

Snow Park Village Transportation Analysis

**Prepared for:
Deer Valley**

April 2021

UT20-2245

FEHR  PEERS

Table of Contents

1. Executive Summary	1
1.1.1 LOS Summary	1
2. Introduction	3
2.1 Purpose/Conclusions and Recommendations.....	3
2.2 Scope.....	3
2.3 Analysis Methodology	5
3. Existing 2020 Background Conditions	6
3.1 Purpose	6
3.2 Roadway System.....	6
3.3 Traffic Volumes	7
3.4 Level of Service Analysis	9
3.5 Mitigation Measures	10
3.6 Origin-Destination Data	10
3.7 Vehicle Occupancy Data.....	11
4. Project Conditions	14
4.1 Purpose	14
4.2 Project Description.....	14
4.3 Trip Generation	14
4.4 Trip Distribution and Assignment.....	19
5. Existing 2020 plus Project Conditions	21
5.1 Purpose	21
5.2 Traffic Volumes	21
5.3 Level of Service Analysis	23
5.4 Mitigation Measures	24
6. Opening Year 2022 Background Conditions	27
6.1 Purpose	27
6.2 Traffic Volumes	27
6.3 Level of Service Analysis	27
6.4 Mitigation Measures	28
7. Opening Year 2022 plus Project Conditions	30
7.1 Purpose	30
7.2 Traffic Volumes	30
7.3 Level of Service Analysis	31
7.4 Mitigation Measures	32

8. Future 2040 Background Conditions.....	35
8.1 Purpose	35
8.2 Traffic Volumes	35
8.3 Level of Service Analysis	35
8.4 Mitigation Measures	36
9. Future 2040 plus Project Conditions	38
9.1 Purpose	38
9.2 Traffic Volumes	38
9.3 Level of Service Analysis	39
9.4 Mitigation Measures	40
10. TDM Analysis.....	43
10.1 Purpose	43
10.2 Trip Generation	43
10.3 Level of Service Analysis	44
11. Roadway Analysis.....	45
11.1 Purpose	45
11.2 Analysis Results	45
12. Parking Analysis	47
12.1 Purpose	47
12.2 Analysis Results	47
12.3 Parking Management	49
13. Conclusion/Recommendations	50
Appendix.....	51

List of Figures

Figure 1: Project Site	4
Figure 2: Existing 2020 Background Saturday AM & PM Peak Hour Traffic Conditions	8
Figure 3: Deer Valley Origin-Destination AM Incoming – PM Outgoing Trends	13
Figure 4: Saturday AM & PM Peak Hour Trip Generation.....	20
Figure 5: Existing 2020 plus Project Saturday AM & PM Peak Hour Traffic Conditions.....	26
Figure 6: Opening Year 2022 Background Saturday AM & PM Peak Hour Traffic Conditions.....	29
Figure 7: Opening Year 2022 plus Project Saturday AM & PM Peak Hour Traffic Conditions	34
Figure 8: Future 2040 Background Saturday AM & PM Peak Hour Traffic Conditions	37
Figure 9: Future 2040 plus Project Saturday AM & PM Peak Hour Traffic Conditions	42

List of Tables

Table 1: Snow Park Village Saturday AM and PM Peak Hour Level of Service Summary	2
Table 2: Level of Service Descriptions	5
Table 3: Existing 2020 Background Conditions Saturday AM & PM Peak Hour Level of Service.....	9
Table 4: Snow Park Village Vehicle Occupancy Summary.....	12
Table 5: Snow Park Village Trip Generation	18
Table 6: Existing 2020 plus Project Conditions Saturday AM & PM Peak Hour Level of Service	23
Table 7: Existing 2020 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service	25
Table 8: Opening Year 2022 Background Conditions Saturday AM & PM Peak Hour Level of Service	28
Table 9: Opening Year 2022 plus Project Conditions Saturday AM & PM Peak Hour Level of Service	31
Table 10: Opening Year 2022 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service	33
Table 11: Future 2040 Background Conditions Saturday AM & PM Peak Hour Level of Service	36
Table 12: Future 2040 plus Project Conditions Saturday AM & PM Peak Hour Level of Service.....	39
Table 13: Future 2040 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service.....	41
Table 14: Snow Park Village Saturday Trip Generation – with TDM Reduction	43
Table 15: Snow Park Village TDM Reduction Saturday Peak Hour Level of Service Summary	44
Table 16: Roadway Level of Service Peak Hour Two-Way Traffic Thresholds	45
Table 17: Snow Park Village Roadway LOS Analysis Summary	46
Table 18: Snow Park Village Parking Analysis Summary	48

This page intentionally left blank.

1. Executive Summary

The project goal in undertaking this study included: 1. All study intersections meet Park City intersection standard Level of Service (LOS) as LOS C or better, and 2. Have the proposed project achieve a measurable level of parking requirement reduction through various factors.

The scope of this study analyzes the traffic operations and impacts for existing 2020 background, existing 2020 plus project, opening year 2022 background, opening year 2022 plus project, future 2040 background, and future 2040 plus project conditions at key intersections. The plus project analysis includes project trips generated from the proposed project. The parking analysis took into account both physical and behavioral impacts of the identified resort uses.

Overall in plus project conditions, all study intersections, with recommended mitigations in place, meet or exceed the Park City LOS standards. Furthermore, the most impaired intersection under current conditions, the Deer Valley Drive North / Deer Valley Drive South intersection, which operates today at a LOS below Park City standards, achieves a LOS A by implementing more efficient roadway use and a traffic signal with capabilities to provide transit priority. This LOS A conditions is achieved under all study scenarios. On parking, a 20% parking requirement reduction can be achieved through various factors as further detailed in the body of the study.

1.1.1 LOS Summary

Table 1 reports LOS at the study intersections. For signalized intersections and roundabouts, average vehicular delay and LOS are reported. For unsignalized intersections, the worst movement delay and LOS are reported. Detailed descriptions of the intersection operations can be found in the subsequent chapters. Due to the mixed-use nature of the project along with a transit hub and paid parking, the net total trips generated by the AM peak hour is 92 trips and the PM peak hour is 81 trips.

Table 1: Snow Park Village Saturday AM and PM Peak Hour Level of Service Summary

Intersection			Existing Background	Existing + Project Mitigated ²	2022 Background	2022 + Project Mitigated ²	2040 Background	2040 + Project Mitigated ²
ID	Location	Period	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹
1	Deer Valley Dr N / Deer Valley Dr S	AM	D / 27	A / 6	D / 28	A / 6	E / 39	A / 6
		PM	E / 36	A / 7	E / 39	A / 7	F / 117	A / 8
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	B / 11	B / 12	B / 12	B / 13	C / 16	C / 19
		PM	B / 11	B / 12	B / 11	B / 12	B / 14	C / 15
3	Deer Valley Dr / Bonanza Dr	AM	B / 11	B / 11	B / 12	B / 12	B / 12	B / 13
		PM	B / 13	B / 13	B / 13	B / 13	B / 18	B / 18

1. Intersection average LOS and delay for signalized intersections and roundabouts, worst movement LOS and delay for unsignalized intersections.
2. Deer Valley Drive North / Deer Valley Drive South intersection analyzed as a signal as a mitigation.

Source: Fehr & Peers.

2. Introduction

2.1 Purpose/Conclusions and Recommendations

This study provides a summary of the potential transportation-related impacts from the proposed Snow Park Village development located at the Deer Valley Resort in Park City, Utah. See **Figure 1** for a project location map.

This study analyzes the traffic operations and impacts for existing 2020 background, existing 2020 plus project, 2022 opening day background, 2022 opening day plus project, 2040 background, and 2040 plus project conditions at key intersections described below in the Scope section. The plus project analyses include project trips generated from the proposed project.

In conclusion, the Deer Valley Drive North / Deer Valley Drive South intersection operates at an unacceptable LOS in both Saturday AM and PM peak hours during all analysis scenarios. In plus project conditions, this intersections is proposed to re-align, causing delays at the northbound approach, which becomes the new side-street stop control. Due to the stop-controlled northbound movement, vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. A potential mitigation of a traffic signal with capabilities to provide transit priority was analyzed for this study. The Deer Valley Drive North / Deer Valley Drive South intersection operates at LOS A for all scenarios as a signalized intersection. This signal alternative is recommended at this intersection when warrants are met.

2.2 Scope

This study analyzes the traffic impacts of the project in conjunction with adjacent intersections. Impacts are specifically addressed at the following study intersections:

The following intersections were included in this study:

- 1) Deer Valley Drive North / Deer Valley Drive South – Side street Stop
- 1) Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal - Roundabout
- 2) Bonanza Drive / Deer Valley Drive (SR-224) – Signalized



Figure 1
Project Site 

2.3 Analysis Methodology

LOS is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. **Table 2** provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections. The Highway Capacity Manual 6th Edition (HCM 2016) methodology was used in this study to remain consistent with “state of the practice” professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized intersections and roundabouts, the LOS is provided for the overall intersection (weighted average of all approach delays).

Table 2: Level of Service Descriptions

LOS	Description	Signalized Intersections	Unsignalized Intersections	Roundabouts
		Avg. Delay (sec/veh) ¹	Avg. Delay (sec/veh) ²	Avg. Delay (sec/veh) ³
A	<i>Free Flow / Insignificant Delay</i> Extremely favorable progression. Individual users are virtually unaffected by others in the traffic stream.	< 10.0	< 10.0	< 10.0
B	<i>Stable Operations / Minimum Delays</i> Good progression. The presence of other users in the traffic stream becomes noticeable.	> 10.0 to 20.0	> 10.0 to 15.0	> 10.0 to 15.0
C	<i>Stable Operations / Acceptable Delays</i> Fair progression. The operation of individual users is affected by interactions with others in the traffic stream	> 20.0 to 35.0	> 15.0 to 25.0	> 15.0 to 25.0
D	<i>Approaching Unstable Flows / Tolerable Delays</i> Marginal progression. Operating conditions are noticeably more constrained.	> 35.0 to 55.0	> 25.0 to 35.0	> 25.0 to 35.0
E	<i>Unstable Operations / Significant Delays Can Occur</i> Poor progression. Operating conditions are at or near capacity.	> 55.0 to 80.0	> 35.0 to 50.0	> 35.0 to 50.0
F	<i>Forced, Unpredictable Flows / Excessive Delays</i> Unacceptable progression with forced or breakdown of operating conditions.	> 80.0	> 50.0	> 50.0

1. Overall intersection LOS and average delay (seconds/vehicle) for all approaches.
 2. Worst approach LOS and delay (seconds/vehicle) only.
 3. Overall intersection LOS and average delay (seconds/vehicle) for all approaches.
- Source: Fehr & Peers descriptions, based on *Highway Capacity Manual, 6th Edition*.

3. Existing 2020 Background Conditions

3.1 Purpose

The existing 2020 background conditions analysis examines the study intersections and roadways during the peak travel periods of the day under existing traffic and geometric conditions. Through this analysis, existing traffic operational deficiencies can be identified and potential mitigation measures recommended.

3.2 Roadway System

The primary roadways that will provide access to the project are described below.

- **Deer Valley Drive (SR-224)** is classified as a principal arterial road and has a posted speed limit of 35 mph from Park Avenue to about half way between Bonanza Drive and Marsac Avenue, and 40 mph to the Marsac Avenue roundabout. SR-224 has a five-lane cross section with two travel lanes in each direction with a two-way left-turn lane north of the Marsac Avenue roundabout.
- **Marsac Avenue (SR-224)** is classified as a principal arterial road and has a posted speed limit of 25 mph. Marsac Avenue has a two-lane cross section with one travel lane in each direction near the project area.
- **Deer Valley Drive South** is classified as a major collector road and has a posted speed limit of 25 mph. Deer Valley Drive South has a two-lane cross section with one travel lane in each direction near the project area.
- **Deer Valley Drive North / Deer Valley Drive East** this loop section of Deer Valley Drive is classified as a collector road and has a posted speed limit of 25 mph. Deer Valley Drive North / Deer Valley Drive East has a two-lane cross section with one travel lane in each direction near the project area.
- **Doe Pass Road** is classified as a collector road and has a posted speed limit of 25 mph. Doe Pass Road has a two-lane cross section with one unstriped travel lane in each direction near the project area.

3.3 Traffic Volumes

Fehr & Peers collected intersection turning movement traffic counts at the study intersections to establish a baseline of existing conditions and operations for the area. Intersection turning movement counts were collected at the Deer Valley Drive North / Deer Valley Drive South intersection on February 15, 2020 (President's Day weekend) and February 29, 2020 for the Saturday AM peak period (7:45 AM – 9:45 AM) and the Saturday PM peak period (3:30 PM – 5:30 PM). Intersection turning movement counts were collected at the Deer Valley Drive / Marsac Avenue / Bus Terminal roundabout and the Bonanza Drive / Deer Valley Drive intersection on December 19, 2020 for the Saturday AM and PM peak periods.

Roadway vehicle counts are provided by the Utah Department of Transportation (UDOT) Continuous Count Stations (CCS). Data from two CCSs in the vicinity of the project site (one on SR-224 just south of Snyderville and one on SR-248 just west of Quinn's Junction) were reviewed for the past five years to determine the winter peak traffic. It was observed from the data that the month of January experienced the highest Average Daily Traffic (ADT) volumes of any month of the year. This is likely due to increase in traffic caused by events in the area, such as the Sundance Film Festival. While January may be the busiest month for traffic on the outskirts of Park City, February is another high-volume month within 5% of January's volumes and also the month of Presidents' Day weekend, the busiest ski weekend of the year. To account for the busiest ski season, the turning movement volumes taken in December were adjusted by a factor of 1.05 (5% higher) to replicate February conditions. The existing 2020 background Saturday AM and PM peak hour volumes are shown in **Figure 2**.

Fehr & Peers also collected Saturday daily roadway counts on February 15, 2020 (President's Day weekend) on the internal Deer Valley Drive roadways at the following locations:

- Deer Valley Drive South – between Royal Street and drop-off/pick-up area
- Deer Valley Drive South – south of the Deer Valley Drive North / Deer Valley Drive South intersection
- Deer Valley Drive East – between Queen Esther Drive and parking lot
- Deer Valley Drive North – east of the Deer Valley Drive North / Deer Valley Drive South intersection



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr

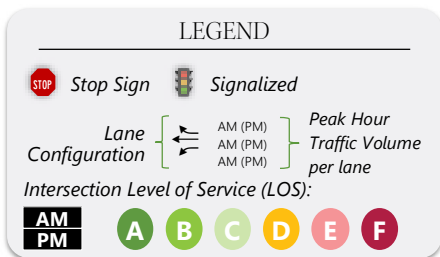
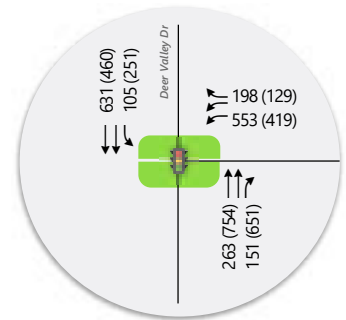
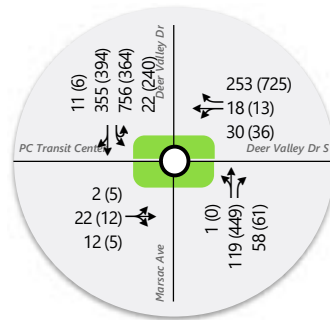
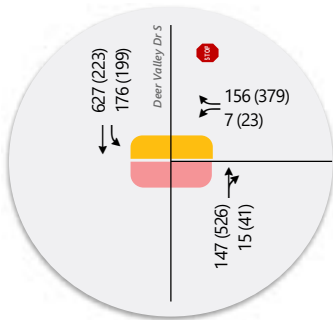


Figure 2
Existing 2020 Background Saturday AM & PM
Peak Hour Traffic Conditions

3.4 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, the existing background Saturday AM and PM peak hour LOS were computed for each study intersection. The results of this analysis for the Saturday AM and PM peak hours are reported in **Table 3** (see Appendix for the detailed LOS report). These results serve as a base for the analysis of the impacts of the proposed Snow Park Village development.

