TRAFFIC IMPACT STUDY
FOR

MacEwen 480
Phoenix, Arizona

Prepared for:

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9000 East Pima Center Parkway, Suite 350
Scottsdale, Arizona 85250

Prepared by:

UCG
United Civil Group

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November 15, 2018
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1.0 EXECUTIVE SUMMARY

Taylor Morrison retained United Civil Group to prepare a traffic impact study for the proposed MacEwen 480 development in Phoenix, Arizona. The MacEwen 480 encompasses approximately 473 acres and is located south of Sonoran Desert Drive between the 16th Street and 24th Street alignments. Planned as a master-planned single-family residential community, MacEwen 480 will include a maximum of 1,420 single-family dwelling units. The initial phase of development, referred to as Phase I, consists of approximately 238 homes that will be occupied by 2022. Phases II and III will follow with the construction of 504 and 678 additional homes, respectively, in years 2025 and 2030. The MacEwen 480 Traffic Impact Study also analyzes 2035 traffic conditions as the final horizon year (5 years after full build out of the development).

1.1 Scope of the MacEwen 480 Traffic Impact Study

The scope of the traffic impact study, as coordinated with the City of Phoenix, includes the evaluation of existing, future background, and future total traffic conditions for the roadways and intersections within the study area, as well as, the proposed MacEwen 480 access driveways along Sonoran Desert Drive. A review of the existing conditions includes the analysis of the 2018 collected traffic volumes with the existing roadway and intersection geometry. The future background traffic conditions analyze horizon years 2022, 2025, 2030 and 2035 by incrementally increasing the traffic volumes within the study area (excluding the traffic from MacEwen480) using the existing roadway and intersection geometry. This analysis was conducted as a baseline in which to compare future traffic volumes and infrastructure recommendations. Lastly, the future total traffic conditions (including the traffic from MacEwen 480) analysis examines the horizon year traffic volumes with the site proposed geometric roadway and intersection improvements. Therefore, the total traffic analysis demonstrates how the proposed improvements accommodate traffic growth within the study area.

The study area for this traffic impact study (multi-phase development) was determined by the City of Phoenix Street Transportation Department as per the City of Phoenix Street Planning and Design Guidelines dated December 2009. The study area spans the Sonoran Desert Drive/Dove Valley Road Corridor from Cave Creek Road to the east, through the Sonoran Foothills community both north and south of Sonoran Desert Drive to North Valley Parkway to the west.

1.2 Projected Traffic Volumes

1.2.1 Future Background Traffic Conditions and Findings

Future background traffic is defined as increased traffic volumes on the surrounding roadway network within the study area without the proposed development. The growth rate assumptions and resulting future background traffic volumes along Sonoran Desert Drive for 2022, 2025, 2030 and 2035 were determined after multiple meetings with

Arizona State Land, City of Phoenix Planning and Development and Street Transportation Departments, and the MacEwen 480 development team. The final growth rate assumptions, derived separate from this traffic impact study, were based upon anticipated regional growth within the study area and included projected absorption rates (number of anticipated homes sales per month within the study area) through the horizon year of the study. In addition to the maximum of 1,420 dwelling units to be developed within MacEwen 480, regional growth is expected to contribute an additional 5,251single-family dwelling units within the study area by the horizon year of 2035. The final growth rate assumptions used in this traffic impact study were agreed upon by the City of Phoenix staff in February 2019.

1.2.2 MacEwen 480 Site Traffic

Site traffic, based on 100% occupancy for each phase of development, equates to the total number of trips generated by MacEwen 480 distributed onto the roadway network. Based on the data calculated from the ITE Trip Generation Manual, MacEwen480 is expected to generate approximately 2,309 daily trips with 174 occurring during the morning peak hour and 234 occurring in the evening peak hour by 2022. When MacEwen 480 is built out and occupied (2030), a total of 12,962 daily trips are expected with approximately 1,023 occurring in the morning and 1,352 in the evening. These trips were then distributed onto the roadway network based on regional employment and retail centers. The distribution percentages were assumed to be 60 percent to the east and 40 percent to the west of MacEwen 480.

1.2.3 Future Total Traffic Conditions and Findings

Future total traffic conditions (including phased MacEwen 480 site traffic) are considered the characterization of the surrounding transportation system within the study area. As part of the traffic impact study, future total traffic volumes within the study area were evaluated for the 2022, 2025, 2030 and 2035 horizon years. This evaluation is used to determine roadway and intersection geometric improvements needed as a result of the proposed development.

1.3 Recommended Improvements

1.3.1 Existing Traffic Conditions

The existing traffic conditions and circulation patterns within the study area highlight the role that Sonoran Desert Drive plays as an important regional transportation corridor, providing a connection and alternate route from Interstate 17 to the Loop 101 (via Cave Creek Road). In its current configuration with limited access and alternating passing lanes, Sonoran Desert Drive has an estimated capacity of 25,200 vehicles per day and currently operates at approximately one-third of that capacity. West of the Sonoran Desert Drive transition on Dove Valley Road to approximately 1000 feet west of Paloma Parkway, the capacity is reduced from 25,200 vehicles per day to 20,000 vehicles per day due to the change in characteristics of the roadway including: a

reduced posted speed limit, stop controlled accesses that create side friction from vehicles turning onto and off of Dove Valley Road, the elimination of the passing lanes and the raised medians. The capacity then increases on Dove Valley Road west along the four lane arterial cross-section to 40,000 vehicles per day.

Constraints exist on the eastern portion of Sonoran Desert Drive near the intersection of Sonoran Desert Drive/Cave Creek Road due to the existing raised medians. Currently, some eastbound drivers wanting to make a left turn are unable to transition into the exclusive left turn lane because they are blocked by the high volume of eastbound vehicles queued to make a right turn onto Cave Creek Road. The analyses completed as part of this report show that intersection improvements are needed, under existing conditions, to increase capacity and storage at the intersection of Cave Creek Road/Sonoran Desert Drive. Specific near-term intersection improvements are recommended to address these existing capacity constraints and provide relief as traffic volumes continue to grow.

Cave Creek Road and Sonoran Desert Drive. The recommended improvements include adding dual northbound left-turn lanes from Cave Creek Road onto Sonoran Desert Drive and dual eastbound right-turn lanes from Sonoran Desert Drive onto Cave Creek Road. This can be accomplished by removing approximately 1,200 feet of existing medians and repaving/restriping the west leg of Sonoran Desert Drive as two eastbound right-turn lanes, one eastbound left-turn lane and two westbound receiving lanes. The two westbound receiving lanes will transition to one lane approximately 500 feet west of Cave Creek Road. These improvements are anticipated to remain within the existing Sonoran Desert Drive footprint at the intersection with minimal impacts to the surrounding area. Ultimately, these improvements will be supplemented with the expansion of Sonoran Desert Drive to its six-lane parkway configuration.

1.3.2 Future Background Traffic Conditions

The future background traffic conditions and analyses show that regional infrastructure improvements are needed to support continued traffic growth within the area. Without MacEwen 480, future background traffic is anticipated to grow by 340 percent west of MacEwen 480 and 210 percent east of MacEwen 480 by year 2035. This increase in the future background traffic is anticipated to exceed the current capacity of Sonoran Desert Drive.

Consistent with the recommendations in this traffic impact study, certain regional infrastructure projects are expected as part of the City's future plans to provide for a more robust roadway network within the study area. This expanded roadway network is necessary; to accommodate projected future traffic growth and regional development. In evaluating these potential future improvements, the MacEwen 480 traffic impact study referenced the City of Phoenix 2015 General Plan Street Classification Map, the Sonoran Parkway Corridor Report prepared by Kirkham Michael in July 2003 and the Pre-Final Alignment Study: Sonoran Desert Drive Paloma Parkway

to Dove Valley Road prepared by Ty-Lin dated September 2013. Three regional roadway projects include the construction of Sonoran Desert Drive from North Valley Parkway identified in these documents include the construction of the southern leg of Sonoran Desert Drive from Paloma Parkway to the Dove Valley Road/Sonoran Desert Drive transition; the widening of Cave Creek Road both north and south of the Sonoran Desert Drive intersection; and the expansion of Sonoran Desert Drive to its ultimate six-lane parkway configuration from Cave Creek Road to the Dove Valley Road transition.

Sonoran Desert Drive. Of these future improvements, construction of the next phase of Sonoran Desert Drive from Paloma Parkway to the Dove Valley Road transition is the most likely to occur within the next ten years and will have a significant impact on traffic patterns and congestion in the region. Today, Sonoran Desert Drive is the primary roadway that provides access to MacEwen 480 and the State Trust Lane parcels that represent areas of future regional growth within the study area. The Sonoran Desert Drive corridor has been planned and designated as a regional roadway corridor since 1987 and is intended to function as an east-west regional connector between Interstate 17 and northeast Phoenix. The current plans and alignment for Sonoran Desert Drive were approved by the City on the 2003 Kirkham Michael report and the 2011 Ty-Lin report noted above.

The existing Sonoran Desert Drive roadway was completed in 2013 and includes one lane in each direction, with alternative passing lanes from Cave Creek Road to the existing Dove Valley Road transition. As noted above, ultimately, Sonoran Desert Drive is planned to be expanded to a six-lane parkway from Cave Creek Road to just west of the Apache Wash trailhead entrance with a new southern leg of Sonoran Desert Drive extending west to Paloma Parkway (ultimately connecting to Loop 303 at Interstate 17). This southern leg of Sonoran Desert Drive will be developed as a six-lane arterial roadway and is intended to be the primary corridor for regional traffic. Dove Valley Road will remain as a four-lane minor arterial roadway.

Cave Creek Road. As per the City of Phoenix 2015 General Plan Street Classification Map, Cave Creek Road will ultimately be widened to a six-lane major arterial. This widening effort will allow for additional capacity through the Cave Creek Road and Sonoran Desert Drive intersection, which may be required to sustain the future background traffic volumes by year 2035.

1.3.3 Future Total Traffic Conditions

With the development of Phase I, two collector roadways will be constructed on Sonoran Desert Drive to access the MacEwen 480 property. The primary collector roadway, at the approximate mid-point of the MacEwen 480 property, will be constructed to allow full access in and out of the community. The secondary collector roadway, at the western MacEwen 480 boundary, will be constructed to provide left-in/right-in/right-out access to the property. The secondary collector roadway will link Sonoran Desert Drive to the primary collector roadway and provide an alternative

means of ingress and egress to the community. As such, dedicated left-turn lanes for westbound traffic and exclusive right-turn lanes for eastbound traffic on Sonoran Desert Drive are recommended at both accesses. In order to accommodate MacEwen 480 access, Sonoran Desert Drive will be widened 18 feet along the MacEwen 480 frontage and restriped to provide two through lanes in each direction with a painted median which transitions into the exclusive turn lanes.

The new primary two-lane divided collector roadway should be designed to provide access to the local roadways within the MacEwen 480 community. Full access movements along the primary collector roadway should be spaced at approximate 660 foot spacing where possible, with the minimum spacing being 300 feet.

The new secondary collector roadway should be designed with one lane in each direction and a two-way left-turn lane. The two-way left-turn lane will allow for full turning movements along the secondary collector. Local road and driveway spacing along the secondary collector roadway should be planned to allow for adequate distance and visibility per the City of Phoenix Design Guidelines.

Based on the projected future total traffic volumes, a new traffic signal is anticipated to be warranted at Sonoran Desert Drive and the primary collector roadway by year 2025. However, prior to installation of a signal, actual traffic volumes should be collected and a traffic signal study should be performed to confirm signal warrants are met.

2.0 INTRODUCTION

This report documents a traffic impact study ("MacEwen TIS") performed for the proposed MacEwen 480 development located south of Sonoran Desert Drive between the 16th Street and 24th Street alignments in Phoenix, Arizona ("MacEwen 480"). The MacEwen 480 site is approximately 473 acres in size and is planned to be accessed by two collector roadways located on Sonoran Desert Drive. MacEwen 480 is planned to consist of a maximum of 1,420 single-family homes, which will be constructed in three phases with planned full build-out by year 2030.

The MacEwen TIS has been performed in general accordance with the requirements established by the City of Phoenix, as well as locally accepted standards and industry practice to determine the impacts of MacEwen 480 as well as projected regional growth on the surrounding street network. Requirements for the MacEwen 480 TIS were set forth by the City of Phoenix *Street Planning and Design Guidelines ("City Guidelines").* Based on the City Guidelines; MacEwen 480 will be analyzed as a Multi-Phase Development with peak hour trips estimated to be greater than 1,000 vehicles per hour. Therefore, the study horizon years for MacEwen 480 will include: year 2022 with the completion of Phase I, year 2025 with the completion of Phases I plus II, and year 2030 at full build-out. Year 2035 is also analyzed to identify traffic impacts five years after full build-out of MacEwen 480.

The goal of the MacEwen TIS was to develop a comprehensive traffic impact study to guide transportation planning and construction by:

- Providing reliable guidance on short and mid-range planning of site accesses, recommending off-site improvements needed to permit the street system to satisfactorily accommodate site and non-site traffic, and interfacing between the on-site circulation and the off-site traffic, and
- Assisting the developer and property owners in making critical land use site planning decisions regarding traffic and transportation aspects.

3.0 PROPOSED DEVELOPMENT

3.1 Site Location

The MacEwen 480 residential development is planned for the approximate 473 acre property located south of Sonoran Desert Drive between the 16th Street and 24th Street alignments in Phoenix, Arizona. **Figures 1 and 2** present the location of MacEwen 480 within the context of the immediate area and its location within the City of Phoenix.

3.2 Land Use and Intensity

MacEwen 480 is a master-planned residential community planned to consist of a maximum of 1,420 single-family dwelling units. MacEwen 480 will be constructed in three phases with planned full build-out by year 2030. MacEwen 480 will have two collector roadway access points on Sonoran Desert Drive. The conceptual layout of the development is illustrated in **Figure 3**. **Table 1** shows the number of residential units projected as part of each phase of development for MacEwen 480.

Table 1: Development Unit Site Data

Development Unit	Gross Acres	Proposed Land Use	Projected Number of Units
A	148.2	Single-family Detached Housing and Amenity Area	238
B	164.8	Single-family Detached Housing	504
C	160.3	Single-family Detached Housing	678
Total	***473.3***	***Single-family Detached Housing***	***1,420***

Source: Taylor Morrison 2019

3.3 Phasing and Timing

MacEwen 480 is planned to be developed in three phases with an initial opening in year 2022. The assumed build-out years for each phase are as follows:

Phase I: 2022 – Development Unit A (238 single-family residential homes)
Phase II: 2025 – Development Unit B (504 single-family residential homes)
Phase III: 2030 – Development Unit C (678 single-family residential homes)

Per the City Guidelines and through discussions the City of Phoenix Street Transportation staff, year 2035, five years after full buildout was also analyzed.

3.4 Site Accessibility

The MacEwen 480 access points utilized as part of the trip assignment and analysis on this study are shown on Figure 3. On Sonoran Desert Drive, the site is planned to have one primary full movement access point bisecting Development Unit C at the approximate mid-point of the MacEwen 480 property frontage and one left-in/right-

in/right out secondary access point west of Development Unit C at the western property boundary of MacEwen 480. The primary and secondary access points are spaced approximately one-quarter mile apart on Sonoran Desert Drive. Additional information related to the site accessibility is provided in Section 8.4.

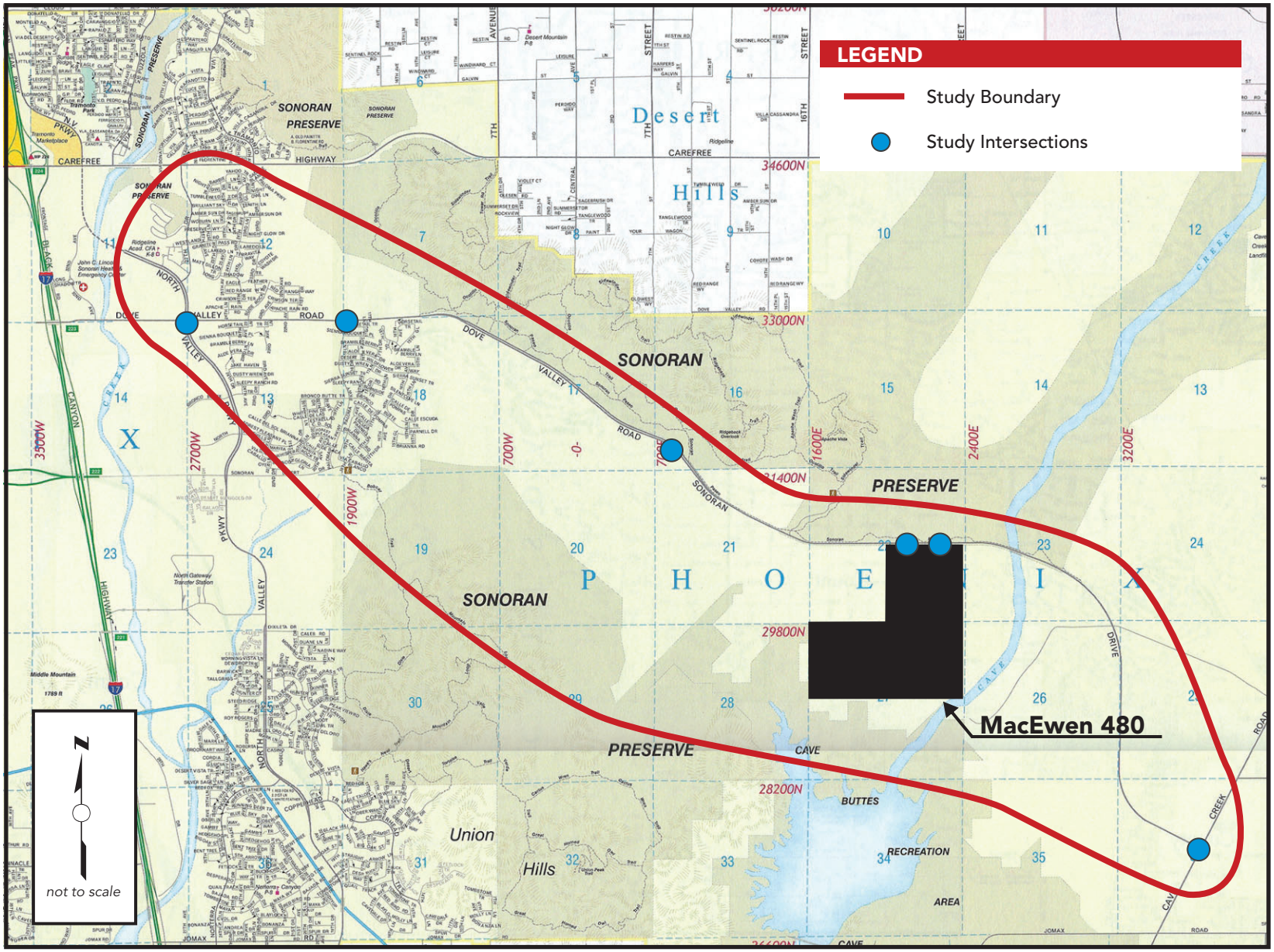

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Figure 1: Vicinity Map

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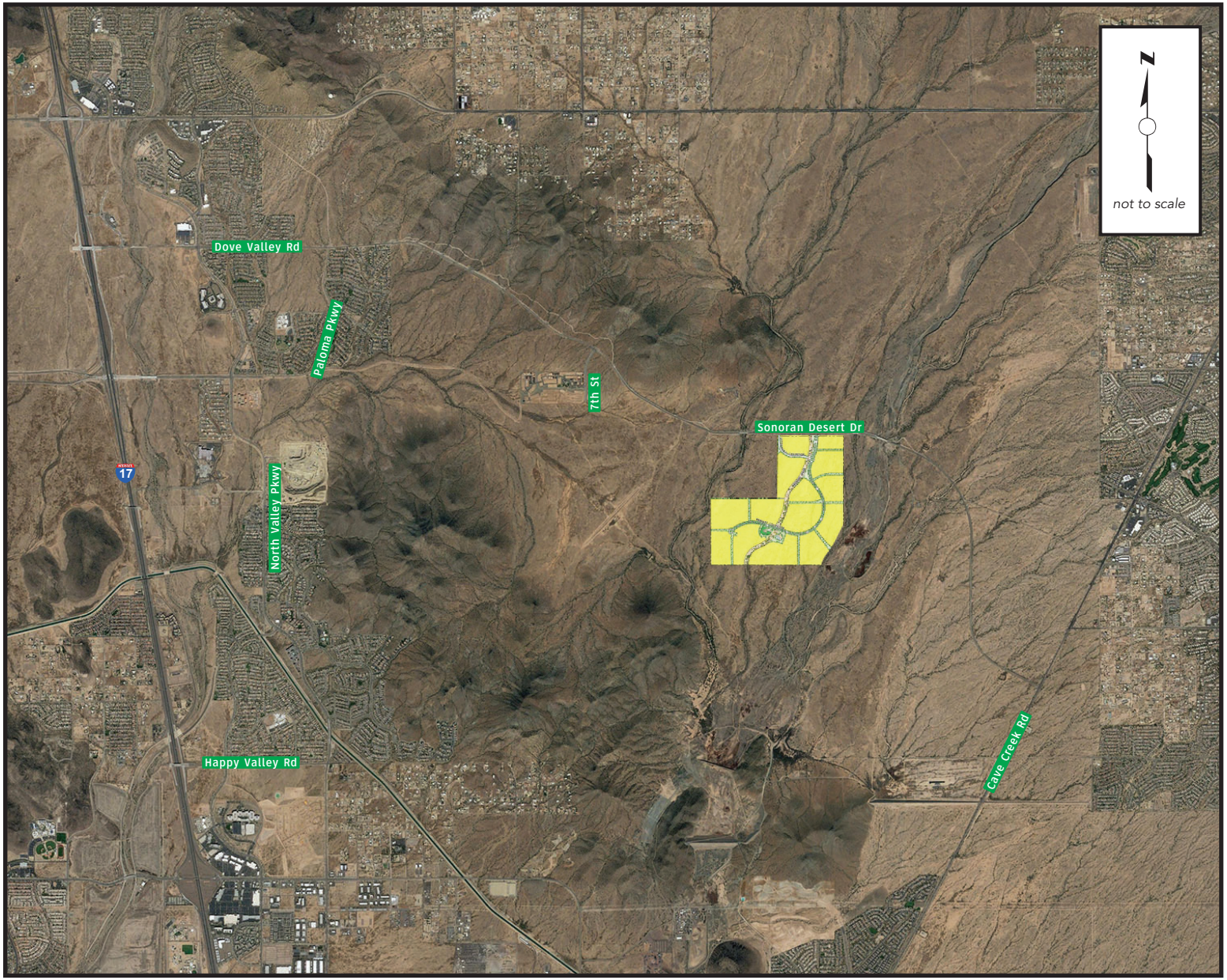

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Figure 2: Aerial View

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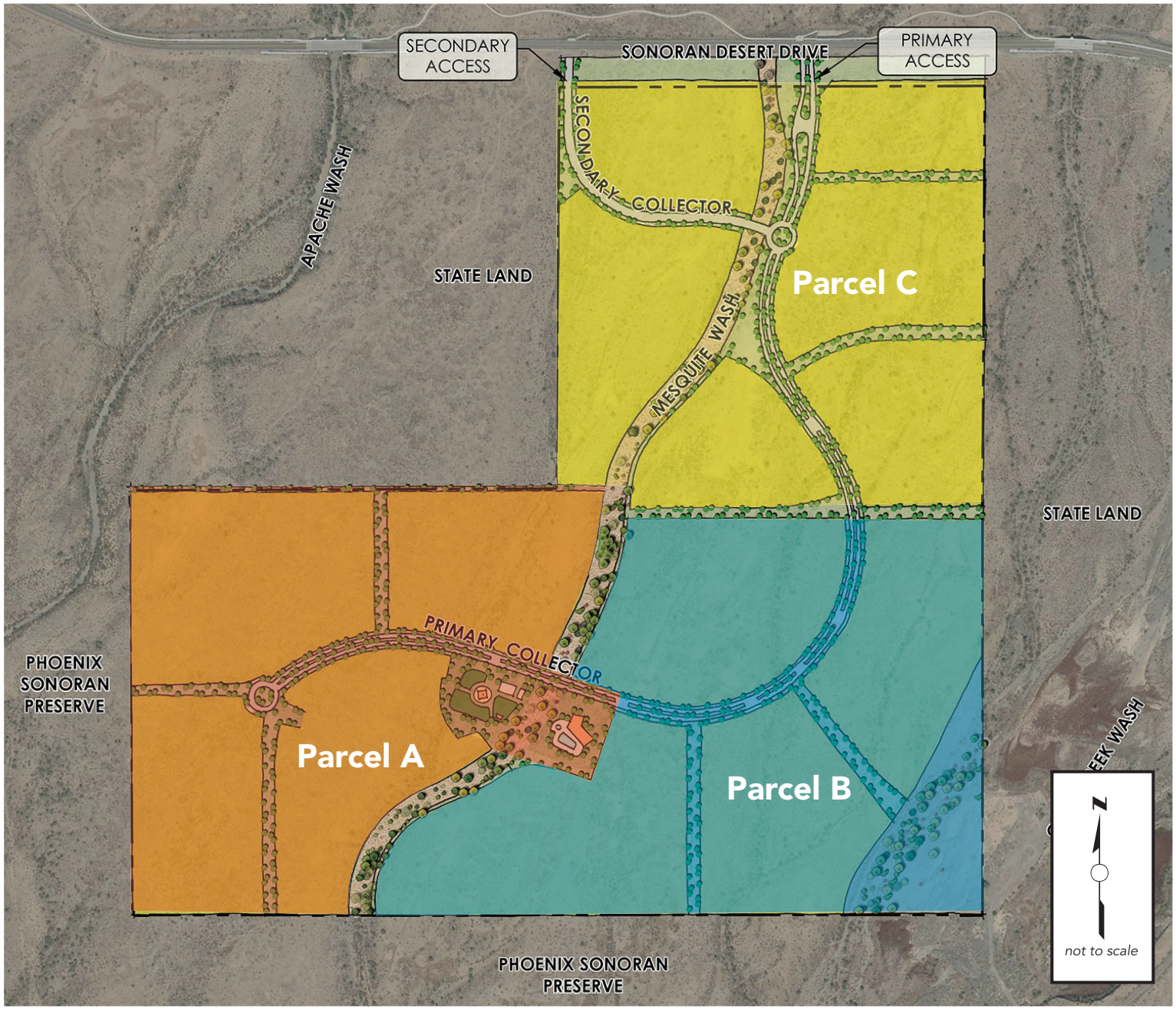

Figure 3: Site Plan

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4.0 STUDY AREA

Based on density, phasing, site characteristics and size (forecasted trip generation of MacEwen 480), MacEwen 480 falls under the study area category "Multi-Phase Developments" per the City Guidelines. The study area was defined according to these guidelines, and based on information and discussions with the City of Phoenix Street Transportation Department.

4.1 Study Area

For MacEwen 480, the study area includes all access drives and signalized or potentially signalized intersections on Sonoran Desert Drive and Dove Valley Road from Cave Creek Road to North Valley Parkway. Specifically, the intersections are defined as:

- Cave Creek Road/Sonoran Desert Drive
- 7th Street/Dove Valley Road
- Paloma Parkway/Dove Valley Road
- North Valley Parkway/Dove Valley Road

Figure 1 shows the approximate study area for the MacEwen TIS.

4.2 Existing Land Uses within the Study Area

The study area for the proposed development is within Section 22 of Township 5 North, Range 3 East, and Section 22 of Township 5North, Range 3 East in Phoenix, Arizona. Within the study area, MacEwen 480 is more specifically located, south of Sonoran Desert Drive between the 16th Street and 24th Street alignments.

The following describes the current land uses within the study area surrounding MacEwen 480.

SUBJECT SITE: undeveloped desert land
NORTH: Sonoran Desert Drive followed by the Phoenix Sonoran Preserve
SOUTH: Phoenix Sonoran Preserve and Maricopa County Flood Control District
EAST: State Land
WEST: State Land, Phoenix Sonoran Preserve and Maricopa County Flood Control District

4.3 Anticipated Future Development and Planned Improvements

Future development is anticipated within the study area. Multiple residential developments are planned within the Sonoran Foothills master planned community, located approximately three miles west of MacEwen 480. The aforementioned Paloma Parkway/Dove Valley Road and North Valley Parkway/Dove Valley Road intersections are located near the Sonoran Foothills community. Additionally, approximately 5,000

acres of State Land located east and west of MacEwen 480 along Sonoran Desert Drive are planned for future development, including single-family and multi-family housing, with the State Land near the intersection of Sonoran Desert Drive/Cave Creek Road planned for residential and commercial uses. The City of Phoenix, based on data from Maricopa Association of Governments, established growth estimates for the larger regional area surrounding MacEwen 480. The City's current estimates project that approximately 5,250 single-family dwelling units, in addition to MacEwen 480, will be developed on 1,980 acres in the study area by year 2035. These growth projections are factored in the background traffic assumptions for the MacEwen TIS discussed in more detail in Section 7 below.

Based on information provided in the City of Phoenix Transportation 2050 Plan, the Sonoran Desert Drive Corridor Report and the Sonoran Desert Drive Pre-Final Alignment Study, Sonoran Desert Drive will be widened in the future to a parkway cross-section with major intersection improvements along the corridor from Dove Valley Road to Cave Creek Road. A new segment of Sonoran Desert Drive (along the Lone Mountain Road alignment) is planned to continue south and west of Dove Valley Road to Paloma Parkway (and continue to the Interchange of Interstate 17 and Loop 303). This southern segment of Sonoran Desert Drive is intended to carry a significant percentage of the regional traffic. At full buildout, Sonoran Desert Drive will be a six lane parkway with a 150 foot (typical) median from Cave Creek Road to Dove Valley Road. The southern segment of Sonoran Desert Drive, from Dove Valley Road to Paloma Parkway, will be developed as a six lane major arterial.

5.0 LEVEL OF SERVICE METHODOLOGY

The roadway system's ability to accommodate traffic demand is typically limited by the capacity. The level of service (LOS) concept is used in traffic engineering to describe the degree of delay a driver can expect. The concept defines a near-capacity condition as LOS E while a free flow condition under which a driver would experience minimal delay is defined as LOS A.

5.1 Roadway Level of Service

The analysis of roadway segment level of service is based on the number of lanes, the functional classification of the roadway, maximum desired level of service capacity, roadway geometrics and existing or forecasted average daily traffic volumes. The City of Phoenix *Street Planning and Design Guidelines* dated December 2009, Chapter 2 provides traffic volumes given the various street classifications. **Table 2** presents the street classification values. For arterial roadways evaluated within the MacEwen TIS, the capacity was assumed to be approximately 10,000 vehicles per day per lane.

Table 2: Average Daily Traffic Volumes by Street Classification

Street Classification	Typical Average Daily Traffic (ADT)
Freeway/Expressway	Over 50,000
Major Arterial	30,000 to 60,000
Arterial	15,000 to 50,000
Collector	5,000 to 30,000
Minor/Residential Collector	1,000 to 8,000
Local	Under 1,000 with single-family homes, 2,000 with more dense development

Source: City of Phoenix Street Planning and Design Guidelines

Because Sonoran Desert Drive operates as a parkway/highway with limited access and alternative passing lanes throughout the corridor, HIGHPLAN 2012, LOS planning software, was used to determine the capacity along the corridor. For two-lane uninterrupted flows, HIGHPLAN uses the maximum service flow rate based on area type and free flow speed for the facility. **Table 3** presents the calculated capacity for Sonoran Desert Drive based on inputs such as, number of through lanes, posted speed, passing lanes, percent heavy vehicles and class.

Table 3: Estimated Capacity for Sonoran Desert Drive

Lanes	Average Daily Traffic Capacity
2	25,200
4	48,500
6	72,200
8	96,900

Source: HIGHPLAN 2012 Conceptual Planning Analysis

5.2 Intersection Level of Service

Intersection capacity analysis is a principal tool used in traffic engineering. Operation is characterized according to the amount of delay at an intersection approach and quantified into a level of service ("LOS"). The intersection LOS was determined using the methodologies presented in the Transportation Research Board's Highway Capacity Manual ("HCM"). The LOS grades quantify and categorize a driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. Per the HCM, the signalized and unsignalized (all-way stop controlled or two-way stop controlled intersection) delay and associated LOS is presented in **Table 4**. City of Phoenix guidelines strive to obtain a level of service D or better for both signalized and unsignalized intersection overall operations. Intersections having a LOS E or LOS F may warrant improvements or traffic reductions.

Table 4: Intersection Levels of Service and Delay

Level of Service	Description	Signalized Delay (Sec/Veh)	Unsignalized Delay (Sec/Veh)
A	Minimal control delay, traffic operates at primary free flow conditions, unimpeded movement within traffic stream	≤ 10	≤ 10
B	Minor control delay at signalized intersections, traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream	> 10 and ≤ 20	> 10 and ≤ 15
C	Moderate control delay, movement within traffic stream more restricted than LOS B, formation of queues contributes to lower average travel speeds	> 20 and ≤ 35	> 15 and ≤ 25
D	Considerable control delay that may be substantially increased by small increases in flow, average travel speeds continue to decrease.	> 35 and ≤ 55	> 25 and ≤ 35
E	High control delay, average travel speed no more than 22 percent of free flow speed	> 55 and ≤ 80	> 35 and ≤ 50
F	Extremely high control	> 80	> 50

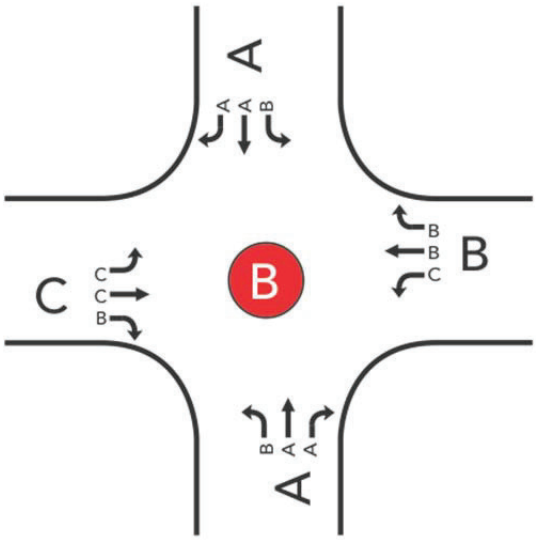
Source: Highway Capacity Manual 2010

For signalized and all-way stop controlled intersections, LOS is calculated for a movement (e.g. left, through, right), for the approach (e.g. northbound, southbound, eastbound, westbound) and for the overall intersection as a whole.

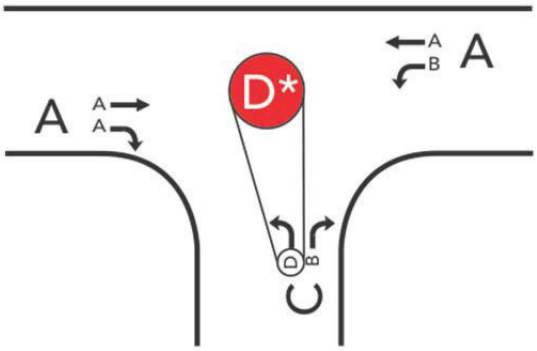
For two-way stop controlled intersections, LOS is calculated for a movement and for the approach. However, for the overall intersection, LOS is reported as the lowest movement within the intersection. This is because the majority of drivers are on the major roadway and do not experience delay traversing through the intersection. The example below illustrates the various LOS calculations completed for intersections.

EXAMPLE:

Signalized & All-Way Stop Controlled



Two-Way Stop Controlled



*Reported as lowest movement LOS

Source: United Civil Group, 2019

6.0 EXISTING CONDITIONS

The analysis of existing conditions includes the following items: physical characteristics, traffic volumes, existing condition capacity analyses for intersections, and safety of the roadway network. The analysis of existing conditions provides a base against which the incremental traffic impacts on the Dove Valley Road/Sonoran Desert Drive corridor, and the corresponding intersections can be measured, due to the increase in traffic from regional growth and MacEwen 480. United Civil Group conducted field observations to collect relevant information pertaining to the MacEwen 480 property, existing lane uses in the surrounding area, current traffic volumes and operational conditions, lane configurations and traffic controls, and other key roadway characteristics. A detailed account of this information and findings are provided below.

6.1 Roadway Characteristics

Dove Valley Road has an east/west alignment and is classified as an Arterial per the City of Phoenix *Street Classification Map* dated March 19, 2014. Dove Valley Road is a four lane section noted as C with raised medians, but tapers to a two lane section east of 22nd Avenue. The posted speed limit within the study area is 35 miles per hour.

Sonoran Desert Drive has an east/west alignment and is classified as a Major Arterial per the City of Phoenix *Street Classification Map* dated March 19, 2014. In addition, Sonoran Desert Drive is classified as cross sections Z-A and A. Sonoran Desert Drive is currently a three-lane roadway with one lane in each direction and an alternating passing lane. The posted speed limit within the study area is 45 miles per hour.

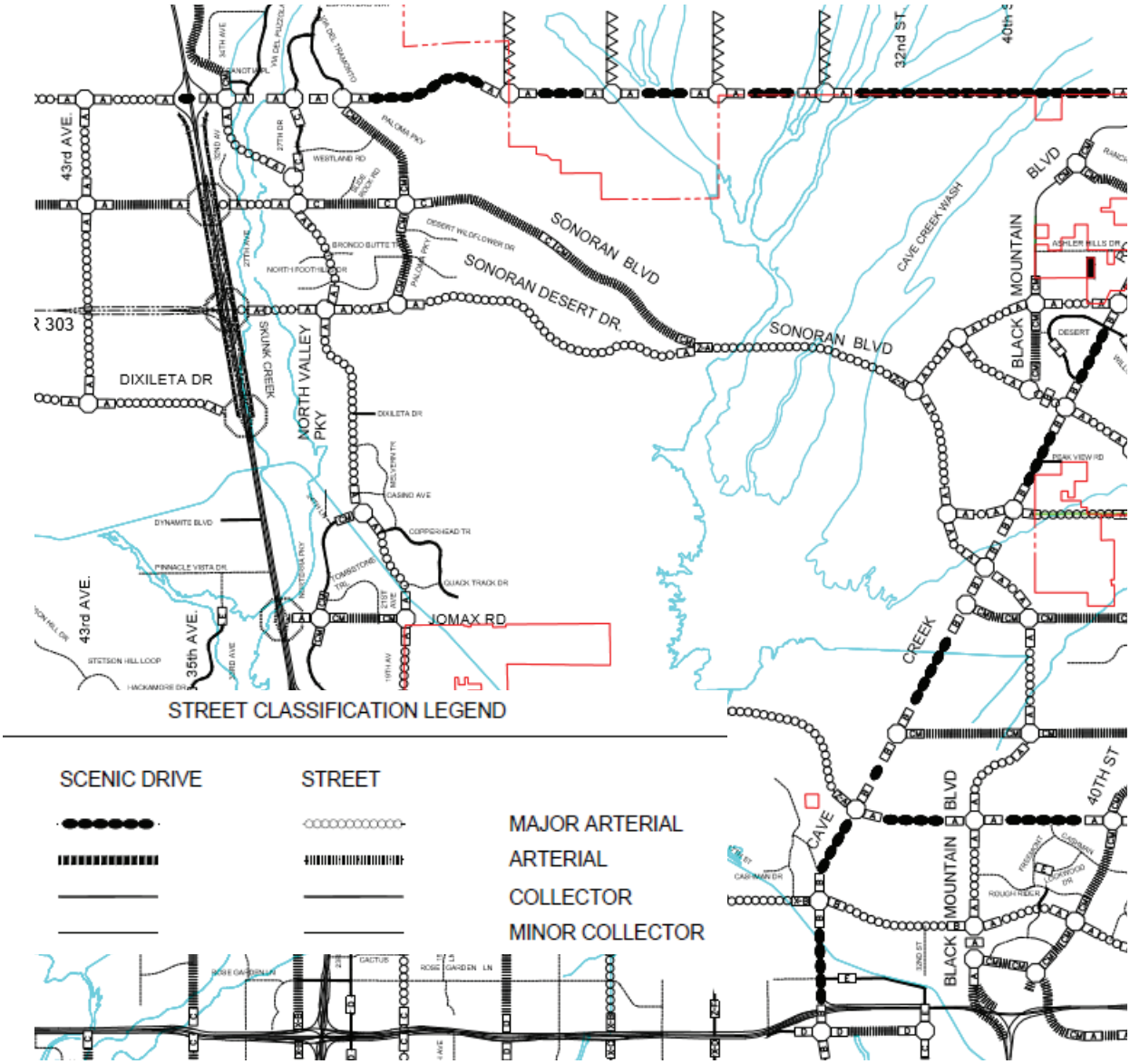
Cave Creek Road has a north/south alignment and is classified as a Major Arterial, with certain segments designated as scenic, per the City of Phoenix *Street Classification Map* dated March 19, 2014. Cave Creek Road is currently a four-lane roadway with two lanes in both the northbound and southbound directions separated by a raised median. The posted speed limit within the study area is 50 miles per hour.

7th Street has a north/south alignment and is considered a Collector just south of the Dove Valley Road. 7th Street is designed as a two lane roadway that widens at the intersection with Dove Valley Road to include a raised median and exclusive turn lanes. 7th Street currently provides exclusive access to the Sonoran Gate residential community. The posted speed limit on 7th Street within the study area is 25 miles per hour.

Paloma Parkway has a north/south alignment and is classified as an Arterial per the City of Phoenix *Street Classification Map* dated March 19, 2014. Paloma Parkway between Dove Valley Road and Bronco Butte Trail is constructed as a half street. From Bronco Butte Trail south to Sonoran Desert Drive, Paloma Parkway is constructed as a four lane section with two lanes in both the northbound and southbound directions

separated by a raised median. The posted speed limit on Paloma Parkway is 35 miles per hour.

North Valley Parkway has a north/south alignment and is classified as a Major Arterial per the City of Phoenix *Street Classification Map* dated March 19, 2014. To the south of Dove Valley Road, North Valley Parkway is currently a four-lane roadway with two lanes in both the northbound and southbound directions separated by a raised median. To the north of Dove Valley Road, North Valley Parkway is currently a six-lane roadway with three lanes in both the northbound and southbound directions separated by a raised median. The posted speed limit is 40 miles per hour.



Source: City of Phoenix Street Classification Map, 2014.

City of Phoenix's Street Classification Map dated March 19, 2014, for the study area is provided for reference.

6.2 Intersection Configurations

The intersection of **Cave Creek Road/Sonoran Desert Drive** operates as a signalized intersection with protective/permissive left-turn phasing on the northbound and southbound approaches. The northbound approach consists of an exclusive left-turn lane, two through lanes, and a bike lane. The southbound approach consists of an exclusive U-turn lane, two through lanes and a bike lane. The eastbound approach consists of exclusive left- and right-turn lanes with a bike lane.

The intersection of **7th Street/Dove Valley Road** operates as an unsignalized intersection with stop control on the northbound approach. The northbound approach consists of exclusive right and left-turn lanes with a bike lane. The westbound approach consists of an exclusive left-turn lane and a through lane. The eastbound approach consists of an exclusive right-turn lane, through lane and a bike lane.

The intersection of **Paloma Parkway/Dove Valley Road** operates as an unsignalized intersection with stop control on the northbound approach. The northbound approach consists of exclusive right and left-turn lanes. The westbound approach consists of an exclusive left-turn lane and a through lane. The eastbound approach consists of an exclusive right-turn lane and a through lane.

The intersection of **North Valley Parkway/Dove Valley Road** operates as a signalized intersection and is built to its ultimate configuration. Protective/permissive left-turn phasing exists on the north- and southbound approaches, and protective phasing exists on the east-and westbound approaches. The northbound approach consists of an exclusive left-turn lane, three through lanes, a bike lane and an exclusive right-turn lane. The southbound approach consists of an exclusive left-turn lane, three through lanes, a bike lane and an exclusive right-turn lane. The westbound approach consists of dual-left-turn lanes, two through lanes, a bike lane and an exclusive right-turn lane. The eastbound approach consists of dual-left-turn lanes, three through lanes, a bike lane and an exclusive right-turn lane.

Figure 4 graphically depicts the existing geometry of the study area's intersections and roadway alignments for 2019.

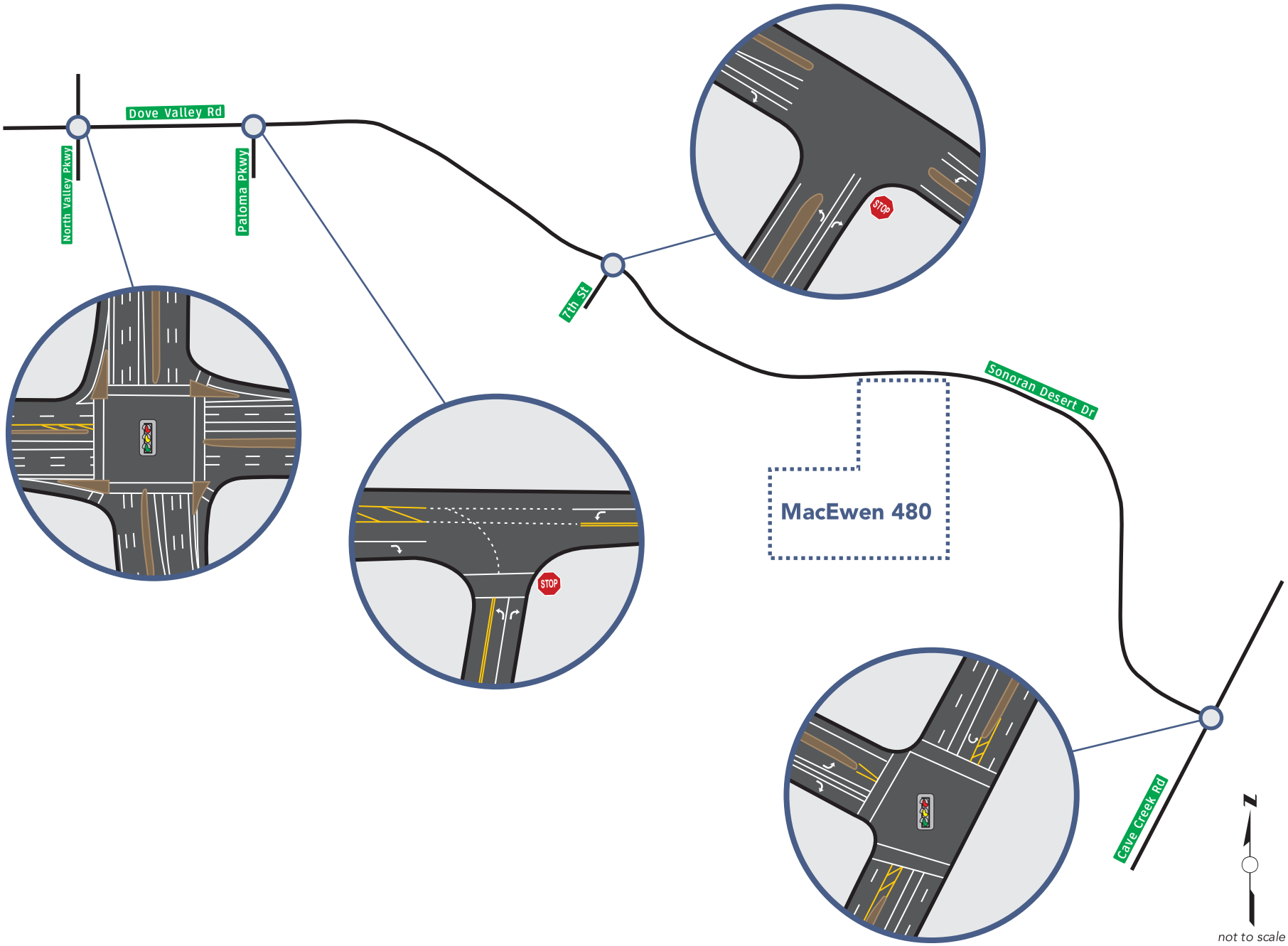


Figure 4: Existing Geometry - Year 2018

6.3 Traffic Count Data

Average daily traffic ("ADT") volumes within the study area were obtained from the City of Phoenix *Traffic Volume Map* Township and Range 5N-3E and the City of Phoenix Street Transportation Department which are reported in **Table 5**.

Table 5: Average Daily Traffic Volumes

Roadway	Northbound or Eastbound	Southbound or Westbound	Year
Dove Valley Road at 16th Avenue	4,098	4,255	2018
Cave Creek Road south of Sonoran Desert Drive	14,586	14,408	2015
Paloma Parkway south of Sonoran Desert Drive	1,157	1,164	2015
North Valley Parkway north of Sonoran Desert Drive	4,370	4,527	2014

Source: City of Phoenix

United Civil Group staff collected existing turning movement counts at the Study Intersections on Tuesday, August 14, 2018, and Wednesday, August 15, 2018, in 15-minute intervals from 7:00am to 9:00am and from 4:00pm to 6:00pm. A seasonal adjustment factor of 1/0.95 was used to account for the monthly variation because the traffic data was collected in the month of August. The resulting peak hour turning movements on each day are presented in **Figure 5**. Summary tables of the data collection efforts are presented in Appendix A.

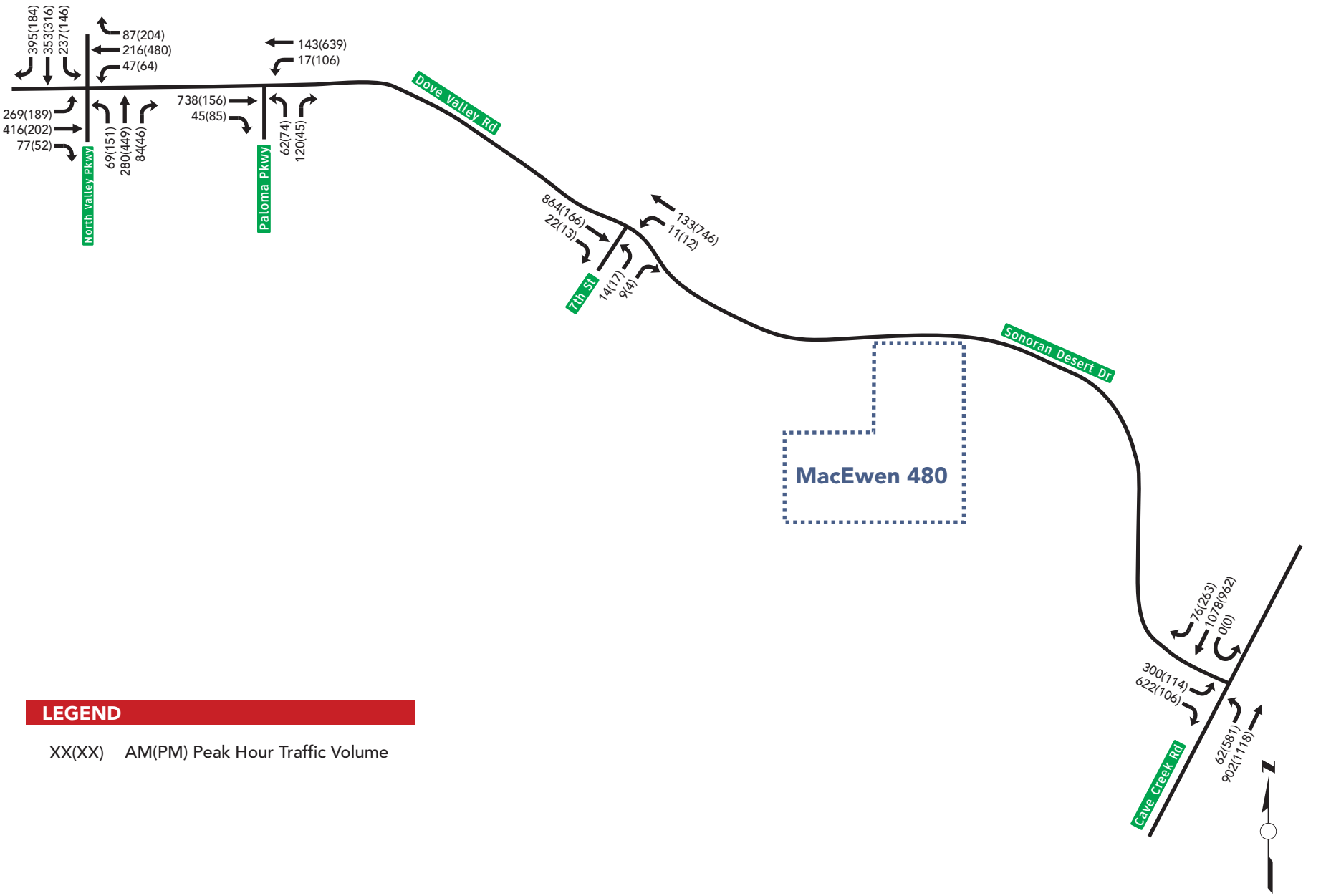


Figure 5: Existing Traffic - Year 2018

6.4 Existing Intersection Deceleration Lane Storage

Dedicated right-turn and left-turn lanes are provided on existing intersections within the study area. **Table 6** presents the storage lengths of the existing auxiliary deceleration lanes as compared to the calculated queue lengths for the existing conditions. The calculations below were conducted utilizing the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets.*

Table 6: Existing Deceleration Lane Storage Analysis

Intersection		Leg	Storage Length Provided (Approx. Existing) (ft)	Calculated Queue Length (Existing 2018) (ft)
1	Cave Creek Road/Sonoran Desert Drive	NB Left	300	740*
		SB U-turn	280	-
		EB Left	275	385*
		EB Right	275	400*
2	Dove Valley Road/7th Street	WB Left	200	10
		EB Right	240	20
		NB Left	280	15
		NB Right	280	8
3	Paloma Parkway/Dove Valley Parkway	WB Left	160	90
		EB Right	265	75
		NB Left	110	65
		NB Right	110	100
4	North Valley Parkway/Dove Valley Parkway	WB Left	500	85
		WB Right	250	130
		EB Left	500	345
		EB Right	150	50
		NB Left	300	195
		NB Right	270	55
		SB Left	265	305*
		SB Right	265	255

*Existing provided storage length is shorter than calculated storage length in the existing condition.

6.5 Existing Roadway Level of Service

One of the most important measures resulting from the roadway level of service is the v/c ratio; the ratio of current demand to the capacity of the facility. Using the ADT for year 2018 on Sonoran Desert Drive (8,353) and the 2 lane capacity calculated for Sonoran Desert Drive of 25,200 the existing v/c ratio is 0.33, meaning 33 percent of the roadway's capacity is used in the existing conditions.

6.6 Existing Intersection Level of Service

The intersection levels of service at the Study Intersections were evaluated using the existing lane geometry (Figure 4) and 2018 adjusted intersection turning movement volumes (Figure 5). PTV Vistro, a traffic modeling software employing the methodologies as presented in the Highway Capacity Manual, was utilized for the capacity analysis to obtain the existing conditions levels of service and average delay. Summaries of the PTV Vistro output calculations are included in *Appendix B: Capacity Analyses*.

