

11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

City of Artesia, California

April 18, 2022

Prepared by:



TJW ENGINEERING, INC.
9841 Irvine Center Drive, Suite 200
Irvine, CA 92618
949.878.3509 | www.tjwengineering.com



TJW ENGINEERING, INC.
TRAFFIC ENGINEERING &
TRANSPORTATION PLANNING
CONSULTANTS

April 18, 2022

Ms. Kim Prijatel
CITY VENTURES
3121 Michaelson Drive, Suite 150
Irvine, CA 92618

Subject: Traffic Impact Analysis – 11700 Arkansas Street Mixed-Use Project, City of Artesia

Dear Ms. Prijatel:

TJW ENGINEERING, INC. (TJW) is pleased to present you with this traffic impact analysis for the proposed Mixed-Use Artesia Project on Arkansas Street located at 11700 Arkansas Street in the City of Artesia.

This traffic study has been prepared to meet the traffic study requirements for the City of Artesia and assesses the forecast 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 Artesia.

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

Sincerely,

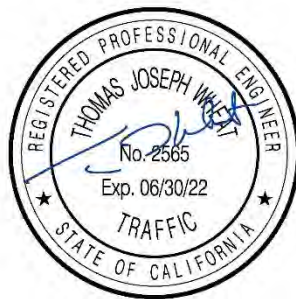
A handwritten signature in black ink, appearing to read 'TH Wheat', written over a light blue circular background.

Thomas Wheat, PE, TE
President

A handwritten signature in black ink, appearing to read 'David Chew', written over a light blue circular background.

David Chew, PTP
Transportation Planner

Registered Civil Engineer #69467
Registered Traffic Engineer #2565



A handwritten signature in black ink, appearing to read 'Daniel Flores', written over a light blue circular background.

Daniel Flores, EIT
Project Engineer

11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

City of Artesia, California

April 18, 2021

Prepared for:

Mr. Kim Prijatel

CITY VENTURES

3121 Michelson Drive, Suite 150

Irvine, CA 92612

Prepared by:

Thomas Wheat, PE, TE

David Chew, PTP

Daniel Flores, EIT



TJW ENGINEERING, INC.

9841 Irvine Center Drive, Suite 200

Irvine, CA 92618

949.878.3509 | www.tjwengineering.com

Table of Contents

1.0	EXECUTIVE SUMMARY	iii
1.1	SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS	iv
1.2	ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS	iv
1.3	SUMMARY OF DEFICIENCIES AND RECOMMENDED IMPROVEMENTS	v
2.0	INTRODUCTION.....	1
2.1	PROJECT DESCRIPTION.....	1
2.2	STUDY AREA	1
2.3	ANALYSIS METHODOLOGY.....	4
2.4	PERFORMANCE CRITERIA.....	7
2.4.1	City of Artesia	7
3.0	EXISTING CONDITIONS.....	8
3.1	EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS	8
3.2	CITY OF ARTESIA GENERAL PLAN CIRCULATION ELEMENT.....	8
3.4	EXISTING PUBLIC TRANSIT SERVICES	8
3.5	EXISTING TRAFFIC VOLUMES	9
3.6	EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS.....	13
3.7	EXISTING CONDITIONS ROADWAY SEGMENT ANALYSIS	13
4.0	PROPOSED PROJECT	14
4.1	PROJECT DESCRIPTION.....	14
4.2	PROJECT TRIP GENERATION.....	14
4.3	PROJECT TRIP DISTRIBUTION	15
4.4	MODAL SPLIT.....	15
4.5	CUMULATIVE PROJECTS TRAFFIC.....	15
5.0	OPENING YEAR CONDITIONS (OY)	17
5.1	ROADWAY IMPROVEMENTS	17
5.2	OY BASE TRAFFIC VOLUMES	17
5.3	OY INTERSECTION LEVEL OF SERVICE ANALYSIS.....	17
5.4	OY CONDITIONS ROADWAY SEGMENT ANALYSIS	18
6.0	OPENING YEAR PLUS PROJECT CONDITIONS (OYP).....	21
6.1	ROADWAY IMPROVEMENTS	21
6.2	OPENING YEAR BASE TRAFFIC VOLUMES	21
6.3	OPENING YEAR PLUS PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS.....	21
6.4	OYP CONDITIONS ROADWAY SEGMENT ANALYSIS	22
6.5	OYP ON-STREET PARKING	22



List of Tables

Table 1: HCM – LOS & Delay Ranges – Signalized Intersections	5
Table 2: HCM – LOS & Delay Ranges – Unsignalized Intersections.....	6
Table 3: Roadway Capacities.....	6
Table 4: City of Artesia Thresholds of Significance	7
Table 5: Roadway Characteristics within Study Area.....	8
Table 6: Intersection Analysis – Existing Conditions	13
Table 7: Roadway Segment – Existing Conditions	13
Table 8: Proposed Project Trip Generation.....	14
Table 9: Intersection Analysis –Opening Year (OY) Conditions.....	18
Table 10: Roadway Segment – Project Opening Year (OY) Conditions.....	18
Table 11: Intersection Analysis – Opening Year Base Plus Project (OYP) Conditions	21
Table 12: Roadway Segment – Opening Year plus Project (OYP) Conditions	22

List of Exhibits

Exhibit 1: Project Location.....	2
Exhibit 2: Proposed Project Site Plan	3
Exhibit 3: Lane Geometry and Intersection Controls	10
Exhibit 4: Existing Transit Services	11
Exhibit 5: Existing AM and PM Peak Hour Volumes.....	12
Exhibit 6: Trip Distribution at Study Intersections	16
Exhibit 7: Opening Year (OY) Lane Geometry and Intersection Controls	19
Exhibit 8: Opening Year (OY) AM and PM Peak Hour Volumes	20
Exhibit 9: Angled Parking Conceptual Drawing.....	23
Exhibit 10: Opening Year Plus Project (OYP) AM and PM Peak Hour Volumes	24

Appendices

Appendix A: Glossary of Terminology
Appendix B: Scoping Agreement and Artesia Roadway Classifications and Cross Sections
Appendix C: Existing Traffic Counts
Appendix D: HCM Analysis Sheets



1.0 EXECUTIVE SUMMARY

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed Mixed-Use Artesia Project on Arkansas Street located 11700 Arkansas Street in the City of Artesia. 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 Artesia via a scoping agreement (See **Appendix B**) and is pursuant to applicable City of Artesia.

The proposed project consists of mixed-use project, a 3-story multifamily residential with 59 units and 5,290 square feet of leasable commercial space. Site access is planned via one full-access driveways on Arkansas Street. The site is currently zoned as Low Density Residential and classified as Light Manufacturing and Industrial in the City of Artesia General Plan Land Use Plan. The project site is currently occupied by RV storage.

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

There is currently construction at intersection #4 Pioneer Boulevard/East Arkansas Street the intersection is adding a traffic signal which will be completed by May 2022.

There is also construction at the SR-91 interchange on Pioneer Boulevard entering the Westbound on-ramp onto the SR-91 which is projected to be completed by December 2022. The on-ramp will be relocated to east of Pioneer Boulevard, 50% of the project peak hour trips are predicted to use on-ramp which is less than 25 peak hour trips. The relocation of the interchange has already been approved and the addition of 25 peak hour trips should not cause for a deficient intersection.

The proposed project is projected to generate 521 daily trips, 26 AM peak hour trips, and 46 PM peak hour trips.

The following five (5) intersections in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. Pioneer Blvd/166th St;
2. Alburdis Ave/166th St;
3. Pioneer Blvd/West Arkansas St;
4. Pioneer Blvd/East Arkansas St;
5. Project Dwy/Arkansas St.



The study intersections are analyzed for the following study scenarios:

- Existing Traffic Condition (Existing);
- Opening Year Without Project Condition (Existing + Ambient);
- Project Opening Year Plus Projects Condition (Existing + Ambient + Project).

1.1 SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS

Table ES-1 summarizes the results of the intersection level of service analysis based on the City of Artesia thresholds of significance for analyzing transportation deficiencies.

Table ES-1
Summary of Transportation Deficiencies at Study Intersections

Intersection			Opening Year Plus Project	Future Year Plus Project
1	Pioneer	166 th	No Deficiencies	No Deficiencies
2	Alburtis	166 th	No Deficiencies	No Deficiencies
3	Pioneer	West Arkansas	No Deficiencies	No Deficiencies
4	Pioneer	East Arkansas	No Deficiencies	No Deficiencies

Existing Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Existing* conditions with the exception of:

#4 – Pioneer Boulevard/East Arkansas Street (LOS D PM and AM Peak Hour)

Opening Year (OY) Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year Base* conditions.

Opening Year Plus Project (OYP) Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year Plus Project* conditions.

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 Artesia 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/stripping should be implemented in conjunction with detailed construction plans for the project site.

1.3 SUMMARY OF DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

The determination of a deficiency at an intersection is based on the project's contribution to the intersection's volume to capacity (V/C) ratio. Based on those thresholds, intersection #4 – Pioneer Boulevard/East Arkansas Street has an existing LOS D for the PM and AM Peak Hour. A traffic signal is currently under construction and will be completed by May 2022 before the project's opening year 2023.

2.0 INTRODUCTION

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed Mixed-Use Artesia Project on Arkansas Street located 11700 Arkansas Street in the City of Artesia. 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 Artesia via a scoping agreement (See **Appendix B**) and is pursuant to applicable City of Artesia.

2.1 PROJECT DESCRIPTION

The proposed project consists of mixed-use project, a 3-story multifamily residential with 59 units and 5,290 square feet of leasable commercial space. Site access is planned via one full-access driveways on Arkansas Street. The site is currently zoned as Low Density Residential and classified as Light Manufacturing and Industrial in the City of Artesia General Plan Land Use Plan. The project site is currently occupied by RV storage.

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

Exhibit 1 shows the project site location. **Exhibit 2** shows the proposed project site plan.

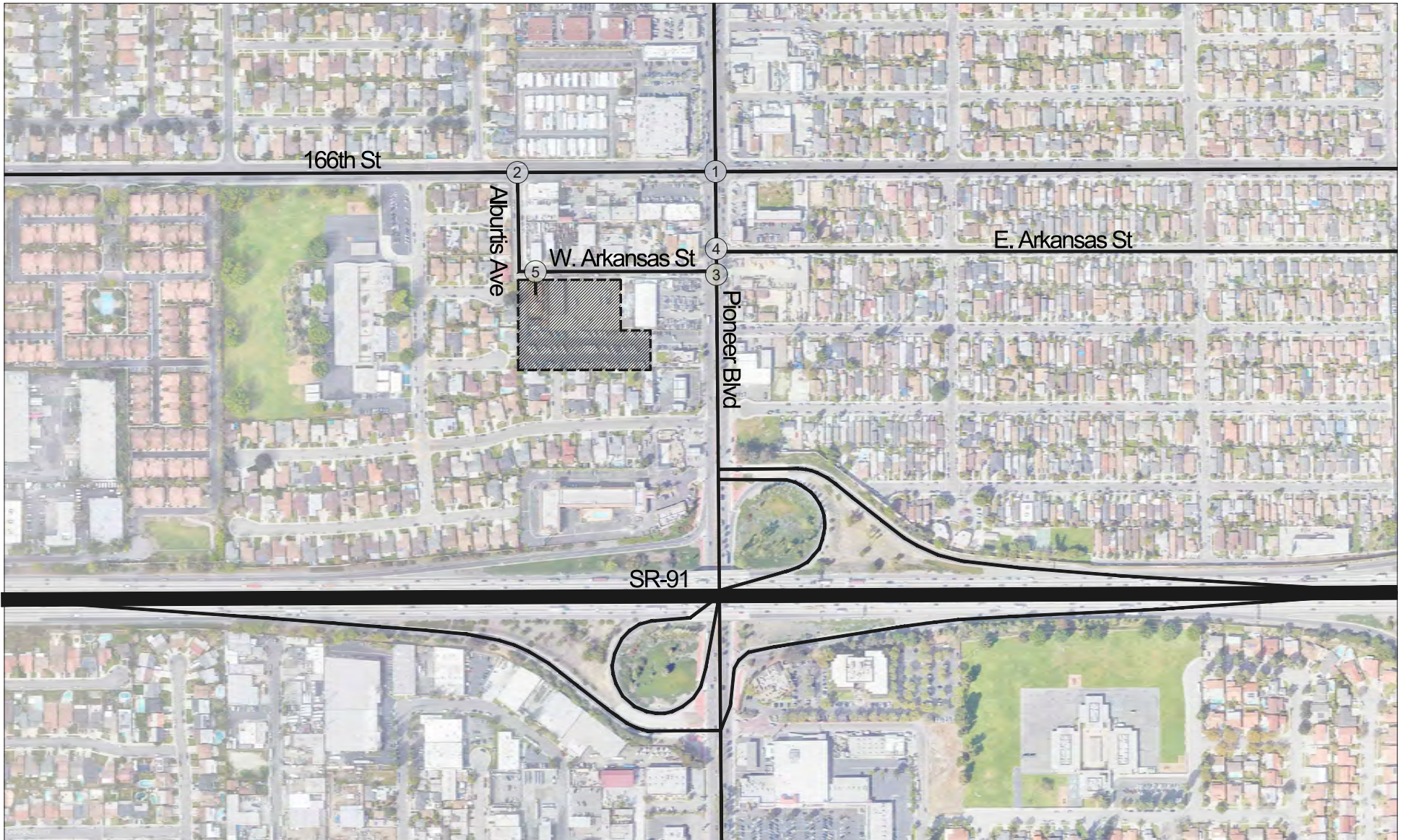
2.2 STUDY AREA

The following five (5) intersections in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. Pioneer Blvd/166th St;
2. Alburtis/166th St;
3. Pioneer Blvd/West Arkansas St;
4. Pioneer Blvd/East Arkansas St;
5. Project Dwy/Arkansas St.

The study intersections are all located within the City of Artesia.





Legend:

-  Project Site
-  Study Intersection Location

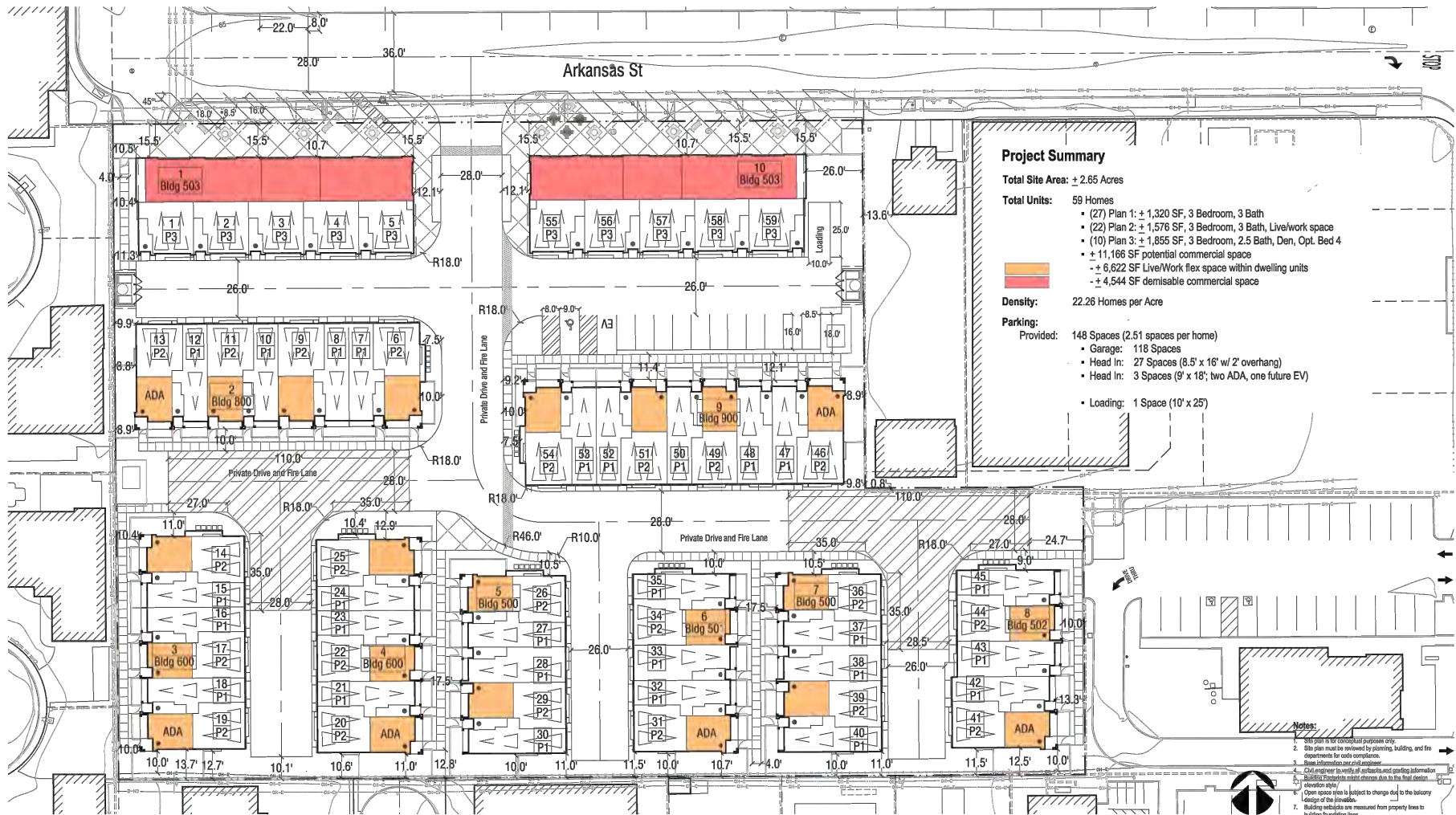
Project Location



11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

CVR-21-001





CONCEPTUAL SITE PLAN 11700 ARKANSAS STREET SITE

ARTESIA, CA

CONCEPT STUDY

© 2022 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA | 2020299 | 01-06-22

ARCHITECTS • PLANNERS • DESIGNERS
WHA.
ORANGE COUNTY • LOS ANGELES • BAY AREA



to ooe oect Ste la

11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis



TJW ENGINEERING, INC.

CVR-21-001



Not to Scale

2.3 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 Artesia and Caltrans traffic impact 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.

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

This traffic analysis follows the *City of Artesia (January 2021)*. Below are the following study scenarios:

- Existing Traffic Condition (Existing);
- Opening Year Without Project Condition (Existing + Ambient);
- Project Opening Year Plus Projects Condition (Existing + Ambient + 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.

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. $PHF = [Hourly Volume] / [4 * Peak 15\text{-Minute Volume}]$. 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 Artesia 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.

Table 2 describes the general characteristics of traffic flow and accompanying delay ranges at unsignalized intersections.