Table 3: Existing 2020 Background Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South ¹	AM	WB Stop	WB Left	27	D	-	-
		PM		WB Right	36	E	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	11	B
		PM		-	-	-	11	B
3	Bonanza Drive / Deer Valley Drive (SR-224)	AM	Signal	-	-	-	11	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 3**, all study intersections operated within acceptable LOS (LOS C or better), with the exception of the westbound approach at the Deer Valley Drive North / Deer Valley Drive South intersection in the AM peak hour and PM peak hour, which operates at LOS D and LOS E, respectively. This was caused by the high volumes of vehicles exiting the Deer Valley Resort area making a westbound right turn onto Deer Valley Drive South. The westbound right movement is stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive South.

It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

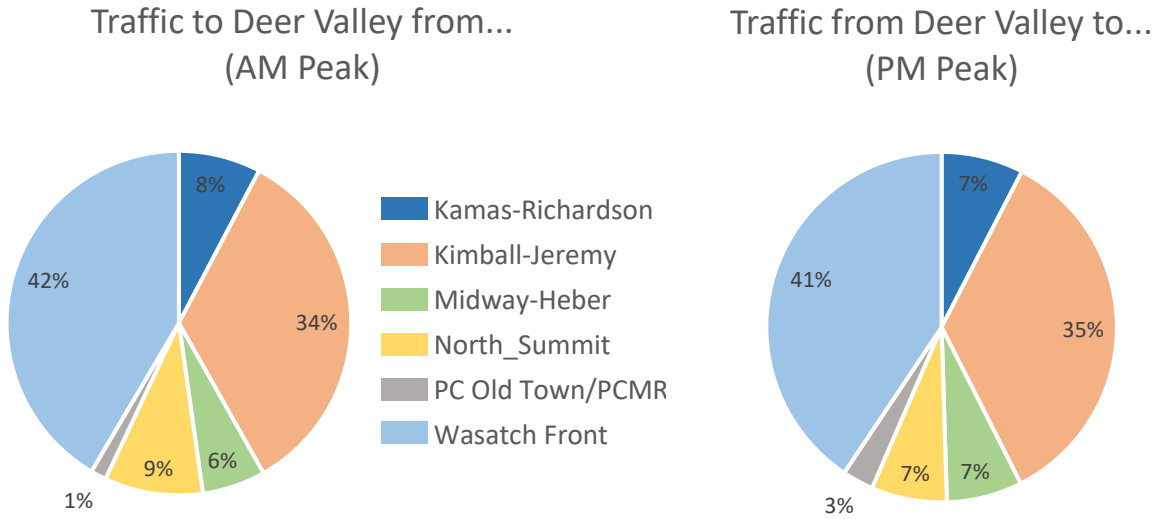


3.5 Mitigation Measures

The concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for existing background conditions.

3.6 Origin-Destination Data

To understand the distribution of origins from which travelers access Deer Valley, Fehr & Peers employed origin-destination data provided by StreetLight Data. This data provider collects samples of trips using mobile phone data (location-based services, or LBS) and aggregates it provide estimates of travel between origin-destination pairs. In this study, trips to and from surrounding areas (Kamas-Richardson, Kimball-Jeremy, Midway-Heber, North Summit County, Wasatch Front, and Park City Old Town/Mountain Resort) were examined. The data sample used in this study was based on 2019 and 2020 observed travel patterns on weekend days during morning and afternoon peak periods (8:00am-10:00am and 3:00pm-5:00pm, respectively) in January and February (peak ski months). The figure below displays the distributions of origins for visitors of the Deer Valley Resort, as also shown in **Figure 3**.



The Wasatch Front contributes the majority of visitors to and from the Deer Valley Resort with 42% and 41% in the AM peak and PM peak, respectively. The Kimball-Jeremy area contributes the second-greatest proportion of visitors with 34% and 35% in the AM peak and PM peak, respectively. The vehicular traffic to

and from the Kimball-Jeremy area are good candidates to encourage shifting to transit or other modes, especially with the proposed improved transit service accessing the Deer Valley Resort.

3.7 Vehicle Occupancy Data

In addition to the traffic counts and StreetLight data, Fehr & Peers collected vehicle occupancy counts for the AM peak period inbound traffic for the Deer Valley Resort. Vehicle occupancy counts were collected for the following three days:

- Saturday, February 13, 2021
- Tuesday, February 23, 2021
- Saturday, February 27, 2021

Table 4 shows the summary of the vehicle occupancy data calculated from the data collected for the three days listed above. It should be noted that the vehicle occupancy counts were collected during the COVID-19 pandemic, and the data shown in **Table 4** could be skewed because people are less likely to carpool with individuals outside of their immediate home due to the pandemic. In summary, the average vehicle occupancy for Snow Park Village was observed to be 2.02 occupants/vehicle on Saturday (weighted average of the two sample Saturdays), and 1.90 occupants/vehicle on a weekday (from a single weekday). Also, the percent single occupant vehicles were observed to be about 36% on Saturday (weighted average of the two sample Saturdays), and about 38% on a weekday (from a single weekday). Vehicle occupancy is a useful metric to have available for baseline conditions, as it can be used in evaluating how future implementation of potential transportation demand management (TDM) strategies could impact travel behaviors.

Table 4: Snow Park Village Vehicle Occupancy Summary

Time Period	Total Vehicle Count	Average Occupancy	Single Occupant Vehicles	Percent Single Occupant Vehicles
Saturday, February 13, 2021				
7:45 – 8:00	45	1.76	19	42%
8:00 – 8:15	58	1.84	23	40%
8:15 – 8:30	59	2.12	17	29%
8:30 – 8:45	68	2.09	19	28%
8:45 – 9:00	74	2.04	26	35%
9:00 – 9:15	26	2.12	12	46%
9:15 – 9:30	22	1.95	10	45%
9:30 – 9:45	20	1.95	7	35%
Sum	372	-	133	-
Weighted Average	-	1.99	-	36%
Tuesday, February 23, 2021				
7:45 – 8:00	15	1.60	6	40%
8:00 – 8:15	32	1.50	22	69%
8:15 – 8:30	48	1.65	24	50%
8:30 – 8:45	56	1.91	17	30%
8:45 – 9:00	63	2.00	23	37%
9:00 – 9:15	48	1.92	16	33%
9:15 – 9:30	43	2.23	11	26%
9:30 – 9:45	24	2.17	5	21%
Sum	329	-	124	-
Weighted Average	-	1.90	-	38%
Saturday, February 27, 2021				
7:45 – 8:00	41	1.66	20	49%
8:00 – 8:15	77	2.04	24	31%
8:15 – 8:30	100	1.91	38	38%
8:30 – 8:45	93	2.11	28	30%
8:45 – 9:00	120	2.28	40	33%
9:00 – 9:15	133	1.98	61	46%
9:15 – 9:30	129	1.97	39	30%
9:30 – 9:45	38	2.13	10	26%
Sum	731	-	260	-
Weighted Average	-	2.03	-	36%

Source: Fehr & Peers.

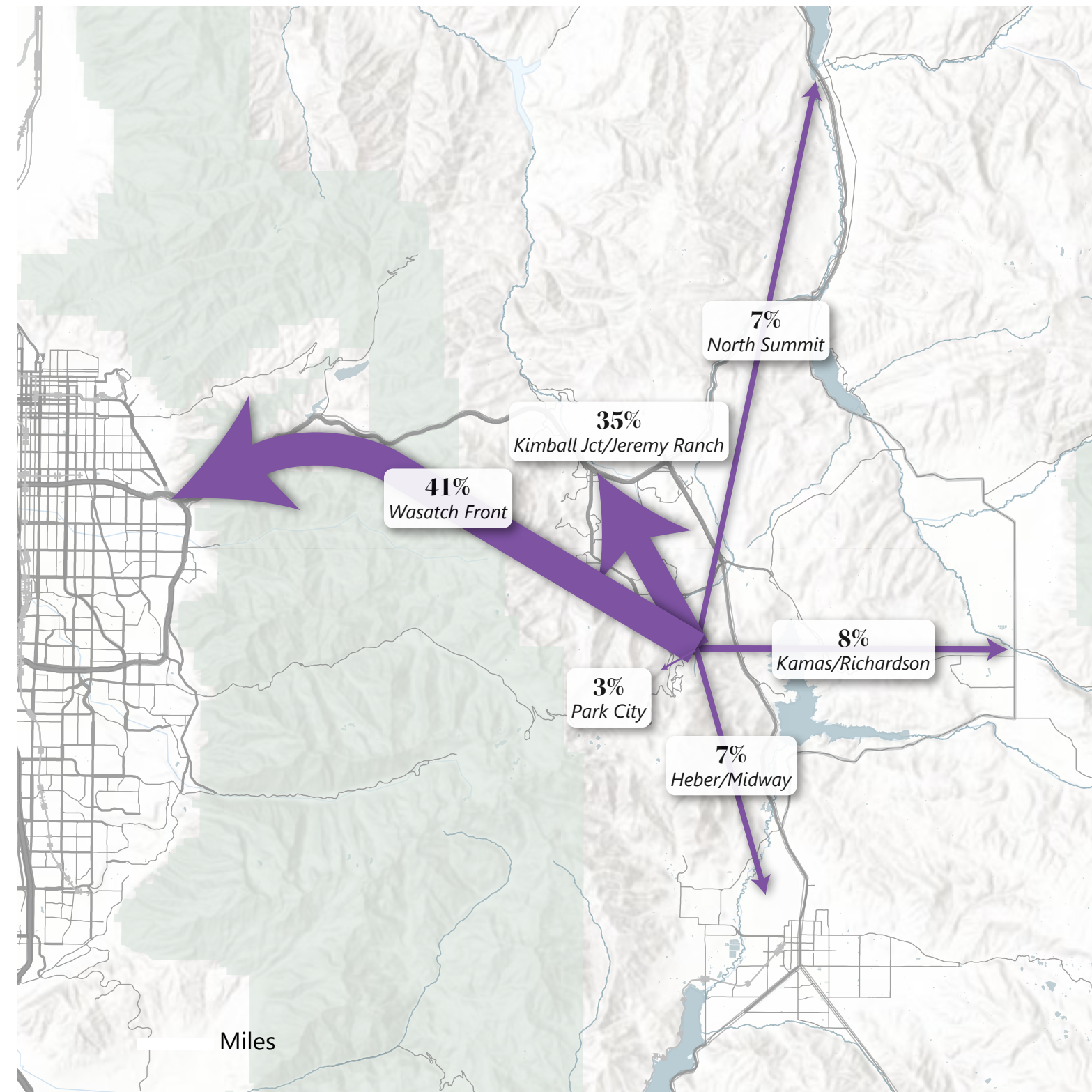
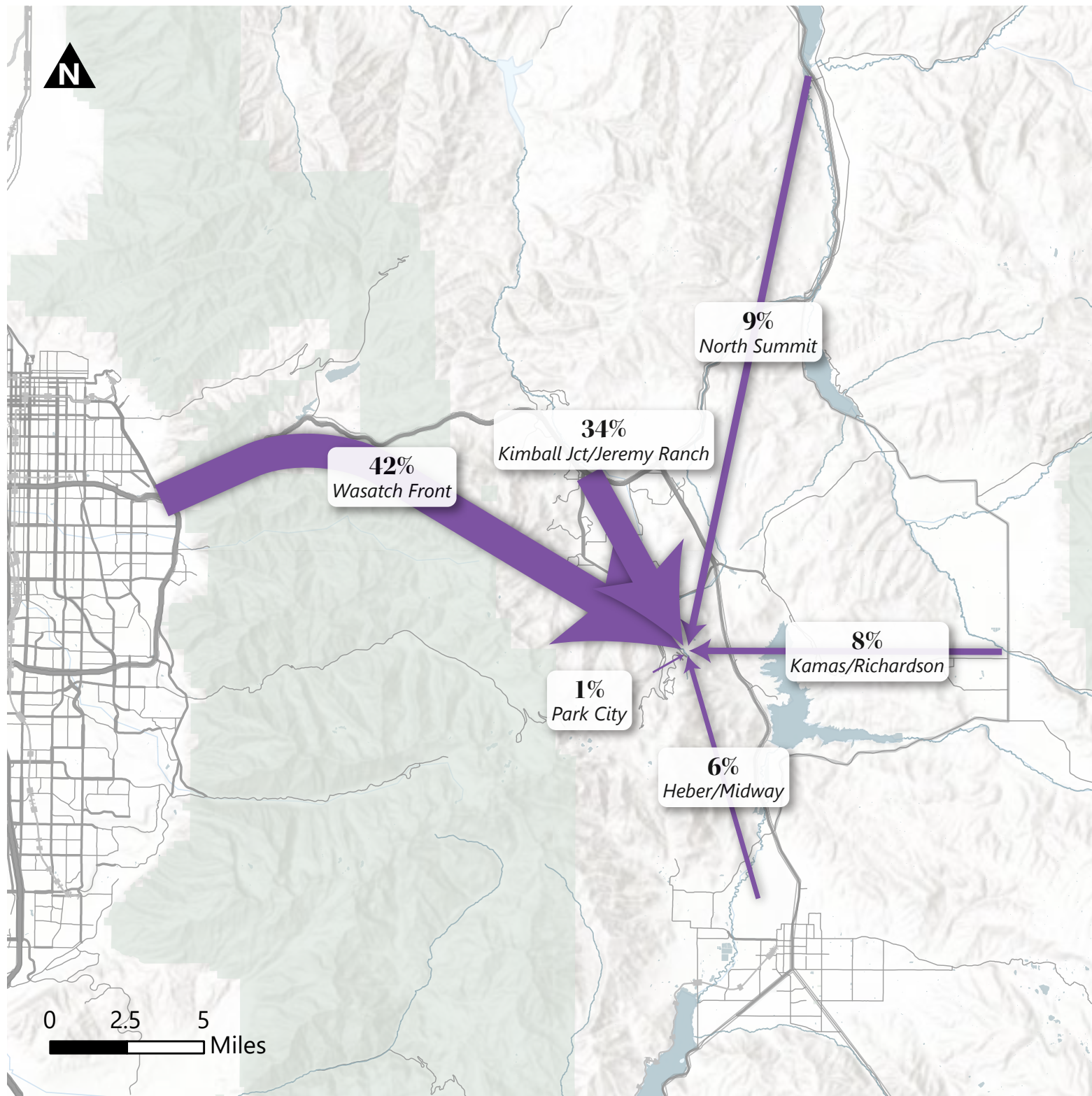


Figure 3
Deer Valley Origin-Destination AM Incoming - PM Outgoing Trends 

4. Project Conditions

4.1 Purpose

The project conditions analysis explains the type and intensity of development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in the Introduction.

4.2 Project Description

The proposed Snow Park Village development will be located at the north and south plots of the Deer Valley Resort. The plots are currently parking lots for the Snow Park Lodge. The Deer Valley resort is in a cul-de-sac type of location, and all trips will access the development through the Deer Valley Drive North / Deer Valley Drive South intersection.

4.3 Trip Generation

Much research and case studies have been performed to better understand the transportation benefits of mixed-use development and transit-oriented development (TOD) over the past decade. “D” factors affect the way mixed-use developments generate trips. The “D” factors include:

- Density (*dwellings, jobs per acre*)
- Diversity (*mix of housing, jobs, retail*)
- Design (*connectivity, walkability*)
- Destinations (*regional accessibility*)
- Distance to Transit (*rail and bus proximity*)
- Development Scale (*population, jobs*)
- Demographics (*household size, income*)

Because of the “D” factors, mixed-use developments and TOD have a much higher distribution of mode split (split between walk, bike, transit, and vehicle) and generally result in lower single-occupant vehicle trips and parking demand. Research has shown that mixed-use developments and TOD generate one-third to two-thirds less trips than national state-of-the-practice trip generation methodologies would say it should.

Trip generation for the proposed Snow Park Village was obtained from the *Institute of Transportation Engineers – 10th Edition Trip Generation Manual* (ITE Manual) and Fehr & Peers' mixed-use development (MXD+) methodology via MainStreet, a Fehr & Peers web application that captures the traffic benefits of developments by looking at interactions among the mixture of land uses and patron usage of alternative modes (i.e. transit, bicycling, and/or walking).