The results of the existing levels of service are presented in **Table 7**. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signal optimized with a cycle length of 120 seconds, typical of City of Phoenix signal timings.

Table 7: 2018 Existing Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	B	A	-	A	A	B	B	B	D	-	D	D	-	-	-	-	C
PM Peak Hour	D	A	-	B	A	B	B	B	E	-	E	E	-	-	-	-	B
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	C	-	C	C	-	-	-	-	-	A	A	A	A	A	-	A	C*
PM Peak Hour	C	-	A	C	-	-	-	-	-	A	A	A	A	A	-	A	C*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	C	-	C	C	-	-	-	-	-	A	A	A	A	A	-	A	C*
PM Peak Hour	D	-	A	C	-	-	-	-	-	A	A	A	A	A	-	A	D*
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	A	A	A	A	A	A	A	A	E	D	D	D	E	E	D	E	C
PM Peak Hour	A	B	B	B	A	B	B	B	E	D	D	D	E	D	D	D	C

*LOS presented is for the worst case movement.

As shown in Table 7, all of the study intersections currently operate at overall intersection acceptable levels of service, LOS D or better, during the morning and evening peak hours.

Even though the intersection of Cave Creek Road/Sonoran Desert Drive produces acceptable levels of service for most turning movements in the existing conditions, high turning movement volumes in the morning and evening peak hours generate queues that are greater than the storage provided at the intersection. Therefore, these queues create backups and lead to longer observed delay times than reported in the analyses.

7.0 PROJECTED TRAFFIC

7.1 MacEwen 480 Trip Generation

Estimates of the traffic volumes that will be generated by MacEwen 480 were determined from transportation planning data taken from the Institute of Transportation Engineers ("ITE") publication titled *Trip Generation, 10th Edition, 2017*. The ITE rates are based on studies that measure trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. **Table 8** presents the forecasted weekday vehicle trip rates used for the MacEwen 480 development.

The most similar land use code for the development was determined to be ITE Land Use Code ("LUC") 210 – Single-family Detached Housing.

Single-family Detached Housing – includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Table 8: MacEwen 480 Trip Generation

Land Use	Units	Size	Daily	AM Peak			PM Peak		
				in	out	total	in	out	total
Phase I									
Single-Family Detached Housing	Dwelling Units	238	2,309	43	131	174	147	87	234
Phases II									
Single-Family Detached Housing	Dwelling Units	504	4,604	91	272	363	302	178	480
Phase III									
Single-Family Detached Housing	Dwelling Units	678	6,049	121	365	486	402	236	638
Total		1,420	12,962	255	768	1,023	851	501	1,352

Single-Family Detached Housing – ITE LUC 210

AM Peak Hour	T = 0.71 x (Dwelling Units) + 4.80	25% entering, 75% exiting
PM Peak Hour	Ln(T) = 0.96 x Ln(Dwelling Units) + 0.20	63% entering, 37% exiting
Daily	Ln(T) = 0.92 x Ln(Dwelling Units) + 2.71	50% entering, 50% exiting

On a typical weekday, after full buildout of the entire site, MacEwen 480 is forecasted to generate 12,962 daily trips, 1,023 trips in the morning peak hour and 1,352 trips in the evening peak hour.

7.2 Trip Distribution and Assignment

The trip distribution procedure determines the general pattern of travel for vehicle entering and leaving the subject site and the study area. The assumed trip distribution percentages for the development are shown in **Table 9**. For a development of this type, these percentages are mainly based on the type of land uses of the

development, the location of the site within the City of Phoenix, and the connectivity of the site to the region.

Because this development is residential, distribution of the home-to-work trips is generally based on the roadway connectivity and Maricopa Association of Governments (MAG) socio-economic employment data.

Table 9: Trip Distribution

Origin/Destination	Arriving To	Departing To
Cave Creek Road south of Sonoran Desert Drive	45%	45%
Cave Creek Road north of Sonoran Desert Drive	15%	15%
Dove Valley Road west of North Valley Parkway	35%	35%
North Valley Parkway north of Dove Valley Road	3%	3%
North Valley Parkway south of Dove Valley Road	2%	2%
Total	100%	100%

The site-generated trips were routed in to and out of site driveways based on typical driver behavior. The morning and evening peak hour site-generated traffic volumes for the MacEwen 480 development are shown on **Figures 6, 7 and 8** for each phase of development.

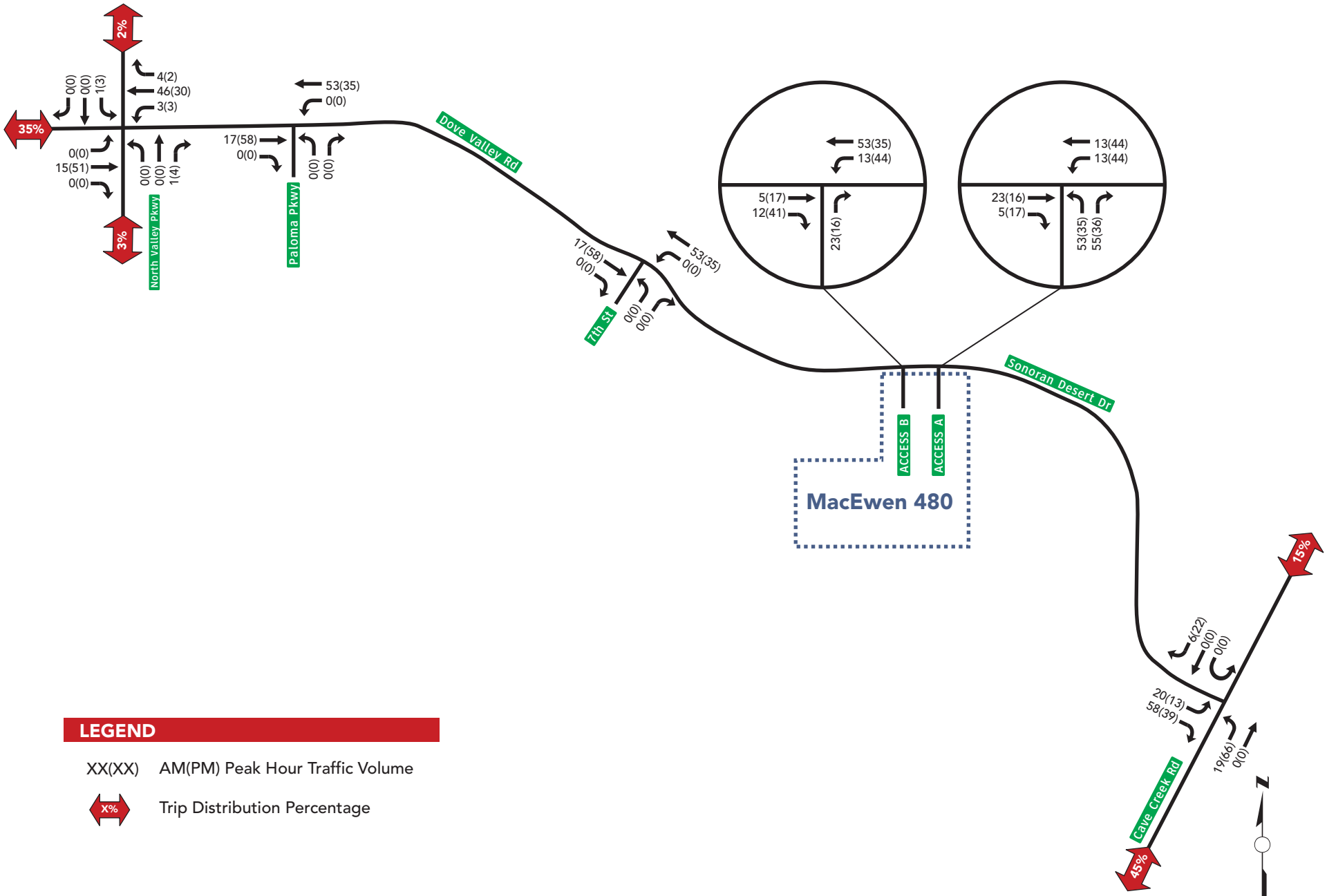


Figure 6: Site Generated Traffic and Trip Distribution - Phase I

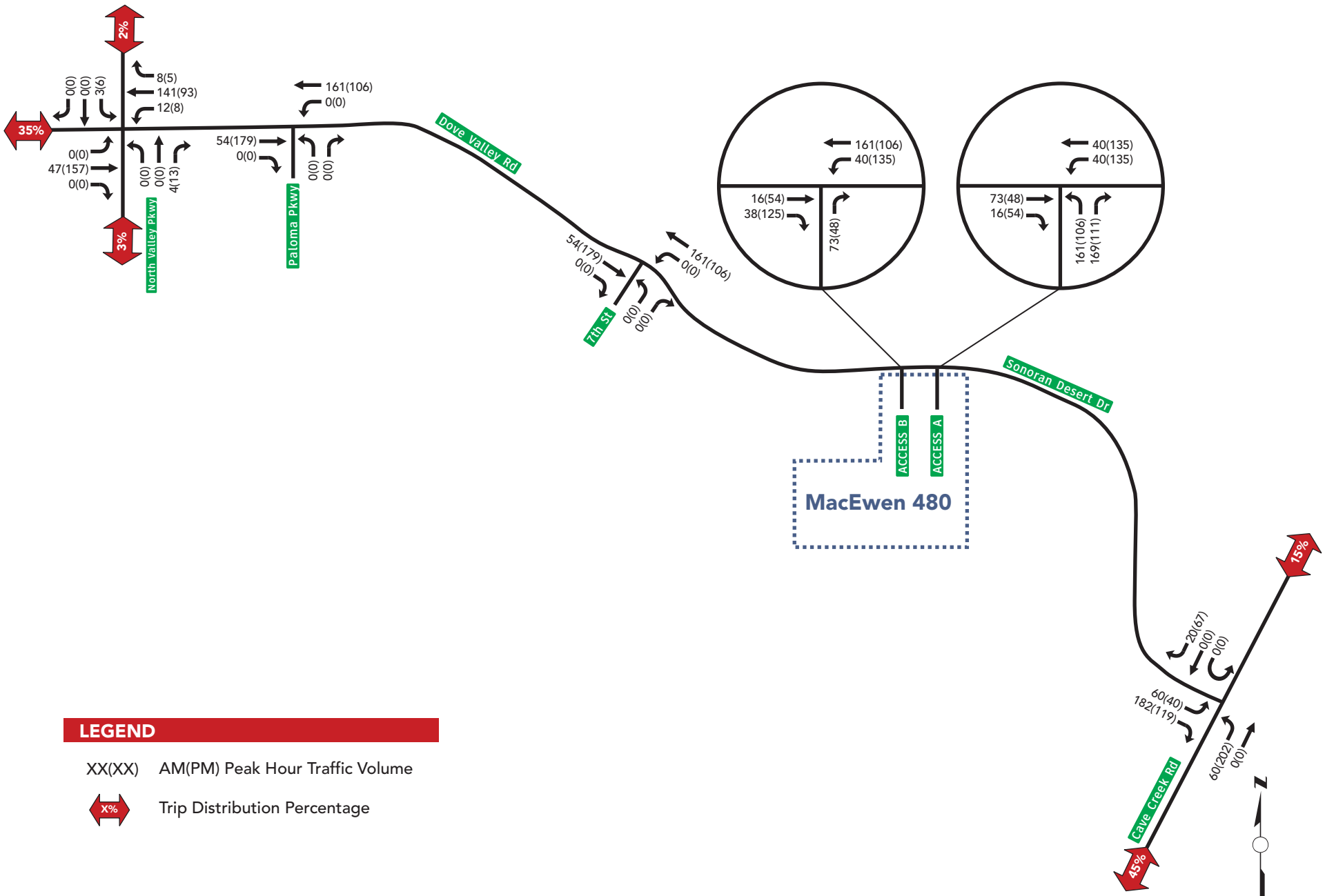


Figure 7: Site Generated Traffic and Trip Distribution - Phase II

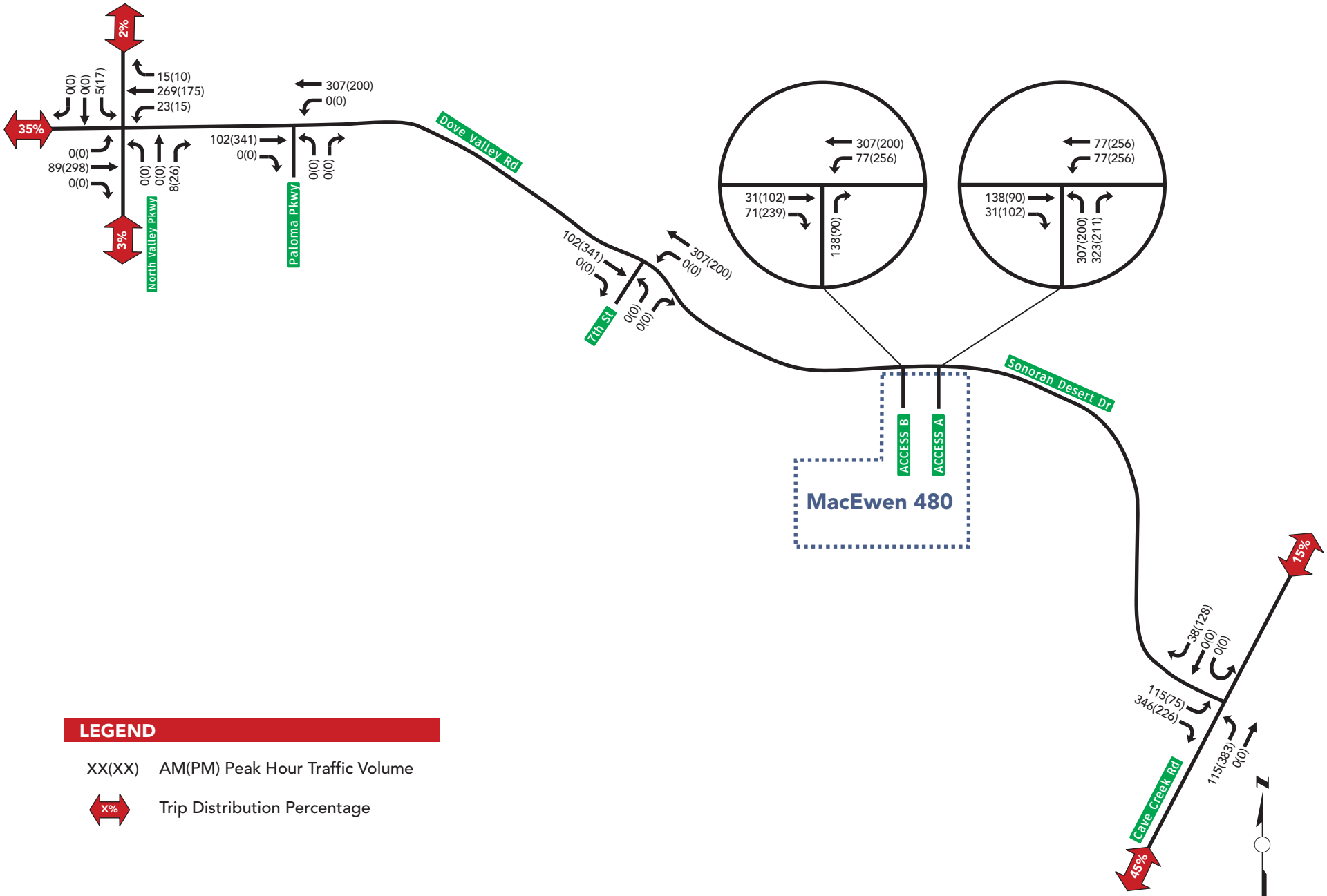


Figure 8: Site Generated Traffic and Trip Distribution - Phase III

7.3 Background Traffic

The background traffic represents the projected future traffic volumes within the study area, resulting from regional growth and pass-through traffic, without the traffic generated by MacEwen 480. Background traffic was estimated based on land use, projected housing developments, and absorption rates (projected home sales/month) along the Sonoran Desert Drive Corridor for the horizon years, 2022, 2025, 2030, and 2035. The MacEwen TIS assumes that approximately 5,250 single-family dwelling units, in addition to those proposed within MacEwen 480, will be developed along the Sonoran Desert Drive corridor by year 2035. This analysis resulted from multiple meeting with Arizona State Land, various departments within the City of Phoenix and the MacEwen development team. The final growth rate assumptions were derived separate from this traffic impact study and were agreed upon by the City of Phoenix staff in February 2019.

Figures 9 through 12 present the future background traffic, graphically for horizon years 2022, 2025, 2030 and 2035, respectively.

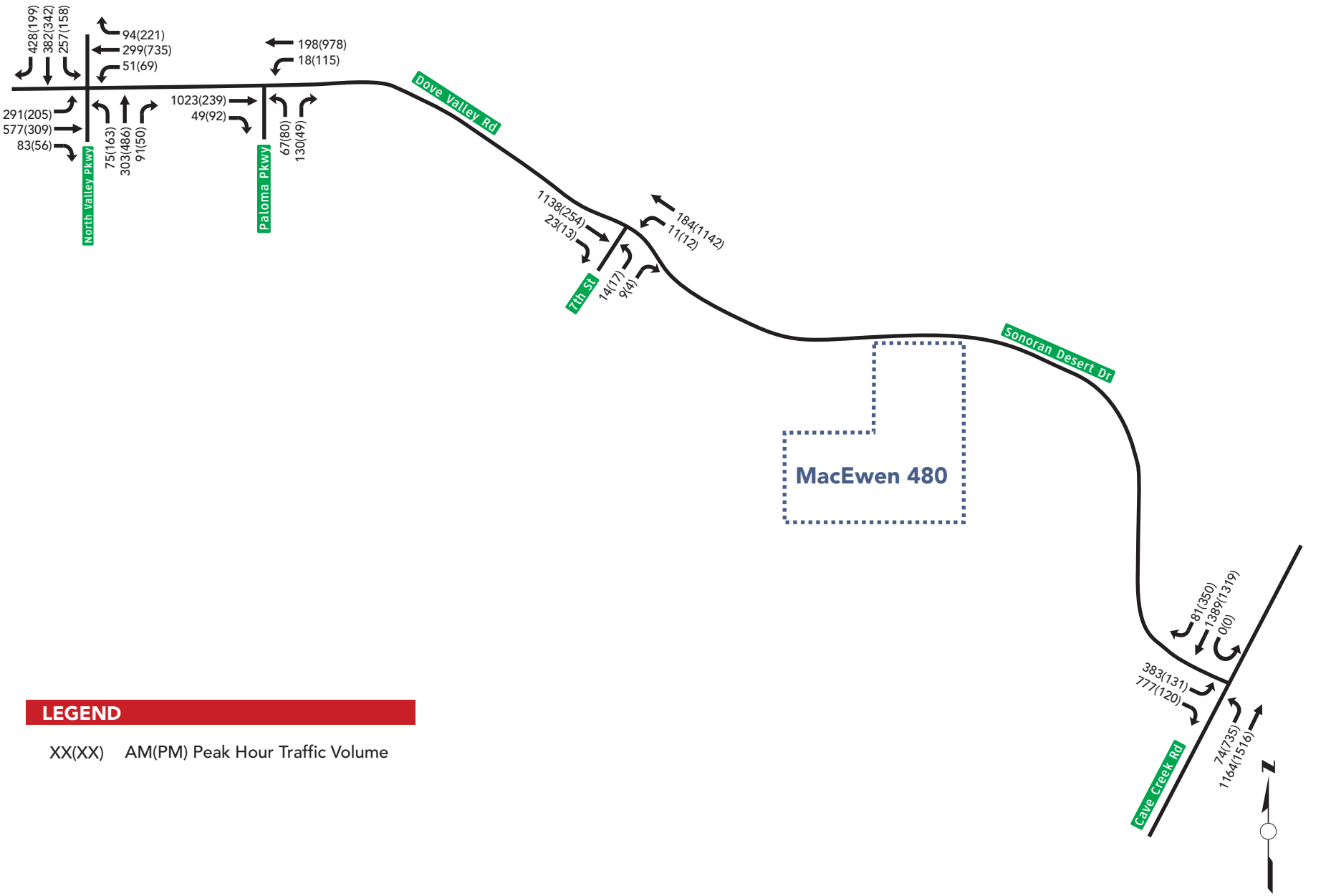


Figure 9: Background Traffic - Year 2022

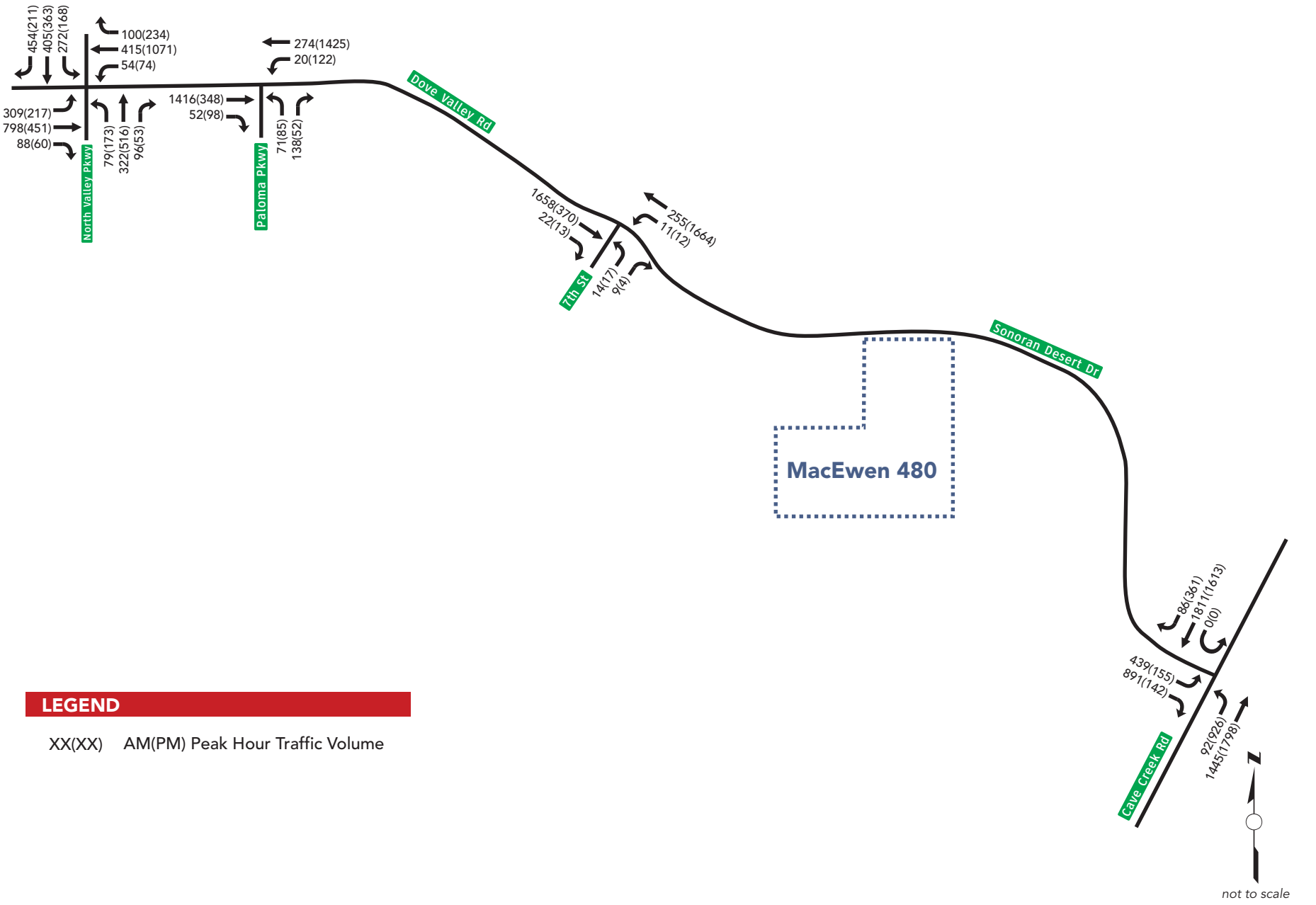


Figure 10: Background Traffic - Year 2025

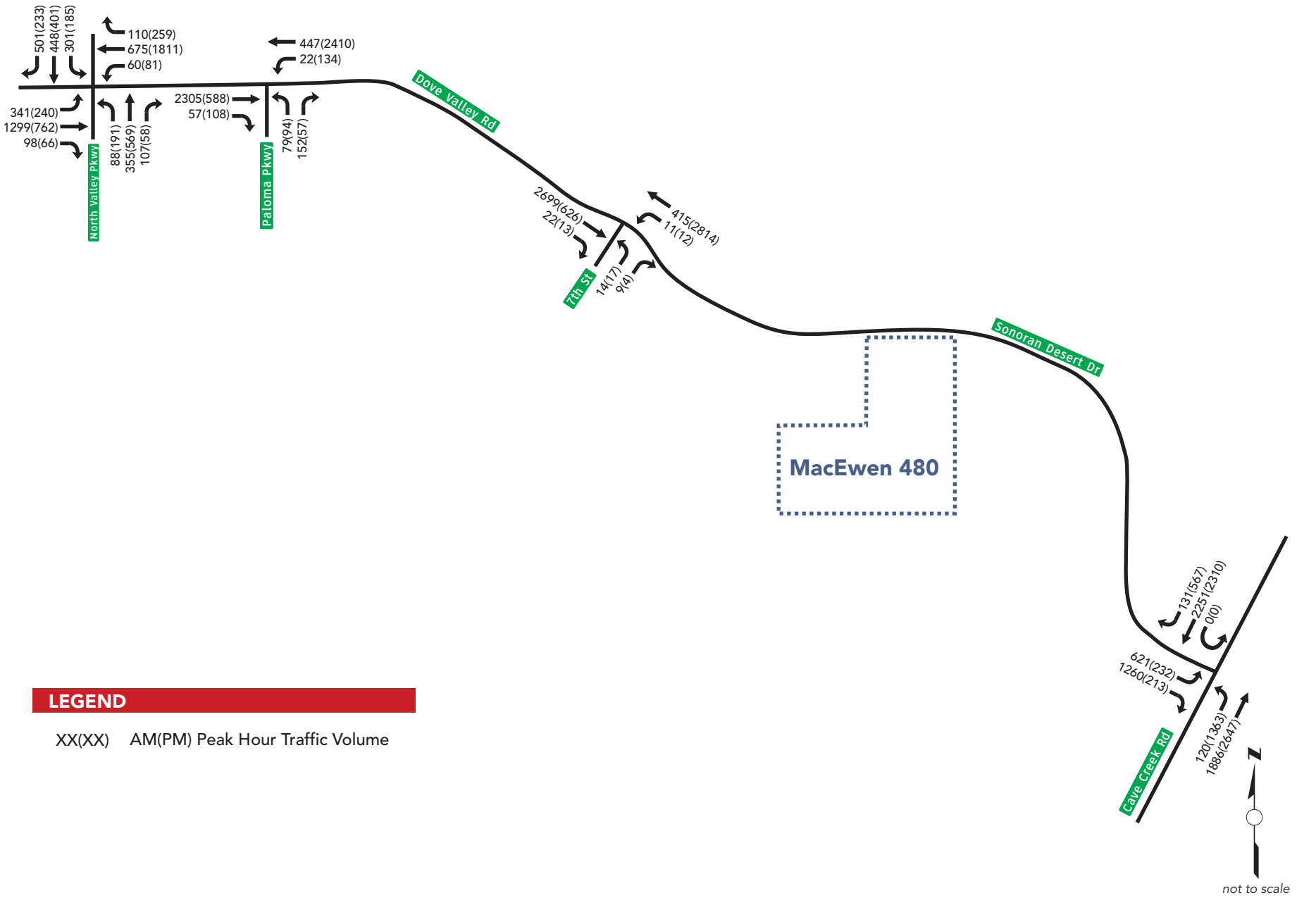


Figure 11: Background Traffic - Year 2030

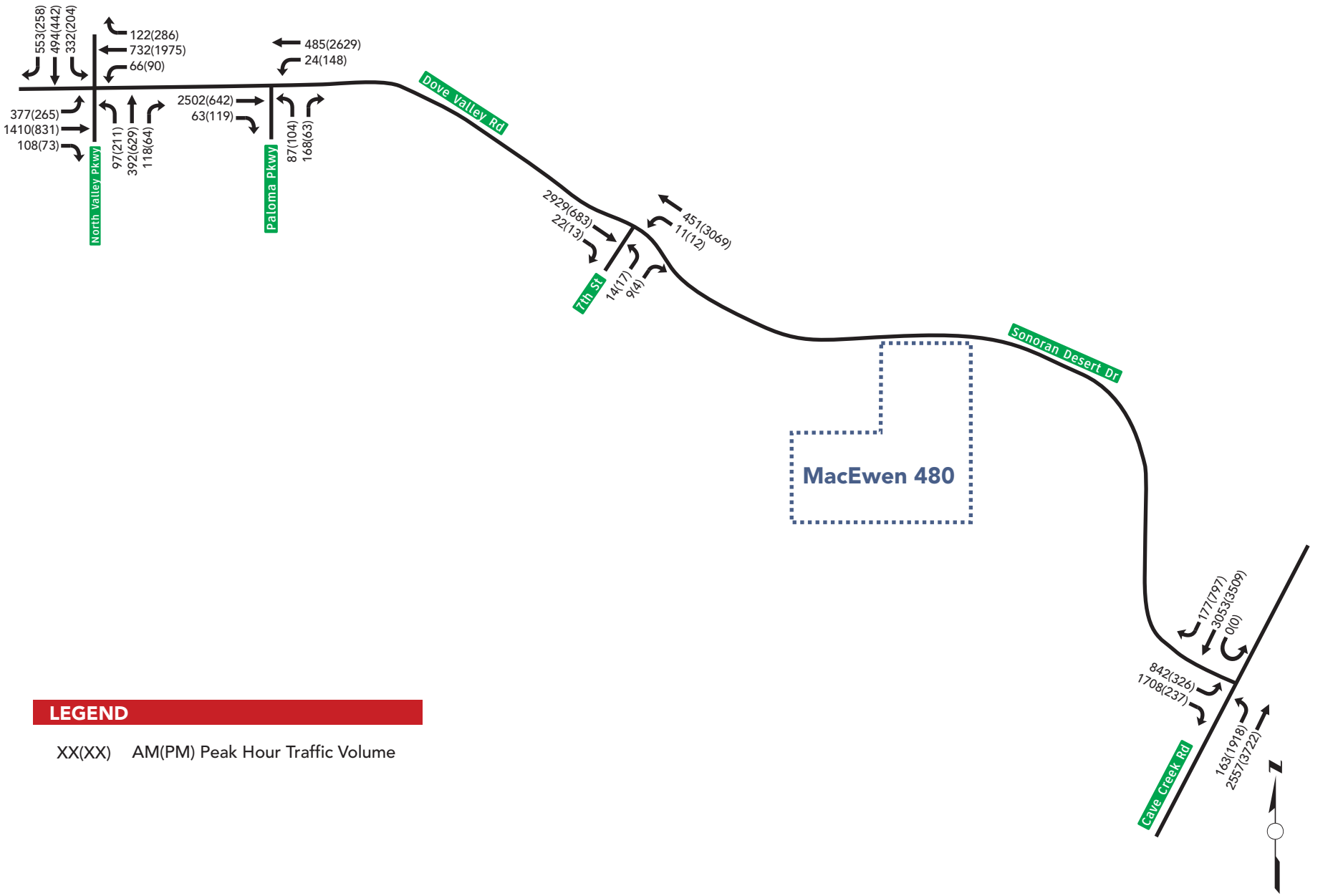


Figure 12: Background Traffic - Year 2035

7.4 Total Traffic Volumes

The total traffic for years 2022, 2025, 2030 and 2035 are presented in **Figures 13 through 16**. The total traffic volumes are calculated by adding the traffic generated by MacEwen 480 to the background traffic for the corresponding year. The total traffic volumes are used to determine the appropriate traffic control needs and roadway improvements required for each of the horizon years analyzed.

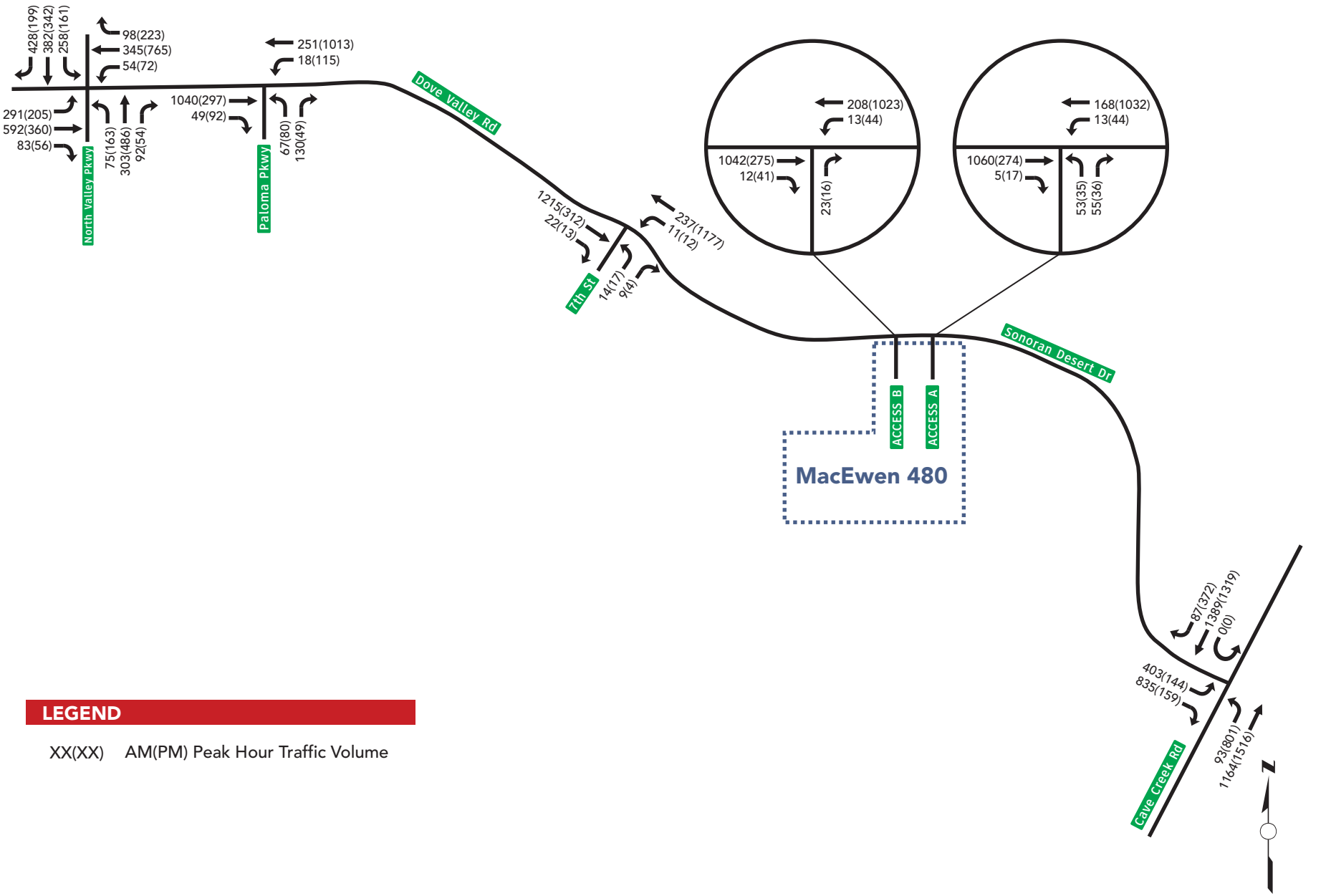


Figure 13: Total Traffic - Year 2022

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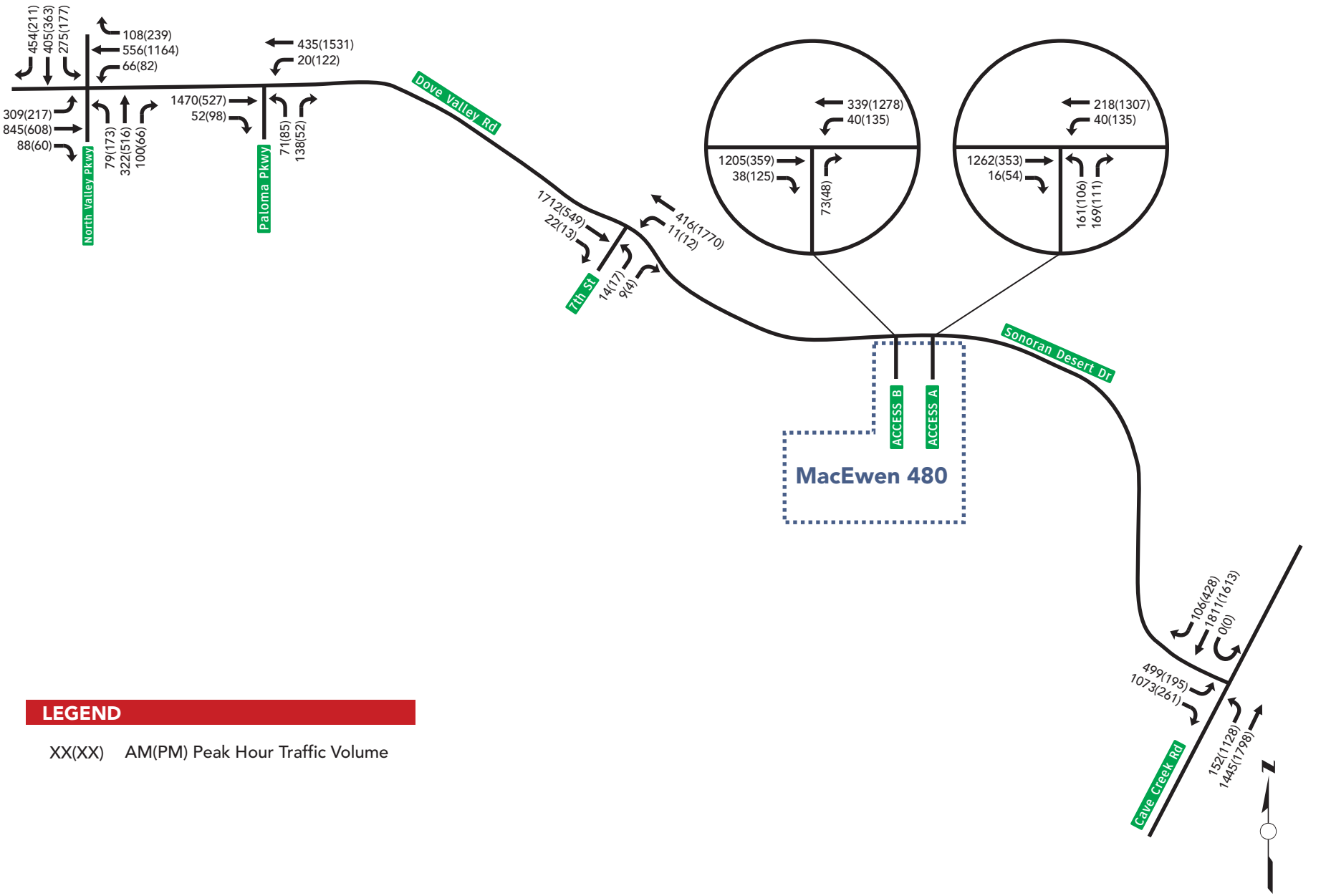

Figure 14: Total Traffic - Year 2025

United Civil Group

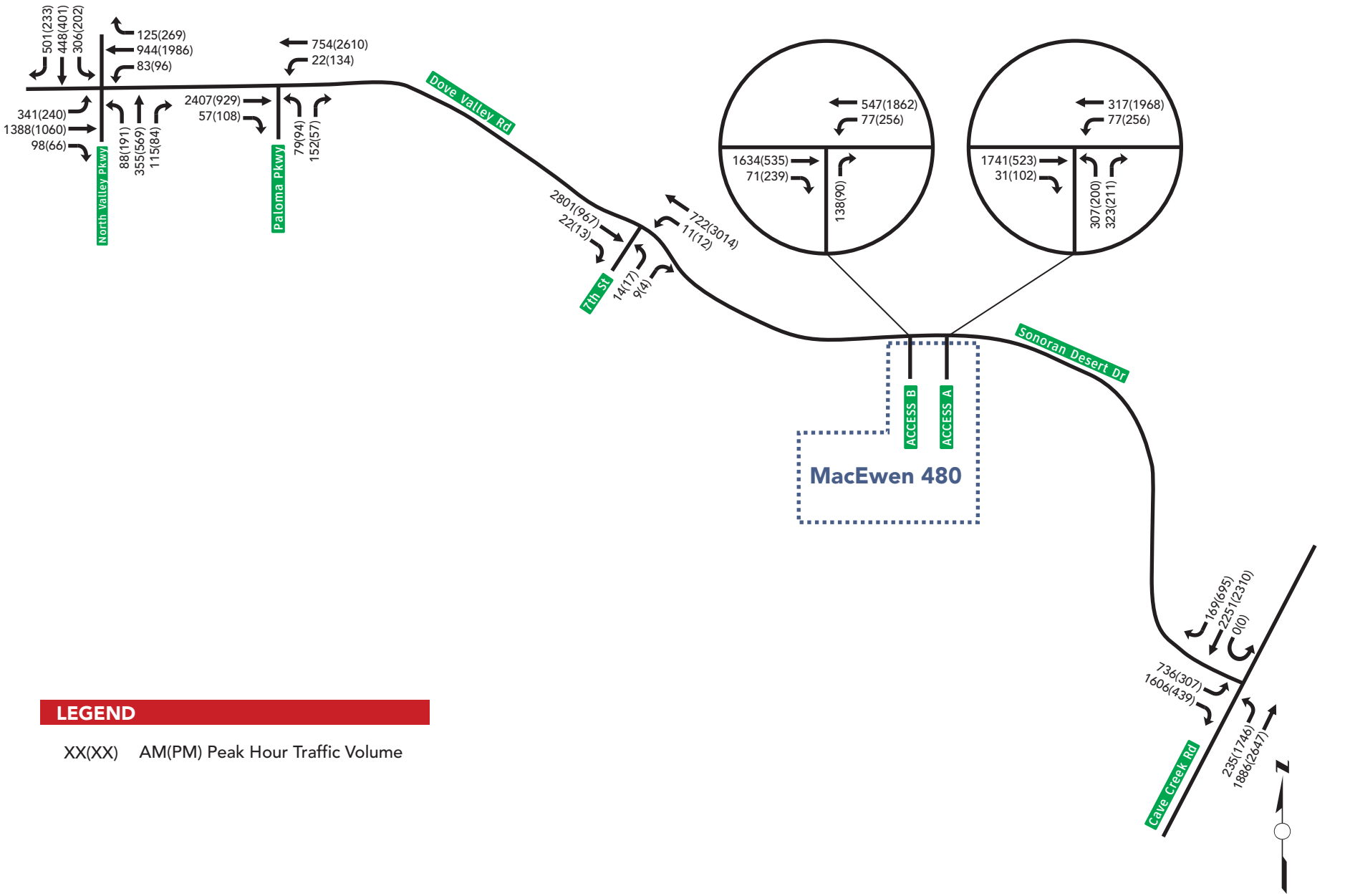

Figure 15: Total Traffic - Year 2030

United Civil Group

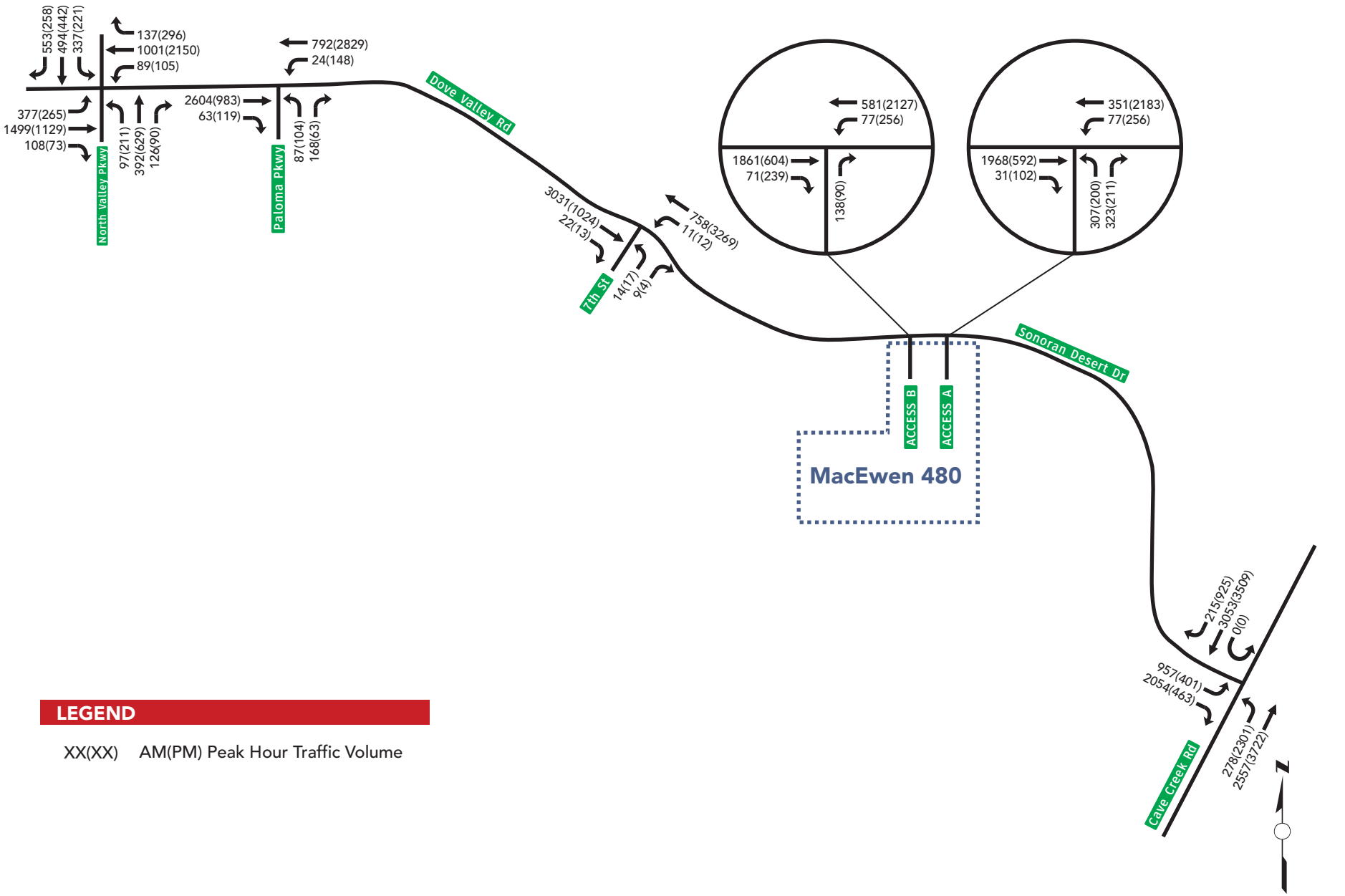

Figure 16: Total Traffic - Year 2035

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8.0 TRAFFIC AND IMPROVEMENT ANALYSIS

The purpose of this section is to show the relationship between future background and total traffic operations and roadway geometrics; identify needs pertaining to traffic flow and safety; and identify alternatives for further consideration where applicable.

8.1 LOS Analyses for Future Background Traffic Conditions

The analysis of future background level of service (LOS) provides a measure of future background traffic conditions without roadway improvements. The *Highway Capacity Manual* level of service methodology was used to evaluate the level of service of the study intersections and the Sonoran Desert Drive Corridor. City of Phoenix guidelines consider an acceptable level of service as LOS D or better.

8.1.1 Intersection LOS Analyses – Future Background

The future projected traffic levels of service are presented in the following tables. Details of the level of service analyses are provided in Appendix B.

The background traffic level of service analyses for years 2022, 2025, 2030 and 2035 are provided in **Tables 10 through 13**. This analysis gives the baseline to compare geometric recommendations and/or total trips from the proposed development.

Table 10: 2022 Background Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive – Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	B	B	-	B	A	C	C	C	D	-	D	D	-	-	-	-	C
PM Peak Hour	E	A	-	C	A	D	E	E	E	-	E	E	-	-	-	-	D
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	D	-	C	D	-	-	-	-	-	B	A	A	A	A	-	A	D*
PM Peak Hour	D	-	A	D	-	-	-	-	-	A	A	A	A	A	-	A	D*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	E	-	D	D	-	-	-	-	-	A	A	A	B	A	-	A	E*
PM Peak Hour	F	-	A	E	-	-	-	-	-	A	A	A	A	A	-	A	F*
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	A	B	B	B	A	A	B	A	E	D	D	D	E	E	D	E	C
PM Peak Hour	B	B	B	B	B	B	B	B	E	C	C	D	E	D	D	D	C

*LOS presented is for the worst case movement.

As shown in Table 10, three of the study intersections operate at overall intersection acceptable levels of service, LOS D or better. The forth intersection, Paloma Parkway/Dove Valley Road operates at an unacceptable level of service, LOS F, in the evening peak hour 2022 background traffic conditions and an LOS E in the morning peak hour. From the analysis it appears that the northbound left-turn movements will experience significant delay due to limited gaps in traffic on Dove Valley Road in the morning and evening peak hours.

During the evening peak hour, several movements operate at an LOS E at the intersection of Cave Creek Road/Sonoran Desert Drive. This is due to the volume of traffic and limited storage capacity for the northbound left, southbound right and eastbound left and right-turning movements.

Some movements at the intersection of North Valley Parkway/Dove Valley Road operate at LOS E during the morning and evening peak hours. Both the eastbound and westbound left turns experience greater delay. This may be due to the signal timing for the protected dual-left-turn movements. The westbound through movement also begins to show signs of delay in the morning peak period. This is due to the two-through lane configuration and the reduced lane capacity in the westbound direction, west of the intersection.

Table 11: 2025 Background Conditions Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	D	B	-	C	A	E	E	E	D	-	E	D	-	-	-	-	D
PM Peak Hour	F	A	-	D	A	F	F	F	F	-	E	F	-	-	-	-	F
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	E	F	-	-	-	-	-	B	A	A	A	A	-	A	F*
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	B	A	-	A	F
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	A	B	B	B	A	B	B	B	E	D	D	D	E	D	D	D	C
PM Peak Hour	B	B	B	B	B	B	B	B	E	C	C	D	E	F	D	F	E

*LOS presented is for the worst case movement.

By year 2025, Table 11 shows that all of the study intersections are predicted to operate at unacceptable levels of service, LOS E or worse during one or more peak

periods of the day with no geometric improvements incorporated into the analysis models.

The intersection of North Valley Parkway/Dove Valley Road is built to its ultimate configuration, currently. However, this intersection is failing due to the projection of 2025 background traffic within the area. Once Sonoran Desert Drive is constructed from Paloma Parkway to Dove Valley Road, traffic patterns will shift over to this roadway and alleviate congestion at the intersection of North Valley Parkway/Dove Valley Road.

Table 12: 2030 Background Conditions Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	D	C	-	C	A	F	F	F	E	-	F	F	-	-	-	-	F
PM Peak Hour	F	A	-	F	A	F	F	F	F	-	F	F	-	-	-	-	F
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	F	F	-	-	-	-	-	D	A	A	A	A	-	A	F*
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	C	A	-	A	F
PM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	A	A	-	A	F
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	B	C	C	C	B	B	C	B	E	D	C	D	E	D	D	D	C
PM Peak Hour	B	B	B	B	B	B	B	B	E	C	C	D	E	F	D	F	F

*LOS presented is for the worst case movement.

As the background traffic volumes continue to increase, Table 12 illustrates that all of the intersections operate at unacceptable levels of service, LOS F, during one or more peak periods throughout the 2030 background condition year with no geometric improvements incorporated into the analysis model.

Table 13: 2035 Background Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	E	F	-	F	A	F	F	F	F	-	F	F	-	-	-	-	F
PM Peak Hour	F	F	-	F	A	F	F	F	F	-	F	F	-	-	-	-	F
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	F	F	-	-	-	-	-	E	A	A	A	A	-	A	F*
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	D	A	-	A	F
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	B	A	-	A	F
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	B	C	C	C	C	C	C	C	D	D	C	D	E	D	D	D	C
PM Peak Hour	B	B	B	B	B	C	C	B	E	C	C	D	E	F	D	F	F

*LOS presented is for the worst case movement.

As shown in Table 13, all of the intersections continue to operate at unacceptable levels of service, LOS F, during one or more peak periods throughout the 2035 background condition year with no geometric improvements incorporated into the analysis models.

8.1.2 Roadway LOS and Volume/Capacity Ratios – Future Background

Average daily traffic volumes were estimated using the approved final growth rate projections provided by the City of Phoenix. The background volumes for the horizon years are presented in Table 14. These volumes represent average daily traffic estimates without the MacEwen development. The capacity of 25,200 was used for Sonoran Desert Drive. Throughout all study years, it is assumed that regionally, Sonoran Desert Drive remains at is current capacity and cross section configuration, without the construction of the southwest segment of Sonoran Desert Drive from Dove Valley Road to Paloma Parkway.

Table 14: Background Volumes Without Construction of Sonoran Desert Drive

Year	Arriving To	Volume	Volume/Capacity Ratio
2025	Sonoran Desert Drive/Dove Valley Road west of MacEwen	20,900	0.82
	Sonoran Desert Drive east of MacEwen	12,300	0.48
	Sonoran Desert Drive near Cave Creek Road	12,300	0.48
2030	Sonoran Desert Drive/Dove Valley Road west of MacEwen	35,900	1.42
	Sonoran Desert Drive east of MacEwen	18,000	0.71
	Sonoran Desert Drive near Cave Creek Road	19,200	0.76
2035	Sonoran Desert Drive/Dove Valley Road west of MacEwen	39,200	1.55
	Sonoran Desert Drive east of MacEwen	21,000	0.83
	Sonoran Desert Drive near Cave Creek Road	27,600	1.09

Based on Transportation Research Board's Highway Capacity Manual, a LOS D is defined for a two lane highway segment with level terrain and with 40% No Passing Zones as 0.6 and an LOS of E is defined as 1.0.

If growth within the Sonoran Desert Drive Corridor materializes as projected, Sonoran Desert Drive/Dove Valley Road will operate at unacceptable LOS west of MacEwen by year 2025 and along the entire corridor by year 2030.

8.2 Roadway and Capacity Improvements Within the Study Area

Using the future background LOS analyses as a guide, roadway and capacity improvements within the study area are considered. The following analyses are conducted in order to address identified capacity constraints along the roadway segments and intersections within the study area.

