mile from the project site (see **Exhibit 4**).

3.5 EXISTING PROJECT BASELINE (2021) TRAFFIC VOLUMES

To determine the existing operation of the study intersections, AM and PM peak period traffic counts at the study intersections were collected on Thursday June 3, 2021. The traffic volumes used in this analysis are from the highest hour within the peak period counted. In addition, historical counts collected in January 2017 were utilized to account for the current effect of COVID-19 on traffic volumes. Detailed traffic count data is provided in **Appendix B**. **Exhibit 5** shows existing AM and PM peak hour volumes at the study intersections.

3.6 EXISTING PROJECT BASELINE (2021) CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing Project Baseline (2021) conditions AM and PM peak hour intersection analysis is shown in **Table 3**. Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 3**. HCM analysis sheets are provided in **Appendix C**.

Table 3:
Intersection Analysis – Existing Project Baseline (2021) Conditions

Intersection	Control Type	Peak Hour	Existing Conditions	
			Delay ¹	LOS
#1 – Sanderson Avenue/Ramona Expressway	Signal	AM	83.6	F
		PM	43.8	D
#2 – Sanderson Avenue/Ramona Boulevard	Signal	AM	10.3	B
		PM	9.5	A
#3 – Sanderson Avenue/Cottonwood Avenue	Signal	AM	21.5	C
		PM	20.3	C

Note: AWSC = All-Way Stop-Control, TWSC = Two-Way Stop-Control, Delay shown in seconds per vehicle.

1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown.

As shown in **Table 3**, the study intersections are currently operating at an acceptable LOS during the AM and PM peak hours for *existing* conditions, with the exception of the following intersection:

- #1 - Sanderson Avenue/Ramona Expressway (AM Peak Hour)

Sanderson Ave/Ramona Exp Sanderson Ave/Ramona Blvd Sanderson Ave/Cottonwood

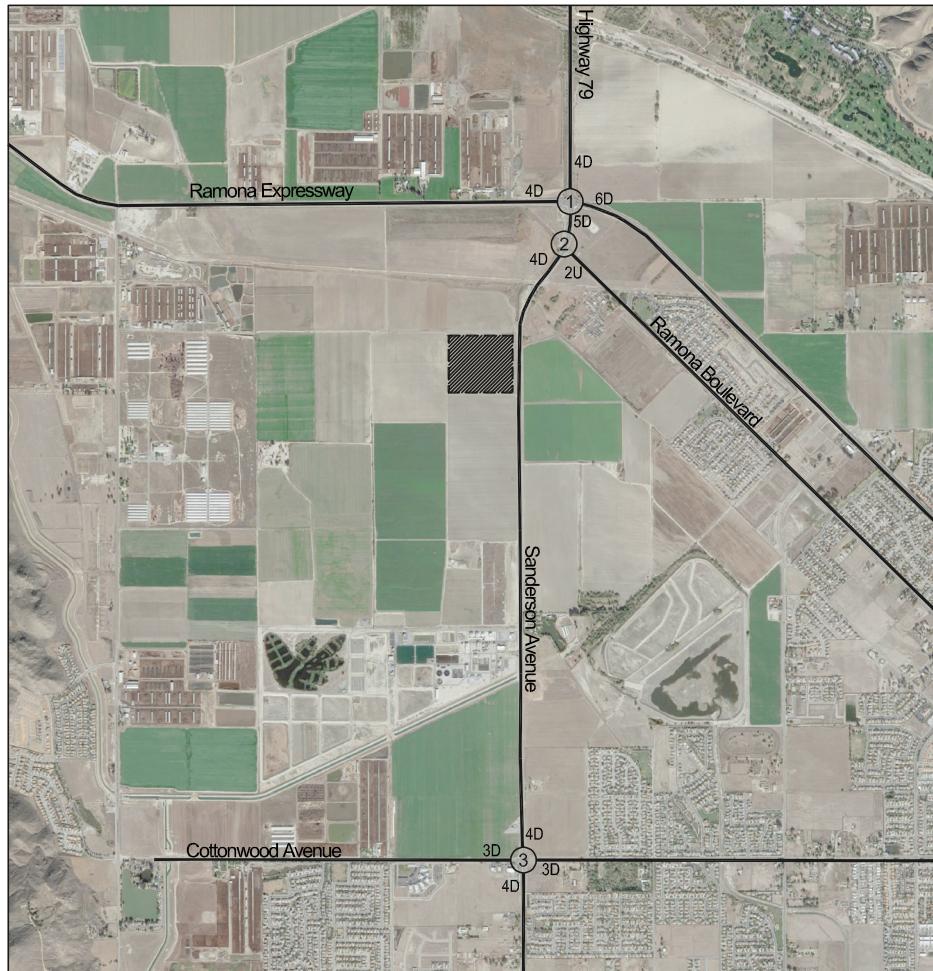
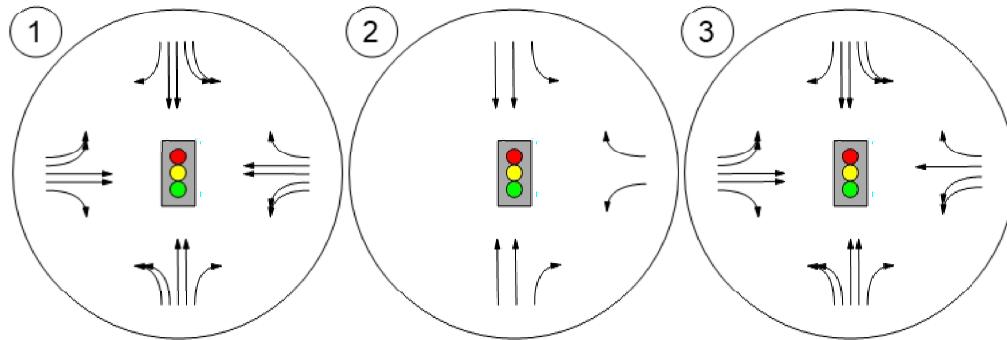


Exhibit 3: Existing Lane Geometry and Intersection Controls

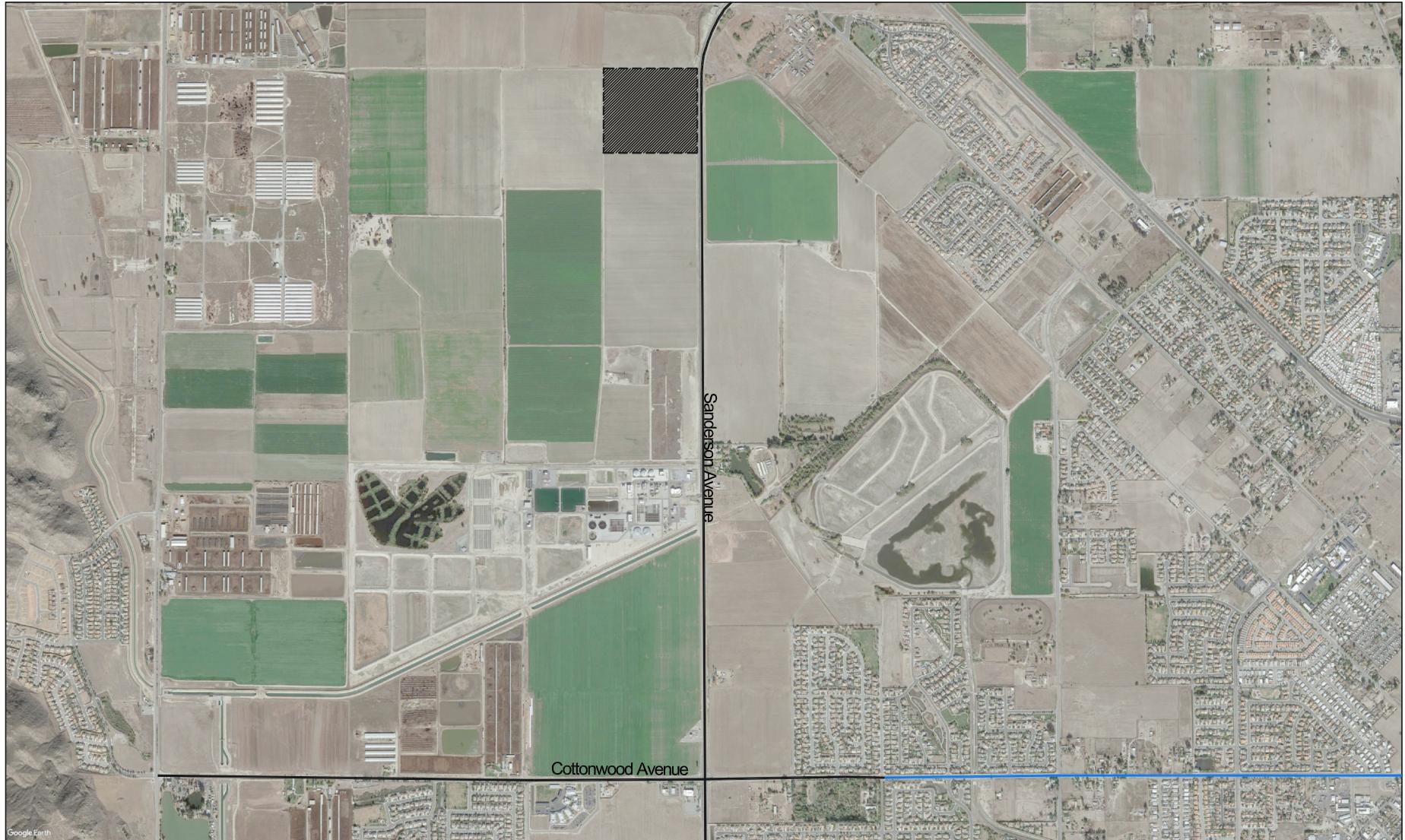
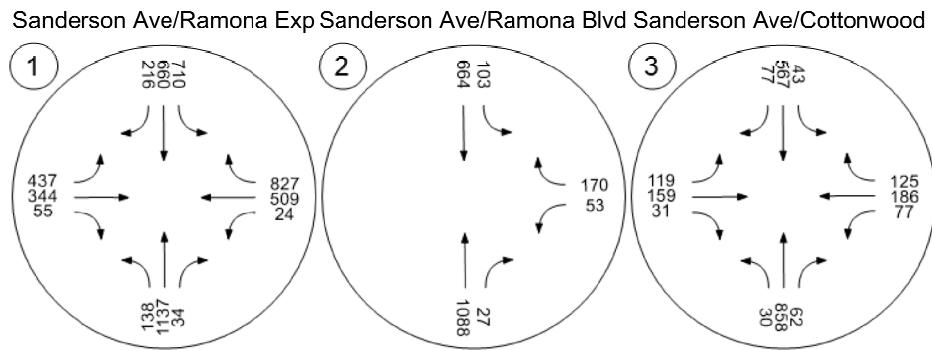


Exhibit 4: Existing Transit Services



Sanderson Ranch Traffic Impact Analysis

AM PEAK HOUR



PM PEAK HOUR

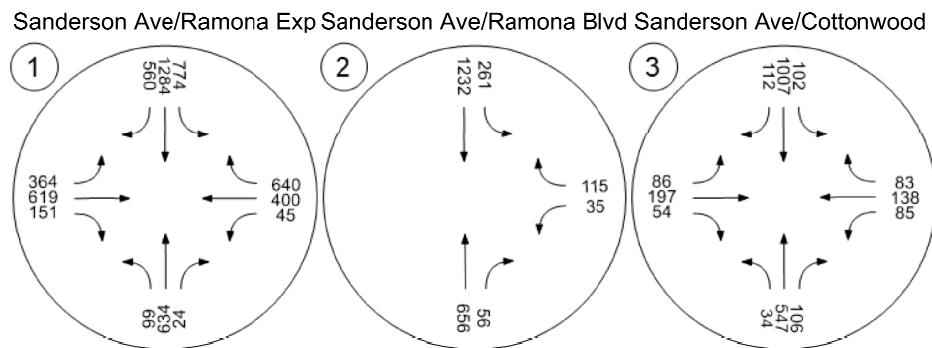


Exhibit 5: Existing Project Baseline (2021) AM/PM Peak Hour Volumes



Sanderson Ranch Traffic Impact Analysis

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4.0 PROPOSED PROJECT

4.1 PROJECT DESCRIPTION

The proposed project consists of 215 single family residential homes. The site is currently zoned as RM and classified as MDR (Medium Density Residential) Land Use in the City of San Jacinto General Plan Land Use Map. The project site is currently vacant. The proposed project land use is permitted in the zone and does not require a zone change or General Plan amendment.

The proposed project is anticipated to be built and generating trips in 2023. A growth rate of 2% was used to account future traffic volumes.

Intersection #4 proposes a deceleration lane heading southbound, the driveway at intersection #4 is proposed to be a right in and right out only.

Intersection #5 proposes a traffic signal, the driveway at intersection #5 is proposed to be a full access driveway.

Exhibit 1 previously showed the proposed project site plan.

4.2 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic, both inbound and outbound, produced by a development. Determining trip generation for a proposed project is based on projecting the amount of traffic that the specific land uses being proposed will produce. Industry standard *Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017)* trip generation rates were used to determine trip generation of for most of the proposed project land uses.

Table 4 summarizes the projected AM peak hour, PM peak hour and daily trip generation of the proposed project.

Table 4:
Proposed Project AM/PM Peak Hour Trip Generation

Proposed Land Use ¹	Qty	Unit ²	Daily Trips (ADTs)		AM Peak Hour					PM Peak Hour				
			Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
							In	Out	Total			In	Out	Total
Single-Family Housing (210)	215	DU	9.44	2,030	0.74	25:75	40	119	159	0.99	63:37	134	79	213
Total				2,030			40	119	159			134	79	213

1: Rates from ITE Trip Generation (10th Edition, 2017)

2: DU = Dwelling Units

As shown in **Table 4**, the proposed project is projected to generate 159 total AM peak hour trips, 213 total PM peak hour trips and 2,030 total daily trips.

4.3 PROJECT TRIP DISTRIBUTION

Projecting trip distribution involves the process of identifying probable destinations and traffic routes that will be utilized by the proposed project's traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the probable routes onto which project traffic would distribute. The projected trip distribution for the proposed project is based on anticipated travel patterns to and from the project site. **Exhibit 6** shows the general projected AM and PM trip distribution of proposed project trips, respectively.

4.4 MODAL SPLIT

The traffic reducing potential of public transit, walking and bicycling have not been considered in this analysis since transit facilities in the study area are limited.

4.5 CUMULATIVE PROJECTS TRAFFIC

Guidelines require that other reasonably foreseeable development projects which are either approved or are currently being processed in the study area also be included as part of a cumulative analysis scenario. A list of cumulative projects was developed for this analysis through consultation with City of San Jacinto staff, and obtainment of current development status reports. **Exhibit 7** shows the location of nearby cumulative developments. A summary of the cumulative projects land uses is shown in **Table 5**.

Table 5:
Cumulative Projects List

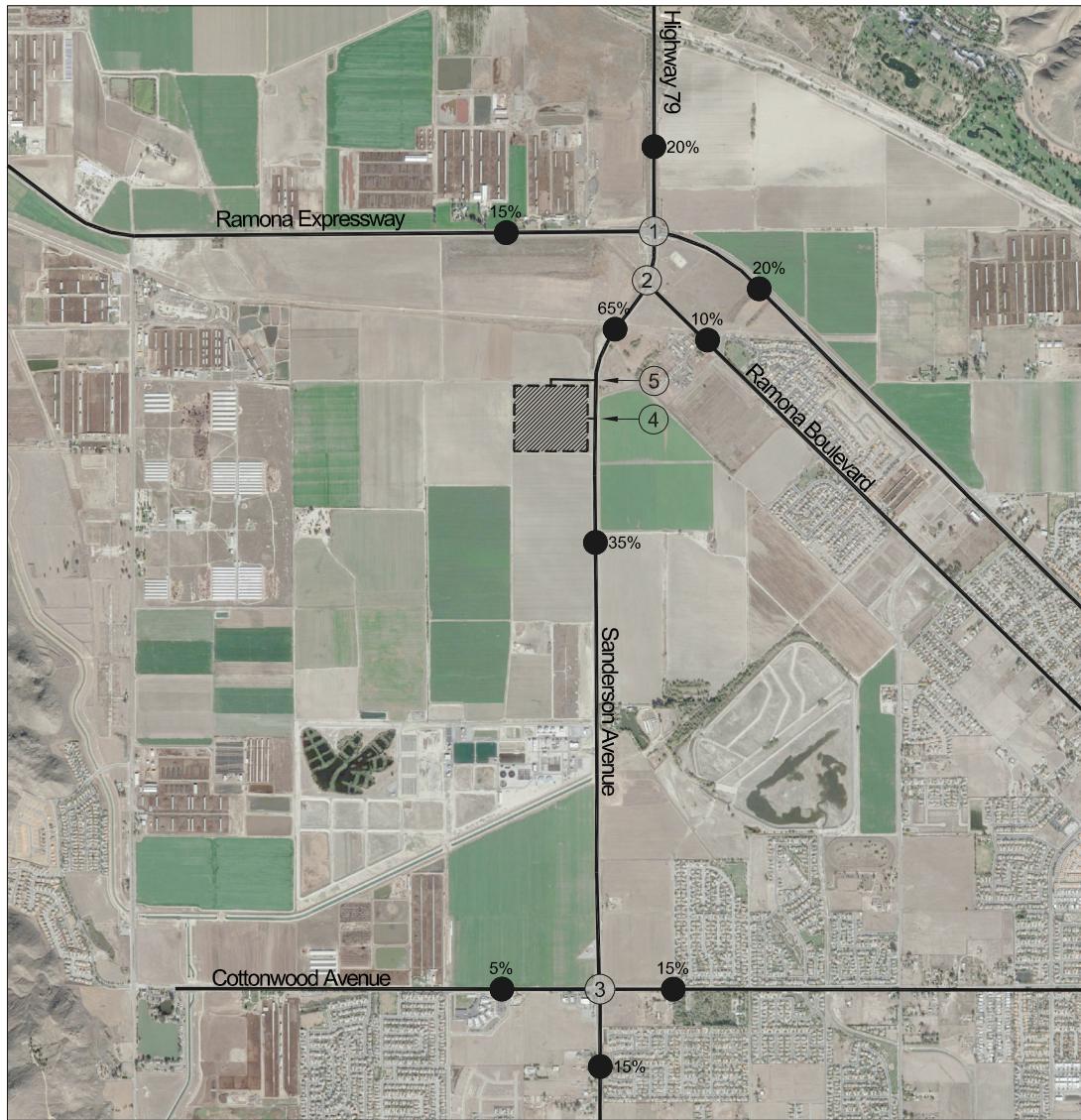
Project ¹	Land Use ²	Qty	Units ³	AM Peak Hour			PM Peak Hour			Daily
				In	Out	Total	In	Out	Total	
1 P19-030	Single-Family Detached Housing	42	DU	8	23	31	26	16	42	396
2 P19-033	Single-Family Detached Housing	73	DU	13	41	54	45	27	72	689
3 P19-034	Single-Family Detached Housing	81	DU	15	45	60	50	30	80	765
4 P20-007	Single-Family Detached Housing	1	DU	0	1	1	1	0	1	9
5 P20-016	Single-Family Detached Housing	1	DU	0	1	1	1	0	1	9
6 P20-026	Mixed Use ⁴	39.495	TSF	221	189	410	180	173	353	5,620
Total				257	300	557	303	246	549	7,488

1: List of cumulative projects provided by the City of San Jacinto.

2: Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017.

3: DU = Dwelling Units; TSF = Thousand Square Feet.

4: NWC Sanderson Avenue and Cottonwood Avenue Retail Development, Traffic Impact Study, RK engineering group, Inc. (04/04/17).