The MXD+ trip generation methodology accurately captures the trip-reducing benefits of mixed-use development projects and is used throughout the United States to help developers, agencies, and the public to quantify these trip reductions. The MXD+ trip generation model is promoted by the United States Environmental Protection Agency (EPA) and has been adopted by the American Society of Civil Engineers (ASCE), American Planning Association (APA), and many others as a recommended resource for trip generation of smart-growth developments. The MXD+ model uses ITE trip generation rates and applies additional variables to those trip generation rates. Some of the additional variables include:

- Employment
- (Population + Employment) per square mile
- Land area
- Total jobs / population diversity
- Number of intersections per square mile
- Employment within a mile; within
- Employment within a 30-minute trip by transit
- Average household size
- Vehicles owned per capita

Trip generation for the project was computed using trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition, 2017, with trip reductions based on Fehr & Peers' MXD+ methodology to account for the project's many land uses and availability of transit. The updated land use plan of Snow Park Village is proposed to include 11 buildings which include the following land uses (taken from the land use program dated February 18, 2021):

- 40,000 square feet of ballroom/event center space
- 125 multifamily housing units
- 192 hotel rooms
- 26,500 square feet of commercial/retail space

The development is also proposed to include the current Deer Valley resort and other land uses in support of the resort. It should be noted that the land uses supporting the ski resort will not be traffic generators; rather, the ski resort will be the generator, and the support land uses serve as accessories to the resort. The current traffic accessing the ski resort were assumed to cover the trip generation for the ski resort and the support land uses. **Table 5** shows the Saturday daily, AM peak hour, and PM peak hour trip generations for the proposed Snow Park Village Development.

The project site is proposed to have a new transit hub on site. Therefore, the Snow Park Village development will have direct access to frequent and free transit. The Snow Park Village is also proposing paid parking for the new parking structure. To account for this, an additional trip reduction of shift to transit was assumed on top of what was projected in the MXD+ model as this model relies on households and job proximity to transit, and not regional attraction proximity to transit nor a cost comparison of parking versus transit. A reduction to transit was assumed for daily, AM peak hour, and PM peak hour. This reduction was calculated from Fehr & Peers' Parking Cost+ tool under the assumption that all trips deterred from the new parking prices would shift to transit or other modes with the accessibility of the new transit hub. This Parking Cost+ tool relies on elasticities ranging from occupancy, dwell time, and volume – calculated from a meta analysis of 50 studies of parking demand. This additional transit reduction is 17.6%, 17.3%, and 17.6% for the Daily, AM, and PM trip generations, respectively.

Additional internal capture was added to the initial internal capture from MXD+ due to the captive nature of a ski resort. These additional internal capture rates were taken from a similar study of Squaw Valley resort in California, conducted by Fehr & Peers in 2014. These calculations vary by land use due to the nature of the attractiveness of certain amenities to those who might not otherwise visit the resort. For example, someone looking to buy sunglasses is very unlikely to choose to make a special trip to buy them at a ski resort, especially during the busiest hour of the busiest day of the week, unless they are already there to ski. Thus, the additional internal capture rate for retail is 95%. However, incoming hotel guests and event attendees likely would not be at the resort without those amenities (lodging for out-of-town guests). Thus, the additional internal capture for the hotels is low, 10% (several amenities are still available to guests internal to the site). Furthermore, the planned apartments in the development will house resort workers, who, during peak hour, can easily walk to work internal to the site. Thus, their additional internal capture rate is high (95%).

The external vehicle trips expected to be generated by the proposed Snow Park Village development and the percent reductions due to internal capture, shift to transit, and shift to walk/bike are shown in **Table 5**.



Altogether, the proposed development will generate 92 trips in the AM peak hour and 81 trips in the PM peak hour.

Table 5: Snow Park Village Trip Generation

Snow Park Development														
Land Use ¹	Number of Units	Unit Type	Rate ²	Daily Trip Generation ³	% Entering ⁴	% Exiting ⁴	% Walk/Bike ⁵	% Transit ⁵	% Addit'l Transit ⁷	% Internal Capture ⁶	% Addit'l Int. Capt. ⁸	Trips Entering	Trips Exiting	New Daily Trips
(220) - Multifamily Housing Low-Rise	125	Dwelling Unit	8.14	1,018	50%	50%	4.6%	3.0%	17.6%	1.9%	95.0%	19	19	38
(330) - Resort Hotel	192	Rooms	8.19	1,572	50%	50%						516	516	1,032
(820) - Shopping Center	26.5	1,000 Sq. Ft	46.12	1,222	50%	50%						22	22	44
(495) Recreational Community Center	40.0	1,000 Sq. Ft	9.1	364	50%	50%						133	133	266
Net Weekday Trips				4,176								690	690	1,380
Land Use ¹	Number of Units	Unit Type	Rate ²	AM Peak Hour Trip Generation ³	% Entering ⁴	% Exiting ⁴	% Walk/Bike ⁵	% Transit ⁵	% Addit'l Transit ⁷	% Internal Capture ⁶	% Addit'l Int. Capt. ⁸	Trips Entering	Trips Exiting	New AM Peak Hour Trips
(220) - Multifamily Housing Low-Rise	125	Dwelling Unit	0.46	58	23%	77%	5.6%	1.9%	17.3%	3.7%	95.0%	0	2	2
(330) - Resort Hotel	192	Rooms	0.32	61	72%	28%						28	11	39
(820) - Shopping Center	26.5	1,000 Sq. Ft	0.94	25	62%	38%						1	0	1
(495) Recreational Community Center	40.0	1,000 Sq. Ft	1.76	70	62%	38%						31	19	50
Net Saturday AM Peak Hour Trips				214								60	32	92
Land Use ¹	Number of Units	Unit Type	Rate ²	PM Peak Hour Trip Generation ³	% Entering ⁴	% Exiting ⁴	% Walk/Bike ⁵	% Transit ⁵	% Addit'l Transit ⁷	% Internal Capture ⁶	% Addit'l Int. Capt. ⁸	Trips Entering	Trips Exiting	New PM Peak Hour Trips
(220) - Multifamily Housing Low-Rise	125	Dwelling Unit	0.7	88	60%	40%	3.4%	2.9%	17.6%	10.6%	95.0%	2	1	3
(330) - Resort Hotel	192	Rooms	0.41	79	43%	57%						20	26	46
(820) - Shopping Center	26.5	1,000 Sq. Ft	4.5	119	52%	48%						2	2	4
(495) Recreational Community Center	40.0	1,000 Sq. Ft	1.07	43	52%	48%						15	13	28
Net Saturday PM Peak Hour Trips				328								39	42	81

1. (XXX) Indicates ITE Land Use Code. Land Use Code from the Institute of Transportation Engineers - 10th Edition Trip Generation Manual (ITE Manual)

2. ITE Trip Generation Rates. Hotel Saturday Daily rate used in place of non-existent Resort Hotel Saturday Daily rate. Due to no available Saturday AM/PM-specific rates, AM Weekday rates used for AM Peak and Saturday Peak rates used for PM Peak.

3. Traffic Generated by the development according to trip generation rates provided in the ITE Manual.

4. Percentage of trips Entering and Exiting the development according to the ITE Manual.

5. Percentage of trips that shift to active transportation or transit modes based on data collected by U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

6. Percentage of trips that are captured internally to the site based on rates published in ITE Manual.

7. Percentage of trips that shift to transit due to parking costs based on Fehr & Peers's Parking Cost Tool.

8. Percentage of trips that are captured internally to the site based on rates from the Fehr & Peers Squaw Valley study.

Source: Fehr & Peers

4.4 Trip Distribution and Assignment

Project traffic was assigned to the roadway network based on the proximity to major streets and freeways, roadway network, high population densities, and regional trip attractions. Existing travel patterns revealed in the Streetlight data, Continuous Count Station data collection from UDOT, and observed during data collection also provided helpful guidance to establish these distribution percentages, especially in close proximity to the site.

The Continuous Count Station data from UDOT informed the distribution of trips arriving via SR-224 and SR-248. Closer to the project site, Streetlight data informed the distribution of trips arriving via Marsac Avenue and Deer Valley Drive. Overall, the project-generated trips were distributed to and from these directions in the Existing analysis, in the corresponding percentages:

- 50% North (using SR-224)
- 20% East (using SR-248 via Bonanza Drive)
- 15% West (using any of the accesses along Deer Valley Drive between Bonanza and Marsac)
- 5% West (using the Transit Hub access at the Marsac Roundabout)
- 10% South (using Marsac Avenue)

These trip distribution assumptions were used to distribute project-generated traffic to the study area intersections and are shown in **Figure 4**.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr

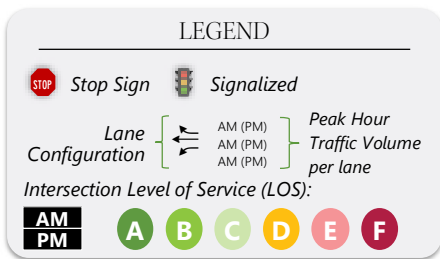
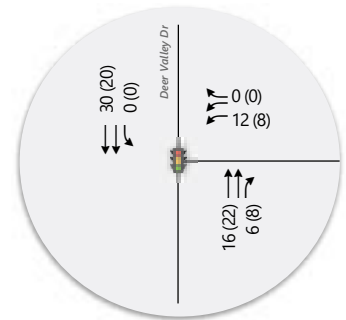
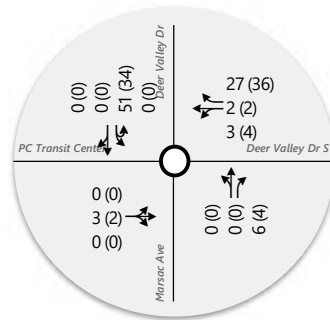
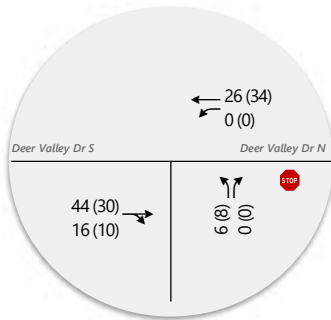


Figure 4 Saturday AM & PM Peak Hour Trip Generation

5. Existing 2020 plus Project Conditions

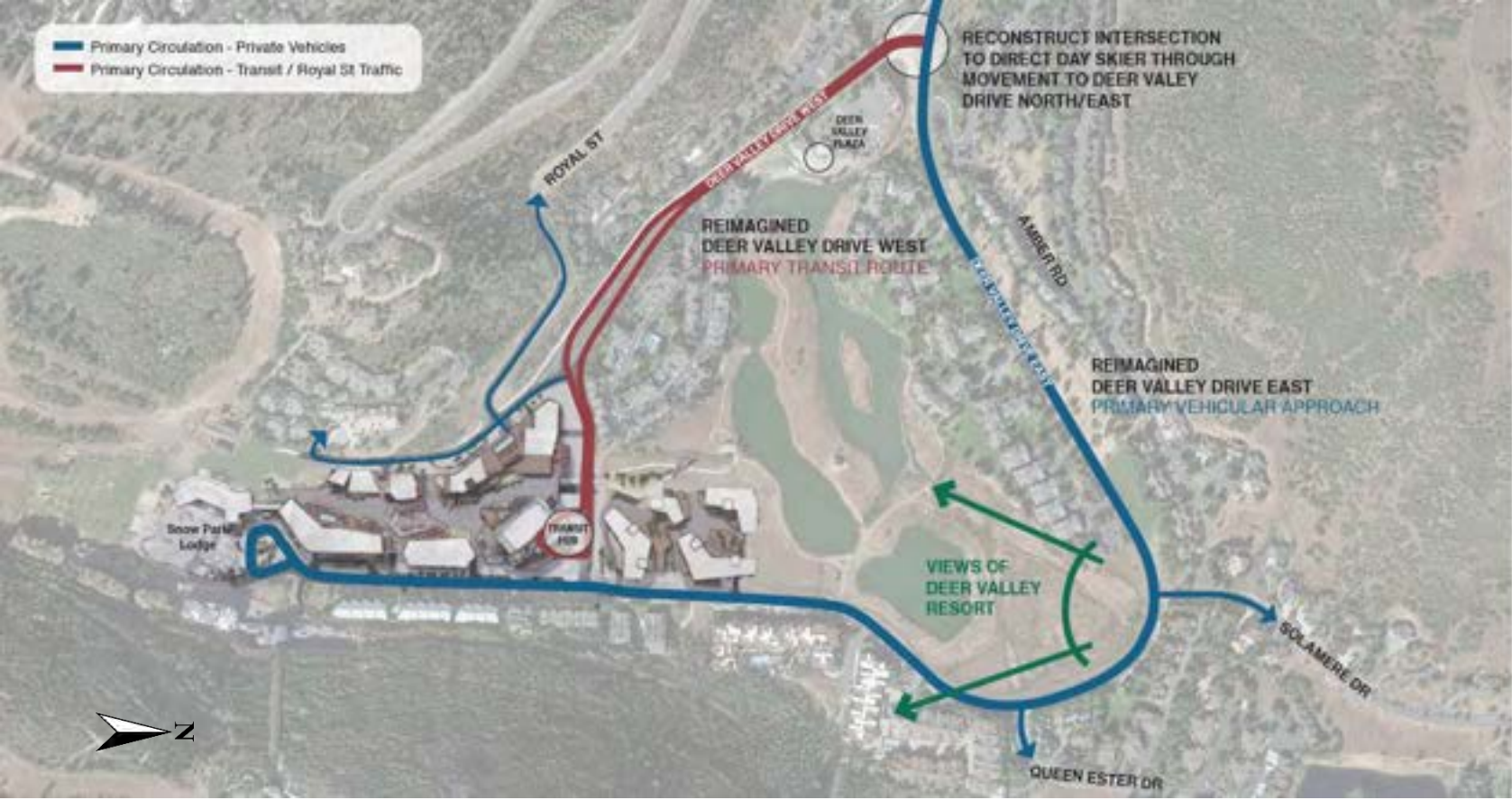
5.1 Purpose

The purpose of the existing 2020 plus project conditions analysis is to evaluate the impact of the proposed development traffic on the surrounding roadway network under existing conditions. In order to analyze this impact, the Saturday peak hour background traffic volumes were combined with volumes generated by the proposed project at its Saturday peak hour. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed project.

5.2 Traffic Volumes

The trips in and out of the existing Deer Valley resort were assumed to be for the ski resort users and were not subtracted out from the background volumes. Project-generated traffic for the additional land uses and re-development was added to the background volumes to yield existing 2020 plus project peak hour volumes. The Saturday AM and PM peak hour traffic volumes at the study intersections are shown in **Figure 4**.

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection. The intersection is currently a T-intersection with free-flow movement north/south along Deer Valley Drive South and stop-control on the westbound approach on Deer Valley Drive North. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive North and stop-control on the northbound approach on Deer Valley Drive South (see figure below). Deer Valley Drive South on the west end will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street. Deer Valley Drive North (connecting to Deer Valley Drive east) will serve as the primary vehicular route to access the Snow Park Lodge drop-off/pick-up area and parking structure accesses. To account for this shift in primary routes internally, it was assumed that 80% of the total traffic would use Deer Valley Drive North (connecting to Deer Valley Drive East) and 20% of the total traffic would use Deer Valley Drive South). Background traffic was shifted and modified to account for the proposed internal circulation.



5.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, the existing 2020 plus project Saturday AM and PM peak hour LOS were computed for each study intersection. The results of the analysis are reported in **Table 6** (see Appendix for the detailed LOS report).

Table 6: Existing 2020 plus Project Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South ¹	AM	NB Stop	NB Left	26	D	-	-
		PM		NB Left	78	F	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	12	B
		PM		-	-	-	12	B
3	Bonanza Drive / Deer Valley Drive (SR-224) ²	AM	Signal	-	-	-	11	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle).
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 6**, the Deer Valley Drive / Marsac Avenue roundabout and Bonanza Drive / Deer Valley Drive signal both operate at acceptable LOS (LOS C or better) for existing plus project conditions. However, the Deer Valley Drive North / Deer Valley Drive South operates at LOS D in the Saturday AM peak hour and LOS F in the Saturday PM peak hour. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. The expected 95th percentile queue length for the northbound left movement reported in Synchro is about 120 feet for the PM peak hour. The figure below shows the 95th percentile queue.