Table 2:
HCM – LOS & Delay Ranges – Unsignalized Intersections

Level of Service	Description	Delay (in seconds)
A	Little or no delays.	0 – 10.00
B	Short traffic delays.	10.01 – 15.00
C	Average traffic delays.	15.01 – 25.00
D	Long traffic delays. Multiple vehicles in queue.	25.01 – 35.00
E	Very long delays. Demand approaching capacity of intersection	35.01 – 50.00
F	Very constrained flow with extreme delays and intersection capacity exceeded.	> 50.01

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

This analysis utilizes *PTV Vistro*, Version 2021 analysis software for all signalized and unsignalized intersections. *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 *Synchro* takes the optimization and coordination of signalized intersections within a network into consideration.

Daily Roadway Analysis Roadway segment level of service is estimated by comparing the two-way 24-hour traffic volumes on the roadway segment to the daily roadway capacity, based on its functional classification. This comparison results in a volume-to-capacity (v/c) ratio, which represents the percentage of the daily vehicular capacity that is required to accommodate the daily traffic volume. **Table 3** presents the daily roadway capacity for each roadway classification.

Table 3:
Roadway Capacities

Street Classification	Lanes	Cross Sections (Curb-to Curb / R.O.W.)	Daily Level of Service (LOS)				
			A	B	C	D	E
Primary Highway / Primary Arterial	6	102'-108' / 122'-128'	25,000	35,000	50,000	55,000	60,000
Primary Highway / Primary Arterial	4	78'-82' / 98'-102'	15,000	21,000	30,000	35,000	40,000
Secondary Highway / Secondary Arterial	4	64'-72' / 84'-92'	10,000	14,000	20,000	25,000	30,000
Collector (with TWLTL)	2	50'/70'	5,000	7,000	10,000	13,000	15,000
Collector (no TWLTL)	2	40'/60'	2,500	3,500	5,000	6,500	8,000

Source: City of Artesia General Plan.

2.4 PERFORMANCE CRITERIA

2.4.1 City of Artesia

The City of Artesia has established level of service “C” or better as acceptable LOS for all intersections along the designated street system in the City’s Traffic Study Requirements for the City of Artesia (January 2021).

For the purposes of analyzing transportation deficiencies, the City of Artesia identifies deficiencies through a comparison of “without project” and “with project” traffic conditions. While the City of Artesia determines an intersection’s level of service using the HCM 6 methodology, the determination of a deficiency at an intersection is based on a project’s contribution to the intersection’s volume-to-capacity (V/C) ratio as defined below in **Table 4**.

Table 4:
City of Artesia Thresholds of Significance

Level of Service	Signalized	Un-Signalized
E	Delay of 2 seconds	20 peak hour trips on a critical movement
F	Delay of 1 second or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Note: V/C = Volume to capacity ratio

Source: City of Artesia Traffic Study Requirements (January 2021).

3.0 EXISTING 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 5**.

Table 5:
Roadway Characteristics within Study Area

Roadway	Classification ¹	Jurisdiction	Direction	Existing Travel Lanes	Median Type ²	Speed Limit (mph)	On-Street Parking
Pioneer	Primary Arterial Highway	Artesia	North-South	6	RM	35	Yes
166 th	Secondary Arterial Highway	Artesia	East-West	4	NM	35	Yes
Arkansas	Local Street	Artesia	East-West	2	NM	25	Yes
Alburtis	Local Street	Artesia	North-South	2	NM	25	Yes

1: Sources: City of Artesia General Plan.

2: RM= Raised Median, NM = No Median.

Exhibit 3 show existing conditions study area intersection and roadway geometry.

3.2 CITY OF ARTESIA GENERAL PLAN CIRCULATION ELEMENT

The proposed project site is located within the City of Artesia. **Appendix B** contains the current *City of Artesia Plan Circulation Plan* and an explanation of roadway cross sections.

According to the *City of Artesia General Plan Conceptual Trail System*, there are no bicycle routes planned on Pioneer Boulevard or 166th Street.

3.4 EXISTING PUBLIC TRANSIT SERVICES

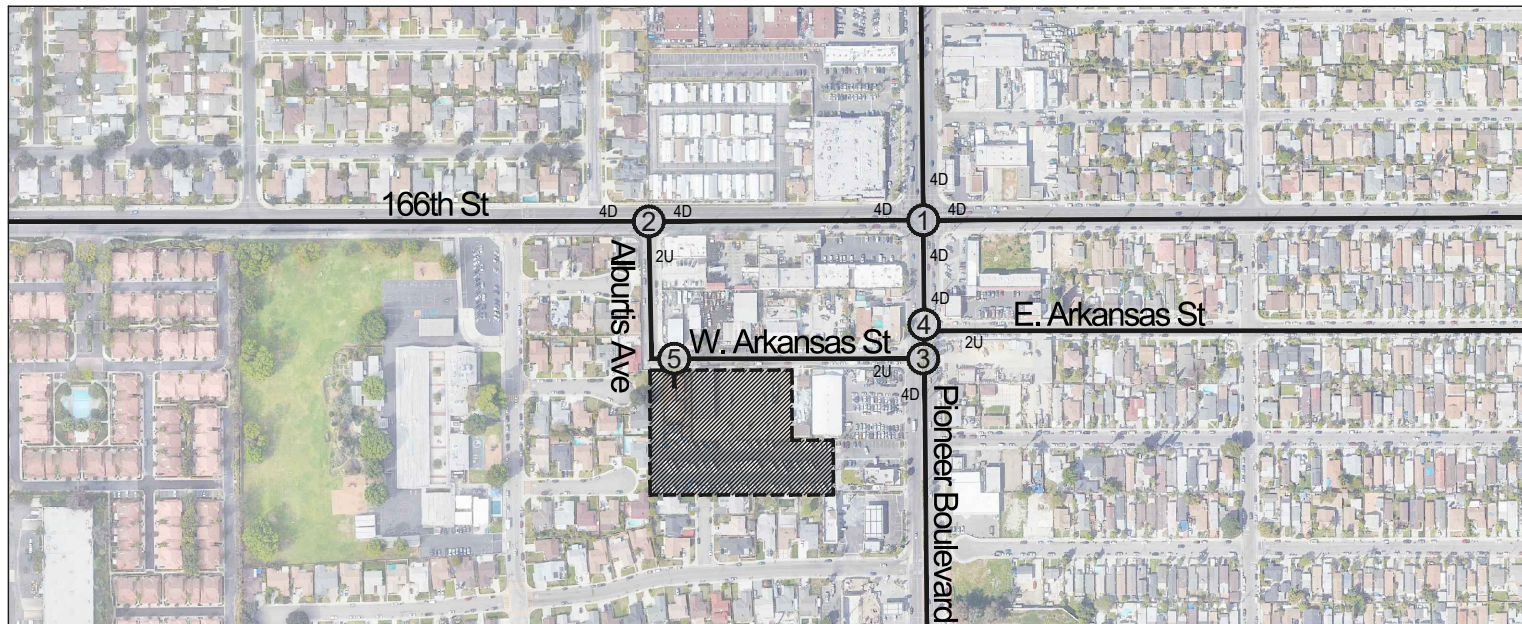
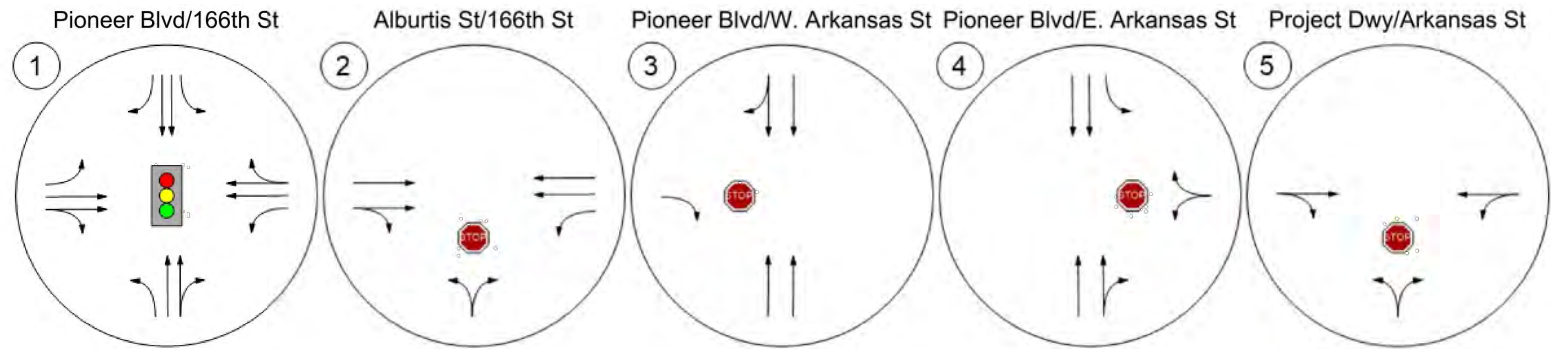
The City of Artesia is served by Metro which provides bus service throughout the Los Angeles County region. The City of Artesia also provides a free electric bus for the entire city, **Exhibit 4** shows the Metro, and electric bus route in the vicinity of the project site.

The nearest transit service is Metro Route 62 with stops at the intersections of Pioneer Boulevard/166th Street and Pioneer Boulevard/168th Street. The City of Artesia also has an electric bus route and the closest stop is at Pioneer Boulevard /168th Street.



3.5 EXISTING TRAFFIC VOLUMES

To determine the existing operation of the study intersections, AM and PM peak period traffic volumes were estimated based on new traffic counts collected on Thursday, September 16, 2021. Detailed traffic count data is provided in **Appendix C**.



Legend:

- Project Site
- ← Existing Lane
- 2U 2-Lane Undivided Roadway
- 4D 4-Lane Divided Roadway

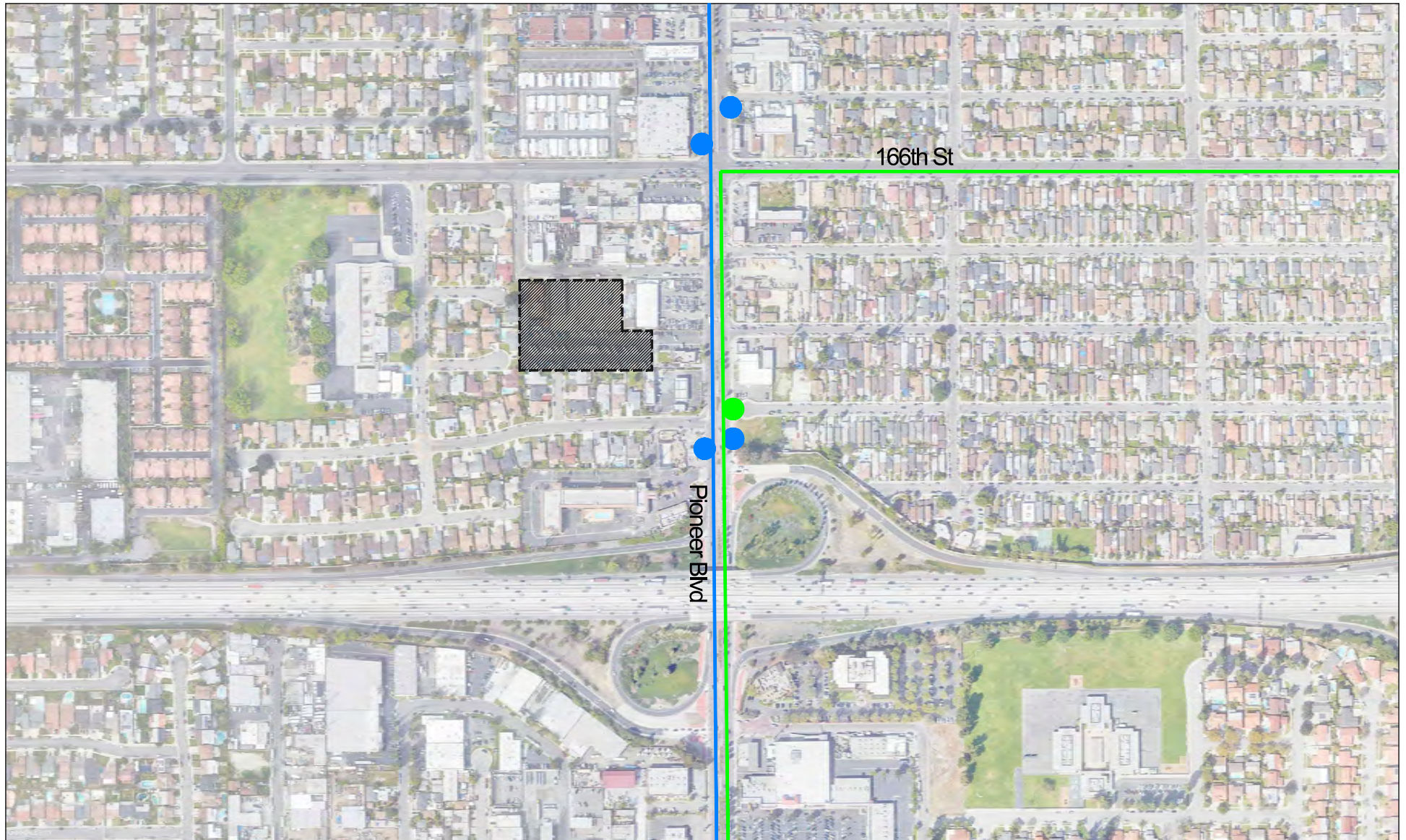
t t ae eoet a teecto otol



11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

CVR-21-001





Legend:

-  Project Site
-  OCTA - Route 37
-  City of Artesia EV Bus Route

t t at Sece

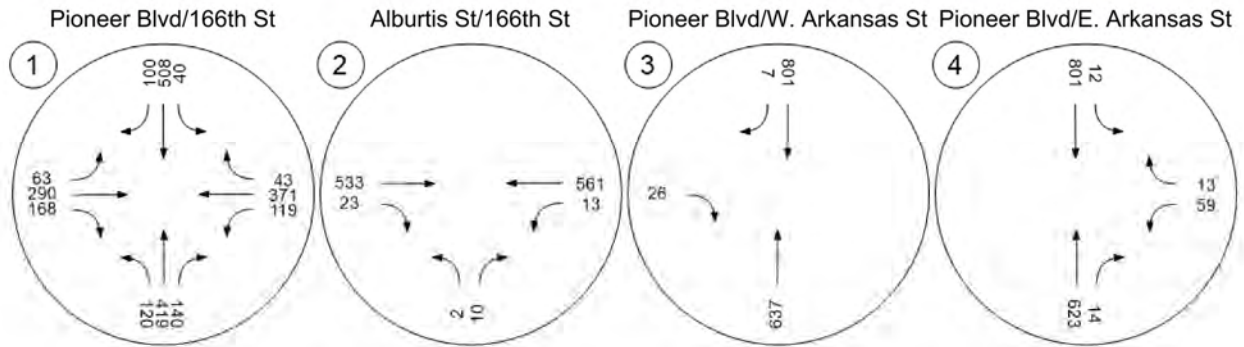


11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

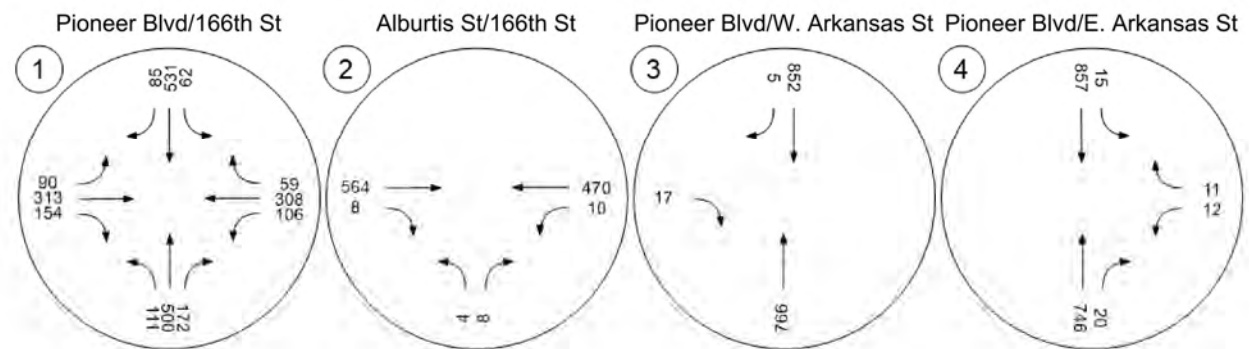
CVR-21-001



AM Peak Hour Trips



PM Peak Hour Trips



3.6 EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing 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 D**.

Table 6:
Intersection Analysis – Existing Conditions

Intersection			Control Type	Peak Hour	Existing Conditions	
					Delay ¹	LOS
1	Pioneer	166 th	Signal	AM	30.4	C
				PM	29.3	C
2	Alburtis	166 th	TWSC	AM	19.2	C
				PM	18.1	C
3	Pioneer	West Arkansas	OWSC	AM	11.5	B
				PM	11.8	B
4	Pioneer	East Arkansas	OWSC	AM	30.6	D
				PM	31.9	D

Note: 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 6**, the study intersections are currently operating at an acceptable LOS during the AM and PM peak hours for *existing* conditions with the except for the following intersections:

#4 - Pioneer Boulevard/East Arkansas Street (LOS D PM and AM Peak Hour)

3.7 EXISTING CONDITIONS ROADWAY SEGMENT ANALYSIS

The roadway level of service analysis was conducted based on the roadway capacities presented previously in this report. The results of the roadway analysis for Existing Conditions are shown on **Table 7**. Review of this table indicates that the study roadway segment of Arkansas Street between Alburtis Avenue and Pioneer Boulevard is currently operating at an acceptable level of service (LOS D or better) on a daily basis.

Table 7:
Roadway Segment – Existing Conditions

Roadway	Segment	Roadway Classification	Existing Lane Configuration	LOS E Capacity	Existing ADT	V/C	LOS
Arkansas	Alburtis Ave to Pioneer Blvd	Local Street	2 Lanes Undivided	8,000	311	0.039	A

4.0 PROPOSED PROJECT

4.1 PROJECT DESCRIPTION

The proposed project consists of mixed-use project, a 3-story multifamily residential with 59 units and 5,290 square feet of leasable commercial space. Site access is planned via one full-access driveways on Arkansas Street. The site is currently zoned as Low Density Residential and classified as Light Manufacturing and Industrial in the City of Artesia General Plan Land Use Plan. The project site is currently occupied by RV storage.

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

Exhibit 2 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 8 summarizes the projected AM peak hour, PM peak hour and daily trip generation of the proposed project. The proposed project is projected to generate 521 daily trips, 26 AM peak hour trips, and 46 PM peak hour trips.