Legend:

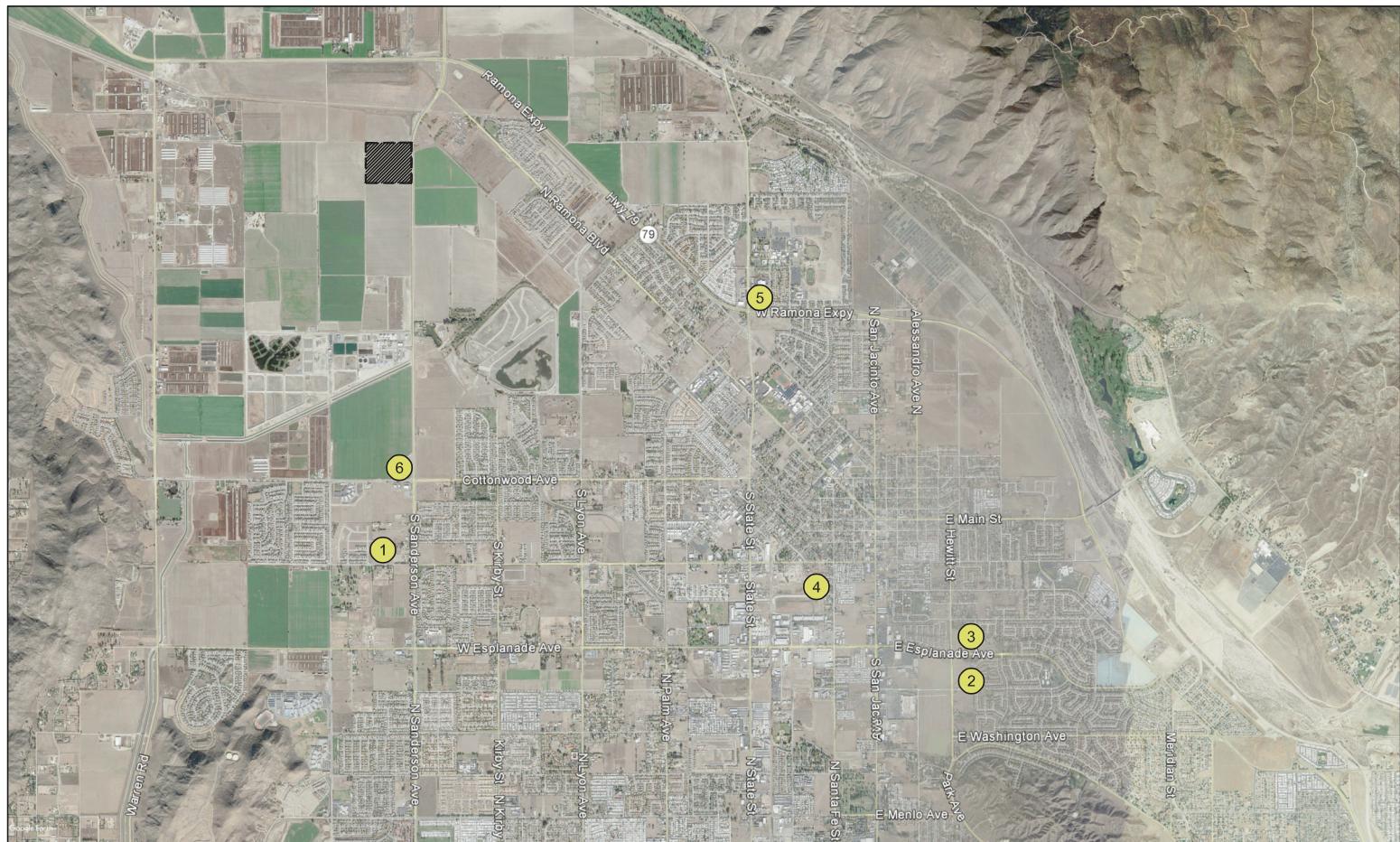
- Project Site
- (#) Study Intersection Location

JDP-21-001



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Exhibit 6: Trip Distribution of Proposed Project Trips at Study Intersections



Legend:

- Approximate Cumulative Project Locations
- Project Site

Exhibit 7: Cumulative Project Map

Sanderson Ranch Traffic Impact Analysis

JDP-21-001



Not to Scale

5.0 OPENING YEAR (2023) WITHOUT PROJECT CONDITIONS (OY)

Opening year (2023) without project (OY) conditions analysis is intended to identify baseline conditions in the near-term without the proposed project.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the *existing plus ambient plus cumulative* scenario are consistent with those previously shown in **Exhibit 3**.

5.2 OY CONDITIONS TRAFFIC VOLUMES

OY volumes include background traffic plus the addition of the traffic projected to be generated by cumulative projects. Since the proposed project is expected to be built and generating trips in 2023, OY volumes include a growth rate of 2% per year for two years, applied to existing volumes.

$$\text{OY Volumes} = (\text{Existing (2021) Counts} * 1.02^2) + \text{Cumulative Traffic}$$

Exhibit 8 shows OY AM and PM peak hour volumes at the study intersections.

5.3 OY INTERSECTION LEVEL OF SERVICE ANALYSIS

OY conditions AM and PM peak hour intersection analysis is shown in **Table 6**. Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 3**. HCM analysis sheets are provided in **Appendix C**.

Table 6:
Intersection Analysis – OY Conditions

Intersection	Control Type	Peak Hour	Existing Conditions	
			Delay ¹	LOS
#1 – Sanderson Avenue/Ramona Expressway	Signal	AM	103.4	F
		PM	49.0	D
#2 – Sanderson Avenue/Ramona Boulevard	Signal	AM	10.8	B
		PM	10.0	A
#3 – Sanderson Avenue/Cottonwood Avenue	Signal	AM	26.4	C
		PM	26.3	C

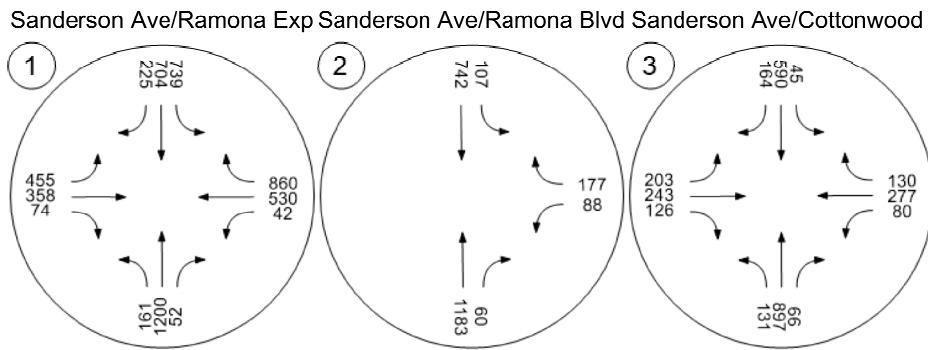
Note: AWSC = All-Way Stop-Control, TWSC = Two-Way Stop-Control, Delay shown in seconds per vehicle.

1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown.

As shown in **Table 6**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for OY conditions with the exception of the following intersection:

- #1 – Sanderson Avenue/Ramona Expressway (AM Peak Hour).

AM PEAK HOUR



PM PEAK HOUR

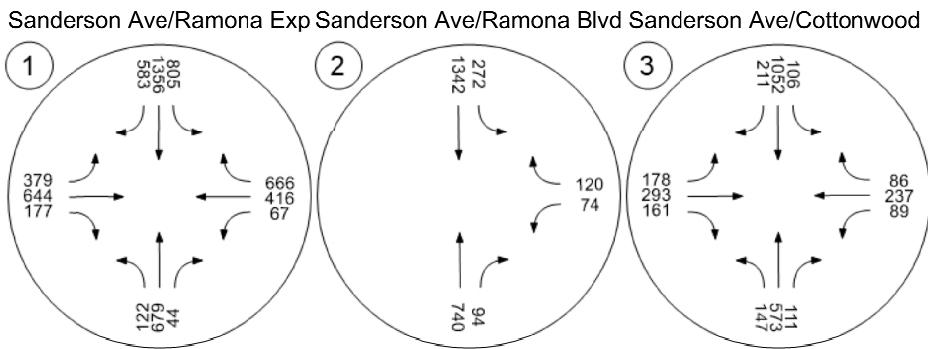


Exhibit 8: Opening Year (OY) AM/PM Peak Hour Volumes

6.0 OPENING YEAR (2023) WITH PROJECT CONDITIONS (OYP)

Opening year (2023) with project conditions (OYP) conditions analysis is intended to identify the project-related cumulative impacts on the planned circulation system.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls have changed at intersection #4 and intersection #5 to accommodate for the *OYP* scenario.

Intersection #4 proposes a deceleration lane heading southbound, the driveway at intersection #4 is proposed to be a right in and right out only.

Intersection #5 proposes a traffic signal, the driveway at intersection #5 is proposed to be a full access driveway.

6.2 OYP TRAFFIC VOLUMES

OYP volumes include background traffic plus the addition of the traffic projected to be generated by the proposed project and traffic projected to be generated by cumulative developments in the vicinity of the proposed project. Cumulative developments are projects which are in various stages of planning, entitlement and construction. Since the proposed project is expected to be built and generating trips in 2023, *OYP* volumes include an ambient growth rate of 2% per year for two years, applied to existing volumes.

OYP Volumes = (Existing (2021) Counts * 1.02^2) + Cumulative Projects Traffic + Project Traffic

The cumulative projects were previously discussed in *Section 4.6 Cumulative Projects Traffic*.

Exhibit 9 shows *OYP* AM and PM peak hour volumes at the study intersections.

6.3 OYP CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

OYP conditions AM and PM peak hour intersection analysis is shown in ***Table 7***. HCM analysis sheets are provided in ***Appendix C***.

Table 7:
Intersection Analysis – OYP Conditions

Intersection	Control Type	Peak Hour	OY Conditions		OYP Conditions			
			Delay ¹	LOS	Delay ¹	LOS	Change	Impact?
#1 – Sanderson Avenue/Ramona Expressway	Signal	AM	103.4	F	104.5	F	1.1	No
		PM	49.0	D	49.9	D	0.9	No
#2 – Sanderson Avenue/Ramona Boulevard	Signal	AM	10.8	A	11.0	B	0.2	No
		PM	10.0	A	10.1	B	0.1	No
#3 – Sanderson Avenue/Cottonwood Avenue	Signal	AM	26.4	C	26.6	C	0.2	No
		PM	26.3	C	26.6	C	0.3	No
#4 – Sanderson Avenue/South Project Driveway	OWSC	AM	-	-	11.5	B	-	No
		PM	-	-	14.8	B	-	No
#5 – Sanderson Avenue/Ramona Boulevard	Signal	AM	-	-	3.2	C	-	No
		PM	-	-	2.8	A	-	No

Note: AWSC = All-Way Stop-Control, TWSC = Two-Way Stop-Control, OWSC = One-Way Stop Control, Delay shown in seconds per vehicle.

1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown.

As shown in **Table 7**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for OYP conditions with the exception of the following intersection:

- #1 – Sanderson Avenue/Ramona Expressway (AM Peak Hour).

Referencing section 2.5.1 City of San Jacinto Signalized Intersection Operating Requirements, intersection #1 Sanderson Avenue/Ramona Expressway has an existing LOS F for the AM peak hour without project traffic. Intersection #1 also does not delay by more than 5.0 or more seconds which does not cause an impact nor a reason to improve the intersection.

6.4 OYP SIGNAL WARRANT ANALYSIS

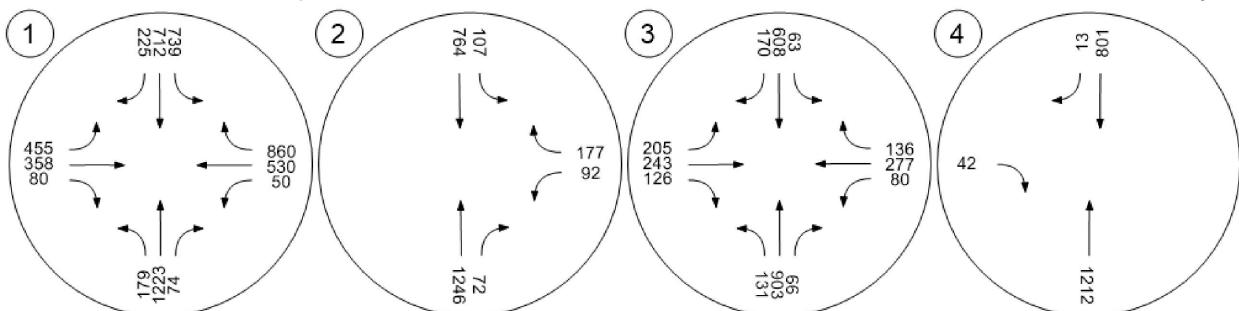
Traffic signal warrants for OYP conditions have been prepared based on peak-hour intersection volumes at the project site access location. The purpose of this analysis is to ensure the need for a signal that the project is proposing. **Table 8** summarizes the results of the signal warrant analysis. Detailed warrant analysis sheets are contained in **Appendix D**.

Table 8:
Signal Warrant Analysis Opening Year plus Project (OYP) Conditions

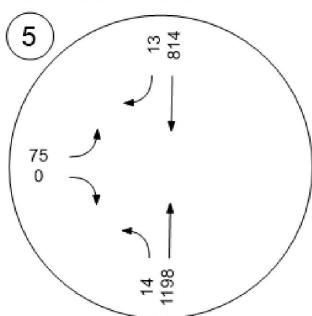
Intersection			Peak Hour Signal Warrant Met?	
			AM Peak Hour	PM Peak Hour
5	Sanderson Avenue	North Project Driveway	Yes	No

AM PEAK HOUR

Sanderson Ave/Ramona Exp Sanderson Ave/Ramona Blvd Sanderson Ave/Cottonwood Sanderson Ave/South Project

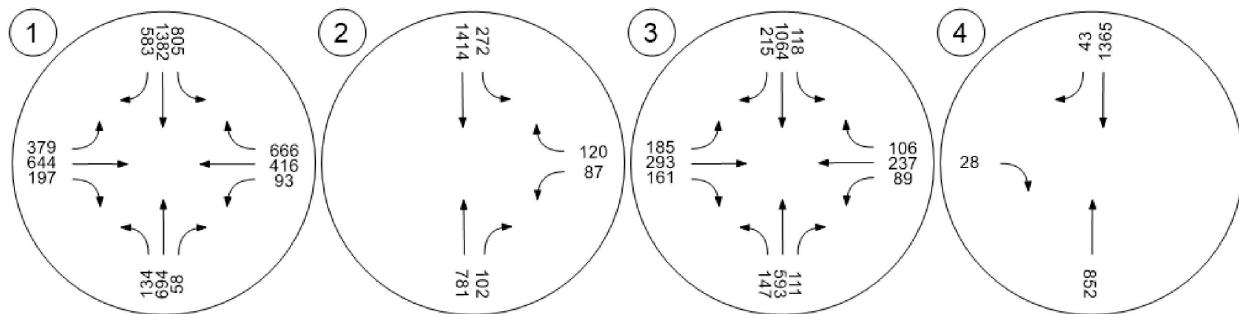


Sanderson Ave/Ramona Blvd



PM PEAK HOUR

Sanderson Ave/Ramona Exp Sanderson Ave/Ramona Blvd Sanderson Ave/Cottonwood Sanderson Ave/South Project



Sanderson Ave/Ramona Blvd

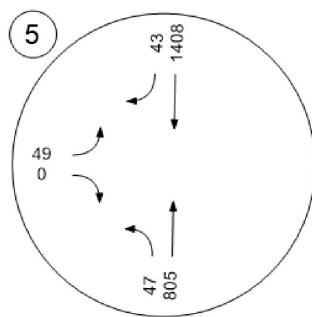


Exhibit 9: Opening Year Plus Project (OYP) AM/PM Peak Hour Volumes

Sunterra Traffic Impact Analysis

JDP-21-001

7.0 VEHICLE MILES TRAVELED (VMT) ANALYSIS

Senate Bill (SB) 743 was adopted in 2013 requiring the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts within the California Environmental Quality Act (CEQA). For land use projects, OPR has identified Vehicle Miles Traveled (VMT) as the new metric for transportation analysis under CEQA. The regulatory changes to the CEQA guidelines that implement SB 743 were approved on December 28th, 2018 with an implementation date of July 1st, 2020 as the new metric.

7.1 VEHICLE MILES TRAVELED (VMT) ANALYSIS

Consistent with the new metric of VMT for analysis of transportation impacts, this analysis follows VMT guidelines set forth by the *City of San Jacinto Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (June, 16st, 2020)*. VMT is to be determined.

Appendices

APPENDIX A

SCOPING AGREEMENT AND SAN JACINTO ROADWAY CLASSIFICATIONS AND CROSS SECTIONS

Daniel Flores

From: John Pourkazemi <john@trilakeconsultants.com>
Sent: Wednesday, June 2, 2021 2:54 PM
To: David Chew
Cc: Randel, Travis; Peter Kulmaticki; Daniel Flores; Stuart McKibbin
Subject: San Jacinto Sanderson Ranch
Attachments: JDP21001 Scoping.pdf; City of San Jacinto - VMT.pdf

David,

The scoping agreement is acceptable however, please indicate and evaluate the VMT per City of San Jacinto's adopted VMT guidelines, as attached.

Thank you,
John.

From: Randel, Travis <tranel@sanjacintoca.gov>
Sent: Tuesday, May 4, 2021 3:38 PM
To: Stuart McKibbin <stuart@trilakeconsultants.com>; John Pourkazemi <john@trilakeconsultants.com>; Kristy Rightmire <kristy@trilakeconsultants.com>
Cc: David Chew <david@tjwengineering.com>; Peter Kulmaticki <pkulmaticki@jdpierceco.com>; Daniel Flores <Daniel@tjwengineering.com>
Subject: FW: San Jacinto Sanderson Ranch

David, by way of this e-mail, I'm forwarding you're scoping agreement to the City Engineer. They will review and get back to you.

Travis



Travis Randel
Planning & Community Development Director
City of San Jacinto
595 S. San Jacinto Avenue
San Jacinto, CA 92583
P: 951.654.7337
F: 951.654.3728
tranel@sanjacintoca.gov
www.sanjacintoca.gov

Due to the on-going public health crisis, City Hall is closed to the public. Staff is still in office Monday – Thursday 8am – 5 pm., closed holiday and every Friday. Please visit our website at: <https://www.sanjacintoca.gov/COVID-19> for more information.

Don't forget to follow us on social media for current status and important updates –



From: David Chew <david@tjwengineering.com>

Sent: Tuesday, May 4, 2021 2:24 PM

To: Randel, Travis <tranel@sanjacintoca.gov>; Peter Kulmaticki <pkulmaticki@jd pierceco.com>

Cc: Daniel Flores <Daniel@tjwengineering.com>

Subject: San Jacinto Sanderson Ranch

Hi Travis,

We're working with Peter on the Sanderson Ranch project. We've pulled together the attached scoping agreement for City review. Please review and let us know if you have any comments before we move forward with the study.

Let me know if there's any questions/concerns.

Thank you,

David

David Chew | PTP



TJW ENGINEERING, INC.