5.4 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A potential mitigation for this intersection is to provide a traffic signal with capabilities to provide transit priority. This potential mitigation of a traffic signal was analyzed and recommended for this study, when warrants are met. The signal analysis results are shown in **Table 7** (see Appendix for the detailed LOS report).

As shown in **Table 7**, the Deer Valley Drive North / Deer Valley Drive South intersection operates at LOS A for both Saturday AM and PM peak hours as a signalized intersection.

Table 7: Existing 2020 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South ²	AM	Signal	-	-	-	6	A
		PM		-	-	-	7	A
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	12	B
		PM		-	-	-	12	B
3	Bonanza Drive / Deer Valley Drive (SR-224) ²	AM	Signal	-	-	-	11	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.

2. This represents the overall intersection LOS and delay (seconds/vehicle).

3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

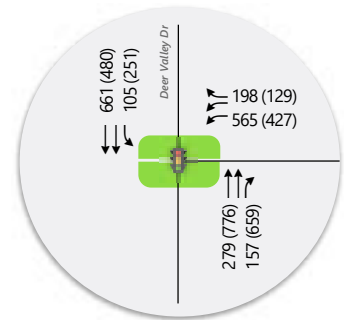
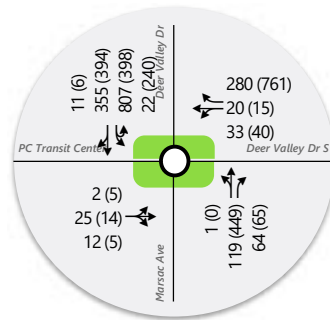
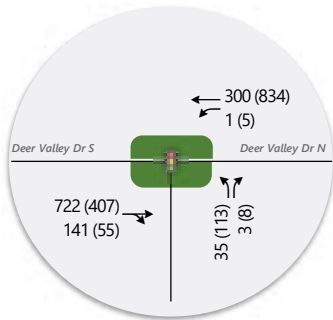
Source: Fehr & Peers.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr N

3. Deer Valley Dr/Bonanza Dr



LEGEND

Stop Sign
 Signalized

Lane Configuration {

 AM (PM)

 AM (PM)

 AM (PM)

} Peak Hour Traffic Volume per lane

Intersection Level of Service (LOS):

 A
 B
 C
 D
 E
 F

Figure 5 Existing 2020 plus Project Saturday AM & PM Peak Hour Traffic Conditions

6. Opening Year 2022 Background Conditions

6.1 Purpose

The purpose of the opening year 2022 background conditions analysis is to evaluate the study intersections during the peak travel periods of the day under projected 2022 traffic volumes, when the development is projected to open. This analysis provides a baseline condition for the year 2022, which can be used to determine future project impacts.

6.2 Traffic Volumes

Traffic volumes for 2022 were estimated using traffic counts and forecasted volumes from the Summit/Wasatch Travel Demand Model (September 2020 version) for 2024. The Summit/Wasatch Travel Demand Model shows a lower growth rate in the future by accounting for a higher mode split of transportation – higher usage of transit, walking, and biking than previous versions of travel demand models. The following growth rates used on the following roadways to project 2022 background weekday volumes as shown in **Figure 6**.

- 0.5% on Deer Valley Drive (SR-224) north of Bonanza Drive
- 0.5% on Deer Valley Drive (SR-224) south of Bonanza Drive
- 0.5% on Deer Valley Drive (SR-224) north of Marsac Avenue
- 0.6% on Deer Valley Drive (SR-224) east of Marsac Avenue
- 0.6% on Deer Valley Drive (SR-224) north of Deer Valley Drive South
- 0.4% on Deer Valley Drive (SR-224) south of Deer Valley Drive South
- 1.7% on Bonanza Drive
- 0.3% on Marsac Avenue

6.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, opening year 2022 background

weekday peak hour LOS was computed for each study intersection. The results of this analysis for the Saturday AM and PM peak hour are reported in **Table 8** (see Appendix for the detailed LOS report).

Table 8: Opening Year 2022 Background Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South	AM	WB Stop	WB Left	28	D	-	-
		PM		WB Right	39	E	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	12	B
		PM		-	-	-	11	B
3	Bonanza Drive / Deer Valley Drive (SR-224)	AM	Signal	-	-	-	12	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 8**, all study intersections operated within acceptable LOS (LOS C or better), with the exception of the westbound approach at the Deer Valley Drive North / Deer Valley Drive South intersection in the AM peak hour and PM peak hour, which operates at LOS D and LOS E, respectively. This was caused by the high volumes of vehicles exiting the Snow Park area making a westbound right turn onto Deer Valley Drive South. The westbound right movement is stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive South.

It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

6.4 Mitigation Measures

The concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for opening year background conditions.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr

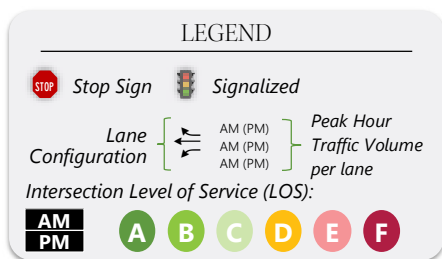
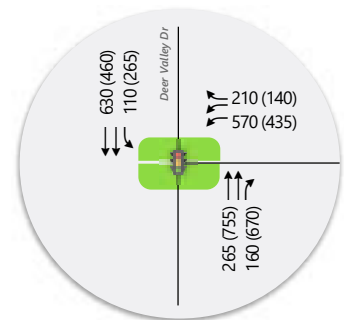
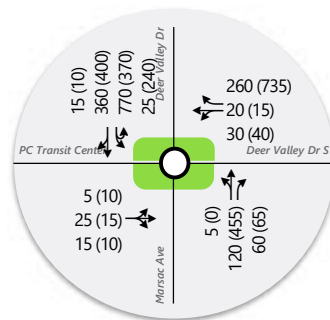


Figure 6
Opening Year 2022 Background Saturday AM & PM
Peak Hour Traffic Conditions

7. Opening Year 2022 plus Project Conditions

7.1 Purpose

The purpose of the opening year 2022 plus project conditions analysis is to evaluate the impact of the proposed development traffic on the surrounding roadway network in the year 2022, the proposed opening year of the development. In order to analyze this impact, the projected 2022 Saturday AM and PM peak hour background traffic volumes were combined with volumes generated by the conceptual development for the Saturday AM and PM peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed project in opening year 2022.

7.2 Traffic Volumes

Project-generated traffic (**Figure 4**) was added to the opening year 2022 background volumes (**Figure 6**) to yield “opening year 2022 plus project” Saturday AM and PM peak hour traffic volumes at the study intersections as shown in **Figure 7**.

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection. The intersection is currently a T-intersection with free-flow movement north/south along Deer Valley Drive South and stop-control on the westbound approach on Deer Valley Drive North. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive North and stop-control on the northbound approach on Deer Valley Drive South. Deer Valley Drive South on the west end will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street. Deer Valley Drive North (connecting to Deer Valley Drive east) will serve as the primary vehicular route to access the Snow Park Lodge drop-off/pick-up area and parking structure accesses. To account for this shift in primary routes internally, it was assumed that 80% of the total traffic would use Deer Valley Drive North (connecting to Deer Valley Drive East) and 20% of the total traffic would use Deer Valley Drive South). Background traffic was shifted and modified to account for the proposed internal circulation.

7.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, opening year 2022 plus project Saturday AM and PM peak hour LOS were computed for each study intersection. The results of the analysis are reported in **Table 9** (see Appendix for the detailed LOS report).

Table 9: Opening Year 2022 plus Project Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South	AM	NB Stop	NB Left	27	D	-	-
		PM		NB Left	88	F	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	13	B
		PM		-	-	-	12	B
3	Bonanza Drive / Deer Valley Drive (SR-224)	AM	Signal	-	-	-	12	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle).
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 9**, the Deer Valley Drive / Marsac Avenue roundabout and Bonanza Drive / Deer Valley Drive signal both operate at acceptable LOS (LOS C or better) for opening year plus project conditions. However, the Deer Valley Drive North / Deer Valley Drive South operates at LOS D and LOS F in the Saturday AM peak hour and PM peak hour, respectively. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. The expected 95th percentile queue length for the northbound left movement reported in Synchro is about 130 feet for the PM peak hour. The figure below shows the 95th percentile queue.

It should be noted that the proposed Snow Park Village development introduces various support land uses intended to attract resort users to stay on-site after the ski resort peak hour. This will help distribute the peaking of traffic, reducing delays at the study intersections and roadways. Therefore, the results shown in **Table 9** are likely overstated.



7.4 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that as vehicles experience delay on the northbound movement, drivers have the option to avoid this delay by approaching this intersection via the free-flow westbound approach by looping around and using Deer Valley Drive East. It should also be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A potential mitigation for this intersection is to provide a traffic signal with capabilities to provide transit priority. This potential mitigation of a traffic signal was analyzed and recommended for this study, when warrants are met. The signal analysis results are shown in **Table 10** (see Appendix for the detailed LOS report).

As shown in **Table 10**, the Deer Valley Drive North / Deer Valley Drive South intersection operates at LOS A for both Saturday AM and PM peak hours as a signalized intersection.

Table 10: Opening Year 2022 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South ²	AM	Signal	-	-	-	6	A
		PM		-	-	-	7	A
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	13	B
		PM		-	-	-	12	B
3	Bonanza Drive / Deer Valley Drive (SR-224) ²	AM	Signal	-	-	-	12	B
		PM		-	-	-	13	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.

2. This represents the overall intersection LOS and delay (seconds/vehicle).

3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

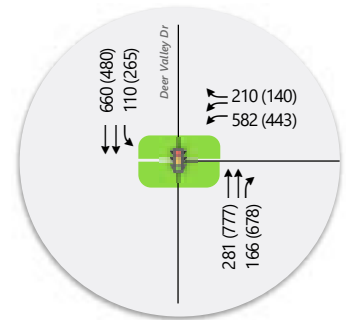
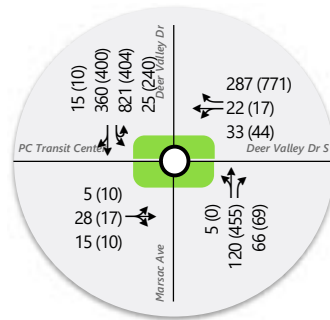
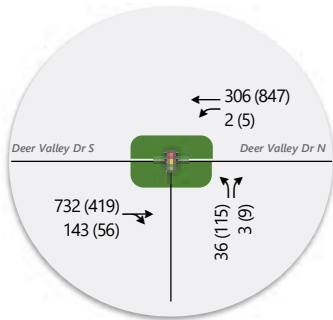
Source: Fehr & Peers.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr



LEGEND

Stop Sign
 Signalized

Lane Configuration {

 AM (PM)

 AM (PM)

 AM (PM)
 } Peak Hour Traffic Volume per lane

Intersection Level of Service (LOS):

A
B
C
D
E
F

Figure 7

Opening Year 2022 + Project Saturday AM & PM
Peak Hour Traffic Conditions

8. Future 2040 Background Conditions

8.1 Purpose

The purpose of the future 2040 background conditions analysis is to evaluate the study intersections during the peak travel periods of the day under projected 2040 traffic volumes. This analysis provides a baseline condition for the year 2040, which can be used to determine future project impacts.

8.2 Traffic Volumes

Traffic volumes for 2040 were estimated using traffic counts and forecasted volumes from the Summit/Wasatch Travel Demand Model (September 2020 version) for 2040. The Summit/Wasatch Travel Demand Model shows a lower growth rate in the future by accounting for a higher mode split of transportation – higher usage of transit, walking, and biking than previous versions of travel demand models. The following growth rates used on the following roadways to project 2040 background weekday volumes as shown in **Figure 8**.

- 0.3% on Deer Valley Drive (SR-224) north of Bonanza Drive
- 0.7% on Deer Valley Drive (SR-224) south of Bonanza Drive
- 0.6% on Deer Valley Drive (SR-224) north of Marsac Avenue
- 0.9% on Deer Valley Drive (SR-224) east of Marsac Avenue
- 1.0% on Deer Valley Drive (SR-224) north of Deer Valley Drive South
- 0.8% on Deer Valley Drive (SR-224) south of Deer Valley Drive South
- 1.2% on Bonanza Drive
- 0.4% on Marsac Avenue

8.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, future 2040 background weekday peak hour LOS was computed for each study intersection. The results of this analysis for the AM & PM peak hour are reported in **Table 11** (see Appendix for the detailed LOS report).

Table 11: Future 2040 Background Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South	AM	WB Stop	WB Left	39	E	-	-
		PM		WB Right	117	F	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	16	C
		PM		-	-	-	14	B
3	Bonanza Drive / Deer Valley Drive (SR-224)	AM	Signal	-	-	-	12	B
		PM		-	-	-	18	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 11**, all study intersections operated within acceptable levels of service, with the exception of the westbound approach at the Deer Valley Drive North / Deer Valley Drive South intersection in both AM and PM peak hours, which operates at LOS E and LOS F, respectively. This was caused by the high volumes of inbound traffic on Deer Valley Drive South making it difficult for vehicles to turn left from Deer Valley Drive North in the AM peak hour, and the high volumes of vehicles exiting the Snow Park area making a westbound right turn onto Deer Valley Drive South in the PM peak hour. The westbound movements are stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive South.

It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

8.4 Mitigation Measures

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for future 2040 background conditions.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr

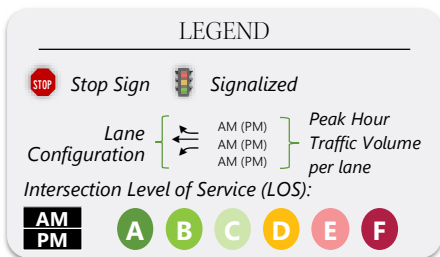
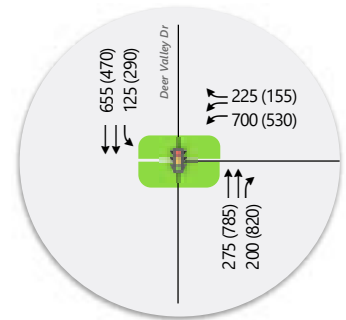
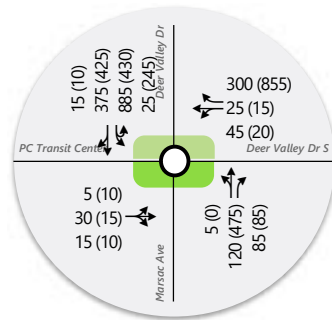
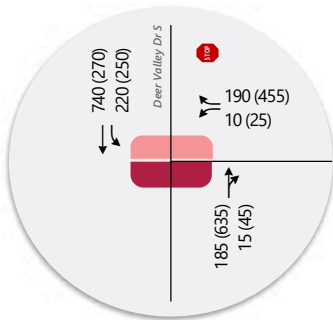


Figure 8
Future 2040 Background Saturday AM & PM
Peak Hour Traffic Conditions

9. Future 2040 plus Project Conditions

9.1 Purpose

The purpose of the future 2040 plus project conditions analysis is to evaluate the impact of the proposed development traffic on the surrounding roadway network in the year 2040. In order to analyze this impact, the projected 2040 Saturday AM and PM peak hour background traffic volumes were combined with volumes generated by the conceptual development for the Saturday AM and PM peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the conceptual project in 2040.

9.2 Traffic Volumes

Project-generated traffic (**Figure 4**) was added to the future 2040 background volumes (**Figure 8**) to yield “future 2040 plus project” Saturday AM and PM peak hour traffic volumes at the study intersections as shown in **Figure 9**.

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive North / Deer Valley Drive South intersection. The intersection is currently a T-intersection with free-flow movement north/south along Deer Valley Drive South and stop-control on the westbound approach on Deer Valley Drive North. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive North and stop-control on the northbound approach on Deer Valley Drive South. Deer Valley Drive South on the west end will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street. Deer Valley Drive North (connecting to Deer Valley Drive east) will serve as the primary vehicular route to access the Snow Park Lodge drop-off/pick-up area and parking structure accesses. To account for this shift in primary routes internally, it was assumed that 80% of the total traffic would use Deer Valley Drive North (connecting to Deer Valley Drive East) and 20% of the total traffic would use Deer Valley Drive South). Background traffic was shifted and modified to account for the proposed internal circulation.