8.2.1 Sonoran Desert Drive from Paloma Parkway to Dove Valley Road

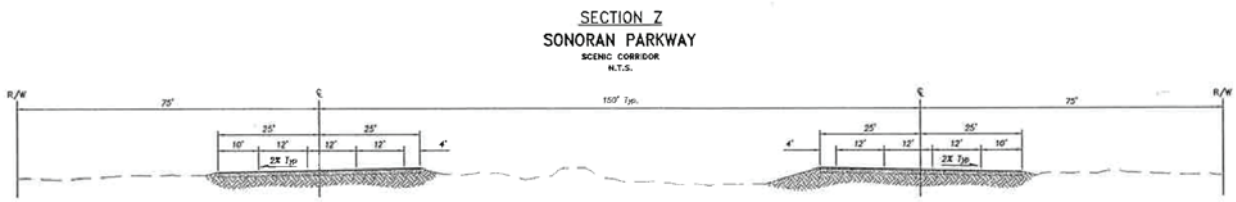
In 2013, the City of Phoenix commissioned Ty-Lin to prepare the Pre-Final Alignment Study of Sonoran Desert Drive from Paloma Parkway to Dove Valley Road. This southwestern segment of Sonoran Desert Drive is intended to provide relief for the Dove Valley Road Corridor and is intended to be a primary regional transportation connection providing access to Interstate 17 and the Loop 303 interchange. The primary purpose of the report was to establish a recommended alternative for the geometric design and alignment of a new 6-lane major arterial road along Sonoran Desert Drive between Paloma Parkway and Dove Valley Road. The Ty-Lin study serves as a guide for future development in the area and ensures that this major arterial is constructed per City of Phoenix standards and requirements. When constructed, this major arterial will allow traffic to reroute from Dove Valley Road and will tie into Interstate 17 and Loop 303, providing regional connectivity within the area.

The background traffic analysis completed as part of the MacEwen TIS and summarized in Table 14 shots that, without the development of MacEwen 480, Dove Valley Road west of the MacEwen 480 property will exceed its capacity by 2030 as a result of

regional growth. Once this segment of Sonoran Desert Drive is constructed west of Dove Valley Road, traffic projections show that approximately 26,800 vehicles per day are expected by year 2035 along this segment, (Ty-Lin Sonoran Desert Drive Alignment Study Table 7-1) thus returning Dove Valley Road to an acceptable level of service. Construction of Sonoran Desert Drive west of Dove Valley Road is a significant component of the City's planned regional transportation network and is required to alleviate congestion caused by regional growth and an increase in pass through traffic.

8.2.2 Sonoran Desert Drive east of Dove Valley Road

Sonoran Desert Drive, east of Dove Valley Road, has a current width of approximately 48 feet measured edge of pavement to edge of pavement and includes one lane in cash direction as well as an alternating passing lane. The City of Phoenix long term plan is to reclassify Sonoran Desert Drive to a parkway corridor. In anticipation of this, 300 feet of right of way is reserved for this corridor along the MacEwen 480 property boundary. The ultimate cross section of the parkway corridor is shown below, which illustrates a 150 foot wide median with three lanes of travel and a bike lane in each direction.



Source: DRAFT Sonoran Parkway Corridor Report prepared by Kirkham Michael July 2003

Because of the complexities in constructing the full parkway corridor from Cave Creek Road to Dove Valley Road, it is assumed for the purposes of the MacEwen 480 TIS that Sonoran Desert Drive will be widened as part of a single, City-initiated construction project, will not be constructed in segments as development occurs along the corridor. In addition, it is assumed that Sonoran Desert Drive will be widened to its ultimate configuration after MacEwen 480 is built-out.

8.3 Cave Creek Road/Sonoran Desert Drive Intersection Improvements

The intersection of Cave Creek Road/Sonoran Desert Drive shows an acceptable LOS in the morning and evening peak hours for the overall intersection in the existing conditions. However, specific movements are producing undesirable LOS, specifically the northbound left-turn movement and the eastbound right- and left-turn movements. In addition, the storage for these same turning movements is confined by existing medians. Therefore, as queues spill into the travel way, this creates undue delay and unnecessary backups which lead to longer observed delay times than reported in the analyses. Moreover, regional projected growth in the area only exacerbates the congestion and queue lengths as shown in the continued deterioration of LOS in the background horizon years.

In order to mitigate the existing traffic impacts at the intersection, improvements are recommended to address the existing capacity constraints. These improvements include removing approximately 1,200 feet of existing medians and repaving/restriping the west leg of Sonoran Desert Drive as two eastbound right-turn lanes, one eastbound left-turn lane and two westbound receiving lanes. The two westbound receiving lanes will transition to one lane approximately 500 feet west of Cave Creek Road. These improvements are anticipated to remain within the existing Sonoran Desert Drive footprint at the intersection with minimal impacts to the surrounding area.

Figure 17 presents the recommendations for intersection improvements at Cave Creek Road/Sonoran Desert Drive.

8.4 Accessibility to MacEwen 480

Access to MacEwen 480 via Sonoran Desert Drive is limited to a primary collector ("Access A") and a secondary collector ("Access B"). The primary full access and the secondary left-in/right-in/right-out access are spaced approximately one-quarter mile apart on Sonoran Desert Drive.

Accessibility to the majority of the residential parcels will be provided via Access A, which is planned to meander through the MacEwen 480 property. Full and restricted turning movement access is planned along the interior collector road; however, specific access points are unknown at this time. Therefore, site access intersections along Access A should generally be spaced a minimum of 300 feet apart. Due to its design and location of the MacEwen 480 property, Access A will only accommodate MacEwen 480 traffic with a projected average daily traffic volume of approximately 13,000 vehicles. Therefore, a two lane roadway with raised medians, and exclusive left-turn lanes is sufficient to handle the projected traffic on Access A.

A secondary collector road, Access B, is planned that ties into Access A approximately one-quarter mile south of Sonoran Desert Drive. It is not anticipated that this roadway will carry a significant amount of traffic and therefore will be designed as a minor collector into the development. The purpose Access B is to provide additional accessibility and secondary access to the community. Access B should be designed with left-in/right-in/right-out access only at Sonoran Desert Drive.

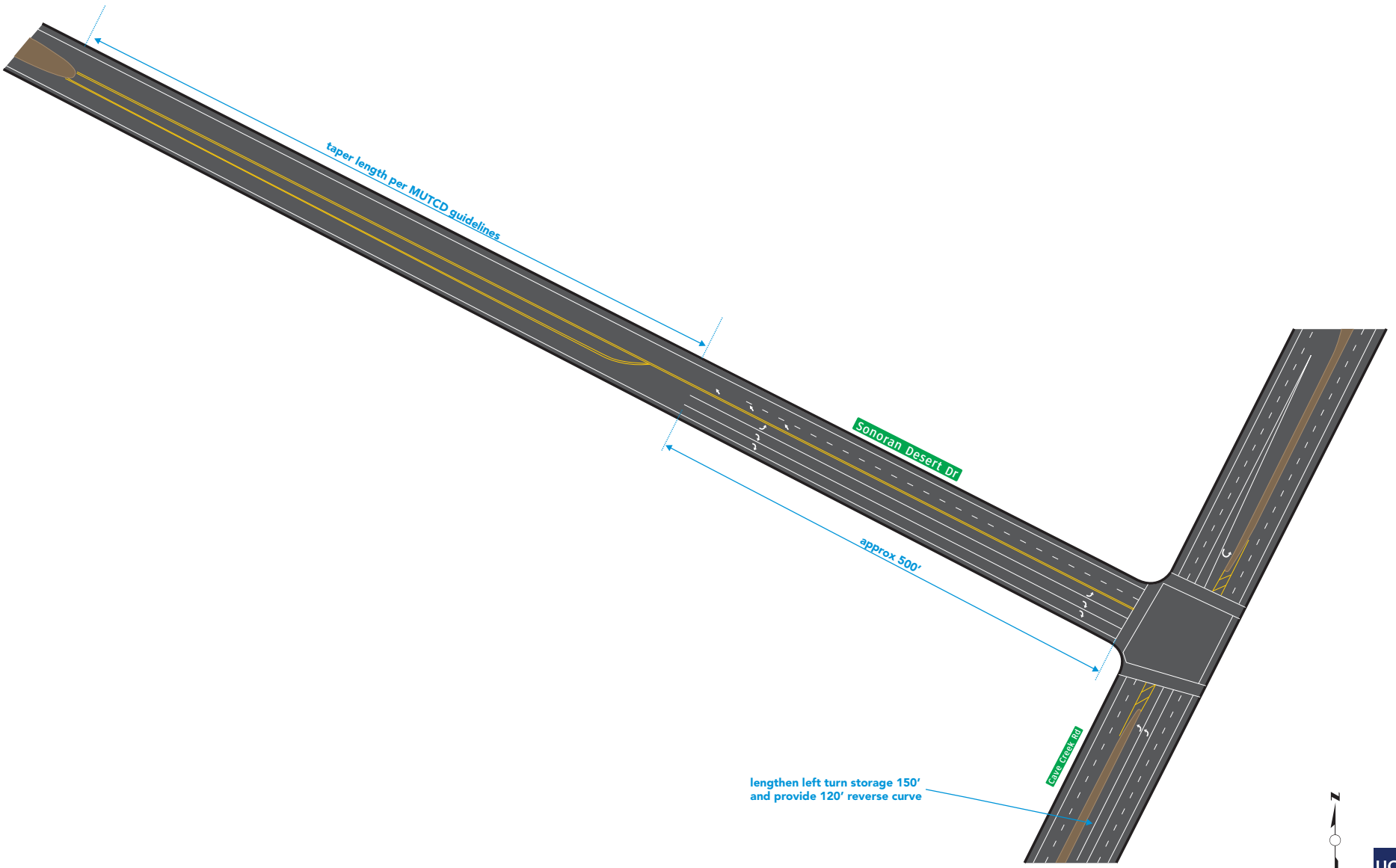


Figure 17: Cave Creek Road/Sonoran Desert Drive Intersection Recommendations

8.5 Site Access Turn Lane Analysis

Per Section 3.12 Right-Turn and Left-Turn Lanes from City of Phoenix's *Street Planning and Design Guidelines*, right- and left-turn lanes provide a deceleration lane for vehicles turning into large traffic generators or at intersections with high right and/or left-turn demand in order to reduce delay for through vehicles as well as minimize rear-end collisions. Based on the guidelines, right and left-turn deceleration lanes are considered on a case by case basis.

8.5.1 Right-Turn Deceleration Lanes

Based on projected right-turn volumes at the site accesses, right-turn deceleration lanes are recommended at both Access A and Access B along with the development of Phase I.

8.5.2 Right-Turn Deceleration Lane Storage Length

AASHTO's *A Policy on Geometric Design of Highways and Streets* was utilized in calculating the storage lengths required for the right-turn deceleration lanes at the site accesses.

The storage lengths according to AASHTO use the following formulas:

For unsignalized conditions, the deceleration lane storage length is calculated by taking the average number of turning vehicles during a 2 minute interval in the peak hour and multiplying by 25 feet for a typical length of a vehicle.

For signalized conditions:

Right-turn storage length = (1-G/C)VKL(1+p)/Nc

V = peak 15 min flow rate expressed in vehicles per hour (vph)
K = Queue factor: Use 1.5 for Right on Red and 2 for No Right on Red
L = 25 typical length of a passenger vehicle
p= percentages of trucks or buses (2% assumed for this analysis)
C = Cycle Length in seconds
G = Green time in seconds
Nc=number of cycles per hour =3600/C
C = 120 sec and G = 60 seconds so Nc = 30 and G/C = 0.5.

Based on the City Guidelines, a typical storage length is 100 feet while the maximum storage length is 250 feet. If the calculated storage length fell below the typical 100 foot storage length, the recommended storage length was rounded up to 100 feet. Typical taper lengths for the City of Phoenix are 150 feet curb tapers. The recommended right-turn lane storage and taper lengths for Phase I and after full build-

out of MacEwen 480 are presented in **Table 15** below. Based on geometric constraints at the site accesses, a taper of 90 feet is recommended.

Table 15: Right-Turn Deceleration Lane Storage Lengths

Location		Existing Storage Length (feet)	Turn Volume	Recommended Storage (feet)	Taper (feet)
On	At				
Full Build Out - 2030					
Sonoran Desert Drive	Access A	-	EB Right: 102	100	90
Sonoran Desert Drive	Access B	-	EB Right: 239	200	90

8.4.3 Left-Turn Deceleration Lane

Based on projected left-turn volumes at Access A, left-turn deceleration lanes are recommended at Access A.

8.4.4 Left-Turn Deceleration Lane Storage Length

AASHTO's *A Policy on Geometric Design of Highways and Streets* was utilized in calculating the storage lengths required for the left-turn deceleration lanes at the site accesses.

Left-turn storage length = VKL(1+p)/Nc
V = peak 15 min flow rate expressed in vehicles per hour (vph)
K = Queue factor (constant between 1.5 and 2 - for periodic heavy demand)
L = 25 typical length of a passenger vehicle
p= percentages of trucks or buses (2% assumed for this analysis)
C = Cycle Length in seconds
Nc=number of cycles per hour =3600/C
C = 120 sec so Nc = 30

City Guidelines state that a typical exclusive left-turn storage length is 100 feet while the maximum storage length is 250 feet depending upon the roadway classification. Therefore, if the calculated storage length fell below the typical 100 foot storage length, the recommended storage length was rounded up to 100 feet. The recommended left-turn lane storage and taper of the proposed development are presented in **Table 16** below.

Table 16: Left-Turn Deceleration Lane Storage Lengths

Location		Turn Volume	Calculated Storage Length (feet)	Recommended Storage (feet)	Taper (feet)
On	At				
Full Build Out - 2025					
Sonoran Desert Drive	Access A	WB Left: 256	330	250	90
Sonoran Desert Drive	Access B	WB Left: 256	215	250	90

8.6 Traffic Signal Warrant Analysis

The 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) was used as the primary tool to determine if a traffic signal is warranted at the intersection of Sonoran Desert Drive/Access A as well as the off-site intersections of Paloma Parkway/Dove Valley Road and 7th Street/Dove Valley Road. There are nine specific signal warrants in the MUTCD; however, not all warrants are applicable to this study. The warrants used in this analysis include:

Warrant 1 – Eight-Hour Vehicular Volume
Warrant 2 – Four-Hour Vehicular Volume
Warrant 3 – Peak Hour

Appendix C: Traffic Signal Warrant Analyses presents the results of the signal warrant analyses for the intersections of Sonoran Desert Drive/Access A, 7th Street/Dove Valley Road and Paloma Parkway/Dove Valley Road.

Warrant 1 – Eight-Hour Vehicular Volume

The Minimum Vehicular Volume, Condition A, is intended for application where the volume of intersecting traffic from a side street or driveway is the principal reason for considering installation of a traffic signal. In this condition, the warrant would be satisfied when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach is equal to or exceeds specified limits located on *Table 4C-1 Warrant 1 Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

The Interruption of Continuous Traffic, Condition B, is intended for application where the traffic volume on a major street is so heavy that the traffic on a minor intersection street or driveway has excessive delay or hazard in entering or crossing the major street. This warrant is met when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach is equal to or exceeds specified limits located on *Table 4C-1 Warrant 1, Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

Volume projections for the eight highest hours on an average day were determined by applying hourly adjustment factors calculated from the available peak hour turning movement count data.

Warrant 1 Results:
Sonoran Desert Drive/Access A - Warrant 1 for both Condition A and Condition B is met by year 2025.
Paloma Parkway/Dove Valley Road - Warrant 1 is not met throughout the 2035 horizon year
7th Street/Dove Valley Road - Warrant 1 is not met throughout the 2035 horizon year.

Warrant 2 – Four-Hour Vehicular Volume
The four-hour vehicular volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant is satisfied when, for each of any four hours of an average day, plotted points representing vehicles per hour on the major street (total of both approaches) and the vehicles per hour on the minor street approach (one direction only) all fall above the appropriate curve located on *Figure 4C-2 Warrant 2, Four-Hour Vehicular Volume* in the *MUTCD 2009*.

Warrant 2 Results:
Sonoran Desert Drive/Access A - Warrant 2 is met by 2025
Paloma Parkway/Dove Valley Road - Warrant 2 is met by 2025
7th Street/Dove Valley Road - Warrant 2 is not met throughout the 2035 horizon year

Warrant 3 - Peak Hour Volume
The peak hour volume warrants is intended for applications where there are relatively high volumes entering from the side street during one hour of the day. This warrant is satisfied when for any peak hour of an average day, plotted points representing vehicles per hour on the major street (total of both approaches) and the vehicles per hour on the minor street approach (one direction only) all fall above the appropriate curve located on *Figure 4C-3 Warrant 3, Peak Hour Vehicular Volume* in the *MUTCD 2009*.

Warrant 3 Results:
Sonoran Desert Drive/Access A - Warrant 3 is met by 2025
Paloma Parkway/Dove Valley Road - Warrant 3 is met by 2025
7th Street/Dove Valley Road - Warrant 3 is not met throughout the 2035 horizon year

Signal Warrant Summary
The intersection of Sonoran Desert Drive/Access A meets signal warrants 1, 2 and 3 with the opening of Phase II of the proposed development. Although this intersection meets traffic signal warrants with the opening of Phase II, a traffic signal is not recommended until these warrants are reevaluated once Phase II is built out and actual traffic volumes can be collected at this intersection.

The intersection of Paloma Parkway/Dove Valley Road meets signal warrants 2 and 3 by year 2025. These signal warrants are met in response to growth in background traffic

only, without development of MacEwen 480. However, it should be noted that new residential development is proposed within the vicinity of this intersection (projected buildout by 2025) and increased traffic volumes are likely on Paloma Parkway, that were not captured in this analysis. Therefore, this signal warrant analysis should be revised when known development and more accurate traffic volumes are forecast on Paloma Parkway.

The intersection of 7th Street/Dove Valley Parkway does not meet signal warrants 1, 2 or 3 by 2035 the horizon year of this study. However, it should be noted that as background traffic increases and parcels of land are developed near this intersection, signal warrants could be met prior to 2035.

8.7 Intersection Sight Distance

Proper intersection sight distance and sight triangles shall be maintained at all driveways and site accesses to give drivers exiting and entering a clear view of conflicting traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view. The landscape and hardscape within the sight triangles must not obstruct the driver's view of the adjacent travel lanes. The site designers shall follow the methodologies presented in the *AASHTO Green Book* to ensure adequate sight distance is provided.

8.8 Sonoran Desert Drive at MacEwen 480 Frontage

Sonoran Desert Drive will be widened to a parkway cross-section in the future. In order to preserve the integrity of the natural landscape adjacent to the roadway and to facilitate the efficient build-out of Sonoran Desert Drive while minimizing throw away improvements, recommendations for improvements along the MacEwen 480 frontage were developed with consideration to as minimal of impact, as possible.

Figure 18 presents the recommendation to add an additional 18 feet of pavement on the south side of Sonoran Desert Drive at the MacEwen 480 frontage. Once constructed, the total width of the roadway will be 66 feet along the MacEwen 480 frontage. This allows for two 11 foot travel lanes in the eastbound and westbound directions separated by a 10 foot painted median, and 5 foot bike lanes. The taper length required to widen Sonoran Desert Drive to 66 feet was determined by multiplying the additional width added (18 feet) to the design speed of 55 mph resulting in a 990 foot taper. It should be noted that there are two existing box culverts located under Sonoran Desert Drive that may need to be lengthened due to these proposed roadway improvements. With the recommended geometrics, Access B should be designed as a left-in/right-in/right-out only. By allowing the left-in movement at both MacEwen 480 accesses, this design will provide enough left-turn storage to accommodate the estimated volume of left-turn vehicles anticipated.

When Sonoran Desert Drive is constructed to its ultimate parkway cross-section, Access B will be limited to right-in/right-out only. This change will push all eastbound left turn vehicles to Access A. As such, dual left turn lanes may be required at the Sonoran Desert Drive/Access A intersection to accommodate the left turn movements. Because Sonoran Desert Drive will already be widened at the intersection, the intersection will need to be restriped with dual left turn lanes to accommodate the projected future turning movement volumes at Access A.

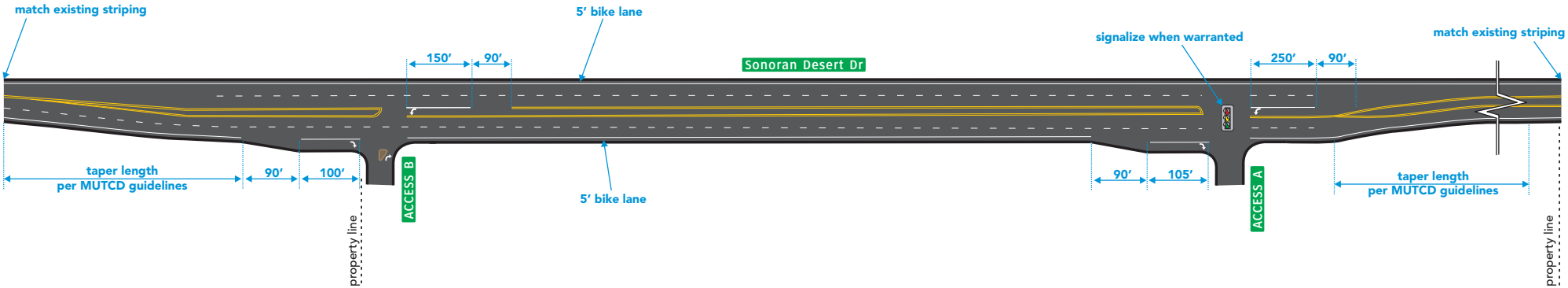


Figure 18: Recommendation for MacEwen 480 Frontage on Sonoran Desert Drive

N

not to scale

UCG
United Civil Group

8.9 LOS Analyses for Future Total Traffic Conditions

The LOS for future total traffic conditions is based upon the recommended roadway and intersection improvements in the above sections. As such, the improvements are added to the total traffic analyses, incrementally, in the horizon years in which they are warranted.

8.9.1 Intersection LOS Analyses – Future Total Traffic

Intersection LOS are presented in **Tables 17 through 20** for years 2022, 2025, 2030 and 2035 total traffic.

For the year 2022 total traffic conditions the following improvements are made to the study intersections and analyzed within Vistro:

1. The intersection of Cave Creek Road/Sonoran Desert Drive allows for dual northbound left-turn lanes and dual eastbound right-turn lanes.
2. Sonoran Desert Drive at the MacEwen 480 frontage is widened to 18 feet to accommodate two lanes in each direction with exclusive right and left-turn lanes at both accesses.
3. Access B is limited to left-in/right-in/right-out only.

Table 17: 2022 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	B	A	-	B	-	B	B	B	D	-	D	D	-	-	-	-	D
PM Peak Hour	D	A	-	B	-	B	B	B	E	-	D	E	-	-	-	-	C
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	D	-	C	D	-	-	-	-	-	B	A	A	A	A	-	A	D*
PM Peak Hour	E	-	A	D	-	-	-	-	-	A	A	A	A	A	-	A	E*
Paloma Parkway/Dove Valley Road – One-Way Stop																	
AM Peak Hour	E	-	D	D	-	-	-	-	-	A	A	A	B	A	-	A	E*
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F*
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	A	B	B	B	A	B	B	A	E	D	D	D	E	E	D	E	C
PM Peak Hour	B	B	B	B	B	B	B	B	E	C	C	D	E	D	D	D	C
Access A/Sonoran Desert Drive – One-Way Stop																	
AM Peak Hour	D	-	C	D	-	-	-	-	-	A	A	A	B	A	-	A	D*
PM Peak Hour	E	-	A	C	-	-	-	-	-	A	A	A	A	A	-	A	E*
Access B/Sonoran Desert Drive – One-Way Stop																	
AM Peak Hour	-	-	C	C	-	-	-	-	-	A	A	A	-	A	-	A	C*
PM Peak Hour	-	-	A	A	-	-	-	-	-	A	A	A	-	A	-	A	A*

*LOS presented is for the worst case movement.

As shown in Table 17, the intersections of Cave Creek Road/Sonoran Desert Drive, North Valley Parkway/Dove Valley Road and Access B/Sonoran Desert Drive operate at acceptable levels of service, LOS D or better, during the morning and evening peak hours throughout the 2022 total traffic conditions.

The intersections of 7th Street/Dove Valley Road, Paloma Parkway/Dove Valley Road and Access A/Sonoran Desert Drive operate at unacceptable levels of service, LOS E or worse, during the morning and/or evening peak hours of the 2022 total traffic conditions. This is because motorists turning left onto Sonoran Desert Drive from the minor roadway experience longer delays during the peak periods. Left-turning movements on stop-controlled minor roads and driveways that intersect with major streets typically experience greater delay for short periods of time in the peak hours due to the wait for acceptable gaps on the major street, while the free-flowing major streets experience minimal delay.

For year 2025, the improvements from 2022 are incorporated into Vistro, along with the following recommendations:

1. The intersection of Paloma Parkway/Dove Valley Road meets signal warrants using future background traffic volumes and is included in this analysis.
2. The intersection of Sonoran Desert Drive/Access A meets signal warrants using future total traffic volumes and is included in this analysis.

Table 18: 2025 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	C	B	-	B	A	D	D	D	D	-	D	D	-	-	-	-	C
PM Peak Hour	F	A	-	D	A	E	F	E	F	-	D	E	-	-	-	-	D
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	E	F	-	-	-	-	-	C	A	A	A	A	-	A	F*
PM Peak Hour	F	-	B	F	-	-	-	-	-	A	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	D	-	E	E	-	-	-	-	-	F	A	D	E	A	-	A	D
PM Peak Hour	E	-	E	E	-	-	-	-	-	A	A	A	A	F	-	D	C
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	A	B	B	B	B	B	B	B	E	D	C	D	E	D	D	D	C
PM Peak Hour	B	B	B	B	B	B	B	B	E	C	C	D	E	F	D	F	E
Access A/Sonoran Desert Drive - Signalized																	
AM Peak Hour	E	-	D	E	-	-	-	-	-	A	A	A	A	A	-	A	B
PM Peak Hour	E	-	E	E	-	-	-	-	-	A	A	A	A	A	-	A	A
Access B/Sonoran Desert Drive – One-Way Stop																	
AM Peak Hour	-	-	B	B	-	-	-	-	-	A	A	A	B	A	-	A	B*
PM Peak Hour	-	-	A	A	-	-	-	-	-	A	A	A	A	A	-	A	A*

*LOS presented is for the worst case movement.

As shown in Table 18, the study intersection of Cave Creek Road/Sonoran Desert Drive operates at an acceptable LOS D or better during the morning and evening peak hours for the 2025 total conditions. The anticipated LOS at this intersection is due to the proposed improvements.

Paloma Parkway/Dove Valley Road and the site access intersections operate at acceptable levels of service, LOS D or better, within the morning and evening peak hours of the 2025 total condition year.

The intersection of 7th Street/Dove Valley Road operates at unacceptable levels of service, LOS E or worse, within morning and evening peak hours. This is due to delay

of the left-turning vehicles on the minor approach caused by increased traffic on the major roadways with few acceptable gaps in traffic.

Some movements at the intersection of North Valley Parkway/Dove Valley Road experience unreasonable delay, which is also experienced in the background conditions. The delay is caused by the increased traffic volumes at the intersection.

Table 19: 2030 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	D	C	-	C	A	F	F	F	F	-	F	F	-	-	-	-	F
PM Peak Hour	F	B	-	F	A	F	F	F	F	-	E	F	-	-	-	-	F
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	F	F	-	-	-	-	-	D	A	A	A	A	-	A	F*
PM Peak Hour	F	-	C	F	-	-	-	-	-	B	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	E	-	F	F	-	-	-	-	-	F	A	F	E	A	-	A	F
PM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	A	F	-	F	F
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	B	B	B	B	C	B	C	C	E	D	C	D	E	F	D	E	D
PM Peak Hour	B	B	B	B	B	B	B	B	E	D	C	D	E	F	D	F	F
Access A/Sonoran Desert Drive - Signalized																	
AM Peak Hour	D	-	D	D	-	-	-	-	-	C	A	C	C	A	-	A	C*
PM Peak Hour	E	-	D	E	-	-	-	-	-	A	A	A	A	A	-	A	B
Access B/Sonoran Desert Drive – One-Way Stop																	
AM Peak Hour	-	-	C	C	-	-	-	-	-	A	A	A	C	A	-	A	C*
PM Peak Hour	-	-	B	B	-	-	-	-	-	A	A	A	B	A	-	A	B*

*LOS presented is for the worst case movement.

As shown in Table 19, and consistent with the background traffic conditions articulated in Table 12, all of the study intersections (except the MacEwen 480 site accesses) operate at unacceptable levels of service, LOS E or worse, throughout the 2030 total condition year. For the Cave Creek Road/Sonoran Desert Drive intersection, by year 2030, the benefits of the intersection improvements shown in year 2022 and maintained through 2025 are offset by the proposed increase in regional traffic volumes.

As further discussed in Section 8.2.2, regional transportation system improvements will be warranted in response to traffic generated from regional growth and the expanded

use of Sonoran Desert Drive as an alternative regional transportation corridor. As land is developed near the intersection of Cave Creek Road/Sonoran Desert Drive, and with continued growth of regional background traffic, the intersection should be built to its ultimate configuration. This may include widening Cave Creek Road to 6 lanes as shown on the City of Phoenix's Street Classification Map.

LOS at the intersections of Paloma Parkway/Dove Valley Road and North Valley Parkway/Dove Valley Road will also improve with regional improvements, including the construction on Sonoran Desert Drive from Paloma Parkway to Dove Valley Road. The 7th Street/Dove Valley Road intersection produces unacceptable delay from the minor roadway due to the low number of acceptable gaps in traffic.

Table 20: 2035 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cave Creek Road/Sonoran Desert Drive - Signalized																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	E	F	-	F	A	F	F	F	F	-	F	F	-	-	-	-	F
PM Peak Hour	F	F	-	F	A	F	F	F	F	-	E	F	-	-	-	-	F
7th Street/Dove Valley Road – One-Way Stop																	
	NEB				SWB				SEB				NWB				
AM Peak Hour	F	-	F	F	-	-	-	-	-	E	A	A	A	A	-	A	F*
PM Peak Hour	F	-	C	F	-	-	-	-	-	B	A	A	A	A	-	A	F*
Paloma Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	E	-	F	F	-	-	-	-	-	F	A	F	E	A	-	A	F
PM Peak Hour	F	-	F	F	-	-	-	-	-	A	A	A	A	F	-	F	F
North Valley Parkway/Dove Valley Road – Signalized																	
AM Peak Hour	B	C	C	C	C	C	C	C	D	D	C	D	E	F	C	E	D
PM Peak Hour	B	B	B	B	B	C	C	B	E	D	C	D	E	F	D	F	F
Access A/Sonoran Desert Drive - Signalized																	
AM Peak Hour	D	-	D	D	-	-	-	-	-	C	A	C	D	A	-	B	C
PM Peak Hour	E	-	D	E	-	-	-	-	-	A	A	A	A	B	-	B	B
Access B/Sonoran Desert Drive – One-Way Stop																	
AM Peak Hour	-	-	D	D	-	-	-	-	-	A	A	A	C	A	-	A	D*
PM Peak Hour	-	-	B	B	-	-	-	-	-	A	A	A	B	A	-	A	B*

*LOS presented is for the worst case movement.

As shown in Table 20, and consistent with background traffic conditions shown in Table 13, all of the Study intersections (except the MacEwen 480 accesses) continue to operate at unacceptable levels of service, LOS E or worse, during at least one peak hour period, throughout the 2035 total condition year. However, as the roadway

network expands throughout the study area and drivers shift to new roadways, the intersection levels of service will balance throughout the region.

8.9.2 Total Traffic Volume/Capacity Ratios

Average daily traffic volumes were estimated using the approved final growth rate projections provided by the City of Phoenix. The total volumes for the horizon years are presented in **Table 21**. These volumes represent average daily traffic estimates with the MacEwen development. The capacity of 25,200 was used for Sonoran Desert Drive.

Table 21: Total Traffic Volumes without Construction of Sonoran Desert Drive

Year	Arriving To	Volume	Volume/Capacity Ratio
2025	Sonoran Desert Drive/Dove Valley Road west of MacEwen	23,600	0.93
	Sonoran Desert Drive east of MacEwen	16,300	0.64
	Sonoran Desert Drive near Cave Creek Road	16,300	0.64
2030	Sonoran Desert Drive/Dove Valley Road west of MacEwen	40,600	1.61
	Sonoran Desert Drive east of MacEwen	25,100	0.99
	Sonoran Desert Drive near Cave Creek Road	26,400	1.05
2035	Sonoran Desert Drive/Dove Valley Road west of MacEwen	44,000	1.74
	Sonoran Desert Drive east of MacEwen	28,200	1.11
	Sonoran Desert Drive near Cave Creek Road	34,700	1.37

Based on Transportation Research Board's Highway Capacity Manual, a LOS D is defined for a two lane highway segment with level terrain and with 40% No Passing Zones as 0.6 and an LOS of E is defined as 1.0.

If growth within the Sonoran Desert Drive area continues as projected, and consistent with the background traffic volumes (without MacEwen 480) as shown in Table 14, the Sonoran Desert Drive/Dove Valley Road Corridor will operate at unacceptable levels west of MacEwen 480 by year 2025 and along the entire corridor by year 2030.

9.0 CONCLUSIONS & RECOMMENDATIONS

The following summarizes the traffic impact study performed for the proposed MacEwen 480 development located south of Sonoran Desert Drive between the 16th Street and 24th Street alignments in Phoenix, Arizona. The proposed 473 acre development is planned to consist of a maximum of 1,420 single-family residential homes that will be constructed in three phases.

Based on the data calculated form the ITE Trip Generation Manual, the proposed development is expected to generate approximately 12,962 total weekday trips upon completion in 2030. During the morning and evening peak hours, MacEwen 480 will generate approximately 1,023 and 1,352 trips, respectively.

The study area intersections of Cave Creek Road/Sonoran Desert Drive, 7th Street/Dove Valley Road, Paloma Parkway/Dove Valley Road and North Valley Parkway/Dove Valley Road currently operate at acceptable levels of service, LOS C or better, in the morning and evening peak hours of the 2019 existing condition. Using existing geometrics and future background volumes (without consideration for MacEwen 480), by year 2025, the intersection levels of service throughout the study area degrade as regional growth occurs and traffic volumes within the study area increase. In addition to intersection levels of service, roadway levels of service for the background conditions are shown as an LOS E for Sonoran Desert Drive/Dove Valley Road west of the MacEwen 480 development. In order to address the volume of regional traffic projected within the study area, the construction of the southern leg of Sonoran Desert Drive from Paloma Parkway to the Dove Valley Road transition is recommended as a regional improvement project.

The intersection of Cave Creek Road/Sonoran Desert Drive currently has excessive queuing in the existing conditions. To facilitate relief under existing conditions and accommodate projected growth, near-term intersection improvements are recommended. These include adding dual-left-turn lanes to increase storage for the northbound left-turn lane from Cave Creek Road onto Sonoran Desert Drive and adding dual right-turn lanes to increase storage for the southbound right-turn lane from Sonoran Desert Drive to Cave Creek Road. These improvements require modifications to the westernmost portion of Sonoran Desert drive as shown in Figure 18.

Sonoran Desert Drive is ultimately planned to be expanded to a six-lane parkway. Given that the expansion of Sonoran Desert Drive should be constructed as a single, regional improvement project, and due to the future 100-foot wide median and the challenges of building Sonoran Desert Drive in portions, interim improvements are proposed for MacEwen 480 that are slightly wider than the existing roadway footprint. As part of Phase I of MacEwen 480 it is recommended that Sonoran Desert Drive be restriped to remove the passing lane transition in front of the site, and install two travel

lanes in each direction with a painted median and exclusive turn lanes. At the MacEwen 480 site accesses, exclusive right- and left-turn lanes should be installed during Phase I of development. Figure 19 illustrates the proposed frontage widening and accesses on Sonoran Desert Drive.

A traffic signal is warranted using projected Phase I plus II traffic volumes at the primary site access. However, prior to installation of a signal, actual traffic volumes should be collected after opening of Phase II to confirm signal warrants are met, and that the installation of a signal will decrease delay and improve safety.

The primary site access road within MacEwen 480 should be designed as a two-lane collector with raised medians. Full movement access points along the primary access road should be spaced at approximate 660 foot spacing where possible, with the minimum spacing being 300 feet. A secondary access point off Sonoran Desert Drive is proposed to be located at the northwest corner of the site. This secondary connection should be designed as a minor collector roadway.

Sight triangles will be maintained or provided at all driveways to give drivers exiting and entering a clear view of conflicting traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view. The site designers shall follow section 9.5: *Intersection Sight Distance* of the *AASHTO Geometric Design of Highways and Streets* manual to ensure adequate sight distance is provided.

Certain regional infrastructure projects are expected as part of the City's future plans to provide for a more robust roadway network within the study area. This expanded roadway network is necessary to accommodate projected future traffic growth and regional development. In order to quantify the impact of proposed background traffic and identify mitigation measures needed to support the MacEwen 480 development, these infrastructure improvements were assumed to be completed during the horizon of this traffic impact analysis to accommodate anticipated regional congestion through the addition of an expanded roadway network. These include the construction of Sonoran Desert Drive from North Valley Parkway east to tie in at the Dove Valley Road/Sonoran Desert Drive transition; the widening of Cave Creek Road both north and south of the Sonoran Desert Drive intersection; and the widening of Dove Valley Road west to Interstate 17.

The following recommendations apply:

PHASE I

- Design and construct Cave Creek Road/Sonoran Desert Drive intersection improvements per Figure 18.
- Design and widen Sonoran Desert Drive along the MacEwen 480 frontage per Figure 19.
- Provide exclusive left- and right-turn lanes at Access A/Sonoran Desert Drive.
- Design Access B as a left-in/right-in/right-out only access.

PHASE II

- Perform a signal warrant study to determine the need for a signal at Access A.
- Construct the signal at Primary Collector/Sonoran Desert Drive when signal warrants are met.

10.0 LIMITATIONS

Our professional services have been performed using that degree of skill ordinarily exercised, under similar circumstances, by reputable transportation engineering firms practicing in this locality. No other warranty, expressed or implied, is made.

The contents of this report are intended for the sole use of the addressee and his/her designees. In completing this report, data was obtained from a variety of sources which were assumed reliable and accurate (i.e. City, County, State and Federal sources). Should deviations from this report be noted, this firm shall be contacted for review of the area of concern.

A reasonable attempt was made to acquire data or plans that may be helpful in more accurately projecting traffic volumes. United Civil Group is not responsible for incorporating data made available after this document has been finalized.

This report is issued with the understanding that it is the responsibility of the owner to see that its findings are carried out or brought to the attention of those concerned. In the event that any changes to the proposed project are made, the findings of this report shall be subject to review and may require modification or addendum.

11.0 SOURCES

A Policy on Geometric Design of Highway and Streets, AASHTO, 2011.

City of Phoenix Street Planning and Design Guidelines, 2009.

Highway Capacity Manual, Transportation Research Board, 2010.

Manual on Uniform Traffic Control Devices, Federal Highway Administration, 2009.

Pre-Final Alignment Study Sonoran Desert Drive Paloma Parkway to Dove Valley Road, TY LIN International, September 2013.

Sonoran Parkway Corridor Report, Kirkham Michael, July 2003.

Traffic Engineering Handbook 5th Ed., Institute of Transportation Engineers, 1999.

Trip Generation, 10th Edition. Institute of Transportation Engineers, 2017.

APPENDIX A

United Civil Group

Turning Movement Count

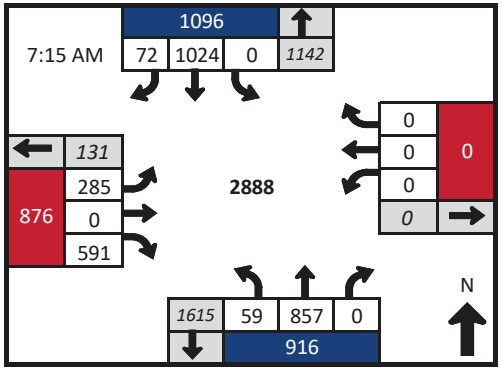
Project No: TR18055

Location: Cave Creek Road and Sonoran Desert Drive

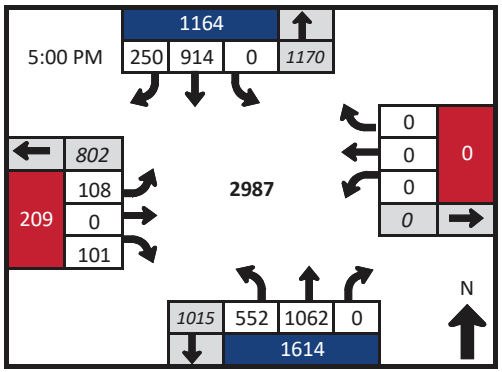
Intersection Configuration: Signalized

Aug-15-2018 (Wednesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	50	1		2				
Southbound	50	1		1	1			
Eastbound	45	1				1		
Westbound								



	Cave Creek Road				Cave Creek Road				Sonoran Desert Drive				Sonoran Desert Drive				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	8	160	0	0	0	240	22	0	44	0	127	0	0	0	0	0	601	
7:15 AM	23	214	0	0	0	248	20	0	68	0	140	0	0	0	0	0	713	
7:30 AM	17	235	0	0	0	287	25	0	75	0	138	0	0	0	0	0	777	
7:45 AM	10	221	0	0	0	253	19	0	84	0	171	0	0	0	0	0	758	2849
8:00 AM	9	187	0	0	0	236	8	0	58	0	142	0	0	0	0	0	640	2888
8:15 AM	11	227	0	0	0	234	13	0	47	0	109	0	0	0	0	0	641	2816
8:30 AM	14	229	0	0	0	246	14	0	37	1	79	0	0	0	0	0	620	2659
8:45 AM	24	237	0	0	0	235	27	0	33	0	44	0	0	0	0	0	600	2501
Peak Hour Total	**59**	**857**	**0**	**0**	**0**	**1024**	**72**	**0**	**285**	**0**	**591**	**0**	**0**	**0**	**0**	**0**	**2888**	



	Cave Creek Road				Cave Creek Road				Sonoran Desert Drive				Sonoran Desert Drive				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	75	229	0	0	0	269	31	0	19	0	23	0	0	0	0	0	646	
4:15 PM	104	257	0	0	0	194	58	1	21	0	28	0	0	0	0	0	662	
4:30 PM	103	293	0	0	0	202	40	0	11	0	13	0	0	0	0	0	662	
4:45 PM	104	261	0	0	0	226	52	0	18	0	28	0	0	0	0	0	689	2659
5:00 PM	127	245	0	0	0	199	43	0	30	0	24	0	0	0	0	0	668	2681
5:15 PM	145	303	0	0	0	237	67	0	27	0	29	0	0	0	0	0	808	2827
5:30 PM	142	256	0	0	0	287	63	0	24	0	19	0	0	0	0	0	791	2956
5:45 PM	138	258	0	0	0	191	77	0	27	0	29	0	0	0	0	0	720	2987
Peak Hour Total	**552**	**1062**	**0**	**0**	**0**	**914**	**250**	**0**	**108**	**0**	**101**	**0**	**0**	**0**	**0**	**0**	**2987**	

UCG
United Civil Group

Turning Movement Count

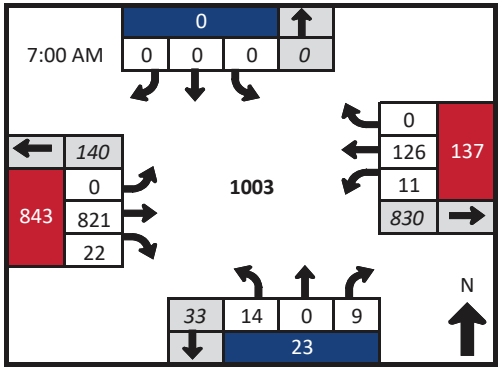
	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	25	1				1		
Southbound								
Eastbound	45	1		1		1		
Westbound	45	1		1				

Project No: TR18055

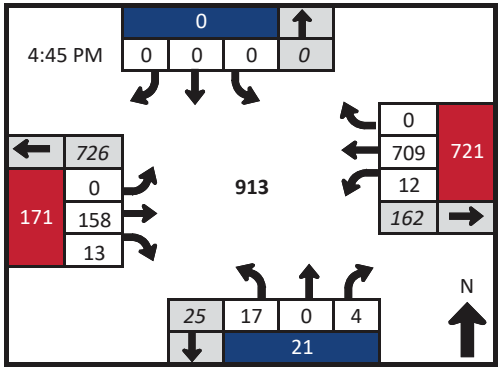
Location: 7th Street
and Dove Valley Road

Intersection Configuration: Unsignalized

Aug-14-2018 (Tuesday)



	7th Street Northbound				7th Street Southbound				Dove Valley Road Eastbound				Dove Valley Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	4	0	3	0	0	0	0	0	0	183	7	0	1	25	0	0	223	
7:15 AM	2	0	1	0	0	0	0	0	0	205	5	0	2	30	0	0	245	
7:30 AM	3	0	2	0	0	0	0	0	0	222	4	0	1	36	0	0	268	
7:45 AM	5	0	3	0	0	0	0	0	0	211	6	0	7	35	0	0	267	1003
8:00 AM	7	0	4	0	0	0	0	0	0	160	5	0	2	20	0	0	198	978
8:15 AM	8	0	2	0	0	0	0	0	0	120	8	0	2	28	0	0	168	901
8:30 AM	5	0	2	0	0	0	0	0	0	104	4	0	0	24	0	0	139	772
8:45 AM	3	0	7	0	0	0	0	0	0	77	9	0	4	26	0	0	126	631
Peak Hour Total	**14**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**821**	**22**	**0**	**11**	**126**	**0**	**0**	**1003**	



	7th Street Northbound				7th Street Southbound				Dove Valley Road Eastbound				Dove Valley Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	3	0	2	0	0	0	0	0	0	31	0	0	1	118	0	0	155	
4:15 PM	4	0	5	0	0	0	0	0	0	35	6	0	3	139	0	0	192	
4:30 PM	5	0	4	0	0	0	0	0	0	46	1	0	1	157	0	0	214	
4:45 PM	4	0	2	0	0	0	0	0	0	47	1	0	2	172	0	0	228	789
5:00 PM	5	0	1	0	0	0	0	0	0	39	3	0	2	149	0	0	199	833
5:15 PM	1	0	0	0	0	0	0	0	0	33	3	0	4	190	0	0	231	872
5:30 PM	7	0	1	0	0	0	0	0	0	39	6	0	4	198	0	0	255	913
5:45 PM	3	0	0	0	0	0	0	0	0	23	4	0	4	144	0	0	178	863
Peak Hour Total	**17**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**158**	**13**	**0**	**12**	**709**	**0**	**0**	**913**	

United Civil Group

Turning Movement Count

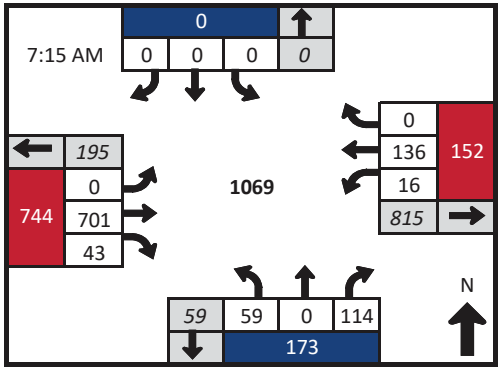
Project No: TR18055

Location: Paloma Parkway and Dove Valley Road

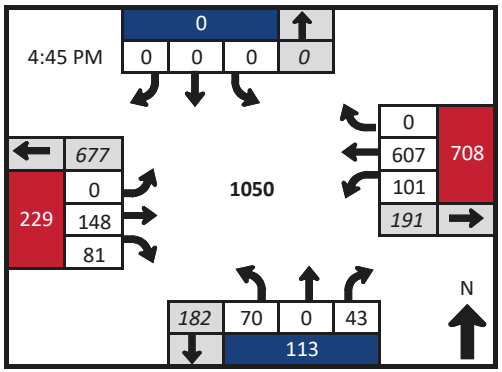
Intersection Configuration: Unsignalized

Aug-14-2018 (Tuesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	35	1				1		
Southbound								
Eastbound	45			1		1		
Westbound	45	1		1				



	Paloma Parkway Northbound				Paloma Parkway Southbound				Dove Valley Road Eastbound				Dove Valley Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	7	0	35	0	0	0	0	0	0	148	7	0	5	25	0	0	227	
7:15 AM	10	0	37	0	0	0	0	0	0	190	13	0	4	31	0	0	285	
7:30 AM	21	0	21	0	0	0	0	0	0	200	6	0	5	32	0	0	285	
7:45 AM	14	0	31	0	0	0	0	0	0	163	11	0	2	50	0	0	271	1068
8:00 AM	14	0	25	0	0	0	0	0	0	148	13	0	5	23	0	0	228	1069
8:15 AM	15	0	20	0	0	0	0	0	0	96	55	0	7	37	0	0	230	1014
8:30 AM	37	0	22	0	0	0	0	0	0	85	19	0	7	26	0	0	196	925
8:45 AM	16	0	22	0	0	0	0	0	0	64	14	0	2	26	0	0	144	798
Peak Hour Total	**59**	**0**	**114**	**0**	**0**	**0**	**0**	**0**	**0**	**701**	**43**	**0**	**16**	**136**	**0**	**0**	**1069**	



	Paloma Parkway Northbound				Paloma Parkway Southbound				Dove Valley Road Eastbound				Dove Valley Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	13	0	6	0	0	0	0	0	0	30	13	0	12	104	0	0	178	
4:15 PM	12	0	15	0	0	0	0	0	0	36	9	0	15	134	0	0	221	
4:30 PM	19	0	14	0	0	0	0	0	0	38	13	0	26	114	0	0	224	
4:45 PM	25	0	14	0	0	0	0	0	0	42	21	0	30	136	0	0	268	891
5:00 PM	15	0	10	0	0	0	0	0	0	35	20	0	24	141	0	0	245	958
5:15 PM	19	0	10	0	0	0	0	0	0	29	21	0	22	170	0	0	271	1008
5:30 PM	11	0	9	0	0	0	0	0	0	42	19	0	25	160	0	0	266	1050
5:45 PM	11	0	4	0	0	0	0	0	0	22	11	0	25	146	0	0	219	1001
Peak Hour Total	**70**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**148**	**81**	**0**	**101**	**607**	**0**	**0**	**1050**	

United Civil Group

Turning Movement Count

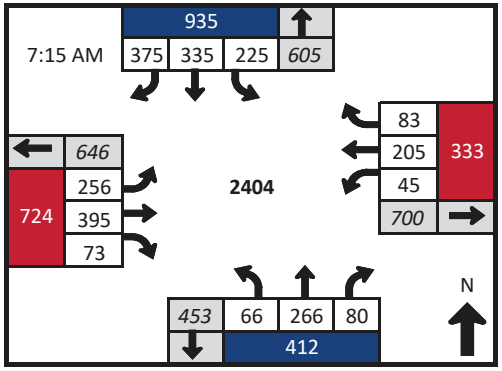
Project No: TR18055

Location: North Valley Parkway and Dove Valley Road

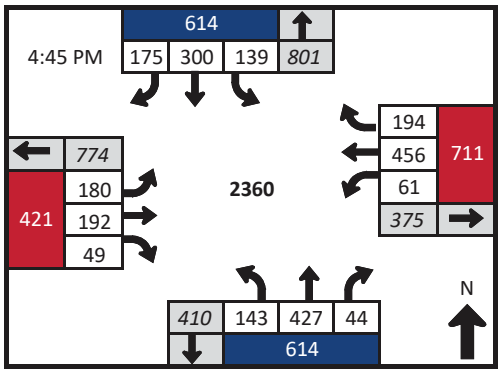
Intersection Configuration: Signalized

Aug-14-2018 (Tuesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	40	1		3		1		
Southbound	40	1		3		1		
Eastbound	35	2		3		1		
Westbound	35	2		2		1		



	North Valley Parkway				North Valley Parkway				Dove Valley Road				Dove Valley Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	22	23	18	0	50	44	35	0	38	76	9	0	8	57	9	0	389	
7:15 AM	16	42	18	1	42	59	70	0	40	116	14	0	14	52	13	0	496	
7:30 AM	21	68	25	0	68	77	97	0	72	94	19	0	12	52	26	0	631	
7:45 AM	18	108	25	0	66	103	110	0	109	94	22	0	11	62	34	0	762	2278
8:00 AM	11	48	12	0	49	96	98	0	35	91	18	0	8	39	10	0	515	2404
8:15 AM	14	60	17	0	47	82	41	0	24	62	13	0	10	54	14	0	438	2346
8:30 AM	29	85	12	0	35	68	35	0	15	46	10	0	8	43	22	0	408	2123
8:45 AM	26	45	14	0	28	49	48	0	33	39	18	0	10	39	17	0	366	1727
Peak Hour Total	**66**	**266**	**80**	**1**	**225**	**335**	**375**	**0**	**256**	**395**	**73**	**0**	**45**	**205**	**83**	**0**	**2404**	



	North Valley Parkway				North Valley Parkway				Dove Valley Road				Dove Valley Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	37	79	5	0	29	57	27	0	41	31	25	0	19	75	32	0	457	
4:15 PM	27	78	18	0	24	64	41	0	45	33	22	0	17	86	48	0	503	
4:30 PM	22	85	19	0	37	55	35	0	47	36	12	0	8	88	44	0	488	
4:45 PM	41	101	12	0	39	71	34	0	45	40	10	0	19	97	59	0	568	2016
5:00 PM	32	118	14	0	28	70	62	0	46	54	16	0	14	107	40	0	601	2160
5:15 PM	33	121	10	0	36	77	43	0	49	54	10	0	10	135	50	0	628	2285
5:30 PM	37	87	8	0	36	82	36	0	40	44	13	0	18	117	45	0	563	2360
5:45 PM	21	76	8	0	27	61	45	0	43	36	20	0	23	84	51	0	495	2287
Peak Hour Total	**143**	**427**	**44**	**0**	**139**	**300**	**175**	**0**	**180**	**192**	**49**	**0**	**61**	**456**	**194**	**0**	**2360**	

City of Phoenix
Traffic Count Summary

Study ID: 15892
Study Status: New

Location : On DOVE VALLEY RD Between 16TH AVE And 16TH AVE
Placed @ :
Study Start : N: Nov 07, 2018, S: Nov 07, 2018
Study Length : 48 hours
Neighborhood :
Project Status :