9841 Irvine Center Drive

Suite 200

Irvine, CA 92618

t: [\(949\) 878-3509](tel:(949)878-3509)

d: [\(949\) 536-8450](tel:(949)536-8450)

David@tjwengineering.com

www.tjwengineering.com

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Travis



Travis Randel
Planning & Community Development Director
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Thank you,

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David Chew | PTP



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d: [\(949\) 536-8450](tel:(949)536-8450)

David@tjwengineering.com

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APPENDIX B

EXISTING TRAFFIC COUNTS

Counts Unlimited, Inc.
 PO Box 1178
 Corona, CA 92878
 (951)268-6268

City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Boulevard
 Weather: Clear

File Name : 02_SJC_Sanderson_Ramona Blvd AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

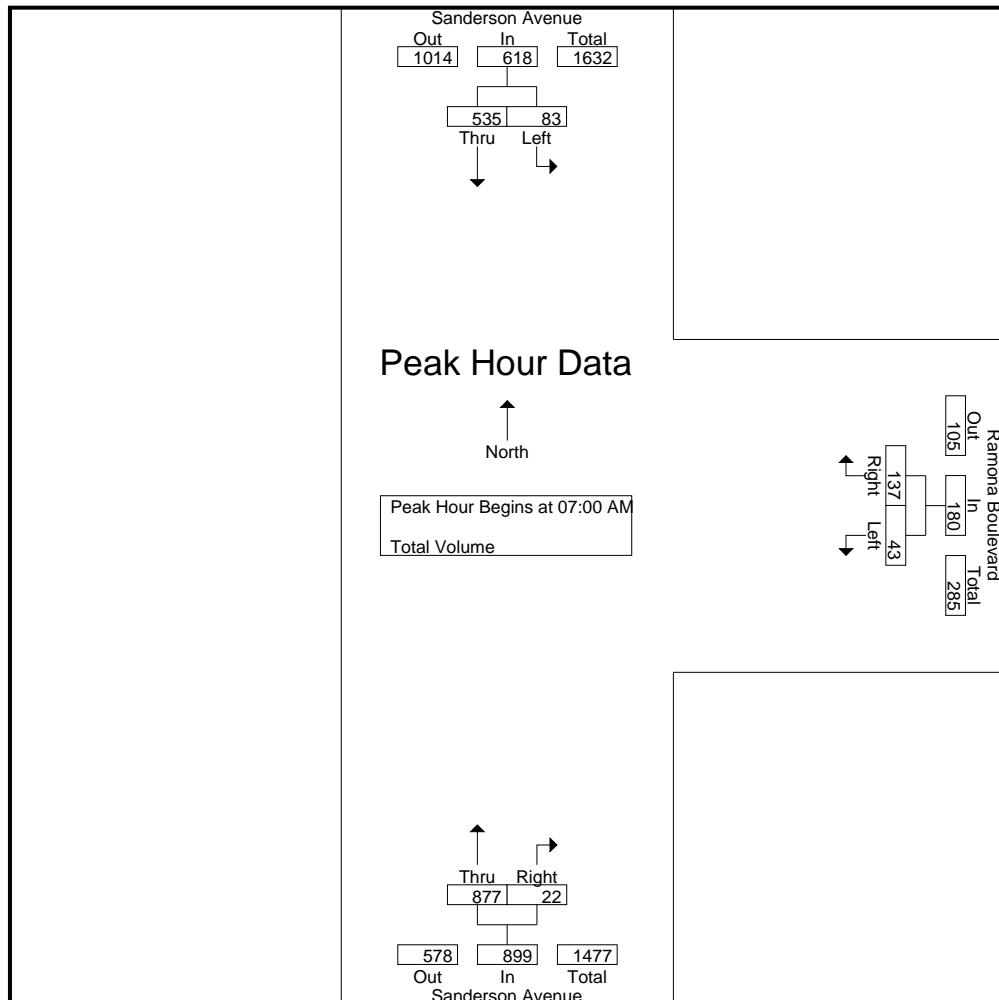
Start Time	Sanderson Avenue Southbound			Ramona Boulevard Westbound			Sanderson Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	25	124	149	10	38	48	207	4	211	408
07:15 AM	16	116	132	7	34	41	260	6	266	439
07:30 AM	20	151	171	13	39	52	218	5	223	446
07:45 AM	22	144	166	13	26	39	192	7	199	404
Total	83	535	618	43	137	180	877	22	899	1697
08:00 AM	25	116	141	10	30	40	169	5	174	355
08:15 AM	13	127	140	6	41	47	187	5	192	379
08:30 AM	20	132	152	3	40	43	191	10	201	396
08:45 AM	15	141	156	11	25	36	176	7	183	375
Total	73	516	589	30	136	166	723	27	750	1505
Grand Total	156	1051	1207	73	273	346	1600	49	1649	3202
Apprch %	12.9	87.1		21.1	78.9		97	3		
Total %	4.9	32.8	37.7	2.3	8.5	10.8	50	1.5	51.5	

Start Time	Sanderson Avenue Southbound			Ramona Boulevard Westbound			Sanderson Avenue Northbound			Int. Total	
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:00 AM											
07:00 AM	25	124	149	10	38	48	207	4	211	408	
07:15 AM	16	116	132	7	34	41	260	6	266	439	
07:30 AM	20	151	171	13	39	52	218	5	223	446	
07:45 AM	22	144	166	13	26	39	192	7	199	404	
Total Volume	83	535	618	43	137	180	877	22	899	1697	
% App. Total	13.4	86.6		23.9	76.1		97.6	2.4			
PHF	.830	.886	.904	.827	.878	.865	.843	.786	.845	.951	

Counts Unlimited, Inc.
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 Corona, CA 92878
 (951)268-6268

City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Boulevard
 Weather: Clear

File Name : 02_SJC_Sanderson_Ramona Blvd AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	25	124	149	10	38	48	207	4	211
+15 mins.	16	116	132	7	34	41	260	6	266
+30 mins.	20	151	171	13	39	52	218	5	223
+45 mins.	22	144	166	13	26	39	192	7	199
Total Volume	83	535	618	43	137	180	877	22	899
% App. Total	13.4	86.6		23.9	76.1		97.6	2.4	
PHF	.830	.886	.904	.827	.878	.865	.843	.786	.845

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Boulevard
 Weather: Clear

File Name : 02_SJC_Sanderson_Ramona Blvd PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

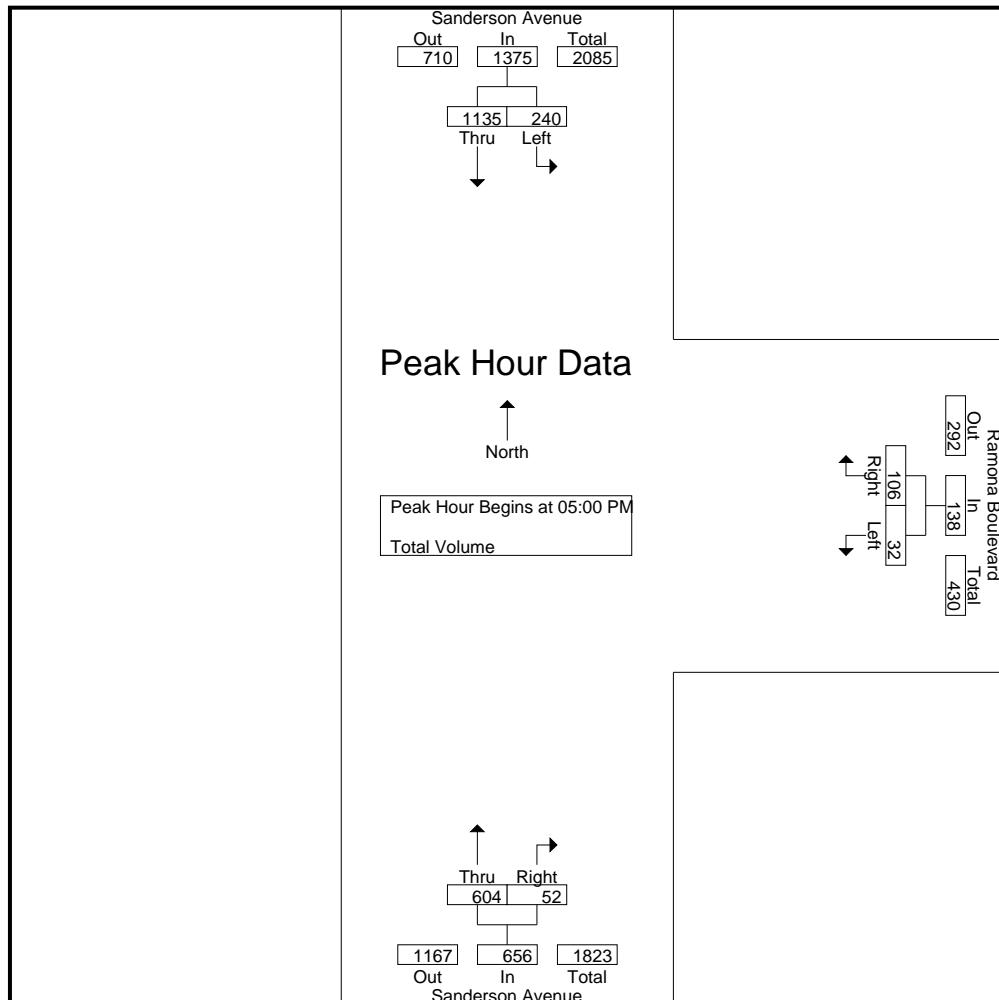
Start Time	Sanderson Avenue Southbound			Ramona Boulevard Westbound			Sanderson Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	49	290	339	7	23	30	146	7	153	522
04:15 PM	64	240	304	8	24	32	116	7	123	459
04:30 PM	51	269	320	8	26	34	106	14	120	474
04:45 PM	61	247	308	11	23	34	161	14	175	517
Total	225	1046	1271	34	96	130	529	42	571	1972
05:00 PM	53	284	337	7	20	27	163	8	171	535
05:15 PM	64	276	340	6	29	35	146	18	164	539
05:30 PM	64	275	339	12	31	43	155	13	168	550
05:45 PM	59	300	359	7	26	33	140	13	153	545
Total	240	1135	1375	32	106	138	604	52	656	2169
Grand Total	465	2181	2646	66	202	268	1133	94	1227	4141
Apprch %	17.6	82.4		24.6	75.4		92.3	7.7		
Total %	11.2	52.7	63.9	1.6	4.9	6.5	27.4	2.3	29.6	

Start Time	Sanderson Avenue Southbound			Ramona Boulevard Westbound			Sanderson Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	53	284	337	7	20	27	163	8	171	535
05:15 PM	64	276	340	6	29	35	146	18	164	539
05:30 PM	64	275	339	12	31	43	155	13	168	550
05:45 PM	59	300	359	7	26	33	140	13	153	545
Total Volume	240	1135	1375	32	106	138	604	52	656	2169
% App. Total	17.5	82.5		23.2	76.8		92.1	7.9		
PHF	.938	.946	.958	.667	.855	.802	.926	.722	.959	.986

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 Weather: Clear

File Name : 02_SJC_Sanderson_Ramona Blvd PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM			04:45 PM			04:45 PM		
+0 mins.	53	284	337	11	23	34	161	14	175
+15 mins.	64	276	340	7	20	27	163	8	171
+30 mins.	64	275	339	6	29	35	146	18	164
+45 mins.	59	300	359	12	31	43	155	13	168
Total Volume	240	1135	1375	36	103	139	625	53	678
% App. Total	17.5	82.5		25.9	74.1		92.2	7.8	
PHF	.938	.946	.958	.750	.831	.808	.959	.736	.969

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Cottonwood Avenue
 Weather: Clear

File Name : 03_SJC_Sanderson_Cottonwood AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

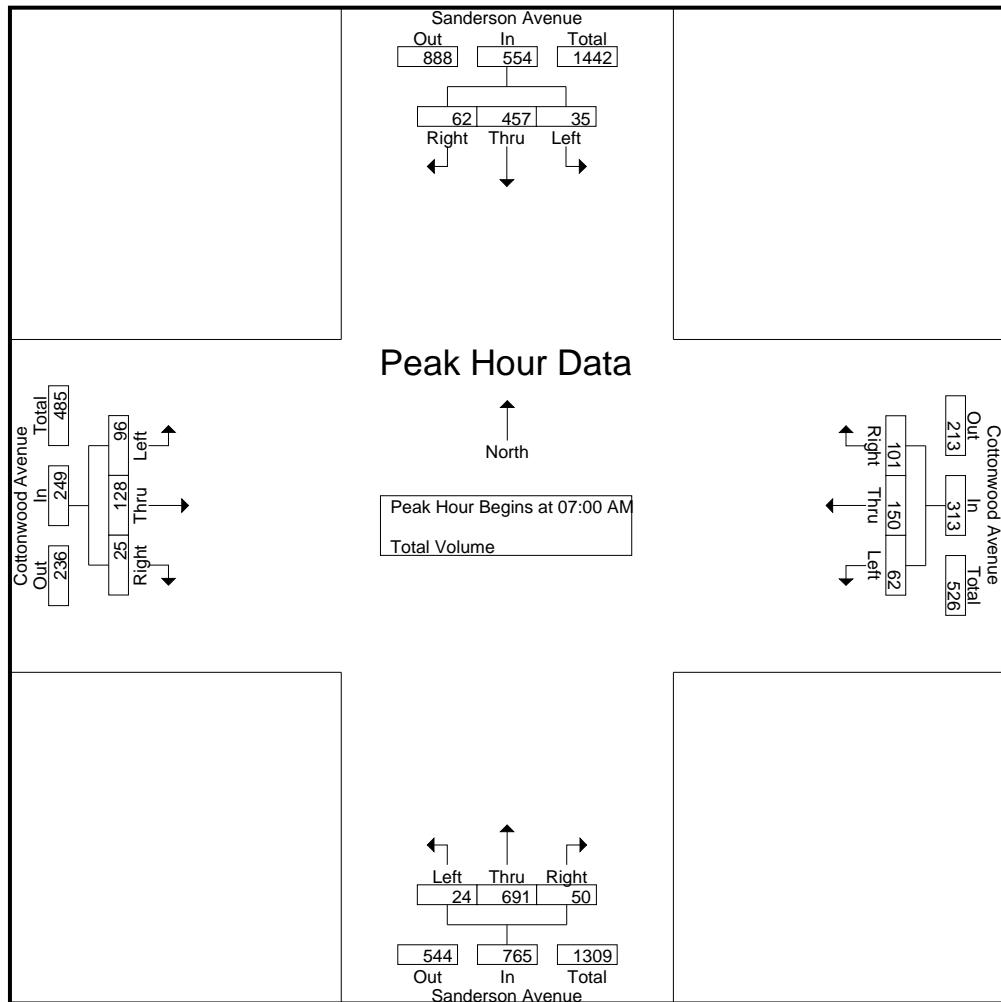
Start Time	Sanderson Avenue Southbound				Cottonwood Avenue Westbound				Sanderson Avenue Northbound				Cottonwood Avenue Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	8	108	18	134	21	39	29	89	7	165	9	181	27	17	7	51	455
07:15 AM	7	100	10	117	14	31	35	80	6	207	12	225	23	29	9	61	483
07:30 AM	11	113	10	134	16	35	13	64	8	158	16	182	22	41	3	66	446
07:45 AM	9	136	24	169	11	45	24	80	3	161	13	177	24	41	6	71	497
Total	35	457	62	554	62	150	101	313	24	691	50	765	96	128	25	249	1881
08:00 AM	4	124	12	140	14	35	22	71	5	123	13	141	24	15	8	47	399
08:15 AM	10	104	9	123	17	48	16	81	9	156	14	179	20	19	3	42	425
08:30 AM	11	111	11	133	18	64	15	97	12	148	12	172	21	56	21	98	500
08:45 AM	9	130	10	149	24	30	20	74	8	141	12	161	15	40	16	71	455
Total	34	469	42	545	73	177	73	323	34	568	51	653	80	130	48	258	1779
Grand Total	69	926	104	1099	135	327	174	636	58	1259	101	1418	176	258	73	507	3660
Apprch %	6.3	84.3	9.5		21.2	51.4	27.4		4.1	88.8	7.1		34.7	50.9	14.4		
Total %	1.9	25.3	2.8	30	3.7	8.9	4.8	17.4	1.6	34.4	2.8	38.7	4.8	7	2	13.9	

Start Time	Sanderson Avenue Southbound				Cottonwood Avenue Westbound				Sanderson Avenue Northbound				Cottonwood Avenue Eastbound				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:00 AM																		
07:00 AM	8	108	18	134	21	39	29	89	7	165	9	181	27	17	7	51	455	
07:15 AM	7	100	10	117	14	31	35	80	6	207	12	225	23	29	9	61	483	
07:30 AM	11	113	10	134	16	35	13	64	8	158	16	182	22	41	3	66	446	
07:45 AM	9	136	24	169	11	45	24	80	3	161	13	177	24	41	6	71	497	
Total Volume	35	457	62	554	62	150	101	313	24	691	50	765	96	128	25	249	1881	
% App. Total	6.3	82.5	11.2		19.8	47.9	32.3		3.1	90.3	6.5		38.6	51.4	10			
PHF	.795	.840	.646	.820	.738	.833	.721	.879	.750	.835	.781	.850	.889	.780	.694	.877	.946	

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 N/S: Sanderson Avenue
 E/W: Cottonwood Avenue
 Weather: Clear

File Name : 03_SJC_Sanderson_Cottonwood AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:00 AM				07:45 AM			
	Out	In	Total		Out	In	Total		Out	In	Total		Out	In	Total	
+0 mins.	11	113	10	134	11	45	24	80	7	165	9	181	24	41	6	71
+15 mins.	9	136	24	169	14	35	22	71	6	207	12	225	24	15	8	47
+30 mins.	4	124	12	140	17	48	16	81	8	158	16	182	20	19	3	42
+45 mins.	10	104	9	123	18	64	15	97	3	161	13	177	21	56	21	98
Total Volume	34	477	55	566	60	192	77	329	24	691	50	765	89	131	38	258
% App. Total	6	84.3	9.7		18.2	58.4	23.4		3.1	90.3	6.5		34.5	50.8	14.7	
PHF	.773	.877	.573	.837	.833	.750	.802	.848	.750	.835	.781	.850	.927	.585	.452	.658

Counts Unlimited, Inc.
 PO Box 1178
 Corona, CA 92878
 (951)268-6268

City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Cottonwood Avenue
 Weather: Clear

File Name : 03_SJC_Sanderson_Cottonwood PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