9.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, future 2040 plus project Saturday AM and PM peak hour LOS were computed for each study intersection for the conceptual site development. The results of the analysis are reported in **Table 12** (see Appendix for the detailed LOS report).

Table 12: Future 2040 plus Project Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South	AM	NB Stop	NB Left	38	E	-	-
		PM		NB Left	283	F	-	-
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	19	C
		PM		-	-	-	15	C
3	Bonanza Drive / Deer Valley Drive (SR-224)	AM	Signal	-	-	-	13	B
		PM		-	-	-	18	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
 2. This represents the overall intersection LOS and delay (seconds/vehicle).
 3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
- Source: Fehr & Peers.

As shown in **Table 12**, the Deer Valley Drive / Marsac Avenue roundabout and Bonanza Drive / Deer Valley Drive signal both operate at acceptable LOS for opening year plus project conditions. However, the Deer Valley Drive North / Deer Valley Drive South operates at LOS E in the Saturday AM peak hour and LOS F in the Saturday PM peak hour. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. The expected 95th percentile queue length for the northbound left movement reported in Synchro is about 250 feet for the PM peak hour. The figure below shows the 95th percentile queue.



9.4 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A potential mitigation for this intersection is to provide a traffic signal with capabilities to provide transit priority. This potential mitigation of a traffic signal was analyzed and recommended for this study, when warrants are met. The signal analysis results are shown in **Table 13** (see Appendix for the detailed LOS report).

As shown in **Table 13**, the Deer Valley Drive North / Deer Valley Drive South intersection operates at LOS A for both Saturday AM and PM peak hours as a signalized intersection.

Table 13: Future 2040 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service

Intersection				Worst Movement ¹			Overall Intersection ²	
ID	Location	Period	Control	Movement ³	Delay Sec/Veh	LOS	Avg. Delay Sec/Veh	LOS
1	Deer Valley Drive North / Deer Valley Drive South ²	AM	Signal	-	-	-	6	A
		PM		-	-	-	8	A
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	Roundabout	-	-	-	19	C
		PM		-	-	-	15	C
3	Bonanza Drive / Deer Valley Drive (SR-224) ²	AM	Signal	-	-	-	13	B
		PM		-	-	-	18	B

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.

2. This represents the overall intersection LOS and delay (seconds/vehicle).

3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

Source: Fehr & Peers.



1. Deer Valley Dr S/
Deer Valley Dr N

2. Deer Valley Dr/Marsac Ave/
PC Transit Center/Deer Valley Dr S

3. Deer Valley Dr/Bonanza Dr

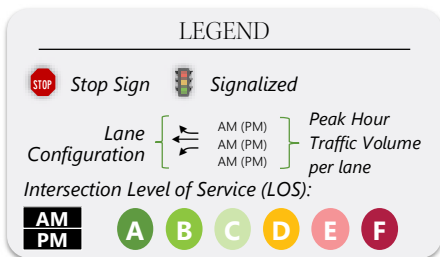
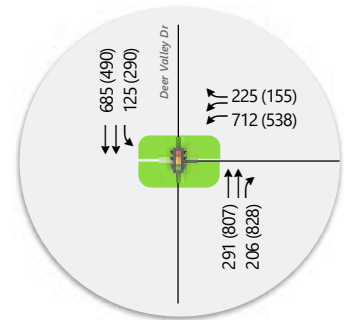
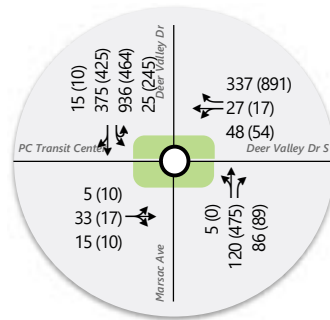
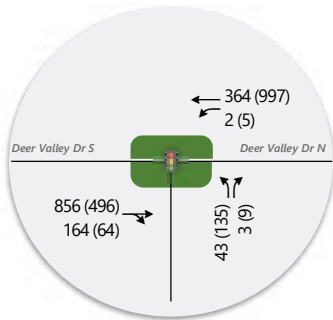


Figure 9
Future 2040 + Project Saturday AM & PM
Peak Hour Traffic Conditions

10. TDM Analysis

10.1 Purpose

The purpose of the TDM analysis is to evaluate the impact of additional reductions to the generated trips due to various TDM strategies. An additional 11% reduction to generated trips were estimated due to the implementation and enforcement of TDM strategies. Intersection LOS analyses were then performed for the opening day plus project and 2040 plus project conditions. TDM strategies (which were proposed by the Deer Valley Ski Resort) in this analysis included:

- Develop and promote commute trip reduction program
- Incentivize employees to use transit (take opportunity of the proposed transit hub on site)
- Provide a staff-operated shuttle service for employees for Summit County residents, and a contracted bus service from residents outside of Summit County
- Provide a ride-share program
- Provide an on-site childcare services

10.2 Trip Generation

The external vehicle trips expected to be generated by the proposed Snow Park Village redevelopment and the percent reductions due to TDM strategies, on top of reductions to internal capture, shift to transit, and shift to walk/bike, are shown in **Table 14** below.

Table 14: Snow Park Village Saturday Trip Generation – with TDM Reduction

Time Period	Project Gross Trips	Net External Vehicle Trips ¹	TDM Reduction		New Net External Vehicle Trips
			Percent	Vehicles	
Daily	4,176	1,380	11%	459	921
AM Peak Hour	214	92	11%	24	68
PM Peak Hour	328	81	11%	36	45

1. Reductions due to internal capture, shift to transit, and shift to walk/bike applied, as described in Section 4 of this report. Source: Fehr & Peers.

10.3 Level of Service Analysis

Using Synchro software (for signalized and unsignalized intersections) and SIDRA software (for roundabouts) and the HCM 6 delay thresholds provided in the Introduction, Saturday AM and PM peak hour LOS were computed for each study intersection for existing 2020 plus project, opening day 2022 plus project, and future 2040 plus project conditions. **Table 15** below shows a comparison of the LOS and delay at the study intersections with and without the TDM reductions, for mitigated conditions. As shown in **Table 15**, the delay is reduced slightly at several intersections due to lower volumes from TDM reductions.

Table 15: Snow Park Village TDM Reduction Saturday Peak Hour Level of Service Summary

Intersection			Existing + Project	Existing + Project (TDM Reduction)	2022 + Project	2022 + Project (TDM Reduction)	2040 + Project	2040 + Project (TDM Reduction)
ID	Location	Period	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹	LOS & Sec/Veh ¹
1	Deer Valley Dr S / Deer Valley Dr N	AM	A / 6	A / 6	A / 6	A / 6	A / 6	A / 6
		PM	A / 7	A / 6	A / 7	A / 7	A / 8	A / 7
2	Deer Valley Drive (SR-224) / Marsac Avenue / Bus Terminal	AM	B / 12	B / 11	B / 13	B / 12	C / 19	C / 18
		PM	B / 12	B / 11	B / 12	B / 12	C / 15	C / 15
3	Deer Valley Dr / Bonanza	AM	B / 11	B / 11	B / 12	B / 12	B / 13	B / 13
		PM	B / 13	B / 13	B / 13	B / 13	B / 18	B / 18

1. Intersection average LOS and delay for signalized intersections and roundabouts, worst movement LOS and delay for unsignalized intersections.

Source: Fehr & Peers.

11. Roadway Analysis

11.1 Purpose

The purpose of the roadway analysis is to document the Saturday peak hour roadway volumes to determine the LOS of the internal project roadways.

11.2 Analysis Results

The roadway LOS was calculated based on planning level generalized peak hour two-way volumes for roadway capacities, as shown in **Table 16**. These volumes are published by the Florida Department of Transportation (FDOT) based on planning applications of the HCM and are widely used for planning level evaluation of roadway capacity. **Table 16** shows the peak hour two-way capacity estimates for a 2-lane roadway in areas over 5,000 population not in urbanized areas.

Table 16: Roadway Level of Service Peak Hour Two-Way Traffic Thresholds

Level of Service	Peak Hour Traffic Capacity Estimates
	2 Lanes
LOS B or better	≤ 820
LOS C	821 – 1,550
LOS D	1,551 – 2,190
LOS E or worse	> 2,190

Source: Fehr & Peers, based on FDOT Generalized Peak Hour Two-Way Volumes for areas over 5,000 not in urbanized areas.

As stated previously, the concept master plan for Snow Park Village shows Deer Valley Drive North (connecting to Deer Valley Drive East) as the primary vehicular route to access the Snow Park Lodge and parking structure access, and Deer Valley Drive South on the west end as the primary transit route to access the proposed transit hub. The same assumption used for previous analyses (80% of total traffic using Deer Valley Drive North and 20% of total traffic using Deer Valley Drive South) were applied for the roadway volumes. **Table 17** shows the peak hour roadway LOS analysis for each scenario. As shown in **Table 17**, all internal roadways are expected to operate at LOS C with the current 2-lane configuration for all scenarios. The 2-lane roadway shows sufficient capacity for the expected traffic at Snow Park Village.

Table 17: Snow Park Village Roadway LOS Analysis Summary

Scenario	Saturday Peak Hour	Deer Valley Dr S (South of Y-Intersection)		Deer Valley Dr N (East of Y-Intersection)		Deer Valley Dr E	
		Two-Way Volume ¹	LOS	Two-Way Volume ¹	LOS	Two-Way Volume ¹	LOS
Existing	AM	650	A/B	400	A/B	400	A/B
	PM	800	A/B	620	A/B	470	A/B
Existing plus Project	AM	240	A/B	910	C	910	C
	PM	310	A/B	1,200	C	1,050	C
Opening Year 2022 plus Project	AM	240	A/B	920	C	920	C
	PM	310	A/B	1,220	C	1,060	C
Future 2040 plus Project	AM	280	A/B	1,060	C	1,060	C
	PM	360	A/B	1,410	C	1,240	C

1. Rounded up to the nearest 10.
 Source: Fehr & Peers.

12. Parking Analysis

12.1 Purpose

The purpose of the parking analysis is to evaluate the proposed parking supply and demand.

12.2 Analysis Results

For the shared parking analysis of the updated land use plan, the development is proposed to include 11 buildings which include the following land uses (taken from the land use program dated February 18, 2021):

- 40,000 square feet of ballroom/event center space
- 125 multifamily housing units
- 192 hotel rooms with 4,500 square feet of hotel support uses.
- 26,500 square feet of commercial/retail space

The development is also proposed to include the Deer Valley Ski resort and other land uses in support of the resort. It should be noted that the land uses supporting the ski resort will not be parking generators; rather, the ski resort will be the parking generator, and the support land uses serve as accessories to the resort.

Fehr & Peers used the methodology outlined in Urban Land Institute's (ULI) *Shared Parking* to determine the recommended number of parking spaces at the resort. The methods outlined in *Shared Parking* are considered national state-of-the-practice for determining shared parking reductions. It provides instruction for reducing parking requirements for mixed use developments.

The ULI manual includes baseline parking rates that are informed by parking counts performed across the United States. While these are generally acceptable in many land use contexts, the baseline ULI parking rates are based on nationwide suburban area parking counts and do not consider the unique travel patterns in the study area. Therefore, this analysis was performed using parking rates based on the parking requirements outlined in Park City zoning code.

Fehr & Peers approximated the required number of parking spaces at the development using the following factors:

- Proposed land use characteristics, as described in the introduction,

- Parking rates from Park City zoning code.
- Monthly adjustment factors from *Shared Parking*,
- Time-of day adjustment factors from *Shared Parking*.
- Noncaptive ratios (internal capture) rates calculated using ULI's *Shared Parking* spreadsheet tool,
- Mode adjustment (walking, biking, transit) rates calculated using ULI's *Shared Parking* spreadsheet tool.
- Parking counts at the resort collected during ski season from 2016 to 2020.
 - These counts showed an average February Saturday parking rate of 1,421 stalls at the resort. This was rounded up to assume 1,500 stalls for day skiers and employees.

From the planned land uses that generate parking and the recommended rates from the Park City zoning code, the base required parking was calculated to be 2,262 stalls. This however does not account for paid parking (which is proposed in future plans for the parking structure) and shared parking. As stated in section 4.3 of this study, a reduction of up to 17% daily was calculated from Fehr & Peers' Parking Cost+ tool due to paid parking. Also, from the shared parking analysis, a reduction of up to 9% reduction was calculated due to the factors listed above. This results in a potential reduction of up to 26% in recommended parking due to paid parking and shared parking. For this study, a 20% reduction was assumed to be applicable due to factors such as existing and proposed land uses and expected growth, and was applied to the base required parking. **Table 18** outlines the number of recommended stalls with the reduction due to paid parking and shared parking. Shared parking calculations are attached in the Appendix.

Table 18: Snow Park Village Parking Analysis Summary

Base Recommended Stalls	% Reduction (Paid Parking and Shared Parking)	Stalls Reduced (Paid Parking and Shared Parking)	Net Recommended Stalls
2,262	20%	452	1,810

Source: Fehr & Peers

As shown in **Table 18**, with the expected reductions due to paid parking and shared parking, it is recommended that a minimum of 1,810 stalls be provided for the proposed Snow Park Village development. It should be noted that phasing and ongoing refinement of the land use program may adjust the base parking rates and recommendations.



12.3 Parking Management

The traffic circulation within the parking structure and the access roadways depends on the efficiency of the operation of the tolled parking structure. It is recommended that the parking management, such as tolling technology and structure accesses, be planned to provide efficient operations and traffic circulation.

13. Conclusion/Recommendations

All study intersections, except for the intersection at Deer Valley Drive North / Deer Valley Drive South, operate within acceptable LOS (LOS C or better) during all analysis scenarios: Existing 2020, Opening Year 2022, and Future 2040 Background and Plus Project conditions. The Deer Valley Drive North / Deer Valley Drive South intersection operates at an unacceptable LOS in both Saturday AM and PM peak hours during all analysis scenarios. No mitigations are recommended for the unacceptable delays in the Existing 2020 Condition or 2022 and 2040 Background conditions due to the re-alignment of the intersection in the project site plan. In plus project conditions, the re-alignment of the intersection shifts the delay to the northbound approach, which becomes the new side-street stop control. Due to the stop-controlled northbound movement, vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. A potential mitigation of a traffic signal with capabilities to provide transit priority was analyzed for this study. The Deer Valley Drive North / Deer Valley Drive South intersection operates at LOS A for all scenarios as a signalized intersection. This signal alternative is recommended at this intersection when warrants are met. Planned TDM strategies also additionally reduce delay at several study intersections.