Table 8:
Proposed Project 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
Multi-Family Housing (Mid-Rise) 221	59.00	DU	5.44	321	0.36	26:74	5	16	21	0.44	61:39	16	10	26
Shopping Center 820	5.29	TSF	37.75	200	0.94	62:38	3	2	5	3.81	48:52	10	10	20
Total				521			9	17	26			25	21	46

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

2: DU=Dwelling Unit; TSF=Thousand Square Feet



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.

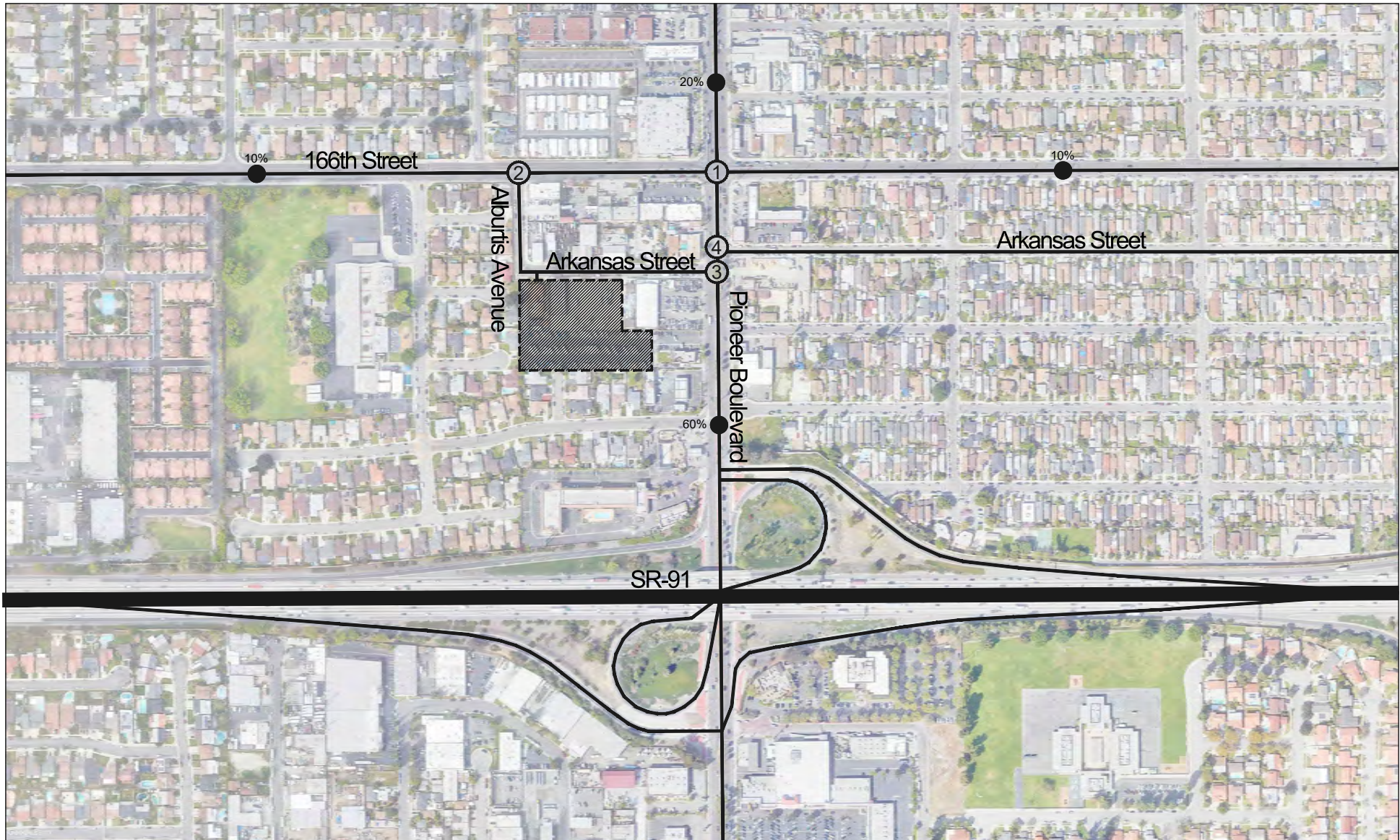
Exhibit 6 shows the projected trip distribution of proposed project trips.

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

Opening Year (2023) traffic volumes were developed using an annual ambient growth rate of 2%. It is assumed the growth rate of 2% would account for any potential cumulative projects within the study area.



Legend:

-  Project Site
-  Study Intersection Location
- XX% Percent Trip Distribution

t tto at St teecto



11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

CVR-21-001



5.0 OPENING YEAR CONDITIONS (OY)

Opening Year (OY) traffic 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 have changed for the *project opening year base* scenario the updates are shown in **Exhibit 7**.

There is currently construction at intersection #4 Pioneer Boulevard/East Arkansas Street the intersection is adding a traffic signal which will be completed by May 2022.

There is also construction at the SR-91 interchange on Pioneer Boulevard entering the Westbound on-ramp onto the SR-91 which is projected to be completed by December 2022. The on-ramp will be relocated to east of Pioneer Boulevard, 50% of the project peak hour trips are predicted to use on-ramp which is less than 25 peak hour trips. The relocation of the interchange has already been approved and the addition of 25 peak hour trips should not cause for a deficient intersection.

5.2 OY BASE TRAFFIC VOLUMES

OY volumes include background traffic. Since the proposed project is expected to be built and generating trips in 2023, *project opening year base* volumes include a growth rate of 2% per year for two years, applied to existing volumes.

OY Volumes = (Existing (2021) Counts * 1.02²)

Exhibit 8 shows *opening year* AM and PM peak hour volumes at the study intersections.

5.3 OY INTERSECTION LEVEL OF SERVICE ANALYSIS

Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 7**. HCM analysis sheets are provided in **Appendix D**.

Table 9:
Intersection Analysis –Opening Year (OY) Conditions

Intersection			Control Type	Peak Hour	OY Conditions	
					Delay ¹	LOS
1	Pioneer	166 th	Signal	AM	31.1	C
				PM	29.7	C
2	Alburtis	166 th	TWSC	AM	20.1	C
				PM	18.8	C
3	Pioneer	W. Arkansas	TWSC	AM	11.7	B
				PM	12.0	B
4	Pioneer	E. Arkansas	Signal	AM	3.6	A
				PM	2.0	A

Note: 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.

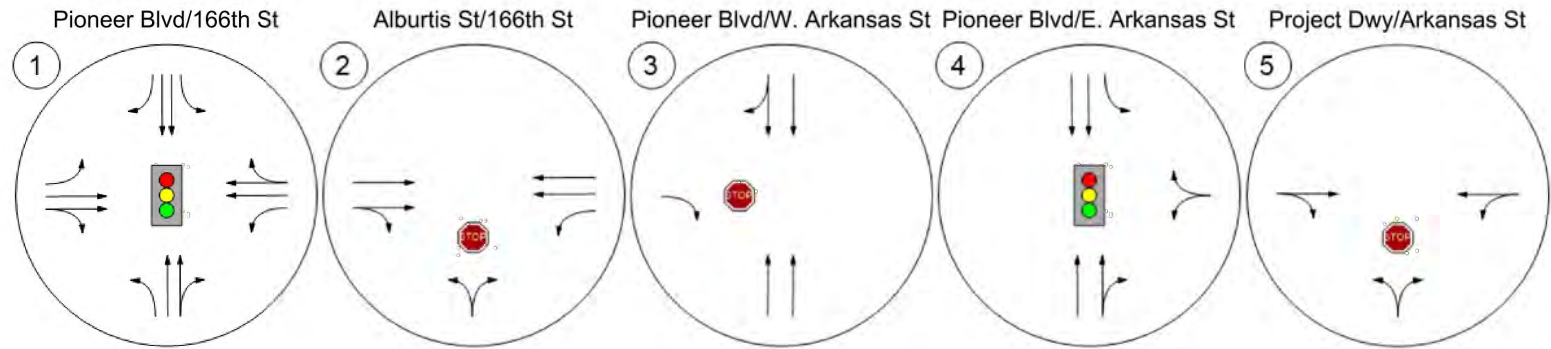
As shown in **Table 9** the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for OY conditions.

5.4 OY CONDITIONS ROADWAY SEGMENT ANALYSIS

The roadway level of service analysis results for the Opening Year 2023 scenario are summarized on **Table 10**. Review of this table indicates that the study roadway would continue to operate at an acceptable level of service (LOS D or better) on a daily basis

Table 10:
Roadway Segment – Project Opening Year (OY) Conditions

Roadway	Segment	Roadway Classification	Existing Lane Configuration	LOS E Capacity	OY ADT	V/C	LOS
Arkansas	Alburtis Ave to Pioneer Blvd	Local Street	2 Lanes Undivided	8,000	324	0.04	A



Legend:

- Project Site
- ← Existing Lane
- 2U 2-Lane Undivided Roadway
- 4D 4-Lane Divided Roadway

the area of the project

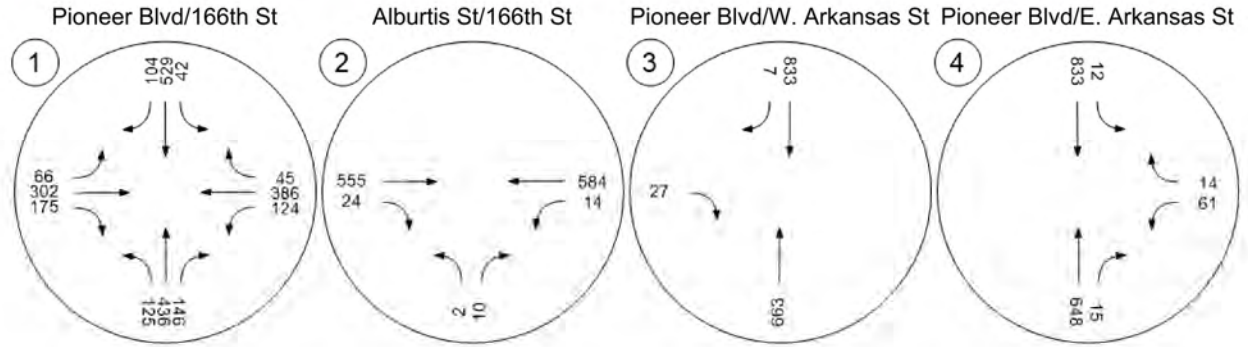


11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

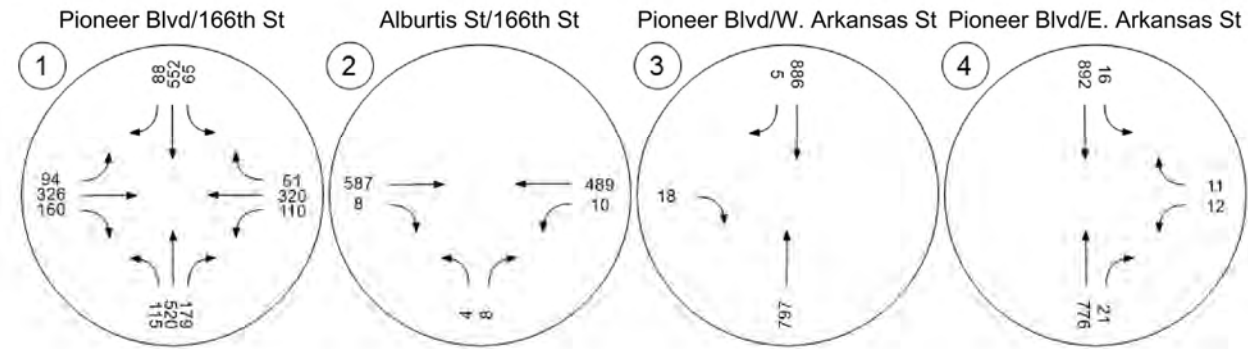
CVR-21-001



AM Peak Hour Trips



PM Peak Hour Trips



6.0 OPENING YEAR PLUS PROJECT CONDITIONS (OYP)

Opening Year Plus Project (OYP) conditions analysis is intended to identify the project-related impacts on both the existing and planned near-term circulation system.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the *opening year plus project* scenario are consistent with those previously shown in **Exhibit 7**. In addition, the project is proposing diagonal parking on Arkansas Street along the project frontage. See **Exhibit 9** for the new parking striping layout.

6.2 OYP TRAFFIC VOLUMES

OYP volumes include background traffic plus the addition of traffic projected to be generated by nearby cumulative projects. Since the proposed project is expected to be built and generating trips in 2023, *Opening Year Plus Project* volumes include a growth rate of 2% per year for one year, applied to existing volumes. It is assumed the growth rate of 2% would account for any potential cumulative projects within the study area. **Exhibit 10** shows *opening year plus project* AM and PM peak hour volumes at the study intersections.

OYP Volumes = (Existing (2023) Counts * 1.02¹) + Project

6.3 OYP INTERSECTION LEVEL OF SERVICE ANALYSIS

Opening year plus project conditions AM and PM peak hour intersection analysis is shown in **Table 11**. HCM analysis sheets are provided in **Appendix D**.

Table 11:
Intersection Analysis – Opening Year Base Plus Project (OYP) Conditions

Intersection			Control Type	Peak Hour	OY Conditions		OYP Conditions	
					Delay ¹	LOS	Delay ¹	LOS
1	Pioneer	166 th	Signal	AM	31.1	C	31.7	C
				PM	29.7	C	30.1	C
2	Alburtis	166 th	TWSC	AM	20.1	C	20.8	C
				PM	18.8	C	20.2	C
3	Pioneer	W Arkansas	TWSC	AM	11.7	B	11.8	B
				PM	12.0	B	12.2	B
4	Pioneer	E Arkansas	Signal	AM	3.6	A	3.6	A
				PM	2.0	A	2.0	A
5	Project Dwy	Arkansas	OWSC	AM	-	-	8.8	A
				PM	-	-	8.8	A

Note: 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 11**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for *opening year plus project* conditions.

6.4 OYP CONDITIONS ROADWAY SEGMENT ANALYSIS

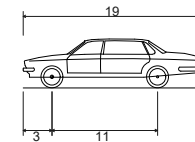
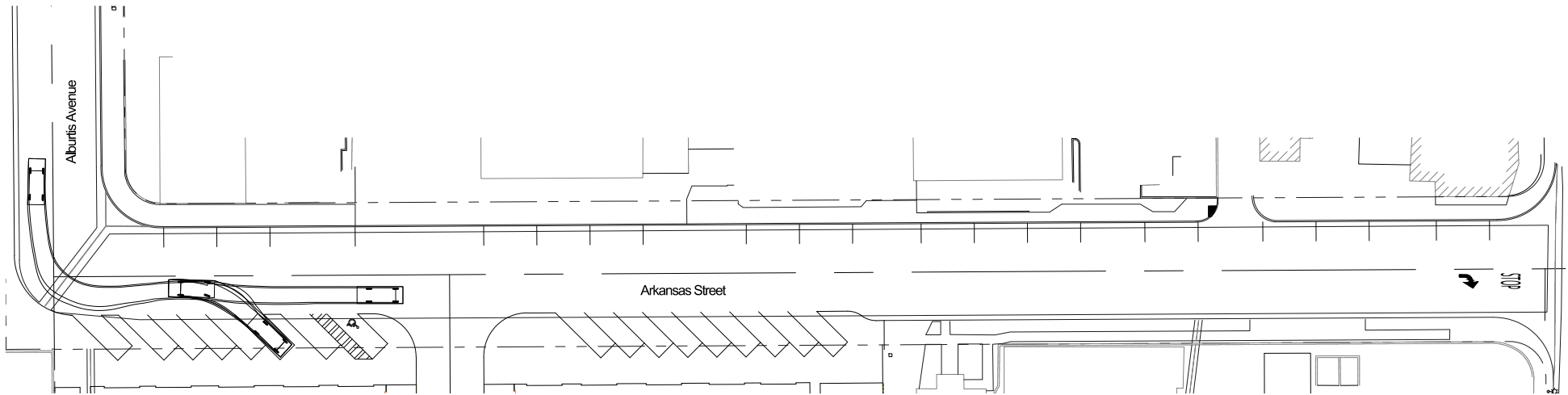
The roadway level of service analysis results for the Opening Year 2023 Plus Project scenario are summarized on **Table 12**. Review of this table indicates that the roadway would continue to operate at an acceptable level of service (LOS D or better) on a daily basis.

Table 12:
Roadway Segment – Opening Year plus Project (OYP) Conditions

Roadway	Segment	Roadway Classification	Existing Lane Configuration	LOS E Capacity	OY ADT	Project ADT	OY + Project	V/C	LOS
Arkansas	Alburtis Ave to Pioneer Blvd	Local Street	2 Lanes Undivided	8,000	324	521	845	0.106	A

6.5 OYP ON-STREET PARKING

There is currently on-street parking available to passenger vehicles only on Arkansas Street, no truck parking is allowed on Arkansas Street. The project proposes angles parking along the project frontage. The existing LOS for Arkansas Street between Alburtis Avenue to Pioneer Boulevard is a LOS A. OYP conditions propose that the LOS will continue to remain the same. The proposed angled parking would be on the south of Arkansas Street for vehicles heading eastbound. **Exhibit 9** shows an angled parking conceptual drawing of a 19- foot passenger car parking in a parking space and having sufficient room to reverse out of the parking space without interfering with oncoming vehicles heading westbound.