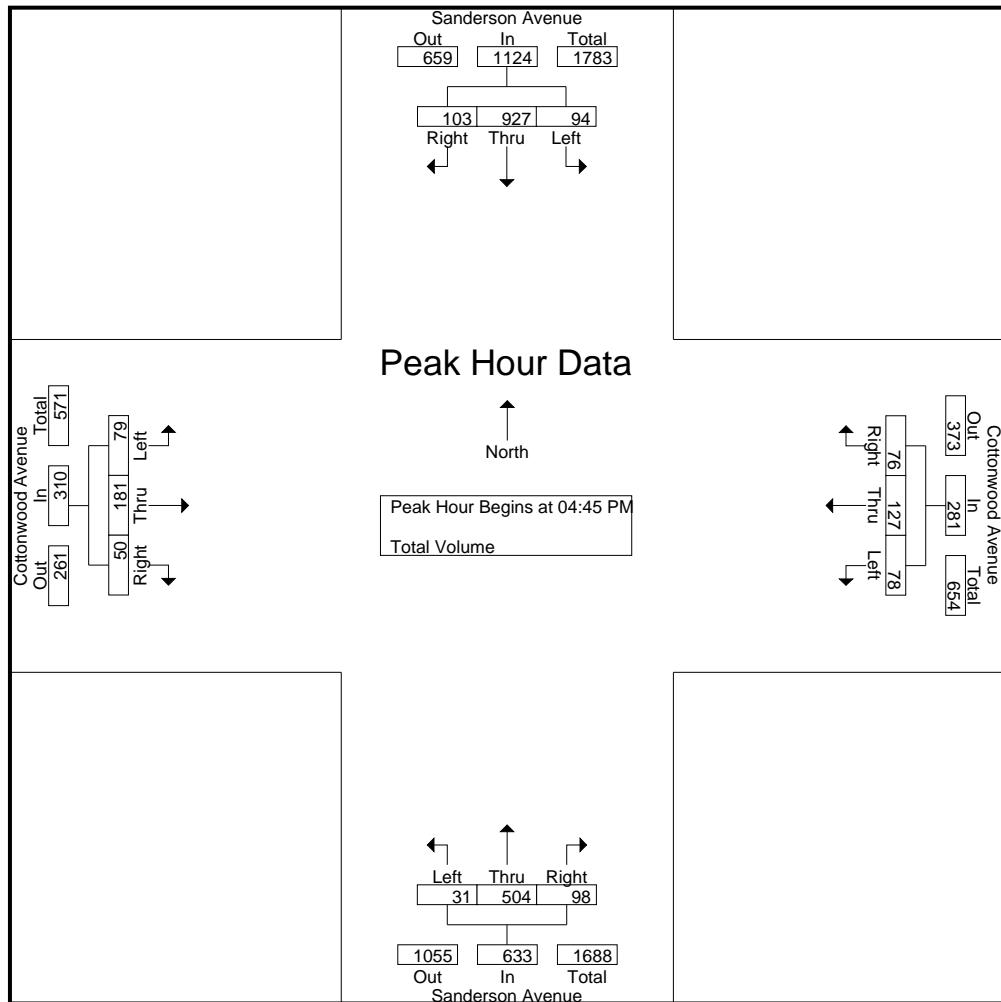
Start Time	Sanderson Avenue Southbound				Cottonwood Avenue Westbound				Sanderson Avenue Northbound				Cottonwood Avenue Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	27	242	20	289	24	32	27	83	10	101	22	133	28	48	16	92	597
04:15 PM	21	233	22	276	20	29	14	63	9	101	14	124	14	41	11	66	529
04:30 PM	21	237	30	288	19	24	16	59	7	134	15	156	13	40	14	67	570
04:45 PM	27	219	20	266	17	32	18	67	13	143	31	187	20	47	14	81	601
Total	96	931	92	1119	80	117	75	272	39	479	82	600	75	176	55	306	2297
05:00 PM	23	220	19	262	22	28	21	71	3	91	27	121	18	55	15	88	542
05:15 PM	19	256	37	312	14	34	21	69	9	140	24	173	17	43	11	71	625
05:30 PM	25	232	27	284	25	33	16	74	6	130	16	152	24	36	10	70	580
05:45 PM	27	244	26	297	18	24	17	59	11	94	21	126	11	61	9	81	563
Total	94	952	109	1155	79	119	75	273	29	455	88	572	70	195	45	310	2310
Grand Total	190	1883	201	2274	159	236	150	545	68	934	170	1172	145	371	100	616	4607
Apprch %	8.4	82.8	8.8		29.2	43.3	27.5		5.8	79.7	14.5		23.5	60.2	16.2		
Total %	4.1	40.9	4.4	49.4	3.5	5.1	3.3	11.8	1.5	20.3	3.7	25.4	3.1	8.1	2.2	13.4	

Start Time	Sanderson Avenue Southbound				Cottonwood Avenue Westbound				Sanderson Avenue Northbound				Cottonwood Avenue Eastbound				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:45 PM																		
04:45 PM	27	219	20	266	17	32	18	67	13	143	31	187	20	47	14	81	601	
05:00 PM	23	220	19	262	22	28	21	71	3	91	27	121	18	55	15	88	542	
05:15 PM	19	256	37	312	14	34	21	69	9	140	24	173	17	43	11	71	625	
05:30 PM	25	232	27	284	25	33	16	74	6	130	16	152	24	36	10	70	580	
Total Volume	94	927	103	1124	78	127	76	281	31	504	98	633	79	181	50	310	2348	
% App. Total	8.4	82.5	9.2		27.8	45.2	27		4.9	79.6	15.5		25.5	58.4	16.1			
PHF	.870	.905	.696	.901	.780	.934	.905	.949	.596	.881	.790	.846	.823	.823	.833	.881	.939	

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Cottonwood Avenue
 Weather: Clear

File Name : 03_SJC_Sanderson_Cottonwood PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:30 PM				04:45 PM			
+0 mins.	23	220	19	262	17	32	18	67	7	134	15	156	20	47	14	81
+15 mins.	19	256	37	312	22	28	21	71	13	143	31	187	18	55	15	88
+30 mins.	25	232	27	284	14	34	21	69	3	91	27	121	17	43	11	71
+45 mins.	27	244	26	297	25	33	16	74	9	140	24	173	24	36	10	70
Total Volume	94	952	109	1155	78	127	76	281	32	508	97	637	79	181	50	310
% App. Total	8.1	82.4	9.4		27.8	45.2	27		5	79.7	15.2		25.5	58.4	16.1	
PHF	.870	.930	.736	.925	.780	.934	.905	.949	.615	.888	.782	.852	.823	.823	.833	.881

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Expressway
 Weather: Clear

File Name : 01_SJC_Sanderson_Ramona Expy AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

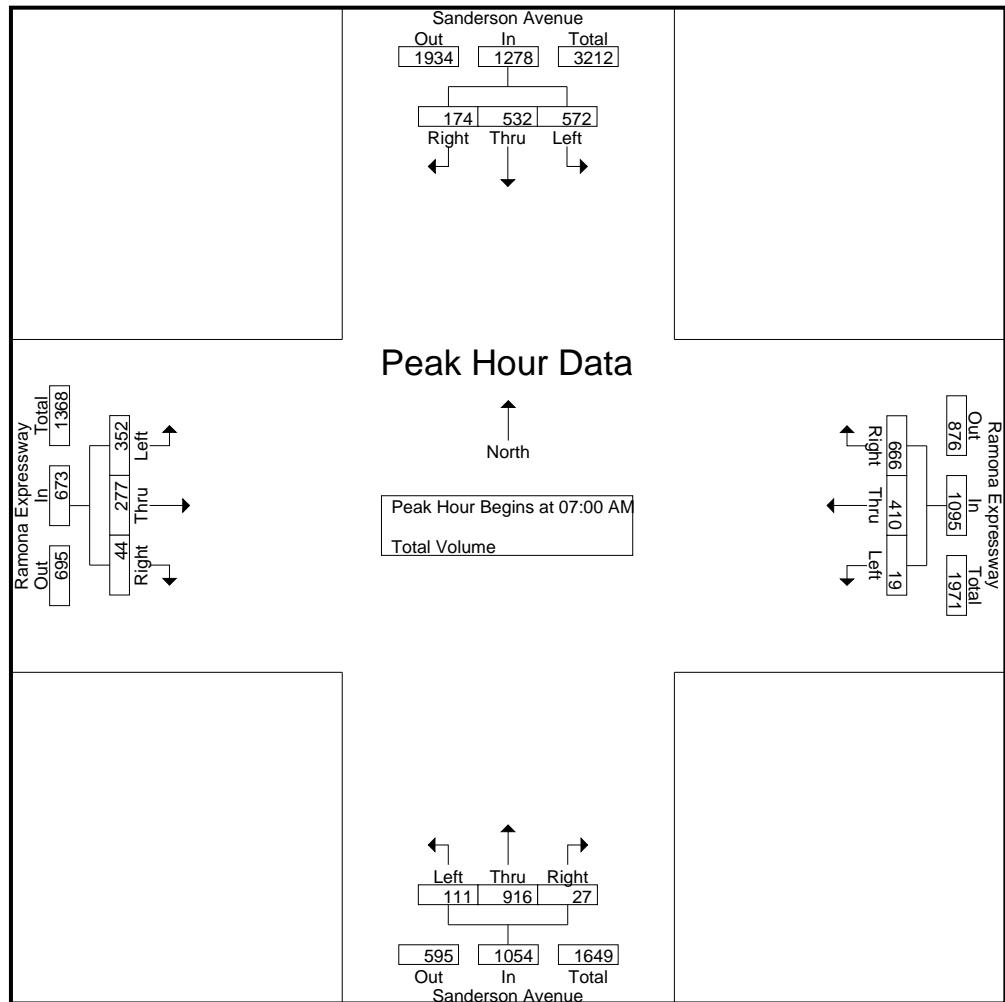
Start Time	Sanderson Avenue Southbound				Ramona Expressway Westbound				Sanderson Avenue Northbound				Ramona Expressway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	132	118	47	297	3	108	167	278	29	223	3	255	73	53	10	136	966
07:15 AM	123	115	69	307	3	85	175	263	30	273	5	308	101	65	14	180	1058
07:30 AM	161	159	15	335	3	124	180	307	35	219	10	264	80	66	12	158	1064
07:45 AM	156	140	43	339	10	93	144	247	17	201	9	227	98	93	8	199	1012
Total	572	532	174	1278	19	410	666	1095	111	916	27	1054	352	277	44	673	4100
08:00 AM	108	124	49	281	5	75	157	237	18	187	9	214	72	69	15	156	888
08:15 AM	118	117	49	284	3	89	163	255	26	192	6	224	68	55	17	140	903
08:30 AM	122	123	58	303	7	65	164	236	26	187	2	215	94	73	16	183	937
08:45 AM	139	130	41	310	10	61	121	192	11	179	6	196	81	52	20	153	851
Total	487	494	197	1178	25	290	605	920	81	745	23	849	315	249	68	632	3579
Grand Total	1059	1026	371	2456	44	700	1271	2015	192	1661	50	1903	667	526	112	1305	7679
Apprch %	43.1	41.8	15.1		2.2	34.7	63.1		10.1	87.3	2.6		51.1	40.3	8.6		
Total %	13.8	13.4	4.8	32	0.6	9.1	16.6	26.2	2.5	21.6	0.7	24.8	8.7	6.8	1.5	17	

Start Time	Sanderson Avenue Southbound				Ramona Expressway Westbound				Sanderson Avenue Northbound				Ramona Expressway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	132	118	47	297	3	108	167	278	29	223	3	255	73	53	10	136	966
07:15 AM	123	115	69	307	3	85	175	263	30	273	5	308	101	65	14	180	1058
07:30 AM	161	159	15	335	3	124	180	307	35	219	10	264	80	66	12	158	1064
07:45 AM	156	140	43	339	10	93	144	247	17	201	9	227	98	93	8	199	1012
Total Volume	572	532	174	1278	19	410	666	1095	111	916	27	1054	352	277	44	673	4100
% App. Total	44.8	41.6	13.6		1.7	37.4	60.8		10.5	86.9	2.6		52.3	41.2	6.5		
PHF	.888	.836	.630	.942	.475	.827	.925	.892	.793	.839	.675	.856	.871	.745	.786	.845	.963

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Expressway
 Weather: Clear

File Name : 01_SJC_Sanderson_Ramona Expy AM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	132	118	47	297	3	108	167	278	29	223	3	255	101	65	14	180
+15 mins.	123	115	69	307	3	85	175	263	30	273	5	308	80	66	12	158
+30 mins.	161	159	15	335	3	124	180	307	35	219	10	264	98	93	8	199
+45 mins.	156	140	43	339	10	93	144	247	17	201	9	227	72	69	15	156
Total Volume	572	532	174	1278	19	410	666	1095	111	916	27	1054	351	293	49	693
% App. Total	44.8	41.6	13.6		1.7	37.4	60.8		10.5	86.9	2.6		50.6	42.3	7.1	
PHF	.888	.836	.630	.942	.475	.827	.925	.892	.793	.839	.675	.856	.869	.788	.817	.871

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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Expressway
 Weather: Clear

File Name : 01_SJC_Sanderson_Ramona Expy PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 1

Groups Printed- Total Volume

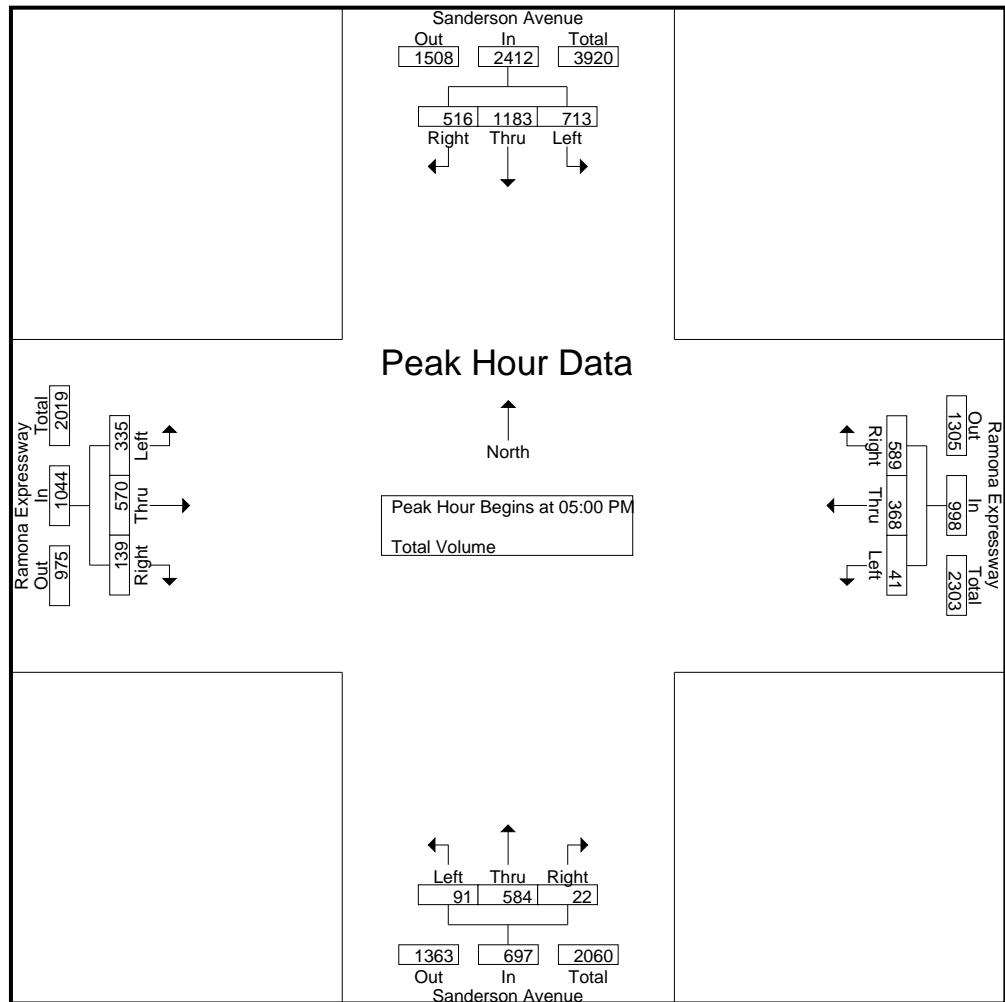
Start Time	Sanderson Avenue Southbound				Ramona Expressway Westbound				Sanderson Avenue Northbound				Ramona Expressway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	191	308	126	625	8	70	124	202	30	147	3	180	75	142	35	252	1259
04:15 PM	170	250	111	531	10	96	134	240	21	115	3	139	82	151	40	273	1183
04:30 PM	185	276	127	588	8	75	127	210	22	111	6	139	102	132	30	264	1201
04:45 PM	193	277	84	554	11	71	130	212	24	155	5	184	88	129	32	249	1199
Total	739	1111	448	2298	37	312	515	864	97	528	17	642	347	554	137	1038	4842
05:00 PM	173	287	105	565	12	83	136	231	26	149	9	184	113	169	26	308	1288
05:15 PM	171	291	196	658	12	125	172	309	23	142	5	170	78	138	43	259	1396
05:30 PM	173	289	109	571	7	88	160	255	19	152	2	173	88	138	35	261	1260
05:45 PM	196	316	106	618	10	72	121	203	23	141	6	170	56	125	35	216	1207
Total	713	1183	516	2412	41	368	589	998	91	584	22	697	335	570	139	1044	5151
Grand Total	1452	2294	964	4710	78	680	1104	1862	188	1112	39	1339	682	1124	276	2082	9993
Apprch %	30.8	48.7	20.5		4.2	36.5	59.3		14	83	2.9		32.8	54	13.3		
Total %	14.5	23	9.6	47.1	0.8	6.8	11	18.6	1.9	11.1	0.4	13.4	6.8	11.2	2.8	20.8	

Start Time	Sanderson Avenue Southbound				Ramona Expressway Westbound				Sanderson Avenue Northbound				Ramona Expressway Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	173	287	105	565	12	83	136	231	26	149	9	184	113	169	26	308	1288
05:15 PM	171	291	196	658	12	125	172	309	23	142	5	170	78	138	43	259	1396
05:30 PM	173	289	109	571	7	88	160	255	19	152	2	173	88	138	35	261	1260
05:45 PM	196	316	106	618	10	72	121	203	23	141	6	170	56	125	35	216	1207
Total Volume	713	1183	516	2412	41	368	589	998	91	584	22	697	335	570	139	1044	5151
% App. Total	29.6	49	21.4		4.1	36.9	59		13.1	83.8	3.2		32.1	54.6	13.3		
PHF	.909	.936	.658	.916	.854	.736	.856	.807	.875	.961	.611	.947	.741	.843	.808	.847	.922

Counts Unlimited, Inc.
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City of San Jacinto
 N/S: Sanderson Avenue
 E/W: Ramona Expressway
 Weather: Clear

File Name : 01_SJC_Sanderson_Ramona Expy PM
 Site Code : 99921264
 Start Date : 6/3/2021
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:45 PM				04:15 PM			
+0 mins.	173	287	105	565	11	71	130	212	24	155	5	184	82	151	40	273
+15 mins.	171	291	196	658	12	83	136	231	26	149	9	184	102	132	30	264
+30 mins.	173	289	109	571	12	125	172	309	23	142	5	170	88	129	32	249
+45 mins.	196	316	106	618	7	88	160	255	19	152	2	173	113	169	26	308
Total Volume	713	1183	516	2412	42	367	598	1007	92	598	21	711	385	581	128	1094
% App. Total	29.6	49	21.4		4.2	36.4	59.4		12.9	84.1	3		35.2	53.1	11.7	
PHF	.909	.936	.658	.916	.875	.734	.869	.815	.885	.965	.583	.966	.852	.859	.800	.888

INTERSECTION TURNING MOVEMENT COUNTS

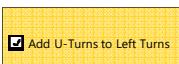
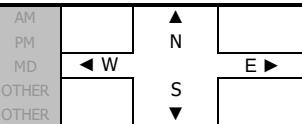
PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:
Wed, Apr 6, 16

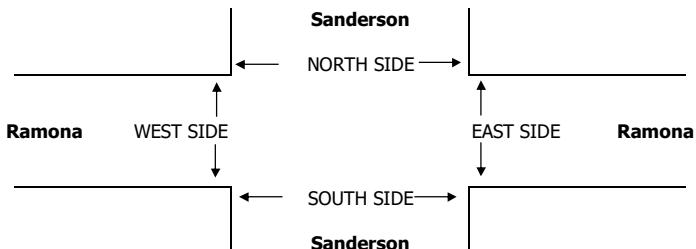
LOCATION: San Jacinto
NORTH & SOUTH: Sanderson
EAST & WEST: Ramona