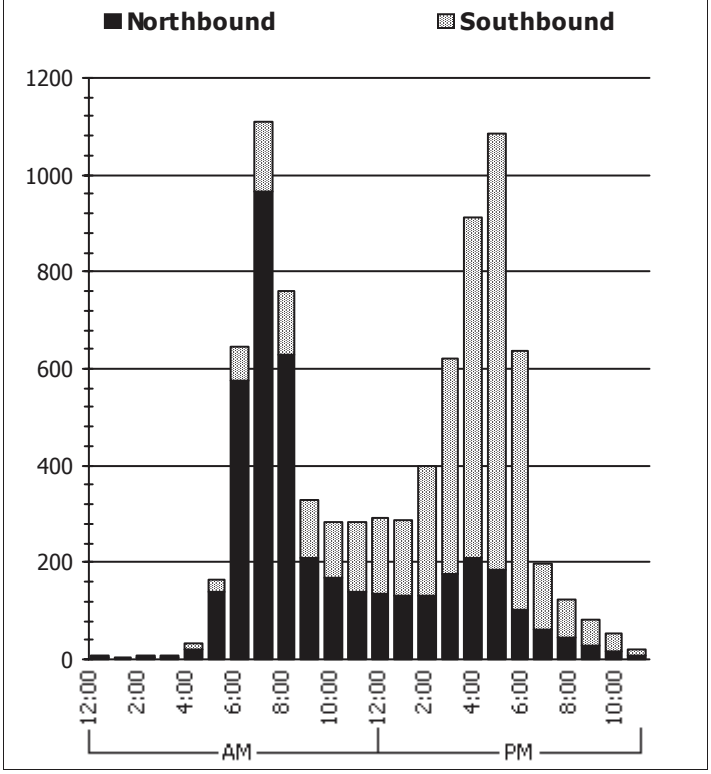
Average Amount of Traffic

Begin	North	South	Total	Avg. Speed
12:00am	2.5	6.5	9.0	68.3
01:00	2.0	2.5	4.5	47.1
02:00	2.5	4.0	6.5	53.8
03:00	6.0	2.5	8.5	60.6
04:00	22.5	9.0	31.5	56.3
05:00	138.0	27.5	165.5	53.8
06:00	575.5	71.0	646.5	49.3
07:00	**965.0**	**146.0**	**1111.0**	**49.3**
08:00	630.5	129.5	760.0	49.1
09:00	208.0	122.5	330.5	51.2
10:00	169.5	115.0	284.5	48.9
11:00	140.5	142.5	283.0	49.9
12:00pm	136.0	155.5	291.5	51.8
01:00	130.5	157.5	288.0	51.5
02:00	132.0	267.0	399.0	54.4
03:00	178.0	444.5	622.5	53.2
04:00	209.0	701.5	910.5	49.7
05:00	**184.0**	**899.5**	**1083.5**	**41.2**
06:00	104.0	532.5	636.5	45.0
07:00	61.5	137.5	199.0	51.0
08:00	46.5	77.0	123.5	54.0
09:00	28.5	54.5	83.0	52.5
10:00	16.5	36.5	53.0	52.8
11:00	9.5	13.0	22.5	56.9
Daily Total	**4098.5**	**4255.0**	**8353.5**	

Speed Distribution (mph)

	North	South	Average
Average	48.6	49.6	49.1
15%	40.2	36.7	38.5
30%	42.5	41.7	42.1
50%	45.4	45.9	45.7
70%	48.1	49.0	48.6
85%	52.3	68.1	60.2
% over 35 mph	97.5	88.9	93.2
% over 40 mph	86.7	77.4	82.1
% over 45 mph	52.9	55.5	54.2

Average Number of Vehicles Per Hour



APPENDIX B

Vistro File: K:\...\Vistro - MacEwen 480 031919.vistro
Report File: K:\...\01 - 2018 Existing AM.pdf

Scenario 1 2018 Existing AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Right	0.560	20.7	C
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.054	19.7	C
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.209	20.3	C
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.300	28.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	249
Total Hourly Volume [veh/h]	62	902	0	1078	76	300	373
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	16	226	0	270	19	75	93
Total Analysis Volume [veh/h]	62	902	0	1078	76	300	373
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	58	0	49	0	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	28	0	29	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81	73	73	73	31	31
g / C, Green / Cycle	0.67	0.67	0.60	0.60	0.60	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.00	0.31	0.31	0.17	0.23
s, saturation flow rate [veh/h]	589	3560	618	1870	1827	1781	1589
c, Capacity [veh/h]	387	2398	341	1129	1103	463	413
d1, Uniform Delay [s]	9.50	8.57	0.00	13.71	13.71	39.53	42.95
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.45	0.00	1.69	1.74	1.53	7.49
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.38	0.00	0.52	0.52	0.65	0.90
d, Delay for Lane Group [s/veh]	10.38	9.02	0.00	15.40	15.45	41.06	50.43
Lane Group LOS	B	A	A	B	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.55	4.42	0.00	8.50	8.32	7.82	11.16
50th-Percentile Queue Length [ft/ln]	13.73	110.48	0.00	212.44	208.11	195.52	278.94
95th-Percentile Queue Length [veh/ln]	0.99	7.87	0.00	13.28	13.06	12.41	16.64
95th-Percentile Queue Length [ft/ln]	24.71	196.66	0.00	331.96	326.41	310.17	415.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.38	9.02	0.00	15.42	15.45	41.06	50.43
Movement LOS	B	A	A	B	B	D	D
d_A, Approach Delay [s/veh]	9.11		15.42			46.25	
Approach LOS	A		B			D	
d_I, Intersection Delay [s/veh]	20.68						
Intersection LOS	C						
Intersection V/C	0.560						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.928	5.084	4.132
Bicycle LOS	E	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.054

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
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]	14	9	11	133	864	22
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]	4	2	3	33	216	6
Total Analysis Volume [veh/h]	14	9	11	133	864	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.05	0.03	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	19.71	15.44	9.78	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.08	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.27	1.95	1.10	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	18.04		0.75		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
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]	62	120	738	45	17	143
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]	16	30	185	11	4	36
Total Analysis Volume [veh/h]	62	120	738	45	17	143
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.21	0.29	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	20.32	17.05	0.00	0.00	9.40	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.77	1.17	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	19.31	29.29	0.00	0.00	1.56	0.00
d_A, Approach Delay [s/veh]	18.16		0.00		1.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.08					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.300

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	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
Right-Turn on Red Volume [veh/h]	0	0	34	0	0	158	0	0	31	0	0	35
Total Hourly Volume [veh/h]	69	280	50	237	353	237	269	416	46	47	216	52
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]	17	70	13	59	88	59	67	104	12	12	54	13
Total Analysis Volume [veh/h]	69	280	50	237	353	237	269	416	46	47	216	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	28	0	22	41	0	24	24	0	46	46	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	87	75	75	87	78	78	12	18	18	4	10	10
g / C, Green / Cycle	0.72	0.62	0.62	0.72	0.65	0.65	0.10	0.15	0.15	0.03	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.03	0.20	0.07	0.15	0.08	0.08	0.03	0.01	0.06	0.03
s, saturation flow rate [veh/h]	1085	5094	1589	1175	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	841	3176	991	907	3308	1032	341	743	232	116	287	128
d1, Uniform Delay [s]	4.93	9.00	8.78	5.45	7.92	8.67	52.87	47.67	45.09	56.84	54.00	52.44
k, delay calibration	0.11	0.50	0.50	0.31	0.11	0.15	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.05	0.10	0.43	0.01	0.16	4.07	0.66	0.41	2.29	3.97	2.06
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	0.08	0.09	0.05	0.26	0.11	0.23	0.79	0.56	0.20	0.41	0.75	0.41
d, Delay for Lane Group [s/veh]	4.97	9.05	8.88	5.89	7.94	8.83	56.94	48.34	45.50	59.13	57.98	54.50
Lane Group LOS	A	A	A	A	A	A	E	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.92	0.50	1.74	1.06	2.37	4.12	3.88	1.23	0.73	3.33	1.55
50th-Percentile Queue Length [ft/ln]	10.95	23.08	12.52	43.50	26.44	59.17	103.05	96.89	30.71	18.26	83.13	38.85
95th-Percentile Queue Length [veh/ln]	0.79	1.66	0.90	3.13	1.90	4.26	7.42	6.98	2.21	1.31	5.99	2.80
95th-Percentile Queue Length [ft/ln]	19.70	41.55	22.54	78.29	47.60	106.51	185.49	174.40	55.27	32.87	149.64	69.92

Movement, Approach, & Intersection Results

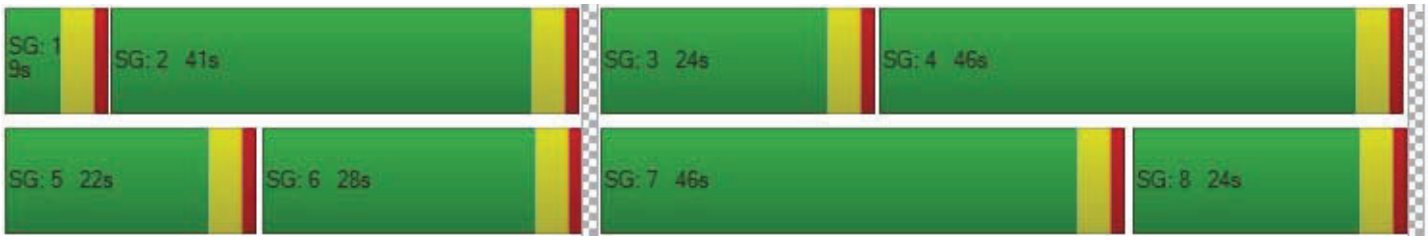
d_M, Delay for Movement [s/veh]	4.97	9.05	8.88	5.89	7.94	8.83	56.94	48.34	45.50	59.13	57.98	54.50
Movement LOS	A	A	A	A	A	A	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	8.33			7.60			51.32			57.58		
Approach LOS	A			A			D			E		
d_I, Intersection Delay [s/veh]	28.73											
Intersection LOS	C											
Intersection V/C	0.300											

Other Modes

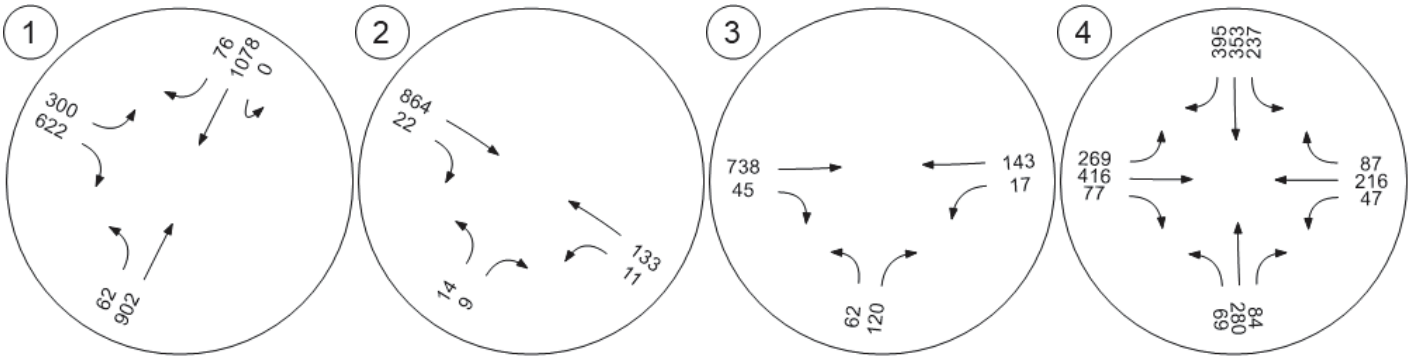
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	617	333	700
d_b, Bicycle Delay [s]	38.40	28.70	41.67	25.35
I_b,int, Bicycle LOS Score for Intersection	1.798	2.101	1.979	1.848
Bicycle LOS	A	B	A	A

Sequence

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



Traffic Volume - Base Volume



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Scenario 2 2018 Existing PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	0.519	17.5	B
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.058	18.1	C
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.301	25.9	D
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.310	29.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	42
Total Hourly Volume [veh/h]	581	1118	0	962	263	114	64
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	145	280	0	241	66	29	16
Total Analysis Volume [veh/h]	581	1118	0	962	263	114	64
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	26	54	0	28	0	66	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	102	102	76	76	76	10	10
g / C, Green / Cycle	0.85	0.85	0.63	0.63	0.63	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.76	0.31	0.00	0.34	0.34	0.06	0.04
s, saturation flow rate [veh/h]	767	3560	504	1870	1734	1781	1589
c, Capacity [veh/h]	651	3025	331	1184	1098	149	133
d1, Uniform Delay [s]	24.11	1.97	0.00	12.22	12.25	53.83	52.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.04	0.35	0.00	1.74	1.89	7.94	2.69
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.37	0.00	0.54	0.54	0.77	0.48
d, Delay for Lane Group [s/veh]	41.15	2.32	0.00	13.96	14.15	61.77	55.19
Lane Group LOS	D	A	A	B	B	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.11	1.12	0.00	8.65	8.13	3.62	1.90
50th-Percentile Queue Length [ft/ln]	102.84	28.08	0.00	216.31	203.14	90.42	47.49
95th-Percentile Queue Length [veh/ln]	7.40	2.02	0.00	13.48	12.80	6.51	3.42
95th-Percentile Queue Length [ft/ln]	185.12	50.54	0.00	336.91	320.01	162.75	85.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.15	2.32	0.00	14.03	14.15	61.77	55.19
Movement LOS	D	A	A	B	B	E	E
d_A, Approach Delay [s/veh]	15.60		14.05			59.41	
Approach LOS	B		B			E	
d_I, Intersection Delay [s/veh]	17.50						
Intersection LOS	B						
Intersection V/C	0.519						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.534	5.143	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
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]	17	4	12	746	166	13
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]	4	1	3	187	42	3
Total Analysis Volume [veh/h]	17	4	12	746	166	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.06	0.00	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	18.10	9.12	7.60	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.18	0.01	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.62	0.34	0.65	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.39		0.12		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.301

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
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]	74	45	156	85	106	639
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]	19	11	39	21	27	160
Total Analysis Volume [veh/h]	74	45	156	85	106	639
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.30	0.05	0.00	0.00	0.08	0.01
d_M, Delay for Movement [s/veh]	25.86	9.26	0.00	0.00	7.95	0.00
Movement LOS	D	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.22	0.16	0.00	0.00	0.26	0.00
95th-Percentile Queue Length [ft/ln]	30.60	3.99	0.00	0.00	6.51	0.00
d_A, Approach Delay [s/veh]	19.58		0.00		1.13	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	2.87					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

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):	0.310

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	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
Right-Turn on Red Volume [veh/h]	0	0	18	0	0	73	0	0	20	0	0	81
Total Hourly Volume [veh/h]	151	449	28	146	316	111	189	202	32	64	480	123
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]	38	112	7	37	79	28	47	51	8	16	120	31
Total Analysis Volume [veh/h]	151	449	28	146	316	111	189	202	32	64	480	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	29	45	0	9	25	0	22	55	0	11	44	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	80	71	71	80	70	70	9	23	23	4	19	19
g / C, Green / Cycle	0.67	0.59	0.59	0.67	0.58	0.58	0.07	0.20	0.20	0.04	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.09	0.02	0.14	0.06	0.07	0.05	0.04	0.02	0.02	0.13	0.08
s, saturation flow rate [veh/h]	1135	5094	1589	1015	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	814	3017	941	727	2974	928	257	995	310	129	563	251
d1, Uniform Delay [s]	7.31	10.94	10.16	7.35	11.08	11.17	54.40	40.47	39.67	56.69	49.17	46.11
k, delay calibration	0.11	0.50	0.50	0.14	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.10	0.06	0.17	0.02	0.06	4.07	0.10	0.14	2.96	3.78	1.47
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	0.19	0.15	0.03	0.20	0.11	0.12	0.74	0.20	0.10	0.50	0.85	0.49
d, Delay for Lane Group [s/veh]	7.42	11.05	10.22	7.53	11.09	11.23	58.47	40.57	39.81	59.65	52.95	47.58
Lane Group LOS	A	B	B	A	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.30	1.71	0.31	1.27	1.19	1.27	2.92	1.67	0.79	1.00	7.22	3.43
50th-Percentile Queue Length [ft/ln]	32.52	42.76	7.68	31.63	29.63	31.74	72.99	41.80	19.68	24.96	180.48	85.76
95th-Percentile Queue Length [veh/ln]	2.34	3.08	0.55	2.28	2.13	2.28	5.26	3.01	1.42	1.80	11.63	6.17
95th-Percentile Queue Length [ft/ln]	58.54	76.96	13.83	56.93	53.33	57.12	131.39	75.25	35.42	44.92	290.64	154.36

Movement, Approach, & Intersection Results

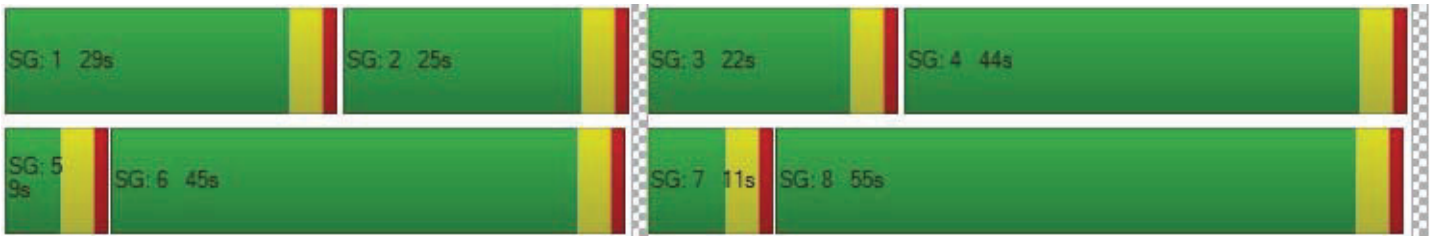
d_M, Delay for Movement [s/veh]	7.42	11.05	10.22	7.53	11.09	11.23	58.47	40.57	39.81	59.65	52.95	47.58
Movement LOS	A	B	B	A	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	10.14			10.21			48.51			52.60		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.60											
Intersection LOS	C											
Intersection V/C	0.310											

Other Modes

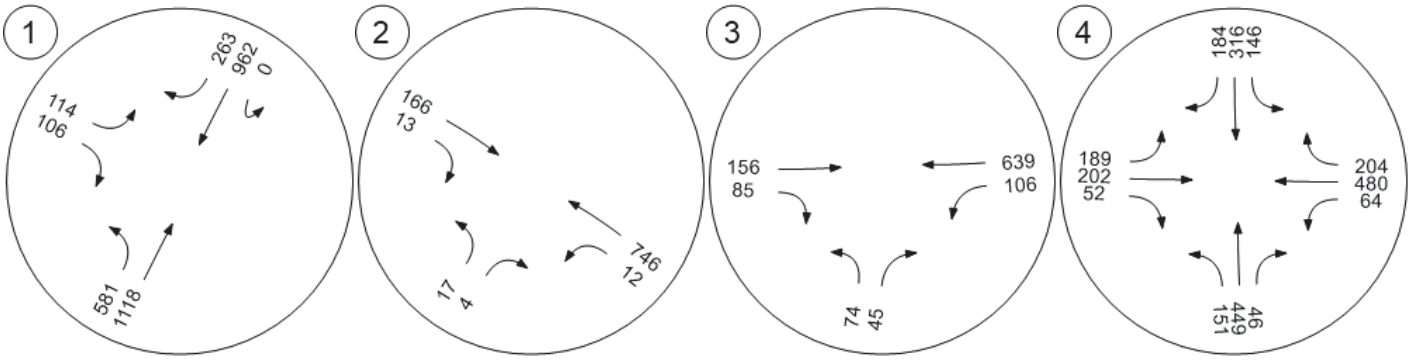
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	350	850	667
d_b, Bicycle Delay [s]	26.00	40.84	19.84	26.67
l_b,int, Bicycle LOS Score for Intersection	1.915	1.915	1.803	2.177
Bicycle LOS	A	A	A	B

Sequence

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



Traffic Volume - Base Volume



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Scenario 3 2022 Background AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Right	0.710	25.7	C
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.085	29.0	D
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.365	35.4	E
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.345	30.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	25.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1864	1.2905	1.0000	1.2881	1.0694	1.2772	1.2487
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	310
Total Hourly Volume [veh/h]	74	1164	0	1389	81	383	467
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	19	291	0	347	20	96	117
Total Analysis Volume [veh/h]	74	1164	0	1389	81	383	467
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	20	0	11	0	100	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	65	65	65	38	38
g / C, Green / Cycle	0.61	0.61	0.54	0.54	0.54	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.15	0.33	0.00	0.40	0.40	0.22	0.29
s, saturation flow rate [veh/h]	488	3560	482	1870	1834	1781	1589
c, Capacity [veh/h]	272	2182	209	1012	992	571	510
d1, Uniform Delay [s]	17.36	13.37	0.00	20.92	20.99	35.29	39.22
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.46	0.94	0.00	4.67	4.84	1.38	7.05
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.53	0.00	0.73	0.74	0.67	0.92
d, Delay for Lane Group [s/veh]	19.82	14.31	0.00	25.59	25.83	36.66	46.27
Lane Group LOS	B	B	A	C	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.89	8.15	0.00	15.38	15.24	9.54	13.63
50th-Percentile Queue Length [ft/ln]	22.20	203.64	0.00	384.41	381.10	238.52	340.83
95th-Percentile Queue Length [veh/ln]	1.60	12.83	0.00	21.81	21.65	14.61	19.69
95th-Percentile Queue Length [ft/ln]	39.95	320.66	0.00	545.18	541.18	365.16	492.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.82	14.31	0.00	25.70	25.83	36.66	46.27
Movement LOS	B	B	A	C	C	D	D
d_A, Approach Delay [s/veh]	14.64		25.71			41.94	
Approach LOS	B		C			D	
d_I, Intersection Delay [s/veh]	25.73						
Intersection LOS	C						
Intersection V/C	0.710						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.154	5.345	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.085

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.3861	1.3861	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]	14	9	11	184	1138	23
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]	4	2	3	46	285	6
Total Analysis Volume [veh/h]	14	9	11	184	1138	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.09	0.04	0.02	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	28.95	20.24	11.09	0.00	0.00	0.00
Movement LOS	D	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.28	0.11	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.89	2.85	1.40	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.54		0.63		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.51					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.365

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.3861	1.0824	1.0824	1.3861
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]	67	130	1023	49	18	198
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]	17	33	256	12	5	50
Total Analysis Volume [veh/h]	67	130	1023	49	18	198
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.36	0.45	0.01	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	35.44	27.64	0.00	0.00	10.69	0.00
Movement LOS	E	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	1.56	2.24	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	38.92	56.01	0.00	0.00	2.13	0.00
d_A, Approach Delay [s/veh]	30.30		0.00		0.89	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	4.15					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.345

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.3861	1.0824	1.0824	1.3861	1.0824
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	36	0	0	171	0	0	33	0	0	37
Total Hourly Volume [veh/h]	75	303	55	257	382	257	291	577	50	51	299	57
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]	19	76	14	64	96	64	73	144	13	13	75	14
Total Analysis Volume [veh/h]	75	303	55	257	382	257	291	577	50	51	299	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	41	0	22	54	0	43	45	0	12	14	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	83	70	70	83	74	74	13	21	21	4	13	13
g / C, Green / Cycle	0.69	0.58	0.58	0.69	0.62	0.62	0.11	0.18	0.18	0.03	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.07	0.06	0.03	0.22	0.07	0.16	0.08	0.11	0.03	0.01	0.08	0.04
s, saturation flow rate [veh/h]	1063	5094	1589	1168	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	789	2971	927	862	3147	982	364	895	279	119	373	167
d1, Uniform Delay [s]	6.10	11.09	10.80	6.82	9.47	10.45	52.45	46.00	42.11	56.78	52.50	49.88
k, delay calibration	0.11	0.50	0.50	0.36	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.07	0.12	0.64	0.02	0.25	4.06	0.79	0.30	2.41	4.02	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.10	0.06	0.30	0.12	0.26	0.80	0.64	0.18	0.43	0.80	0.34
d, Delay for Lane Group [s/veh]	6.15	11.16	10.92	7.46	9.49	10.70	56.51	46.78	42.41	59.20	56.52	51.09
Lane Group LOS	A	B	B	A	A	B	E	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	1.15	0.63	2.25	1.30	2.95	4.45	5.35	1.28	0.79	4.57	1.64
50th-Percentile Queue Length [ft/ln]	13.97	28.75	15.79	56.35	32.43	73.63	111.26	133.79	32.04	19.82	114.30	40.92
95th-Percentile Queue Length [veh/ln]	1.01	2.07	1.14	4.06	2.33	5.30	7.91	9.15	2.31	1.43	8.08	2.95
95th-Percentile Queue Length [ft/ln]	25.15	51.76	28.43	101.43	58.37	132.54	197.75	228.63	57.68	35.67	201.96	73.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.15	11.16	10.92	7.46	9.49	10.70	56.51	46.78	42.41	59.20	56.52	51.09
Movement LOS	A	B	B	A	A	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	10.26			9.26			49.63			56.10		
Approach LOS	B			A			D			E		
d_I, Intersection Delay [s/veh]	30.57											
Intersection LOS	C											
Intersection V/C	0.345											

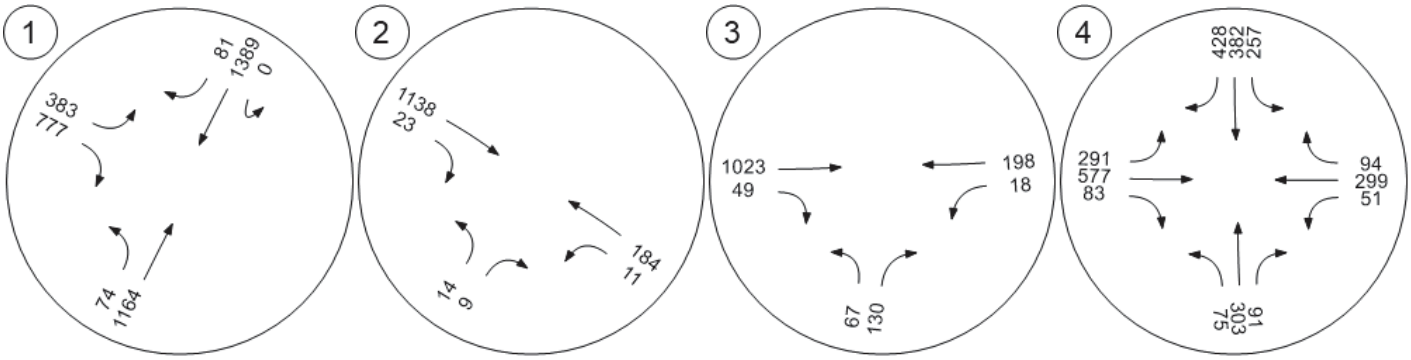
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	833	683	167
d_b, Bicycle Delay [s]	28.70	20.42	26.00	50.42
l_b,int, Bicycle LOS Score for Intersection	1.818	2.146	2.083	1.926
Bicycle LOS	A	B	B	A

Sequence

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

Traffic Volume - Future Background Volume



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Scenario 4 2022 Background PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	0.755	39.1	D
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.114	32.2	D
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.610	68.0	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.404	32.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	39.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2645	1.3559	1.0000	1.3709	1.3320	1.1481	1.1287
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	48
Total Hourly Volume [veh/h]	735	1516	0	1319	350	131	72
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	184	379	0	330	88	33	18
Total Analysis Volume [veh/h]	735	1516	0	1319	350	131	72
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	45	106	0	61	0	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	102	102	57	57	57	10	10
g / C, Green / Cycle	0.85	0.85	0.48	0.48	0.48	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.80	0.43	0.00	0.45	0.47	0.07	0.05
s, saturation flow rate [veh/h]	923	3560	345	1870	1739	1781	1589
c, Capacity [veh/h]	741	3026	180	888	826	148	132
d1, Uniform Delay [s]	37.10	2.35	0.00	30.31	31.28	54.42	52.81
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.12	0.60	0.00	21.32	29.45	15.29	3.44
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.50	0.00	0.96	0.99	0.88	0.54
d, Delay for Lane Group [s/veh]	68.22	2.95	0.00	51.63	60.73	69.71	56.25
Lane Group LOS	E	A	A	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.92	1.84	0.00	26.60	28.00	4.45	2.16
50th-Percentile Queue Length [ft/ln]	197.94	46.10	0.00	665.05	699.99	111.17	54.05
95th-Percentile Queue Length [veh/ln]	12.53	3.32	0.00	35.06	36.68	7.91	3.89
95th-Percentile Queue Length [ft/ln]	313.31	82.97	0.00	876.51	916.94	197.63	97.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.22	2.95	0.00	54.87	60.73	69.71	56.25
Movement LOS	E	A	A	D	E	E	E
d_A, Approach Delay [s/veh]	24.26		56.10			64.93	
Approach LOS	C		E			E	
d_I, Intersection Delay [s/veh]	39.15						
Intersection LOS	D						
Intersection V/C	0.755						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.989	5.509	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.114

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.5304	1.5304	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]	17	4	12	1142	254	13
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]	4	1	3	286	64	3
Total Analysis Volume [veh/h]	17	4	12	1142	254	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.11	0.01	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	32.25	9.61	7.80	0.00	0.00	0.00
Movement LOS	D	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.38	0.02	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.44	0.38	0.70	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.94		0.08		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.47					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	68.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.5304	1.0824	1.0824	1.5304
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]	80	49	239	92	115	978
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]	20	12	60	23	29	245
Total Analysis Volume [veh/h]	80	49	239	92	115	978
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.61	0.06	0.00	0.00	0.09	0.01
d_M, Delay for Movement [s/veh]	68.05	9.79	0.00	0.00	8.23	0.00
Movement LOS	F	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.14	0.20	0.00	0.00	0.31	0.00
95th-Percentile Queue Length [ft/ln]	78.56	4.88	0.00	0.00	7.73	0.00
d_A, Approach Delay [s/veh]	45.92		0.00		0.87	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	4.42					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.5304	1.0824	1.0824	1.5304	1.0824
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	20	0	0	79	0	0	22	0	0	88
Total Hourly Volume [veh/h]	163	486	30	158	342	120	205	309	34	69	735	133
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]	41	122	8	40	86	30	51	77	9	17	184	33
Total Analysis Volume [veh/h]	163	486	30	158	342	120	205	309	34	69	735	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	11	28	0	15	17	0	66	68	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	71	61	61	71	60	60	10	32	32	5	27	27
g / C, Green / Cycle	0.59	0.50	0.50	0.59	0.50	0.50	0.08	0.27	0.27	0.04	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.02	0.16	0.07	0.08	0.06	0.06	0.02	0.02	0.21	0.08
s, saturation flow rate [veh/h]	1136	5094	1589	1018	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	721	2564	800	641	2543	793	275	1365	426	133	808	361
d1, Uniform Delay [s]	11.03	16.37	15.09	11.12	16.14	16.29	54.07	34.25	32.87	56.65	45.22	39.16
k, delay calibration	0.14	0.50	0.50	0.17	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.16	0.09	0.32	0.02	0.09	4.01	0.08	0.08	3.14	4.40	0.63
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	0.23	0.19	0.04	0.25	0.13	0.15	0.75	0.23	0.08	0.52	0.91	0.37
d, Delay for Lane Group [s/veh]	11.23	16.53	15.18	11.43	16.17	16.37	58.08	34.33	32.95	59.79	49.62	39.79
Lane Group LOS	B	B	B	B	B	B	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	2.40	0.42	1.82	1.63	1.75	3.16	2.35	0.75	1.08	10.99	3.35
50th-Percentile Queue Length [ft/ln]	46.74	60.04	10.57	45.60	40.86	43.74	78.98	58.64	18.73	26.94	274.81	83.84
95th-Percentile Queue Length [veh/ln]	3.37	4.32	0.76	3.28	2.94	3.15	5.69	4.22	1.35	1.94	16.43	6.04
95th-Percentile Queue Length [ft/ln]	84.14	108.07	19.03	82.09	73.56	78.73	142.16	105.55	33.72	48.49	410.75	150.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.23	16.53	15.18	11.43	16.17	16.37	58.08	34.33	32.95	59.79	49.62	39.79
Movement LOS	B	B	B	B	B	B	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	15.20			15.00			43.13			48.97		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.02											
Intersection LOS	C											
Intersection V/C	0.404											

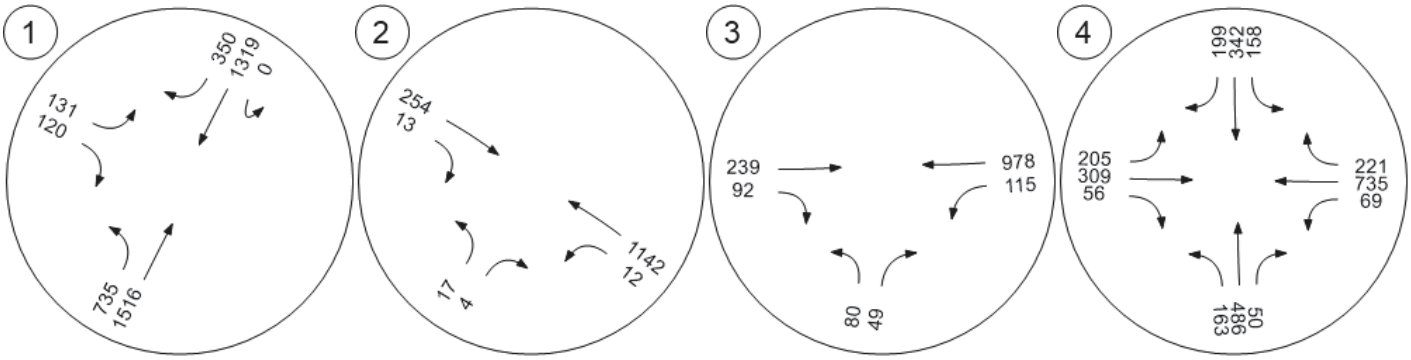
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	400	217	1067
d_b, Bicycle Delay [s]	40.02	38.40	47.70	13.07
l_b,int, Bicycle LOS Score for Intersection	1.944	1.944	1.873	2.405
Bicycle LOS	A	A	A	B

Sequence

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

Traffic Volume - Future Background Volume



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Report File: K:\...\05 - 2025 Background AM.pdf

Scenario 5 2025 Background AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SWB Right	0.876	44.7	D
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.199	68.6	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.765	118.1	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.396	32.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4915	1.6021	1.0000	1.6797	1.1250	1.4632	1.4332
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	356
Total Hourly Volume [veh/h]	92	1445	0	1811	86	439	535
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	23	361	0	453	22	110	134
Total Analysis Volume [veh/h]	92	1445	0	1811	86	439	535
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	72	0	63	0	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	70	70	61	61	61	42	42
g / C, Green / Cycle	0.58	0.58	0.51	0.51	0.51	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.24	0.41	0.00	0.51	0.51	0.25	0.34
s, saturation flow rate [veh/h]	389	3560	369	1870	1841	1781	1589
c, Capacity [veh/h]	195	2066	133	948	933	629	561
d1, Uniform Delay [s]	27.54	17.80	0.00	29.59	29.59	33.32	37.84
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.22	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.96	2.00	0.00	29.59	33.50	2.85	24.43
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.70	0.00	1.00	1.02	0.70	0.95
d, Delay for Lane Group [s/veh]	35.50	19.80	0.00	59.18	63.08	36.17	62.27
Lane Group LOS	D	B	A	F	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	12.97	0.00	32.07	32.58	10.99	18.33
50th-Percentile Queue Length [ft/ln]	35.51	324.16	0.00	801.70	814.38	274.73	458.24
95th-Percentile Queue Length [veh/ln]	2.56	18.87	0.00	41.41	42.49	16.43	25.35
95th-Percentile Queue Length [ft/ln]	63.91	471.79	0.00	1035.15	1062.17	410.64	633.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.50	19.80	0.00	61.04	63.08	36.17	62.27
Movement LOS	D	B	A	E	E	D	E
d_A, Approach Delay [s/veh]	20.74		61.13			50.50	
Approach LOS	C		E			D	
d_I, Intersection Delay [s/veh]	44.70						
Intersection LOS	D						
Intersection V/C	0.876						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.400	5.697	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	68.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.199

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.9190	1.9190	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]	14	9	11	255	1658	22
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]	4	2	3	64	415	6
Total Analysis Volume [veh/h]	14	9	11	255	1658	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.20	0.07	0.03	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	68.63	37.22	14.73	0.00	0.00	0.00
Movement LOS	F	E	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.68	0.24	0.09	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	17.03	5.94	2.23	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	56.34		0.61		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.74					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	118.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.9190	1.1487	1.1487	1.9190
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]	71	138	1416	52	20	274
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]	18	35	354	13	5	69
Total Analysis Volume [veh/h]	71	138	1416	52	20	274
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.77	0.82	0.01	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	118.11	83.61	0.00	0.00	13.19	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh/ln]	3.98	5.55	0.00	0.00	0.14	0.00
95th-Percentile Queue Length [ft/ln]	99.40	138.71	0.00	0.00	3.40	0.00
d_A, Approach Delay [s/veh]	95.33		0.00		0.90	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	10.24					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.396

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.9190	1.1487	1.1487	1.9190	1.1487
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	38	0	0	181	0	0	35	0	0	40
Total Hourly Volume [veh/h]	79	322	58	272	405	273	309	798	53	54	415	60
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]	20	81	15	68	101	68	77	200	13	14	104	15
Total Analysis Volume [veh/h]	79	322	58	272	405	273	309	798	53	54	415	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	22	51	0	26	50	0	10	34	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	64	64	78	69	69	13	26	26	4	17	17
g / C, Green / Cycle	0.65	0.53	0.53	0.65	0.58	0.58	0.11	0.21	0.21	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.08	0.06	0.04	0.23	0.08	0.17	0.09	0.16	0.03	0.02	0.12	0.04
s, saturation flow rate [veh/h]	1049	5094	1589	1169	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	733	2718	848	813	2947	920	383	1090	340	122	493	220
d1, Uniform Delay [s]	7.76	13.93	13.55	8.73	11.58	12.87	52.11	43.98	38.37	56.75	50.44	46.31
k, delay calibration	0.11	0.50	0.50	0.40	0.11	0.22	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.09	0.16	0.89	0.02	0.37	4.05	0.97	0.21	2.52	4.00	0.66
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	0.11	0.12	0.07	0.33	0.14	0.30	0.81	0.73	0.16	0.44	0.84	0.27
d, Delay for Lane Group [s/veh]	7.82	14.02	13.70	9.62	11.60	13.24	56.16	44.95	38.58	59.27	54.43	46.97
Lane Group LOS	A	B	B	A	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.70	1.42	0.77	2.86	1.58	3.62	4.72	7.38	1.29	0.84	6.29	1.64
50th-Percentile Queue Length [ft/ln]	17.47	35.47	19.26	71.57	39.38	90.51	117.95	184.56	32.16	20.99	157.26	40.95
95th-Percentile Queue Length [veh/ln]	1.26	2.55	1.39	5.15	2.84	6.52	8.28	11.84	2.32	1.51	10.40	2.95
95th-Percentile Queue Length [ft/ln]	31.44	63.85	34.67	128.83	70.88	162.91	207.00	295.97	57.88	37.78	260.09	73.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.82	14.02	13.70	9.62	11.60	13.24	56.16	44.95	38.58	59.27	54.43	46.97
Movement LOS	A	B	B	A	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	12.92			11.51			47.64			54.08		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.52											
Intersection LOS	C											
Intersection V/C	0.396											

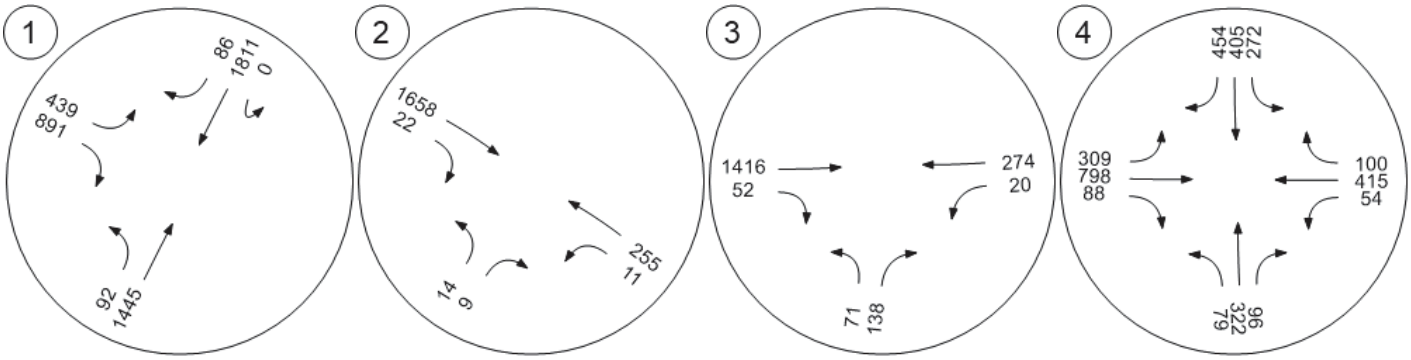
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	783	767	500
d_b, Bicycle Delay [s]	30.82	22.20	22.82	33.75
l_b,int, Bicycle LOS Score for Intersection	1.833	2.182	2.217	2.029
Bicycle LOS	A	B	B	B

Sequence

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

Traffic Volume - Future Background Volume



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Scenario 6 2025 Background PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	NEB Left	0.918	82.2	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.284	87.6	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	1.495	414.5	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.513	63.1	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	82.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.5942	1.6083	1.0000	1.6772	1.3720	1.3611	1.3366
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	56
Total Hourly Volume [veh/h]	926	1798	0	1613	361	155	86
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	232	450	0	403	90	39	22
Total Analysis Volume [veh/h]	926	1798	0	1613	361	155	86
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	47	107	0	60	0	13	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	103	103	56	56	56	9	9
g / C, Green / Cycle	0.86	0.86	0.47	0.47	0.47	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	1.03	0.50	0.00	0.53	0.56	0.09	0.05
s, saturation flow rate [veh/h]	902	3560	262	1870	1757	1781	1589
c, Capacity [veh/h]	762	3056	141	873	820	134	119
d1, Uniform Delay [s]	37.26	2.43	0.00	32.00	32.00	55.50	54.27
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	108.41	0.84	0.00	73.29	103.33	89.24	7.94
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.59	0.00	1.13	1.20	1.16	0.72
d, Delay for Lane Group [s/veh]	145.68	3.27	0.00	105.29	135.33	144.74	62.22
Lane Group LOS	F	A	A	F	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	24.20	2.04	0.00	40.65	45.02	7.25	2.74
50th-Percentile Queue Length [ft/ln]	605.03	51.09	0.00	1016.20	1125.59	181.21	68.56
95th-Percentile Queue Length [veh/ln]	37.69	3.68	0.00	56.03	63.95	12.24	4.94
95th-Percentile Queue Length [ft/ln]	942.30	91.97	0.00	1400.68	1598.85	305.89	123.40

Movement, Approach, & Intersection Results

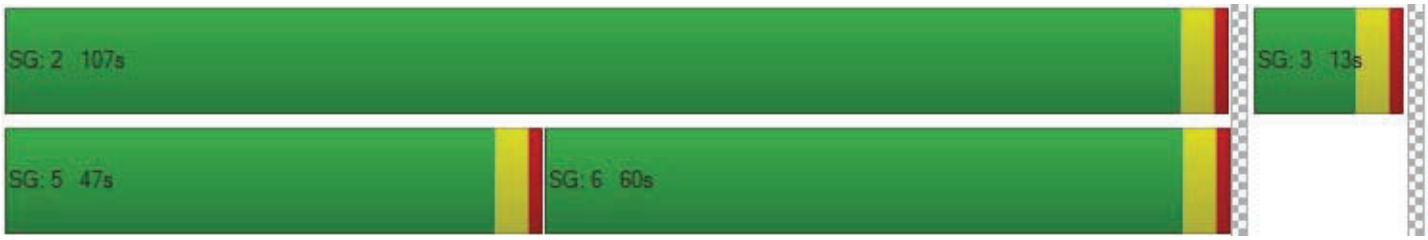
d_M, Delay for Movement [s/veh]	145.68	3.27	0.00	116.95	135.33	144.74	62.22
Movement LOS	F	A	A	F	F	F	E
d_A, Approach Delay [s/veh]	51.68		120.31			115.29	
Approach LOS	D		F			F	
d_I, Intersection Delay [s/veh]	82.21						
Intersection LOS	F						
Intersection V/C	0.918						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.380	5.761	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	87.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.284

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	2.2306	2.2306	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]	17	4	12	1664	370	13
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]	4	1	3	416	93	3
Total Analysis Volume [veh/h]	17	4	12	1664	370	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.28	0.01	0.01	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	87.57	10.36	8.09	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.00	0.02	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	25.09	0.45	0.77	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	72.86		0.06		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.78					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	414.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.495

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	2.2306	1.1487	1.1487	2.2306
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]	85	52	348	98	122	1425
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]	21	13	87	25	31	356
Total Analysis Volume [veh/h]	85	52	348	98	122	1425
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	1.50	0.07	0.00	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	414.46	10.60	0.00	0.00	8.63	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	7.67	0.24	0.00	0.00	0.37	0.00
95th-Percentile Queue Length [ft/ln]	191.85	6.05	0.00	0.00	9.19	0.00
d_A, Approach Delay [s/veh]	261.17		0.00		0.68	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	17.29					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	63.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	2.2306	1.1487	1.1487	2.2306	1.1487
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	21	0	0	84	0	0	24	0	0	93
Total Hourly Volume [veh/h]	173	516	32	168	363	127	217	451	36	74	1071	141
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]	43	129	8	42	91	32	54	113	9	19	268	35
Total Analysis Volume [veh/h]	173	516	32	168	363	127	217	451	36	74	1071	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	26	39	0	12	25	0	9	57	0	12	60	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	57	57	68	56	56	10	35	35	5	30	30
g / C, Green / Cycle	0.57	0.47	0.47	0.57	0.47	0.47	0.08	0.29	0.29	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.02	0.17	0.07	0.08	0.06	0.09	0.02	0.02	0.30	0.09
s, saturation flow rate [veh/h]	1131	5094	1589	1010	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	684	2399	749	606	2377	742	287	1498	467	135	890	397
d1, Uniform Delay [s]	12.61	18.69	17.15	12.73	18.39	18.56	53.85	32.83	30.61	56.66	45.03	37.07
k, delay calibration	0.17	0.50	0.50	0.21	0.11	0.11	0.11	0.11	0.11	0.11	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.21	0.11	0.47	0.03	0.11	4.02	0.11	0.07	3.45	95.39	0.54
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	0.25	0.22	0.04	0.28	0.15	0.17	0.75	0.30	0.08	0.55	1.20	0.36
d, Delay for Lane Group [s/veh]	12.91	18.90	17.25	13.20	18.41	18.67	57.87	32.94	30.68	60.11	140.42	37.61
Lane Group LOS	B	B	B	B	B	B	E	C	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.18	2.78	0.49	2.14	1.89	2.01	3.34	3.38	0.76	1.16	24.77	3.45
50th-Percentile Queue Length [ft/ln]	54.53	69.46	12.22	53.40	47.13	50.32	83.51	84.59	19.03	28.98	619.28	86.19
95th-Percentile Queue Length [veh/ln]	3.93	5.00	0.88	3.84	3.39	3.62	6.01	6.09	1.37	2.09	36.48	6.21
95th-Percentile Queue Length [ft/ln]	98.16	125.02	21.99	96.12	84.84	90.57	150.32	152.27	34.25	52.16	912.00	155.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.91	18.90	17.25	13.20	18.41	18.67	57.87	32.94	30.68	60.11	140.42	37.61
Movement LOS	B	B	B	B	B	B	E	C	C	E	F	D
d_A, Approach Delay [s/veh]	17.39			17.13			40.51			124.53		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	63.07											
Intersection LOS	E											
Intersection V/C	0.513											

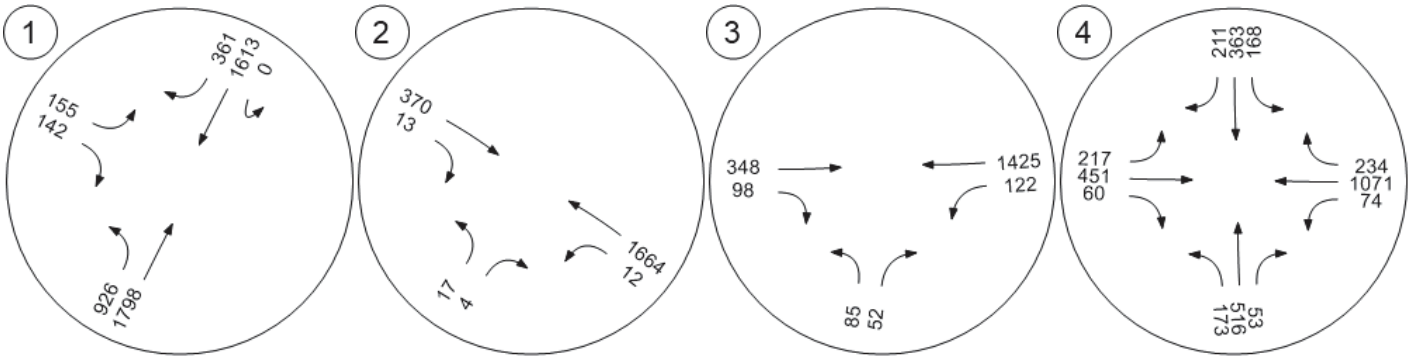
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	350	883	933
d_b, Bicycle Delay [s]	30.10	40.84	18.70	17.07
l_b,int, Bicycle LOS Score for Intersection	1.968	1.968	1.960	2.697
Bicycle LOS	A	A	A	B

Sequence

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

Traffic Volume - Future Background Volume



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Report File: K:\...\07 - 2030 Background AM.pdf

Scenario 7 2030 Background AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Right	1.158	115.5	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	1.234	797.7	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	4.328	1,923.1	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.502	34.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	115.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.158

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.9322	2.0910	1.0000	2.0879	1.7222	2.0702	2.0254
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	504
Total Hourly Volume [veh/h]	120	1886	0	2251	131	621	756
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	30	472	0	563	33	155	189
Total Analysis Volume [veh/h]	120	1886	0	2251	131	621	756
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	72	0	63	0	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	59	59	59	44	44
g / C, Green / Cycle	0.57	0.57	0.49	0.49	0.49	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.38	0.53	0.00	0.64	0.65	0.35	0.48
s, saturation flow rate [veh/h]	316	3560	241	1870	1834	1781	1589
c, Capacity [veh/h]	195	2018	61	919	902	653	583
d1, Uniform Delay [s]	27.57	23.96	0.00	30.50	30.50	36.95	38.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.43	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.59	9.63	0.00	141.02	152.05	22.65	146.07
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.93	0.00	1.30	1.32	0.95	1.30
d, Delay for Lane Group [s/veh]	41.17	33.59	0.00	171.52	182.55	59.60	184.07
Lane Group LOS	D	C	A	F	F	E	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	24.06	0.00	59.80	61.43	20.84	39.79
50th-Percentile Queue Length [ft/ln]	52.71	601.40	0.00	1495.07	1535.64	520.94	994.83
95th-Percentile Queue Length [veh/ln]	3.80	32.10	0.00	86.75	89.82	28.32	58.79
95th-Percentile Queue Length [ft/ln]	94.88	802.50	0.00	2168.65	2245.46	708.10	1469.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.17	33.59	0.00	176.71	182.55	59.60	184.07
Movement LOS	D	C	A	F	F	E	F
d_A, Approach Delay [s/veh]	34.04		177.03			127.93	
Approach LOS	C		F			F	
d_I, Intersection Delay [s/veh]	115.55						
Intersection LOS	F						
Intersection V/C	1.158						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.787	6.098	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	797.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.234

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.1233	3.1233	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]	14	9	11	415	2699	22
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]	4	2	3	104	675	6
Total Analysis Volume [veh/h]	14	9	11	415	2699	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	1.23	0.32	0.07	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	797.70	187.54	31.14	0.00	0.00	0.00
Movement LOS	F	F	D	A	A	A
95th-Percentile Queue Length [veh/ln]	2.46	1.01	0.24	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	61.57	25.16	5.91	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	558.94		0.80		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	4.16					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	1,923.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.328

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	3.1233	1.2682	1.2682	3.1233
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]	79	152	2305	57	22	447
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]	20	38	576	14	6	112
Total Analysis Volume [veh/h]	79	152	2305	57	22	447
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	4.33	3.12	0.02	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	1923.10	1129.12	0.00	0.00	24.51	0.00
Movement LOS	F	F	A	A	C	A
95th-Percentile Queue Length [veh/ln]	10.43	16.38	0.00	0.00	0.35	0.00
95th-Percentile Queue Length [ft/ln]	260.82	409.52	0.00	0.00	8.81	0.00
d_A, Approach Delay [s/veh]	1400.65		0.00		1.15	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	105.84					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.502

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	3.1233	1.2682	1.2682	3.1233	1.2682
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	42	0	0	200	0	0	39	0	0	44
Total Hourly Volume [veh/h]	88	355	65	301	448	301	341	1299	59	60	675	66
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]	22	89	16	75	112	75	85	325	15	15	169	17
Total Analysis Volume [veh/h]	88	355	65	301	448	301	341	1299	59	60	675	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	28	0	22	41	0	24	57	0	13	46	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	67	50	50	67	58	58	14	36	36	4	26	26
g / C, Green / Cycle	0.56	0.42	0.42	0.56	0.49	0.49	0.12	0.30	0.30	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.07	0.04	0.25	0.09	0.19	0.10	0.26	0.04	0.02	0.19	0.04
s, saturation flow rate [veh/h]	1027	5094	1589	1197	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	615	2122	662	711	2479	773	416	1547	483	126	783	349
d1, Uniform Delay [s]	12.42	21.96	21.30	14.18	17.34	19.51	51.51	39.05	30.22	56.70	45.08	38.11
k, delay calibration	0.11	0.50	0.50	0.46	0.11	0.27	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.17	0.30	1.68	0.03	0.81	4.03	1.29	0.11	2.77	2.97	0.26
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	0.14	0.17	0.10	0.42	0.18	0.39	0.82	0.84	0.12	0.48	0.86	0.19
d, Delay for Lane Group [s/veh]	12.52	22.13	21.60	15.86	17.38	20.32	55.54	40.35	30.33	59.47	48.05	38.37
Lane Group LOS	B	C	C	B	B	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.07	2.08	1.14	4.44	2.26	5.28	5.19	11.87	1.25	0.93	9.86	1.60
50th-Percentile Queue Length [ft/ln]	26.67	52.01	28.62	110.89	56.53	132.09	129.80	296.73	31.17	23.36	246.54	40.06
95th-Percentile Queue Length [veh/ln]	1.92	3.74	2.06	7.89	4.07	9.05	8.93	17.52	2.24	1.68	15.01	2.88
95th-Percentile Queue Length [ft/ln]	48.00	93.61	51.52	197.23	101.76	226.33	223.22	437.98	56.11	42.05	375.29	72.10