Appendix

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	156	147	15	176	627
Future Vol, veh/h	7	156	147	15	176	627
Conflicting Peds, #/hr	7	7	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	166	156	16	187	667

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1213	172	0
Stage 1	165	-	-
Stage 2	1048	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	201	872	-
Stage 1	864	-	-
Stage 2	338	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	173	865	-
Mov Cap-2 Maneuver	173	-	-
Stage 1	863	-	-
Stage 2	291	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	173	865	1403
HCM Lane V/C Ratio	-	-	0.043	0.192	0.133
HCM Control Delay (s)	-	-	26.7	10.1	8
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0.7	0.5

MOVEMENT SUMMARY

 Site: 101 [Existing AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.157	13.4	LOS B	0.6	14.5	0.63	0.63	0.63	33.7
8	T1	127	3.0	0.157	7.8	LOS A	0.6	14.5	0.63	0.63	0.63	34.3
18b	R3	62	3.0	0.157	7.8	LOS A	0.6	14.5	0.63	0.63	0.63	32.5
Approach		189	3.5	0.157	7.9	LOS A	0.6	14.5	0.63	0.63	0.63	33.7
SouthEast: RoadName												
3bx	L3	32	3.0	0.142	4.3	LOS A	0.5	14.7	0.29	0.17	0.29	35.9
3ax	L1	19	100.0	0.142	7.1	LOS A	0.5	14.7	0.29	0.17	0.29	34.5
18ax	R1	269	3.0	0.142	4.3	LOS A	0.6	15.2	0.29	0.17	0.29	35.6
Approach		320	8.8	0.142	4.4	LOS A	0.6	15.2	0.29	0.17	0.29	35.5
North: Deer Valley Drive												
7u	U	23	3.0	0.748	14.3	LOS B	8.6	221.4	0.52	0.26	0.52	30.4
7a	L1	804	3.0	0.748	14.3	LOS B	8.6	221.4	0.52	0.26	0.52	29.5
4	T1	378	3.0	0.748	8.1	LOS A	8.6	221.4	0.32	0.15	0.32	33.5
14	R2	12	100.0	0.204	7.2	LOS A	0.9	23.5	0.20	0.09	0.20	34.5
Approach		1217	3.9	0.748	12.3	LOS B	8.6	221.4	0.45	0.23	0.45	30.7
West: Transit Center												
5	L2	2	100.0	0.159	18.6	LOS C	0.3	11.7	0.68	0.68	0.68	29.6
12a	R1	23	100.0	0.159	18.6	LOS C	0.3	11.7	0.68	0.68	0.68	29.2
12	R2	13	100.0	0.159	18.6	LOS C	0.3	11.7	0.68	0.68	0.68	28.6
Approach		38	100.0	0.159	18.6	LOS C	0.3	11.7	0.68	0.68	0.68	29.0
All Vehicles		1765	6.9	0.748	10.5	LOS B	8.6	221.4	0.45	0.27	0.45	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Existing AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	553	198	263	151	105	631
Future Volume (veh/h)	553	198	263	151	105	631
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	576	206	274	157	109	657
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	722	331	1107	868	539	1761
Arrive On Green	0.25	0.25	0.32	0.32	0.08	0.52
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	576	206	274	157	109	657
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.5	6.3	2.7	2.3	1.7	5.3
Cycle Q Clear(g_c), s	8.5	6.3	2.7	2.3	1.7	5.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	722	331	1107	868	539	1761
V/C Ratio(X)	0.80	0.62	0.25	0.18	0.20	0.37
Avail Cap(c_a), veh/h	1581	725	2517	1497	1136	4362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.5	11.5	4.8	7.8	6.7
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.1	0.8	1.0	0.5	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.1	16.2	11.5	4.8	7.9	6.8
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	782		431			766
Approach Delay, s/veh	16.9		9.1			6.9
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.9	20.9		16.5		29.8
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+13), s	13.5	4.7		10.5		7.3
Green Ext Time (p_c), s	0.1	0.9		0.9		2.2
Intersection Summary						
HCM 6th Ctrl Delay			11.3			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	11.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	379	526	41	199	223
Future Vol, veh/h	23	379	526	41	199	223
Conflicting Peds, #/hr	2	2	0	3	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	408	566	44	214	240

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1261	593	0	0	613	0
Stage 1	591	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	188	506	-	-	966	-
Stage 1	553	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	146	504	-	-	963	-
Mov Cap-2 Maneuver	146	-	-	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	395	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.7	0	4.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	146	504	963
HCM Lane V/C Ratio	-	-	0.169	0.809	0.222
HCM Control Delay (s)	-	-	34.6	35.8	9.8
HCM Lane LOS	-	-	D	E	A
HCM 95th %tile Q(veh)	-	-	0.6	7.7	0.8

MOVEMENT SUMMARY

 Site: 101 [Existing PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.344	13.5	LOS B	1.5	38.8	0.64	0.65	0.68	32.9
8	T1	454	3.0	0.344	9.0	LOS A	1.5	38.8	0.64	0.65	0.68	33.8
18b	R3	62	3.0	0.344	9.0	LOS A	1.5	38.8	0.64	0.65	0.68	32.1
Approach		516	3.2	0.344	9.0	LOS A	1.5	38.8	0.64	0.65	0.68	33.6
SouthEast: RoadName												
3bx	L3	36	3.0	0.559	14.3	LOS B	3.7	97.6	0.74	0.91	1.23	31.7
3ax	L1	13	100.0	0.559	19.1	LOS C	3.7	97.6	0.74	0.91	1.23	30.4
18ax	R1	732	3.0	0.559	14.2	LOS B	3.8	98.4	0.75	0.91	1.23	31.0
Approach		782	4.6	0.559	14.3	LOS B	3.8	98.4	0.75	0.91	1.23	31.0
North: Deer Valley Drive												
7u	U	242	3.0	0.617	10.2	LOS B	5.3	134.5	0.36	0.17	0.36	31.9
7a	L1	368	3.0	0.617	10.2	LOS B	5.3	134.5	0.36	0.17	0.36	31.0
4	T1	398	3.0	0.617	7.1	LOS A	5.3	134.5	0.27	0.12	0.27	33.7
14	R2	6	100.0	0.169	6.8	LOS A	0.7	18.8	0.18	0.08	0.18	34.6
Approach		1014	3.6	0.617	9.0	LOS A	5.3	134.5	0.32	0.15	0.32	32.2
West: Transit Center												
5	L2	5	100.0	0.078	14.1	LOS B	0.1	5.8	0.61	0.61	0.61	31.0
12a	R1	12	100.0	0.078	14.1	LOS B	0.1	5.8	0.61	0.61	0.61	30.5
12	R2	5	100.0	0.078	14.1	LOS B	0.1	5.8	0.61	0.61	0.61	29.9
Approach		22	100.0	0.078	14.1	LOS B	0.1	5.8	0.61	0.61	0.61	30.5
All Vehicles		2334	4.8	0.617	10.8	LOS B	5.3	134.5	0.54	0.52	0.71	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Existing PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕	↗	↖	↕
Traffic Volume (veh/h)	419	129	754	651	251	460
Future Volume (veh/h)	419	129	754	651	251	460
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	436	134	785	678	261	479
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	550	252	1405	912	412	2115
Arrive On Green	0.19	0.19	0.41	0.41	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	436	134	785	678	261	479
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.1	5.1	10.0	18.4	4.5	3.5
Cycle Q Clear(g_c), s	8.1	5.1	10.0	18.4	4.5	3.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	550	252	1405	912	412	2115
V/C Ratio(X)	0.79	0.53	0.56	0.74	0.63	0.23
Avail Cap(c_a), veh/h	1281	588	2040	1195	805	3535
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	20.9	12.8	8.3	9.9	4.8
Incr Delay (d2), s/veh	1.0	0.6	0.1	1.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.9	3.2	7.9	1.3	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.1	21.6	13.0	9.4	11.0	4.8
LnGrp LOS	C	C	B	A	B	A
Approach Vol, veh/h	570		1463			740
Approach Delay, s/veh	22.7		11.3			7.0
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	1.9	29.4		15.8		41.3
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+10), s	10.5	20.4		10.1		5.5
Green Ext Time (p_c), s	0.4	3.1		0.6		1.6

Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	722	141	1	300	35	3
Future Vol, veh/h	722	141	1	300	35	3
Conflicting Peds, #/hr	0	0	7	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	768	150	1	319	37	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	925	0	1171 851
Stage 1	-	-	-	-	850 -
Stage 2	-	-	-	-	321 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	739	-	213 360
Stage 1	-	-	-	-	419 -
Stage 2	-	-	-	-	735 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	734	-	211 357
Mov Cap-2 Maneuver	-	-	-	-	211 -
Stage 1	-	-	-	-	416 -
Stage 2	-	-	-	-	734 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	357	-	-	734	-
HCM Lane V/C Ratio	0.176	0.009	-	-	0.001	-
HCM Control Delay (s)	25.7	15.2	-	-	9.9	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-

MOVEMENT SUMMARY

 Site: 101 [Existing Plus Project AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.172	14.4	LOS B	0.6	15.7	0.64	0.64	0.64	33.4
8	T1	127	3.0	0.172	8.5	LOS A	0.6	15.8	0.64	0.64	0.64	34.0
18b	R3	68	3.0	0.172	8.4	LOS A	0.6	15.8	0.64	0.64	0.64	32.2
Approach		196	3.5	0.172	8.5	LOS A	0.6	15.8	0.64	0.64	0.64	33.4
SouthEast: RoadName												
3bx	L3	35	3.0	0.157	4.4	LOS A	0.6	16.4	0.29	0.17	0.29	35.9
3ax	L1	21	100.0	0.157	7.3	LOS A	0.6	16.4	0.29	0.17	0.29	34.4
18ax	R1	298	3.0	0.157	4.4	LOS A	0.7	17.0	0.30	0.17	0.30	35.5
Approach		354	8.8	0.157	4.6	LOS A	0.7	17.0	0.30	0.17	0.30	35.5
North: Deer Valley Drive												
7u	U	23	3.0	0.786	16.1	LOS C	10.0	256.6	0.61	0.32	0.61	29.7
7a	L1	859	3.0	0.786	16.1	LOS C	10.0	256.6	0.61	0.32	0.61	28.8
4	T1	378	3.0	0.786	8.5	LOS A	10.0	256.6	0.34	0.17	0.34	33.4
14	R2	12	100.0	0.215	7.3	LOS A	0.9	24.9	0.22	0.10	0.22	34.4
Approach		1271	3.9	0.786	13.8	LOS B	10.0	256.6	0.52	0.27	0.52	30.1
West: Transit Center												
5	L2	2	100.0	0.182	20.1	LOS C	0.3	13.3	0.70	0.70	0.70	29.0
12a	R1	27	100.0	0.182	20.1	LOS C	0.3	13.3	0.70	0.70	0.70	28.6
12	R2	13	100.0	0.182	20.1	LOS C	0.3	13.3	0.70	0.70	0.70	28.0
Approach		41	100.0	0.182	20.1	LOS C	0.3	13.3	0.70	0.70	0.70	28.5
All Vehicles		1863	6.9	0.786	11.6	LOS B	10.0	256.6	0.50	0.30	0.50	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Existing Plus Project AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	565	198	279	157	105	661
Future Volume (veh/h)	565	198	279	157	105	661
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	589	206	291	164	109	689
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	734	337	1101	872	527	1752
Arrive On Green	0.25	0.25	0.32	0.32	0.08	0.51
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	589	206	291	164	109	689
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.8	6.3	2.9	2.4	1.8	5.7
Cycle Q Clear(g_c), s	8.8	6.3	2.9	2.4	1.8	5.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	734	337	1101	872	527	1752
V/C Ratio(X)	0.80	0.61	0.26	0.19	0.21	0.39
Avail Cap(c_a), veh/h	1572	721	2502	1497	1120	4337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.4	11.7	4.8	7.9	6.9
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.1	0.9	1.0	0.5	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.1	16.1	11.7	4.8	8.0	7.0
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	795		455			798
Approach Delay, s/veh	16.9		9.2			7.1
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.9	20.9		16.7		29.8
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+I), s	13.8	4.9		10.8		7.7
Green Ext Time (p_c), s	0.1	1.0		0.9		2.4
Intersection Summary						
HCM 6th Ctrl Delay			11.4			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	6.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	407	55	5	834	113	8
Future Vol, veh/h	407	55	5	834	113	8
Conflicting Peds, #/hr	0	0	2	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	438	59	5	897	122	9

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	499	0	1377	473
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	907	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1065	-	160	591
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	394	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1063	-	159	588
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	392	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	73.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	159	588	-	-	1063	-
HCM Lane V/C Ratio	0.764	0.015	-	-	0.005	-
HCM Control Delay (s)	77.5	11.2	-	-	8.4	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	4.8	0	-	-	0	-

MOVEMENT SUMMARY

 Site: 101 [Existing Plus Project PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.359	14.2	LOS B	1.6	42.0	0.65	0.68	0.75	32.7
8	T1	454	3.0	0.359	9.5	LOS A	1.6	42.1	0.65	0.68	0.75	33.5
18b	R3	66	3.0	0.359	9.5	LOS A	1.6	42.1	0.65	0.68	0.75	31.9
Approach		520	3.2	0.359	9.5	LOS A	1.6	42.1	0.65	0.68	0.75	33.3
SouthEast: RoadName												
3bx	L3	40	3.0	0.590	15.3	LOS C	4.2	109.8	0.76	0.94	1.31	31.3
3ax	L1	15	100.0	0.590	20.1	LOS C	4.2	109.8	0.76	0.94	1.31	29.9
18ax	R1	769	3.0	0.590	15.2	LOS C	4.3	110.8	0.76	0.95	1.31	30.6
Approach		824	4.8	0.590	15.3	LOS C	4.3	110.8	0.76	0.95	1.31	30.6
North: Deer Valley Drive												
7u	U	242	3.0	0.642	10.9	LOS B	5.7	146.4	0.40	0.20	0.40	31.6
7a	L1	402	3.0	0.642	10.9	LOS B	5.7	146.4	0.40	0.20	0.40	30.7
4	T1	398	3.0	0.642	7.3	LOS A	5.7	146.4	0.29	0.14	0.29	33.6
14	R2	6	100.0	0.176	6.9	LOS A	0.8	19.7	0.20	0.09	0.20	34.5
Approach		1048	3.6	0.642	9.5	LOS A	5.7	146.4	0.36	0.18	0.36	32.0
West: Transit Center												
5	L2	5	100.0	0.088	14.8	LOS B	0.1	6.5	0.62	0.62	0.62	30.8
12a	R1	14	100.0	0.088	14.8	LOS B	0.1	6.5	0.62	0.62	0.62	30.3
12	R2	5	100.0	0.088	14.8	LOS B	0.1	6.5	0.62	0.62	0.62	29.7
Approach		24	100.0	0.088	14.8	LOS B	0.1	6.5	0.62	0.62	0.62	30.3
All Vehicles		2417	4.9	0.642	11.5	LOS B	5.7	146.4	0.56	0.55	0.77	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Existing Plus Project PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕	↖	↖↗	↕
Traffic Volume (veh/h)	427	129	776	659	251	480
Future Volume (veh/h)	427	129	776	659	251	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	445	134	808	686	261	500
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	558	256	1413	920	405	2117
Arrive On Green	0.19	0.19	0.41	0.41	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	445	134	808	686	261	500
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.4	5.2	10.5	18.8	4.5	3.8
Cycle Q Clear(g_c), s	8.4	5.2	10.5	18.8	4.5	3.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	558	256	1413	920	405	2117
V/C Ratio(X)	0.80	0.52	0.57	0.75	0.64	0.24
Avail Cap(c_a), veh/h	1262	579	2009	1185	790	3481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	21.1	13.0	8.3	10.2	4.9
Incr Delay (d2), s/veh	1.0	0.6	0.1	1.3	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	3.4	8.2	1.3	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.4	21.7	13.2	9.5	11.4	4.9
LnGrp LOS	C	C	B	A	B	A
Approach Vol, veh/h	579		1494			761
Approach Delay, s/veh	23.0		11.5			7.1
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	1.9	29.9		16.1		41.8
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+10), s	10.5	20.8		10.4		5.8
Green Ext Time (p_c), s	0.4	3.2		0.6		1.6

Intersection Summary

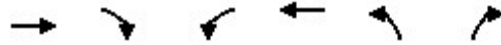
HCM 6th Ctrl Delay		12.7				
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