P - Passenger Car	
Overall Length	19.000ft
Overall Width	7.000ft
Overall Body Height	5.101ft
Min Body Ground Clearance	1.116ft
Track Width	6.000ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	24.000ft

the local area



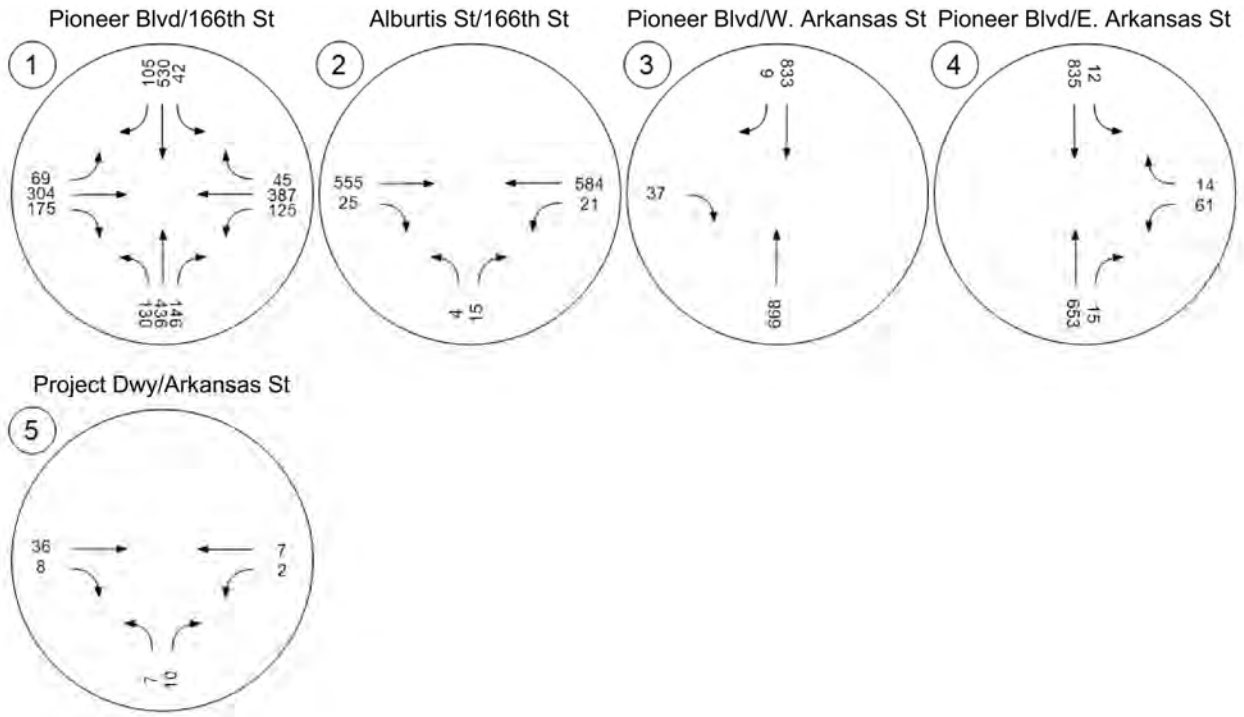
11700 Arkansas Street Mixed-Use Project Traffic Impact Analysis

CVR-21-001

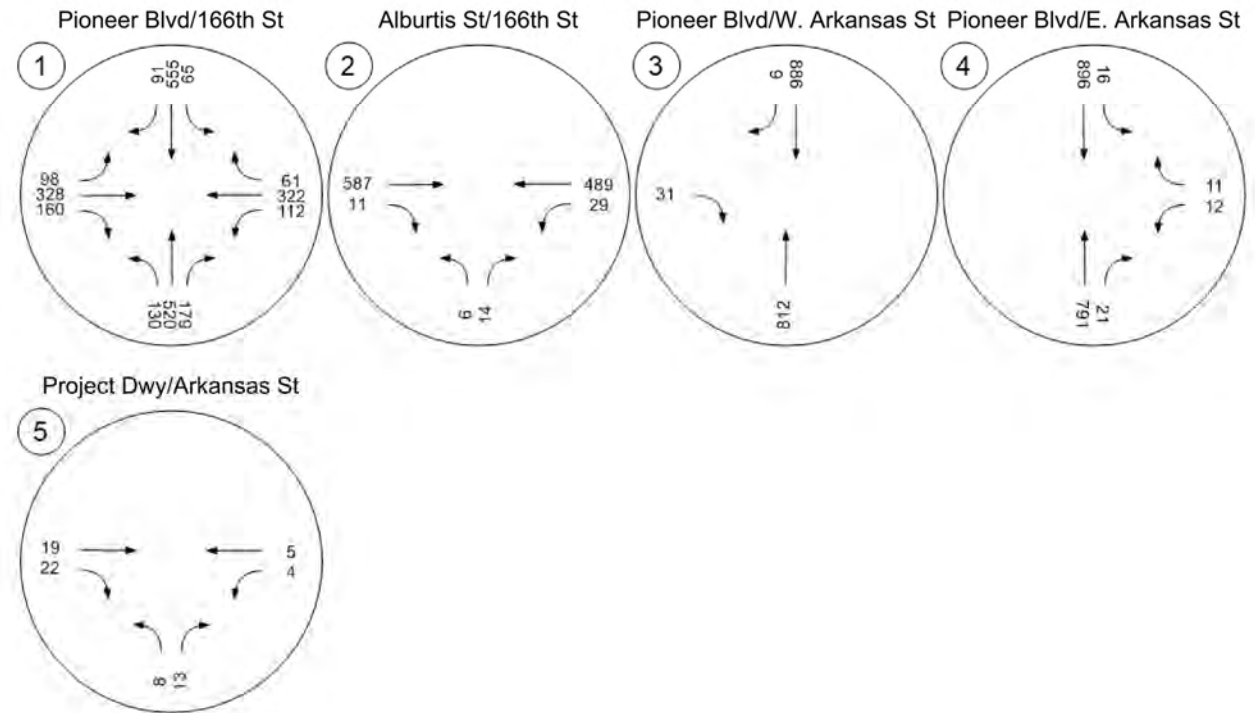


Not to Scale

AM Peak Hour Trips



PM Peak Hour Trips



APPENDIX



APPENDIX A

Glossary of Terminology

Glossary of Terminology

ACRONYMS:

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
LOS	Level of Service
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS:

AVERAGE DAILY TRAFFIC – *The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.*

CAPACITY – *The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.*

CORNER SIGHT DISTANCE – *The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.*

CYCLE LENGTH – *The time period in seconds required for a traffic signal to complete one full cycle of indications.*

CUL-DE-SAC – *A local street open at one end only and with special provisions for turning around.*

DAILY CAPACITY – *A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.*

DELAY – *The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.*

DENSITY – *The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.*

DESIGN SPEED – *A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.*

DIRECTIONAL SPLIT – *The percent of traffic in the peak direction at any point in time.*

FREE FLOW – *Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.*

HEADWAY – *Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.*

LEVEL OF SERVICE – *A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.*

LOOP DETECTOR – *A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.*

PASSENGER CAR EQUIVALENT (PCE) – *A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.*

PEAK HOUR – *The 60 consecutive minutes with the highest number of vehicles.*

QUEUE LENGTH – *The length of vehicle queue, typically expressed in feet, waiting at a service area such as a Traffic signal, stop sign, or access gate.*

SIGHT DISTANCE – *The continuous length of roadway visible to a driver or roadway user.*

SIGNAL CYCLE – *The time period in seconds required for one complete sequence of signal indications.*

SIGNAL PHASE – *The part of the signal cycle allocated to one or more traffic movements.*

STARTING DELAY – *The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.*

STOPPING SIGHT DISTANCE – *The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.*

TRAFFIC-ACTUATED SIGNAL – *A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.*

TRIP – *The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.*

TRIP GENERATION RATE – *The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.*

TURNING RADIUS – *The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheel base as well as the steering mechanism of the vehicle.*

VEHICLE MILES OF TRAVEL – *A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.*

APPENDIX B

SCOPING AGREEMENT

Scoping Agreement for Traffic Impact Analysis

This form acknowledges the requirements for the traffic impact analysis of the following project. The analysis will follow the local jurisdiction's traffic impact analysis guidelines.

Project Name: Mixed-Use Artesia Project on Arkansas Street
Project Address: 11700 Arkansas Street, Artesia, CA
Project Description: Mixed-Use project with 59 units and 5,290 SF of leasable commercial space

	<u>Consultant</u>	<u>Developer</u>
Name:	<u>TJW Engineering</u>	<u>City Ventures</u>
Address:	<u>6 Venture, Suite 225</u> <u>Irvine, CA</u>	<u>3121 Michelson Drive, Suite 150</u> <u>Irvine, CA 92618</u>
Telephone:	<u>949-878-3509</u>	<u>949-258-7540</u>
Email:	<u>David@tjwengineering.com</u>	<u>Kprijatel@cityventures.com</u>

Trip Generation Source: ITE Trip Generation Manual, 10th Edition (2017) – Land Use Code 221, 820

Current GP Land Use:	<u>Low Density Residential</u>	Proposed Land Use:	<u>Low Density Residential</u>
Current Zoning:	<u>Light Manufacturing & Industrial</u>	Proposed Zoning:	<u>Residential</u>

Is the project screened from LOS analysis? ☐ Yes ☒ No

Justification:	
----------------	--

Is the project screened from VMT analysis? ☐ Yes ☒ No

Justification:	County of Los Angeles guidelines will be followed for VMT analysis.
----------------	---



	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips				9	17	26
PM Trips				25	21	46
Daily						521

Internal Trip Capture: ☐ Yes ☒ No _____ % Trip Discount

Pass-By Allowance: ☐ Yes ☒ No _____ % Trip Discount

Trip Distribution: See attached

Project Build-out Year: 2023 Annual Ambient Growth Rate: 2%

Study Intersections:

- | | | |
|--|-----|--|
| 1. Pioneer Blvd / 166 th St | 6. | |
| 2. Alburdis St / 166 th St | 7. | |
| 3. Pioneer Blvd / Arkansas St | 8. | |
| 4. _____ | 9. | |
| 5. _____ | 10. | |

Study Roadway Segments:

- | | | |
|--|----|--|
| 1. Arkansas St b/w Alburdis Ave & Pioneer Blvd | 3. | |
| 2. _____ | 4. | |

Analysis Scenarios:

- | | | |
|---------------------------------------|-----|--|
| 1. Existing Conditions | 6. | |
| 2. Opening Year Conditions | 7. | |
| 3. Opening Year Conditions w/ Project | 8. | |
| 4. _____ | 9. | |
| 5. _____ | 10. | |

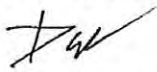
Date of Traffic Counts: New counts will be conducted.



Additional Items to be Addressed:	Diagonal Parking – Concept striping plan to determine capacity to allow for backing out of vehicles; collect ADT (1 weekday and 1 weekend day) along frontage of project (Arkansas St) to assess overall usage of the roadway
-----------------------------------	---

Additional Notes:	
-------------------	--

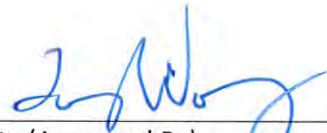
Signatures:



Consultant's Representative

8/11/2021

Date

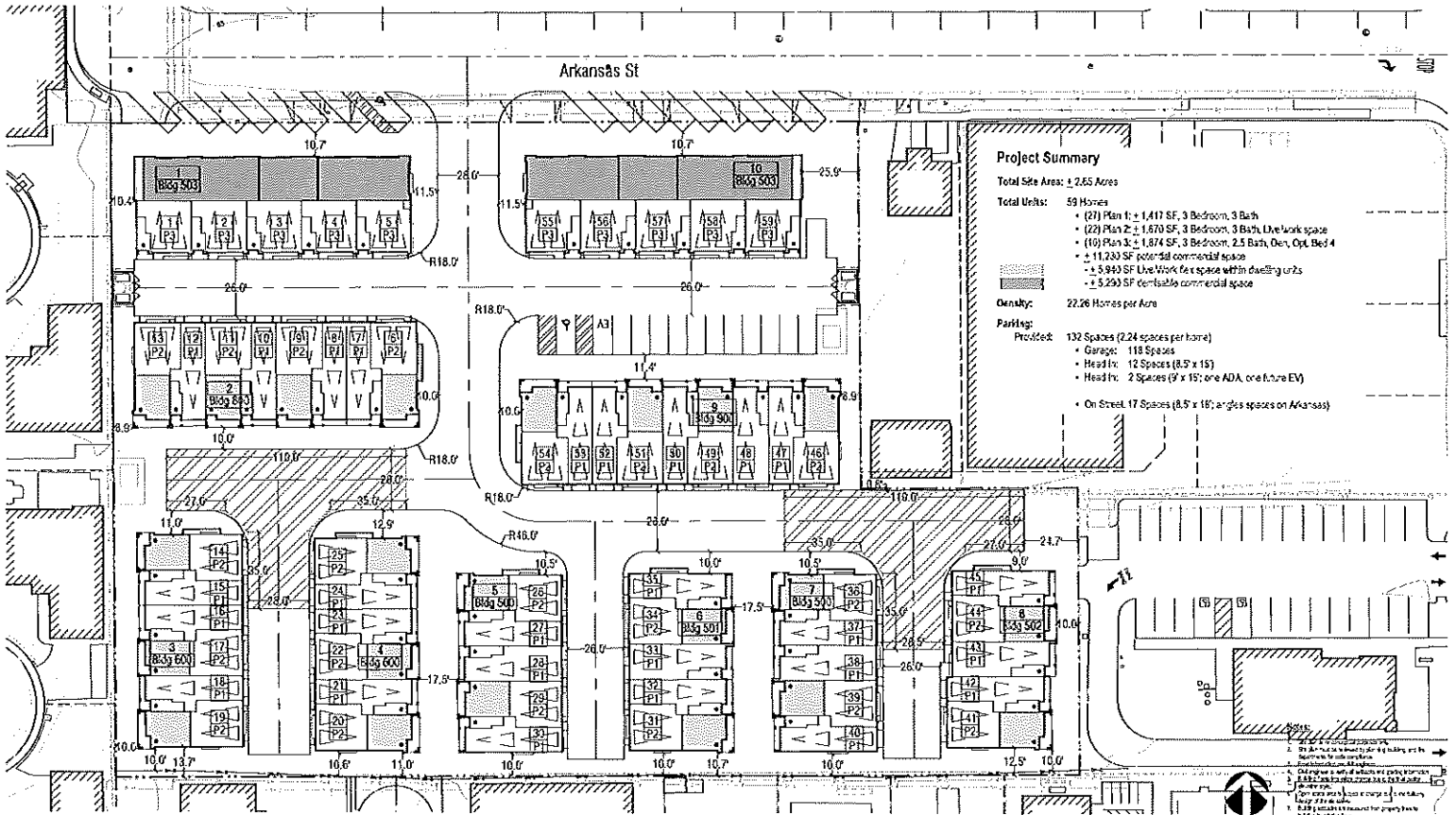


City (Approved By)

9/1/21

Date





CONCEPTUAL SITE PLAN

11700 ARKANSAS STREET SITE

ARTESIA, CA



© 2021 WALSH NEWMAN ASSOCIATES, INC. ALL RIGHTS RESERVED. 2020299 | 08-02-21

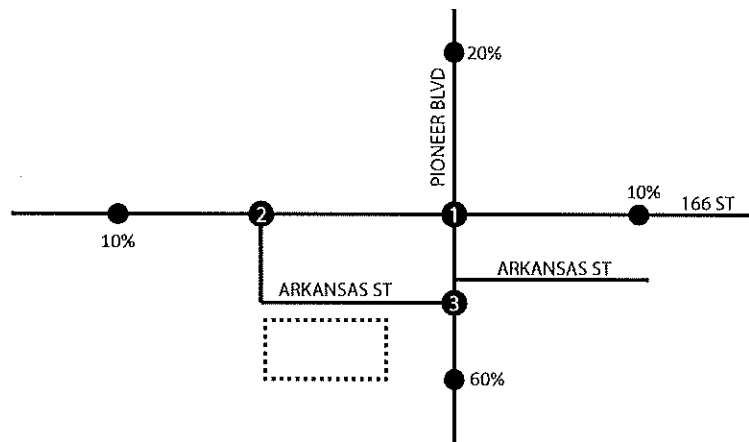
CONCEPT STUDY



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
Multi-Family Housing (Mid-Rise) 221	59.00	DU	5.44	321	0.36	26:74	5	16	21	0.44	61:39	16	10	26
Shopping Center 820	5.29	TSF	37.75	200	0.94	62:38	3	2	5	3.81	48:52	10	10	20
Total				521			9	17	26			25	21	46

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

2: DU=Dwelling Unit; TSF=Thousand Square Feet



- Legend:
- XX% Trip Distribution
 - - - Project Site
 - Study Intersection



TJW ENGINEERING, INC.

Exhibit 1: Trip Distribution and Study Intersections

CVR-21-001 11700 Arkansas St TIA



Not to Scale

APPENDIX C

EXISTING TRAFFIC COUNTS

City of Artesia
N/S: Pioneer Boulevard
E/W: 166th Street
Weather: Clear

File Name : 01_ATS_Pioneer_166_AM
Site Code : 99921467
Start Date : 9/16/2021
Page No : 1

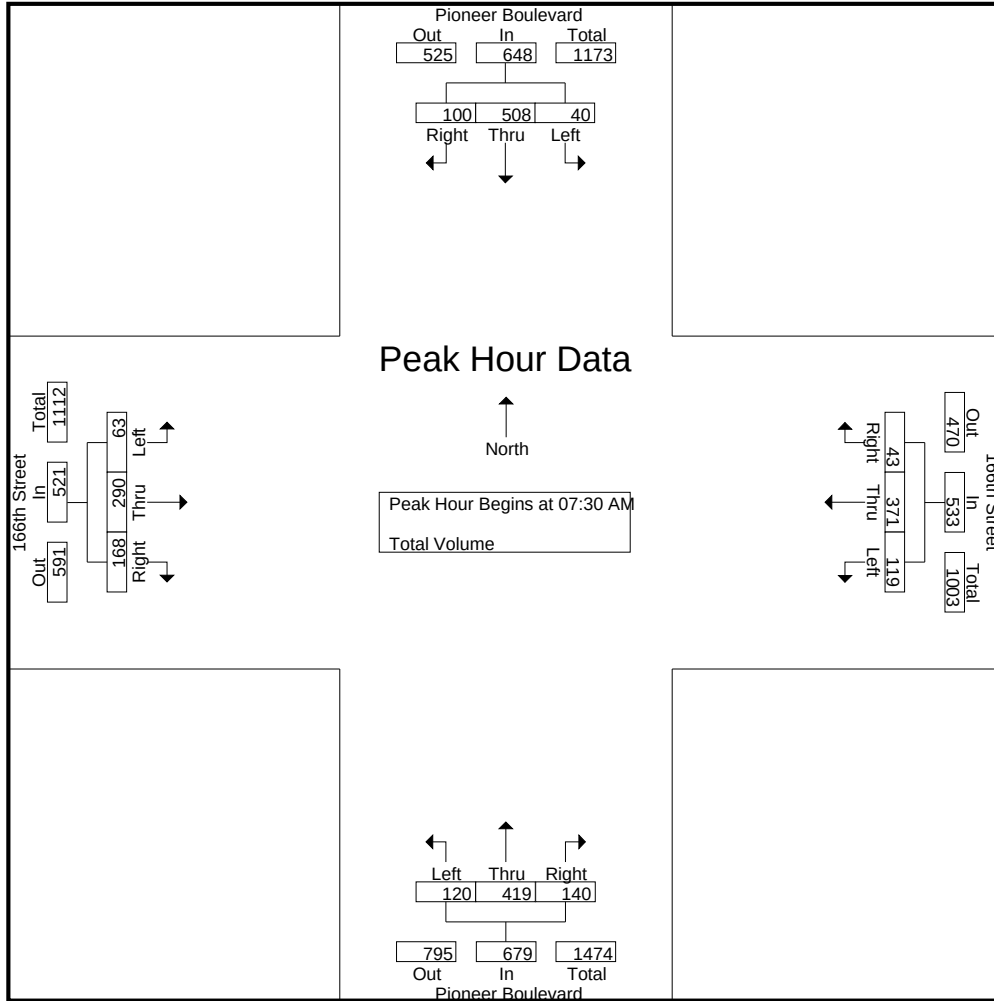
Groups Printed- Total Volume

Start Time	Pioneer Boulevard Southbound				166th Street Westbound				Pioneer Boulevard Northbound				166th Street 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	4	82	13	99	27	43	7	77	13	58	12	83	7	18	37	62	321
07:15 AM	8	109	24	141	37	90	3	130	19	77	14	110	15	52	47	114	495
07:30 AM	5	156	25	186	37	116	12	165	27	102	48	177	17	91	41	149	677
07:45 AM	13	107	22	142	28	92	13	133	37	117	34	188	14	81	39	134	597
Total	30	454	84	568	129	341	35	505	96	354	108	558	53	242	164	459	2090
08:00 AM	6	130	27	163	22	75	11	108	28	110	30	168	14	62	39	115	554
08:15 AM	16	115	26	157	32	88	7	127	28	90	28	146	18	56	49	123	553
08:30 AM	10	89	13	112	27	53	8	88	22	83	18	123	21	50	58	129	452
08:45 AM	13	105	12	130	21	49	12	82	20	70	24	114	7	28	29	64	390
Total	45	439	78	562	102	265	38	405	98	353	100	551	60	196	175	431	1949
Grand Total	75	893	162	1130	231	606	73	910	194	707	208	1109	113	438	339	890	4039
Apprch %	6.6	79	14.3		25.4	66.6	8		17.5	63.8	18.8		12.7	49.2	38.1		
Total %	1.9	22.1	4	28	5.7	15	1.8	22.5	4.8	17.5	5.1	27.5	2.8	10.8	8.4	22	