Movement, Approach, & Intersection Results

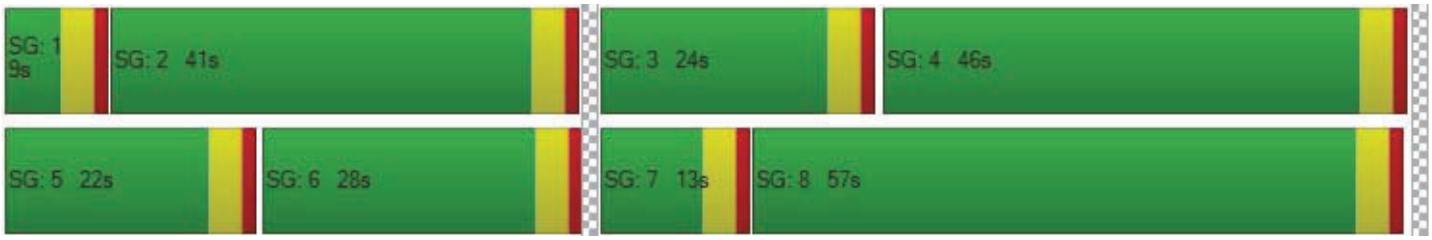
d_M, Delay for Movement [s/veh]	12.52	22.13	21.60	15.86	17.38	20.32	55.54	40.35	30.33	59.47	48.05	38.37
Movement LOS	B	C	C	B	B	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	20.40			17.79			43.05			48.11		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	34.68											
Intersection LOS	C											
Intersection V/C	0.502											

Other Modes

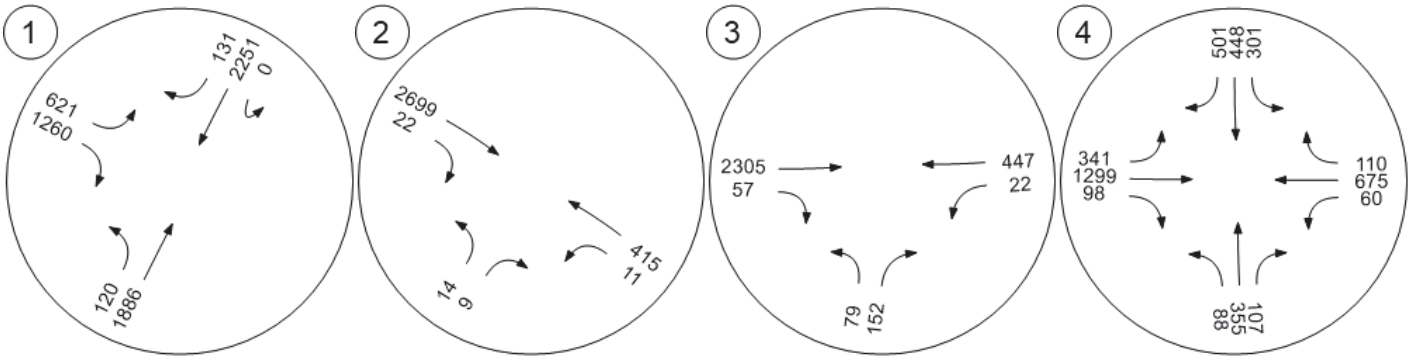
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	617	883	700
d_b, Bicycle Delay [s]	38.40	28.70	18.70	25.35
l_b,int, Bicycle LOS Score for Intersection	1.862	2.247	2.516	2.257
Bicycle LOS	A	B	B	B

Sequence

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



Traffic Volume - Future Background Volume



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Report File: K:\...\08 - 2030 Background PM.pdf

Scenario 8 2030 Background PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	NEB Left	1.345	233.9	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	2.389	1,624.3	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	28.867	10,000.0	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.744	219.4	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	233.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.345

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	0	0	0	1
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	100.00	500.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	2.3460	2.3672	1.0000	2.4015	2.1560	2.0370	2.0099
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	85
Total Hourly Volume [veh/h]	1363	2647	0	2310	567	232	128
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	341	662	0	578	142	58	32
Total Analysis Volume [veh/h]	1363	2647	0	2310	567	232	128
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	47	107	0	60	0	13	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	103	103	56	56	56	9	9
g / C, Green / Cycle	0.86	0.86	0.47	0.47	0.47	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	1.64	0.74	0.00	0.77	0.82	0.13	0.08
s, saturation flow rate [veh/h]	829	3560	113	1870	1748	1781	1589
c, Capacity [veh/h]	759	3056	65	873	816	134	119
d1, Uniform Delay [s]	37.47	4.69	0.00	32.00	32.00	55.50	55.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	363.74	3.60	0.00	296.94	348.41	338.34	59.62
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.80	0.87	0.00	1.65	1.76	1.74	1.07
d, Delay for Lane Group [s/veh]	401.21	8.29	0.00	328.94	380.41	393.84	115.12
Lane Group LOS	F	A	A	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	77.88	6.32	0.00	94.86	100.36	16.49	5.49
50th-Percentile Queue Length [ft/ln]	1947.07	158.03	0.00	2371.55	2508.94	412.27	137.21
95th-Percentile Queue Length [veh/ln]	132.22	10.44	0.00	147.05	158.05	26.80	9.55
95th-Percentile Queue Length [ft/ln]	3305.48	261.12	0.00	3676.23	3951.32	670.12	238.67

Movement, Approach, & Intersection Results

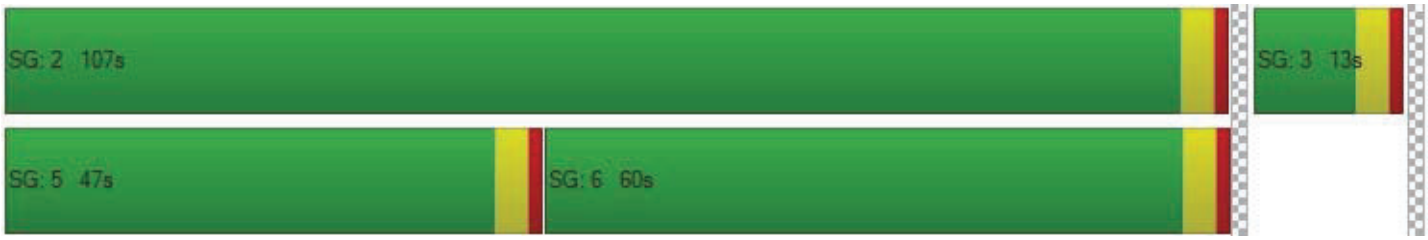
d_M, Delay for Movement [s/veh]	401.21	8.29	0.00	348.36	380.41	393.84	115.12
Movement LOS	F	A	A	F	F	F	F
d_A, Approach Delay [s/veh]	141.84		354.67			294.74	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	233.93						
Intersection LOS	F						
Intersection V/C	1.345						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	7.441	6.506	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	1,624.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.389

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.7721	3.7721	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]	17	4	12	2814	626	13
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]	4	1	3	704	157	3
Total Analysis Volume [veh/h]	17	4	12	2814	626	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	2.39	0.01	0.01	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	1624.29	12.50	8.86	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.22	0.02	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	80.43	0.62	0.96	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1317.28		0.04		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	7.97					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	28.867

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	3.7721	1.2682	1.2682	3.7721
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]	94	57	588	108	134	2410
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]	24	14	147	27	34	603
Total Analysis Volume [veh/h]	94	57	588	108	134	2410
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	28.87	0.11	0.01	0.00	0.15	0.02
d_M, Delay for Movement [s/veh]	10000.00	12.97	0.00	0.00	9.70	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	13.88	0.38	0.00	0.00	0.52	0.00
95th-Percentile Queue Length [ft/ln]	347.05	9.40	0.00	0.00	13.05	0.00
d_A, Approach Delay [s/veh]	6230.06		0.00		0.51	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	277.81					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	219.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	3.7721	1.2682	1.2682	3.7721	1.2682
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	23	0	0	93	0	0	26	0	0	103
Total Hourly Volume [veh/h]	191	569	35	185	401	140	240	762	40	81	1811	156
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]	48	142	9	46	100	35	60	191	10	20	453	39
Total Analysis Volume [veh/h]	191	569	35	185	401	140	240	762	40	81	1811	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	16	20	0	12	16	0	9	73	0	15	79	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	67	55	55	67	54	54	11	36	36	5	30	30
g / C, Green / Cycle	0.56	0.46	0.46	0.56	0.45	0.45	0.09	0.30	0.30	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.17	0.11	0.02	0.19	0.08	0.09	0.07	0.15	0.03	0.02	0.51	0.10
s, saturation flow rate [veh/h]	1112	5094	1589	983	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	663	2343	731	581	2311	721	311	1531	478	136	890	397
d1, Uniform Delay [s]	13.18	19.71	17.90	13.33	19.44	19.64	53.42	34.53	30.12	56.72	45.02	37.44
k, delay calibration	0.22	0.50	0.50	0.27	0.11	0.11	0.11	0.11	0.11	0.11	0.46	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	0.25	0.12	0.78	0.04	0.13	4.08	0.25	0.07	4.13	469.46	0.63
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	0.29	0.24	0.05	0.32	0.17	0.19	0.77	0.50	0.08	0.60	2.04	0.39
d, Delay for Lane Group [s/veh]	13.67	19.95	18.02	14.11	19.48	19.77	57.50	34.78	30.20	60.85	514.48	38.07
Lane Group LOS	B	B	B	B	B	B	E	C	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.51	3.18	0.55	2.46	2.16	2.31	3.69	6.07	0.84	1.28	71.01	3.86
50th-Percentile Queue Length [ft/ln]	62.78	79.59	13.74	61.57	54.10	57.70	92.20	151.76	20.97	31.94	1775.25	96.42
95th-Percentile Queue Length [veh/ln]	4.52	5.73	0.99	4.43	3.90	4.15	6.64	10.11	1.51	2.30	111.36	6.94
95th-Percentile Queue Length [ft/ln]	113.01	143.26	24.74	110.83	97.38	103.85	165.97	252.78	37.75	57.49	2784.04	173.55

Movement, Approach, & Intersection Results

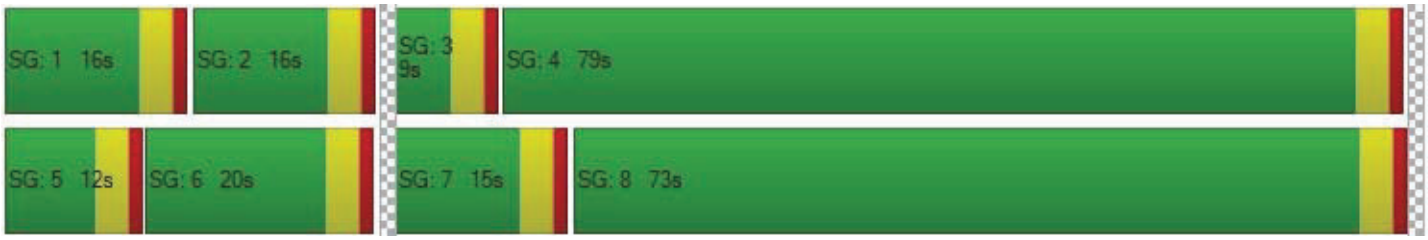
d_M, Delay for Movement [s/veh]	13.67	19.95	18.02	14.11	19.48	19.77	57.50	34.78	30.20	60.85	514.48	38.07
Movement LOS	B	B	B	B	B	B	E	C	C	E	F	D
d_A, Approach Delay [s/veh]	18.36			18.17			39.84			460.25		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	219.45											
Intersection LOS	F											
Intersection V/C	0.744											

Other Modes

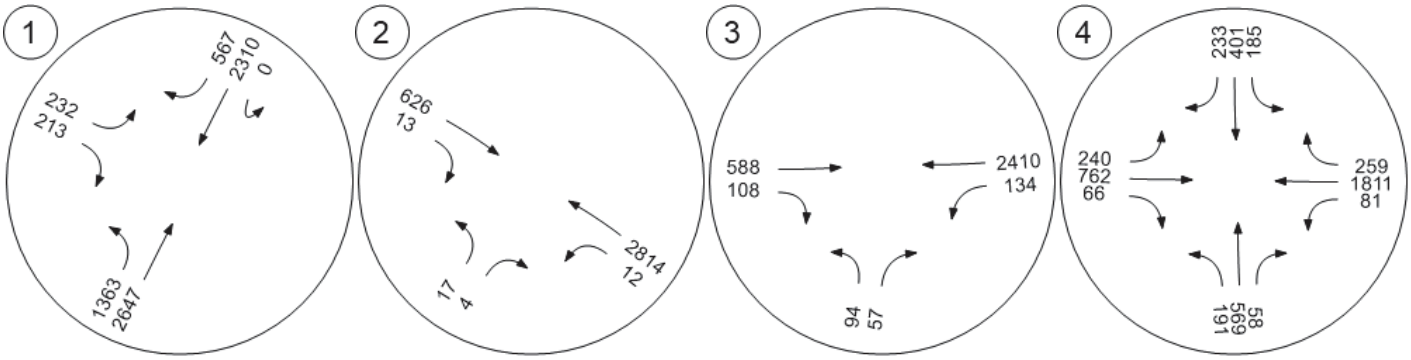
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	267	200	1150	1250
d_b, Bicycle Delay [s]	45.07	48.60	10.84	8.44
l_b,int, Bicycle LOS Score for Intersection	2.010	2.010	2.147	3.334
Bicycle LOS	B	B	B	C

Sequence

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



Traffic Volume - Future Background Volume



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Report File: K:\...\09 - 2035 Background AM.pdf

Scenario 9 2035 Background AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SWB Right	1.570	278.9	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	1.883	1,358.9	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	7.087	3,344.2	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.553	34.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	278.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.570

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	2.6271	2.8343	1.0000	2.8320	2.3333	2.8070	2.7462
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	683
Total Hourly Volume [veh/h]	163	2557	0	3053	177	842	1025
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	41	639	0	763	44	211	256
Total Analysis Volume [veh/h]	163	2557	0	3053	177	842	1025
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	72	0	63	0	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	59	59	59	44	44
g / C, Green / Cycle	0.57	0.57	0.49	0.49	0.49	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.68	0.72	0.00	0.86	0.88	0.47	0.64
s, saturation flow rate [veh/h]	240	3560	124	1870	1834	1781	1589
c, Capacity [veh/h]	194	2018	60	919	902	653	583
d1, Uniform Delay [s]	35.76	26.00	0.00	30.50	30.50	38.00	38.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.08	124.40	0.00	344.94	360.21	141.54	348.44
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	1.27	0.00	1.76	1.79	1.29	1.76
d, Delay for Lane Group [s/veh]	68.84	150.40	0.00	375.44	390.71	179.54	386.44
Lane Group LOS	E	F	A	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.70	59.66	0.00	111.88	113.58	43.76	72.56
50th-Percentile Queue Length [ft/ln]	92.42	1491.41	0.00	2797.05	2839.60	1094.12	1813.89
95th-Percentile Queue Length [veh/ln]	6.65	86.16	0.00	175.86	179.28	63.95	114.01
95th-Percentile Queue Length [ft/ln]	166.36	2154.09	0.00	4396.56	4482.08	1598.64	2850.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.84	150.40	0.00	382.63	390.71	179.54	386.44
Movement LOS	E	F	A	F	F	F	F
d_A, Approach Delay [s/veh]	145.51		383.07			293.13	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	278.93						
Intersection LOS	F						
Intersection V/C	1.570						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.376	6.797	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	1,358.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.883

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.3906	3.3906	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]	14	9	11	451	2929	22
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]	4	2	3	113	732	6
Total Analysis Volume [veh/h]	14	9	11	451	2929	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	1.88	0.45	0.09	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	1358.90	290.46	37.92	0.00	0.00	0.00
Movement LOS	F	F	E	A	A	A
95th-Percentile Queue Length [veh/ln]	2.74	1.28	0.30	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	68.45	31.94	7.39	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	940.81		0.90		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	6.42					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	3,344.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.087

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	3.3906	1.4002	1.4002	3.3906
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]	87	168	2502	63	24	485
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]	22	42	626	16	6	121
Total Analysis Volume [veh/h]	87	168	2502	63	24	485
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	7.09	4.56	0.03	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	3344.17	1820.74	0.00	0.00	29.37	0.00
Movement LOS	F	F	A	A	D	A
95th-Percentile Queue Length [veh/ln]	12.05	19.61	0.00	0.00	0.48	0.00
95th-Percentile Queue Length [ft/ln]	301.21	490.17	0.00	0.00	11.89	0.00
d_A, Approach Delay [s/veh]	2340.50		0.00		1.38	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	179.49					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	3.3906	1.4002	1.4002	3.3906	1.4002
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	47	0	0	221	0	0	43	0	0	48
Total Hourly Volume [veh/h]	97	392	71	332	494	332	377	1410	65	66	732	74
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]	24	98	18	83	124	83	94	353	16	17	183	19
Total Analysis Volume [veh/h]	97	392	71	332	494	332	377	1410	65	66	732	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	10	0	13	14	0	13	16	0	81	84	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	50	50	63	54	54	16	40	40	4	29	29
g / C, Green / Cycle	0.53	0.42	0.42	0.53	0.45	0.45	0.13	0.34	0.34	0.04	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.08	0.04	0.29	0.10	0.21	0.11	0.28	0.04	0.02	0.21	0.05
s, saturation flow rate [veh/h]	1005	5094	1589	1130	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	562	2129	664	634	2288	714	454	1707	533	131	861	384
d1, Uniform Delay [s]	14.48	22.03	21.28	17.49	20.18	23.03	50.84	36.69	27.67	56.65	43.45	36.20
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.33	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	0.19	0.32	3.08	0.05	1.44	3.97	1.07	0.10	2.97	2.48	0.24
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	0.17	0.18	0.11	0.52	0.22	0.47	0.83	0.83	0.12	0.50	0.85	0.19
d, Delay for Lane Group [s/veh]	14.62	22.22	21.61	20.57	20.22	24.47	54.81	37.76	27.77	59.62	45.93	36.44
Lane Group LOS	B	C	C	C	C	C	D	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.30	2.31	1.25	5.61	2.75	6.58	5.72	12.55	1.31	1.03	10.52	1.75
50th-Percentile Queue Length [ft/ln]	32.41	57.71	31.30	140.24	68.63	164.50	143.03	313.86	32.67	25.73	262.90	43.68
95th-Percentile Queue Length [veh/ln]	2.33	4.15	2.25	9.49	4.94	10.79	9.64	18.37	2.35	1.85	15.83	3.15
95th-Percentile Queue Length [ft/ln]	58.34	103.87	56.34	237.35	123.53	269.68	241.10	459.13	58.80	46.31	395.86	78.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.62	22.22	21.61	20.57	20.22	24.47	54.81	37.76	27.77	59.62	45.93	36.44
Movement LOS	B	C	C	C	C	C	D	D	C	E	D	D
d_A, Approach Delay [s/veh]	20.82			21.54			40.88			46.16		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.35											
Intersection LOS	C											
Intersection V/C	0.553											

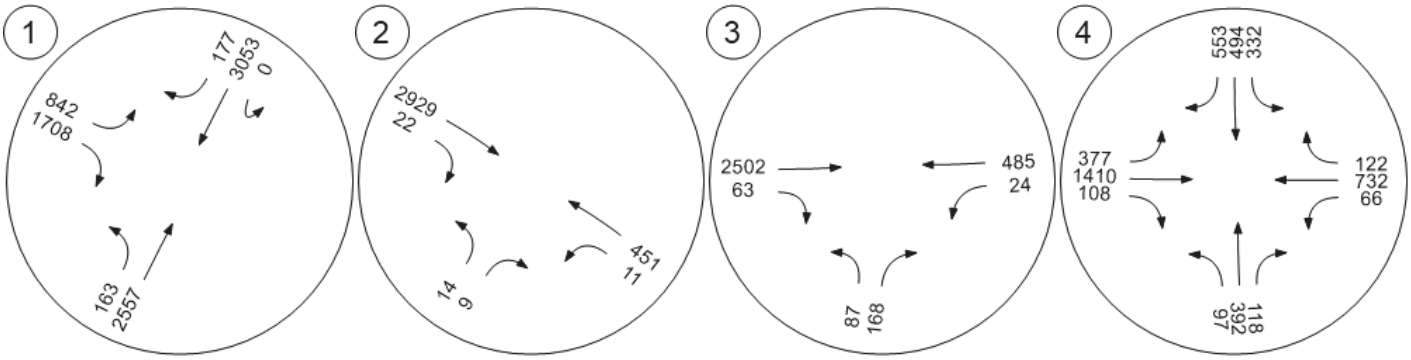
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	100	167	200	1333
d_b, Bicycle Delay [s]	54.15	50.42	48.60	6.67
l_b,int, Bicycle LOS Score for Intersection	1.893	2.318	2.602	2.319
Bicycle LOS	A	B	B	B

Sequence

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

Traffic Volume - Future Background Volume



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Report File: K:\...\10 - 2035 Background PM.pdf

Scenario 10 2035 Background PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	NEB Left	1.793	496.7	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	3.867	2,825.7	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	77.918	10,000.0	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.813	250.9	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	496.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.793

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	3.3007	3.3296	1.0000	3.6477	3.0320	2.8611	2.2376
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	94
Total Hourly Volume [veh/h]	1918	3722	0	3509	797	326	143
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	480	931	0	877	199	82	36
Total Analysis Volume [veh/h]	1918	3722	0	3509	797	326	143
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	46	107	0	61	0	13	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	103	103	57	57	57	9	9
g / C, Green / Cycle	0.86	0.86	0.48	0.48	0.48	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	2.48	1.05	0.00	1.15	1.23	0.18	0.09
s, saturation flow rate [veh/h]	773	3560	38	1870	1755	1781	1589
c, Capacity [veh/h]	743	3056	60	888	834	134	119
d1, Uniform Delay [s]	38.07	8.50	0.00	31.50	31.50	55.50	55.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	715.66	101.25	0.00	644.18	715.51	659.71	106.36
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.58	1.22	0.00	2.42	2.58	2.44	1.20
d, Delay for Lane Group [s/veh]	753.73	109.75	0.00	675.68	747.01	715.21	161.86
Lane Group LOS	F	F	A	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	148.88	53.00	0.00	182.13	187.48	28.41	7.04
50th-Percentile Queue Length [ft/ln]	3721.95	1325.01	0.00	4553.32	4687.11	710.36	175.90
95th-Percentile Queue Length [veh/ln]	260.49	76.97	0.00	294.94	304.84	44.86	12.05
95th-Percentile Queue Length [ft/ln]	6512.16	1924.20	0.00	7373.44	7620.89	1121.62	301.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	753.73	109.75	0.00	703.25	747.01	715.21	161.86
Movement LOS	F	F	A	F	F	F	F
d_A, Approach Delay [s/veh]	328.75		711.35			546.49	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	496.74						
Intersection LOS	F						
Intersection V/C	1.793						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	8.785	7.685	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	2,825.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.867

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	4.1144	4.1144	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]	17	4	12	3069	683	13
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]	4	1	3	767	171	3
Total Analysis Volume [veh/h]	17	4	12	3069	683	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	3.87	0.01	0.01	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	2825.74	13.09	9.05	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.43	0.03	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	85.82	0.67	1.01	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2290.00		0.04		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	12.69					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	77.918

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	4.1144	1.4002	1.4002	4.1144
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]	104	63	642	119	148	2629
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]	26	16	161	30	37	657
Total Analysis Volume [veh/h]	104	63	642	119	148	2629
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	77.92	0.13	0.01	0.00	0.17	0.03
d_M, Delay for Movement [s/veh]	10000.00	13.75	0.00	0.00	10.12	0.00
Movement LOS	F	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	15.37	0.46	0.00	0.00	0.63	0.00
95th-Percentile Queue Length [ft/ln]	384.26	11.39	0.00	0.00	15.68	0.00
d_A, Approach Delay [s/veh]	6232.73		0.00		0.54	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	281.34					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	250.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	4.1144	1.4002	1.4002	4.1144	1.4002
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	25	0	0	103	0	0	29	0	0	114
Total Hourly Volume [veh/h]	211	629	39	204	442	155	265	831	44	90	1975	172
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]	53	157	10	51	111	39	66	208	11	23	494	43
Total Analysis Volume [veh/h]	211	629	39	204	442	155	265	831	44	90	1975	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	23	0	9	23	0	13	73	0	15	75	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	66	57	57	66	53	53	12	37	37	5	30	30
g / C, Green / Cycle	0.55	0.48	0.48	0.55	0.44	0.44	0.10	0.31	0.31	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.19	0.12	0.02	0.23	0.09	0.10	0.08	0.16	0.03	0.03	0.55	0.11
s, saturation flow rate [veh/h]	1094	5094	1589	901	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	641	2431	759	527	2233	697	337	1560	487	142	890	397
d1, Uniform Delay [s]	13.87	18.71	16.81	14.04	20.73	20.98	52.94	34.52	29.71	56.65	45.02	37.86
k, delay calibration	0.28	0.50	0.50	0.38	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	0.26	0.13	1.64	0.04	0.16	4.07	0.28	0.08	4.55	552.39	0.75
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	0.33	0.26	0.05	0.39	0.20	0.22	0.79	0.53	0.09	0.63	2.22	0.43
d, Delay for Lane Group [s/veh]	14.65	18.97	16.94	15.68	20.77	21.14	57.01	34.80	29.79	61.20	597.40	38.61
Lane Group LOS	B	B	B	B	C	C	E	C	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.91	3.43	0.59	2.91	2.49	2.67	4.06	6.67	0.92	1.42	81.26	4.30
50th-Percentile Queue Length [ft/ln]	72.72	85.66	14.75	72.66	62.23	66.78	101.56	166.66	22.91	35.59	2031.48	107.62
95th-Percentile Queue Length [veh/ln]	5.24	6.17	1.06	5.23	4.48	4.81	7.31	10.90	1.65	2.56	127.76	7.71
95th-Percentile Queue Length [ft/ln]	130.89	154.18	26.55	130.78	112.01	120.21	182.80	272.51	41.24	64.06	3193.89	192.69

Movement, Approach, & Intersection Results

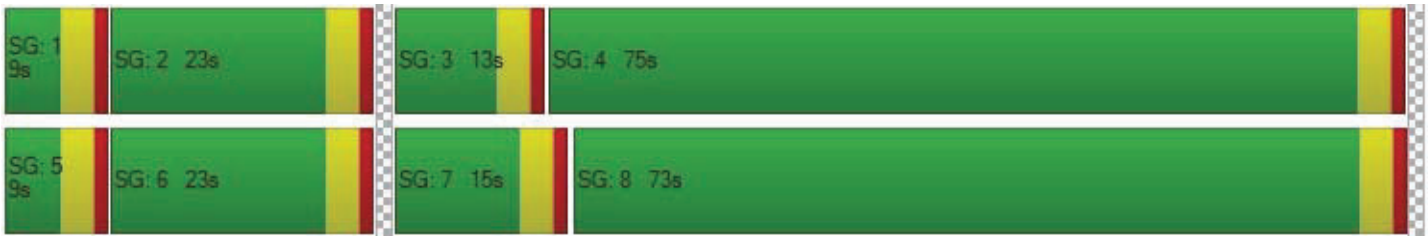
d_M, Delay for Movement [s/veh]	14.65	18.97	16.94	15.68	20.77	21.14	57.01	34.80	29.79	61.20	597.40	38.61
Movement LOS	B	B	B	B	C	C	E	C	C	E	F	D
d_A, Approach Delay [s/veh]	17.84			19.54			39.77			532.87		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	250.88											
Intersection LOS	F											
Intersection V/C	0.813											

Other Modes

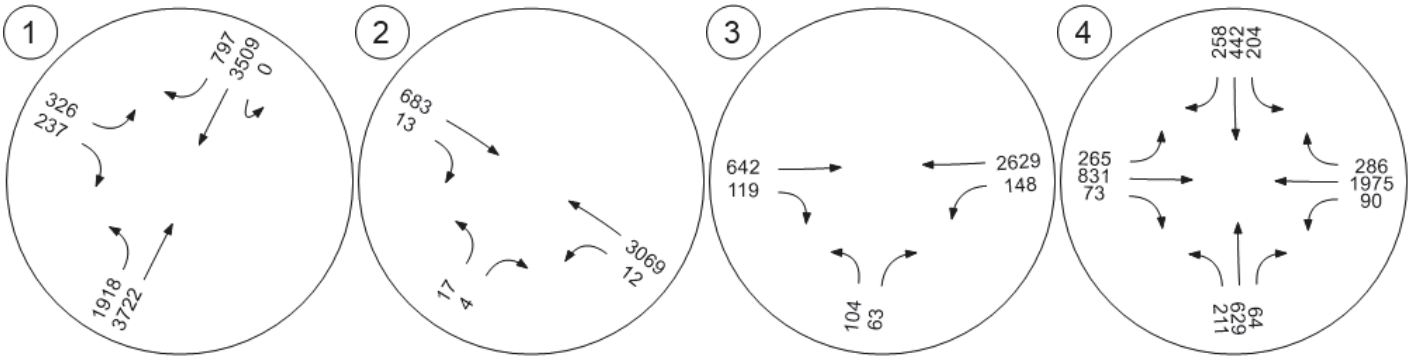
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1150	1183
d_b, Bicycle Delay [s]	42.50	42.50	10.84	10.00
l_b,int, Bicycle LOS Score for Intersection	2.057	2.057	2.203	3.499
Bicycle LOS	B	B	B	C

Sequence

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



Traffic Volume - Future Background Volume



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Scenario 11 2022 Total AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	0.636	22.2	C
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.102	34.3	D
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.402	40.5	E
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.359	31.0	C
5	Access A & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Left	0.285	31.9	D
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.082	19.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1864	1.2905	1.0000	1.2881	1.0694	1.2772	1.2487
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	19	0	0	0	6	20	58
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	334
Total Hourly Volume [veh/h]	93	1164	0	1389	87	403	501
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	23	291	0	347	22	101	125
Total Analysis Volume [veh/h]	93	1164	0	1389	87	403	501
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	18	0	9	0	102	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81	73	73	73	31	31
g / C, Green / Cycle	0.68	0.68	0.60	0.60	0.60	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.10	0.33	0.00	0.40	0.40	0.23	0.18
s, saturation flow rate [veh/h]	926	3560	482	1870	1832	1781	2813
c, Capacity [veh/h]	546	2411	257	1129	1106	456	721
d1, Uniform Delay [s]	12.07	9.30	0.00	15.63	15.68	42.90	40.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.70	0.00	3.01	3.12	5.80	1.22
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.48	0.00	0.66	0.66	0.88	0.69
d, Delay for Lane Group [s/veh]	12.74	9.99	0.00	18.64	18.81	48.69	41.60
Lane Group LOS	B	A	A	B	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.38	6.24	0.00	12.53	12.41	11.80	6.60
50th-Percentile Queue Length [ft/ln]	9.58	156.01	0.00	313.31	310.34	295.08	164.96
95th-Percentile Queue Length [veh/ln]	0.69	10.34	0.00	18.34	18.19	17.44	10.81
95th-Percentile Queue Length [ft/ln]	17.24	258.43	0.00	458.46	454.79	435.94	270.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.74	9.99	0.00	18.72	18.81	48.69	41.60
Movement LOS	B	A	A	B	B	D	D
d_A, Approach Delay [s/veh]	10.19		18.72			44.76	
Approach LOS	B		B			D	
d_I, Intersection Delay [s/veh]	22.25						
Intersection LOS	C						
Intersection V/C	0.636						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.169	5.350	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.102

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.3861	1.3861	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	53	17	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]	14	9	11	237	1215	22
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]	4	2	3	59	304	6
Total Analysis Volume [veh/h]	14	9	11	237	1215	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.10	0.04	0.02	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	34.32	21.98	11.52	0.00	0.00	0.00
Movement LOS	D	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.34	0.13	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.38	3.17	1.49	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	29.49		0.51		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.402

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.3861	1.0824	1.0824	1.3861
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	17	0	0	53
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]	67	130	1040	49	18	251
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]	17	33	260	12	5	63
Total Analysis Volume [veh/h]	67	130	1040	49	18	251
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.40	0.46	0.01	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	40.46	28.57	0.00	0.00	10.78	0.00
Movement LOS	E	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	1.77	2.32	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	44.21	57.95	0.00	0.00	2.17	0.00
d_A, Approach Delay [s/veh]	32.62		0.00		0.72	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	4.26					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.359

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.3861	1.0824	1.0824	1.3861	1.0824
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	15	0	3	46	4
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	36	0	0	171	0	0	33	0	0	39
Total Hourly Volume [veh/h]	75	303	56	258	382	257	291	592	50	54	345	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]	19	76	14	65	96	64	73	148	13	14	86	15
Total Analysis Volume [veh/h]	75	303	56	258	382	257	291	592	50	54	345	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 m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	36	0	22	49	0	46	34	0	28	16	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	68	68	81	73	73	13	23	23	4	14	14
g / C, Green / Cycle	0.68	0.57	0.57	0.68	0.60	0.60	0.11	0.19	0.19	0.03	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.07	0.06	0.04	0.22	0.07	0.16	0.08	0.12	0.03	0.02	0.10	0.04
s, saturation flow rate [veh/h]	1065	5094	1589	1172	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	775	2890	902	849	3080	961	364	959	299	122	421	188
d1, Uniform Delay [s]	6.64	11.94	11.64	7.42	10.15	11.19	52.45	44.75	40.83	56.75	51.68	48.47
k, delay calibration	0.11	0.50	0.50	0.36	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.07	0.13	0.67	0.02	0.26	4.06	0.65	0.26	2.52	4.01	0.95
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	0.10	0.10	0.06	0.30	0.12	0.27	0.80	0.62	0.17	0.44	0.82	0.31
d, Delay for Lane Group [s/veh]	6.69	12.01	11.77	8.09	10.16	11.46	56.52	45.40	41.09	59.27	55.69	49.41
Lane Group LOS	A	B	B	A	B	B	E	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.59	1.21	0.68	2.40	1.36	3.08	4.45	5.41	1.26	0.84	5.26	1.66
50th-Percentile Queue Length [ft/ln]	14.85	30.18	16.88	60.06	33.96	77.10	111.26	135.14	31.45	20.99	131.41	41.51
95th-Percentile Queue Length [veh/ln]	1.07	2.17	1.22	4.32	2.45	5.55	7.91	9.22	2.26	1.51	9.02	2.99
95th-Percentile Queue Length [ft/ln]	26.73	54.33	30.38	108.11	61.13	138.77	197.75	230.47	56.61	37.78	225.41	74.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.69	12.01	11.77	8.09	10.16	11.46	56.52	45.40	41.09	59.27	55.69	49.41
Movement LOS	A	B	B	A	B	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	11.06			9.94			48.63			55.30		
Approach LOS	B			A			D			E		
d_I, Intersection Delay [s/veh]	31.01											
Intersection LOS	C											
Intersection V/C	0.359											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	750	500	200
d_b, Bicycle Delay [s]	32.27	23.44	33.75	48.60
l_b,int, Bicycle LOS Score for Intersection	1.818	2.147	2.091	1.970
Bicycle LOS	A	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 5: Access A & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.285

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.1242	1.0000	1.0000	1.1242
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	55	23	5	13	13
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]	53	55	1060	5	13	168
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]	13	14	265	1	3	42
Total Analysis Volume [veh/h]	53	55	1060	5	13	168
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.29	0.20	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	31.91	21.54	0.00	0.00	10.61	0.00
Movement LOS	D	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	1.12	0.74	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	28.01	18.48	0.00	0.00	1.52	0.00
d_A, Approach Delay [s/veh]	26.63		0.00		0.76	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	2.23					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.1242	1.0000	1.0000	1.1242
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	23	5	12	13	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	23	1042	12	13	208
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	6	261	3	3	52
Total Analysis Volume [veh/h]	0	23	1042	12	13	208
Pedestrian Volume [ped/h]	0		0		0	

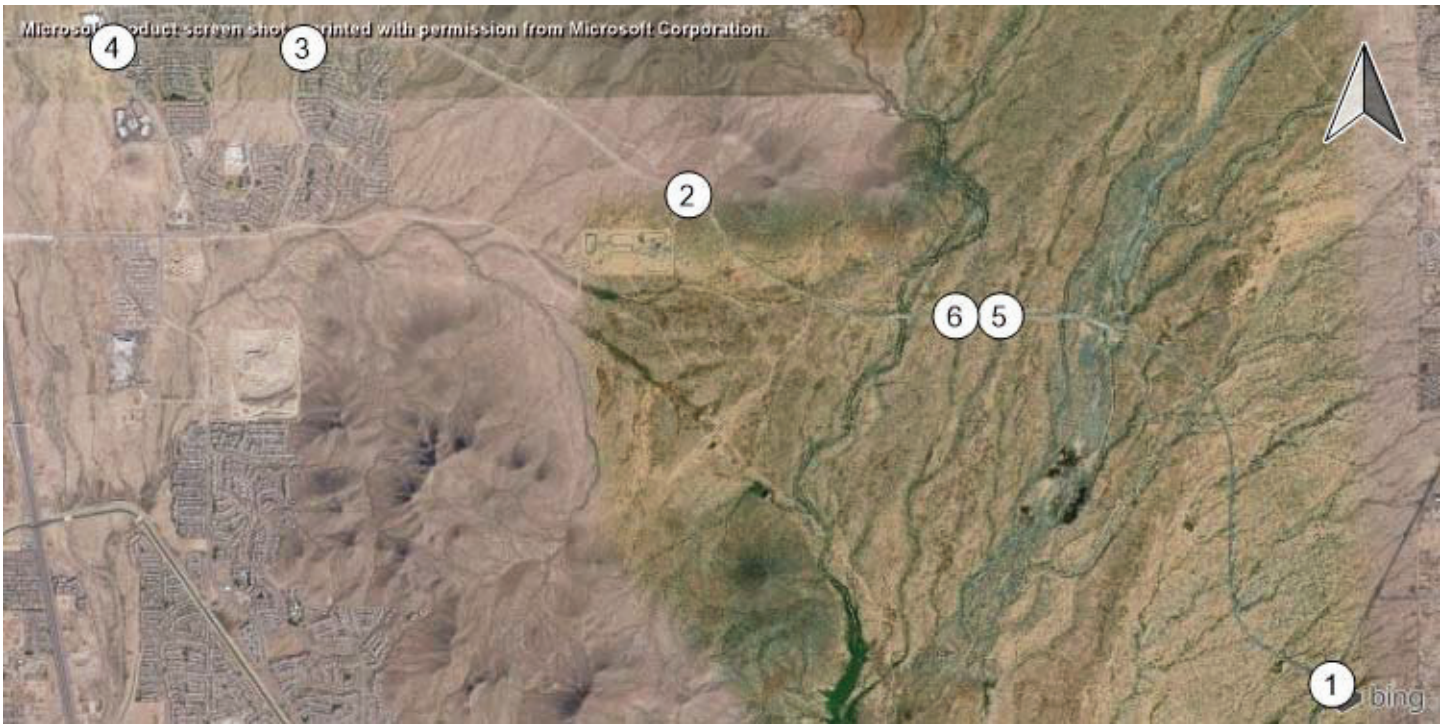
Intersection Settings

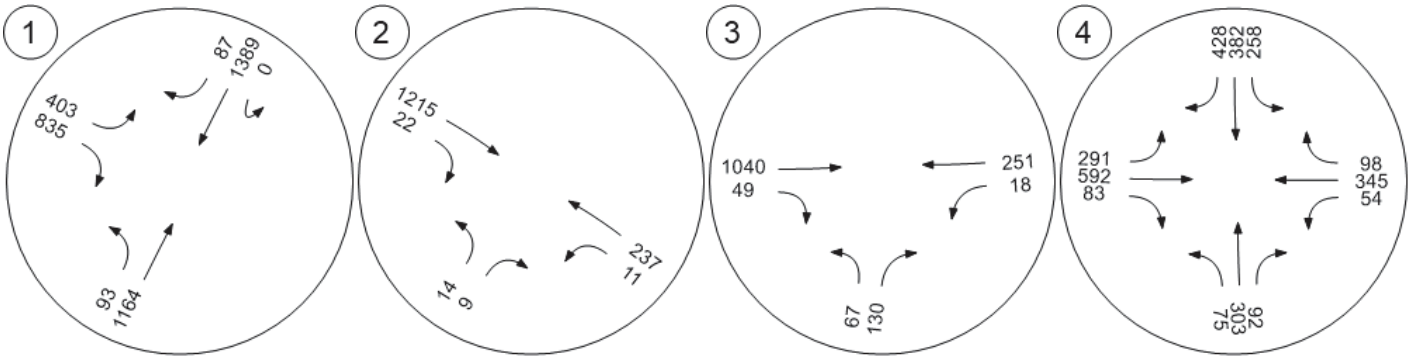
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

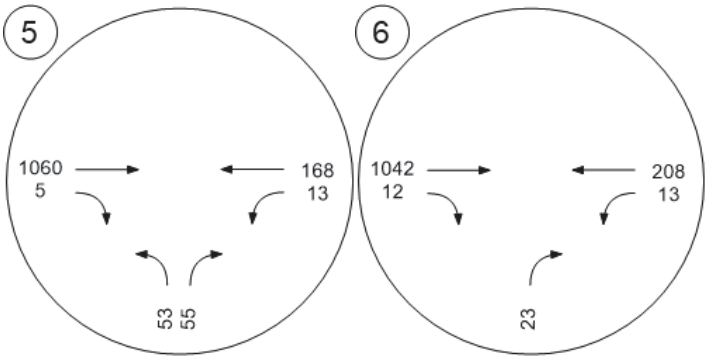
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	19.06	0.00	0.00	10.56	0.00
Movement LOS		C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.27	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	0.00	6.68	0.00	0.00	1.50	0.00
d_A, Approach Delay [s/veh]	19.06		0.00		0.62	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	C					

Traffic Volume - Future Total Volume







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Report File: K:\...\12 - 2022 Total PM.pdf

Scenario 12 2022 Total PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	0.639	20.4	C
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.130	36.6	E
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	0.699	89.0	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.414	32.4	C
5	Access A & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Left	0.232	36.0	E
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.021	9.8	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2645	1.3559	1.0000	1.3709	1.3320	1.1481	1.1287
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	66	0	0	0	22	13	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	63
Total Hourly Volume [veh/h]	801	1516	0	1319	372	144	96
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	200	379	0	330	93	36	24
Total Analysis Volume [veh/h]	801	1516	0	1319	372	144	96
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	24	74	0	50	0	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	100	100	77	77	77	12	12
g / C, Green / Cycle	0.83	0.83	0.64	0.64	0.64	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.68	0.43	0.00	0.46	0.48	0.08	0.03
s, saturation flow rate [veh/h]	1170	3560	345	1870	1733	1781	2813
c, Capacity [veh/h]	904	2966	232	1201	1113	179	282
d1, Uniform Delay [s]	32.45	2.91	0.00	14.22	14.74	52.84	50.29
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.50	0.63	0.00	3.68	4.57	8.29	0.71
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.51	0.00	0.72	0.75	0.81	0.34
d, Delay for Lane Group [s/veh]	44.95	3.54	0.00	17.90	19.31	61.13	51.00
Lane Group LOS	D	A	A	B	B	E	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.49	2.60	0.00	14.15	14.35	4.55	1.34
50th-Percentile Queue Length [ft/ln]	62.29	64.95	0.00	353.79	358.65	113.78	33.53
95th-Percentile Queue Length [veh/ln]	4.48	4.68	0.00	20.32	20.56	8.05	2.41
95th-Percentile Queue Length [ft/ln]	112.11	116.92	0.00	508.02	513.94	201.25	60.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.95	3.54	0.00	18.39	19.31	61.13	51.00
Movement LOS	D	A	A	B	B	E	D
d_A, Approach Delay [s/veh]	17.86		18.59			57.08	
Approach LOS	B		B			E	
d_I, Intersection Delay [s/veh]	20.36						
Intersection LOS	C						
Intersection V/C	0.639						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.044	5.527	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.130

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.5304	1.5304	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	35	58	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]	17	4	12	1177	312	13
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]	4	1	3	294	78	3
Total Analysis Volume [veh/h]	17	4	12	1177	312	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.13	0.01	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	36.63	9.97	7.94	0.00	0.00	0.00
Movement LOS	E	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.44	0.02	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.88	0.41	0.74	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	31.55		0.08		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.49					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	89.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.5304	1.0824	1.0824	1.5304
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	58	0	0	35
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]	80	49	297	92	115	1013
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]	20	12	74	23	29	253
Total Analysis Volume [veh/h]	80	49	297	92	115	1013
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.70	0.07	0.00	0.00	0.10	0.01
d_M, Delay for Movement [s/veh]	88.98	10.19	0.00	0.00	8.41	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.73	0.21	0.00	0.00	0.33	0.00
95th-Percentile Queue Length [ft/ln]	93.25	5.29	0.00	0.00	8.16	0.00
d_A, Approach Delay [s/veh]	59.05		0.00		0.86	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	5.22					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	32.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.414

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.0824	1.5304	1.0824	1.0824	1.5304	1.0824
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	3	0	0	0	51	0	3	30	2
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	21	0	0	79	0	0	22	0	0	89
Total Hourly Volume [veh/h]	163	486	33	161	342	120	205	360	34	72	765	134
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]	41	122	8	40	86	30	51	90	9	18	191	34
Total Analysis Volume [veh/h]	163	486	33	161	342	120	205	360	34	72	765	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	32	31	0	11	10	0	45	19	0	59	33	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	70	59	59	70	59	59	10	33	33	5	28	28
g / C, Green / Cycle	0.59	0.50	0.50	0.59	0.49	0.49	0.08	0.27	0.27	0.04	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.02	0.16	0.07	0.08	0.06	0.07	0.02	0.02	0.21	0.08
s, saturation flow rate [veh/h]	1138	5094	1589	1021	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	712	2520	786	635	2502	781	275	1399	437	134	833	372
d1, Uniform Delay [s]	11.42	16.94	15.65	11.53	16.66	16.81	54.08	33.98	32.27	56.65	44.87	38.47
k, delay calibration	0.14	0.50	0.50	0.18	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.17	0.10	0.35	0.02	0.09	4.02	0.10	0.08	3.32	4.67	0.59
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	0.23	0.19	0.04	0.25	0.14	0.15	0.75	0.26	0.08	0.54	0.92	0.36
d, Delay for Lane Group [s/veh]	11.63	17.11	15.75	11.87	16.68	16.90	58.09	34.08	32.35	59.97	49.54	39.06
Lane Group LOS	B	B	B	B	B	B	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.91	2.45	0.48	1.91	1.67	1.78	3.16	2.73	0.74	1.13	11.47	3.34
50th-Percentile Queue Length [ft/ln]	47.81	61.33	11.90	47.68	41.66	44.59	78.99	68.34	18.53	28.16	286.75	83.60
95th-Percentile Queue Length [veh/ln]	3.44	4.42	0.86	3.43	3.00	3.21	5.69	4.92	1.33	2.03	17.02	6.02
95th-Percentile Queue Length [ft/ln]	86.05	110.40	21.42	85.83	75.00	80.27	142.18	123.01	33.36	50.68	425.61	150.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.63	17.11	15.75	11.87	16.68	16.90	58.09	34.08	32.35	59.97	49.54	39.06
Movement LOS	B	B	B	B	B	B	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	15.73			15.48			42.20			48.86		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.38											
Intersection LOS	C											
Intersection V/C	0.414											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	100	250	483
d_b, Bicycle Delay [s]	36.04	54.15	45.94	34.50
I_b,int, Bicycle LOS Score for Intersection	1.946	1.946	1.901	2.434
Bicycle LOS	A	A	A	B

Sequence

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

Intersection Level Of Service Report
Intersection 5: Access A & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.232

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.1707	1.0000	1.0000	1.1707
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	36	16	17	44	44
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]	35	36	274	17	44	1032
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]	9	9	69	4	11	258
Total Analysis Volume [veh/h]	35	36	274	17	44	1032
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.23	0.05	0.00	0.00	0.03	0.01
d_M, Delay for Movement [s/veh]	36.00	9.94	0.00	0.00	7.93	0.00
Movement LOS	E	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.86	0.15	0.00	0.00	0.11	0.00
95th-Percentile Queue Length [ft/ln]	21.44	3.70	0.00	0.00	2.69	0.00
d_A, Approach Delay [s/veh]	22.79		0.00		0.32	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.37					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.1707	1.0000	1.0000	1.1707
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	17	41	44	35
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	16	275	41	44	1023
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	69	10	11	256
Total Analysis Volume [veh/h]	0	16	275	41	44	1023
Pedestrian Volume [ped/h]	0		0		0	

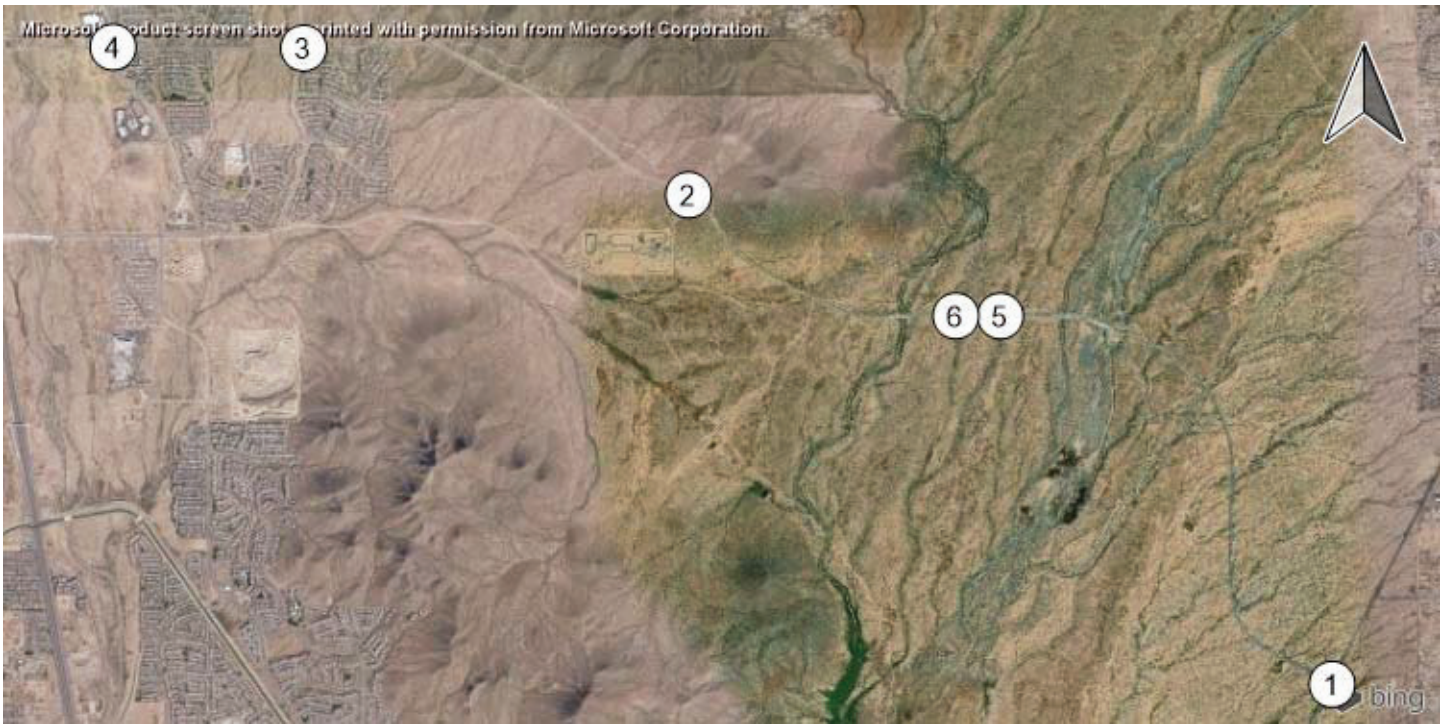
Intersection Settings

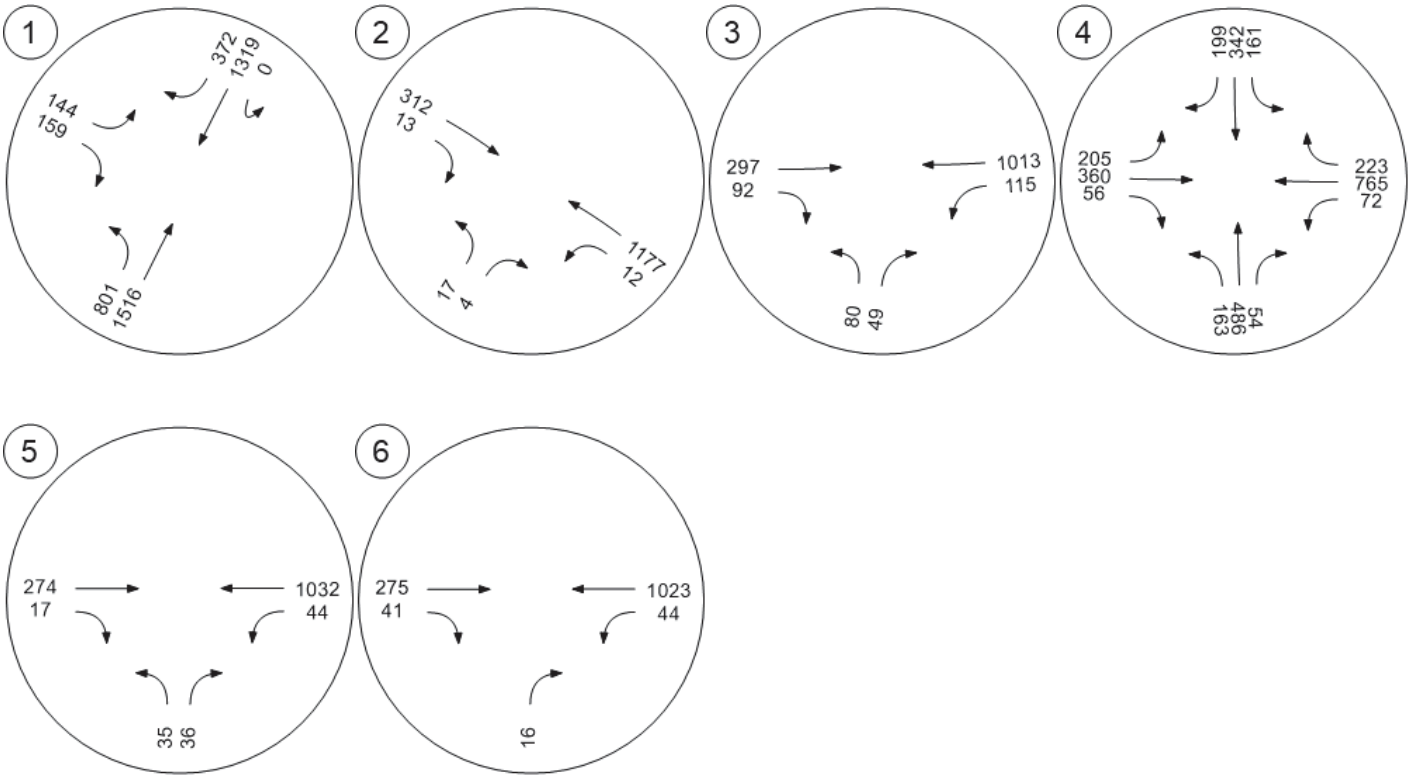
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	0.00	9.81	0.00	0.00	8.00	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.06	0.00	0.00	0.11	0.00
95th-Percentile Queue Length [ft/ln]	0.00	1.60	0.00	0.00	2.75	0.00
d_A, Approach Delay [s/veh]	9.81		0.00		0.33	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.36					
Intersection LOS	A					