PROJECT #: SC0905
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

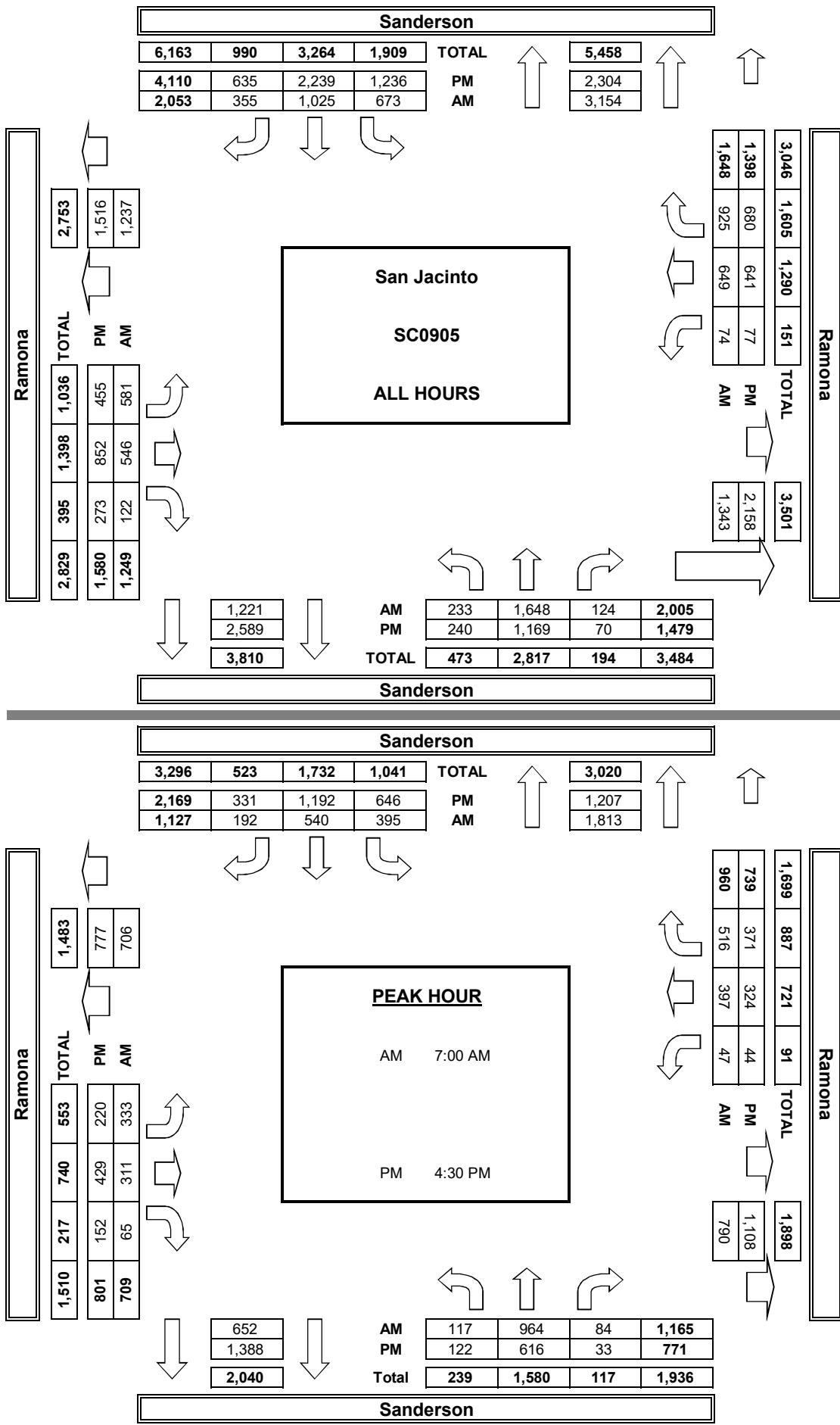


	Northbound			Southbound			Eastbound			Westbound				
	Sanderson			Sanderson			Ramona			Ramona				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	
AM	7:00 AM	34	272	15	99	127	49	107	56	12	7	97	115	990
	7:15 AM	27	274	22	104	125	57	71	80	10	8	119	133	1,030
	7:30 AM	25	226	24	110	142	40	76	88	22	10	111	137	1,011
	7:45 AM	31	192	23	82	146	46	79	87	21	22	70	131	930
	8:00 AM	41	169	10	70	129	41	69	65	8	13	69	102	786
	8:15 AM	30	204	8	70	105	46	63	67	15	8	71	112	799
	8:30 AM	21	160	14	78	131	50	56	60	12	3	63	96	744
	8:45 AM	24	151	8	60	120	26	60	43	22	3	49	99	665
	VOLUMES	233	1,648	124	673	1,025	355	581	546	122	74	649	925	6,955
	APPROACH %	12%	82%	6%	33%	50%	17%	47%	44%	10%	4%	39%	56%	
PM	APP/DEPART	2,005	/	3,154	2,053	/	1,221	1,249	/	1,343	1,648	/	1,237	0
	BEGIN PEAK HR	7:00 AM												
	VOLUMES	117	964	84	395	540	192	333	311	65	47	397	516	3,961
	APPROACH %	10%	83%	7%	35%	48%	17%	47%	44%	9%	5%	41%	54%	
	PEAK HR FACTOR	0.902			0.965			0.948			0.923			0.961
PM	APP/DEPART	1,165	/	1,813	1,127	/	652	709	/	790	960	/	706	0
	4:00 PM	24	190	10	114	251	82	66	96	31	9	55	88	1,016
	4:15 PM	32	136	12	167	236	81	53	103	29	16	90	81	1,036
	4:30 PM	22	171	9	151	308	80	51	90	39	9	71	80	1,081
	4:45 PM	30	145	3	153	293	66	62	120	32	21	67	88	1,080
PM	5:00 PM	35	137	12	169	282	89	64	118	47	8	94	100	1,155
	5:15 PM	35	163	9	173	309	96	43	101	34	6	92	103	1,164
	5:30 PM	32	111	6	172	285	70	62	115	30	5	94	72	1,054
	5:45 PM	30	116	9	137	275	71	54	109	31	3	78	68	981
	VOLUMES	240	1,169	70	1,236	2,239	635	455	852	273	77	641	680	8,567
PM	APPROACH %	16%	79%	5%	30%	54%	15%	29%	54%	17%	6%	46%	49%	
	APP/DEPART	1,479	/	2,304	4,110	/	2,589	1,580	/	2,158	1,398	/	1,516	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	122	616	33	646	1,192	331	220	429	152	44	324	371	4,480
	APPROACH %	16%	80%	4%	30%	55%	15%	27%	54%	19%	6%	44%	50%	
PM	PEAK HR FACTOR	0.931			0.938			0.874			0.915			0.962
	APP/DEPART	771	/	1,207	2,169	/	1,388	801	/	1,108	739	/	777	0



AM	7:00 AM
	7:15 AM
	7:30 AM
	7:45 AM
	8:00 AM
	8:15 AM
	8:30 AM
	8:45 AM
	TOTAL
PM	4:00 PM
	4:15 PM
	4:30 PM
	4:45 PM
	5:00 PM
	5:15 PM
	5:30 PM
	5:45 PM
	TOTAL

AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

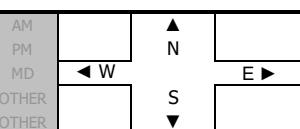
T218

DATE:	San Jacinto
NORTH & SOUTH:	Sanderson
EAST & WEST:	Cottonwood

LOCATION: San Jacinto
NORTH & SOUTH: Sanderson
EAST & WEST: Cottonwood

PROJECT #: SC1664
LOCATION #: 5
CONTROL: SIGNAL

NOTES:



Add U-Turns to Left Turns

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	5	206	13	8	100	17	27	48	3	18	57	21	523
7:15 AM	4	173	11	3	149	16	34	52	3	19	62	36	562
7:30 AM	14	189	13	7	144	18	32	48	5	13	59	26	568
7:45 AM	9	156	12	10	135	15	23	38	11	19	53	21	502
8:00 AM	26	189	18	5	114	26	30	47	13	15	99	22	604
8:15 AM	17	138	12	6	87	16	30	75	18	23	112	27	561
8:30 AM	30	106	22	10	138	16	27	74	30	12	109	23	597
8:45 AM	8	133	9	7	113	9	24	57	26	23	31	24	464
VOLUMES	113	1,290	110	56	980	133	227	439	109	142	582	200	4,381
APPROACH %	7%	85%	7%	5%	84%	11%	29%	57%	14%	15%	63%	22%	
APP/DEPART	1,513	/	1,716	1,169	/	1,231	775	/	605	924	/	829	0

BEGIN PEAK HR

VOLUMES

APPROACH %

PEAK HR FACTOR

APP/DEPART

7:45 AM

82

589

64

31

474

73

110

234

72

69

373

93

2,264

0.789

0.881

0.794

0.826

0.937

735

/

791

578

/

615

416

/

329

535

/

529

0

1:00 PM

5

135

18

17

209

19

20

40

13

22

23

21

542

4:15 PM

6

117

13

20

263

31

24

48

14

19

22

19

596

4:30 PM

10

124

26

28

235

31

24

57

11

23

41

18

628

4:45 PM

8

90

24

30

219

32

11

45

13

25

19

529

5:00 PM

7

118

23

23

262

24

20

55

14

30

32

628

5:15 PM

7

143

23

35

245

27

24

55

11

36

35

20

661

5:30 PM

8

102

19

31

247

31

18

55

10

19

16

593

5:45 PM

6

121

20

24

212

37

22

65

15

19

33

20

594

TOTAL

57

950

166

9%

81%

14%

208

1,892

232

24%

61%

15%

193

242

147

4,771

APPROACH %

5%

81%

14%

28

484

85

9%

113

966

119

23%

63%

14%

84%

10%

84%

0.969

0.892

0.794

0.871

0.936

APP/DEPART

597

/

642

1,198

/

1,120

364

/

428

317

/

286

0

1:45 PM

1,169

1,231

775

/

605

924

/

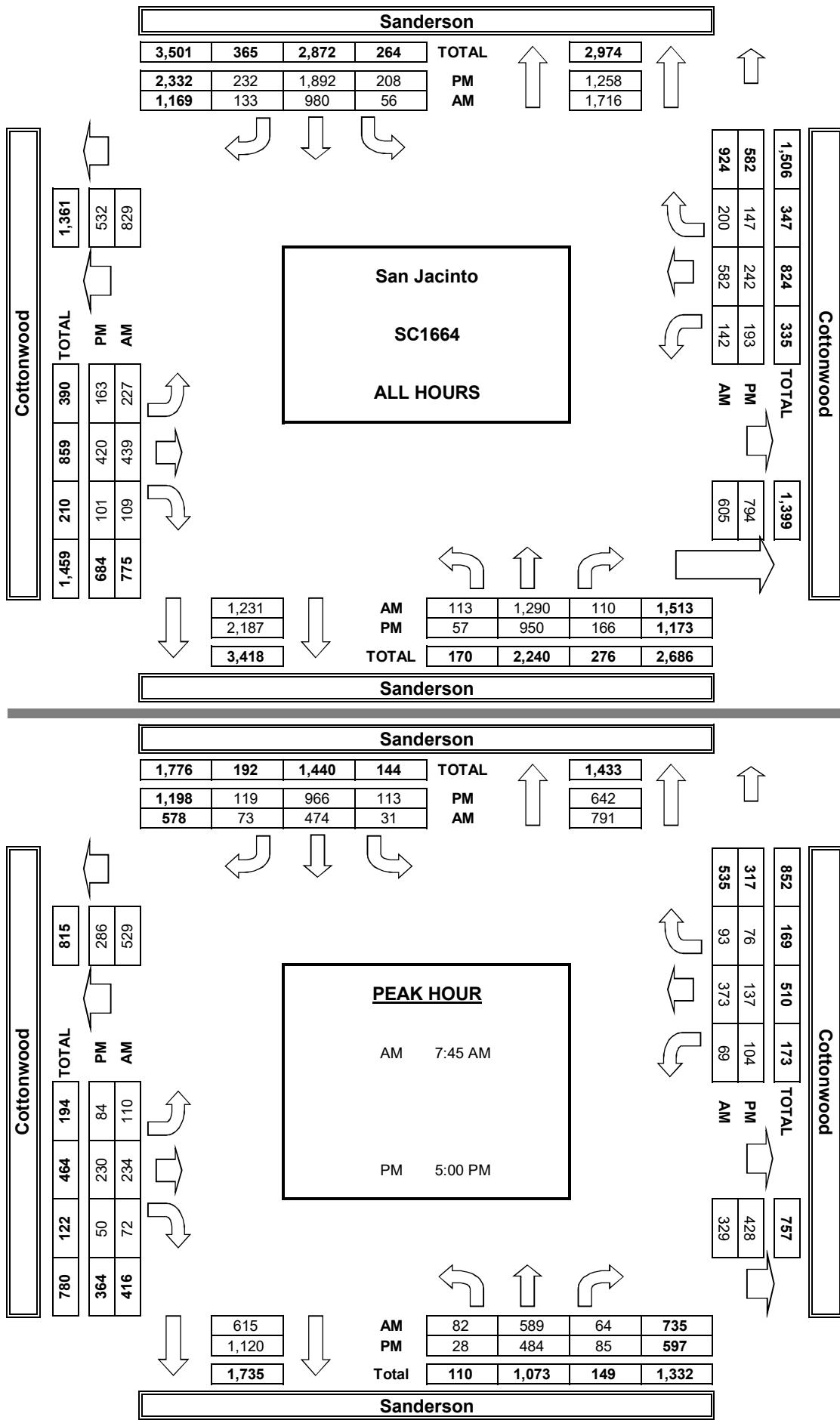
829

0

AM BEGIN PEAK HR

7:45 AM

AimTD LLC
TURNING MOVEMENT COUNTS



APPENDIX C
HCM ANALYSIS WORKSHEETS

EXISTING PROJECT BASELINE (2021) CONDITIONS

Intersection Level Of Service Report
Intersection 1: Sanderson Ave/Ramona Expy

Control Type:	Signalized	Delay (sec / veh):	104.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	395.00	100.00	100.00	395.00	100.00	250.00	400.00	100.00	180.00	370.00	100.00	140.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			65.00			65.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	138	1137	34	710	660	216	437	344	55	24	509	827
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	1137	34	710	660	216	437	344	55	24	509	827
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	295	9	184	171	56	113	89	14	6	132	215
Total Analysis Volume [veh/h]	143	1181	35	737	685	224	454	357	57	25	529	859
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	130											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	20	48	48	24	52	52	16	49	49	9	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	54	61	20	67	83	12	37	48	3	28	52
g / C, Green / Cycle	0.06	0.42	0.47	0.15	0.51	0.64	0.09	0.28	0.37	0.02	0.21	0.40
(v / s)_i Volume / Saturation Flow Rate	0.04	0.33	0.02	0.21	0.19	0.14	0.13	0.10	0.04	0.01	0.15	0.53
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	203	1505	759	541	1853	1026	325	1027	601	82	776	645
d1, Uniform Delay [s]	60.16	32.93	18.67	55.00	19.09	10.03	58.99	37.00	26.55	62.46	46.98	39.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.41	4.19	0.11	165.57	0.57	0.49	182.16	0.20	0.07	2.08	1.07	159.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.78	0.05	1.36	0.37	0.22	1.40	0.35	0.09	0.31	0.68	1.33
d, Delay for Lane Group [s/veh]	64.57	37.11	18.78	220.56	19.66	10.52	241.15	37.20	26.62	64.54	48.05	199.05
Lane Group LOS	E	D	B	F	B	B	F	D	C	E	D	F
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.45	16.82	0.61	20.93	5.88	2.51	13.30	4.27	1.09	0.41	7.52	47.15
50th-Percentile Queue Length [ft/ln]	61.15	420.60	15.14	523.21	147.09	62.85	332.55	106.65	27.17	10.28	187.98	1178.66
95th-Percentile Queue Length [veh/ln]	4.40	23.55	1.09	32.36	9.86	4.53	21.52	7.65	1.96	0.74	12.02	69.83
95th-Percentile Queue Length [ft/ln]	110.06	588.77	27.24	808.99	246.54	113.13	538.07	191.33	48.90	18.51	300.40	1745.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.57	37.11	18.78	220.56	19.66	10.52	241.15	37.20	26.62	64.54	48.05	199.05
Movement LOS	E	D	B	F	B	B	F	D	C	E	D	F
d_A, Approach Delay [s/veh]	39.53			108.37			143.18			140.14		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]				104.88								
Intersection LOS				F								
Intersection V/C				0.754								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.909	3.670	3.210	3.380
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	677	738	692	585
d_b, Bicycle Delay [s]	28.45	25.86	27.79	32.55
I_b,int, Bicycle LOS Score for Intersection	2.681	2.918	2.276	2.725
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.504

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	1088	27	103	664	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	1088	27	103	664	53
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	7	27	175	14
Total Analysis Volume [veh/h]	1144	28	108	698	56
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	34	48	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	5	44	8	8
g / C, Green / Cycle	0.59	0.59	0.08	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.32	0.02	0.06	0.19	0.03	0.11
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	2115	944	147	2650	243	217
d1, Uniform Delay [s]	7.59	5.28	26.99	2.66	23.26	25.35
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	0.06	6.83	0.24	0.48	7.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.03	0.73	0.26	0.23	0.82
d, Delay for Lane Group [s/veh]	8.59	5.34	33.82	2.91	23.74	33.03
Lane Group LOS	A	A	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.66	0.13	1.58	0.28	0.66	2.66
50th-Percentile Queue Length [ft/ln]	91.53	3.25	39.51	6.94	16.54	66.39
95th-Percentile Queue Length [veh/ln]	6.59	0.23	2.84	0.50	1.19	4.78
95th-Percentile Queue Length [ft/ln]	164.75	5.85	71.12	12.50	29.77	119.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.59	5.34	33.82	2.91	23.74	33.03
Movement LOS	A	A	C	A	C	C
d_A, Approach Delay [s/veh]	8.51		7.05		30.82	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			10.35			
Intersection LOS			B			
Intersection V/C			0.504			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1467	267
d_b, Bicycle Delay [s]	20.83	2.13	22.53
I_b,int, Bicycle LOS Score for Intersection	2.527	2.225	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: Sanderson Ave/Cottonwood Ave**

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.411

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	30	858	62	43	567	77	119	159	31	77	186	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	858	62	43	567	77	119	159	31	77	186	125
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	227	16	11	150	20	31	42	8	20	49	33
Total Analysis Volume [veh/h]	32	907	66	45	599	81	126	168	33	81	197	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	9	38	0	13	41	0	12	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	62	62	4	63	63	5	14	14	5	13	13
g / C, Green / Cycle	0.03	0.62	0.62	0.04	0.63	0.63	0.05	0.14	0.14	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.25	0.04	0.01	0.17	0.05	0.04	0.05	0.02	0.02	0.10	0.08
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	108	2238	999	129	2260	1009	194	503	224	161	246	209
d1, Uniform Delay [s]	47.48	9.72	7.59	47.05	8.44	7.42	46.34	38.93	37.90	46.67	42.34	41.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	0.55	0.13	1.59	0.29	0.16	3.60	0.39	0.30	2.43	5.98	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.41	0.07	0.35	0.26	0.08	0.65	0.33	0.15	0.50	0.80	0.63
d, Delay for Lane Group [s/veh]	49.00	10.26	7.72	48.65	8.73	7.57	49.94	39.32	38.19	49.09	48.32	44.46
Lane Group LOS	D	B	A	D	A	A	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.39	4.13	0.49	0.55	2.46	0.61	1.58	1.82	0.71	1.04	5.15	3.28
50th-Percentile Queue Length [ft/ln]	9.83	103.23	12.14	13.82	61.45	15.15	39.52	45.56	17.63	26.11	128.64	82.00
95th-Percentile Queue Length [veh/ln]	0.71	7.43	0.87	0.99	4.42	1.09	2.85	3.28	1.27	1.88	8.87	5.90
95th-Percentile Queue Length [ft/ln]	17.69	185.82	21.85	24.87	110.60	27.28	71.14	82.01	31.73	46.99	221.64	147.61

Movement, Approach, & Intersection Results

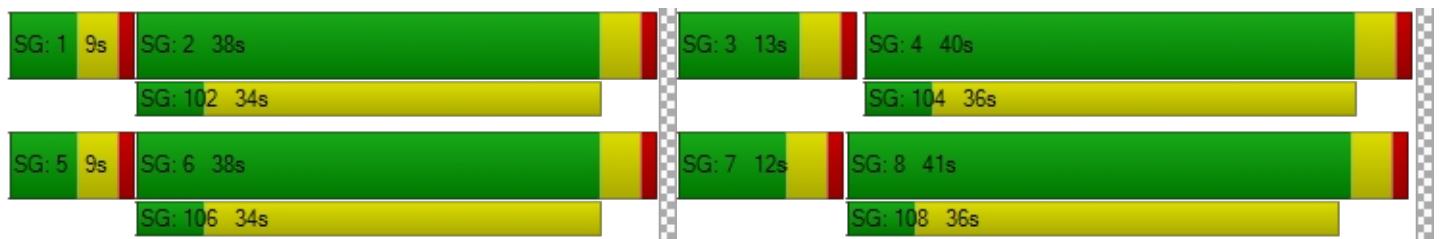
d_M, Delay for Movement [s/veh]	49.00	10.26	7.72	48.65	8.73	7.57	49.94	39.32	38.19	49.09	48.32	44.46
Movement LOS	D	B	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	11.33			11.08			43.30			47.23		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]				21.46								
Intersection LOS				C								
Intersection V/C				0.411								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.039	3.039	2.734	2.553
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	680	740	720
d_b, Bicycle Delay [s]	21.78	21.78	19.85	20.48
I_b,int, Bicycle LOS Score for Intersection	2.389	2.158	1.829	2.236
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Sanderson Ave/Ramona Expy