	Pioneer Boulevard Southbound				166th Street Westbound				Pioneer Boulevard Northbound				166th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	156	25	186	37	116	12	165	27	102	48	177	17	91	41	149	677
07:45 AM	13	107	22	142	28	92	13	133	37	117	34	188	14	81	39	134	597
08:00 AM	6	130	27	163	22	75	11	108	28	110	30	168	14	62	39	115	554
08:15 AM	16	115	26	157	32	88	7	127	28	90	28	146	18	56	49	123	553
Total Volume	40	508	100	648	119	371	43	533	120	419	140	679	63	290	168	521	2381
% App. Total	6.2	78.4	15.4		22.3	69.6	8.1		17.7	61.7	20.6		12.1	55.7	32.2		
PHF	.625	.814	.926	.871	.804	.800	.827	.808	.811	.895	.729	.903	.875	.797	.857	.874	.879

City of Artesia
 N/S: Pioneer Boulevard
 E/W: 166th Street
 Weather: Clear

File Name : 01_ATS_Pioneer_166_AM
 Site Code : 99921467
 Start Date : 9/16/2021
 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				07:15 AM				07:30 AM				07:30 AM			
+0 mins.	5	156	25	186	37	90	3	130	27	102	48	177	17	91	41	149
+15 mins.	13	107	22	142	37	116	12	165	37	117	34	188	14	81	39	134
+30 mins.	6	130	27	163	28	92	13	133	28	110	30	168	14	62	39	115
+45 mins.	16	115	26	157	22	75	11	108	28	90	28	146	18	56	49	123
Total Volume	40	508	100	648	124	373	39	536	120	419	140	679	63	290	168	521
% App. Total	6.2	78.4	15.4		23.1	69.6	7.3		17.7	61.7	20.6		12.1	55.7	32.2	
PHF	.625	.814	.926	.871	.838	.804	.750	.812	.811	.895	.729	.903	.875	.797	.857	.874

City of Artesia
 N/S: Pioneer Boulevard
 E/W: 166th Street
 Weather: Clear

File Name : 01_ATS_Pioneer_166_PM
 Site Code : 99921467
 Start Date : 9/16/2021
 Page No : 1

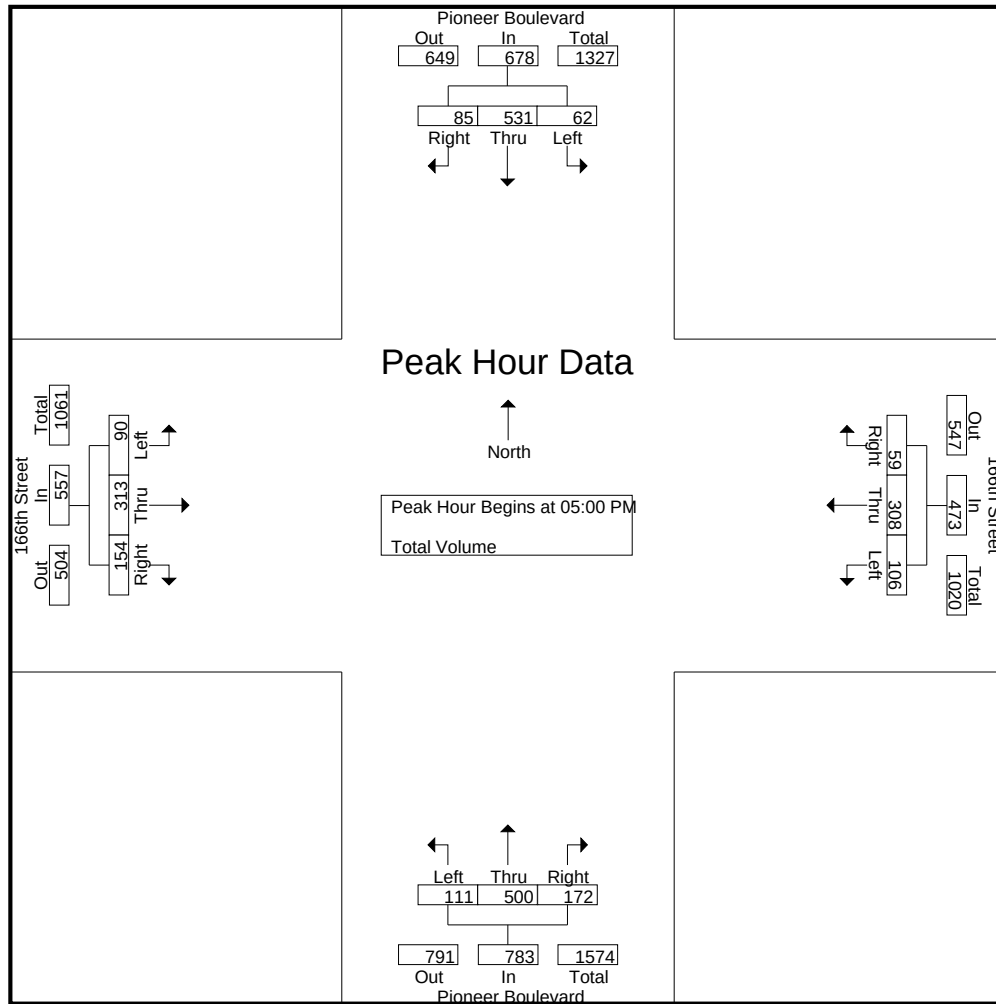
Groups Printed- Total Volume

Start Time	Pioneer Boulevard Southbound				166th Street Westbound				Pioneer Boulevard Northbound				166th Street 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	12	151	24	187	31	63	16	110	19	147	25	191	22	51	34	107	595
04:15 PM	17	185	24	226	32	68	14	114	28	129	36	193	30	65	33	128	661
04:30 PM	17	125	22	164	29	61	15	105	31	135	26	192	20	70	41	131	592
04:45 PM	19	134	21	174	28	86	18	132	26	131	36	193	21	51	29	101	600
Total	65	595	91	751	120	278	63	461	104	542	123	769	93	237	137	467	2448
05:00 PM	16	131	12	159	24	78	16	118	26	127	43	196	20	61	36	117	590
05:15 PM	18	131	30	179	31	77	21	129	25	129	45	199	25	83	42	150	657
05:30 PM	13	145	13	171	27	83	20	130	30	133	38	201	19	74	29	122	624
05:45 PM	15	124	30	169	24	70	2	96	30	111	46	187	26	95	47	168	620
Total	62	531	85	678	106	308	59	473	111	500	172	783	90	313	154	557	2491
Grand Total	127	1126	176	1429	226	586	122	934	215	1042	295	1552	183	550	291	1024	4939
Apprch %	8.9	78.8	12.3		24.2	62.7	13.1		13.9	67.1	19		17.9	53.7	28.4		
Total %	2.6	22.8	3.6	28.9	4.6	11.9	2.5	18.9	4.4	21.1	6	31.4	3.7	11.1	5.9	20.7	

	Pioneer Boulevard Southbound				166th Street Westbound				Pioneer Boulevard Northbound				166th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. 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	16	131	12	159	24	78	16	118	26	127	43	196	20	61	36	117	590
05:15 PM	18	131	30	179	31	77	21	129	25	129	45	199	25	83	42	150	657
05:30 PM	13	145	13	171	27	83	20	130	30	133	38	201	19	74	29	122	624
05:45 PM	15	124	30	169	24	70	2	96	30	111	46	187	26	95	47	168	620
Total Volume	62	531	85	678	106	308	59	473	111	500	172	783	90	313	154	557	2491
% App. Total	9.1	78.3	12.5		22.4	65.1	12.5		14.2	63.9	22		16.2	56.2	27.6		
PHF	.861	.916	.708	.947	.855	.928	.702	.910	.925	.940	.935	.974	.865	.824	.819	.829	.948

City of Artesia
 N/S: Pioneer Boulevard
 E/W: 166th Street
 Weather: Clear

File Name : 01_ATS_Pioneer_166_PM
 Site Code : 99921467
 Start Date : 9/16/2021
 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:

	04:00 PM				04:45 PM				04:45 PM				05:00 PM			
+0 mins.	12	151	24	187	28	86	18	132	26	131	36	193	20	61	36	117
+15 mins.	17	185	24	226	24	78	16	118	26	127	43	196	25	83	42	150
+30 mins.	17	125	22	164	31	77	21	129	25	129	45	199	19	74	29	122
+45 mins.	19	134	21	174	27	83	20	130	30	133	38	201	26	95	47	168
Total Volume	65	595	91	751	110	324	75	509	107	520	162	789	90	313	154	557
% App. Total	8.7	79.2	12.1		21.6	63.7	14.7		13.6	65.9	20.5		16.2	56.2	27.6	
PHF	.855	.804	.948	.831	.887	.942	.893	.964	.892	.977	.900	.981	.865	.824	.819	.829

City of Artesia
 N/S: Albutis Avenue
 E/W: 166th Street
 Weather: Clear

File Name : 02_ATS_Albutis_166_AM
 Site Code : 99921467
 Start Date : 9/16/2021
 Page No : 1

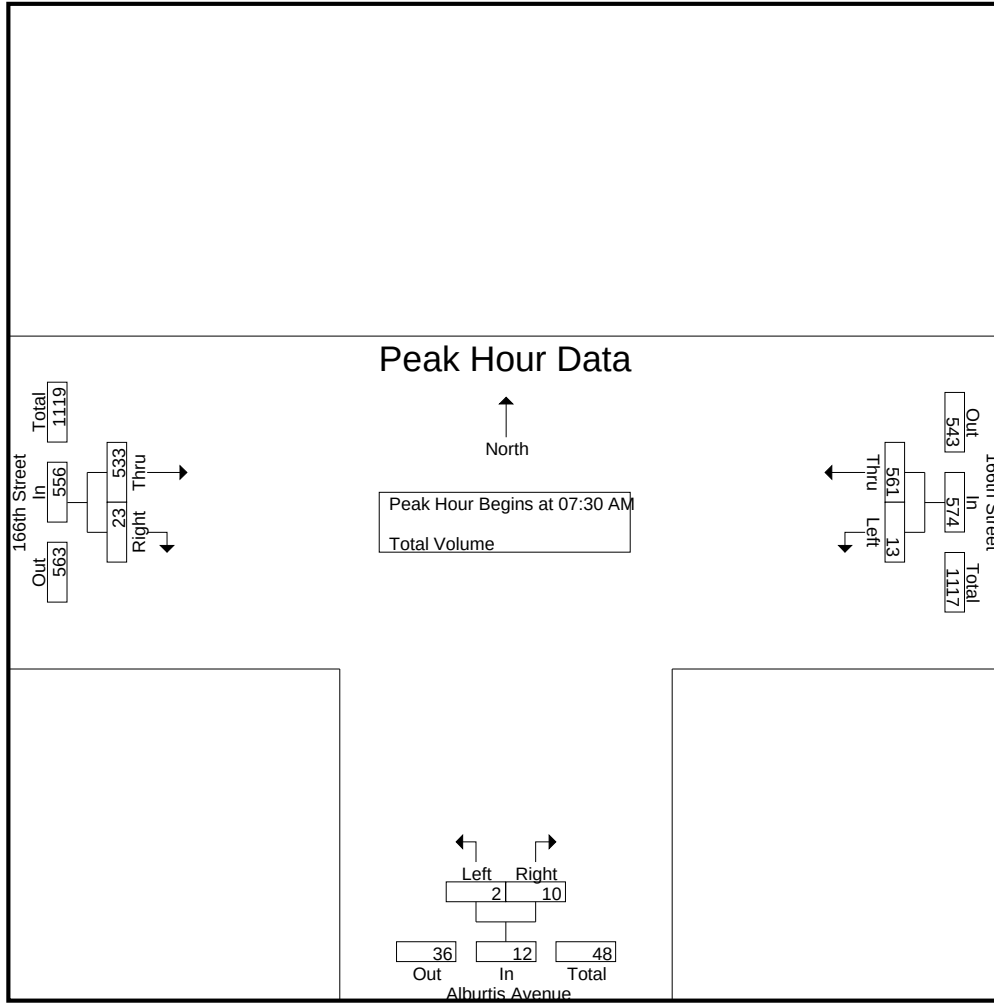
Groups Printed- Total Volume

	166th Street Westbound			Albutis Avenue Northbound			166th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	2	66	68	0	2	2	60	0	60	130
07:15 AM	2	122	124	1	0	1	113	4	117	242
07:30 AM	0	158	158	1	2	3	152	7	159	320
07:45 AM	5	147	152	0	3	3	140	8	148	303
Total	9	493	502	2	7	9	465	19	484	995
08:00 AM	5	121	126	1	4	5	113	6	119	250
08:15 AM	3	135	138	0	1	1	128	2	130	269
08:30 AM	4	80	84	3	0	3	122	0	122	209
08:45 AM	2	76	78	1	0	1	69	3	72	151
Total	14	412	426	5	5	10	432	11	443	879
Grand Total	23	905	928	7	12	19	897	30	927	1874
Apprch %	2.5	97.5		36.8	63.2		96.8	3.2		
Total %	1.2	48.3	49.5	0.4	0.6	1	47.9	1.6	49.5	

	166th Street Westbound			Albutis Avenue Northbound			166th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	158	158	1	2	3	152	7	159	320
07:45 AM	5	147	152	0	3	3	140	8	148	303
08:00 AM	5	121	126	1	4	5	113	6	119	250
08:15 AM	3	135	138	0	1	1	128	2	130	269
Total Volume	13	561	574	2	10	12	533	23	556	1142
% App. Total	2.3	97.7		16.7	83.3		95.9	4.1		
PHF	.650	.888	.908	.500	.625	.600	.877	.719	.874	.892

City of Artesia
 N/S: Alburdis Avenue
 E/W: 166th Street
 Weather: Clear

File Name : 02_ATS_Alburdis_166_AM
 Site Code : 99921467
 Start Date : 9/16/2021
 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			07:15 AM			07:30 AM		
+0 mins.	0	158	158	1	0	1	152	7	159
+15 mins.	5	147	152	1	2	3	140	8	148
+30 mins.	5	121	126	0	3	3	113	6	119
+45 mins.	3	135	138	1	4	5	128	2	130
Total Volume	13	561	574	3	9	12	533	23	556
% App. Total	2.3	97.7		25	75		95.9	4.1	
PHF	.650	.888	.908	.750	.563	.600	.877	.719	.874

City of Artesia
N/S: Albutis Avenue
E/W: 166th Street
Weather: Clear

File Name : 02_ATS_Albutis_166_PM
Site Code : 99921467
Start Date : 9/16/2021
Page No : 1

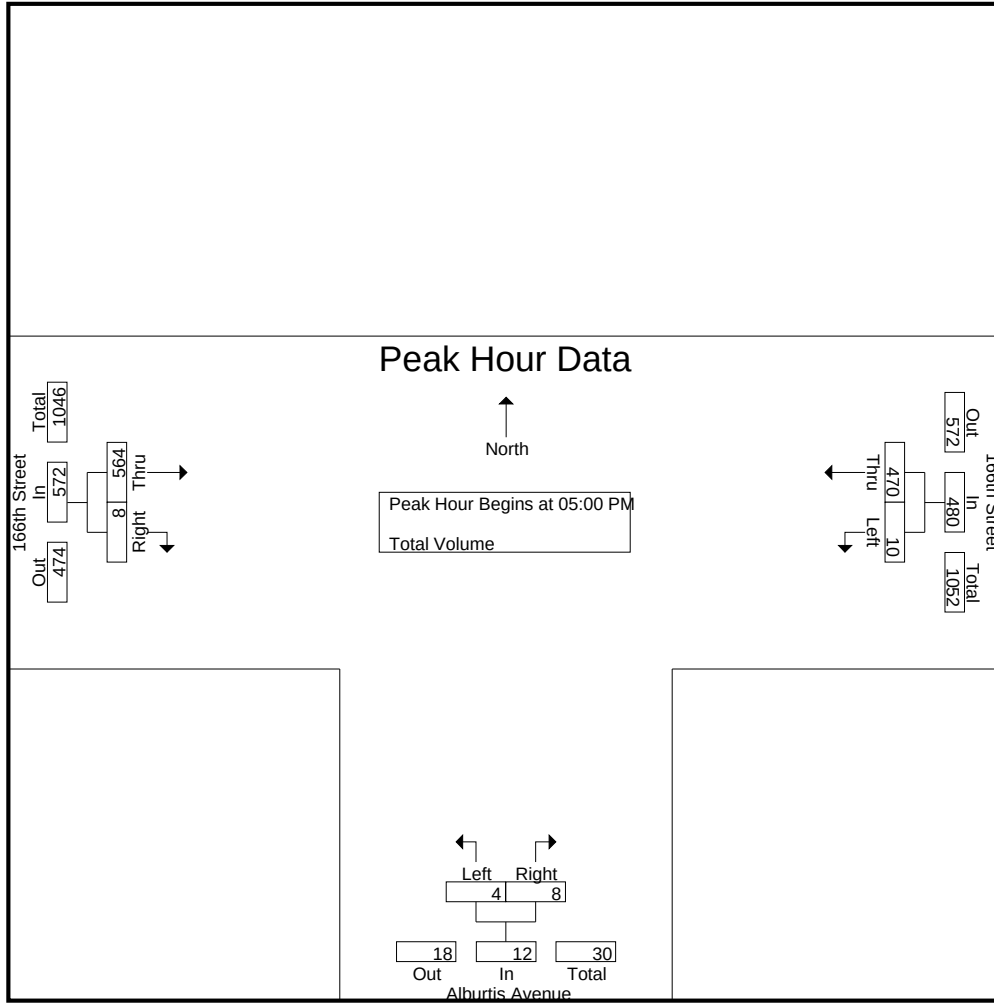
Groups Printed- Total Volume

	166th Street Westbound			Albutis Avenue Northbound			166th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	2	102	104	0	0	0	104	1	105	209
04:15 PM	3	112	115	2	2	4	130	1	131	250
04:30 PM	1	110	111	0	1	1	141	2	143	255
04:45 PM	0	124	124	2	1	3	104	0	104	231
Total	6	448	454	4	4	8	479	4	483	945
05:00 PM	4	105	109	0	3	3	125	2	127	239
05:15 PM	2	126	128	1	3	4	149	0	149	281
05:30 PM	1	119	120	2	0	2	128	4	132	254
05:45 PM	3	120	123	1	2	3	162	2	164	290
Total	10	470	480	4	8	12	564	8	572	1064
Grand Total	16	918	934	8	12	20	1043	12	1055	2009
Apprch %	1.7	98.3		40	60		98.9	1.1		
Total %	0.8	45.7	46.5	0.4	0.6	1	51.9	0.6	52.5	