Traffic Volume - Future Total Volume





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Scenario 13 2025 Total AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SWB Right	0.822	34.3	C
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.273	99.5	F
3	Paloma Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.970	42.2	D
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Left	0.437	32.9	C
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.500	13.8	B
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.165	14.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4915	1.6021	1.0000	1.6797	1.1250	1.4632	1.4332
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	0	0	20	60	182
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	429
Total Hourly Volume [veh/h]	152	1445	0	1811	106	499	644
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	38	361	0	453	27	125	161
Total Analysis Volume [veh/h]	152	1445	0	1811	106	499	644
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	54	0	45	0	66	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	66	66	66	38	38
g / C, Green / Cycle	0.62	0.62	0.55	0.55	0.55	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.21	0.41	0.00	0.51	0.52	0.28	0.23
s, saturation flow rate [veh/h]	735	3560	369	1870	1834	1781	2813
c, Capacity [veh/h]	346	2209	151	1020	1001	557	881
d1, Uniform Delay [s]	27.36	14.56	0.00	25.44	25.94	39.34	36.72
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	1.53	0.00	16.98	19.84	6.23	1.19
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.65	0.00	0.94	0.96	0.90	0.73
d, Delay for Lane Group [s/veh]	31.38	16.08	0.00	42.42	45.78	45.57	37.91
Lane Group LOS	C	B	A	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.90	11.23	0.00	27.14	28.26	14.38	8.22
50th-Percentile Queue Length [ft/ln]	22.41	280.77	0.00	678.54	706.49	359.42	205.62
95th-Percentile Queue Length [veh/ln]	1.61	16.73	0.00	35.69	36.98	20.60	12.93
95th-Percentile Queue Length [ft/ln]	40.34	418.17	0.00	892.14	924.44	514.88	323.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.38	16.08	0.00	44.00	45.78	45.57	37.91
Movement LOS	C	B	A	D	D	D	D
d_A, Approach Delay [s/veh]	17.54		44.10			41.26	
Approach LOS	B		D			D	
d_I, Intersection Delay [s/veh]	34.29						
Intersection LOS	C						
Intersection V/C	0.822						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.450	5.714	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	99.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.273

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.9190	1.9190	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	161	54	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]	14	9	11	416	1712	22
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]	4	2	3	104	428	6
Total Analysis Volume [veh/h]	14	9	11	416	1712	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.27	0.08	0.03	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	99.54	39.93	15.22	0.00	0.00	0.00
Movement LOS	F	E	C	A	A	A
95th-Percentile Queue Length [veh/ln]	0.94	0.26	0.09	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	23.41	6.42	2.34	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	76.22		0.39		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	0.88					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.9190	1.1487	1.1487	1.9190
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	54	0	0	161
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	138	1470	52	20	435
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]	18	35	368	13	5	109
Total Analysis Volume [veh/h]	71	138	1470	52	20	435
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	17	0	103	0	0	103
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	99	99	99	99
g / C, Green / Cycle	0.11	0.11	0.83	0.83	0.83	0.83
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.87	0.04	0.06	0.26
s, saturation flow rate [veh/h]	1603	1431	1683	1431	324	1683
c, Capacity [veh/h]	174	155	1388	1180	60	1388
d1, Uniform Delay [s]	49.92	52.80	10.50	1.91	60.00	2.48
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.54	15.52	41.36	0.07	14.32	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.89	1.06	0.04	0.33	0.31
d, Delay for Lane Group [s/veh]	51.46	68.31	51.86	1.98	74.32	3.07
Lane Group LOS	D	E	F	A	E	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.05	4.73	37.55	0.17	0.84	1.82
50th-Percentile Queue Length [ft/ln]	51.28	118.31	938.83	4.25	21.08	45.62
95th-Percentile Queue Length [veh/ln]	3.69	8.30	50.24	0.31	1.52	3.28
95th-Percentile Queue Length [ft/ln]	92.31	207.50	1256.05	7.65	37.94	82.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.46	68.31	51.86	1.98	74.32	3.07
Movement LOS	D	E	F	A	E	A
d_A, Approach Delay [s/veh]	62.59		50.16		6.20	
Approach LOS	E		D		A	
d_I, Intersection Delay [s/veh]	42.20					
Intersection LOS	D					
Intersection V/C	0.970					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	6.644	4.883
Bicycle LOS	D	F	E

Sequence

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

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.437

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.9190	1.1487	1.1487	1.9190	1.1487
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	3	0	0	0	47	0	12	141	8
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	40	0	0	181	0	0	35	0	0	43
Total Hourly Volume [veh/h]	79	322	60	275	405	273	309	845	53	66	556	65
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]	20	81	15	69	101	68	77	211	13	17	139	16
Total Analysis Volume [veh/h]	79	322	60	275	405	273	309	845	53	66	556	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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	11	0	10	9	0	37	13	0	86	62	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	63	63	73	65	65	13	30	30	4	21	21
g / C, Green / Cycle	0.61	0.53	0.53	0.61	0.54	0.54	0.11	0.25	0.25	0.04	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.06	0.04	0.24	0.08	0.17	0.09	0.17	0.03	0.02	0.16	0.04
s, saturation flow rate [veh/h]	1053	5094	1589	1137	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	690	2685	838	747	2742	856	383	1283	400	130	636	284
d1, Uniform Delay [s]	9.64	14.33	13.95	10.98	13.90	15.45	52.11	40.28	34.76	56.68	48.00	42.23
k, delay calibration	0.11	0.50	0.50	0.43	0.11	0.22	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.09	0.17	1.19	0.02	0.44	4.05	0.58	0.15	3.07	3.99	0.41
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	0.11	0.12	0.07	0.37	0.15	0.32	0.81	0.66	0.13	0.51	0.87	0.23
d, Delay for Lane Group [s/veh]	9.71	14.42	14.12	12.18	13.92	15.88	56.16	40.86	34.91	59.75	51.99	42.63
Lane Group LOS	A	B	B	B	B	B	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.81	1.45	0.81	3.38	1.77	4.07	4.72	7.44	1.21	1.03	8.35	1.68
50th-Percentile Queue Length [ft/ln]	20.26	36.13	20.32	84.52	44.30	101.80	117.95	186.04	30.34	25.76	208.77	41.94
95th-Percentile Queue Length [veh/ln]	1.46	2.60	1.46	6.09	3.19	7.33	8.28	11.92	2.18	1.85	13.09	3.02
95th-Percentile Queue Length [ft/ln]	36.46	65.04	36.58	152.13	79.75	183.25	207.00	297.89	54.61	46.37	327.25	75.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.71	14.42	14.12	12.18	13.92	15.88	56.16	40.86	34.91	59.75	51.99	42.63
Movement LOS	A	B	B	B	B	B	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	13.57			13.98			44.52			51.85		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.93											
Intersection LOS	C											
Intersection V/C	0.437											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	117	83	150	967
d_b, Bicycle Delay [s]	53.20	55.10	51.34	16.02
l_b,int, Bicycle LOS Score for Intersection	1.835	2.183	2.243	2.162
Bicycle LOS	A	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 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.2898	1.0000	1.0000	1.2898
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	161	169	73	16	40	40
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
Right-Turn on Red Volume [veh/h]	0	67	0	6	0	0
Total Hourly Volume [veh/h]	161	102	1262	10	40	218
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]	40	26	316	3	10	55
Total Analysis Volume [veh/h]	161	102	1262	10	40	218
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	68	0	43	0	9	52
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	15	15	90	90	97	97
g / C, Green / Cycle	0.12	0.12	0.75	0.75	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.10	0.07	0.39	0.01	0.09	0.07
s, saturation flow rate [veh/h]	1603	1431	3204	1431	466	3204
c, Capacity [veh/h]	195	174	2395	1069	392	2601
d1, Uniform Delay [s]	51.46	49.84	6.31	3.85	4.44	2.28
k, delay calibration	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.51	3.11	0.83	0.02	0.11	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.59	0.53	0.01	0.10	0.08
d, Delay for Lane Group [s/veh]	59.97	52.95	7.14	3.87	4.55	2.35
Lane Group LOS	E	D	A	A	A	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.19	3.05	5.30	0.05	0.12	0.34
50th-Percentile Queue Length [ft/ln]	129.74	76.30	132.42	1.33	3.06	8.43
95th-Percentile Queue Length [veh/ln]	8.93	5.49	9.07	0.10	0.22	0.61
95th-Percentile Queue Length [ft/ln]	223.14	137.34	226.79	2.40	5.51	15.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.97	52.95	7.14	3.87	4.55	2.35
Movement LOS	E	D	A	A	A	A
d_A, Approach Delay [s/veh]	57.25		7.12		2.69	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	13.83					
Intersection LOS	B					
Intersection V/C	0.500					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.187	4.345
Bicycle LOS	D	F	E

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.165

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.2898	1.0000	1.0000	1.2898
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	73	16	38	40	161
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	73	1205	38	40	339
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	301	10	10	85
Total Analysis Volume [veh/h]	0	73	1205	38	40	339
Pedestrian Volume [ped/h]	0		0		0	

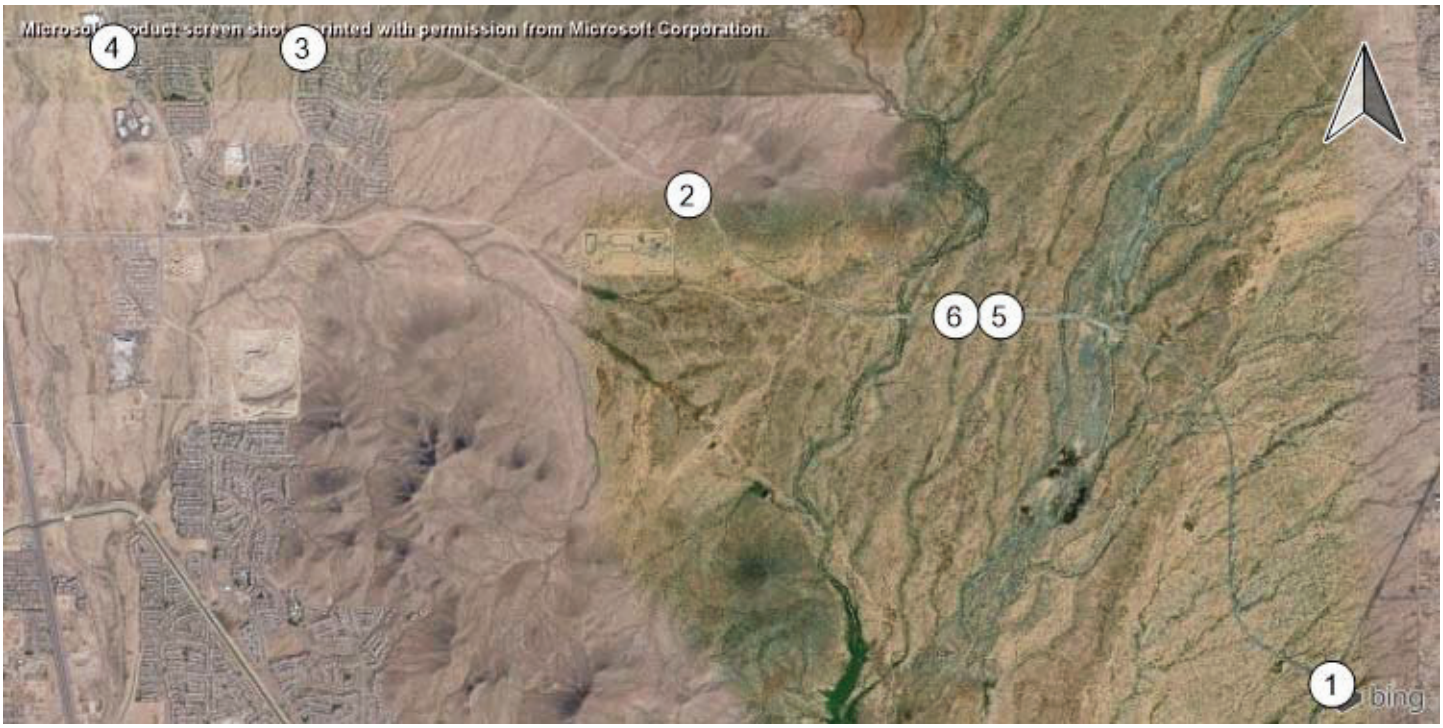
Intersection Settings

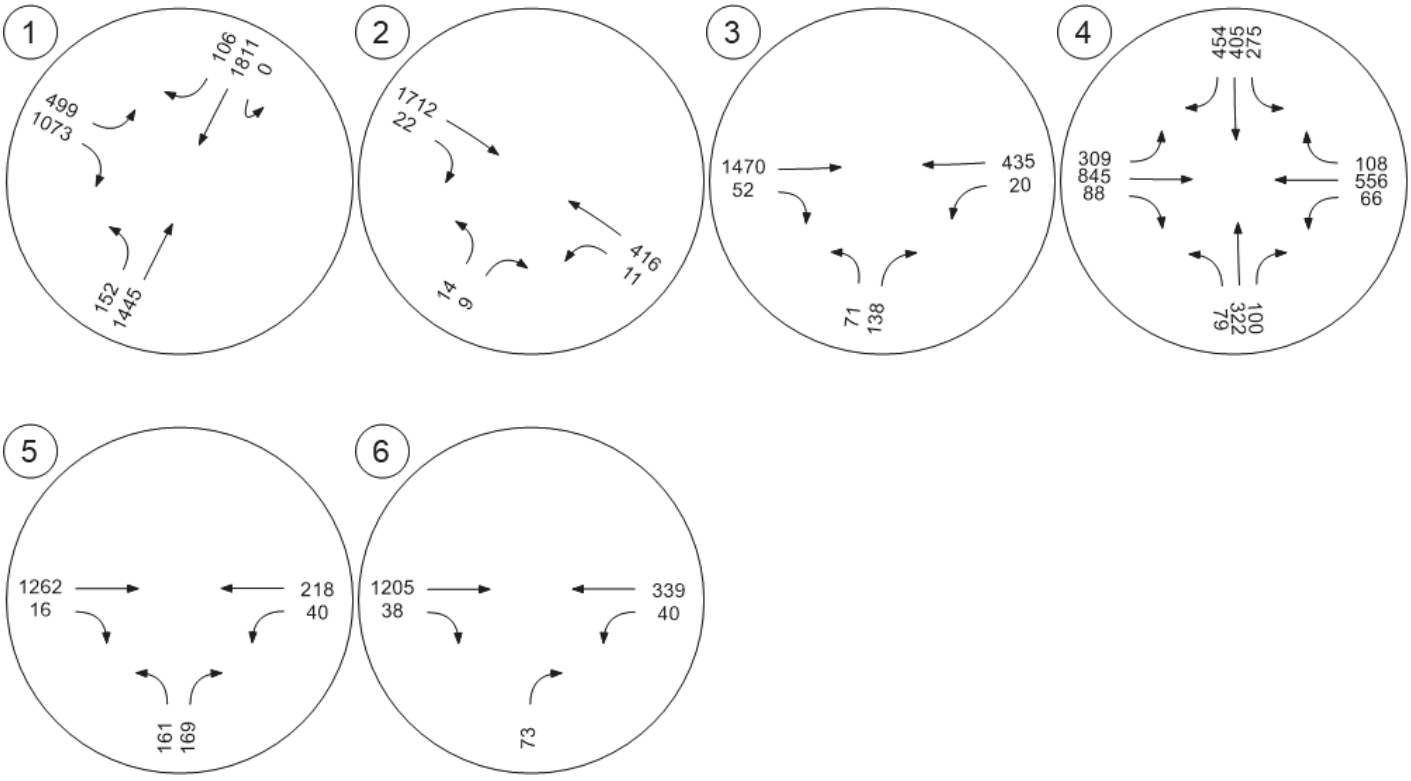
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.17	0.01	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	0.00	14.74	0.00	0.00	11.98	0.00
Movement LOS		B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.59	0.00	0.00	0.23	0.00
95th-Percentile Queue Length [ft/ln]	0.00	14.64	0.00	0.00	5.79	0.00
d_A, Approach Delay [s/veh]	14.74		0.00		1.26	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	B					

Traffic Volume - Future Total Volume





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Scenario 14 2025 Total PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	NEB Left	0.840	51.5	D
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	0.433	153.8	F
3	Paloma Parkway & Dove Valley Road	Signalized	HCM 6th Edition	NB Left	0.963	35.0	C
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.540	78.4	E
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.474	7.9	A
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.058	9.6	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.840

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.5942	1.6083	1.0000	1.6772	1.3720	1.3611	1.3366
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	202	0	0	0	67	40	119
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	104
Total Hourly Volume [veh/h]	1128	1798	0	1613	428	195	157
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	282	450	0	403	107	49	39
Total Analysis Volume [veh/h]	1128	1798	0	1613	428	195	157
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	34	103	0	69	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	99	99	65	65	65	13	13
g / C, Green / Cycle	0.83	0.83	0.54	0.54	0.54	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.81	0.50	0.00	0.55	0.59	0.11	0.06
s, saturation flow rate [veh/h]	1390	3560	262	1870	1741	1781	2813
c, Capacity [veh/h]	1056	2937	151	1013	943	193	305
d1, Uniform Delay [s]	39.18	3.71	0.00	27.50	27.50	53.50	50.52
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	47.99	0.96	0.00	30.12	54.11	32.78	1.35
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.61	0.00	1.01	1.08	1.01	0.52
d, Delay for Lane Group [s/veh]	87.16	4.67	0.00	57.62	81.61	86.28	51.87
Lane Group LOS	F	A	A	F	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.58	4.10	0.00	33.86	37.81	7.42	2.23
50th-Percentile Queue Length [ft/ln]	214.62	102.46	0.00	846.41	945.17	185.42	55.79
95th-Percentile Queue Length [veh/ln]	14.09	7.38	0.00	43.68	51.05	11.93	4.02
95th-Percentile Queue Length [ft/ln]	352.22	184.42	0.00	1091.93	1276.22	298.35	100.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	87.16	4.67	0.00	66.43	81.61	86.28	51.87
Movement LOS	F	A	A	E	F	F	D
d_A, Approach Delay [s/veh]	36.47		69.61			70.93	
Approach LOS	D		E			E	
d_I, Intersection Delay [s/veh]	51.47						
Intersection LOS	D						
Intersection V/C	0.840						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.546	5.816	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	153.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	2.2306	2.2306	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	106	179	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]	17	4	12	1770	549	13
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]	4	1	3	443	137	3
Total Analysis Volume [veh/h]	17	4	12	1770	549	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	0.43	0.01	0.01	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	153.81	11.77	8.61	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.49	0.02	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	37.28	0.56	0.90	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	126.76		0.06		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	1.17					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	2.2306	1.1487	1.1487	2.2306
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	179	0	0	106
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	52	527	98	122	1531
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]	21	13	132	25	31	383
Total Analysis Volume [veh/h]	85	52	527	98	122	1531
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	88	0	32	0	0	32
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	103	103	103	103
g / C, Green / Cycle	0.07	0.07	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.05	0.04	0.31	0.07	0.15	0.91
s, saturation flow rate [veh/h]	1603	1431	1683	1431	788	1683
c, Capacity [veh/h]	116	103	1449	1232	663	1449
d1, Uniform Delay [s]	54.53	53.59	1.69	1.24	3.90	8.34
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.64	3.75	0.71	0.13	0.61	40.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.50	0.36	0.08	0.18	1.06
d, Delay for Lane Group [s/veh]	63.18	57.34	2.39	1.37	4.51	48.46
Lane Group LOS	E	E	A	A	A	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.78	1.61	1.43	0.20	0.79	31.72
50th-Percentile Queue Length [ft/ln]	69.43	40.25	35.75	5.01	19.69	792.96
95th-Percentile Queue Length [veh/ln]	5.00	2.90	2.57	0.36	1.42	43.13
95th-Percentile Queue Length [ft/ln]	124.97	72.45	64.35	9.01	35.44	1078.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.18	57.34	2.39	1.37	4.51	48.46
Movement LOS	E	E	A	A	A	F
d_A, Approach Delay [s/veh]	60.96		2.23		45.21	
Approach LOS	E		A		D	
d_I, Intersection Delay [s/veh]	34.98					
Intersection LOS	C					
Intersection V/C	0.963					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.164	6.860
Bicycle LOS	D	F	F

Sequence

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

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	78.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	1.1487	2.2306	1.1487	1.1487	2.2306	1.1487
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	13	9	0	0	0	157	0	8	93	5
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	26	0	0	84	0	0	24	0	0	95
Total Hourly Volume [veh/h]	173	516	40	177	363	127	217	608	36	82	1164	144
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]	43	129	10	44	91	32	54	152	9	21	291	36
Total Analysis Volume [veh/h]	173	516	40	177	363	127	217	608	36	82	1164	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	23	33	0	9	19	0	16	62	0	16	62	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	59	59	68	56	56	10	35	35	5	30	30
g / C, Green / Cycle	0.57	0.49	0.49	0.57	0.47	0.47	0.08	0.29	0.29	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.03	0.18	0.07	0.08	0.06	0.12	0.02	0.02	0.33	0.09
s, saturation flow rate [veh/h]	1130	5094	1589	978	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	686	2505	782	591	2380	743	287	1495	466	136	890	397
d1, Uniform Delay [s]	12.59	17.25	15.90	12.75	18.34	18.51	53.86	34.02	30.66	56.73	45.02	37.13
k, delay calibration	0.17	0.50	0.50	0.25	0.11	0.11	0.11	0.11	0.11	0.11	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.19	0.12	0.65	0.03	0.11	4.08	0.18	0.07	4.22	141.92	0.56
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	0.25	0.21	0.05	0.30	0.15	0.17	0.76	0.41	0.08	0.60	1.31	0.36
d, Delay for Lane Group [s/veh]	12.88	17.43	16.02	13.40	18.37	18.62	57.94	34.20	30.73	60.95	186.94	37.68
Lane Group LOS	B	B	B	B	B	B	E	C	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.18	2.64	0.58	2.28	1.88	2.01	3.34	4.73	0.76	1.29	30.53	3.53
50th-Percentile Queue Length [ft/ln]	54.51	66.12	14.62	57.12	47.09	50.27	83.55	118.22	19.05	32.36	763.20	88.20
95th-Percentile Queue Length [veh/ln]	3.92	4.76	1.05	4.11	3.39	3.62	6.02	8.30	1.37	2.33	45.59	6.35
95th-Percentile Queue Length [ft/ln]	98.12	119.02	26.31	102.82	84.76	90.49	150.40	207.38	34.29	58.25	1139.82	158.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.88	17.43	16.02	13.40	18.37	18.62	57.94	34.20	30.73	60.95	186.94	37.68
Movement LOS	B	B	B	B	B	B	E	C	C	E	F	D
d_A, Approach Delay [s/veh]	16.27			17.09			40.04			164.04		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	78.35											
Intersection LOS	E											
Intersection V/C	0.540											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	250	967	967
d_b, Bicycle Delay [s]	34.50	45.94	16.02	16.02
l_b,int, Bicycle LOS Score for Intersection	1.975	1.973	2.046	2.785
Bicycle LOS	A	A	B	C

Sequence

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

Intersection Level Of Service Report
Intersection 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.474

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.3884	1.0000	1.0000	1.3884
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	106	111	48	54	135	135
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
Right-Turn on Red Volume [veh/h]	0	44	0	21	0	0
Total Hourly Volume [veh/h]	106	67	353	33	135	1307
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]	27	17	88	8	34	327
Total Analysis Volume [veh/h]	106	67	353	33	135	1307
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	102	0	9	0	9	18
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	10	10	93	93	102	102
g / C, Green / Cycle	0.09	0.09	0.77	0.77	0.85	0.85
(v / s)_i Volume / Saturation Flow Rate	0.07	0.05	0.11	0.02	0.14	0.41
s, saturation flow rate [veh/h]	1603	1431	3204	1431	971	3204
c, Capacity [veh/h]	137	122	2478	1106	878	2717
d1, Uniform Delay [s]	53.74	52.65	3.46	3.16	1.60	2.35
k, delay calibration	0.11	0.11	0.50	0.50	0.12	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.93	3.79	0.12	0.05	0.09	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.55	0.14	0.03	0.15	0.48
d, Delay for Lane Group [s/veh]	62.67	56.43	3.59	3.21	1.69	2.96
Lane Group LOS	E	E	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.47	2.07	0.83	0.15	0.24	1.88
50th-Percentile Queue Length [ft/ln]	86.85	51.74	20.76	3.74	6.07	46.96
95th-Percentile Queue Length [veh/ln]	6.25	3.73	1.49	0.27	0.44	3.38
95th-Percentile Queue Length [ft/ln]	156.33	93.13	37.37	6.74	10.92	84.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.67	56.43	3.59	3.21	1.69	2.96
Movement LOS	E	E	A	A	A	A
d_A, Approach Delay [s/veh]	60.25		3.55		2.84	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	7.94					
Intersection LOS	A					
Intersection V/C	0.474					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	4.468	5.322
Bicycle LOS	D	E	F

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.3884	1.0000	1.0000	1.3884
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	54	125	135	106
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	359	125	135	1278
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	12	90	31	34	320
Total Analysis Volume [veh/h]	0	48	359	125	135	1278
Pedestrian Volume [ped/h]	0		0		0	

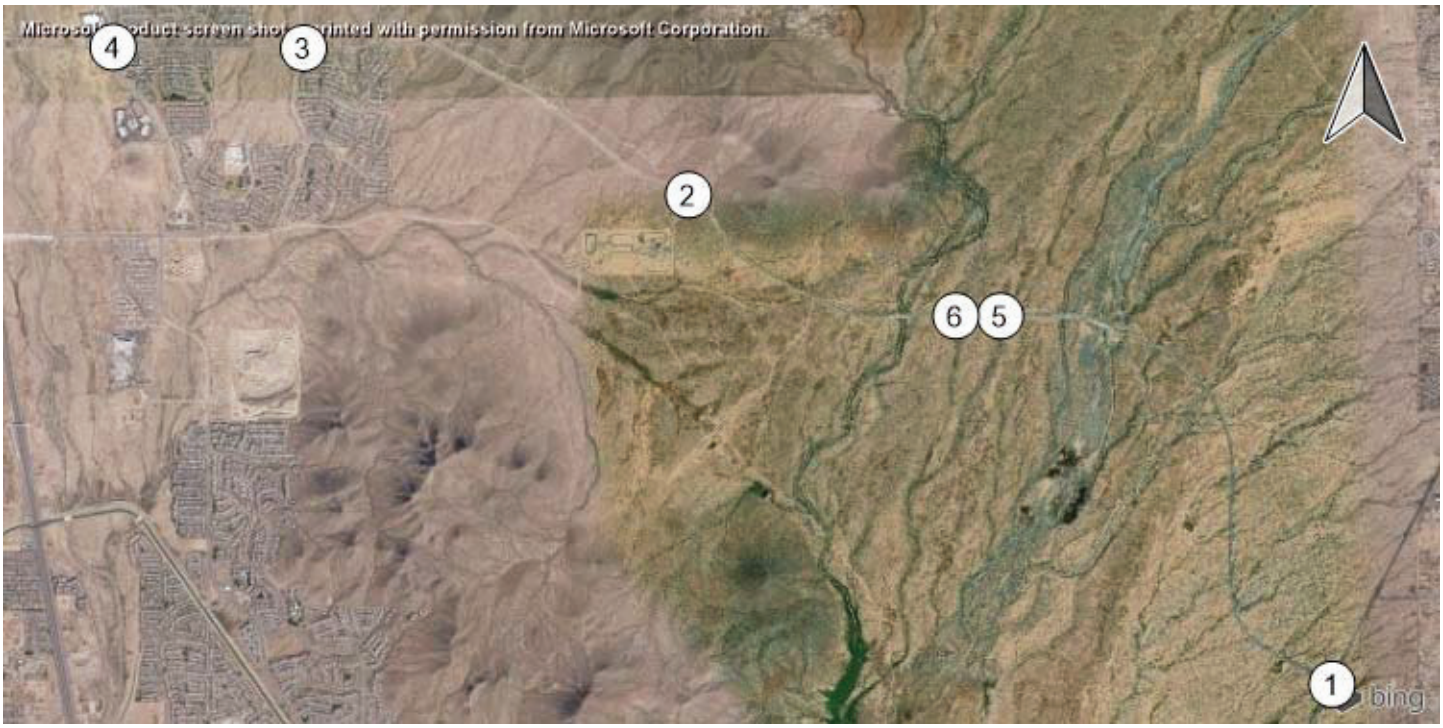
Intersection Settings

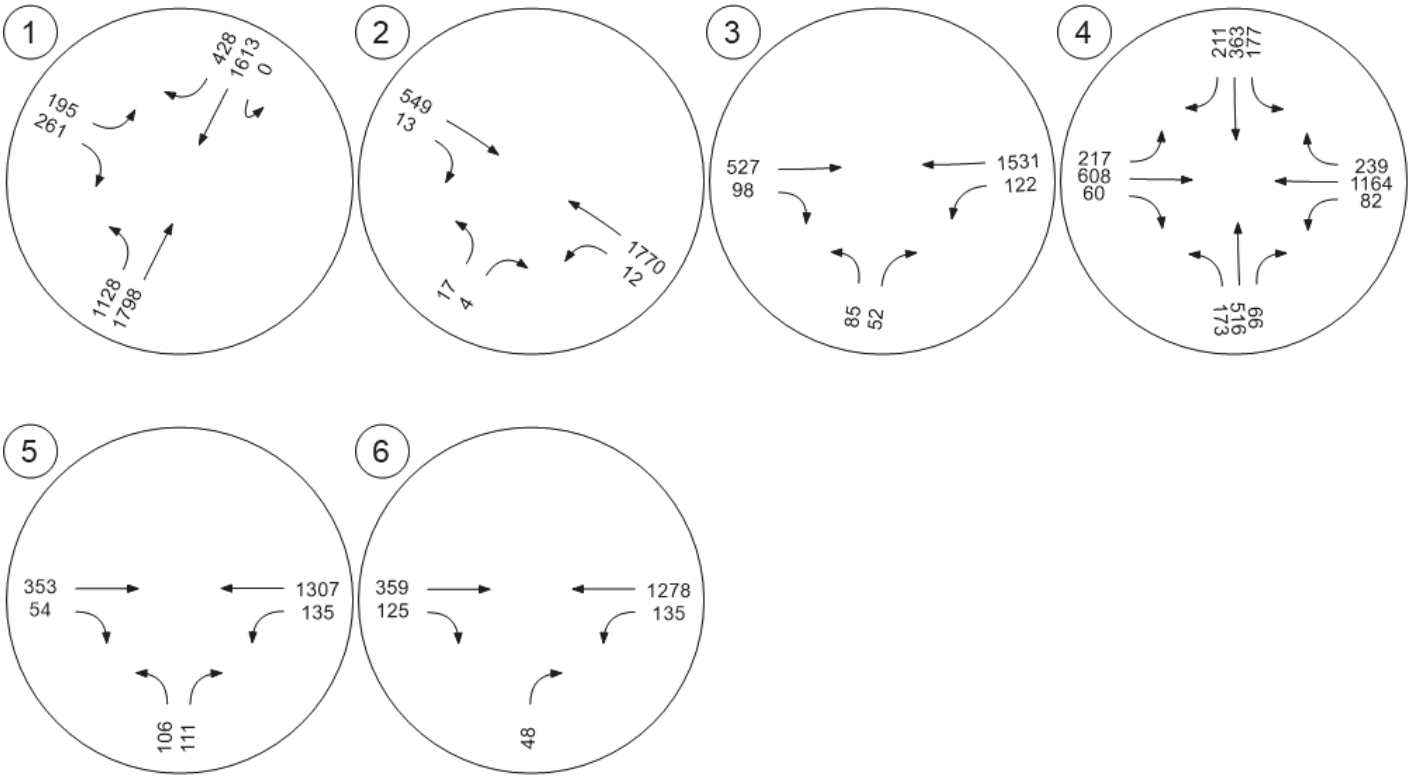
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.00	0.00	0.13	0.01
d_M, Delay for Movement [s/veh]	0.00	9.59	0.00	0.00	8.83	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.18	0.00	0.00	0.43	0.00
95th-Percentile Queue Length [ft/ln]	0.00	4.58	0.00	0.00	10.73	0.00
d_A, Approach Delay [s/veh]	9.59		0.00		0.84	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.85					
Intersection LOS	A					

Traffic Volume - Future Total Volume





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Scenario 15 2030 Total AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	1.107	95.7	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	2.318	1,739.9	F
3	Paloma Parkway & Dove Valley Road	Signalized	HCM 6th Edition	EB Thru	1.536	229.7	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.579	41.8	D
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.751	24.5	C
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.432	24.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	95.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.107

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.9322	2.0910	1.0000	2.0879	1.7222	2.0702	2.0254
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	115	0	0	0	38	115	346
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	642
Total Hourly Volume [veh/h]	235	1886	0	2251	169	736	964
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	59	472	0	563	42	184	241
Total Analysis Volume [veh/h]	235	1886	0	2251	169	736	964
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	76	0	67	0	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	72	63	63	63	40	40
g / C, Green / Cycle	0.60	0.60	0.53	0.53	0.53	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.40	0.53	0.00	0.65	0.66	0.41	0.34
s, saturation flow rate [veh/h]	585	3560	241	1870	1825	1781	2813
c, Capacity [veh/h]	323	2136	75	982	958	594	938
d1, Uniform Delay [s]	28.74	20.41	0.00	28.50	28.50	40.00	40.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.44	5.73	0.00	113.58	126.72	121.80	21.50
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.88	0.00	1.23	1.26	1.24	1.03
d, Delay for Lane Group [s/veh]	42.18	26.14	0.00	142.08	155.22	161.80	61.50
Lane Group LOS	D	C	A	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.81	20.83	0.00	55.86	58.01	36.70	15.92
50th-Percentile Queue Length [ft/ln]	45.13	520.74	0.00	1396.49	1450.34	917.46	398.06
95th-Percentile Queue Length [veh/ln]	3.25	28.31	0.00	79.46	83.46	53.21	22.87
95th-Percentile Queue Length [ft/ln]	81.24	707.86	0.00	1986.59	2086.56	1330.17	571.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.18	26.14	0.00	148.16	155.22	161.80	61.50
Movement LOS	D	C	A	F	F	F	F
d_A, Approach Delay [s/veh]	27.92		148.65			104.92	
Approach LOS	C		F			F	
d_I, Intersection Delay [s/veh]	95.71						
Intersection LOS	F						
Intersection V/C	1.107						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.882	6.129	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	1,739.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.318

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.1233	3.1233	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	307	102	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]	14	9	11	722	2801	22
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]	4	2	3	181	700	6
Total Analysis Volume [veh/h]	14	9	11	722	2801	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	2.32	0.38	0.08	0.01	0.03	0.00
d_M, Delay for Movement [s/veh]	1739.91	227.06	33.93	0.00	0.00	0.00
Movement LOS	F	F	D	A	A	A
95th-Percentile Queue Length [veh/ln]	2.84	1.13	0.26	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	71.05	28.15	6.52	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1147.92		0.51		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	7.48					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	229.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.536

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	3.1233	1.2682	1.2682	3.1233
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	102	0	0	307
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	152	2407	57	22	754
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]	20	38	602	14	6	189
Total Analysis Volume [veh/h]	79	152	2407	57	22	754
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	13	0	107	0	0	107
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	103	103	103	103
g / C, Green / Cycle	0.08	0.08	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.05	0.11	1.43	0.04	0.17	0.45
s, saturation flow rate [veh/h]	1603	1431	1683	1431	130	1683
c, Capacity [veh/h]	120	107	1445	1228	60	1445
d1, Uniform Delay [s]	54.00	55.50	8.50	1.25	60.00	2.18
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.97	199.13	302.90	0.07	16.42	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	1.42	1.67	0.05	0.37	0.52
d, Delay for Lane Group [s/veh]	59.97	254.63	311.40	1.33	76.42	3.53
Lane Group LOS	E	F	F	A	E	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.50	9.15	137.98	0.12	0.94	2.74
50th-Percentile Queue Length [ft/ln]	62.57	228.75	3449.38	3.00	23.46	68.59
95th-Percentile Queue Length [veh/ln]	4.51	15.60	222.49	0.22	1.69	4.94
95th-Percentile Queue Length [ft/ln]	112.63	389.95	5562.32	5.40	42.24	123.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.97	254.63	311.40	1.33	76.42	3.53
Movement LOS	E	F	F	A	E	A
d_A, Approach Delay [s/veh]	188.06		304.22		5.60	
Approach LOS	F		F		A	
d_I, Intersection Delay [s/veh]	229.73					
Intersection LOS	F					
Intersection V/C	1.536					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	8.198	5.413
Bicycle LOS	D	F	F

Sequence

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

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	41.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	3.1233	1.2682	1.2682	3.1233	1.2682
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	5	0	0	0	89	0	23	269	15
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	46	0	0	200	0	0	39	0	0	50
Total Hourly Volume [veh/h]	88	355	69	306	448	301	341	1388	59	83	944	75
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]	22	89	17	77	112	75	85	347	15	21	236	19
Total Analysis Volume [veh/h]	88	355	69	306	448	301	341	1388	59	83	944	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	11	0	10	10	0	9	70	0	29	90	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	54	54	64	55	55	14	40	40	5	30	30
g / C, Green / Cycle	0.53	0.45	0.45	0.53	0.46	0.46	0.12	0.33	0.33	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.07	0.04	0.27	0.09	0.19	0.10	0.27	0.04	0.02	0.27	0.05
s, saturation flow rate [veh/h]	1032	5094	1589	1121	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	586	2274	709	640	2323	725	416	1687	526	135	890	397
d1, Uniform Delay [s]	14.15	19.77	19.23	17.54	19.46	21.90	51.52	36.90	27.88	56.76	45.00	35.42
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.27	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	0.15	0.27	2.55	0.04	0.96	4.06	1.06	0.09	4.44	33.41	0.23
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	0.15	0.16	0.10	0.48	0.19	0.42	0.82	0.82	0.11	0.61	1.06	0.19
d, Delay for Lane Group [s/veh]	14.26	19.92	19.50	20.08	19.50	22.85	55.59	37.96	27.98	61.19	78.41	35.65
Lane Group LOS	B	B	B	C	B	C	E	D	C	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.16	1.95	1.14	5.01	2.43	5.68	5.19	12.37	1.19	1.31	17.12	1.75
50th-Percentile Queue Length [ft/ln]	29.03	48.84	28.60	125.27	60.75	142.11	129.84	309.17	29.73	32.83	428.08	43.70
95th-Percentile Queue Length [veh/ln]	2.09	3.52	2.06	8.68	4.37	9.59	8.93	18.13	2.14	2.36	24.74	3.15
95th-Percentile Queue Length [ft/ln]	52.25	87.91	51.49	217.05	109.35	239.86	223.28	453.36	53.52	59.09	618.57	78.67

Movement, Approach, & Intersection Results

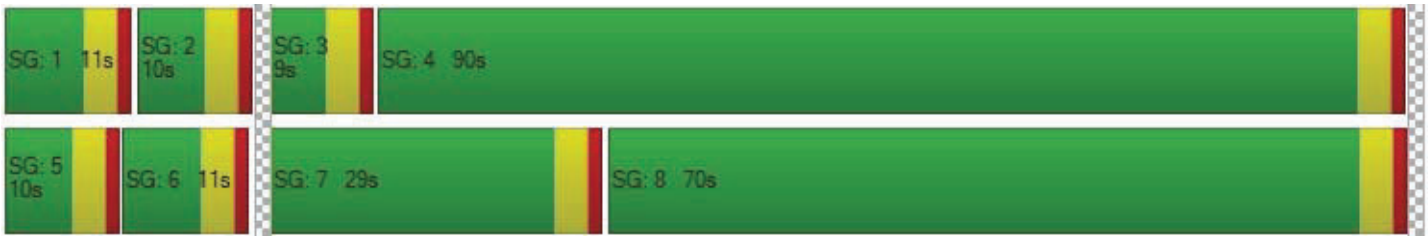
d_M, Delay for Movement [s/veh]	14.26	19.92	19.50	20.08	19.50	22.85	55.59	37.96	27.98	61.19	78.41	35.65
Movement LOS	B	B	B	C	B	C	E	D	C	E	F	D
d_A, Approach Delay [s/veh]	18.89			20.63			40.99			74.21		
Approach LOS	B			C			D			E		
d_I, Intersection Delay [s/veh]	41.85											
Intersection LOS	D											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	117	100	1100	1433
d_b, Bicycle Delay [s]	53.20	54.15	12.15	4.82
l_b,int, Bicycle LOS Score for Intersection	1.867	2.250	2.564	2.510
Bicycle LOS	A	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 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.7390	1.0000	1.0000	1.7390
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	307	323	138	31	77	77
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
Right-Turn on Red Volume [veh/h]	0	129	0	12	0	0
Total Hourly Volume [veh/h]	307	194	1741	19	77	317
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]	77	49	435	5	19	79
Total Analysis Volume [veh/h]	307	194	1741	19	77	317
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	78	0	33	0	9	42
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	26	26	78	78	86	86
g / C, Green / Cycle	0.21	0.21	0.65	0.65	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.19	0.14	0.54	0.01	0.22	0.10
s, saturation flow rate [veh/h]	1603	1431	3204	1431	353	3204
c, Capacity [veh/h]	345	308	2072	925	230	2302
d1, Uniform Delay [s]	45.74	42.78	16.42	7.60	21.96	5.28
k, delay calibration	0.11	0.11	0.50	0.50	0.36	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.94	2.13	4.32	0.04	2.77	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.63	0.84	0.02	0.33	0.14
d, Delay for Lane Group [s/veh]	53.68	44.91	20.74	7.64	24.73	5.41
Lane Group LOS	D	D	C	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.61	5.41	16.86	0.17	0.65	1.06
50th-Percentile Queue Length [ft/ln]	240.29	135.35	421.41	4.21	16.15	26.49
95th-Percentile Queue Length [veh/ln]	14.70	9.23	23.59	0.30	1.16	1.91
95th-Percentile Queue Length [ft/ln]	367.40	230.74	589.74	7.57	29.08	47.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.68	44.91	20.74	7.64	24.73	5.41
Movement LOS	D	D	C	A	C	A
d_A, Approach Delay [s/veh]	50.29		20.60		9.18	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	24.50					
Intersection LOS	C					
Intersection V/C	0.751					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.594	4.457
Bicycle LOS	D	F	E

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.7390	1.0000	1.0000	1.7390
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	138	31	71	77	307
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	138	1634	71	77	547
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	35	409	18	19	137
Total Analysis Volume [veh/h]	0	138	1634	71	77	547
Pedestrian Volume [ped/h]	0		0		0	

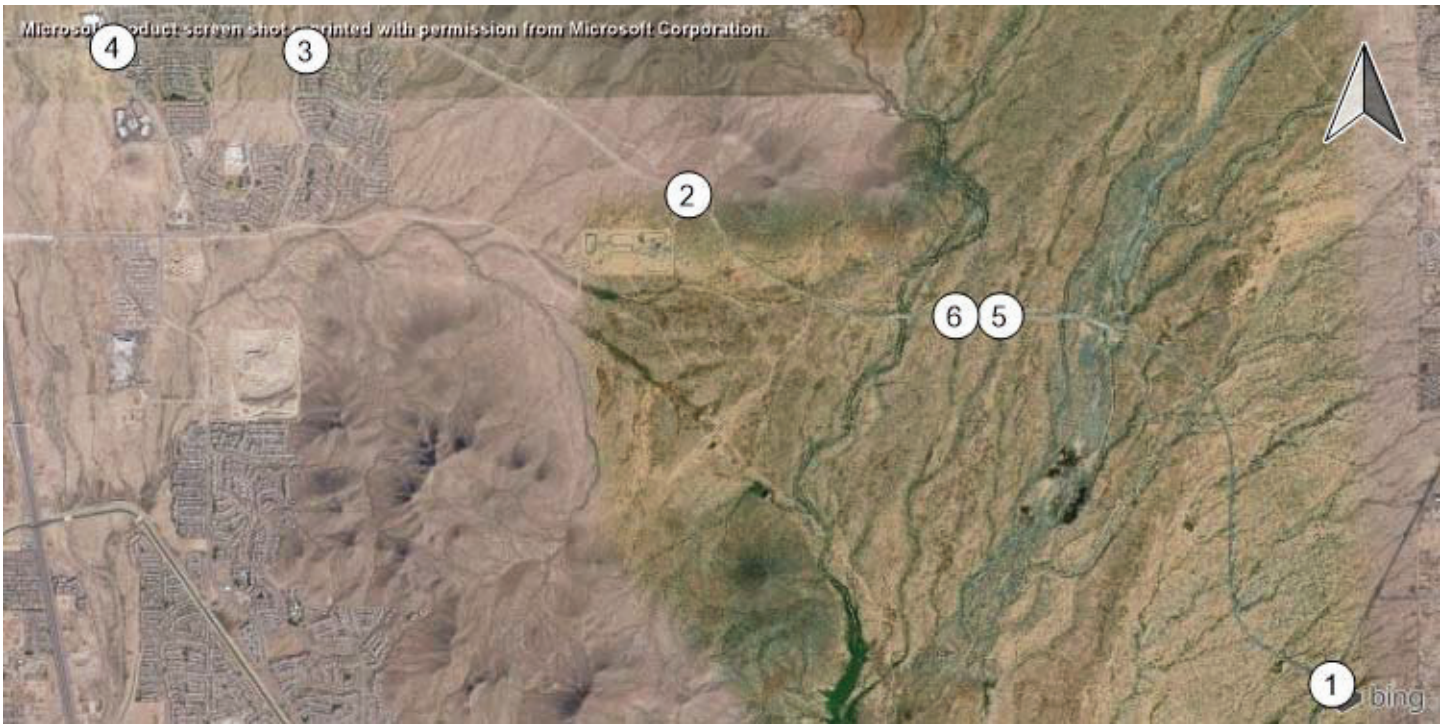
Intersection Settings

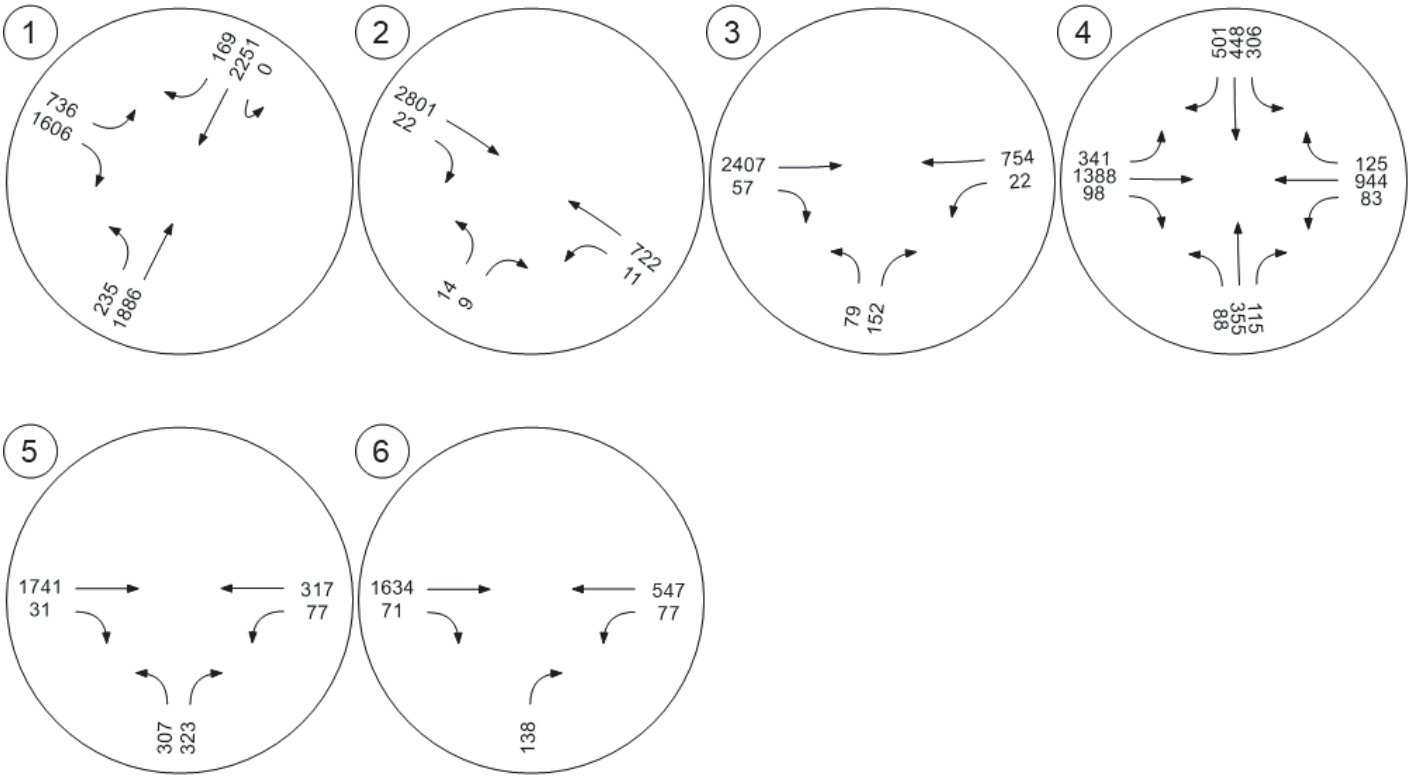
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.43	0.02	0.00	0.21	0.01
d_M, Delay for Movement [s/veh]	0.00	24.56	0.00	0.00	17.32	0.00
Movement LOS		C	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.00	2.09	0.00	0.00	0.77	0.00
95th-Percentile Queue Length [ft/ln]	0.00	52.21	0.00	0.00	19.37	0.00
d_A, Approach Delay [s/veh]	24.56		0.00		2.14	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.91					
Intersection LOS	C					

Traffic Volume - Future Total Volume





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Scenario 16 2030 Total PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SWB Right	1.273	202.0	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	5.588	4,230.6	F
3	Paloma Parkway & Dove Valley Road	Two-way stop	HCM 6th Edition	NB Left	232.785	10,000.0	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.797	251.6	F
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.723	13.0	B
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	WB Left	0.306	11.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	202.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.273

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	2.3460	2.3672	1.0000	2.4015	2.1560	2.0370	2.0099
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	383	0	0	0	128	75	226
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	175
Total Hourly Volume [veh/h]	1746	2647	0	2310	695	307	264
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	437	662	0	578	174	77	66
Total Analysis Volume [veh/h]	1746	2647	0	2310	695	307	264
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	35	102	0	67	0	18	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	98	98	63	63	63	14	14
g / C, Green / Cycle	0.82	0.82	0.53	0.53	0.53	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.38	0.74	0.00	0.80	0.87	0.17	0.09
s, saturation flow rate [veh/h]	1266	3560	113	1870	1729	1781	2813
c, Capacity [veh/h]	1071	2908	61	982	908	208	328
d1, Uniform Delay [s]	39.08	7.86	0.00	28.50	28.50	53.00	51.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.22	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	288.12	5.53	0.00	243.88	299.85	226.25	4.63
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.63	0.91	0.00	1.53	1.66	1.48	0.80
d, Delay for Lane Group [s/veh]	327.20	13.39	0.00	272.38	328.35	279.25	56.29
Lane Group LOS	F	B	A	F	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	44.64	14.19	0.00	91.39	98.61	19.15	3.98
50th-Percentile Queue Length [ft/ln]	1116.07	354.81	0.00	2284.82	2465.15	478.63	99.52
95th-Percentile Queue Length [veh/ln]	75.82	20.37	0.00	139.71	154.23	30.24	7.17
95th-Percentile Queue Length [ft/ln]	1895.56	509.26	0.00	3492.79	3855.75	755.94	179.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	327.20	13.39	0.00	291.94	328.35	279.25	56.29
Movement LOS	F	B	A	F	F	F	E
d_A, Approach Delay [s/veh]	138.11		300.36			176.16	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	202.02						
Intersection LOS	F						
Intersection V/C	1.273						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	7.757	6.612	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	4,230.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.588

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.7721	3.7721	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	200	341	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]	17	4	12	3014	967	13
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]	4	1	3	754	242	3
Total Analysis Volume [veh/h]	17	4	12	3014	967	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	5.59	0.01	0.02	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	4230.59	16.83	10.20	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	3.54	0.04	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	88.59	0.98	1.30	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3427.97		0.04		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	17.91					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	232.785

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	3.7721	1.2682	1.2682	3.7721
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	341	0	0	200
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]	94	57	929	108	134	2610
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]	24	14	232	27	34	653
Total Analysis Volume [veh/h]	94	57	929	108	134	2610
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	232.79	0.18	0.01	0.00	0.20	0.03
d_M, Delay for Movement [s/veh]	10000.00	18.45	0.00	0.00	11.71	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	14.18	0.63	0.00	0.00	0.74	0.00
95th-Percentile Queue Length [ft/ln]	354.62	15.69	0.00	0.00	18.53	0.00
d_A, Approach Delay [s/veh]	6232.13		0.00		0.57	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	239.73					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	251.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	1.2682	3.7721	1.2682	1.2682	3.7721	1.2682
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	26	17	0	0	0	298	0	15	175	10
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	33	0	0	93	0	0	26	0	0	107
Total Hourly Volume [veh/h]	191	569	51	202	401	140	240	1060	40	96	1986	162
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]	48	142	13	51	100	35	60	265	10	24	497	41
Total Analysis Volume [veh/h]	191	569	51	202	401	140	240	1060	40	96	1986	162
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	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]	17	15	0	11	9	0	9	85	0	9	85	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	67	56	56	67	54	54	11	36	36	5	30	30
g / C, Green / Cycle	0.56	0.47	0.47	0.56	0.45	0.45	0.09	0.30	0.30	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.17	0.11	0.03	0.21	0.08	0.09	0.07	0.21	0.03	0.03	0.56	0.10
s, saturation flow rate [veh/h]	1112	5094	1589	969	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	663	2385	744	574	2311	721	311	1517	473	145	890	397
d1, Uniform Delay [s]	13.19	19.11	17.53	13.47	19.44	19.64	53.42	37.38	30.36	56.65	45.02	37.60
k, delay calibration	0.22	0.50	0.50	0.33	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	0.24	0.18	1.12	0.04	0.13	4.08	0.59	0.08	5.02	557.94	0.67
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	0.29	0.24	0.07	0.35	0.17	0.19	0.77	0.70	0.08	0.66	2.23	0.41
d, Delay for Lane Group [s/veh]	13.67	19.34	17.71	14.59	19.48	19.77	57.50	37.97	30.44	61.67	602.95	38.27
Lane Group LOS	B	B	B	B	B	B	E	D	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.51	3.12	0.79	2.76	2.16	2.31	3.69	9.14	0.84	1.52	81.94	4.02
50th-Percentile Queue Length [ft/ln]	62.78	78.08	19.86	68.94	54.10	57.70	92.20	228.49	21.07	38.12	2048.62	100.59
95th-Percentile Queue Length [veh/ln]	4.52	5.62	1.43	4.96	3.90	4.15	6.64	14.10	1.52	2.74	128.85	7.24
95th-Percentile Queue Length [ft/ln]	113.01	140.54	35.76	124.09	97.38	103.85	165.97	352.45	37.93	68.62	3221.14	181.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.67	19.34	17.71	14.59	19.48	19.77	57.50	37.97	30.44	61.67	602.95	38.27
Movement LOS	B	B	B	B	B	B	E	D	C	E	F	D
d_A, Approach Delay [s/veh]	17.90			18.21			41.24			539.03		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	251.63											
Intersection LOS	F											
Intersection V/C	0.797											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	183	83	1350	1350
d_b, Bicycle Delay [s]	49.50	55.10	6.34	6.34
l_b,int, Bicycle LOS Score for Intersection	2.024	2.019	2.311	3.499
Bicycle LOS	B	B	B	C