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	395.00	100.00	100.00	395.00	100.00	250.00	400.00	100.00	180.00	370.00	100.00	140.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			65.00			65.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	99	634	24	774	1284	560	364	619	151	45	400	640
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	634	24	774	1284	560	364	619	151	45	400	640
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	172	7	210	348	152	99	168	41	12	108	174
Total Analysis Volume [veh/h]	107	688	26	839	1393	607	395	671	164	49	434	694
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	9	48	48	25	64	64	15	48	48	9	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	30	38	21	46	61	11	29	38	4	22	47
g / C, Green / Cycle	0.05	0.30	0.38	0.21	0.46	0.61	0.11	0.29	0.38	0.04	0.22	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.02	0.24	0.39	0.38	0.11	0.19	0.10	0.01	0.12	0.43
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	179	1096	616	738	1672	990	389	1045	613	135	783	753
d1, Uniform Delay [s]	46.52	30.03	19.48	39.55	23.55	12.03	44.53	31.10	21.45	46.96	34.93	24.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.18	2.72	0.13	65.59	5.03	2.84	25.41	0.67	0.23	1.64	0.62	18.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.63	0.04	1.14	0.83	0.61	1.02	0.64	0.27	0.36	0.55	0.92
d, Delay for Lane Group [s/veh]	49.70	32.75	19.60	105.14	28.58	14.87	69.94	31.76	21.68	48.60	35.54	43.38
Lane Group LOS	D	C	B	F	C	B	F	C	C	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.38	7.41	0.40	15.11	13.52	7.33	5.80	6.39	2.37	0.58	4.33	16.45
50th-Percentile Queue Length [ft/ln]	34.41	185.37	10.01	377.63	338.08	183.15	144.91	159.85	59.28	14.60	108.35	411.24
95th-Percentile Queue Length [veh/ln]	2.48	11.88	0.72	22.94	19.55	11.77	9.81	10.54	4.27	1.05	7.75	23.10
95th-Percentile Queue Length [ft/ln]	61.94	297.01	18.02	573.42	488.86	294.13	245.15	263.52	106.71	26.28	193.70	577.52

Movement, Approach, & Intersection Results

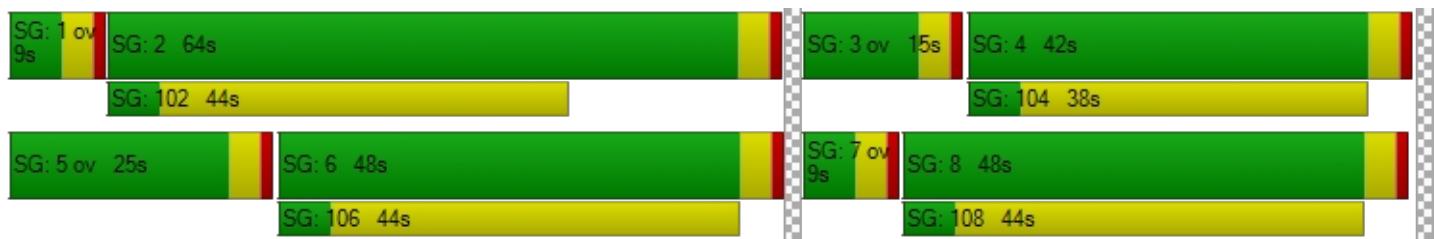
d_M, Delay for Movement [s/veh]	49.70	32.75	19.60	105.14	28.58	14.87	69.94	31.76	21.68	48.60	35.54	43.38
Movement LOS	D	C	B	F	C	B	F	C	C	D	D	D
d_A, Approach Delay [s/veh]	34.54				48.27			42.68			40.71	
Approach LOS	C				D			D			D	
d_I, Intersection Delay [s/veh]					43.81							
Intersection LOS						D						
Intersection V/C					0.814							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	2.939	3.779	3.360	3.419
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	880	1200	880	760
d_b, Bicycle Delay [s]	15.68	8.00	15.68	19.22
I_b,int, Bicycle LOS Score for Intersection	2.237	3.902	2.574	2.531
Bicycle LOS	B	D	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	656	56	261	1232	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	656	56	261	1232	35
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	166	14	66	312	9
Total Analysis Volume [veh/h]	665	57	265	1249	35
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	15	29	31	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	10	46	6	6
g / C, Green / Cycle	0.52	0.52	0.17	0.77	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.15	0.35	0.02	0.07
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1891	844	317	2766	185	165
d1, Uniform Delay [s]	8.39	7.10	23.96	2.54	24.72	26.13
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.15	5.75	0.53	0.49	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.07	0.83	0.45	0.19	0.71
d, Delay for Lane Group [s/veh]	8.91	7.25	29.72	3.08	25.21	31.61
Lane Group LOS	A	A	C	A	C	C
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.19	0.33	3.54	0.21	0.43	1.69
50th-Percentile Queue Length [ft/ln]	54.85	8.37	88.40	5.13	10.83	42.34
95th-Percentile Queue Length [veh/ln]	3.95	0.60	6.36	0.37	0.78	3.05
95th-Percentile Queue Length [ft/ln]	98.74	15.07	159.11	9.24	19.49	76.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.91	7.25	29.72	3.08	25.21	31.61
Movement LOS	A	A	C	A	C	C
d_A, Approach Delay [s/veh]	8.78		7.74		30.14	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			9.48			
Intersection LOS			A			
Intersection V/C			0.432			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	833	900
d_b, Bicycle Delay [s]	20.83	10.21	9.08
I_b,int, Bicycle LOS Score for Intersection	2.155	2.809	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: Sanderson Ave/Cottonwood Ave**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	34	547	106	102	1007	112	86	197	54	85	138	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	547	106	102	1007	112	86	197	54	85	138	83
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	146	28	27	268	30	23	52	14	23	37	22
Total Analysis Volume [veh/h]	36	583	113	109	1072	119	92	210	58	91	147	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	13	42	0	9	40	0	9	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	64	64	5	66	66	5	10	10	5	10	10
g / C, Green / Cycle	0.03	0.64	0.64	0.05	0.66	0.66	0.05	0.10	0.10	0.05	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.07	0.03	0.30	0.07	0.03	0.06	0.04	0.03	0.08	0.05
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	115	2322	1037	175	2383	1064	166	368	164	165	193	164
d1, Uniform Delay [s]	47.33	7.66	6.91	46.66	8.28	6.29	46.68	42.90	41.92	46.68	43.81	42.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.53	0.26	0.21	3.60	0.62	0.21	2.89	1.40	1.29	2.84	6.12	2.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.25	0.11	0.62	0.45	0.11	0.56	0.57	0.35	0.55	0.76	0.54
d, Delay for Lane Group [s/veh]	48.85	7.92	7.12	50.26	8.90	6.51	49.58	44.30	43.21	49.52	49.93	45.47
Lane Group LOS	D	A	A	D	A	A	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	2.13	0.78	1.36	4.51	0.79	1.15	2.46	1.35	1.18	3.89	2.20
50th-Percentile Queue Length [ft/ln]	11.01	53.33	19.44	34.02	112.73	19.73	28.75	61.48	33.69	29.48	97.14	55.05
95th-Percentile Queue Length [veh/ln]	0.79	3.84	1.40	2.45	7.99	1.42	2.07	4.43	2.43	2.12	6.99	3.96
95th-Percentile Queue Length [ft/ln]	19.82	96.00	35.00	61.23	199.79	35.51	51.75	110.67	60.64	53.06	174.85	99.09

Movement, Approach, & Intersection Results

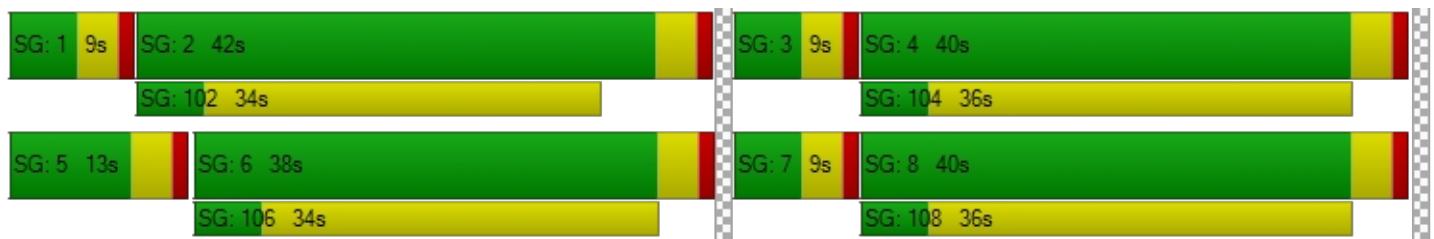
d_M, Delay for Movement [s/veh]	48.85	7.92	7.12	50.26	8.90	6.51	49.58	44.30	43.21	49.52	49.93	45.47
Movement LOS	D	A	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.81				12.15			45.47				48.61
Approach LOS		A			B			D				D
d_I, Intersection Delay [s/veh]					20.31							
Intersection LOS						C						
Intersection V/C					0.418							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.099	3.079	2.739	2.562
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	760	720	720
d_b, Bicycle Delay [s]	21.78	19.22	20.48	20.48
I_b,int, Bicycle LOS Score for Intersection	2.164	2.632	1.857	2.098
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



OY CONDITIONS

Intersection Level Of Service Report
Intersection 1: Sanderson Ave/Ramona Expy

Control Type:	Signalized	Delay (sec / veh):	103.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	395.00	100.00	100.00	395.00	100.00	250.00	400.00	100.00	180.00	370.00	100.00	140.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			65.00			65.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	138	1137	34	710	660	216	437	344	55	24	509	827
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	17	17	0	17	0	0	0	17	17	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	161	1200	52	739	704	225	455	358	74	42	530	860
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	312	13	192	183	58	118	93	19	11	138	223
Total Analysis Volume [veh/h]	167	1246	54	767	731	234	472	372	77	44	550	893
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	125											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	23	48	48	24	49	49	16	49	49	9	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	49	57	20	61	77	12	36	48	4	28	52
g / C, Green / Cycle	0.07	0.39	0.45	0.16	0.49	0.61	0.10	0.29	0.39	0.03	0.22	0.42
(v / s)_i Volume / Saturation Flow Rate	0.05	0.34	0.03	0.22	0.20	0.14	0.13	0.10	0.05	0.01	0.15	0.55
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	234	1414	734	563	1753	990	338	1047	626	112	813	673
d1, Uniform Delay [s]	57.19	35.38	19.24	52.50	20.82	10.96	56.49	35.19	24.60	59.35	44.30	36.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.04	8.19	0.19	165.93	0.73	0.56	181.85	0.20	0.09	2.25	0.99	157.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.88	0.07	1.36	0.42	0.24	1.40	0.36	0.12	0.39	0.68	1.33
d, Delay for Lane Group [s/veh]	61.24	43.57	19.43	218.43	21.55	11.52	238.34	35.40	24.69	61.60	45.30	193.46
Lane Group LOS	E	D	B	F	C	B	F	D	C	E	D	F
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.72	18.95	0.94	21.39	6.53	2.73	13.58	4.22	1.37	0.68	7.39	47.59
50th-Percentile Queue Length [ft/ln]	68.02	473.86	23.40	534.80	163.20	68.26	339.50	105.48	34.32	17.11	184.83	1189.68
95th-Percentile Queue Length [veh/ln]	4.90	26.09	1.69	33.05	10.72	4.91	21.94	7.59	2.47	1.23	11.85	70.44
95th-Percentile Queue Length [ft/ln]	122.43	652.36	42.13	826.32	267.96	122.87	548.46	189.70	61.78	30.80	296.31	1761.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.24	43.57	19.43	218.43	21.55	11.52	238.34	35.40	24.69	61.60	45.30	193.46
Movement LOS	E	D	B	F	C	B	F	D	C	E	D	F
d_A, Approach Delay [s/veh]	44.69				107.38			138.51			134.76	
Approach LOS		D			F			F			F	
d_I, Intersection Delay [s/veh]					103.35							
Intersection LOS						F						
Intersection V/C					0.788							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.82	53.82	53.82	53.82
I_p,int, Pedestrian LOS Score for Intersection	2.934	3.720	3.237	3.420
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	704	720	720	608
d_b, Bicycle Delay [s]	26.24	25.60	25.60	30.28
I_b,int, Bicycle LOS Score for Intersection	2.770	2.989	2.319	2.786
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	1088	27	103	664	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	51	32	0	51	33
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	1183	60	107	742	88
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	311	16	28	195	23
Total Analysis Volume [veh/h]	1244	63	113	780	93
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	34	48	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	5	44	8	8
g / C, Green / Cycle	0.58	0.58	0.08	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.34	0.04	0.06	0.22	0.05	0.12
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	2102	938	154	2650	243	217
d1, Uniform Delay [s]	8.05	5.50	26.85	2.74	23.76	25.47
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.23	0.14	6.59	0.28	0.99	9.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.07	0.73	0.29	0.38	0.86
d, Delay for Lane Group [s/veh]	9.28	5.63	33.44	3.02	24.75	34.84
Lane Group LOS	A	A	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.23	0.30	1.64	0.32	1.13	2.85
50th-Percentile Queue Length [ft/ln]	105.86	7.60	40.99	8.02	28.36	71.35
95th-Percentile Queue Length [veh/ln]	7.61	0.55	2.95	0.58	2.04	5.14
95th-Percentile Queue Length [ft/ln]	190.23	13.68	73.78	14.43	51.04	128.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.28	5.63	33.44	3.02	24.75	34.84
Movement LOS	A	A	C	A	C	C
d_A, Approach Delay [s/veh]	9.11		6.87		31.48	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			10.82			
Intersection LOS			B			
Intersection V/C			0.539			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1467	267
d_b, Bicycle Delay [s]	20.83	2.13	22.53
I_b,int, Bicycle LOS Score for Intersection	2.638	2.296	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sanderson Ave/Cottonwood Ave

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	30	858	62	43	567	77	119	159	31	77	186	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	100	4	1	0	0	84	79	78	94	0	83	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	897	66	45	590	164	203	243	126	80	277	130
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	237	17	12	156	43	54	64	33	21	73	34
Total Analysis Volume [veh/h]	138	948	70	48	624	173	215	257	133	85	293	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	9	38	0	13	41	0	12	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	54	54	4	53	53	8	22	22	5	18	18
g / C, Green / Cycle	0.05	0.54	0.54	0.04	0.53	0.53	0.08	0.21	0.21	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.04	0.01	0.17	0.11	0.06	0.07	0.08	0.02	0.15	0.08
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	179	1956	873	133	1909	852	286	779	348	163	343	291
d1, Uniform Delay [s]	46.95	14.32	11.04	46.98	13.50	12.51	45.02	33.19	33.60	46.67	39.77	36.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.88	0.86	0.18	1.63	0.46	0.54	4.00	0.25	0.69	2.58	6.13	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.48	0.08	0.36	0.33	0.20	0.75	0.33	0.38	0.52	0.86	0.47
d, Delay for Lane Group [s/veh]	53.82	15.18	11.22	48.61	13.95	13.05	49.02	33.44	34.29	49.25	45.90	37.94
Lane Group LOS	D	B	B	D	B	B	D	C	C	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.78	5.83	0.68	0.59	3.63	1.93	2.68	2.55	2.71	1.10	7.56	3.11
50th-Percentile Queue Length [ft/ln]	44.45	145.75	17.02	14.72	90.71	48.24	66.91	63.80	67.82	27.44	188.98	77.75
95th-Percentile Queue Length [veh/ln]	3.20	9.79	1.23	1.06	6.53	3.47	4.82	4.59	4.88	1.98	12.07	5.60
95th-Percentile Queue Length [ft/ln]	80.00	244.74	30.64	26.50	163.28	86.83	120.43	114.84	122.08	49.40	301.71	139.95

Movement, Approach, & Intersection Results

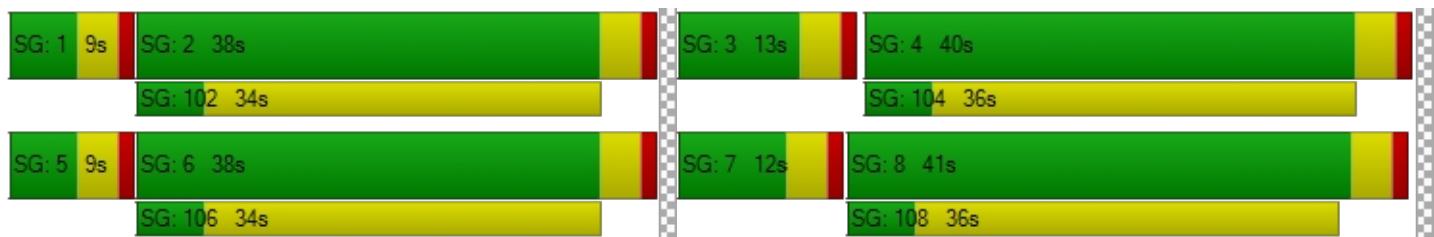
d_M, Delay for Movement [s/veh]	53.82	15.18	11.22	48.61	13.95	13.05	49.02	33.44	34.29	49.25	45.90	37.94
Movement LOS	D	B	B	D	B	B	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	19.55			15.74			39.16			44.34		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]				26.41								
Intersection LOS					C							
Intersection V/C				0.501								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.111	3.098	2.853	2.580
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	680	740	720
d_b, Bicycle Delay [s]	21.78	21.78	19.85	20.48
I_b,int, Bicycle LOS Score for Intersection	2.513	2.257	2.059	2.409
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Sanderson Ave/Ramona Expy