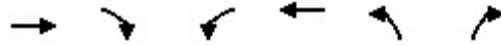
Snow Park Village
 Existing Plus Project AM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	722	141	1	300	35	3
Future Volume (veh/h)	722	141	1	300	35	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	768	150	1	319	37	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	967	189	348	1189	232	206
Arrive On Green	0.64	0.64	0.64	0.64	0.13	0.13
Sat Flow, veh/h	1520	297	609	1870	1781	1585
Grp Volume(v), veh/h	0	918	1	319	37	3
Grp Sat Flow(s),veh/h/ln	0	1817	609	1870	1781	1585
Q Serve(g_s), s	0.0	14.3	0.0	2.9	0.7	0.1
Cycle Q Clear(g_c), s	0.0	14.3	14.3	2.9	0.7	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1155	348	1189	232	206
V/C Ratio(X)	0.00	0.79	0.00	0.27	0.16	0.01
Avail Cap(c_a), veh/h	0	1791	561	1844	839	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	10.4	3.1	14.9	14.6
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.0	0.5	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.6	10.4	3.2	15.2	14.6
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	918			320	40	
Approach Delay, s/veh	6.6			3.2	15.1	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		28.9			28.9	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		37.9			37.9	18.1
Max Q Clear Time (g_c+I1), s		16.3			16.3	2.7
Green Ext Time (p_c), s		8.2			2.0	0.1
Intersection Summary						
HCM 6th Ctrl Delay			6.0			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Existing Plus Project PM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	407	55	5	834	113	8
Future Volume (veh/h)	407	55	5	834	113	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	438	59	5	897	122	9
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	986	133	620	1143	247	220
Arrive On Green	0.61	0.61	0.61	0.61	0.14	0.14
Sat Flow, veh/h	1614	217	901	1870	1781	1585
Grp Volume(v), veh/h	0	497	5	897	122	9
Grp Sat Flow(s),veh/h/ln	0	1831	901	1870	1781	1585
Q Serve(g_s), s	0.0	5.2	0.1	12.9	2.3	0.2
Cycle Q Clear(g_c), s	0.0	5.2	5.3	12.9	2.3	0.2
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1119	620	1143	247	220
V/C Ratio(X)	0.00	0.44	0.01	0.78	0.49	0.04
Avail Cap(c_a), veh/h	0	1678	895	1714	890	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	5.2	5.2	14.3	13.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.4	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	2.5	0.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	4.0	5.2	6.7	15.9	13.5
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	497			902	131	
Approach Delay, s/veh	4.0			6.6	15.7	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		26.5			26.5	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		33.0			33.0	18.0
Max Q Clear Time (g_c+I1), s		7.2			14.9	4.3
Green Ext Time (p_c), s		3.6			7.1	0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.6			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	160	150	15	180	635
Future Vol, veh/h	10	160	150	15	180	635
Conflicting Peds, #/hr	7	7	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	170	160	16	191	676

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1234	176	0	0	177
Stage 1	169	-	-	-	-
Stage 2	1065	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	195	867	-	-	1399
Stage 1	861	-	-	-	-
Stage 2	331	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	167	860	-	-	1398
Mov Cap-2 Maneuver	167	-	-	-	-
Stage 1	860	-	-	-	-
Stage 2	284	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	167	860	1398
HCM Lane V/C Ratio	-	-	0.064	0.198	0.137
HCM Control Delay (s)	-	-	28	10.2	8
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.7	0.5

MOVEMENT SUMMARY

 Site: 101 [2022 BG AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.171	14.1	LOS B	0.6	15.6	0.63	0.63	0.63	33.7
8	T1	128	3.0	0.171	8.3	LOS A	0.6	15.8	0.64	0.64	0.64	33.9
18b	R3	64	3.0	0.171	8.2	LOS A	0.6	15.8	0.64	0.64	0.64	32.3
Approach		197	5.6	0.171	8.4	LOS A	0.6	15.8	0.64	0.64	0.64	33.4
SouthEast: RoadName												
3bx	L3	32	3.0	0.149	4.4	LOS A	0.5	15.4	0.31	0.19	0.31	35.8
3ax	L1	21	100.0	0.149	7.3	LOS A	0.5	15.4	0.31	0.19	0.31	34.4
18ax	R1	277	3.0	0.149	4.4	LOS A	0.6	16.0	0.31	0.19	0.31	35.5
Approach		330	9.3	0.149	4.6	LOS A	0.6	16.0	0.31	0.19	0.31	35.4
North: Deer Valley Drive												
7u	U	27	3.0	0.776	15.7	LOS C	9.5	242.6	0.60	0.32	0.60	29.9
7a	L1	819	3.0	0.776	15.7	LOS C	9.5	242.6	0.60	0.32	0.60	29.0
4	T1	383	3.0	0.776	8.8	LOS A	9.5	242.6	0.36	0.19	0.36	33.1
14	R2	16	100.0	0.212	7.3	LOS A	0.9	24.3	0.22	0.11	0.22	34.4
Approach		1245	4.2	0.776	13.5	LOS B	9.5	242.6	0.52	0.28	0.52	30.2
West: Transit Center												
5	L2	5	100.0	0.203	20.2	LOS C	0.3	15.0	0.69	0.69	0.69	28.9
12a	R1	27	100.0	0.203	20.2	LOS C	0.3	15.0	0.69	0.69	0.69	28.5
12	R2	16	100.0	0.203	20.2	LOS C	0.3	15.0	0.69	0.69	0.69	27.9
Approach		48	100.0	0.203	20.2	LOS C	0.3	15.0	0.69	0.69	0.69	28.3
All Vehicles		1819	7.8	0.776	11.5	LOS B	9.5	242.6	0.50	0.31	0.50	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Opening Year Background AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↖	↕↕
Traffic Volume (veh/h)	570	210	265	160	110	630
Future Volume (veh/h)	570	210	265	160	110	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	594	219	276	167	115	656
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	739	339	1095	872	533	1750
Arrive On Green	0.25	0.25	0.32	0.32	0.08	0.51
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	594	219	276	167	115	656
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.9	6.8	2.8	2.5	1.9	5.4
Cycle Q Clear(g_c), s	8.9	6.8	2.8	2.5	1.9	5.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	739	339	1095	872	533	1750
V/C Ratio(X)	0.80	0.65	0.25	0.19	0.22	0.37
Avail Cap(c_a), veh/h	1563	717	2489	1494	1120	4315
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.6	11.7	4.8	8.0	6.9
Incr Delay (d2), s/veh	0.8	0.8	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.1	0.9	1.1	0.5	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.2	16.4	11.8	4.8	8.1	6.9
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	813		443			771
Approach Delay, s/veh	17.0		9.2			7.1
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.0	20.9		16.9		29.9
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+13), s	13.9	4.8		10.9		7.4
Green Ext Time (p_c), s	0.2	1.0		0.9		2.2
Intersection Summary						
HCM 6th Ctrl Delay			11.5			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	12.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	385	535	45	205	230
Future Vol, veh/h	25	385	535	45	205	230
Conflicting Peds, #/hr	2	2	0	3	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	414	575	48	220	247

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1291	604	0	0	626
Stage 1	602	-	-	-	-
Stage 2	689	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	180	498	-	-	956
Stage 1	547	-	-	-	-
Stage 2	498	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	138	496	-	-	953
Mov Cap-2 Maneuver	138	-	-	-	-
Stage 1	545	-	-	-	-
Stage 2	382	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.1	0	4.7
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	138	496	953
HCM Lane V/C Ratio	-	-	0.195	0.835	0.231
HCM Control Delay (s)	-	-	37.3	39.2	9.9
HCM Lane LOS	-	-	E	E	A
HCM 95th %tile Q(veh)	-	-	0.7	8.3	0.9

MOVEMENT SUMMARY

 Site: 101 [2022 BG PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.358	14.0	LOS B	1.6	41.8	0.65	0.68	0.73	32.7
8	T1	460	3.0	0.358	9.4	LOS A	1.6	41.8	0.65	0.68	0.73	33.6
18b	R3	66	3.0	0.358	9.4	LOS A	1.6	41.8	0.65	0.68	0.73	32.0
Approach		526	3.2	0.358	9.4	LOS A	1.6	41.8	0.65	0.68	0.73	33.4
SouthEast: RoadName												
3bx	L3	40	3.0	0.580	15.2	LOS C	4.0	104.5	0.75	0.93	1.29	31.3
3ax	L1	15	100.0	0.580	20.0	LOS C	4.0	104.5	0.75	0.93	1.29	30.0
18ax	R1	742	3.0	0.580	15.0	LOS C	4.1	105.5	0.76	0.94	1.29	30.6
Approach		798	4.8	0.580	15.1	LOS C	4.1	105.5	0.76	0.94	1.29	30.7
North: Deer Valley Drive												
7u	U	242	3.0	0.633	10.7	LOS B	5.5	141.6	0.39	0.20	0.39	31.8
7a	L1	374	3.0	0.633	10.7	LOS B	5.5	141.6	0.39	0.20	0.39	30.8
4	T1	404	3.0	0.633	7.4	LOS A	5.5	141.6	0.29	0.14	0.29	33.4
14	R2	10	100.0	0.173	6.9	LOS A	0.7	19.2	0.20	0.09	0.20	34.6
Approach		1030	4.0	0.633	9.4	LOS A	5.5	141.6	0.35	0.17	0.35	32.1
West: Transit Center												
5	L2	10	100.0	0.126	15.3	LOS C	0.2	9.4	0.62	0.62	0.62	30.3
12a	R1	15	100.0	0.126	15.3	LOS C	0.2	9.4	0.62	0.62	0.62	29.9
12	R2	10	100.0	0.126	15.3	LOS C	0.2	9.4	0.62	0.62	0.62	29.3
Approach		35	100.0	0.126	15.3	LOS C	0.2	9.4	0.62	0.62	0.62	29.9
All Vehicles		2390	5.5	0.633	11.4	LOS B	5.5	141.6	0.56	0.55	0.75	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Opening Year Background PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	435	140	755	670	265	460
Future Volume (veh/h)	435	140	755	670	265	460
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	453	146	786	698	276	479
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	563	258	1421	926	412	2129
Arrive On Green	0.19	0.19	0.42	0.42	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	453	146	786	698	276	479
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.8	5.9	10.4	19.8	4.9	3.7
Cycle Q Clear(g_c), s	8.8	5.9	10.4	19.8	4.9	3.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	563	258	1421	926	412	2129
V/C Ratio(X)	0.80	0.57	0.55	0.75	0.67	0.22
Avail Cap(c_a), veh/h	1225	562	1950	1162	774	3380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	21.9	13.2	8.5	10.4	4.9
Incr Delay (d2), s/veh	1.0	0.7	0.1	1.6	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.4	3.4	8.9	1.4	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.1	22.6	13.3	10.0	11.7	4.9
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	599		1484			755
Approach Delay, s/veh	23.7		11.8			7.4
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	2.4	30.7		16.5		43.1
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	20	34.1		24.9		59.1
Max Q Clear Time (g_c+10), s	10.9	21.8		10.8		5.7
Green Ext Time (p_c), s	0.4	3.0		0.6		1.6

Intersection Summary

HCM 6th Ctrl Delay		13.1				
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	732	143	2	306	36	3
Future Vol, veh/h	732	143	2	306	36	3
Conflicting Peds, #/hr	0	0	7	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	779	152	2	326	38	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	938	0	1192 863
Stage 1	-	-	-	-	862 -
Stage 2	-	-	-	-	330 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	730	-	207 354
Stage 1	-	-	-	-	414 -
Stage 2	-	-	-	-	728 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	725	-	205 351
Mov Cap-2 Maneuver	-	-	-	-	205 -
Stage 1	-	-	-	-	411 -
Stage 2	-	-	-	-	726 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	25.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	205	351	-	-	725	-
HCM Lane V/C Ratio	0.187	0.009	-	-	0.003	-
HCM Control Delay (s)	26.6	15.4	-	-	10	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-

MOVEMENT SUMMARY

 Site: 101 [2022 Plus Project AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.187	15.1	LOS C	0.6	17.0	0.65	0.65	0.65	33.3
8	T1	128	3.0	0.187	8.9	LOS A	0.7	17.2	0.65	0.65	0.65	33.6
18b	R3	70	3.0	0.187	8.9	LOS A	0.7	17.2	0.65	0.65	0.65	32.0
Approach		203	5.5	0.187	9.1	LOS A	0.7	17.2	0.65	0.65	0.65	33.0
SouthEast: RoadName												
3bx	L3	35	3.0	0.165	4.6	LOS A	0.6	17.3	0.31	0.19	0.31	35.8
3ax	L1	23	100.0	0.165	7.5	LOS A	0.6	17.3	0.31	0.19	0.31	34.3
18ax	R1	305	3.0	0.165	4.5	LOS A	0.7	17.9	0.32	0.19	0.32	35.4
Approach		364	9.2	0.165	4.7	LOS A	0.7	17.9	0.32	0.19	0.32	35.4
North: Deer Valley Drive												
7u	U	27	3.0	0.815	18.0	LOS C	11.0	282.5	0.70	0.39	0.70	29.0
7a	L1	873	3.0	0.815	18.0	LOS C	11.0	282.5	0.70	0.39	0.70	28.2
4	T1	383	3.0	0.815	9.3	LOS A	11.0	282.5	0.40	0.21	0.40	32.9
14	R2	16	100.0	0.223	7.5	LOS A	1.0	25.8	0.24	0.12	0.24	34.3
Approach		1299	4.2	0.815	15.3	LOS C	11.0	282.5	0.60	0.34	0.60	29.5
West: Transit Center												
5	L2	5	100.0	0.228	21.9	LOS C	0.4	16.8	0.71	0.71	0.71	28.3
12a	R1	30	100.0	0.228	21.9	LOS C	0.4	16.8	0.71	0.71	0.71	27.9
12	R2	16	100.0	0.228	21.9	LOS C	0.4	16.8	0.71	0.71	0.71	27.3
Approach		51	100.0	0.228	21.9	LOS C	0.4	16.8	0.71	0.71	0.71	27.7
All Vehicles		1917	7.8	0.815	12.8	LOS B	11.0	282.5	0.56	0.35	0.56	30.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Opening Year Plus Project AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↖	↕↕
Traffic Volume (veh/h)	582	210	281	166	110	660
Future Volume (veh/h)	582	210	281	166	110	660
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	606	219	293	173	115	688
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	750	344	1089	875	522	1742
Arrive On Green	0.26	0.26	0.32	0.32	0.08	0.51
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	606	219	293	173	115	688
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	9.1	6.8	3.0	2.6	1.9	5.8
Cycle Q Clear(g_c), s	9.1	6.8	3.0	2.6	1.9	5.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	750	344	1089	875	522	1742
V/C Ratio(X)	0.81	0.64	0.27	0.20	0.22	0.40
Avail Cap(c_a), veh/h	1555	713	2476	1494	1105	4291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.6	11.9	4.8	8.1	7.1
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.1	0.9	1.1	0.5	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.2	16.3	12.0	4.8	8.2	7.1
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	825		466			803
Approach Delay, s/veh	17.0		9.3			7.3
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.0	20.9		17.1		29.9
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+13), s	13.9	5.0		11.1		7.8
Green Ext Time (p_c), s	0.2	1.0		0.9		2.4

Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	419	56	5	847	115	9
Future Vol, veh/h	419	56	5	847	115	9
Conflicting Peds, #/hr	0	0	2	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	451	60	5	911	124	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	513	0	1404 486
Stage 1	-	-	-	-	483 -
Stage 2	-	-	-	-	921 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1052	-	154 581
Stage 1	-	-	-	-	620 -
Stage 2	-	-	-	-	388 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1050	-	153 578
Mov Cap-2 Maneuver	-	-	-	-	153 -
Stage 1	-	-	-	-	619 -
Stage 2	-	-	-	-	386 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	82
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	153	578	-	-	1050	-
HCM Lane V/C Ratio	0.808	0.017	-	-	0.005	-
HCM Control Delay (s)	87.5	11.3	-	-	8.4	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	5.2	0.1	-	-	0	-