Sequence

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

Intersection Level Of Service Report
Intersection 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.9688	1.0000	1.0000	1.9688
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	200	211	90	102	256	256
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
Right-Turn on Red Volume [veh/h]	0	84	0	40	0	0
Total Hourly Volume [veh/h]	200	127	523	62	256	1918
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]	50	32	131	16	64	480
Total Analysis Volume [veh/h]	200	127	523	62	256	1918
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	102	0	9	0	9	18
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	17	17	86	86	95	95
g / C, Green / Cycle	0.15	0.15	0.71	0.71	0.79	0.79
(v / s)_i Volume / Saturation Flow Rate	0.12	0.09	0.16	0.04	0.30	0.60
s, saturation flow rate [veh/h]	1603	1431	3204	1431	851	3204
c, Capacity [veh/h]	234	209	2282	1019	705	2523
d1, Uniform Delay [s]	49.99	48.01	5.94	5.19	3.61	6.76
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.61	2.84	0.23	0.11	1.45	2.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.61	0.23	0.06	0.36	0.76
d, Delay for Lane Group [s/veh]	58.60	50.85	6.17	5.31	5.06	8.98
Lane Group LOS	E	D	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.41	3.73	1.95	0.42	1.35	9.17
50th-Percentile Queue Length [ft/ln]	160.21	93.30	48.82	10.55	33.83	229.14
95th-Percentile Queue Length [veh/ln]	10.56	6.72	3.52	0.76	2.44	14.13
95th-Percentile Queue Length [ft/ln]	264.00	167.94	87.88	18.99	60.90	353.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.60	50.85	6.17	5.31	5.06	8.98
Movement LOS	E	D	A	A	A	A
d_A, Approach Delay [s/veh]	55.59		6.08		8.52	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	13.04					
Intersection LOS	B					
Intersection V/C	0.723					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	4.648	5.926
Bicycle LOS	D	E	F

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.306

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.9688	1.0000	1.0000	1.9688
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	102	239	256	200
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	90	535	239	256	1862
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	23	134	60	64	466
Total Analysis Volume [veh/h]	0	90	535	239	256	1862
Pedestrian Volume [ped/h]	0		0		0	

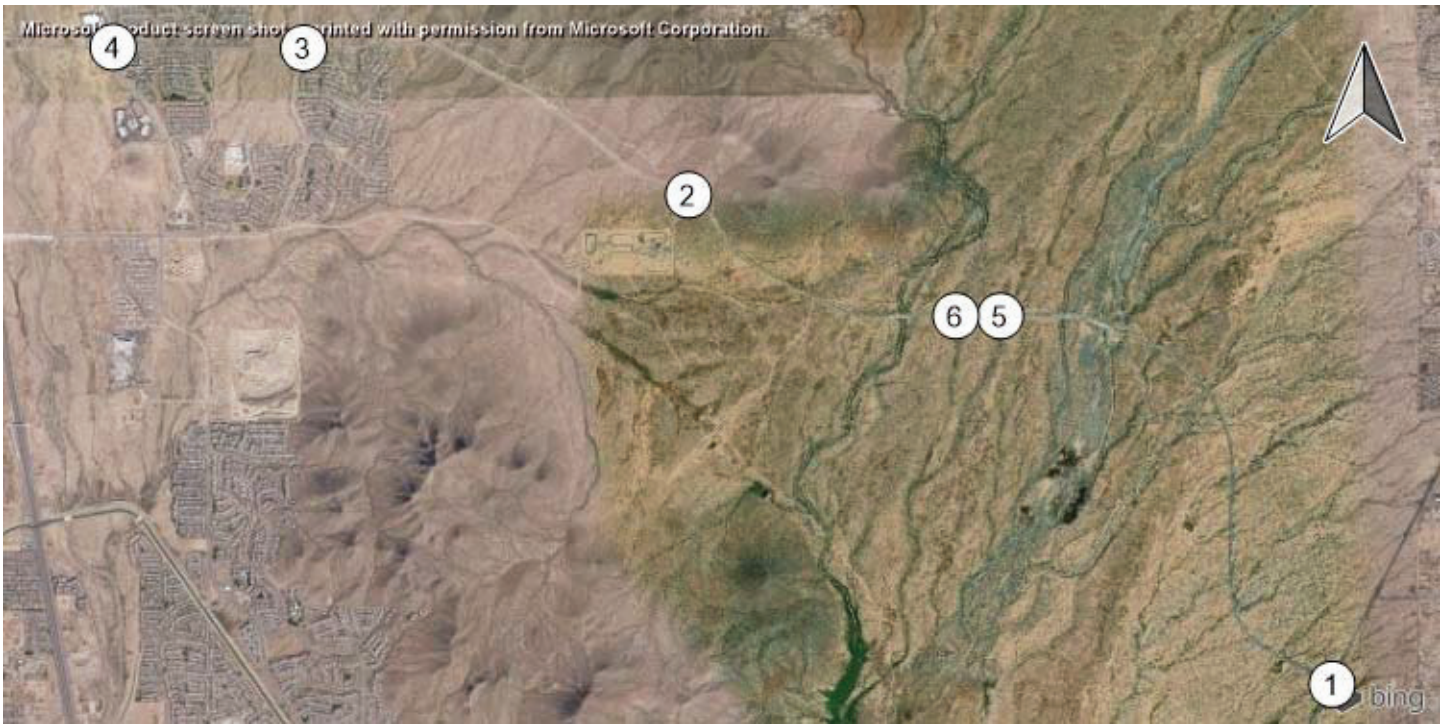
Intersection Settings

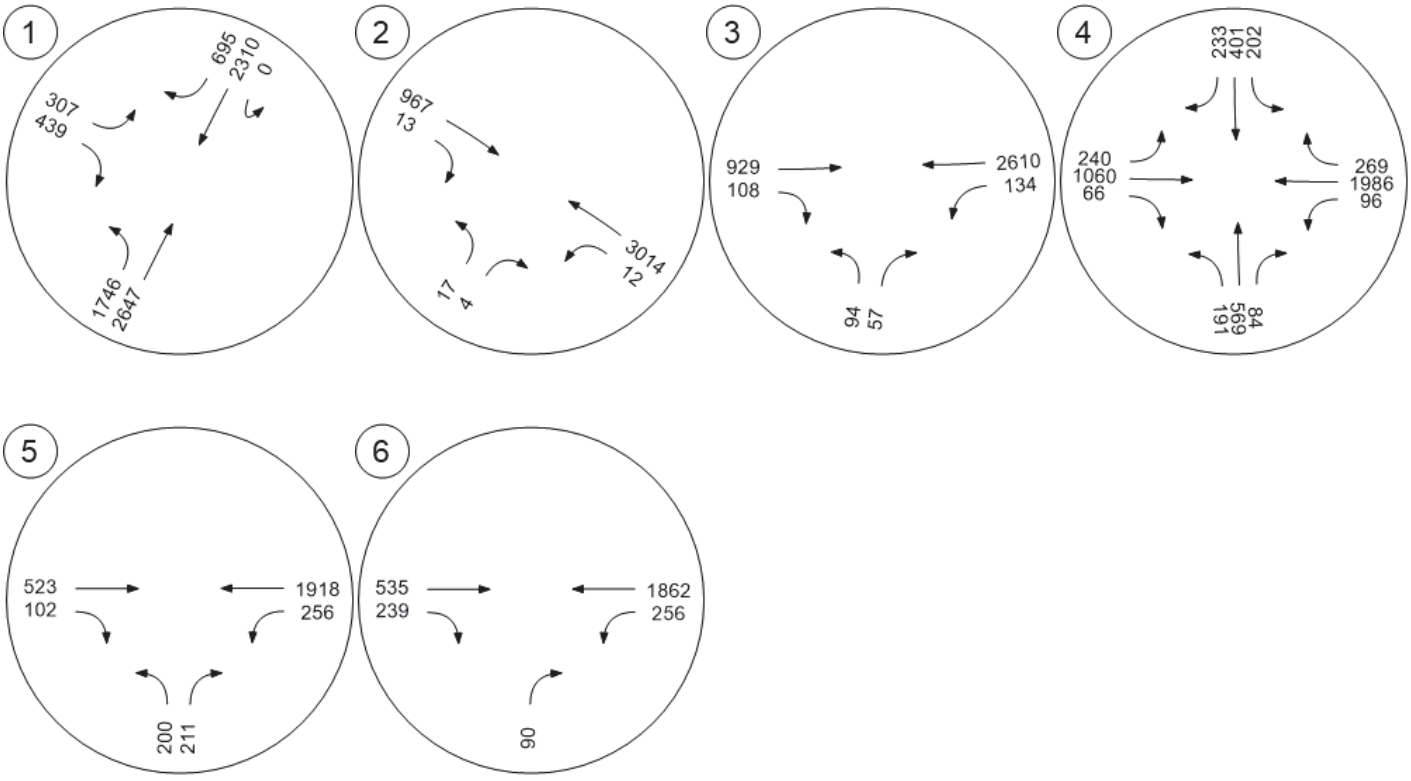
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.12	0.01	0.00	0.31	0.02
d_M, Delay for Movement [s/veh]	0.00	10.62	0.00	0.00	11.18	0.00
Movement LOS		B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.42	0.00	0.00	1.30	0.00
95th-Percentile Queue Length [ft/ln]	0.00	10.48	0.00	0.00	32.45	0.00
d_A, Approach Delay [s/veh]	10.62		0.00		1.35	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.28					
Intersection LOS	B					

Traffic Volume - Future Total Volume





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Scenario 17 2035 Total AM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SEB Left	1.468	234.6	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	3.565	2,842.0	F
3	Paloma Parkway & Dove Valley Road	Signalized	HCM 6th Edition	EB Thru	1.665	276.6	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.630	40.4	D
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.822	30.9	C
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	NB Right	0.514	31.7	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	234.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.468

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	59	857	0	1024	72	285	591
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	2.6271	2.8343	1.0000	2.8320	2.3333	2.8070	2.7462
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	115	0	0	0	38	115	346
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	821
Total Hourly Volume [veh/h]	278	2557	0	3053	215	957	1233
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	70	639	0	763	54	239	308
Total Analysis Volume [veh/h]	278	2557	0	3053	215	957	1233
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	7	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	9	77	0	68	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	10	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	64	64	64	39	39
g / C, Green / Cycle	0.61	0.61	0.53	0.53	0.53	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.64	0.72	0.00	0.87	0.89	0.54	0.44
s, saturation flow rate [veh/h]	438	3560	124	1870	1828	1781	2813
c, Capacity [veh/h]	321	2166	60	997	975	579	914
d1, Uniform Delay [s]	34.00	23.50	0.00	28.00	28.00	40.50	40.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.54	86.36	0.00	291.83	308.90	301.70	160.09
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	1.18	0.00	1.64	1.68	1.65	1.35
d, Delay for Lane Group [s/veh]	59.54	109.86	0.00	319.83	336.90	342.20	200.59
Lane Group LOS	E	F	A	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.54	51.59	0.00	105.99	108.20	64.74	33.15
50th-Percentile Queue Length [ft/ln]	63.45	1289.78	0.00	2649.66	2705.07	1618.60	828.87
95th-Percentile Queue Length [veh/ln]	4.57	72.34	0.00	164.83	169.31	99.96	50.36
95th-Percentile Queue Length [ft/ln]	114.22	1808.44	0.00	4120.78	4232.87	2498.92	1258.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.54	109.86	0.00	327.77	336.90	342.20	200.59
Movement LOS	E	F	A	F	F	F	F
d_A, Approach Delay [s/veh]	104.93		328.37			262.47	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	234.58						
Intersection LOS	F						
Intersection V/C	1.468						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	6.471	6.829	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	2,842.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.565

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	14	9	11	126	821	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	3.3906	3.3906	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	307	102	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]	14	9	11	758	3031	22
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]	4	2	3	190	758	6
Total Analysis Volume [veh/h]	14	9	11	758	3031	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	3.57	0.52	0.10	0.01	0.03	0.00
d_M, Delay for Movement [s/veh]	2841.99	354.54	41.54	0.00	0.00	0.00
Movement LOS	F	F	E	A	A	A
95th-Percentile Queue Length [veh/ln]	3.01	1.40	0.33	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	75.14	34.91	8.16	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1868.64		0.59		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	11.30					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	276.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.665

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	59	114	701	43	16	136
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	3.3906	1.4002	1.4002	3.3906
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	102	0	0	307
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	168	2604	63	24	792
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]	22	42	651	16	6	198
Total Analysis Volume [veh/h]	87	168	2604	63	24	792
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	13	0	107	0	0	107
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	103	103	103	103
g / C, Green / Cycle	0.08	0.08	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.05	0.12	1.55	0.04	0.23	0.47
s, saturation flow rate [veh/h]	1603	1431	1683	1431	106	1683
c, Capacity [veh/h]	120	107	1445	1228	60	1445
d1, Uniform Delay [s]	54.28	55.50	8.50	1.26	60.00	2.27
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.96	264.30	363.96	0.08	18.70	1.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	1.57	1.80	0.05	0.40	0.55
d, Delay for Lane Group [s/veh]	62.25	319.80	372.46	1.34	78.70	3.78
Lane Group LOS	E	F	F	A	E	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.82	11.09	162.48	0.13	1.04	3.01
50th-Percentile Queue Length [ft/ln]	70.41	277.31	4061.92	3.33	25.93	75.33
95th-Percentile Queue Length [veh/ln]	5.07	18.71	266.80	0.24	1.87	5.42
95th-Percentile Queue Length [ft/ln]	126.73	467.85	6669.91	6.00	46.67	135.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.25	319.80	372.46	1.34	78.70	3.78
Movement LOS	E	F	F	A	E	A
d_A, Approach Delay [s/veh]	231.93		363.69		5.98	
Approach LOS	F		F		A	
d_I, Intersection Delay [s/veh]	276.62					
Intersection LOS	F					
Intersection V/C	1.665					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	8.533	5.479
Bicycle LOS	D	F	F

Sequence

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

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	66	266	80	225	335	375	256	395	73	45	205	83
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	3.3906	1.4002	1.4002	3.3906	1.4002
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	5	0	0	0	89	0	23	269	15
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	50	0	0	221	0	0	43	0	0	54
Total Hourly Volume [veh/h]	97	392	76	337	494	332	377	1499	65	89	1001	83
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]	24	98	19	84	124	83	94	375	16	22	250	21
Total Analysis Volume [veh/h]	97	392	76	337	494	332	377	1499	65	89	1001	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	9	0	9	9	0	10	90	0	12	92	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	51	51	60	50	50	16	43	43	5	32	32
g / C, Green / Cycle	0.50	0.42	0.42	0.50	0.42	0.42	0.13	0.36	0.36	0.04	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.10	0.08	0.05	0.31	0.10	0.21	0.11	0.29	0.04	0.03	0.28	0.05
s, saturation flow rate [veh/h]	1014	5094	1589	1085	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	535	2153	672	579	2134	666	454	1837	573	142	963	430
d1, Uniform Delay [s]	16.27	21.68	21.02	22.25	22.45	25.62	50.84	34.76	25.58	56.67	43.80	33.72
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.33	0.11	0.11	0.11	0.11	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	0.19	0.34	4.23	0.05	1.76	3.98	0.93	0.09	4.52	26.49	0.22
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	0.18	0.18	0.11	0.58	0.23	0.50	0.83	0.82	0.11	0.63	1.04	0.19
d, Delay for Lane Group [s/veh]	16.43	21.87	21.36	26.48	22.50	27.38	54.82	35.69	25.67	61.19	70.29	33.94
Lane Group LOS	B	C	C	C	C	C	D	D	C	E	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.40	2.29	1.33	6.24	2.93	7.04	5.72	13.05	1.25	1.41	17.54	1.88
50th-Percentile Queue Length [ft/ln]	34.89	57.15	33.29	155.96	73.24	176.08	143.04	326.22	31.19	35.20	438.60	47.12
95th-Percentile Queue Length [veh/ln]	2.51	4.11	2.40	10.33	5.27	11.40	9.64	18.97	2.25	2.53	25.00	3.39
95th-Percentile Queue Length [ft/ln]	62.81	102.87	59.93	258.37	131.83	284.89	241.11	474.33	56.15	63.35	625.07	84.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.43	21.87	21.36	26.48	22.50	27.38	54.82	35.69	25.67	61.19	70.29	33.94
Movement LOS	B	C	C	C	C	C	D	D	C	E	F	C
d_A, Approach Delay [s/veh]	20.87			25.05			39.07			67.02		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	40.35											
Intersection LOS	D											
Intersection V/C	0.630											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	83	1433	1467
d_b, Bicycle Delay [s]	55.10	55.10	4.82	4.27
I_b,int, Bicycle LOS Score for Intersection	1.898	2.321	2.651	2.572
Bicycle LOS	A	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 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.9847	1.0000	1.0000	1.9847
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	307	323	138	31	77	77
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
Right-Turn on Red Volume [veh/h]	0	129	0	12	0	0
Total Hourly Volume [veh/h]	307	194	1968	19	77	351
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]	77	49	492	5	19	88
Total Analysis Volume [veh/h]	307	194	1968	19	77	351
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	78	0	33	0	9	42
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	26	26	78	78	86	86
g / C, Green / Cycle	0.21	0.21	0.65	0.65	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.19	0.14	0.61	0.01	0.25	0.11
s, saturation flow rate [veh/h]	1603	1431	3204	1431	308	3204
c, Capacity [veh/h]	345	308	2072	925	193	2302
d1, Uniform Delay [s]	45.74	42.78	19.43	7.60	30.17	5.34
k, delay calibration	0.11	0.11	0.50	0.50	0.45	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.94	2.13	11.07	0.04	5.49	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.63	0.95	0.02	0.40	0.15
d, Delay for Lane Group [s/veh]	53.68	44.91	30.50	7.64	35.65	5.48
Lane Group LOS	D	D	C	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.61	5.41	24.08	0.17	0.76	1.19
50th-Percentile Queue Length [ft/ln]	240.29	135.35	601.88	4.21	19.07	29.69
95th-Percentile Queue Length [veh/ln]	14.70	9.23	32.12	0.30	1.37	2.14
95th-Percentile Queue Length [ft/ln]	367.40	230.74	803.05	7.57	34.33	53.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.68	44.91	30.50	7.64	35.65	5.48
Movement LOS	D	D	C	A	D	A
d_A, Approach Delay [s/veh]	50.29		30.28		10.91	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	30.88					
Intersection LOS	C					
Intersection V/C	0.822					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.782	4.486
Bicycle LOS	D	F	E

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	876	0	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.9847	1.0000	1.0000	1.9847
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	138	31	71	77	307
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	138	1861	71	77	581
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	35	465	18	19	145
Total Analysis Volume [veh/h]	0	138	1861	71	77	581
Pedestrian Volume [ped/h]	0		0		0	

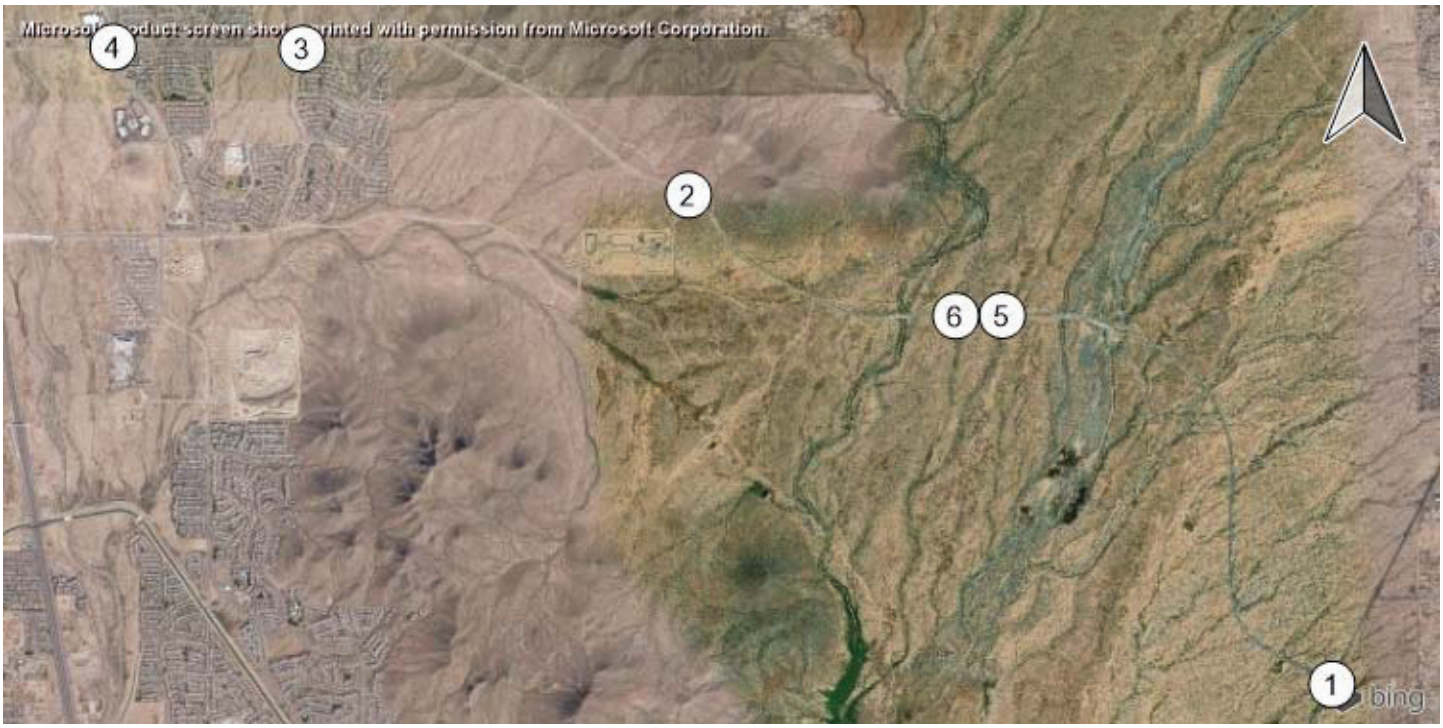
Intersection Settings

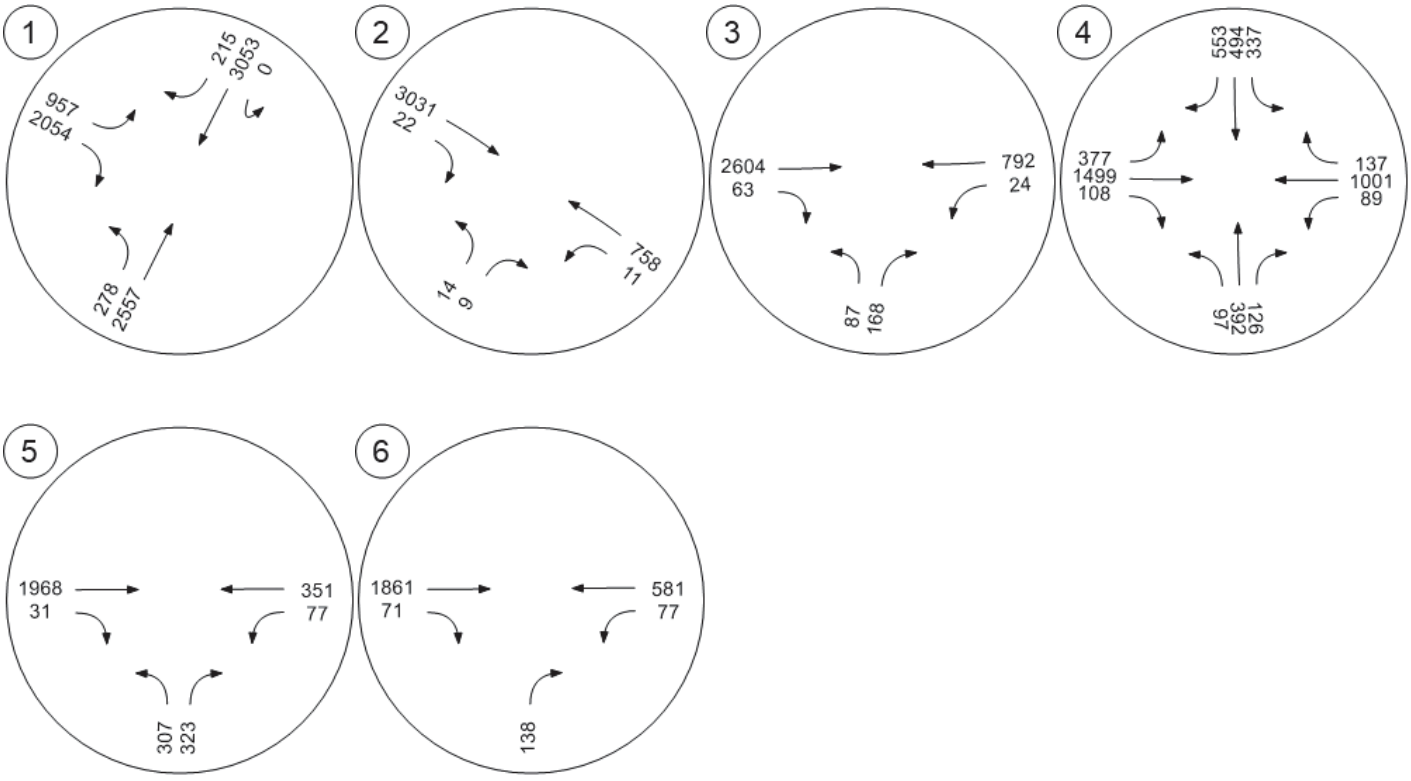
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.51	0.02	0.00	0.26	0.01
d_M, Delay for Movement [s/veh]	0.00	31.74	0.00	0.00	21.03	0.00
Movement LOS		D	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.00	2.72	0.00	0.00	1.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	67.91	0.00	0.00	24.91	0.00
d_A, Approach Delay [s/veh]	31.74		0.00		2.46	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	2.20					
Intersection LOS	D					

Traffic Volume - Future Total Volume





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Scenario 18 2035 Total PM
4/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cave Creek Road & Sonoran Desert Drive	Signalized	HCM 6th Edition	SWB Right	1.773	426.9	F
2	7th Street & Dove Valley Road	Two-way stop	HCM 6th Edition	NEB Left	9.120	7,119.3	F
3	Paloma Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	1.746	282.5	F
4	North Valley Parkway & Dove Valley Road	Signalized	HCM 6th Edition	WB Thru	0.867	282.8	F
5	Access A & Sonoran Desert Drive	Signalized	HCM 6th Edition	NB Left	0.806	15.1	B
6	Access B & Sonoran Desert Drive	Two-way stop	HCM 6th Edition	WB Left	0.325	11.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cave Creek Road & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	426.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.773

Intersection Setup

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Approach	Northeastbound		Southwestbound			Southeastbound	
Lane Configuration							
Turning Movement	Left	Thru	U-turn	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	0
Pocket Length [ft]	300.00	100.00	280.00	100.00	100.00	275.00	100.00
Speed [mph]	50.00		50.00			45.00	
Grade [%]	0.00		0.00			0.00	
Curb Present	No		No			No	
Crosswalk	No		No			No	

Volumes

Name	Cave Creek Road		Cave Creek Road			Sonoran Desert Drive	
Base Volume Input [veh/h]	552	1062	0	914	250	108	101
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	3.3007	3.3296	1.0000	3.6477	3.0320	2.8611	2.2376
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	383	0	0	0	128	75	226
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	185
Total Hourly Volume [veh/h]	2301	3722	0	3509	925	401	278
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	575	931	0	877	231	100	70
Total Analysis Volume [veh/h]	2301	3722	0	3509	925	401	278
Presence of On-Street Parking	No	No	No		No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0			0	
v_di, Inbound Pedestrian Volume crossing m	0		0			0	
v_co, Outbound Pedestrian Volume crossing	0		0			0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0			0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0	
Bicycle Volume [bicycles/h]	0		0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	0	6	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	5	5	0	5	0	5	0
Maximum Green [s]	30	30	0	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	33	103	0	70	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	7	0	7	0
Pedestrian Clearance [s]	0	29	0	28	0	24	0
Rest In Walk		No		No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No		No	
Maximum Recall	No	No		No		No	
Pedestrian Recall	No	No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	99	99	66	66	66	13	13
g / C, Green / Cycle	0.83	0.83	0.55	0.55	0.55	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	2.08	1.05	0.00	1.19	1.27	0.23	0.10
s, saturation flow rate [veh/h]	1107	3560	38	1870	1742	1781	2813
c, Capacity [veh/h]	1012	2937	60	1028	958	193	305
d1, Uniform Delay [s]	40.12	10.50	0.00	27.00	27.00	53.50	52.93
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.38	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	576.79	123.04	0.00	523.26	594.73	498.52	10.47
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.27	1.27	0.00	2.16	2.31	2.08	0.91
d, Delay for Lane Group [s/veh]	616.91	133.54	0.00	550.26	621.73	552.02	63.41
Lane Group LOS	F	F	A	F	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	82.49	67.32	0.00	175.11	182.11	32.38	4.48
50th-Percentile Queue Length [ft/ln]	2062.34	1683.09	0.00	4377.63	4552.85	809.43	111.94
95th-Percentile Queue Length [veh/ln]	145.61	98.45	0.00	284.30	297.97	51.00	7.95
95th-Percentile Queue Length [ft/ln]	3640.25	2461.20	0.00	7107.57	7449.19	1274.98	198.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	616.91	133.54	0.00	576.57	621.73	552.02	63.41
Movement LOS	F	F	A	F	F	F	E
d_A, Approach Delay [s/veh]	318.21		585.99			351.97	
Approach LOS	F		F			F	
d_I, Intersection Delay [s/veh]	426.89						
Intersection LOS	F						
Intersection V/C	1.773						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	9.101	7.790	4.132
Bicycle LOS	F	F	D

Sequence

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

Intersection Level Of Service Report
Intersection 2: 7th Street & Dove Valley Road

Control Type:	Two-way stop	Delay (sec / veh):	7,119.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	9.120

Intersection Setup

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	280.00	200.00	100.00	100.00	240.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	7th Street		Sonoran Desert Drive		Dove Valley Road	
Base Volume Input [veh/h]	17	4	12	709	158	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0526	1.0526	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	4.1144	4.1144	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	200	341	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]	17	4	12	3269	1024	13
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]	4	1	3	817	256	3
Total Analysis Volume [veh/h]	17	4	12	3269	1024	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
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	9.12	0.01	0.02	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	7119.25	17.78	10.47	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	3.64	0.04	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	91.06	1.06	1.37	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	5766.59		0.04		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	27.94					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Paloma Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	282.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.746

Intersection Setup

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
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 Pocket	1	0	0	1	1	0
Pocket Length [ft]	110.00	100.00	100.00	265.00	160.00	100.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Paloma Parkway		Dove Valley Road		Dove Valley Road	
Base Volume Input [veh/h]	70	43	148	81	101	607
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	4.1144	1.4002	1.4002	4.1144
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	341	0	0	200
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	63	983	119	148	2829
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]	26	16	246	30	37	707
Total Analysis Volume [veh/h]	104	63	983	119	148	2829
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	9	0	111	0	0	111
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	107	107	107	107
g / C, Green / Cycle	0.04	0.04	0.89	0.89	0.89	0.89
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.58	0.08	0.29	1.68
s, saturation flow rate [veh/h]	1603	1431	1683	1431	515	1683
c, Capacity [veh/h]	67	60	1501	1276	432	1501
d1, Uniform Delay [s]	57.50	57.50	1.69	0.77	6.47	6.50
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	266.09	69.98	2.25	0.15	2.15	400.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.56	1.06	0.66	0.09	0.34	1.89
d, Delay for Lane Group [s/veh]	323.59	127.48	3.94	0.91	8.62	407.37
Lane Group LOS	F	F	A	A	A	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.95	2.95	2.12	0.12	1.53	174.03
50th-Percentile Queue Length [ft/ln]	173.64	73.80	52.96	2.91	38.27	4350.80
95th-Percentile Queue Length [veh/ln]	12.37	5.31	3.81	0.21	2.76	289.61
95th-Percentile Queue Length [ft/ln]	309.32	132.84	95.34	5.24	68.89	7240.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	323.59	127.48	3.94	0.91	8.62	407.37
Movement LOS	F	F	A	A	A	F
d_A, Approach Delay [s/veh]	249.61		3.61		387.54	
Approach LOS	F		A		F	
d_I, Intersection Delay [s/veh]	282.47					
Intersection LOS	F					
Intersection V/C	1.746					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.951	9.044
Bicycle LOS	D	F	F

Sequence

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

Intersection Level Of Service Report
Intersection 4: North Valley Parkway & Dove Valley Road

Control Type:	Signalized	Delay (sec / veh):	282.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
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 Pocket	1	0	1	1	0	1	2	0	1	2	0	1
Pocket Length [ft]	290.00	100.00	275.00	270.00	100.00	265.00	250.00	100.00	150.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	North Valley Parkway			North Valley Parkway			Dove Valley Road			Dove Valley Road		
Base Volume Input [veh/h]	143	427	44	139	300	175	180	192	49	61	456	194
Base Volume Adjustment Factor	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	1.4002	4.1144	1.4002	1.4002	4.1144	1.4002
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	26	17	0	0	0	298	0	15	175	10
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	36	0	0	103	0	0	29	0	0	118
Total Hourly Volume [veh/h]	211	629	54	221	442	155	265	1129	44	105	2150	178
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]	53	157	14	55	111	39	66	282	11	26	538	45
Total Analysis Volume [veh/h]	211	629	54	221	442	155	265	1129	44	105	2150	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	9	0	9	9	0	9	93	0	9	93	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	35	0	0	34	0	0	34	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	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	66	57	57	66	53	53	12	37	37	5	30	30
g / C, Green / Cycle	0.55	0.48	0.48	0.55	0.44	0.44	0.10	0.31	0.31	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.19	0.12	0.03	0.25	0.09	0.10	0.08	0.22	0.03	0.03	0.60	0.11
s, saturation flow rate [veh/h]	1094	5094	1589	901	5094	1589	3459	5094	1589	3459	3560	1589
c, Capacity [veh/h]	642	2432	759	528	2235	697	337	1556	485	145	890	397
d1, Uniform Delay [s]	13.85	18.69	16.96	14.62	20.70	20.94	52.95	37.19	29.77	56.81	45.01	38.01
k, delay calibration	0.28	0.50	0.50	0.44	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.77	0.26	0.18	2.13	0.04	0.16	4.10	0.66	0.08	6.72	640.52	0.79
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	0.33	0.26	0.07	0.42	0.20	0.22	0.79	0.73	0.09	0.73	2.42	0.45
d, Delay for Lane Group [s/veh]	14.62	18.95	17.14	16.75	20.74	21.10	57.05	37.85	29.85	63.54	685.53	38.81
Lane Group LOS	B	B	B	B	C	C	E	D	C	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.91	3.42	0.83	3.23	2.49	2.67	4.06	9.78	0.92	1.70	92.16	4.48
50th-Percentile Queue Length [ft/ln]	72.70	85.62	20.63	80.80	62.19	66.74	101.59	244.62	22.94	42.41	2304.07	111.89
95th-Percentile Queue Length [veh/ln]	5.23	6.16	1.49	5.82	4.48	4.81	7.31	14.91	1.65	3.05	144.99	7.94
95th-Percentile Queue Length [ft/ln]	130.85	154.12	37.13	145.43	111.95	120.14	182.86	372.87	41.30	76.33	3624.82	198.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.62	18.95	17.14	16.75	20.74	21.10	57.05	37.85	29.85	63.54	685.53	38.81
Movement LOS	B	B	B	B	C	C	E	D	C	E	F	D
d_A, Approach Delay [s/veh]	17.82			19.73			41.15			611.37		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	282.77											
Intersection LOS	F											
Intersection V/C	0.867											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	83	1483	1483
d_b, Bicycle Delay [s]	55.10	55.10	4.00	4.00
l_b,int, Bicycle LOS Score for Intersection	2.071	2.066	2.366	3.664
Bicycle LOS	B	B	B	D

Sequence

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

Intersection Level Of Service Report
Intersection 5: Access A & Sonoran Desert Drive

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	325.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Access A		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	2.2832	1.0000	1.0000	2.2832
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	200	211	90	102	256	256
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
Right-Turn on Red Volume [veh/h]	0	84	0	40	0	0
Total Hourly Volume [veh/h]	200	127	592	62	256	2183
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]	50	32	148	16	64	546
Total Analysis Volume [veh/h]	200	127	592	62	256	2183
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	102	0	9	0	9	18
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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	0.00	2.00
g_i, Effective Green Time [s]	17	17	86	86	95	95
g / C, Green / Cycle	0.15	0.15	0.71	0.71	0.79	0.79
(v / s)_i Volume / Saturation Flow Rate	0.12	0.09	0.18	0.04	0.32	0.68
s, saturation flow rate [veh/h]	1603	1431	3204	1431	806	3204
c, Capacity [veh/h]	234	209	2282	1019	666	2523
d1, Uniform Delay [s]	49.99	48.01	6.09	5.19	3.74	8.52
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.61	2.84	0.28	0.11	1.68	4.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.61	0.26	0.06	0.38	0.87
d, Delay for Lane Group [s/veh]	58.60	50.85	6.37	5.31	5.42	12.80
Lane Group LOS	E	D	A	A	A	B
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.41	3.73	2.27	0.42	1.38	13.53
50th-Percentile Queue Length [ft/ln]	160.21	93.30	56.75	10.55	34.51	338.13
95th-Percentile Queue Length [veh/ln]	10.56	6.72	4.09	0.76	2.48	19.56
95th-Percentile Queue Length [ft/ln]	264.00	167.94	102.16	18.99	62.11	488.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.60	50.85	6.37	5.31	5.42	12.80
Movement LOS	E	D	A	A	A	B
d_A, Approach Delay [s/veh]	55.59		6.27		12.03	
Approach LOS	E		A		B	
d_I, Intersection Delay [s/veh]	15.09					
Intersection LOS	B					
Intersection V/C	0.806					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	4.132	4.705	6.145
Bicycle LOS	D	E	F

Sequence

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

Intersection Level Of Service Report
Intersection 6: Access B & Sonoran Desert Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

Intersection Setup

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
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 Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Access B		Sonoran Desert Drive		Sonoran Desert Drive	
Base Volume Input [veh/h]	0	0	209	0	0	802
Base Volume Adjustment Factor	1.0000	1.0000	1.0526	1.0000	1.0000	1.0526
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	2.2832	1.0000	1.0000	2.2832
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	102	239	256	200
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	90	604	239	256	2127
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	23	151	60	64	532
Total Analysis Volume [veh/h]	0	90	604	239	256	2127
Pedestrian Volume [ped/h]	0		0		0	

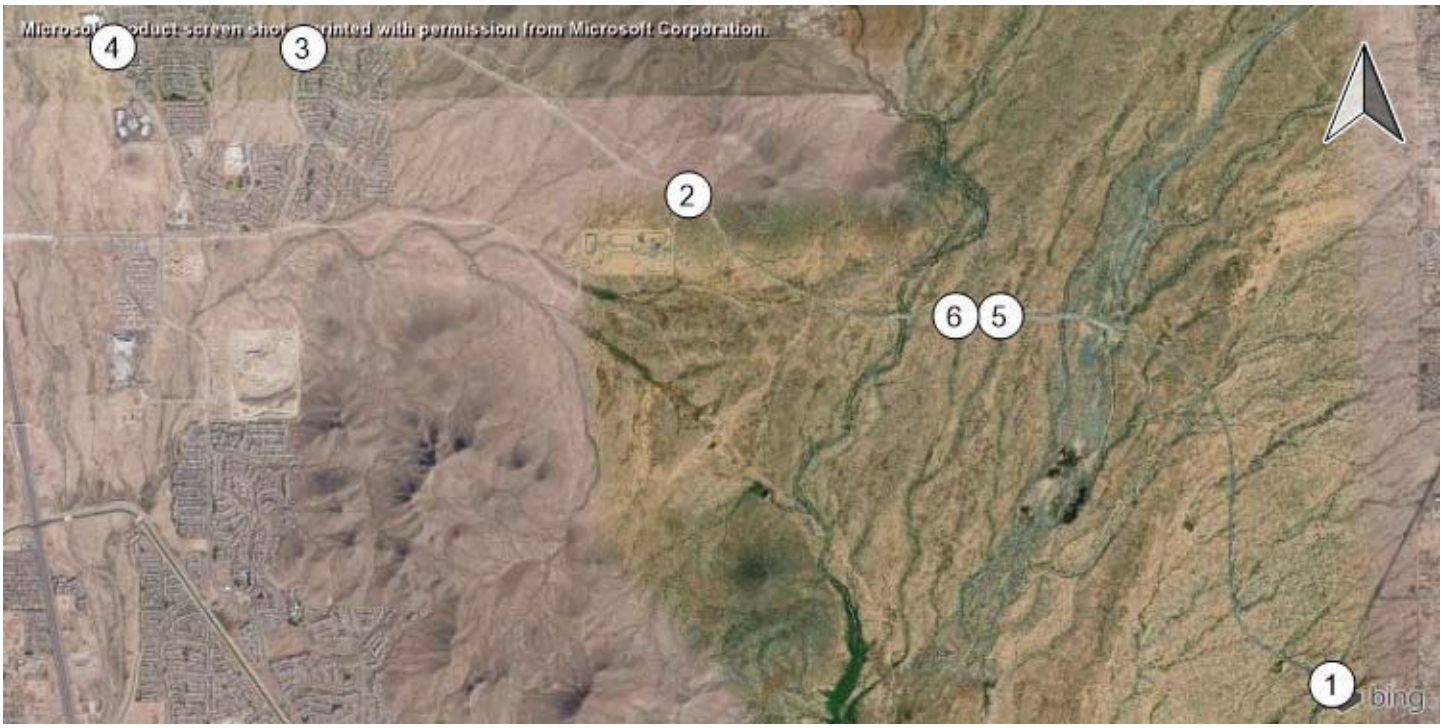
Intersection Settings

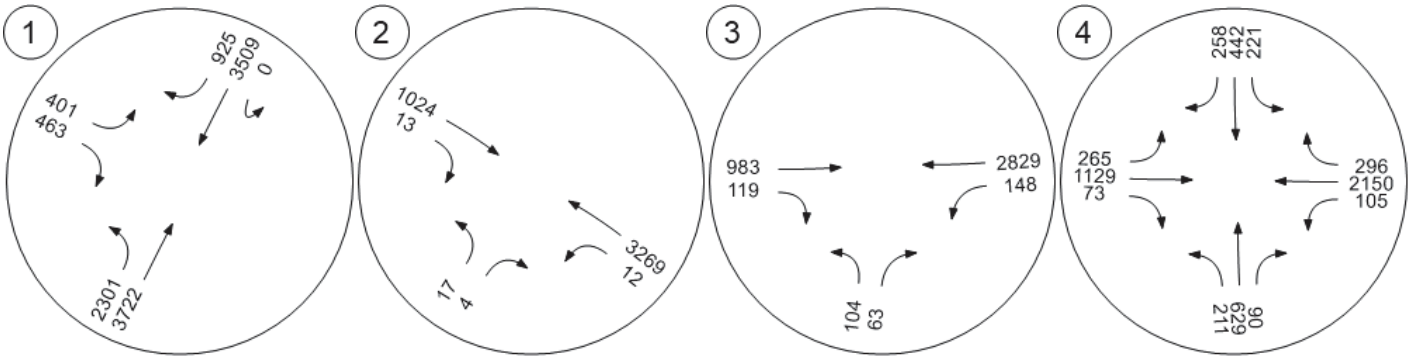
Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

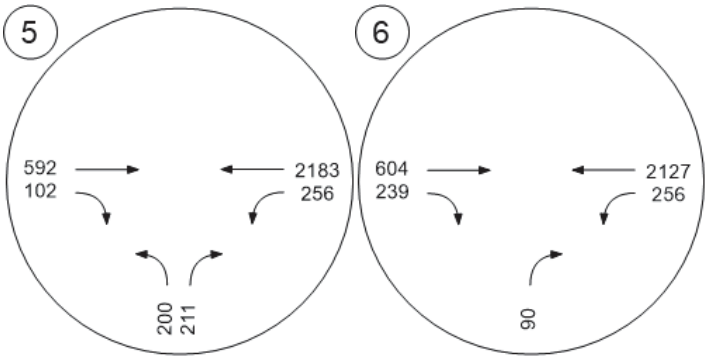
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.13	0.01	0.00	0.32	0.02
d_M, Delay for Movement [s/veh]	0.00	10.96	0.00	0.00	11.74	0.00
Movement LOS		B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.44	0.00	0.00	1.41	0.00
95th-Percentile Queue Length [ft/ln]	0.00	11.11	0.00	0.00	35.29	0.00
d_A, Approach Delay [s/veh]	10.96		0.00		1.26	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.20					
Intersection LOS	B					

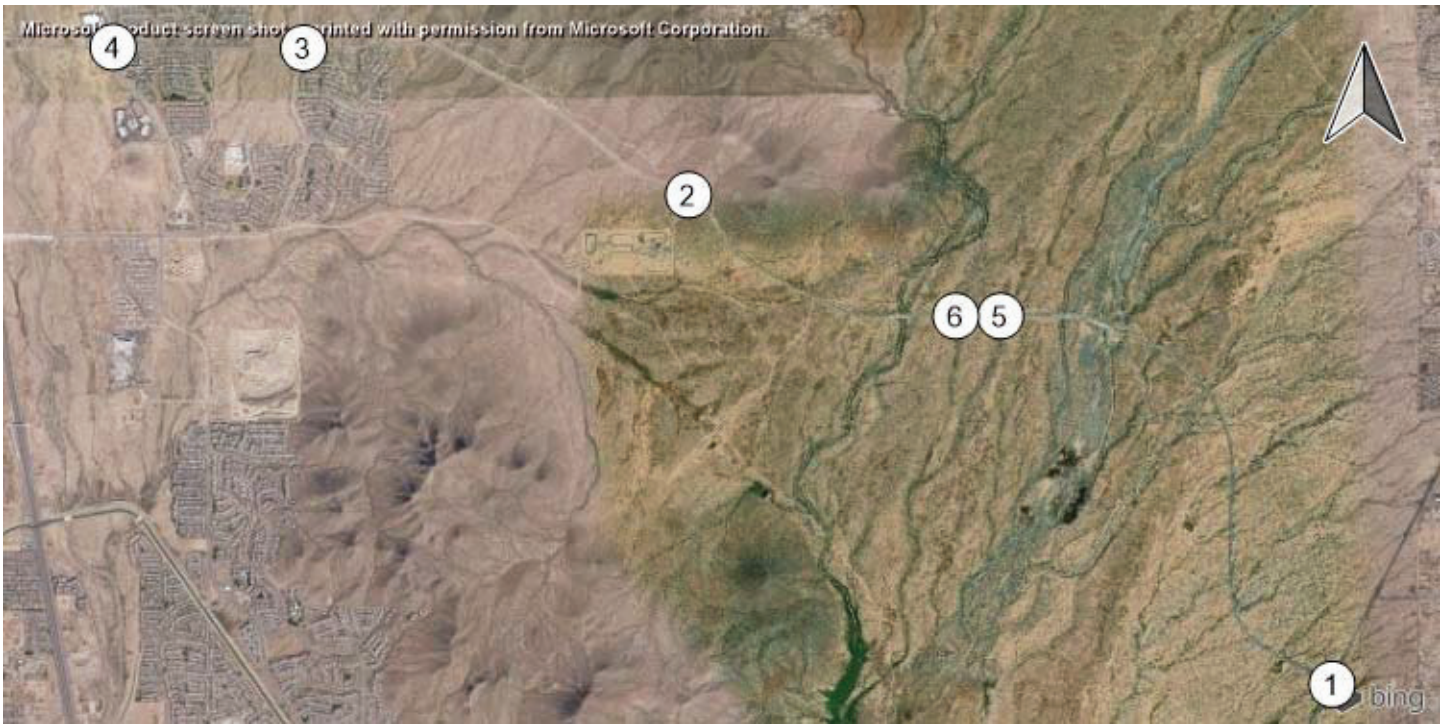
Traffic Volume - Future Total Volume

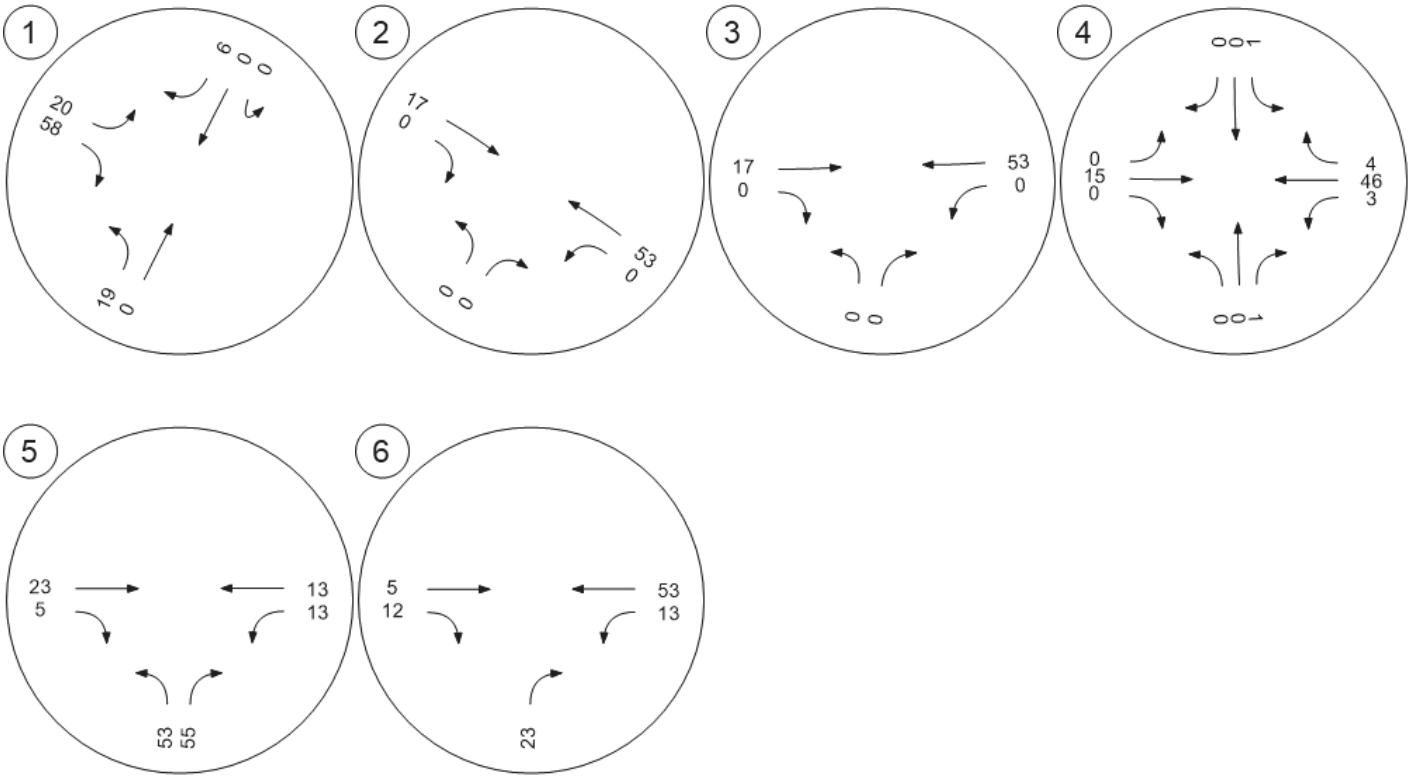






Traffic Volume - Net New Site Trips





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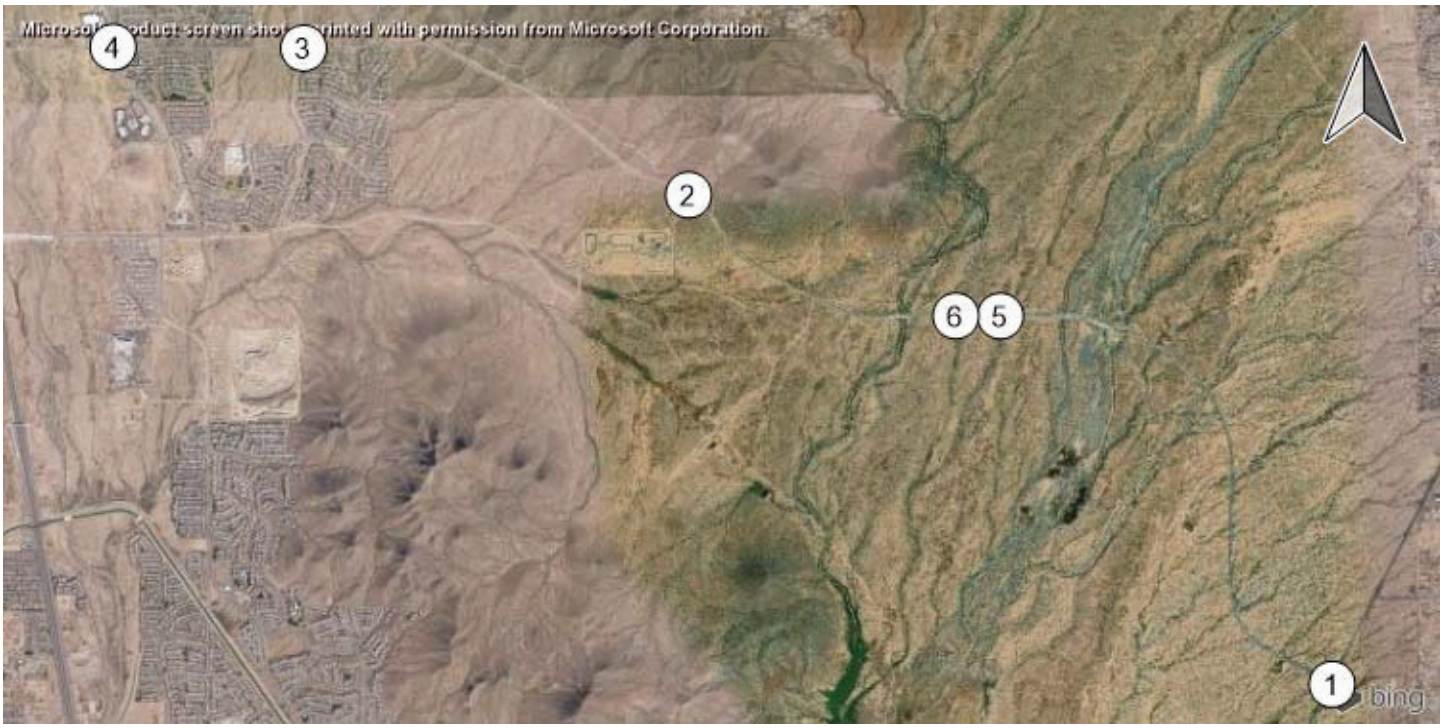