Control Type:	Signalized	Delay (sec / veh):	49.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	395.00	100.00	100.00	395.00	100.00	250.00	400.00	100.00	180.00	370.00	100.00	140.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			65.00			65.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	99	634	24	774	1284	560	364	619	151	45	400	640
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	19	19	19	0	20	0	0	0	20	20	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	679	44	805	1356	583	379	644	177	67	416	666
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	184	12	218	368	158	103	175	48	18	113	181
Total Analysis Volume [veh/h]	132	736	48	873	1471	632	411	698	192	73	451	722
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	9	48	48	25	64	64	15	48	48	9	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	29	38	21	45	60	11	29	38	4	23	48
g / C, Green / Cycle	0.05	0.29	0.38	0.21	0.45	0.60	0.11	0.29	0.38	0.04	0.23	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.20	0.03	0.25	0.41	0.39	0.12	0.19	0.12	0.02	0.12	0.45
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	179	1057	608	738	1633	972	389	1062	621	156	823	771
d1, Uniform Delay [s]	46.86	31.50	20.06	39.55	25.41	13.04	44.53	30.96	21.54	46.68	34.14	24.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.83	3.80	0.25	85.48	8.44	3.37	38.35	0.70	0.28	2.16	0.57	20.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.70	0.08	1.18	0.90	0.65	1.06	0.66	0.31	0.47	0.55	0.94
d, Delay for Lane Group [s/veh]	52.70	35.30	20.31	125.04	33.85	16.41	82.88	31.66	21.82	48.84	34.71	44.88
Lane Group LOS	D	D	C	F	C	B	F	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	8.31	0.76	17.15	15.81	8.22	6.49	6.66	2.80	0.87	4.44	17.44
50th-Percentile Queue Length [ft/ln]	43.93	207.81	18.94	428.63	395.29	205.38	162.36	166.43	70.08	21.76	111.12	436.00
95th-Percentile Queue Length [veh/ln]	3.16	13.04	1.36	26.05	22.33	12.92	10.90	10.89	5.05	1.57	7.90	24.29
95th-Percentile Queue Length [ft/ln]	79.07	326.02	34.10	651.35	558.32	322.89	272.61	272.21	126.14	39.18	197.56	607.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.70	35.30	20.31	125.04	33.85	16.41	82.88	31.66	21.82	48.84	34.71	44.88
Movement LOS	D	D	C	F	C	B	F	C	C	D	C	D
d_A, Approach Delay [s/veh]	37.02				56.90			46.39			41.43	
Approach LOS		D			E			D			D	
d_I, Intersection Delay [s/veh]					48.95							
Intersection LOS							D					
Intersection V/C					0.853							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	2.970	3.838	3.396	3.465
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	880	1200	880	760
d_b, Bicycle Delay [s]	15.68	8.00	15.68	19.22
I_b,int, Bicycle LOS Score for Intersection	2.315	4.015	2.633	2.588
Bicycle LOS	B	D	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	656	56	261	1232	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	57	36	0	60	38
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	740	94	272	1342	74
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	24	69	340	19
Total Analysis Volume [veh/h]	751	95	276	1361	75
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	15	29	31	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	11	45	7	7
g / C, Green / Cycle	0.51	0.51	0.18	0.76	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.21	0.06	0.15	0.38	0.04	0.08
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1840	821	328	2736	201	179
d1, Uniform Delay [s]	9.17	7.72	23.80	2.87	24.81	25.73
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	0.29	5.86	0.65	1.15	4.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.12	0.84	0.50	0.37	0.68
d, Delay for Lane Group [s/veh]	9.84	8.00	29.66	3.52	25.96	30.23
Lane Group LOS	A	A	C	A	C	C
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	0.60	3.68	0.29	0.95	1.71
50th-Percentile Queue Length [ft/ln]	67.01	14.99	91.98	7.17	23.69	42.85
95th-Percentile Queue Length [veh/ln]	4.82	1.08	6.62	0.52	1.71	3.09
95th-Percentile Queue Length [ft/ln]	120.61	26.98	165.56	12.90	42.64	77.13

Movement, Approach, & Intersection Results

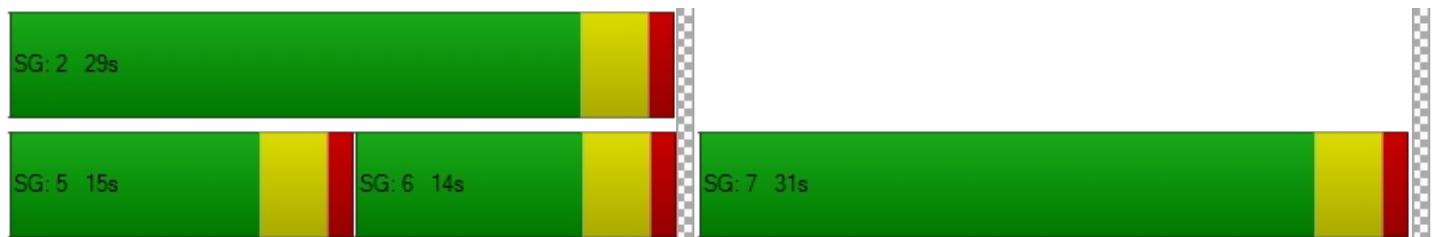
d_M, Delay for Movement [s/veh]	9.84	8.00	29.66	3.52	25.96	30.23
Movement LOS	A	A	C	A	C	C
d_A, Approach Delay [s/veh]	9.63		7.92		28.61	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			9.98			
Intersection LOS			A			
Intersection V/C			0.467			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	833	900
d_b, Bicycle Delay [s]	20.83	10.21	9.08
I_b,int, Bicycle LOS Score for Intersection	2.258	2.910	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sanderson Ave/Cottonwood Ave

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	34	547	106	102	1007	112	86	197	54	85	138	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	112	4	1	0	4	94	89	88	105	1	93	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	573	111	106	1052	211	178	293	161	89	237	86
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	153	30	28	280	56	47	78	43	24	63	23
Total Analysis Volume [veh/h]	157	610	118	113	1120	225	190	312	171	95	252	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	41	0	10	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	56	56	5	55	55	7	18	18	5	16	16
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.55	0.55	0.07	0.18	0.18	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.07	0.03	0.31	0.14	0.05	0.09	0.11	0.03	0.13	0.06
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	226	2030	906	178	1982	885	249	654	292	167	299	254
d1, Uniform Delay [s]	45.90	11.60	10.40	46.61	14.83	11.90	45.70	36.77	37.58	46.69	40.98	37.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	0.38	0.30	3.69	1.17	0.69	4.83	0.54	1.86	3.04	6.37	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.30	0.13	0.63	0.57	0.25	0.76	0.48	0.59	0.57	0.84	0.36
d, Delay for Lane Group [s/veh]	49.73	11.98	10.70	50.30	16.01	12.59	50.53	37.31	39.44	49.74	47.35	38.55
Lane Group LOS	D	B	B	D	B	B	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.93	3.09	1.11	1.41	7.42	2.46	2.40	3.33	3.83	1.23	6.56	2.09
50th-Percentile Queue Length [ft/ln]	48.21	77.37	27.79	35.28	185.44	61.42	60.10	83.24	95.64	30.85	164.11	52.19
95th-Percentile Queue Length [veh/ln]	3.47	5.57	2.00	2.54	11.88	4.42	4.33	5.99	6.89	2.22	10.77	3.76
95th-Percentile Queue Length [ft/ln]	86.77	139.27	50.02	63.50	297.10	110.55	108.18	149.82	172.16	55.53	269.16	93.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.73	11.98	10.70	50.30	16.01	12.59	50.53	37.31	39.44	49.74	47.35	38.55
Movement LOS	D	B	B	D	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	18.50			18.14			41.59			46.02		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]				26.34								
Intersection LOS				C								
Intersection V/C				0.552								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.180	3.146	2.874	2.592
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	680	740	720
d_b, Bicycle Delay [s]	21.78	21.78	19.85	20.48
I_b,int, Bicycle LOS Score for Intersection	2.290	2.762	2.115	2.284
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



OYP CONDITIONS

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	138	1137	34	710	660	216	437	344	55	24	509	827
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	40	39	0	25	0	0	0	23	25	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	1223	74	739	712	225	455	358	80	50	530	860
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	317	19	192	185	58	118	93	21	13	138	223
Total Analysis Volume [veh/h]	186	1270	77	767	739	234	472	372	83	52	550	893
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lag	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	17	48	48	22	53	53	15	51	51	9	45	45
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	40	75	18	49	73	19	15	28	31	27	49
g / C, Green / Cycle	0.07	0.33	0.63	0.15	0.41	0.61	0.16	0.12	0.23	0.26	0.22	0.41
(v / s)_i Volume / Saturation Flow Rate	0.05	0.35	0.05	0.22	0.20	0.14	0.13	0.10	0.05	0.01	0.15	0.55
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	251	1204	1009	528	1489	978	565	452	371	909	806	656
d1, Uniform Delay [s]	54.65	40.04	8.87	51.00	26.10	10.91	48.83	51.22	37.54	33.48	42.75	35.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.29	41.58	0.15	206.45	1.18	0.58	3.34	3.82	0.30	0.03	1.03	172.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	1.05	0.08	1.45	0.50	0.24	0.84	0.82	0.22	0.06	0.68	1.36
d, Delay for Lane Group [s/veh]	58.93	81.61	9.01	257.45	27.29	11.48	52.17	55.04	37.85	33.50	43.78	207.78
Lane Group LOS	E	F	A	F	C	B	D	E	D	C	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.91	24.41	0.82	22.68	7.48	2.65	6.67	5.36	1.89	0.54	7.07	48.33
50th-Percentile Queue Length [ft/ln]	72.67	610.25	20.47	566.94	186.89	66.16	166.70	134.00	47.18	13.44	176.79	1208.23
95th-Percentile Queue Length [veh/ln]	5.23	33.70	1.47	35.37	11.96	4.76	10.90	9.16	3.40	0.97	11.43	72.19
95th-Percentile Queue Length [ft/ln]	130.80	842.44	36.84	884.35	298.99	119.09	272.58	228.92	84.92	24.20	285.82	1804.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.93	81.61	9.01	257.45	27.29	11.48	52.17	55.04	37.85	33.50	43.78	207.78
Movement LOS	E	F	A	F	C	B	D	E	D	C	D	F
d_A, Approach Delay [s/veh]	75.21				126.62			52.04			141.38	
Approach LOS	E				F			D			F	
d_I, Intersection Delay [s/veh]					104.52							
Intersection LOS					F							
Intersection V/C					1.091							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
I_p,int, Pedestrian LOS Score for Intersection	2.944	3.726	3.242	3.427
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	817	783	683
d_b, Bicycle Delay [s]	24.07	21.00	22.20	26.00
I_b,int, Bicycle LOS Score for Intersection	2.824	2.995	2.324	2.793
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	1088	27	103	664	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	114	44	0	73	37
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	1246	72	107	764	92
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	328	19	28	201	24
Total Analysis Volume [veh/h]	1310	76	113	803	97
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	33	47	13	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	5	43	9	9
g / C, Green / Cycle	0.57	0.57	0.08	0.72	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.36	0.05	0.06	0.22	0.05	0.12
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	2061	920	154	2610	264	235
d1, Uniform Delay [s]	8.73	5.84	26.86	3.00	23.20	24.81
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	0.18	6.60	0.31	0.86	5.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.08	0.73	0.31	0.37	0.79
d, Delay for Lane Group [s/veh]	10.24	6.02	33.46	3.31	24.06	30.69
Lane Group LOS	B	A	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.82	0.39	1.64	0.43	1.16	2.63
50th-Percentile Queue Length [ft/ln]	120.40	9.64	41.00	10.76	29.00	65.87
95th-Percentile Queue Length [veh/ln]	8.41	0.69	2.95	0.77	2.09	4.74
95th-Percentile Queue Length [ft/ln]	210.37	17.35	73.81	19.36	52.21	118.57

Movement, Approach, & Intersection Results

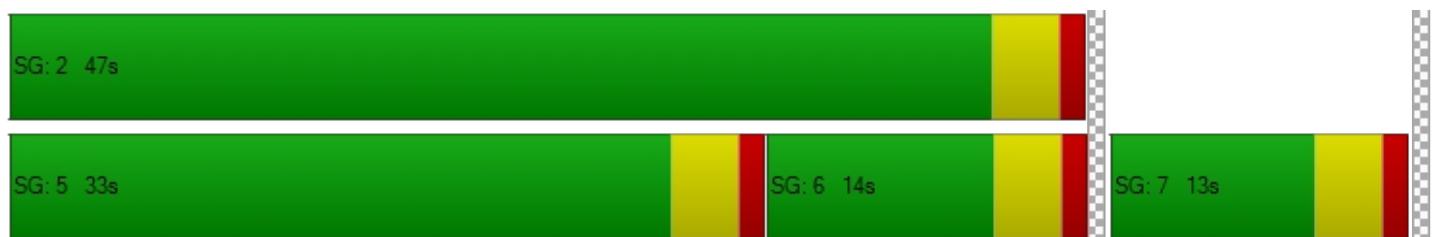
d_M, Delay for Movement [s/veh]	10.24	6.02	33.46	3.31	24.06	30.69
Movement LOS	B	A	C	A	C	C
d_A, Approach Delay [s/veh]	10.01		7.03		28.42	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]			10.97			
Intersection LOS			B			
Intersection V/C			0.558			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1433	300
d_b, Bicycle Delay [s]	20.83	2.41	21.68
I_b,int, Bicycle LOS Score for Intersection	2.703	2.315	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sanderson Ave/Cottonwood Ave

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	30	858	62	43	567	77	119	159	31	77	186	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	100	10	1	18	18	90	81	78	94	0	83	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	903	66	63	608	170	205	243	126	80	277	136
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	239	17	17	161	45	54	64	33	21	73	36
Total Analysis Volume [veh/h]	138	955	70	67	643	180	217	257	133	85	293	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	9	38	0	12	42	0	10	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	54	54	4	52	52	8	21	21	5	18	18
g / C, Green / Cycle	0.06	0.54	0.54	0.04	0.52	0.52	0.08	0.21	0.21	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.04	0.02	0.18	0.11	0.06	0.07	0.08	0.02	0.15	0.09
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	205	1938	865	152	1884	841	284	777	347	163	343	291
d1, Uniform Delay [s]	46.21	14.66	11.28	46.72	13.99	12.94	45.10	33.23	33.64	46.67	39.77	36.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.81	0.90	0.18	1.99	0.49	0.58	4.28	0.25	0.69	2.58	6.11	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.49	0.08	0.44	0.34	0.21	0.76	0.33	0.38	0.52	0.85	0.49
d, Delay for Lane Group [s/veh]	50.03	15.56	11.46	48.71	14.48	13.53	49.38	33.47	34.33	49.25	45.87	38.22
Lane Group LOS	D	B	B	D	B	B	D	C	C	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	5.98	0.69	0.82	3.84	2.06	2.71	2.55	2.71	1.10	7.56	3.29
50th-Percentile Queue Length [ft/ln]	42.52	149.60	17.29	20.53	96.07	51.50	67.82	63.84	67.86	27.44	188.92	82.21
95th-Percentile Queue Length [veh/ln]	3.06	10.00	1.24	1.48	6.92	3.71	4.88	4.60	4.89	1.98	12.06	5.92
95th-Percentile Queue Length [ft/ln]	76.53	249.90	31.12	36.96	172.93	92.70	122.07	114.91	122.16	49.40	301.62	147.97

Movement, Approach, & Intersection Results

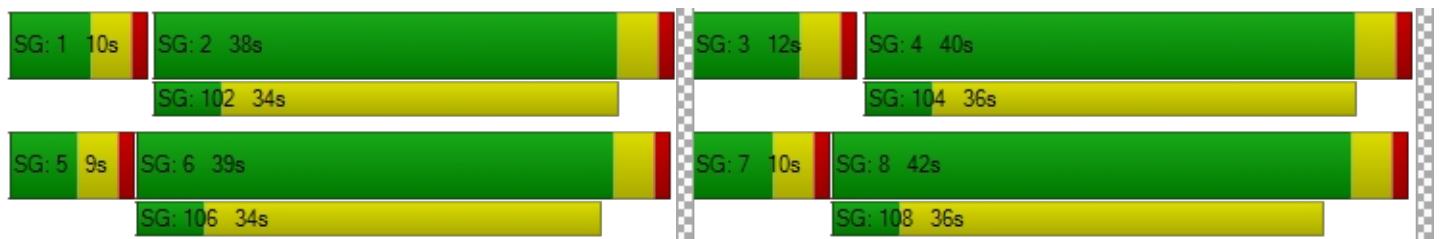
d_M, Delay for Movement [s/veh]	50.03	15.56	11.46	48.71	14.48	13.53	49.38	33.47	34.33	49.25	45.87	38.22
Movement LOS	D	B	B	D	B	B	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	19.40			16.86			39.35			44.31		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]				26.58								
Intersection LOS					C							
Intersection V/C				0.509								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.117	3.113	2.855	2.584
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	680	760	720
d_b, Bicycle Delay [s]	21.13	21.78	19.22	20.48
I_b,int, Bicycle LOS Score for Intersection	2.519	2.294	2.060	2.421
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Sanderson Ave/South Project Dwy

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		South Project Driveway	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Sanderson Avenue		Sanderson Avenue		South Project Driveway	
Base Volume Input [veh/h]	0	1115	717	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	97	84	13	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1212	801	13	0	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	303	200	3	0	11
Total Analysis Volume [veh/h]	0	1212	801	13	0	42
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.39
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.58
d_A, Approach Delay [s/veh]	0.00			0.00		11.39
Approach LOS		A		A		B
d_I, Intersection Delay [s/veh]				0.23		
Intersection LOS				B		

Intersection Level Of Service Report
Intersection 5: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	3.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	0	1115	717	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	14	83	97	13	75
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	14	1198	814	13	75
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	300	204	3	19
Total Analysis Volume [veh/h]	14	1198	814	13	75
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	10	10	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	49	49	0	11	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	7	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48	48	4
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.33	0.22	0.22	0.04
s, saturation flow rate [veh/h]	673	3618	1900	1890	1810
c, Capacity [veh/h]	598	2914	1530	1522	111
d1, Uniform Delay [s]	2.57	1.70	1.45	1.45	27.59
k, delay calibration	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.43	0.43	0.44	7.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.41	0.27	0.27	0.68
d, Delay for Lane Group [s/veh]	2.64	2.13	1.89	1.89	34.60
Lane Group LOS	A	A	A	A	C
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	0.17	0.18	0.19	1.22
50th-Percentile Queue Length [ft/ln]	0.86	4.36	4.62	4.66	30.39
95th-Percentile Queue Length [veh/ln]	0.06	0.31	0.33	0.34	2.19
95th-Percentile Queue Length [ft/ln]	1.56	7.84	8.32	8.38	54.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.64	2.13	1.89	1.89	34.60	34.60
Movement LOS	A	A	A	A	C	C
d_A, Approach Delay [s/veh]	2.13		1.89		34.60	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			3.19			
Intersection LOS			A			
Intersection V/C			0.385			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	21.68
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.765
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1500	1500	233
d_b, Bicycle Delay [s]	1.88	1.88	23.41
I_b,int, Bicycle LOS Score for Intersection	2.560	2.242	1.683
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Sanderson Ave/Ramona Expy

Control Type:	Signalized	Delay (sec / veh):	49.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	395.00	100.00	100.00	395.00	100.00	250.00	400.00	100.00	180.00	370.00	100.00	140.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			65.00			65.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Ramona Expressway			Ramona Expressway		
Base Volume Input [veh/h]	99	634	24	774	1284	560	364	619	151	45	400	640
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	34	33	0	46	0	0	0	40	46	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	694	58	805	1382	583	379	644	197	93	416	666
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	188	16	218	375	158	103	175	53	25	113	181
Total Analysis Volume [veh/h]	145	753	63	873	1499	632	411	698	214	101	451	722
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Overlap									
Signal Group	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups			6,7			2,3			1,8			4,5
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	48	48	25	63	63	15	48	48	9	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	39	39	0	39	39	0	39	39	0	33	33
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No	No									
Maximum Recall	No	No	No									
Pedestrian Recall	No	No	No									
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	29	38	21	44	59	11	29	39	5	23	48
g / C, Green / Cycle	0.06	0.29	0.38	0.21	0.44	0.59	0.11	0.29	0.39	0.05	0.23	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.21	0.04	0.25	0.41	0.39	0.12	0.19	0.13	0.03	0.12	0.45
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	214	1057	614	738	1597	956	389	1049	631	169	823	771
d1, Uniform Delay [s]	46.06	31.68	20.02	39.55	26.68	13.70	44.53	31.27	21.42	46.72	34.14	24.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.73	4.09	0.34	85.48	12.05	3.59	38.35	0.73	0.32	3.38	0.57	20.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.71	0.10	1.18	0.94	0.66	1.06	0.67	0.34	0.60	0.55	0.94
d, Delay for Lane Group [s/veh]	49.80	35.78	20.36	125.04	38.73	17.29	82.88	32.00	21.73	50.10	34.71	44.88
Lane Group LOS	D	D	C	F	D	B	F	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.87	8.58	1.00	17.15	17.38	8.55	6.49	6.70	3.13	1.22	4.44	17.44
50th-Percentile Queue Length [ft/ln]	46.70	214.53	24.95	428.63	434.39	213.65	162.36	167.58	78.25	30.58	111.12	436.00
95th-Percentile Queue Length [veh/ln]	3.36	13.39	1.80	26.05	24.21	13.34	10.90	10.95	5.63	2.20	7.90	24.29
95th-Percentile Queue Length [ft/ln]	84.05	334.63	44.92	651.35	605.29	333.51	272.61	273.73	140.84	55.04	197.56	607.22