	166th Street Westbound			Albutis Avenue Northbound			166th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. 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	4	105	109	0	3	3	125	2	127	239
05:15 PM	2	126	128	1	3	4	149	0	149	281
05:30 PM	1	119	120	2	0	2	128	4	132	254
05:45 PM	3	120	123	1	2	3	162	2	164	290
Total Volume	10	470	480	4	8	12	564	8	572	1064
% App. Total	2.1	97.9		33.3	66.7		98.6	1.4		
PHF	.625	.933	.938	.500	.667	.750	.870	.500	.872	.917

City of Artesia
 N/S: Alburdis Avenue
 E/W: 166th Street
 Weather: Clear

File Name : 02_ATS_Alburdis_166_PM
 Site Code : 99921467
 Start Date : 9/16/2021
 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:

	04:45 PM			04:45 PM			05:00 PM		
+0 mins.	0	124	124	2	1	3	125	2	127
+15 mins.	4	105	109	0	3	3	149	0	149
+30 mins.	2	126	128	1	3	4	128	4	132
+45 mins.	1	119	120	2	0	2	162	2	164
Total Volume	7	474	481	5	7	12	564	8	572
% App. Total	1.5	98.5		41.7	58.3		98.6	1.4	
PHF	.438	.940	.939	.625	.583	.750	.870	.500	.872

City of Artesia
N/S: Pioneer Boulevard
E/W: Arkansas Street
Weather: Clear

File Name : 03_ATS_Pioneer_Arkansas_AM
Site Code : 99921467
Start Date : 9/16/2021
Page No : 1

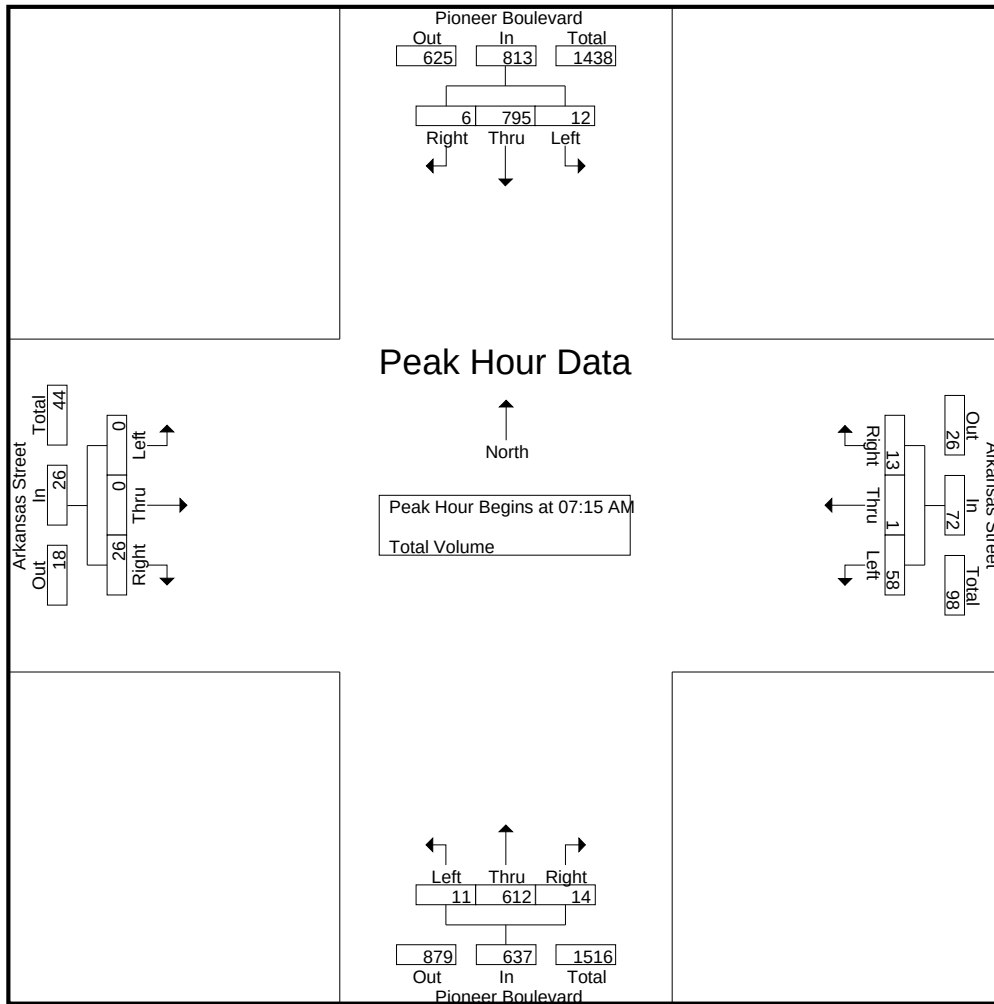
Groups Printed- Total Volume

Start Time	Pioneer Boulevard Southbound				Arkansas Street Westbound				Pioneer Boulevard Northbound				Arkansas Street 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	5	136	2	143	8	0	3	11	4	79	1	84	0	0	3	3	241
07:15 AM	8	216	1	225	18	0	2	20	2	123	2	127	0	0	7	7	379
07:30 AM	3	212	1	216	12	1	6	19	4	159	2	165	0	0	8	8	408
07:45 AM	0	186	2	188	19	0	4	23	3	169	7	179	0	0	7	7	397
Total	16	750	6	772	57	1	15	73	13	530	12	555	0	0	25	25	1425
08:00 AM	1	181	2	184	9	0	1	10	2	161	3	166	0	0	4	4	364
08:15 AM	3	181	1	185	13	0	4	17	1	125	4	130	0	0	5	5	337
08:30 AM	7	167	1	175	8	0	2	10	1	112	3	116	0	0	3	3	304
08:45 AM	4	152	1	157	6	0	4	10	0	107	1	108	0	0	4	4	279
Total	15	681	5	701	36	0	11	47	4	505	11	520	0	0	16	16	1284
Grand Total	31	1431	11	1473	93	1	26	120	17	1035	23	1075	0	0	41	41	2709
Apprch %	2.1	97.1	0.7		77.5	0.8	21.7		1.6	96.3	2.1		0	0	100		
Total %	1.1	52.8	0.4	54.4	3.4	0	1	4.4	0.6	38.2	0.8	39.7	0	0	1.5	1.5	

	Pioneer Boulevard Southbound				Arkansas Street Westbound				Pioneer Boulevard Northbound				Arkansas Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	216	1	225	18	0	2	20	2	123	2	127	0	0	7	7	379
07:30 AM	3	212	1	216	12	1	6	19	4	159	2	165	0	0	8	8	408
07:45 AM	0	186	2	188	19	0	4	23	3	169	7	179	0	0	7	7	397
08:00 AM	1	181	2	184	9	0	1	10	2	161	3	166	0	0	4	4	364
Total Volume	12	795	6	813	58	1	13	72	11	612	14	637	0	0	26	26	1548
% App. Total	1.5	97.8	0.7		80.6	1.4	18.1		1.7	96.1	2.2		0	0	100		
PHE	.375	.920	.750	.903	.763	.250	.542	.783	.688	.905	.500	.890	.000	.000	.813	.813	.949

City of Artesia
N/S: Pioneer Boulevard
E/W: Arkansas Street
Weather: Clear

File Name : 03_ATS_Pioneer_Arkansas_AM
Site Code : 99921467
Start Date : 9/16/2021
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:

	07:15 AM				07:00 AM				07:30 AM				07:15 AM			
+0 mins.	8	216	1	225	8	0	3	11	4	159	2	165	0	0	7	7
+15 mins.	3	212	1	216	18	0	2	20	3	169	7	179	0	0	8	8
+30 mins.	0	186	2	188	12	1	6	19	2	161	3	166	0	0	7	7
+45 mins.	1	181	2	184	19	0	4	23	1	125	4	130	0	0	4	4
Total Volume	12	795	6	813	57	1	15	73	10	614	16	640	0	0	26	26
% App. Total	1.5	97.8	0.7		78.1	1.4	20.5		1.6	95.9	2.5		0	0	100	
PHF	.375	.920	.750	.903	.750	.250	.625	.793	.625	.908	.571	.894	.000	.000	.813	.813

City of Artesia
 N/S: Pioneer Boulevard
 E/W: Arkansas Street
 Weather: Clear

File Name : 03_ATS_Pioneer_Arkansas_PM
 Site Code : 99921467
 Start Date : 9/16/2021
 Page No : 1

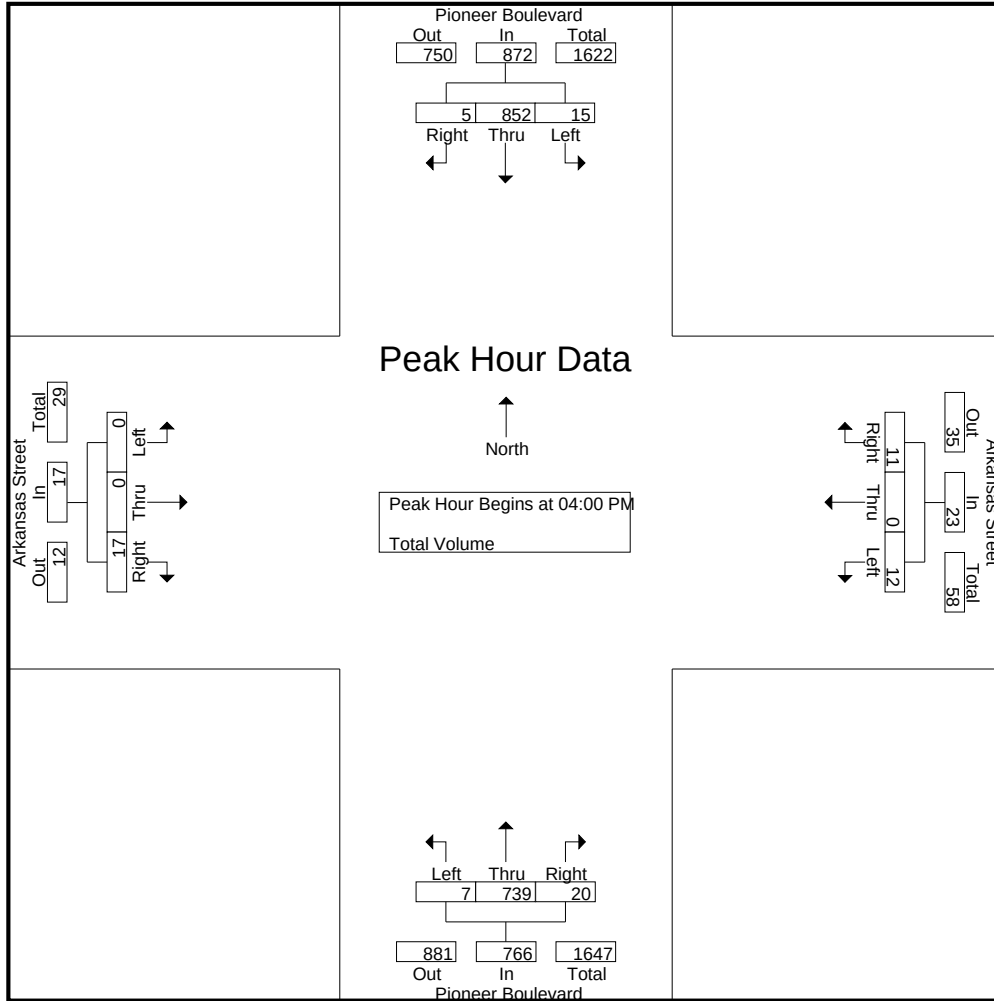
Groups Printed- Total Volume

Start Time	Pioneer Boulevard Southbound				Arkansas Street Westbound				Pioneer Boulevard Northbound				Arkansas Street 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	6	207	2	215	3	0	2	5	0	186	6	192	0	0	9	9	421
04:15 PM	2	254	1	257	4	0	1	5	2	184	6	192	0	0	4	4	458
04:30 PM	4	190	1	195	1	0	2	3	3	182	4	189	0	0	3	3	390
04:45 PM	3	201	1	205	4	0	6	10	2	187	4	193	0	0	1	1	409
Total	15	852	5	872	12	0	11	23	7	739	20	766	0	0	17	17	1678
05:00 PM	2	202	0	204	4	0	5	9	4	186	3	193	0	0	8	8	414
05:15 PM	0	202	4	206	3	0	3	6	0	180	3	183	0	0	3	3	398
05:30 PM	3	171	0	174	4	2	2	8	1	193	6	200	0	0	4	4	386
05:45 PM	2	198	1	201	1	0	0	1	3	180	4	187	0	0	4	4	393
Total	7	773	5	785	12	2	10	24	8	739	16	763	0	0	19	19	1591
Grand Total	22	1625	10	1657	24	2	21	47	15	1478	36	1529	0	0	36	36	3269
Apprch %	1.3	98.1	0.6		51.1	4.3	44.7		1	96.7	2.4		0	0	100		
Total %	0.7	49.7	0.3	50.7	0.7	0.1	0.6	1.4	0.5	45.2	1.1	46.8	0	0	1.1	1.1	

	Pioneer Boulevard Southbound				Arkansas Street Westbound				Pioneer Boulevard Northbound				Arkansas Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	6	207	2	215	3	0	2	5	0	186	6	192	0	0	9	9	421
04:15 PM	2	254	1	257	4	0	1	5	2	184	6	192	0	0	4	4	458
04:30 PM	4	190	1	195	1	0	2	3	3	182	4	189	0	0	3	3	390
04:45 PM	3	201	1	205	4	0	6	10	2	187	4	193	0	0	1	1	409
Total Volume	15	852	5	872	12	0	11	23	7	739	20	766	0	0	17	17	1678
% App. Total	1.7	97.7	0.6		52.2	0	47.8		0.9	96.5	2.6		0	0	100		
PHE	.625	.839	.625	.848	.750	.000	.458	.575	.583	.988	.833	.992	.000	.000	.472	.472	.916

City of Artesia
 N/S: Pioneer Boulevard
 E/W: Arkansas Street
 Weather: Clear

File Name : 03_ATS_Pioneer_Arkansas_PM
 Site Code : 99921467
 Start Date : 9/16/2021
 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:

	04:00 PM				04:45 PM				04:45 PM				05:00 PM			
+0 mins.	6	207	2	215	4	0	6	10	2	187	4	193	0	0	8	8
+15 mins.	2	254	1	257	4	0	5	9	4	186	3	193	0	0	3	3
+30 mins.	4	190	1	195	3	0	3	6	0	180	3	183	0	0	4	4
+45 mins.	3	201	1	205	4	2	2	8	1	193	6	200	0	0	4	4
Total Volume	15	852	5	872	15	2	16	33	7	746	16	769	0	0	19	19
% App. Total	1.7	97.7	0.6		45.5	6.1	48.5		0.9	97	2.1		0	0	100	
PHF	.625	.839	.625	.848	.938	.250	.667	.825	.438	.966	.667	.961	.000	.000	.594	.594

Counts Unlimited, Inc.

Page 1

City of Artesia
Arkansas Street
B/ Alburis Avenue - Pioneer Boulevard
72 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

ATS001
Site Code: 999-21467

Start Time	16-Sep-21 Thu	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	4			0	1				
12:15		1	2			1	2				
12:30		0	1			0	1				
12:45		0	2	1	9	0	3	1	7	2	16
01:00		0	2			0	2				
01:15		0	3			0	1				
01:30		0	3			0	5				
01:45		0	4	0	12	0	1	0	9	0	21
02:00		0	4			0	1				
02:15		0	8			0	2				
02:30		0	13			0	1				
02:45		0	5	0	30	0	4	0	8	0	38
03:00		0	2			0	0				
03:15		0	3			0	0				
03:30		0	4			0	2				
03:45		0	2	0	11	1	4	1	6	1	17
04:00		0	7			0	0				
04:15		0	2			1	3				
04:30		0	1			0	0				
04:45		0	0	0	10	2	3	3	6	3	16
05:00		2	5			5	1				
05:15		2	3			0	4				
05:30		1	3			0	3				
05:45		0	6	5	17	0	4	5	12	10	29
06:00		2	2			1	3				
06:15		0	3			0	2				
06:30		1	4			1	0				
06:45		1	4	4	13	3	0	5	5	9	18
07:00		3	2			3	3				
07:15		6	5			0	1				
07:30		7	0			3	0				
07:45		7	3	23	10	2	1	8	5	31	15
08:00		5	3			2	1				
08:15		6	1			1	1				
08:30		2	0			2	1				
08:45		3	1	16	5	1	0	6	3	22	8
09:00		4	4			1	1				
09:15		5	2			2	1				
09:30		3	0			0	0				
09:45		2	0	14	6	2	0	5	2	19	8
10:00		2	0			2	0				
10:15		0	1			1	1				
10:30		0	0			0	1				
10:45		0	0	2	1	2	1	5	3	7	4
11:00		4	1			2	0				
11:15		2	0			1	0				
11:30		3	0			4	0				
11:45		1	0	10	1	3	1	10	1	20	2
Total		75	125	75	125	49	67	49	67	124	192
Combined Total		200		200		116		116		316	
AM Peak	-	07:15	-	-	-	11:00	-	-	-	-	-
Vol.	-	25	-	-	-	10	-	-	-	-	-
P.H.F.		0.893				0.625					
PM Peak	-	-	02:00	-	-	-	05:15	-	-	-	-
Vol.	-	-	30	-	-	-	14	-	-	-	-
P.H.F.			0.577				0.875				
Percentage		37.5%	62.5%			42.2%	57.8%				

Counts Unlimited, Inc.