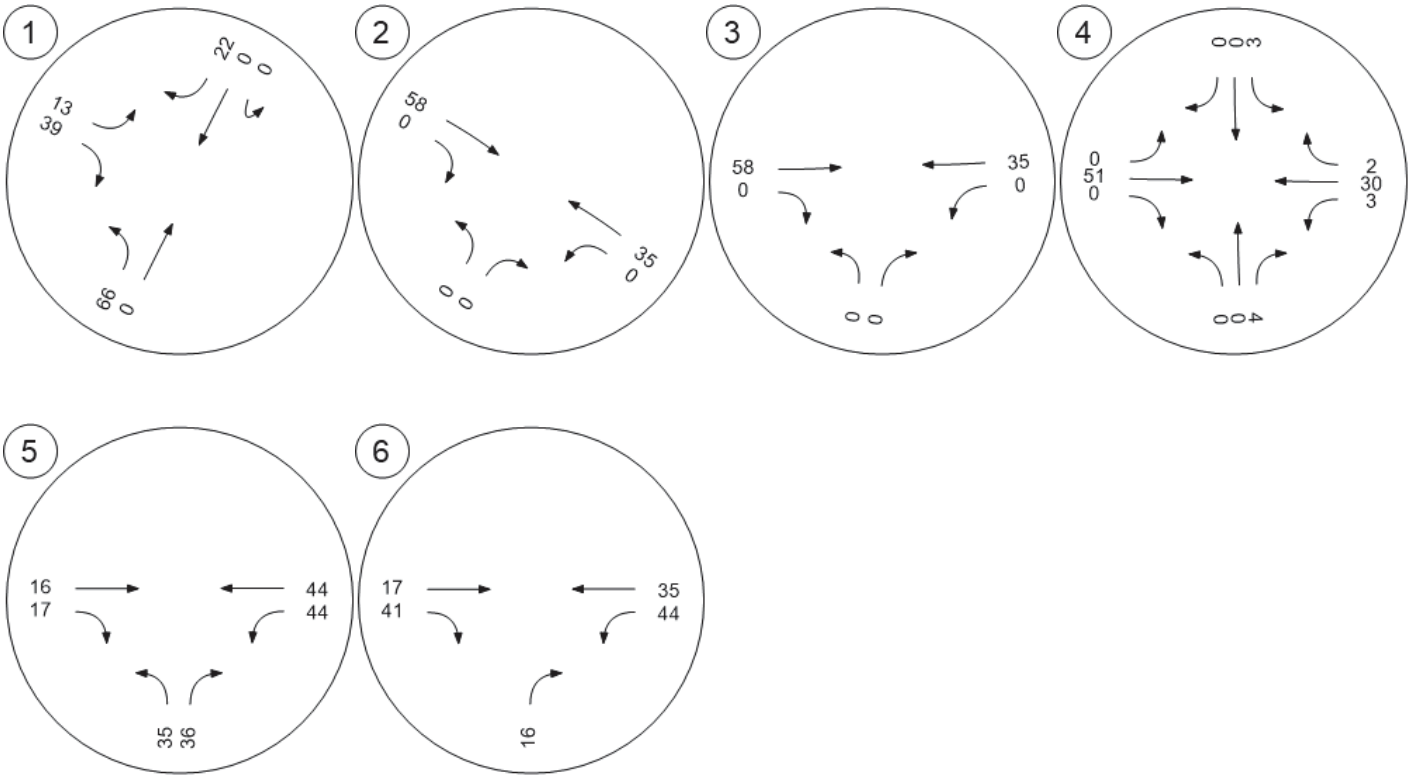

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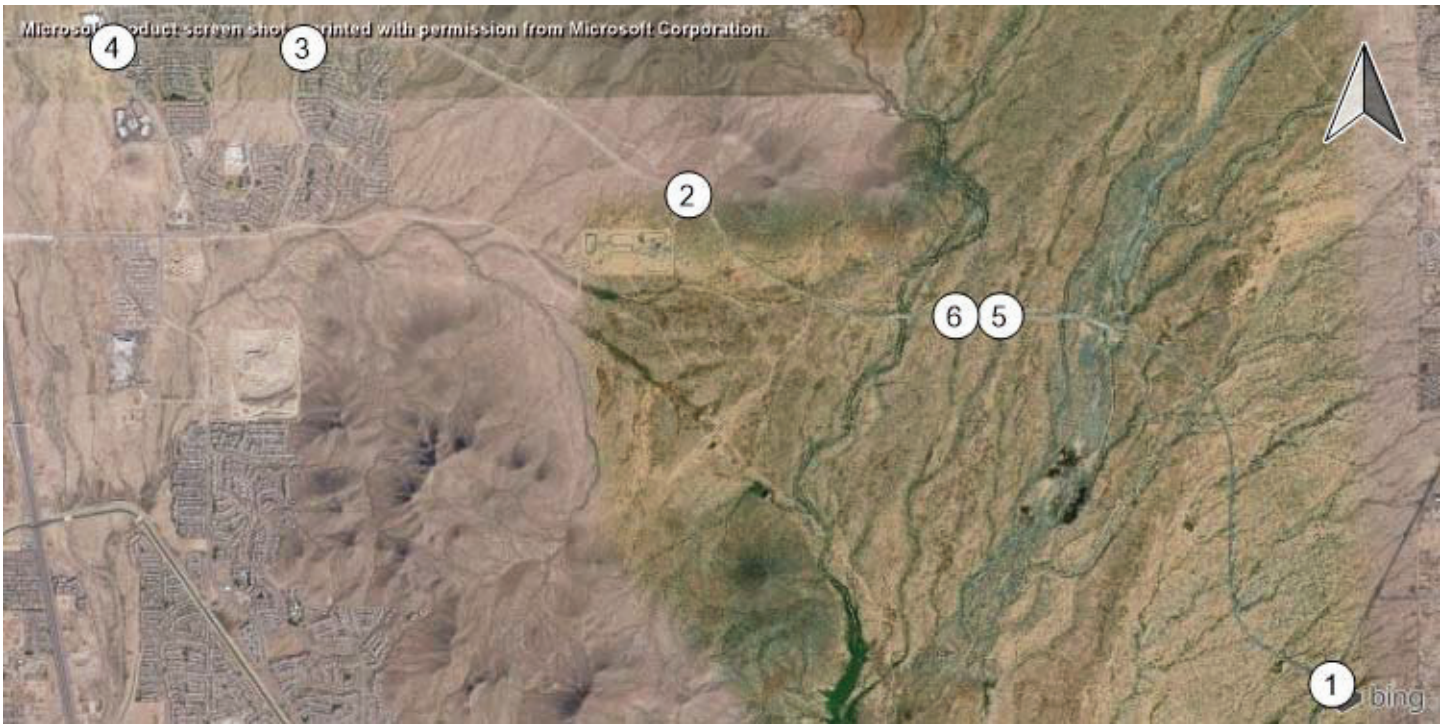

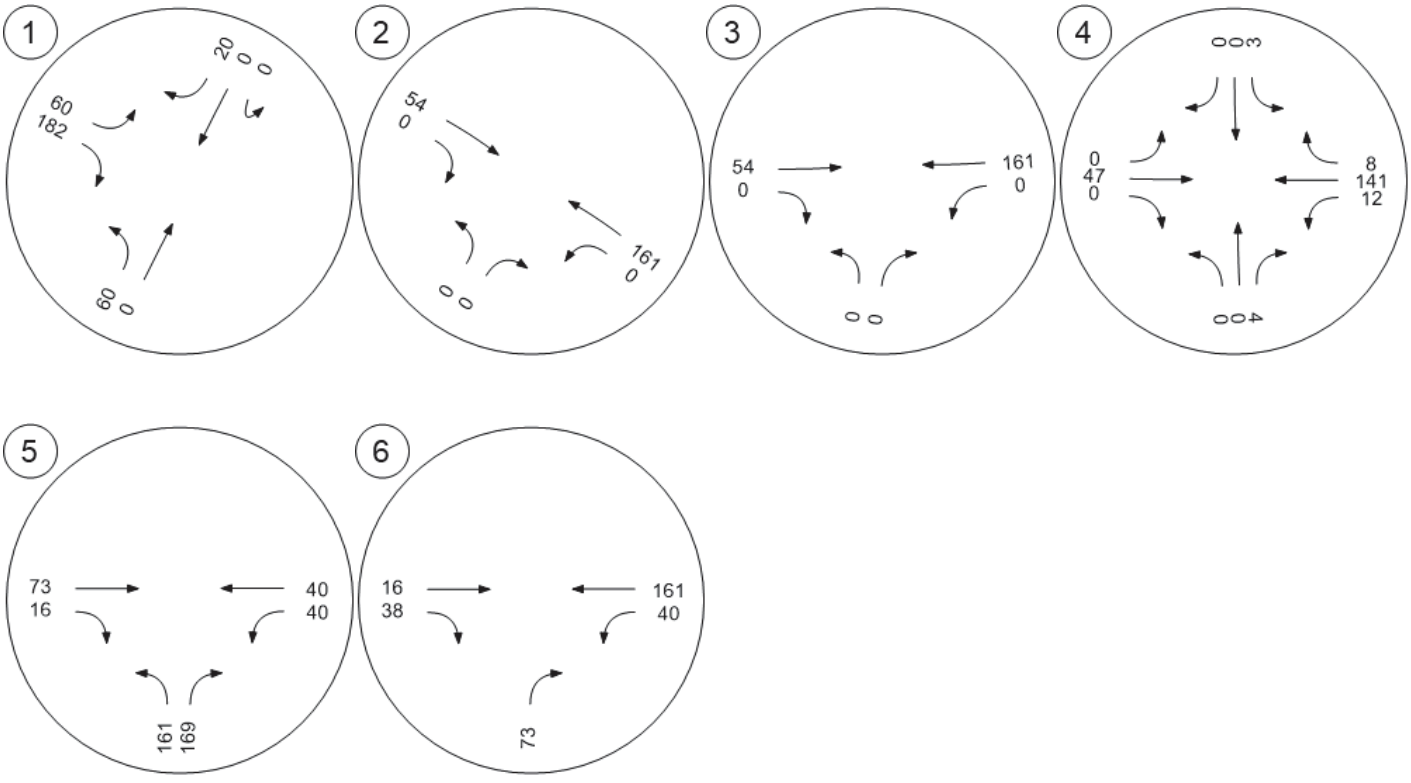

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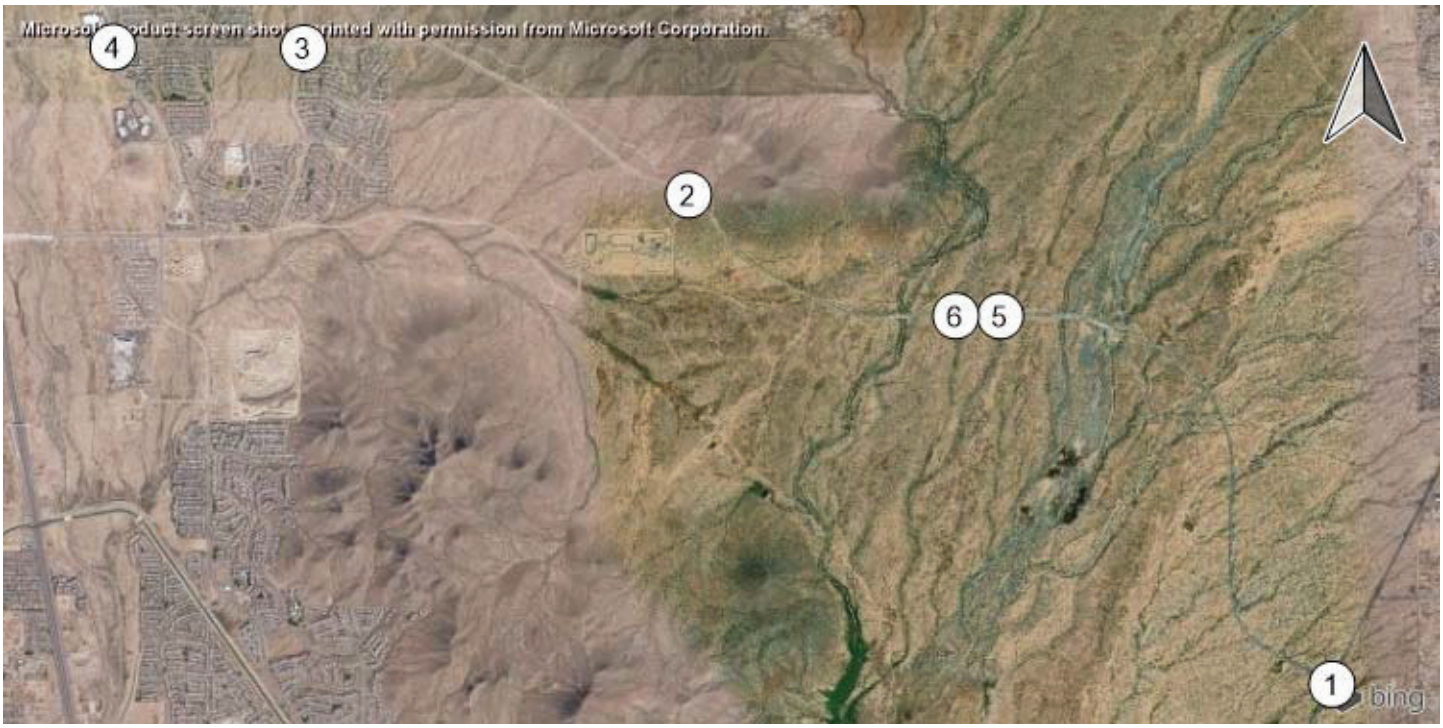

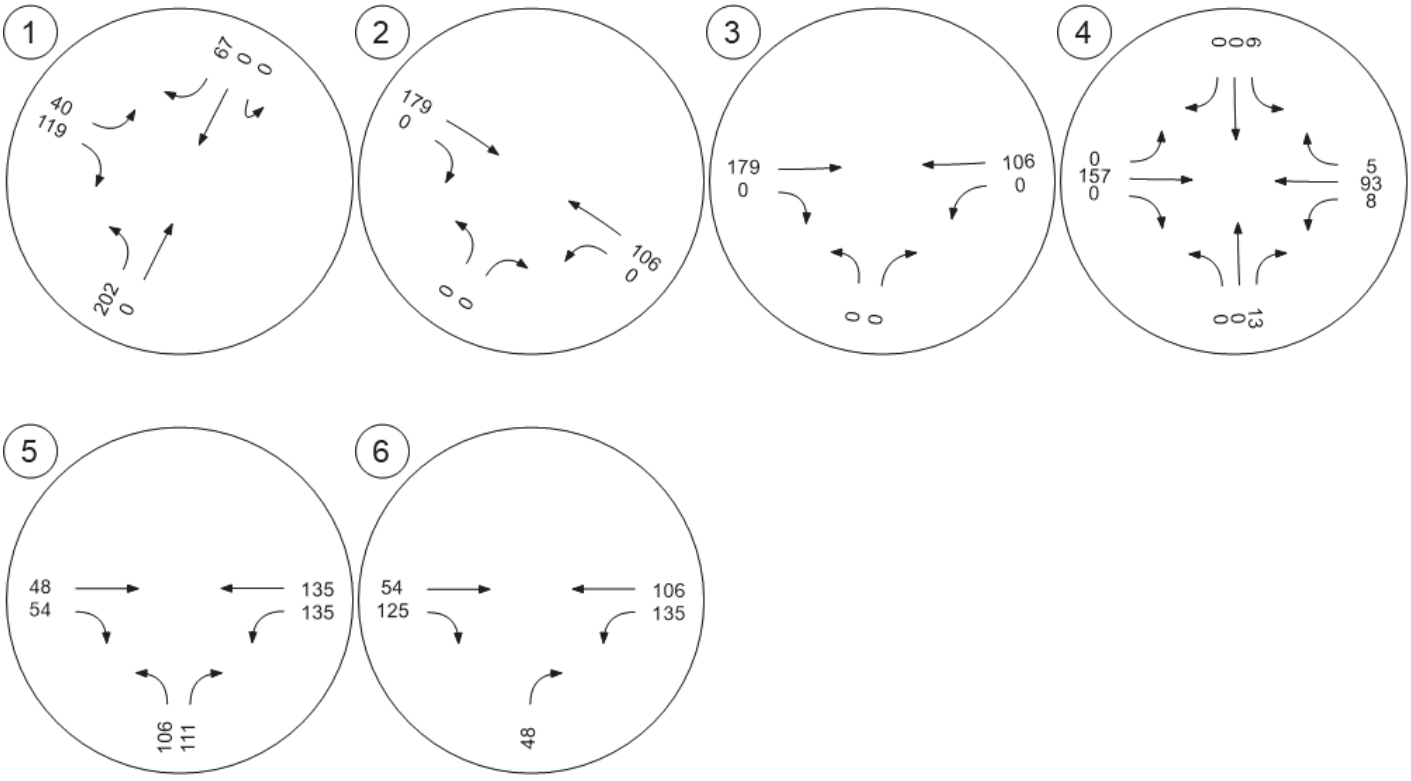

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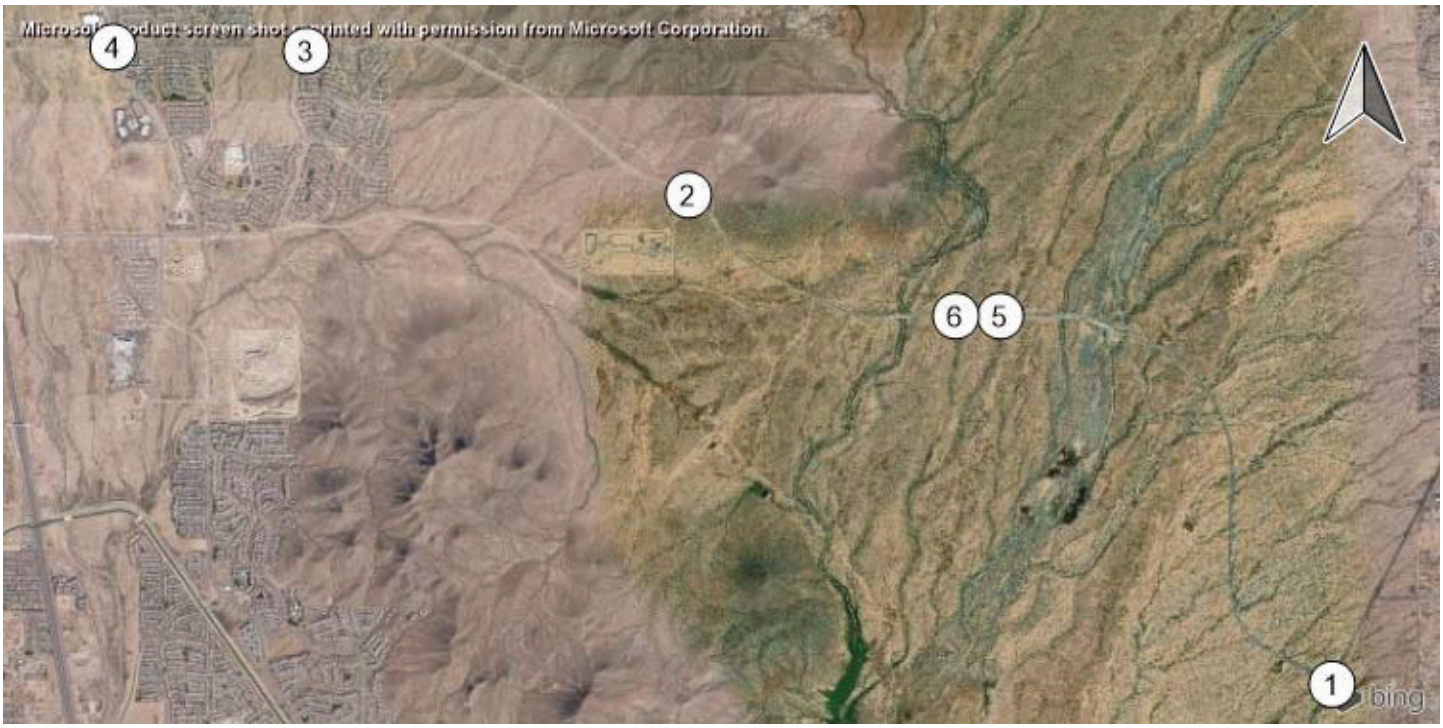

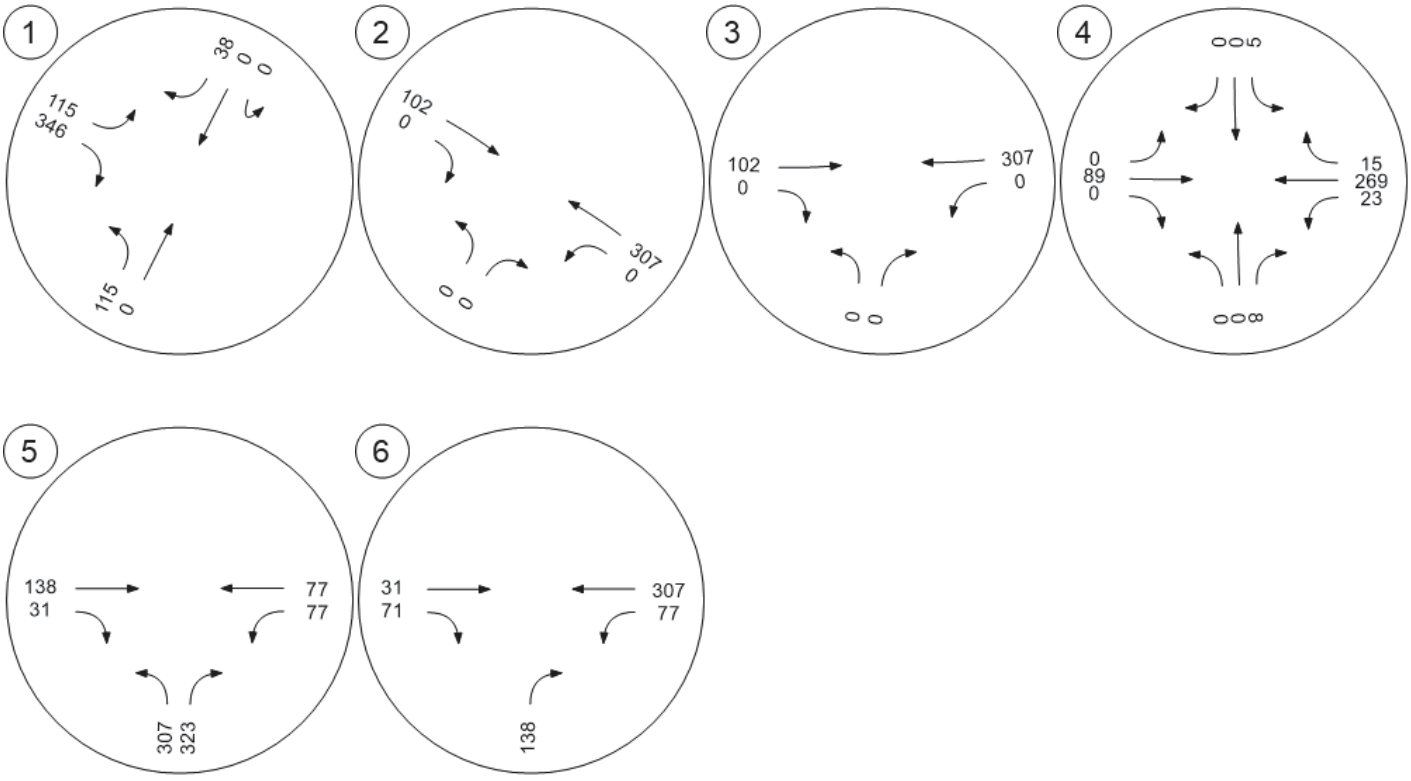

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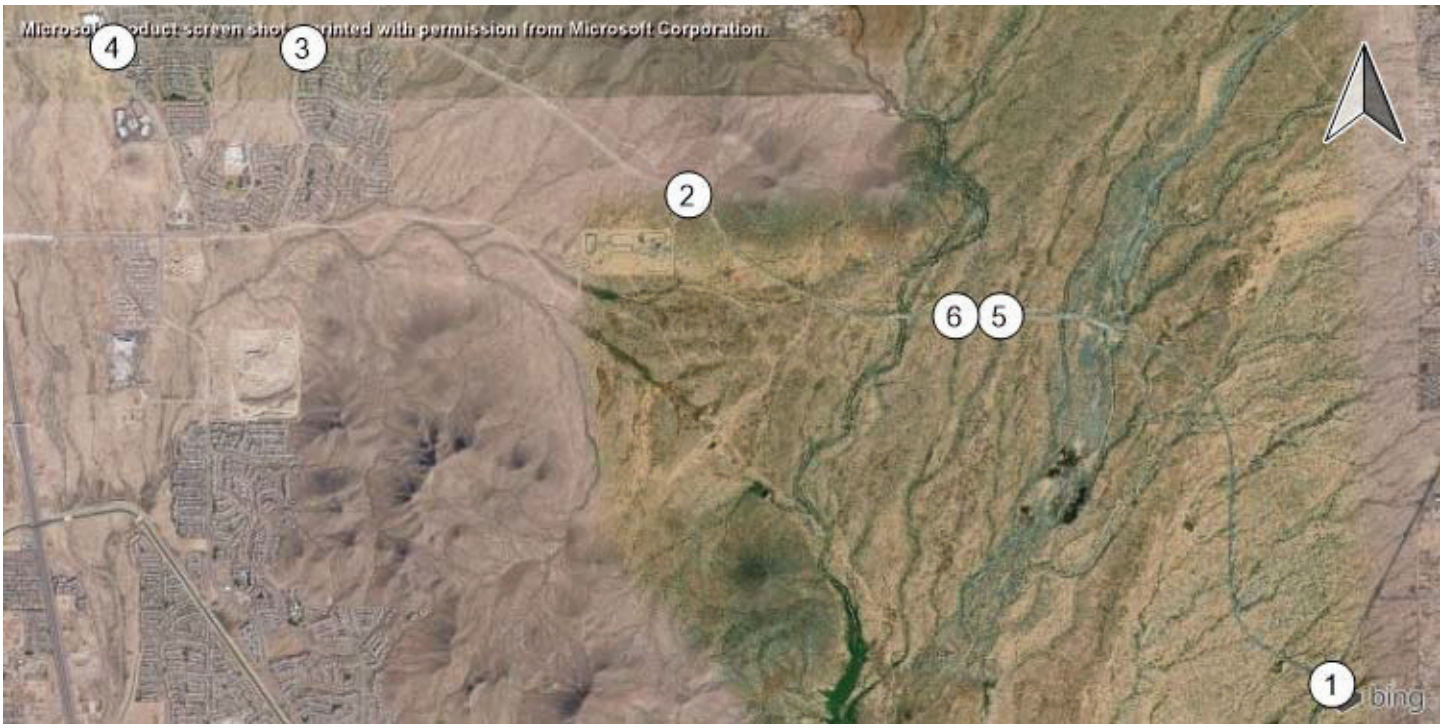

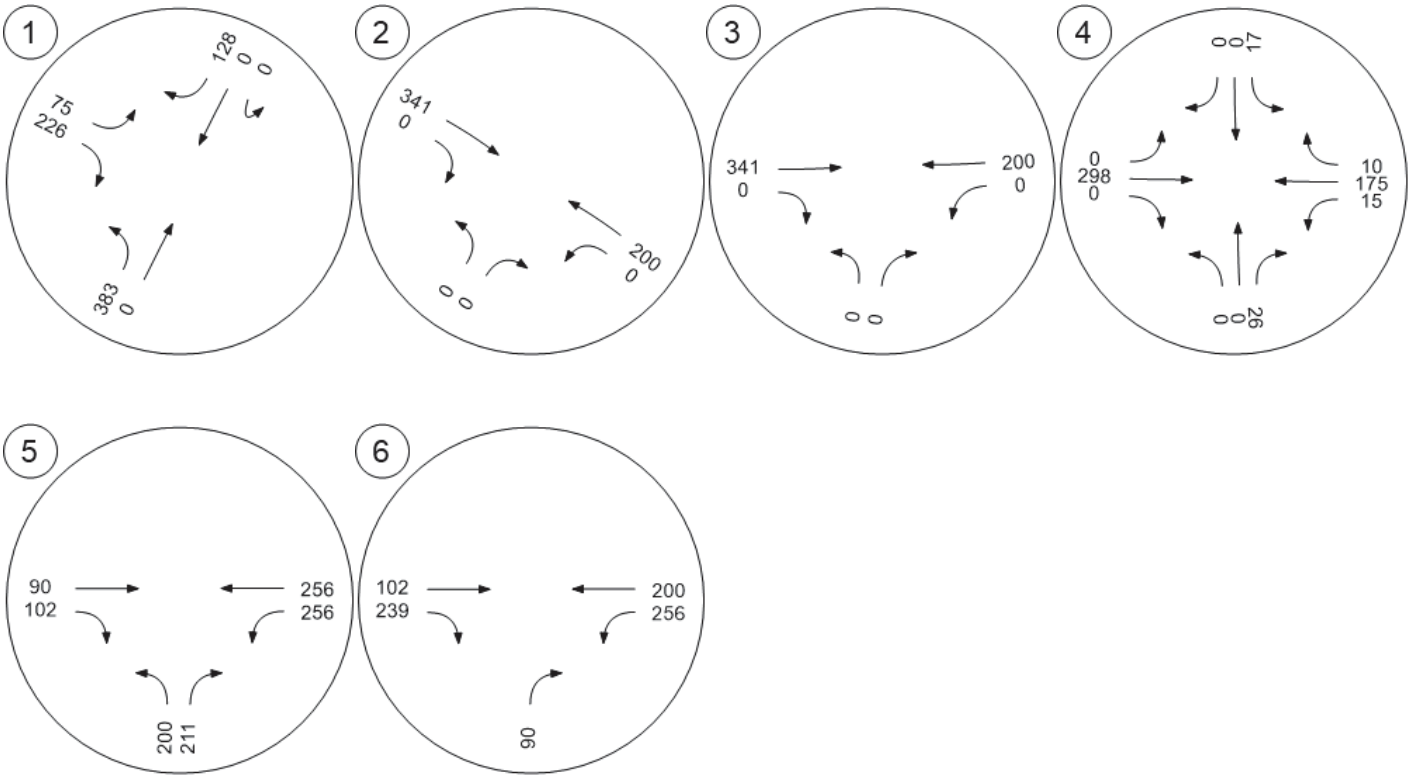

APPENDIX C

Signal Warrants Report For Intersection 3: Paloma Parkway & Dove Valley Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	455	1522	209
2	444	1485	204
3	373	1248	171
4	311	1041	143
5	265	886	122
6	261	872	120
7	255	854	117
8	163	546	75
9	136	454	62
10	120	400	55
11	118	394	54
12	117	391	54
13	116	388	53
14	81	272	37
15	68	227	31
16	51	170	23
17	34	114	16
18	22	73	10
19	13	44	6
20	10	32	4
21	4	12	2
22	4	12	2
23	3	9	1
24	2	8	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1977	2	209	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1929	2	204	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1621	2	171	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1352	2	143	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	4	1151	2	122	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
6	4	1133	2	120	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
7	4	1109	2	117	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	4	709	2	75	No	No	No	No	No	No	Yes	Yes	No	No
9	4	590	2	62	No	No	No	No	No	No	No	Yes	No	No
10	4	520	2	55	No	No	No	No	No	No	No	No	No	No
11	4	512	2	54	No	No	No	No	No	No	No	No	No	No
12	4	508	2	54	No	No	No	No	No	No	No	No	No	No
13	4	504	2	53	No	No	No	No	No	No	No	No	No	No
14	4	353	2	37	No	No	No	No	No	No	No	No	No	No
15	4	295	2	31	No	No	No	No	No	No	No	No	No	No
16	4	221	2	23	No	No	No	No	No	No	No	No	No	No
17	4	148	2	16	No	No	No	No	No	No	No	No	No	No
18	4	95	2	10	No	No	No	No	No	No	No	No	No	No
19	4	57	2	6	No	No	No	No	No	No	No	No	No	No
20	4	42	2	4	No	No	No	No	No	No	No	No	No	No
21	4	16	2	2	No	No	No	No	No	No	No	No	No	No
22	4	16	2	2	No	No	No	No	No	No	No	No	No	No
23	4	12	2	1	No	No	No	No	No	No	No	No	No	No
24	4	10	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					2	3	4	7	7	7	8	9	4	3

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	143.4
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	8:19
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	209
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2186
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 2: 7th Street & Dove Valley Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	SE, NW
Minor Approaches	SW
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	SE	NW	SW
1	427	1734	23
2	417	1692	22
3	350	1422	19
4	292	1186	16
5	249	1009	13
6	245	994	13
7	240	973	13
8	153	623	8
9	127	517	7
10	112	456	6
11	111	449	6
12	110	446	6
13	109	442	6
14	76	310	4
15	64	258	3
16	48	194	3
17	32	130	2
18	20	83	1
19	12	50	1
20	9	36	0
21	3	14	0
22	3	14	0
23	3	10	0
24	2	9	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	2161	2	23	No	No	No	No	No	No	No	No	No	No
2	4	2109	2	22	No	No	No	No	No	No	No	No	No	No
3	4	1772	2	19	No	No	No	No	No	No	No	No	No	No
4	4	1478	2	16	No	No	No	No	No	No	No	No	No	No
5	4	1258	2	13	No	No	No	No	No	No	No	No	No	No
6	4	1239	2	13	No	No	No	No	No	No	No	No	No	No
7	4	1213	2	13	No	No	No	No	No	No	No	No	No	No
8	4	776	2	8	No	No	No	No	No	No	No	No	No	No
9	4	644	2	7	No	No	No	No	No	No	No	No	No	No
10	4	568	2	6	No	No	No	No	No	No	No	No	No	No
11	4	560	2	6	No	No	No	No	No	No	No	No	No	No
12	4	556	2	6	No	No	No	No	No	No	No	No	No	No
13	4	551	2	6	No	No	No	No	No	No	No	No	No	No
14	4	386	2	4	No	No	No	No	No	No	No	No	No	No
15	4	322	2	3	No	No	No	No	No	No	No	No	No	No
16	4	242	2	3	No	No	No	No	No	No	No	No	No	No
17	4	162	2	2	No	No	No	No	No	No	No	No	No	No
18	4	103	2	1	No	No	No	No	No	No	No	No	No	No
19	4	62	2	1	No	No	No	No	No	No	No	No	No	No
20	4	45	2	0	No	No	No	No	No	No	No	No	No	No
21	4	17	2	0	No	No	No	No	No	No	No	No	No	No
22	4	17	2	0	No	No	No	No	No	No	No	No	No	No
23	4	13	2	0	No	No	No	No	No	No	No	No	No	No
24	4	11	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	SW
Total Stopped Delay Per Vehicle on Minor Approach (s)	76.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:29
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	23
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2184
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 5: Access A & Sonoran Desert Drive

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	258	1278	330
2	252	1247	322
3	212	1048	271
4	176	874	226
5	150	744	192
6	148	732	189
7	145	717	185
8	93	459	118
9	77	381	98
10	68	336	87
11	67	331	85
12	66	328	85
13	66	326	84
14	46	229	59
15	38	190	49
16	29	143	37
17	19	96	25
18	12	61	16
19	7	37	10
20	5	27	7
21	2	10	3
22	2	10	3
23	2	8	2
24	1	6	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1536	2	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1499	2	322	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1260	2	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1050	2	226	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	4	894	2	192	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
6	4	880	2	189	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
7	4	862	2	185	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	4	552	2	118	No	No	No	Yes	No	No	No	Yes	No	No
9	4	458	2	98	No	No	No	No	No	No	No	No	No	No
10	4	404	2	87	No	No	No	No	No	No	No	No	No	No
11	4	398	2	85	No	No	No	No	No	No	No	No	No	No
12	4	394	2	85	No	No	No	No	No	No	No	No	No	No
13	4	392	2	84	No	No	No	No	No	No	No	No	No	No
14	4	275	2	59	No	No	No	No	No	No	No	No	No	No
15	4	228	2	49	No	No	No	No	No	No	No	No	No	No
16	4	172	2	37	No	No	No	No	No	No	No	No	No	No
17	4	115	2	25	No	No	No	No	No	No	No	No	No	No
18	4	73	2	16	No	No	No	No	No	No	No	No	No	No
19	4	44	2	10	No	No	No	No	No	No	No	No	No	No
20	4	32	2	7	No	No	No	No	No	No	No	No	No	No
21	4	12	2	3	No	No	No	No	No	No	No	No	No	No
22	4	12	2	3	No	No	No	No	No	No	No	No	No	No
23	4	10	2	2	No	No	No	No	No	No	No	No	No	No
24	4	7	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	7	8	4	7	7	8	7	6

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	228.5
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	20:56
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	330
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1866
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 3: Paloma Parkway & Dove Valley Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1653	625	137
2	1613	610	134
3	1355	513	112
4	1131	428	94
5	962	364	80
6	947	358	79
7	927	351	77
8	593	224	49
9	493	186	41
10	435	164	36
11	428	162	35
12	425	161	35
13	422	159	35
14	296	112	25
15	246	93	20
16	185	70	15
17	124	47	10
18	79	30	7
19	48	18	4
20	35	13	3
21	13	5	1
22	13	5	1
23	10	4	1
24	8	3	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	2278	2	137	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
2	4	2223	2	134	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
3	4	1868	2	112	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	4	1559	2	94	No	No	No	No	No	Yes	Yes	Yes	No	No
5	4	1326	2	80	No	No	No	No	No	Yes	Yes	Yes	No	No
6	4	1305	2	79	No	No	No	No	No	No	Yes	Yes	No	No
7	4	1278	2	77	No	No	No	No	No	No	Yes	Yes	No	No
8	4	817	2	49	No	No	No	No	No	No	No	No	No	No
9	4	679	2	41	No	No	No	No	No	No	No	No	No	No
10	4	599	2	36	No	No	No	No	No	No	No	No	No	No
11	4	590	2	35	No	No	No	No	No	No	No	No	No	No
12	4	586	2	35	No	No	No	No	No	No	No	No	No	No
13	4	581	2	35	No	No	No	No	No	No	No	No	No	No
14	4	408	2	25	No	No	No	No	No	No	No	No	No	No
15	4	339	2	20	No	No	No	No	No	No	No	No	No	No
16	4	255	2	15	No	No	No	No	No	No	No	No	No	No
17	4	171	2	10	No	No	No	No	No	No	No	No	No	No
18	4	109	2	7	No	No	No	No	No	No	No	No	No	No
19	4	66	2	4	No	No	No	No	No	No	No	No	No	No
20	4	48	2	3	No	No	No	No	No	No	No	No	No	No
21	4	18	2	1	No	No	No	No	No	No	No	No	No	No
22	4	18	2	1	No	No	No	No	No	No	No	No	No	No
23	4	14	2	1	No	No	No	No	No	No	No	No	No	No
24	4	11	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	3	5	7	7	2	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	528.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	20:05
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	137
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2415
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 2: 7th Street & Dove Valley Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	SE, NW
Minor Approaches	SW
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	SE	NW	SW
1	1782	562	21
2	1739	549	20
3	1461	461	17
4	1219	384	14
5	1037	327	12
6	1021	322	12
7	1000	315	12
8	640	202	8
9	531	167	6
10	469	148	6
11	462	146	5
12	458	144	5
13	454	143	5
14	319	101	4
15	266	84	3
16	200	63	2
17	134	42	2
18	86	27	1
19	52	16	1
20	37	12	0
21	14	4	0
22	14	4	0
23	11	3	0
24	9	3	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	2344	2	21	No	No	No	No	No	No	No	No	No	No
2	4	2288	2	20	No	No	No	No	No	No	No	No	No	No
3	4	1922	2	17	No	No	No	No	No	No	No	No	No	No
4	4	1603	2	14	No	No	No	No	No	No	No	No	No	No
5	4	1364	2	12	No	No	No	No	No	No	No	No	No	No
6	4	1343	2	12	No	No	No	No	No	No	No	No	No	No
7	4	1315	2	12	No	No	No	No	No	No	No	No	No	No
8	4	842	2	8	No	No	No	No	No	No	No	No	No	No
9	4	698	2	6	No	No	No	No	No	No	No	No	No	No
10	4	617	2	6	No	No	No	No	No	No	No	No	No	No
11	4	608	2	5	No	No	No	No	No	No	No	No	No	No
12	4	602	2	5	No	No	No	No	No	No	No	No	No	No
13	4	597	2	5	No	No	No	No	No	No	No	No	No	No
14	4	420	2	4	No	No	No	No	No	No	No	No	No	No
15	4	350	2	3	No	No	No	No	No	No	No	No	No	No
16	4	263	2	2	No	No	No	No	No	No	No	No	No	No
17	4	176	2	2	No	No	No	No	No	No	No	No	No	No
18	4	113	2	1	No	No	No	No	No	No	No	No	No	No
19	4	68	2	1	No	No	No	No	No	No	No	No	No	No
20	4	49	2	0	No	No	No	No	No	No	No	No	No	No
21	4	18	2	0	No	No	No	No	No	No	No	No	No	No
22	4	18	2	0	No	No	No	No	No	No	No	No	No	No
23	4	14	2	0	No	No	No	No	No	No	No	No	No	No
24	4	12	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	SW
Total Stopped Delay Per Vehicle on Minor Approach (s)	126.8
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	21
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2365
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 5: Access A & Sonoran Desert Drive

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1441	407	217
2	1406	397	212
3	1182	334	178
4	986	278	148
5	839	237	126
6	826	233	124
7	808	228	122
8	517	146	78
9	429	121	65
10	379	107	57
11	373	105	56
12	370	105	56
13	367	104	55
14	258	73	39
15	215	61	32
16	161	46	24
17	108	31	16
18	69	20	10
19	42	12	6
20	30	9	5
21	12	3	2
22	12	3	2
23	9	2	1
24	7	2	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1848	2	217	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1803	2	212	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1516	2	178	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1264	2	148	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	4	1076	2	126	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
6	4	1059	2	124	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
7	4	1036	2	122	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
8	4	663	2	78	No	No	No	No	No	No	Yes	Yes	No	No
9	4	550	2	65	No	No	No	No	No	No	No	Yes	No	No
10	4	486	2	57	No	No	No	No	No	No	No	No	No	No
11	4	478	2	56	No	No	No	No	No	No	No	No	No	No
12	4	475	2	56	No	No	No	No	No	No	No	No	No	No
13	4	471	2	55	No	No	No	No	No	No	No	No	No	No
14	4	331	2	39	No	No	No	No	No	No	No	No	No	No
15	4	276	2	32	No	No	No	No	No	No	No	No	No	No
16	4	207	2	24	No	No	No	No	No	No	No	No	No	No
17	4	139	2	16	No	No	No	No	No	No	No	No	No	No
18	4	89	2	10	No	No	No	No	No	No	No	No	No	No
19	4	54	2	6	No	No	No	No	No	No	No	No	No	No
20	4	39	2	5	No	No	No	No	No	No	No	No	No	No
21	4	15	2	2	No	No	No	No	No	No	No	No	No	No
22	4	15	2	2	No	No	No	No	No	No	No	No	No	No
23	4	11	2	1	No	No	No	No	No	No	No	No	No	No
24	4	9	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					2	3	4	7	7	7	8	9	7	4

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	388.9
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	23:26
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	217
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2065
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

APPENDIX D

Traffic Impact Analysis Review

	Comments	Response
1	Executive Summary, General Comment – Comments are not provided on this section as content is drawn from the remaining sections. Please review and update for conformity with any study revisions prior to the next submittal.	Updated to address comments.
2	Page 5, Section 2.4 – the secondary site access to be included in intersection performance analyses. As Sonoran Desert Drive is a scenic corridor, this secondary access should not include a median break.	Designed as left in/right in/right out only to accommodate the high number of left turning vehicles into MacEwen 480
3	Page 9, Section 3.3 – As discussed in regards to the General Plan, Phoenix has a concept plan for the extension of Sonoran Desert Drive as a scenic corridor, with separate improvements to reroute Dove Valley Road to a "T" intersection near the development. Dove Valley Road is planned as a collector (CM). The cross-sections provided on Page 10 depict Sonoran Desert Drive. Please check the report for consistency on references to Dove Valley Road and Sonoran Desert Drive, and the appropriate roadway sections.	Modified to show Sonoran Desert Drive as a parkway corridor and Dove Valley Road as an arterial.
4	Page 10, Section 3.3 – With regards to the construction timeline for Sonoran Desert Drive, the roadway capacity for this analysis will need to be based on one directional travel lane for all traffic exiting the development. Suggested capacity improvements to mitigate the development traffic is an essential aspect of this study.	Included roadway LOS and capacity in the study.
5	Page 13, Section 5.1 – Sonoran Desert Drive and Dove Valley Road are effectively two-lane roadways with intermittent passing lanes. Proceed with one directional travel lane for roadway capacity analysis.	Sonoran Desert Drive is being analyzed as a two lane highway and Dove Valley as a collector per multiple meetings/discussions/phone calls with City staff.
6	Page 14, Section 5.2 – After submission of this study, Phoenix has provided updated ADT volumes for Dove Valley Road, as conducted by Street Transportation on November 7th, 2018. The volumes indicate background traffic that is 370% higher than used as the background volume in the report. Growth rates for all study links and intersections should be reconsidered accordingly.	ADT volumes that were provided are included in the study.
7	Page 14, Section 5.2 – Were the study intersections each counted twice for each peak hour, or once each over the span of two days? If each were counted twice, please include all raw count data in the appendix.	All count data is included in the appendix.

8	Page 14, Section 5.2 – As these counts were conducted in August when Phoenix-area is typically lower, a seasonal adjustment factor will be required. The Streets traffic counting program has provided the factor of 1/0.95 for the adjustment of August traffic.	A seasonal adjustment of 1/0.95 was used on collected traffic volumes.
9	Section 5 General Comment – A roadway capacity analysis will be required for this study. Please provide analysis for each major roadway link along Sonoran Desert Drive/Dove Valley Road. As discussed in the 11/26 meeting, the analysis shall be based on the existing roadway configurations. Capacity improvements such as widening are to be proposed as needed to mitigate insufficient capacity with the developer being responsible for a proportional share of those costs.	Roadway capacity analyses, traffic impacts and mitigation measures are included in the revised report.
10	Section 6 General Comment – Which public schools will these residents attend?	MacEwen is within the Deer Valley Unified School District. Students are likely to attend Sonoran Foothills Elementary or Desert Mountain Elementary School. Boulder Creek High School will most likely serve the high school students within MacEwen. However, it is anticipated that a percentage of students within the MacEwen development will attend Cave Creek School District elementary, middle and high schools.
11	Page 17, Table 5 – There is currently no planned project to modify the intersection of Cave Creek Road and Sonoran Desert Drive; the study should reflect the existing condition. Study to provide development funded improvements proposals to mitigate the intersection.	Study provides existing conditions and recommendations to increase capacity at intersection of Cave Creek Road and Sonoran Desert Drive. See figure xx.
12	Page 19, Section 6.1 – Please clarify the associated housing density used to derive the number of dwelling units. There is currently a zoning case under review by the City in regards to the allowable density. Are these calculations derived under the existing or proposed zoning?	The 1420 homes is derived from 3 units per acre, the proposed zoning for the development.
13	Page 20, Section 6.2 – Please include the analysis used for derivation of trip distribution. Specially, provide justification for the 30% trip distribution to Cave Creek Road north. This value is drastically higher than other analyses have produced for this area.	Distribution north on Cave Creek Road was re-evaluated and changed to 15% based on discussions with City staff.
14	Page 20, Section 6.2 - It is also unclear how the distribution is applied to the peak hour traffic for intersection analysis at Cave Creek Road. While the background traffic counts indicate	Distribution north on Cave Creek Road was re-evaluated and changed to 15% based on discussions with City staff.

	approximately 70% to the south and 30% to the north, this existing distribution might not apply to the residential-based trips consistent with this development. Please explain and clarify.	
15	Page 23, Section 6.3 – Please explain the basis of the 4% annual growth rate and reconsider in the context of the provided traffic counts. In addition to growth in background traffic, this study must account for planned developments/developable land in the region in association with the approved City's General Land Plan to accurately develop the projected traffic anticipated through the horizon year.	Growth rates were determined based on meetings with City staff and the Development Team outside the preparation of this TIA. Once growth rates were approve by the City, these traffic volumes were used in the analysis of this report.
16	Section 6 General Comment – With respect to the potential roadway capacity analysis for the adjacent eastbound and westbound links, adding the projected site traffic to the current peak hour counts of roughly 900+ vph clearly approaches or exceeds the maximum capacity of the existing roadway. Analysis of roadway link capacity, with proposed mitigation, is an essential aspect of this study's purpose.	Roadway capacity and LOS was updated and incorporated in this report.
17	Section 7 General Comment – As no roadway capacity analysis has been provided, we are unable to properly comment on the proposed improvements with regards to system capacity and effectiveness of improvements.	Roadway capacity and LOS was updated and incorporated in this report.
18	Page 30, Section 7.1 – With regards to the proposed roadway modifications, consider proposed improvements in the context of required capacity. Widening along the property frontage may be required for the geometric configuration of the intersection, but does not advance the overall roadway link capacity without improvements to the remainder of the roadway link.	Roadway capacity and LOS was updated and incorporated in this report.
19	Page 30, Section 7.2 – As stated above, a full-access secondary entrance is inconsistent with the scenic corridor plan for Sonoran Desert Drive. We will require that this access be provided without a median break and thus right-in/right-out only.	Secondary access is designed as right in/right out only
20	Page 30, Section 7.2 – The site plan should depict future connections to the eastern and western adjacent parcels, in conformance with the anticipated future sale of State Lands and as required by Phoenix Subdivision Code. This study shall include the corresponding projected trip distributions for the intersection analyses of the site access points.	Providing connection via the secondary connecter via parcel to the west. Not a connection to the east designated for parks and open space. East within floodway for wash,
21	Page 33, Section 7.4 – Last paragraph, correct "principle" to "principal".	Changed

22	Page 33, Section 7.4 – Include the 7th Street/Dove Valley intersection in the signal warrant analysis, as 2030 analysis indicates LOS F for left-turn movements.	Included
23	Page 34, Section 7.4 – As the signal at the primary access will be required, the developer shall deposit escrow funds for the full cost of the signal installation, if not constructed with Phase 1.	Taylor Morrison will work with the City regarding off-site improvements.
24	Page 34, Section 7.4 – The highest 8-hour volume appears to have been derived from the peak hour traffic counts. Please utilize the provided 24-hour counts for this consideration.	The provided 24 hour counts were utilized to obtain the 8 highest peak hour percentages for signal warrant analysis.
25	Page 38, Table 12 – The intersection of Paloma Pkwy/Dove Valley Road changes to a signalized intersection between the 2020 analysis and the 2030 analysis. What is the basis for this change? As there is no timeline within the City to install the signal, this intersection should also be included in the warrant analysis.	Signal warrants for the intersection of Paloma Pkwy/Dove Valley Road are included in the report.
26	Page 43, Section 7.8 – MacEwen 480 site generated traffic contributes to the future operational deficiencies at the Cave Creek/Sonoran Desert intersection. The City does not accept the premise that projected future LOS F is a basis to avoid mitigation. Minimizing delay is a value to the community, irrespective of the LOS category.	Existing condition improvements are recommended at the intersection of Cave Creek Road/Sonoran Desert Drive to improve operations.
27	Page 43, Section 7.8, Table 16 – Does Appendix B include the 2025 and 2030 analyses for the 'with improvements' configurations? Please include or relabel for clarity for both background and total conditions, preferably as a separate Appendix section. There is a 2030 analysis that includes 2 NB lanes at Cave Creek Road with development volumes, but that depicts a LOS F for the NB left turn movement. This contradicts the summary table and the conclusions drawn from it.	Appendix have been separated and clarified.
28	Figures 14 & 16 – Neither of these lane configurations are acceptable. Figure 14 would provide temporary widening that does improve system capacity. Figure 16 would consist of two 3-lane sections.	Recommended option lies within the existing Sonoran Desert Drive footprint to minimize impacts to natural landscaping adjacent to the roadway.
29	Page 47, Section 8.0 – Dove Valley Road, west of 7th St, will not be widened by 2025. Consistent with the 11/26 meeting, consider the existing roadways for the purposes of analysis with any increased capacity as a proposed mitigation for the site-generated traffic.	Increased capacity west of the MacEwen 480 site is recommended with the development of Sonoran Desert Drive from Paloma Parkway to Dove Valley Road.
30	LOS Analysis, General comment – The analyses were conducted using 110 second cycle lengths for	UCG staff left messages for Tom Wolch, but were unable to reach him.

	Sonoran Desert Drive and Cave Creek Rd. The City currently runs a 120 second cycle length and this should be used as the basis for analysis. Additionally, the pedestrian timings for walk, FDW, and yellow clearance are shorter than current City parameters. Please contract traffic operations (Tom Wolch, 602-534-0698) to ensure that analysis inputs align with City policy.	UCG increased cycle lengths and walk/FDW/Yellow Clearance to more closely resemble City timing plans.
31	Volume Estimates, General comment – Prior to proceeding with the revised analysis, we recommend that the development's traffic engineer discuss and reach consensus on projected volumes and an annual growth rate for background traffic with the City. Please contact Matt Wilson, 602-262-7580, to arrange this discussion.	The Development Team met with City staff on multiple occasions to develop annual growth rates for background traffic outside the preparation of this TIA.