Movement, Approach, & Intersection Results

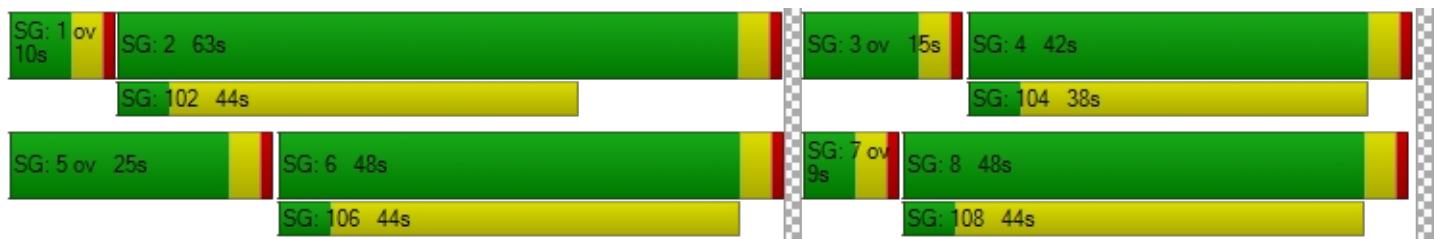
d_M, Delay for Movement [s/veh]	49.80	35.78	20.36	125.04	38.73	17.29	82.88	32.00	21.73	50.10	34.71	44.88
Movement LOS	D	D	C	F	D	B	F	C	C	D	C	D
d_A, Approach Delay [s/veh]	36.88				59.30			46.15			41.69	
Approach LOS		D			E			D			D	
d_I, Intersection Delay [s/veh]					49.95							
Intersection LOS							D					
Intersection V/C					0.858							

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	2.987	3.849	3.406	3.478
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	880	1180	880	760
d_b, Bicycle Delay [s]	15.68	8.41	15.68	19.22
I_b,int, Bicycle LOS Score for Intersection	2.352	4.038	2.651	2.611
Bicycle LOS	B	D	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.488

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	656	56	261	1232	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	98	44	0	132	51
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	781	102	272	1414	87
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	198	26	69	359	22
Total Analysis Volume [veh/h]	792	103	276	1434	88
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	5	10	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	14	0	15	29	31	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	11	45	7	7
g / C, Green / Cycle	0.51	0.51	0.18	0.76	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.15	0.40	0.05	0.08
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1836	820	328	2731	203	181
d1, Uniform Delay [s]	9.34	7.80	23.80	2.99	24.93	25.66
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	0.32	5.86	0.73	1.46	4.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.13	0.84	0.53	0.43	0.67
d, Delay for Lane Group [s/veh]	10.09	8.11	29.66	3.72	26.39	29.98
Lane Group LOS	B	A	C	A	C	C
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.88	0.66	3.68	0.34	1.12	1.70
50th-Percentile Queue Length [ft/ln]	72.07	16.41	91.98	8.56	28.12	42.61
95th-Percentile Queue Length [veh/ln]	5.19	1.18	6.62	0.62	2.02	3.07
95th-Percentile Queue Length [ft/ln]	129.73	29.54	165.56	15.41	50.62	76.70

Movement, Approach, & Intersection Results

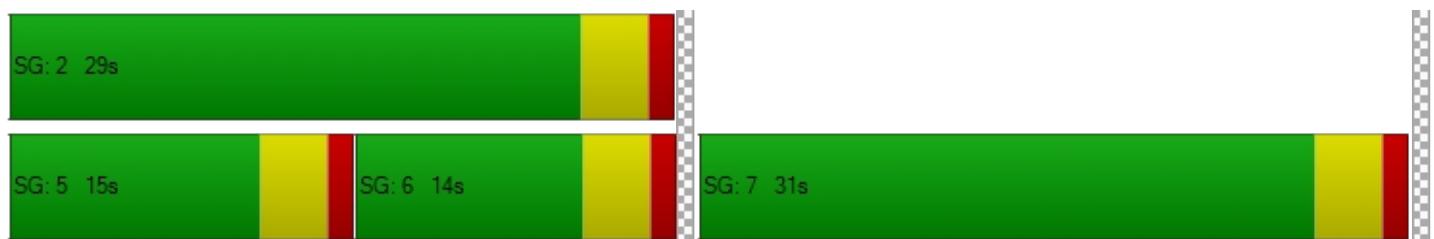
d_M, Delay for Movement [s/veh]	10.09	8.11	29.66	3.72	26.39	29.98
Movement LOS	B	A	C	A	C	C
d_A, Approach Delay [s/veh]	9.86		7.91		28.48	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]			10.06			
Intersection LOS			B			
Intersection V/C			0.488			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	833	900
d_b, Bicycle Delay [s]	20.83	10.21	9.08
I_b,int, Bicycle LOS Score for Intersection	2.298	2.970	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sanderson Ave/Cottonwood Ave

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	1	0	1
Entry Pocket Length [ft]	300.00	100.00	205.00	295.00	100.00	195.00	100.00	100.00	205.00	315.00	100.00	315.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00	0.00	90.00
Speed [mph]	55.00			50.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sanderson Avenue			Sanderson Avenue			Cottonwood Avenue			Cottonwood Avenue		
Base Volume Input [veh/h]	34	547	106	102	1007	112	86	197	54	85	138	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	112	24	1	12	16	98	96	88	105	1	93	20
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	593	111	118	1064	215	185	293	161	89	237	106
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	158	30	31	283	57	49	78	43	24	63	28
Total Analysis Volume [veh/h]	157	632	118	126	1133	229	197	312	171	95	252	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0	
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0	
v_co, Outbound Pedestrian Volume crossing	0				0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0	
Bicycle Volume [bicycles/h]	0				0			0			0	

Intersection Settings

Located in CBD	No											
Signal Coordination Group	-											
Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Offset [s]	0.0											
Offset Reference	Lead Green - Beginning of First Green											
Permissive Mode	SingleBand											
Lost time [s]	2.00											

Phasing & Timing

Control Type	Protecte	Permiss	Permiss									
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-									
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	38	0	10	38	0	12	42	0	10	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No										
Maximum Recall	No	No										
Pedestrian Recall	No	No										
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	55	55	5	55	55	8	19	19	5	16	16
g / C, Green / Cycle	0.06	0.55	0.55	0.05	0.55	0.55	0.08	0.19	0.19	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.07	0.04	0.31	0.14	0.06	0.09	0.11	0.03	0.13	0.07
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	3618	1615	3514	1900	1615
c, Capacity [veh/h]	214	1996	891	192	1973	881	267	674	301	167	300	255
d1, Uniform Delay [s]	46.23	12.19	10.86	46.41	15.06	12.05	45.30	36.27	37.07	46.69	40.93	38.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	0.42	0.31	3.76	1.22	0.72	4.00	0.50	1.68	3.04	6.23	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.32	0.13	0.66	0.57	0.26	0.74	0.46	0.57	0.57	0.84	0.44
d, Delay for Lane Group [s/veh]	51.06	12.61	11.17	50.17	16.28	12.77	49.30	36.77	38.75	49.74	47.16	39.37
Lane Group LOS	D	B	B	D	B	B	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.96	3.33	1.15	1.57	7.60	2.53	2.46	3.30	3.79	1.23	6.55	2.61
50th-Percentile Queue Length [ft/ln]	48.98	83.36	28.66	39.26	190.00	63.14	61.45	82.51	94.65	30.85	163.77	65.19
95th-Percentile Queue Length [veh/ln]	3.53	6.00	2.06	2.83	12.12	4.55	4.42	5.94	6.81	2.22	10.75	4.69
95th-Percentile Queue Length [ft/ln]	88.16	150.05	51.59	70.67	303.03	113.65	110.60	148.52	170.37	55.53	268.70	117.34

Movement, Approach, & Intersection Results

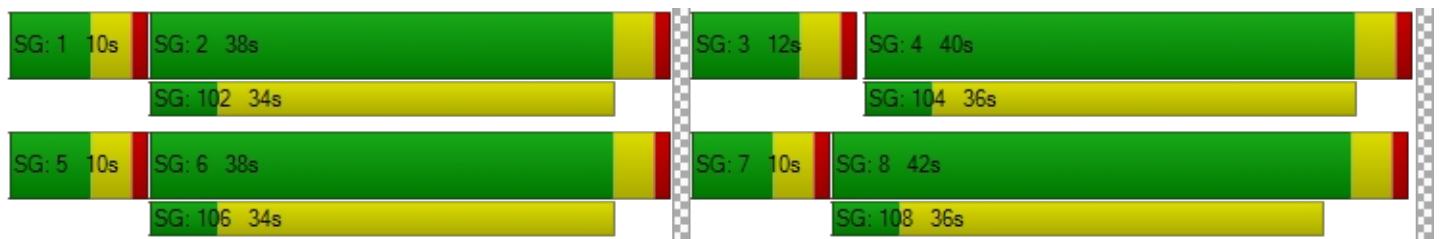
d_M, Delay for Movement [s/veh]	51.06	12.61	11.17	50.17	16.28	12.77	49.30	36.77	38.75	49.74	47.16	39.37
Movement LOS	D	B	B	D	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	19.08			18.61			40.89			45.78		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]				26.55								
Intersection LOS				C								
Intersection V/C				0.558								

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.189	3.165	2.876	2.597
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	680	760	720
d_b, Bicycle Delay [s]	21.78	21.78	19.22	20.48
I_b,int, Bicycle LOS Score for Intersection	2.308	2.787	2.121	2.319
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Sanderson Ave/South Project Dwy

Control Type:	Two-way stop	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.071

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		South Project Driveway	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Sanderson Avenue		Sanderson Avenue		South Project Driveway	
Base Volume Input [veh/h]	0	712	1267	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	140	98	43	0	28
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	852	1365	43	0	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	213	341	11	0	7
Total Analysis Volume [veh/h]	0	852	1365	43	0	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.76
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.23
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.67
d_A, Approach Delay [s/veh]	0.00			0.00		14.76
Approach LOS		A		A		B
d_I, Intersection Delay [s/veh]				0.18		
Intersection LOS				B		

Intersection Level Of Service Report
Intersection 5: Sanderson Ave/Ramona Blvd

Control Type:	Signalized	Delay (sec / veh):	2.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.424

Intersection Setup

Name	Sanderson Avenue		Sanderson Avenue		Ramona Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Sanderson Avenue	Sanderson Avenue	Ramona Boulevard		
Base Volume Input [veh/h]	0	712	1267	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0
Site-Generated Trips [veh/h]	47	93	141	43	49
Diverted Trips [veh/h]	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0
Total Hourly Volume [veh/h]	47	805	1408	43	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	201	352	11	12
Total Analysis Volume [veh/h]	47	805	1408	43	49
Presence of On-Street Parking	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0
v_di, Inbound Pedestrian Volume crossing m	0		0		0
v_co, Outbound Pedestrian Volume crossing	0		0		0
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0
Bicycle Volume [bicycles/h]	0		0		0

Intersection Settings

Located in CBD	No					
Signal Coordination Group	-					
Cycle Length [s]	75					
Coordination Type	Time of Day Pattern Isolated					
Actuation Type	Fully actuated					
Offset [s]	0.0					
Offset Reference	Lead Green - Beginning of First Green					
Permissive Mode	SingleBand					
Lost time [s]	2.00					

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	10	10	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	65	65	0	10	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	9	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	64	64	64	3
g / C, Green / Cycle	0.85	0.85	0.85	0.85	0.04
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.38	0.39	0.03
s, saturation flow rate [veh/h]	373	3618	1900	1880	1810
c, Capacity [veh/h]	363	3072	1614	1597	80
d1, Uniform Delay [s]	3.43	1.10	1.38	1.39	35.21
k, delay calibration	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	0.21	0.91	0.93	7.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.26	0.45	0.45	0.62
d, Delay for Lane Group [s/veh]	4.17	1.30	2.29	2.32	42.71
Lane Group LOS	A	A	A	A	D
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.22	0.09	0.41	0.41	1.02
50th-Percentile Queue Length [ft/ln]	5.55	2.22	10.17	10.37	25.60
95th-Percentile Queue Length [veh/ln]	0.40	0.16	0.73	0.75	1.84
95th-Percentile Queue Length [ft/ln]	9.99	3.99	18.31	18.66	46.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.17	1.30	2.30	2.32	42.71	42.71
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	1.46		2.30		42.71	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]		2.84				
Intersection LOS			A			
Intersection V/C			0.424			

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	29.04
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.842
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1627	1627	160
d_b, Bicycle Delay [s]	1.31	1.31	31.74
I_b,int, Bicycle LOS Score for Intersection	2.263	2.757	1.640
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D

Signal Warrant Analysis

OYP CONDITIONS PEAK HOUR VOLUME WARRANT RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **PM**

Major Street: **Sanderson Avenue**

Minor Street: **Ramona Boulevard**

Total of Both Approaches (VPH): **2303**

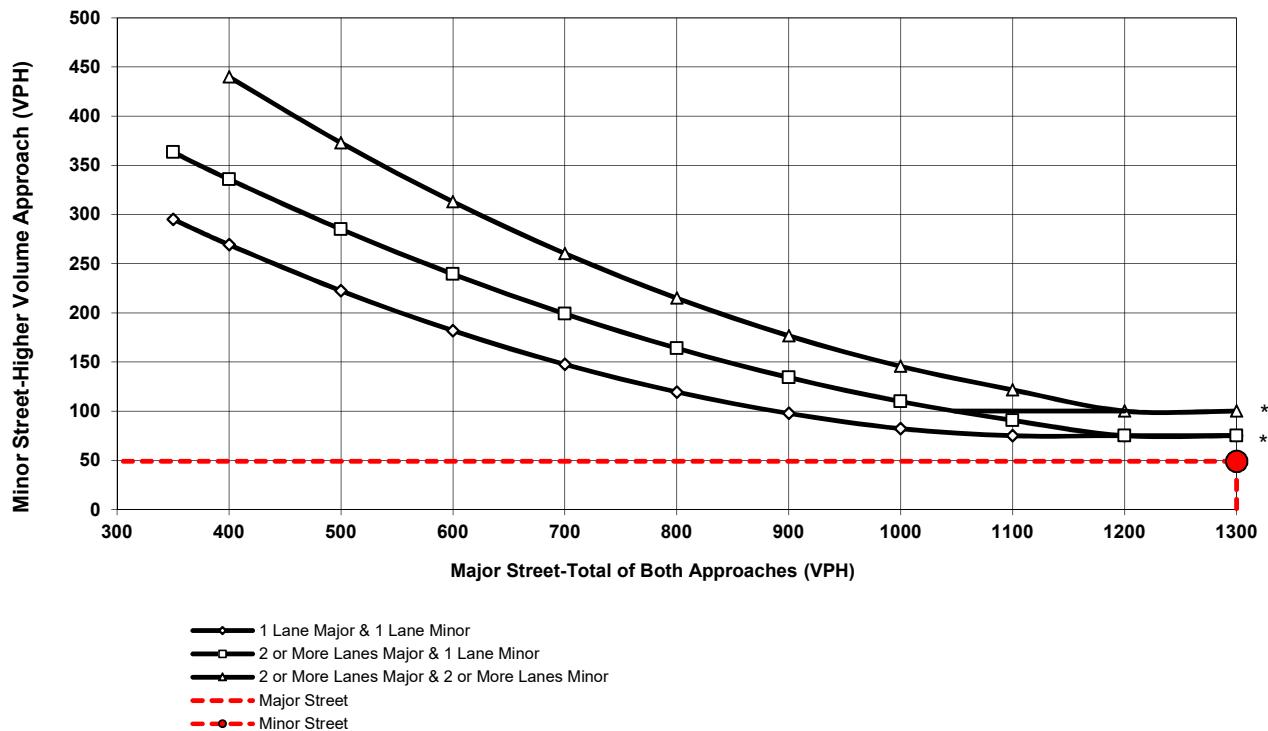
Number of Approach Lanes: **2**

Higher Volume Approach (VPH): **49**

Number of Approach Lanes: **1**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:

100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2014 California Supplement Including Revision 3 (March 9, 2018)

**OYP Conditions
PM Peak Hour Volume Warrant
Sanderson Avenue/Ramona Boulevard**

OYP CONDITIONS PEAK HOUR VOLUME WARRANT RURAL CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Peak Hour: **AM**

Major Street: **Sanderson Avenue**

Minor Street: **Ramona Boulevard**

Total of Both Approaches (VPH): **2039**

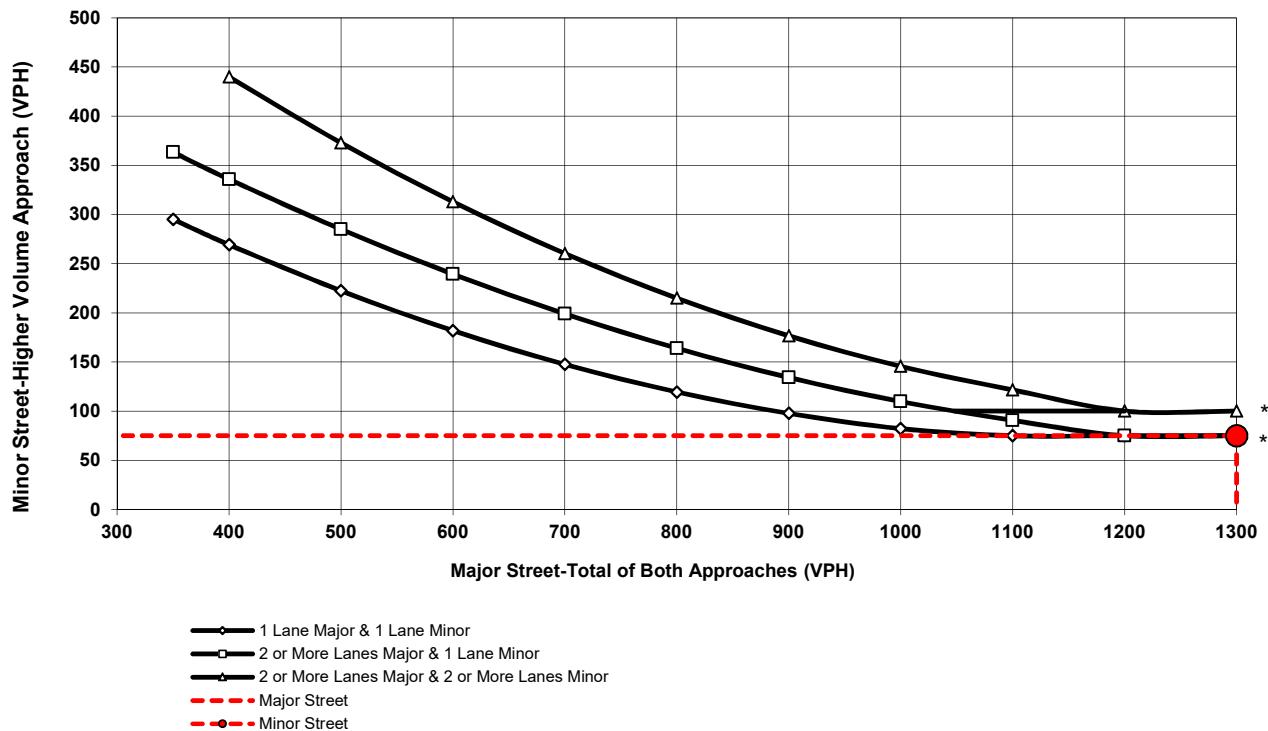
Number of Approach Lanes: **2**

Higher Volume Approach (VPH): **75**

Number of Approach Lanes: **1**

SIGNAL WARRANT SATISFIED

Figure 4C-4. Peak Hour Warrant (Rural)



* Note:

100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 75 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2014 California Supplement Including Revision 3 (March 9, 2018)

**OYP Conditions
AM Peak Hour Volume Warrant
Sanderson Avenue/Ramona Boulevard**