City of Artesia
Arkansas Street
B/ Alburis Avenue - Pioneer Boulevard
72 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

ATS001
Site Code: 999-21467

Start Time	17-Sep-21 Fri	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	4			1	3				
12:15		0	1			0	4				
12:30		0	3			1	1				
12:45		2	4	2	12	0	3	2	11	4	23
01:00		0	4			0	3				
01:15		0	5			0	4				
01:30		0	8			0	7				
01:45		0	4	0	21	0	2	0	16	0	37
02:00		0	3			0	4				
02:15		0	7			0	1				
02:30		0	8			0	1				
02:45		0	10	0	28	0	4	0	10	0	38
03:00		0	7			0	2				
03:15		0	6			0	3				
03:30		0	8			0	1				
03:45		0	2	0	23	0	1	0	7	0	30
04:00		1	2			0	3				
04:15		0	8			0	2				
04:30		0	7			1	3				
04:45		2	3	3	20	3	2	4	10	7	30
05:00		3	1			2	3				
05:15		1	2			0	2				
05:30		3	5			0	2				
05:45		0	1	7	9	1	4	3	11	10	20
06:00		2	3			0	5				
06:15		0	3			2	2				
06:30		3	2			1	1				
06:45		1	4	6	12	2	1	5	9	11	21
07:00		3	5			2	0				
07:15		4	1			4	2				
07:30		4	0			0	0				
07:45		6	1	17	7	1	0	7	2	24	9
08:00		5	3			3	0				
08:15		7	4			4	1				
08:30		5	0			3	1				
08:45		0	0	17	7	2	1	12	3	29	10
09:00		2	0			0	3				
09:15		2	1			1	0				
09:30		2	0			1	1				
09:45		4	3	10	4	0	2	2	6	12	10
10:00		2	0			0	0				
10:15		1	1			3	0				
10:30		1	1			3	0				
10:45		3	1	7	3	3	0	9	0	16	3
11:00		2	0			1	1				
11:15		5	0			4	0				
11:30		3	0			2	0				
11:45		3	0	13	0	6	0	13	1	26	1
Total		82	146	82	146	57	86	57	86	139	232
Combined Total		228		228		143		143		371	
AM Peak	-	07:45	-	-	-	11:00	-	-	-	-	-
Vol.	-	23	-	-	-	13	-	-	-	-	-
P.H.F.		0.821				0.542					
PM Peak	-	-	02:15	-	-	-	00:45	-	-	-	-
Vol.	-	-	32	-	-	-	17	-	-	-	-
P.H.F.			0.800				0.607				
Percentage		36.0%	64.0%			39.9%	60.1%				

Counts Unlimited, Inc.

City of Artesia
Arkansas Street
B/ Alburdis Avenue - Pioneer Boulevard
72 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

ATS001
Site Code: 999-21467

Start Time	18-Sep-21 Sat	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	3			0	2				
12:15		0	3			0	1				
12:30		0	2			0	2				
12:45		1	3	1	11	0	0	0	5	1	16
01:00		0	1			0	3				
01:15		0	1			0	2				
01:30		1	5			0	1				
01:45		0	7	1	14	0	0	0	6	1	20
02:00		0	4			0	4				
02:15		0	0			0	0				
02:30		0	0			0	0				
02:45		0	3	0	7	1	1	1	5	1	12
03:00		0	0			0	1				
03:15		0	3			0	4				
03:30		0	7			0	1				
03:45		0	1	0	11	0	2	0	8	0	19
04:00		0	1			0	2				
04:15		0	2			0	1				
04:30		0	3			0	1				
04:45		0	4	0	10	0	0	0	4	0	14
05:00		0	4			1	2				
05:15		0	4			0	3				
05:30		0	2			0	0				
05:45		1	1	1	11	0	1	1	6	2	17
06:00		0	1			1	1				
06:15		0	4			2	2				
06:30		1	1			3	0				
06:45		1	2	2	8	1	4	7	7	9	15
07:00		3	3			0	0				
07:15		5	4			2	2				
07:30		1	2			1	2				
07:45		1	4	10	13	0	1	3	5	13	18
08:00		3	1			1	3				
08:15		1	5			1	1				
08:30		3	2			3	1				
08:45		1	1	8	9	3	3	8	8	16	17
09:00		0	3			0	0				
09:15		7	0			1	0				
09:30		0	1			0	1				
09:45		1	1	8	5	1	0	2	1	10	6
10:00		2	1			1	0				
10:15		2	0			0	0				
10:30		6	1			0	1				
10:45		3	0	13	2	1	0	2	1	15	3
11:00		2	0			0	0				
11:15		4	2			0	0				
11:30		5	1			0	0				
11:45		3	0	14	3	2	1	2	1	16	4
Total		58	104	58	104	26	57	26	57	84	161
Combined Total		162		162		83		83		245	
AM Peak	-	10:30	-	-	-	08:00	-	-	-	-	-
Vol.	-	15	-	-	-	8	-	-	-	-	-
P.H.F.		0.625				0.667					
PM Peak	-	-	01:15	-	-	-	03:15	-	-	-	-
Vol.	-	-	17	-	-	-	9	-	-	-	-
P.H.F.			0.607				0.563				
Percentage		35.8%	64.2%			31.3%	68.7%				
ADT/AADT		ADT 311		AADT 311							

APPENDIX D

HCM ANALYSIS WORKSHEETS

EXISTING CONDITION

Intersection Level Of Service Report

Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	120	419	140	40	508	100	63	290	168	119	371	43
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]	120	419	140	40	508	100	63	290	168	119	371	43
Peak Hour 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
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]	30	105	35	10	127	25	16	73	42	30	93	11
Total Analysis Volume [veh/h]	120	419	140	40	508	100	63	290	168	119	371	43
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 in	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]	95
Coordination Type	Time of Day Pattern Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	12	35	0	9	32	0	13	39	0	12	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
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
l1_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
l2, 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]	8	52	52	3	47	47	5	16	16	8	19	19
g / C, Green / Cycle	0.08	0.55	0.55	0.03	0.50	0.50	0.05	0.17	0.17	0.08	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.07	0.16	0.16	0.02	0.15	0.07	0.04	0.13	0.14	0.07	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1648	1714	3427	1530	1714	1800	1584	1714	1800	1735
c, Capacity [veh/h]	146	982	899	61	1700	759	82	299	263	146	365	352
d1, Uniform Delay [s]	42.84	11.73	11.75	45.31	14.19	12.94	44.77	38.20	38.36	42.81	34.22	34.25
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]	10.97	0.77	0.85	11.32	0.45	0.36	13.65	5.09	6.51	10.56	1.43	1.51
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	0.82	0.30	0.30	0.66	0.30	0.13	0.77	0.81	0.83	0.82	0.57	0.58
d, Delay for Lane Group [s/veh]	53.80	12.50	12.60	56.64	14.64	13.30	58.41	43.29	44.87	53.37	35.65	35.76
Lane Group LOS	D	B	B	E	B	B	E	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.19	3.36	3.12	1.12	3.21	1.19	1.77	5.74	5.30	3.15	4.47	4.35
50th-Percentile Queue Length [ft/ln]	79.78	84.04	78.12	27.94	80.20	29.72	44.22	143.57	132.54	78.75	111.64	108.70
95th-Percentile Queue Length [veh/ln]	5.74	6.05	5.62	2.01	5.77	2.14	3.18	9.67	9.08	5.67	7.93	7.77
95th-Percentile Queue Length [ft/ln]	143.60	151.27	140.62	50.29	144.36	53.49	79.60	241.82	226.95	141.76	198.28	194.20

Movement, Approach, & Intersection Results

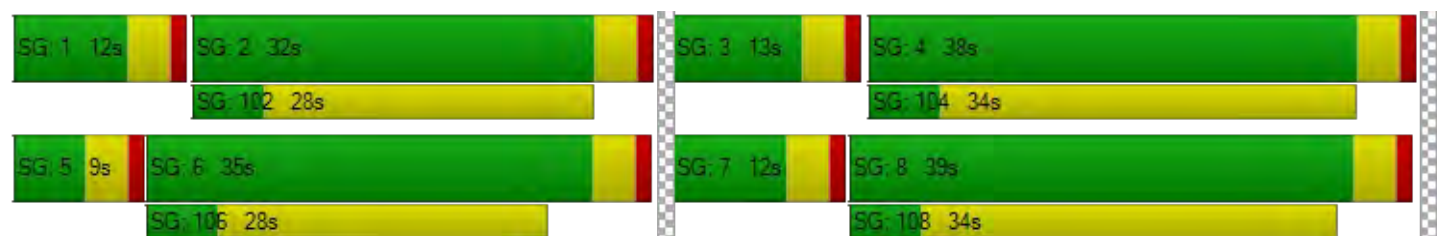
d_M, Delay for Movement [s/veh]	53.80	12.53	12.60	56.64	14.64	13.30	58.41	43.56	44.87	53.37	35.70	35.76
Movement LOS	D	B	B	E	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	19.84			17.03			45.78			39.65		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.18											
Intersection LOS	C											
Intersection V/C	0.434											

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]	38.93			38.93			38.93			38.93		
I_p,int, Pedestrian LOS Score for Intersection	2.591			2.648			2.521			2.500		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	653			589			737			716		
d_b, Bicycle Delay [s]	21.56			23.63			18.95			19.58		
I_b,int, Bicycle LOS Score for Intersection	2.120			2.094			1.989			1.999		
Bicycle LOS	B			B			A			A		

Sequence

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



Intersection Level Of Service Report
Intersection 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 17.2
 Level Of Service: C
 Volume to Capacity (v/c): 0.007

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	2	10	533	23	13	561
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	0	0	0	0	0
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]	2	10	533	23	13	561
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]	1	3	133	6	3	140
Total Analysis Volume [veh/h]	2	10	533	23	13	561
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	17.16	10.09	0.00	0.00	8.56	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.04	0.00
95th-Percentile Queue Length [ft/ln]	1.57	1.57	0.00	0.00	0.96	0.00
d_A, Approach Delay [s/veh]	11.27		0.00		0.19	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.5
 Level Of Service: B
 Volume to Capacity (v/c): 0.045

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	623	14	12	853	7	0	0	26	0	0	13
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
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
Total Hourly Volume [veh/h]	0	623	14	12	853	7	0	0	26	0	0	13
Peak Hour 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
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]	0	156	4	3	213	2	0	0	7	0	0	3
Total Analysis Volume [veh/h]	0	623	14	12	853	7	0	0	26	0	0	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.04	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	8.87	0.00	0.00	0.00	0.00	11.51	0.00	0.00	10.42
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.97	0.00	0.00	0.00	0.00	3.52	0.00	0.00	1.47
d_A, Approach Delay [s/veh]	0.00			0.12			11.51			10.42		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.35											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	111	500	172	62	531	85	90	313	154	106	308	59
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]	111	500	172	62	531	85	90	313	154	106	308	59
Peak Hour 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
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]	28	125	43	16	133	21	23	78	39	27	77	15
Total Analysis Volume [veh/h]	111	500	172	62	531	85	90	313	154	106	308	59
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 in	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]	95
Coordination Type	Time of Day Pattern Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	12	32	0	12	32	0	13	39	0	12	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
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
l1_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
l2, 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]	8	51	51	4	48	48	6	16	16	7	17	17
g / C, Green / Cycle	0.08	0.54	0.54	0.05	0.51	0.51	0.07	0.17	0.17	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.20	0.04	0.15	0.06	0.05	0.14	0.14	0.06	0.10	0.11
s, saturation flow rate [veh/h]	1714	1800	1645	1714	3427	1530	1714	1800	1604	1714	1800	1701
c, Capacity [veh/h]	139	973	889	80	1735	775	115	301	268	133	320	302
d1, Uniform Delay [s]	42.95	12.47	12.48	44.83	13.71	12.27	43.68	38.17	38.29	43.12	35.88	35.94
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]	10.16	1.04	1.14	14.73	0.46	0.29	11.09	5.30	6.52	10.33	1.70	1.86
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	0.80	0.36	0.36	0.78	0.31	0.11	0.78	0.81	0.83	0.80	0.59	0.59
d, Delay for Lane Group [s/veh]	53.11	13.50	13.62	59.57	14.17	12.56	54.77	43.47	44.81	53.45	37.58	37.80
Lane Group LOS	D	B	B	E	B	B	D	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.93	4.30	3.97	1.76	3.29	0.97	2.42	5.85	5.42	2.81	4.09	3.94
50th-Percentile Queue Length [ft/ln]	73.24	107.44	99.18	44.02	82.32	24.33	60.50	146.32	135.50	70.20	102.21	98.48
95th-Percentile Queue Length [veh/ln]	5.27	7.70	7.14	3.17	5.93	1.75	4.36	9.82	9.24	5.05	7.36	7.09
95th-Percentile Queue Length [ft/ln]	131.84	192.43	178.53	79.24	148.17	43.80	108.90	245.51	230.96	126.37	183.98	177.27

Movement, Approach, & Intersection Results

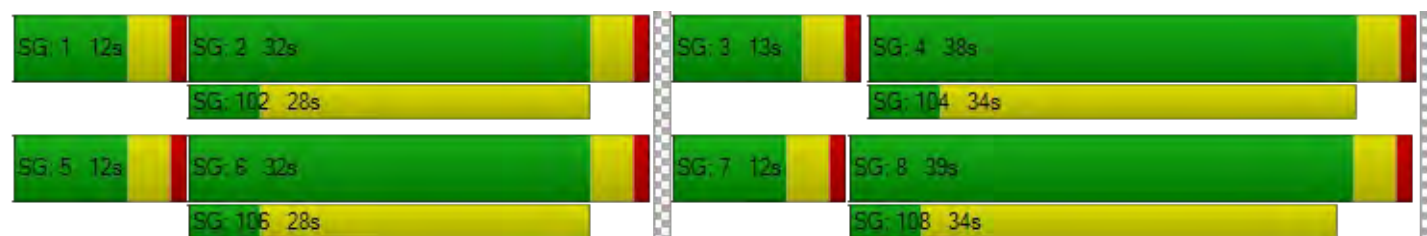
d_M, Delay for Movement [s/veh]	53.11	13.54	13.62	59.57	14.17	12.56	54.77	43.76	44.81	53.45	37.67	37.80
Movement LOS	D	B	B	E	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	19.17			18.12			45.83			41.22		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.03											
Intersection LOS	C											
Intersection V/C	0.441											

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]	38.93			38.93			38.93			38.93		
I_p,int, Pedestrian LOS Score for Intersection	2.611			2.673			2.511			2.503		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			589			737			716		
d_b, Bicycle Delay [s]	23.63			23.63			18.95			19.58		
I_b,int, Bicycle LOS Score for Intersection	2.206			2.119			2.019			1.950		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 16.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.013

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	4	8	564	8	10	470
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	0	0	0	0	0
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]	4	8	564	8	10	470
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]	1	2	141	2	3	118
Total Analysis Volume [veh/h]	4	8	564	8	10	470
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	16.69	10.20	0.00	0.00	8.60	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	1.84	1.84	0.00	0.00	0.75	0.00
d_A, Approach Delay [s/veh]	12.36		0.00		0.18	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.5
 Level Of Service: B
 Volume to Capacity (v/c): 0.030

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	746	20	15	864	5	0	0	17	0	0	11
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
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
Total Hourly Volume [veh/h]	0	746	20	15	864	5	0	0	17	0	0	11
Peak Hour 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
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]	0	187	5	4	216	1	0	0	4	0	0	3
Total Analysis Volume [veh/h]	0	746	20	15	864	5	0	0	17	0	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	9.35	0.00	0.00	0.00	0.00	11.45	0.00	0.00	10.96
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.36	0.00	0.00	0.00	0.00	2.28	0.00	0.00	1.36
d_A, Approach Delay [s/veh]	0.00			0.16			11.45			10.96		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.27											
Intersection LOS	B											

OPENING YEAR CONDITIONS

Intersection Level Of Service Report
Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	120	419	140	40	508	100	63	290	168	119	371	43
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]	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]	125	436	146	42	529	104	66	302	175	124	386	45
Peak Hour 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
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]	31	109	37	11	132	26	17	76	44	31	97	11
Total Analysis Volume [veh/h]	125	436	146	42	529	104	66	302	175	124	386	45
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 in	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]	95
Coordination Type	Time of Day Pattern Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	13	36	0	9	32	0	12	38	0	12	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
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
l1_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
l2, 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]	9	51	51	3	46	46	5	16	16	8	20	20
g / C, Green / Cycle	0.09	0.54	0.54	0.04	0.49	0.49	0.05	0.17	0.17	0.08	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.07	0.17	0.17	0.02	0.15	0.07	0.04	0.14	0.14	0.07	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1648	1714	3427	1530	1714	1800	1584	1714	1800	1735
c, Capacity [veh/h]	155	970	888	63	1661	742	86	309	272	146	372	358
d1, Uniform Delay [s]	42.46	12.17	12.19	45.28	14.94	13.55	44.64	37.94	38.08	42.94	34.11	34.14
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]	9.42	0.84	0.93	11.74	0.51	0.40	13.20	5.13	6.51	12.82	1.49	1.57
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	0.81	0.31	0.31	0.67	0.32	0.14	0.77	0.81	0.83	0.85	0.59	0.59
d, Delay for Lane Group [s/veh]	51.87	13.01	13.12	57.02	15.44	13.95	57.84	43.06	44.59	55.77	35.60	35.71
Lane Group LOS	D	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.26	3.60	3.34	1.18	3.46	1.27	1.84	5.98	5.50	3.37	4.66	4.53
50th-Percentile Queue Length [ft/ln]	81.44	90.02	83.53	29.41	86.51	31.86	46.02	149.54	137.59	84.13	116.39	113.22
95th-Percentile Queue Length [veh/ln]	5.86	6.48	6.01	2.12	6.23	2.29	3.31	9.99	9.35	6.06	8.19	8.02
95th-Percentile Queue Length [ft/ln]	146.59	162.03	150.35	52.93	155.72	57.35	82.83	249.81	233.77	151.43	204.85	200.47

Movement, Approach, & Intersection Results

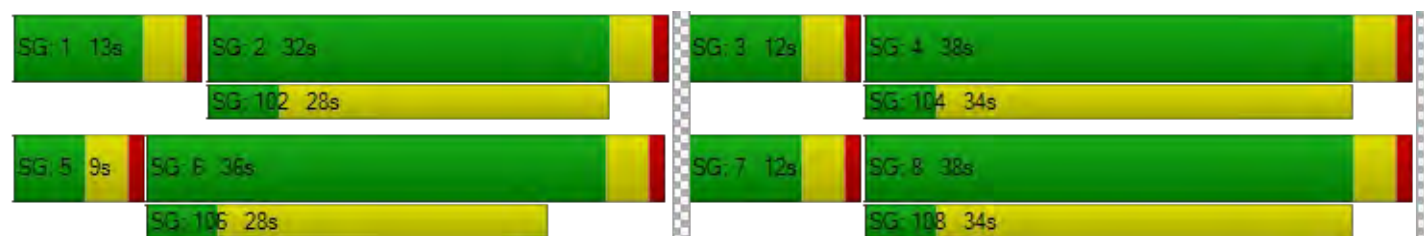
d_M, Delay for Movement [s/veh]	51.87	13.04	13.12	57.02	15.44	13.95	57.84	43.32	44.59	55.77	35.64	35.71
Movement LOS	D	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	19.92			17.80			45.50			40.14		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.47											
Intersection LOS	C											
Intersection V/C	0.452											

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]	38.93			38.93			38.93			38.93		
I_p,int, Pedestrian LOS Score for Intersection	2.603			2.656			2.530			2.508		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	674			589			716			716		
d_b, Bicycle Delay [s]	20.89			23.63			19.58			19.58		
I_b,int, Bicycle LOS Score for Intersection	2.143			2.116			2.008			2.017		
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 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 17.8
 Level Of Service: C
 Volume to Capacity (v/c): 0.007

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	2	10	533	23	13	561
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
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]	2	10	555	24	14	584
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]	1	3	139	6	4	146
Total Analysis Volume [veh/h]	2	10	555	24	14	584
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	17.84	10.18	0.00	0.00	8.63	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.04	0.00
95th-Percentile Queue Length [ft/ln]	1.61	1.61	0.00	0.00	1.06	0.00
d_A, Approach Delay [s/veh]	11.46		0.00		0.20	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.048

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	623	14	12	853	7	0	0	26	0	0	13
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0404	1.0404	1.0404	1.0404	1.0404	1.0000	1.0000	1.0404	1.0000	1.0000	1.0404
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
Total Hourly Volume [veh/h]	0	648	15	12	887	7	0	0	27	0	0	14
Peak Hour 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
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]	0	162	4	3	222	2	0	0	7	0	0	4
Total Analysis Volume [veh/h]	0	648	15	12	887	7	0	0	27	0	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	8.96	0.00	0.00	0.00	0.00	11.70	0.00	0.00	10.54
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	3.76	0.00	0.00	1.61
d_A, Approach Delay [s/veh]	0.00			0.12			11.70			10.54		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.35											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.459

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	111	500	172	62	531	85	90	313	154	106	308	59
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]	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]	115	520	179	65	552	88	94	326	160	110	320	61
Peak Hour 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
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]	29	130	45	16	138	22	24	82	40	28	80	15
Total Analysis Volume [veh/h]	115	520	179	65	552	88	94	326	160	110	320	61
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 in	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]	95
Coordination Type	Time of Day Pattern Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	12	32	0	12	32	0	13	39	0	12	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
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
l1_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
l2, 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]	8	50	50	5	47	47	7	16	16	8	17	17
g / C, Green / Cycle	0.08	0.53	0.53	0.05	0.50	0.50	0.07	0.17	0.17	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.20	0.04	0.16	0.06	0.05	0.14	0.14	0.06	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1645	1714	3427	1530	1714	1800	1604	1714	1800	1702
c, Capacity [veh/h]	143	954	872	84	1698	758	119	311	277	137	330	312
d1, Uniform Delay [s]	42.81	13.17	13.18	44.70	14.43	12.84	43.53	37.90	38.01	42.98	35.56	35.61
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]	10.04	1.16	1.28	14.13	0.51	0.31	10.82	5.33	6.50	10.20	1.68	1.84
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	0.80	0.38	0.38	0.78	0.33	0.12	0.79	0.82	0.83	0.80	0.59	0.60
d, Delay for Lane Group [s/veh]	52.86	14.34	14.46	58.84	14.94	13.15	54.36	43.22	44.51	53.18	37.24	37.45
Lane Group LOS	D	B	B	E	B	B	D	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.03	4.66	4.29	1.83	3.55	1.04	2.52	6.09	5.62	2.91	4.23	4.07
50th-Percentile Queue Length [ft/ln]	75.68	116.45	107.37	45.77	88.69	25.96	62.89	152.21	140.55	72.64	105.74	101.77
95th-Percentile Queue Length [veh/ln]	5.45	8.20	7.69	3.30	6.39	1.87	4.53	10.14	9.51	5.23	7.60	7.33
95th-Percentile Queue Length [ft/ln]	136.22	204.93	192.33	82.39	159.63	46.72	113.20	253.38	237.76	130.75	190.06	183.19

Movement, Approach, & Intersection Results

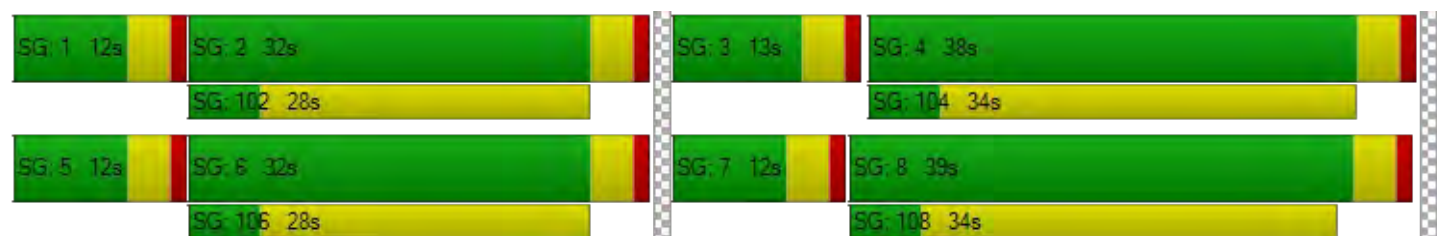
d_M, Delay for Movement [s/veh]	52.86	14.37	14.46	58.84	14.94	13.15	54.36	43.50	44.51	53.18	37.32	37.45
Movement LOS	D	B	B	E	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	19.83			18.76			45.54			40.89		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.29											
Intersection LOS	C											
Intersection V/C	0.459											

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]	38.93			38.93			38.93			38.93		
I_p,int, Pedestrian LOS Score for Intersection	2.623			2.681			2.519			2.511		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			589			737			716		
d_b, Bicycle Delay [s]	23.63			23.63			18.95			19.58		
I_b,int, Bicycle LOS Score for Intersection	2.231			2.141			2.038			1.965		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 17.3
 Level Of Service: C
 Volume to Capacity (v/c): 0.013

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	4	8	564	8	10	470
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
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]	4	8	587	8	10	489
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]	1	2	147	2	3	122
Total Analysis Volume [veh/h]	4	8	587	8	10	489
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.27	10.30	0.00	0.00	8.67	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	1.90	1.90	0.00	0.00	0.76	0.00
d_A, Approach Delay [s/veh]	12.62		0.00		0.17	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.6
 Level Of Service: B
 Volume to Capacity (v/c): 0.032

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	746	20	15	864	5	0	0	17	0	0	11
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0404	1.0404	1.0404	1.0404	1.0404	1.0000	1.0000	1.0404	1.0000	1.0000	1.0404
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
Total Hourly Volume [veh/h]	0	776	21	16	899	5	0	0	18	0	0	11
Peak Hour 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
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]	0	194	5	4	225	1	0	0	5	0	0	3
Total Analysis Volume [veh/h]	0	776	21	16	899	5	0	0	18	0	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	9.47	0.00	0.00	0.00	0.00	11.64	0.00	0.00	11.10
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.49	0.00	0.00	0.00	0.00	2.49	0.00	0.00	1.40
d_A, Approach Delay [s/veh]	0.00			0.16			11.64			11.10		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.28											
Intersection LOS	B											

OPENING YEAR PLUS PROJECT CONDITIONS

Intersection Level Of Service Report

Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	120	419	140	40	508	100	63	290	168	119	371	43
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]	5	0	0	0	1	1	3	2	0	1	1	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]	130	436	146	42	530	105	69	304	175	125	387	45
Peak Hour 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
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	109	37	11	133	26	17	76	44	31	97	11
Total Analysis Volume [veh/h]	130	436	146	42	530	105	69	304	175	125	387	45
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 in	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 Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	14	37	0	9	32	0	16	38	0	16	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
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
l1_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
l2, 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]	9	55	55	4	49	49	5	17	17	9	21	21
g / C, Green / Cycle	0.09	0.54	0.54	0.04	0.49	0.49	0.05	0.17	0.17	0.09	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.08	0.17	0.17	0.02	0.15	0.07	0.04	0.14	0.14	0.07	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1648	1714	3427	1530	1714	1800	1584	1714	1800	1735
c, Capacity [veh/h]	160	978	895	61	1665	743	90	308	271	155	376	362
d1, Uniform Delay [s]	44.56	12.55	12.57	47.74	15.65	14.21	46.84	40.03	40.18	44.69	35.70	35.73
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	0.11
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]	9.61	0.82	0.91	12.89	0.50	0.40	12.67	5.38	6.83	9.46	1.44	1.52
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	0.81	0.31	0.31	0.69	0.32	0.14	0.77	0.82	0.84	0.81	0.58	0.59
d, Delay for Lane Group [s/veh]	54.17	13.37	13.47	60.63	16.16	14.60	59.50	45.41	47.01	54.15	37.14	37.25
Lane Group LOS	D	B	B	E	B	B	E	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.57	3.78	3.51	1.25	3.68	1.36	2.00	6.37	5.86	3.43	4.92	4.79
50th-Percentile Queue Length [ft/ln]	89.21	94.57	87.69	31.23	92.02	34.10	50.10	159.29	146.47	85.74	123.10	119.73
95th-Percentile Queue Length [veh/ln]	6.42	6.81	6.31	2.25	6.63	2.46	3.61	10.51	9.83	6.17	8.56	8.38
95th-Percentile Queue Length [ft/ln]	160.57	170.22	157.85	56.22	165.64	61.38	90.18	262.78	245.72	154.32	214.08	209.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.17	13.40	13.47	60.63	16.16	14.60	59.50	45.68	47.01	54.15	37.19	37.25
Movement LOS	D	B	B	E	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	20.86			18.67			47.85			41.00		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	30.69											
Intersection LOS	C											
Intersection V/C	0.456											

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	2.607			2.659			2.535			2.511		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			560			680			680		
d_b, Bicycle Delay [s]	22.45			25.92			21.78			21.78		
I_b,int, Bicycle LOS Score for Intersection	2.147			2.118			2.012			2.019		
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 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.3
 Level Of Service: C
 Volume to Capacity (v/c): 0.015

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	2	10	533	23	13	561
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	5	0	1	7	0
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]	4	15	555	25	21	584
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]	1	4	139	6	5	146
Total Analysis Volume [veh/h]	4	15	555	25	21	584
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	18.32	10.30	0.00	0.00	8.66	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	2.76	2.76	0.00	0.00	1.60	0.00
d_A, Approach Delay [s/veh]	11.99		0.00		0.30	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.34					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	623	14	12	853	7	0	0	26	0	0	13
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0404	1.0404	1.0404	1.0404	1.0404	1.0000	1.0000	1.0404	1.0000	1.0000	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	0	2	0	0	10	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
Total Hourly Volume [veh/h]	0	653	15	12	887	9	0	0	37	0	0	14
Peak Hour 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
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]	0	163	4	3	222	2	0	0	9	0	0	4
Total Analysis Volume [veh/h]	0	653	15	12	887	9	0	0	37	0	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.07	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	8.97	0.00	0.00	0.00	0.00	11.84	0.00	0.00	10.56
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	5.25	0.00	0.00	1.62
d_A, Approach Delay [s/veh]	0.00			0.12			11.84			10.56		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.43											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 4: Project Dwy/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8
 Level Of Service: A
 Volume to Capacity (v/c): 0.007

Intersection Setup

Name	Project Driveway		Arkansas Street		Arkansas Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway		Arkansas Street		Arkansas Street	
Base Volume Input [veh/h]	0	0	39	0	0	7
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	10	0	8	2	0
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]	7	10	41	8	2	7
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]	2	3	10	2	1	2
Total Analysis Volume [veh/h]	7	10	41	8	2	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.83	8.56	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.30	1.30	0.00	0.00	0.10	0.10
d_A, Approach Delay [s/veh]	8.67		0.00		1.62	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.16					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 1: Pioneer Blvd/166th St

Control Type:	Signalized	Delay (sec / veh):	29.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
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	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			166th Street			166th Street		
Base Volume Input [veh/h]	111	500	172	62	531	85	90	313	154	106	308	59
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]	15	0	0	0	3	3	4	2	0	2	2	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]	130	520	179	65	555	91	98	328	160	112	322	61
Peak Hour 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
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	130	45	16	139	23	25	82	40	28	81	15
Total Analysis Volume [veh/h]	130	520	179	65	555	91	98	328	160	112	322	61
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 in	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]	95
Coordination Type	Time of Day Pattern Coordinated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	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]	13	32	0	13	32	0	12	38	0	12	38	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	23	0	0	23	0	0	29	0	0	29	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		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	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	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
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
l1_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
l2, 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]	9	50	50	5	46	46	7	16	16	8	17	17
g / C, Green / Cycle	0.09	0.53	0.53	0.05	0.48	0.48	0.07	0.17	0.17	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.20	0.20	0.04	0.16	0.06	0.06	0.14	0.14	0.07	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1644	1714	3427	1530	1714	1800	1605	1714	1800	1702
c, Capacity [veh/h]	160	948	866	85	1654	738	125	313	279	141	329	311
d1, Uniform Delay [s]	42.30	13.37	13.38	44.68	15.19	13.54	43.38	37.87	37.98	42.90	35.64	35.70
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]	9.36	1.18	1.30	13.30	0.55	0.34	10.28	5.27	6.41	9.79	1.71	1.87
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	0.81	0.38	0.39	0.77	0.34	0.12	0.78	0.82	0.83	0.80	0.59	0.60
d, Delay for Lane Group [s/veh]	51.67	14.55	14.68	57.98	15.74	13.88	53.66	43.15	44.39	52.69	37.36	37.57
Lane Group LOS	D	B	B	E	B	B	D	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.38	4.70	4.33	1.82	3.68	1.11	2.60	6.11	5.64	2.94	4.26	4.10
50th-Percentile Queue Length [ft/ln]	84.53	117.40	108.19	45.40	92.08	27.74	65.09	152.78	140.98	73.59	106.55	102.55
95th-Percentile Queue Length [veh/ln]	6.09	8.25	7.74	3.27	6.63	2.00	4.69	10.17	9.53	5.30	7.65	7.38
95th-Percentile Queue Length [ft/ln]	152.15	206.24	193.48	81.71	165.74	49.93	117.16	254.14	238.35	132.46	191.19	184.59

Movement, Approach, & Intersection Results

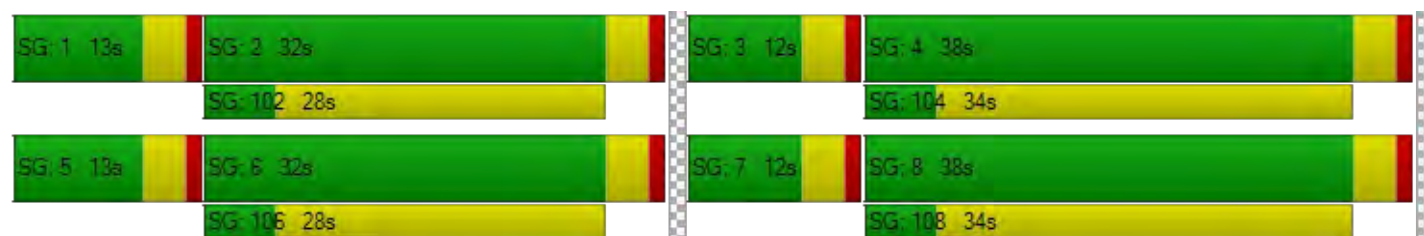
d_M, Delay for Movement [s/veh]	51.67	14.59	14.68	57.98	15.74	13.88	53.66	43.42	44.39	52.69	37.44	37.57
Movement LOS	D	B	B	E	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	20.42			19.37			45.40			40.91		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	29.59											
Intersection LOS	C											
Intersection V/C	0.461											

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]	38.93			38.93			38.93			38.93		
I_p,int, Pedestrian LOS Score for Intersection	2.627			2.683			2.524			2.512		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			589			716			716		
d_b, Bicycle Delay [s]	23.63			23.63			19.58			19.58		
I_b,int, Bicycle LOS Score for Intersection	2.244			2.146			2.043			1.968		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Alburtis St/166th St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.4
 Level Of Service: C
 Volume to Capacity (v/c): 0.022

Intersection Setup

Name	Arkansas Street		Alburtis Street		166th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Arkansas Street		Alburtis Street		166th Street	
Base Volume Input [veh/h]	4	8	564	8	10	470
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	6	0	3	19	0
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]	6	14	587	11	29	489
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]	2	4	147	3	7	122
Total Analysis Volume [veh/h]	6	14	587	11	29	489
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.01	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	18.38	10.45	0.00	0.00	8.75	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	3.25	3.25	0.00	0.00	2.26	0.00
d_A, Approach Delay [s/veh]	12.83		0.00		0.49	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Pioneer Blvd/Arkansas St

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.055

Intersection Setup

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
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	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Pioneer Boulevard			Pioneer Boulevard			Arkansas Street			Arkansas Street		
Base Volume Input [veh/h]	0	746	20	15	864	5	0	0	17	0	0	11
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	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0404	1.0404	1.0404	1.0404	1.0404	1.0000	1.0000	1.0404	1.0000	1.0000	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	0	4	0	0	13	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
Total Hourly Volume [veh/h]	0	791	21	16	899	9	0	0	31	0	0	11
Peak Hour 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
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]	0	198	5	4	225	2	0	0	8	0	0	3
Total Analysis Volume [veh/h]	0	791	21	16	899	9	0	0	31	0	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	9.53	0.00	0.00	0.00	0.00	11.82	0.00	0.00	11.17
Movement LOS		A	A	A	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.51	0.00	0.00	0.00	0.00	4.39	0.00	0.00	1.41
d_A, Approach Delay [s/veh]	0.00			0.17			11.82			11.17		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.36											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 4: Project Dwy/Arkansas St

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8
 Level Of Service: A
 Volume to Capacity (v/c): 0.008

Intersection Setup

Name	Project Driveway		Arkansas Street		Arkansas Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	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]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway		Arkansas Street		Arkansas Street	
Base Volume Input [veh/h]	0	0	18	0	0	5
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	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	13	0	22	4	0
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]	8	13	19	22	4	5
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]	2	3	5	6	1	1
Total Analysis Volume [veh/h]	8	13	19	22	4	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.78	8.50	0.00	0.00	7.28	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	1.58	1.58	0.00	0.00	0.19	0.19
d_A, Approach Delay [s/veh]	8.61		0.00		3.24	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.96					
Intersection LOS	A					