MOVEMENT SUMMARY

 Site: 101 [2022 Plus Project PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.374	14.7	LOS B	1.8	45.0	0.66	0.71	0.79	32.5
8	T1	460	3.0	0.374	9.9	LOS A	1.8	45.1	0.66	0.71	0.79	33.3
18b	R3	70	3.0	0.374	9.9	LOS A	1.8	45.1	0.66	0.71	0.79	31.7
Approach		530	3.2	0.374	9.9	LOS A	1.8	45.1	0.66	0.71	0.79	33.1
SouthEast: RoadName												
3bx	L3	44	3.0	0.612	16.3	LOS C	4.5	117.7	0.77	0.97	1.38	30.8
3ax	L1	17	100.0	0.612	21.1	LOS C	4.5	117.7	0.77	0.97	1.38	29.6
18ax	R1	779	3.0	0.612	16.1	LOS C	4.6	118.8	0.78	0.98	1.38	30.2
Approach		840	5.0	0.612	16.2	LOS C	4.6	118.8	0.78	0.98	1.38	30.2
North: Deer Valley Drive												
7u	U	242	3.0	0.659	11.4	LOS B	6.0	154.2	0.44	0.23	0.44	31.4
7a	L1	408	3.0	0.659	11.4	LOS B	6.0	154.2	0.44	0.23	0.44	30.5
4	T1	404	3.0	0.659	7.7	LOS A	6.0	154.2	0.32	0.16	0.32	33.3
14	R2	10	100.0	0.180	7.0	LOS A	0.8	20.1	0.21	0.10	0.21	34.6
Approach		1065	3.9	0.659	9.9	LOS A	6.0	154.2	0.39	0.20	0.39	31.8
West: Transit Center												
5	L2	10	100.0	0.138	16.1	LOS C	0.2	10.3	0.63	0.63	0.63	30.1
12a	R1	17	100.0	0.138	16.1	LOS C	0.2	10.3	0.63	0.63	0.63	29.7
12	R2	10	100.0	0.138	16.1	LOS C	0.2	10.3	0.63	0.63	0.63	29.0
Approach		37	100.0	0.138	16.1	LOS C	0.2	10.3	0.63	0.63	0.63	29.6
All Vehicles		2473	5.6	0.659	12.2	LOS B	6.0	154.2	0.58	0.58	0.82	31.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Opening Year Plus Project PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (veh/h)	443	140	777	678	265	480
Future Volume (veh/h)	443	140	777	678	265	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	461	146	809	706	276	500
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	569	261	1430	933	405	2131
Arrive On Green	0.19	0.19	0.42	0.42	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	461	146	809	706	276	500
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	9.1	5.9	10.9	20.3	5.0	3.9
Cycle Q Clear(g_c), s	9.1	5.9	10.9	20.3	5.0	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	569	261	1430	933	405	2131
V/C Ratio(X)	0.81	0.56	0.57	0.76	0.68	0.23
Avail Cap(c_a), veh/h	1207	554	1921	1152	760	3330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	22.1	13.4	8.5	10.7	5.0
Incr Delay (d2), s/veh	1.1	0.7	0.1	1.7	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.5	3.6	9.2	1.5	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.4	22.8	13.5	10.2	12.1	5.0
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	607		1515			776
Approach Delay, s/veh	24.0		12.0			7.5
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	2.4	31.3		16.8		43.7
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	20	34.1		24.9		59.1
Max Q Clear Time (g_c+11), s	20	22.3		11.1		5.9
Green Ext Time (p_c), s	0.4	3.1		0.6		1.6

Intersection Summary

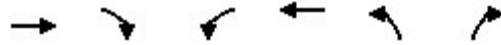
HCM 6th Ctrl Delay		13.3				
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Opening Year Plus Project AM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	732	143	2	306	36	3
Future Volume (veh/h)	732	143	2	306	36	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	779	152	2	326	38	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	974	190	343	1198	229	203
Arrive On Green	0.64	0.64	0.64	0.64	0.13	0.13
Sat Flow, veh/h	1520	297	601	1870	1781	1585
Grp Volume(v), veh/h	0	931	2	326	38	3
Grp Sat Flow(s),veh/h/ln	0	1817	601	1870	1781	1585
Q Serve(g_s), s	0.0	14.7	0.1	3.0	0.7	0.1
Cycle Q Clear(g_c), s	0.0	14.7	14.8	3.0	0.7	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1164	343	1198	229	203
V/C Ratio(X)	0.00	0.80	0.01	0.27	0.17	0.01
Avail Cap(c_a), veh/h	0	1767	543	1819	827	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	10.6	3.0	15.1	14.8
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	0.0	0.5	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.7	10.6	3.2	15.5	14.9
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	931			328	41	
Approach Delay, s/veh	6.7			3.2	15.4	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		29.5			29.5	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		37.9			37.9	18.1
Max Q Clear Time (g_c+I1), s		16.7			16.8	2.7
Green Ext Time (p_c), s		8.3			2.0	0.1
Intersection Summary						
HCM 6th Ctrl Delay			6.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Opening Year Plus Project PM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	419	56	5	847	115	9
Future Volume (veh/h)	419	56	5	847	115	9
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	451	60	5	911	124	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	996	133	613	1153	244	217
Arrive On Green	0.62	0.62	0.62	0.62	0.14	0.14
Sat Flow, veh/h	1617	215	889	1870	1781	1585
Grp Volume(v), veh/h	0	511	5	911	124	10
Grp Sat Flow(s),veh/h/ln	0	1832	889	1870	1781	1585
Q Serve(g_s), s	0.0	5.4	0.1	13.3	2.4	0.2
Cycle Q Clear(g_c), s	0.0	5.4	5.5	13.3	2.4	0.2
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1129	613	1153	244	217
V/C Ratio(X)	0.00	0.45	0.01	0.79	0.51	0.05
Avail Cap(c_a), veh/h	0	1657	870	1692	879	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	5.2	5.2	14.6	13.7
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.6	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	0.0	2.7	0.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	4.0	5.2	6.8	16.2	13.8
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	511			916	134	
Approach Delay, s/veh	4.0			6.8	16.0	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		27.0			27.0	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		33.0			33.0	18.0
Max Q Clear Time (g_c+I1), s		7.4			15.3	4.4
Green Ext Time (p_c), s		3.7			7.2	0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	3.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	190	185	15	220	740
Future Vol, veh/h	10	190	185	15	220	740
Conflicting Peds, #/hr	7	7	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	202	197	16	234	787

Major/Minor	Minor1	Major1	Major2	Major2	Major2
Conflicting Flow All	1468	213	0	0	214
Stage 1	206	-	-	-	-
Stage 2	1262	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	141	827	-	-	1356
Stage 1	829	-	-	-	-
Stage 2	266	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	116	821	-	-	1355
Mov Cap-2 Maneuver	116	-	-	-	-
Stage 1	828	-	-	-	-
Stage 2	218	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	116	821	1355
HCM Lane V/C Ratio	-	-	0.092	0.246	0.173
HCM Control Delay (s)	-	-	39.1	10.8	8.2
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	0.3	1	0.6

MOVEMENT SUMMARY

 Site: 101 [2040 BG AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.214	16.5	LOS C	0.7	19.4	0.67	0.67	0.67	32.8
8	T1	128	3.0	0.214	9.9	LOS A	0.8	19.6	0.67	0.67	0.67	33.1
18b	R3	85	3.0	0.214	9.9	LOS A	0.8	19.6	0.68	0.68	0.68	31.5
Approach		218	5.4	0.214	10.1	LOS B	0.8	19.6	0.67	0.67	0.67	32.5
SouthEast: RoadName												
3bx	L3	48	3.0	0.179	4.7	LOS A	0.7	18.9	0.32	0.20	0.32	35.4
3ax	L1	27	100.0	0.179	7.6	LOS A	0.7	18.9	0.32	0.20	0.32	34.0
18ax	R1	319	3.0	0.179	4.7	LOS A	0.8	19.7	0.32	0.20	0.32	35.3
Approach		394	9.6	0.179	4.9	LOS A	0.8	19.7	0.32	0.20	0.32	35.2
North: Deer Valley Drive												
7u	U	27	3.0	0.882	23.9	LOS C	24.0	613.3	0.94	0.68	1.15	27.0
7a	L1	941	3.0	0.882	23.9	LOS C	24.0	613.3	0.94	0.68	1.15	26.3
4	T1	399	3.0	0.882	11.2	LOS B	24.0	613.3	0.49	0.32	0.55	32.1
14	R2	16	100.0	0.241	7.8	LOS A	1.1	28.3	0.27	0.14	0.27	34.2
Approach		1383	4.1	0.882	20.0	LOS C	24.0	613.3	0.80	0.57	0.97	27.8
West: Transit Center												
5	L2	5	100.0	0.259	24.8	LOS C	0.4	19.8	0.74	0.79	0.88	27.3
12a	R1	32	100.0	0.259	24.8	LOS C	0.4	19.8	0.74	0.79	0.88	26.9
12	R2	16	100.0	0.259	24.8	LOS C	0.4	19.8	0.74	0.79	0.88	26.4
Approach		53	100.0	0.259	24.8	LOS C	0.4	19.8	0.74	0.79	0.88	26.8
All Vehicles		2048	7.8	0.882	16.2	LOS C	24.0	613.3	0.69	0.52	0.81	29.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
2040 Background AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (veh/h)	700	225	275	200	125	655
Future Volume (veh/h)	700	225	275	200	125	655
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	729	234	286	208	130	682
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	864	396	1024	905	492	1657
Arrive On Green	0.29	0.29	0.30	0.30	0.08	0.49
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	729	234	286	208	130	682
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	11.7	7.4	3.2	3.2	2.4	6.4
Cycle Q Clear(g_c), s	11.7	7.4	3.2	3.2	2.4	6.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	864	396	1024	905	492	1657
V/C Ratio(X)	0.84	0.59	0.28	0.23	0.26	0.41
Avail Cap(c_a), veh/h	1462	671	2328	1486	1030	4035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	15.1	13.4	4.8	9.3	8.3
Incr Delay (d2), s/veh	0.9	0.5	0.1	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	5.6	1.0	1.6	0.7	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.4	15.6	13.4	4.8	9.5	8.3
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	963		494			812
Approach Delay, s/veh	17.0		9.8			8.5
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.3	20.9		19.8		30.2
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+14), s	14.4	5.2		13.7		8.4
Green Ext Time (p_c), s	0.2	1.0		1.1		2.3

Intersection Summary

HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	34.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↖		↘	↗
Traffic Vol, veh/h	25	455	635	45	250	270
Future Vol, veh/h	25	455	635	45	250	270
Conflicting Peds, #/hr	2	2	0	3	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	489	683	48	269	290

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1540	712	0	0	734
Stage 1	710	-	-	-	-
Stage 2	830	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	127	~ 432	-	-	871
Stage 1	487	-	-	-	-
Stage 2	428	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	87	~ 430	-	-	869
Mov Cap-2 Maneuver	87	-	-	-	-
Stage 1	486	-	-	-	-
Stage 2	295	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	114	0	5.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	87	430	869
HCM Lane V/C Ratio	-	-	0.309	1.138	0.309
HCM Control Delay (s)	-	-	63.9	116.8	11
HCM Lane LOS	-	-	F	F	B
HCM 95th %tile Q(veh)	-	-	1.2	17.7	1.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

MOVEMENT SUMMARY

 Site: 101 [2040 BG PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.410	15.7	LOS C	2.1	52.8	0.68	0.75	0.89	32.1
8	T1	480	3.0	0.410	10.8	LOS B	2.1	52.9	0.68	0.75	0.89	32.9
18b	R3	86	3.0	0.410	10.8	LOS B	2.1	52.9	0.68	0.75	0.89	31.3
Approach		567	3.2	0.410	10.8	LOS B	2.1	52.9	0.68	0.75	0.89	32.7
SouthEast: RoadName												
3bx	L3	51	3.0	0.690	19.9	LOS C	5.9	154.8	0.82	1.09	1.66	29.4
3ax	L1	15	100.0	0.690	24.9	LOS C	5.9	154.8	0.82	1.09	1.66	28.2
18ax	R1	864	3.0	0.690	19.8	LOS C	6.1	155.9	0.82	1.09	1.65	28.8
Approach		929	4.6	0.690	19.8	LOS C	6.1	155.9	0.82	1.09	1.65	28.8
North: Deer Valley Drive												
7u	U	247	3.0	0.695	12.5	LOS B	6.9	176.1	0.48	0.26	0.48	31.0
7a	L1	434	3.0	0.695	12.5	LOS B	6.9	176.1	0.48	0.26	0.48	30.1
4	T1	429	3.0	0.695	8.3	LOS A	6.9	176.1	0.34	0.17	0.34	33.1
14	R2	10	100.0	0.190	7.1	LOS A	0.8	21.5	0.22	0.10	0.22	34.5
Approach		1121	3.9	0.695	10.8	LOS B	6.9	176.1	0.43	0.22	0.43	31.4
West: Transit Center												
5	L2	10	100.0	0.138	16.9	LOS C	0.2	10.2	0.65	0.65	0.65	29.7
12a	R1	15	100.0	0.138	16.9	LOS C	0.2	10.2	0.65	0.65	0.65	29.3
12	R2	10	100.0	0.138	16.9	LOS C	0.2	10.2	0.65	0.65	0.65	28.7
Approach		35	100.0	0.138	16.9	LOS C	0.2	10.2	0.65	0.65	0.65	29.2
All Vehicles		2653	5.3	0.695	14.1	LOS B	6.9	176.1	0.62	0.65	0.96	30.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 2040 Background PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	530	155	785	820	290	470
Future Volume (veh/h)	530	155	785	820	290	470
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	552	161	818	854	302	490
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	637	292	1539	1017	378	2175
Arrive On Green	0.22	0.22	0.45	0.45	0.12	0.64
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	552	161	818	854	302	490
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	13.7	8.0	13.1	32.1	6.5	4.6
Cycle Q Clear(g_c), s	13.7	8.0	13.1	32.1	6.5	4.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	637	292	1539	1017	378	2175
V/C Ratio(X)	0.87	0.55	0.53	0.84	0.80	0.23
Avail Cap(c_a), veh/h	967	443	1539	1017	624	2667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	26.3	15.0	9.5	13.3	5.8
Incr Delay (d2), s/veh	3.6	0.6	0.2	6.0	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	4.6	17.0	2.4	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.2	26.9	15.2	15.5	16.0	5.8
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	713		1672			792
Approach Delay, s/veh	31.0		15.4			9.7
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	4.1	40.0		21.5		54.1
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+1/3), s	13.5	34.1		15.7		6.6
Green Ext Time (p_c), s	0.5	0.0		0.7		1.6

Intersection Summary

HCM 6th Ctrl Delay		17.5				
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	856	164	2	364	43	3
Future Vol, veh/h	856	164	2	364	43	3
Conflicting Peds, #/hr	0	0	7	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	911	174	2	387	46	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1092	0	1396 1006
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	391 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	639	-	156 293
Stage 1	-	-	-	-	354 -
Stage 2	-	-	-	-	683 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	635	-	154 291
Mov Cap-2 Maneuver	-	-	-	-	154 -
Stage 1	-	-	-	-	352 -
Stage 2	-	-	-	-	681 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	36.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	154	291	-	-	635	-
HCM Lane V/C Ratio	0.297	0.011	-	-	0.003	-
HCM Control Delay (s)	38	17.5	-	-	10.7	-
HCM Lane LOS	E	C	-	-	B	-
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-

MOVEMENT SUMMARY

 Site: 101 [2040 Plus Project AM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.233	17.7	LOS C	0.8	21.0	0.70	0.70	0.70	32.4
8	T1	128	3.0	0.233	10.8	LOS B	0.8	21.2	0.70	0.70	0.70	32.7
18b	R3	91	3.0	0.233	10.7	LOS B	0.8	21.2	0.70	0.70	0.70	31.2
Approach		224	5.3	0.233	10.9	LOS B	0.8	21.2	0.70	0.70	0.70	32.1
SouthEast: RoadName												
3bx	L3	51	3.0	0.194	4.9	LOS A	0.7	20.8	0.32	0.20	0.32	35.4
3ax	L1	29	100.0	0.194	7.8	LOS A	0.7	20.8	0.32	0.20	0.32	34.0
18ax	R1	348	3.0	0.194	4.8	LOS A	0.8	21.7	0.33	0.20	0.33	35.2
Approach		428	9.5	0.194	5.0	LOS A	0.8	21.7	0.33	0.20	0.33	35.1
North: Deer Valley Drive												
7u	U	27	3.0	0.923	29.1	LOS D	41.8	1069.0	1.00	0.95	1.61	25.5
7a	L1	996	3.0	0.923	29.1	LOS D	41.8	1069.0	1.00	0.95	1.61	24.8
4	T1	399	3.0	0.923	12.3	LOS B	41.8	1069.0	0.49	0.39	0.67	31.7
14	R2	16	100.0	0.252	8.0	LOS A	1.1	29.9	0.28	0.15	0.28	34.1
Approach		1437	4.1	0.923	24.2	LOS C	41.8	1069.0	0.85	0.78	1.34	26.5
West: Transit Center												
5	L2	5	100.0	0.288	27.1	LOS D	0.5	22.8	0.75	0.84	1.02	26.6
12a	R1	35	100.0	0.288	27.1	LOS D	0.5	22.8	0.75	0.84	1.02	26.2
12	R2	16	100.0	0.288	27.1	LOS D	0.5	22.8	0.75	0.84	1.02	25.7
Approach		56	100.0	0.288	27.1	LOS D	0.5	22.8	0.75	0.84	1.02	26.1
All Vehicles		2146	7.8	0.923	19.0	LOS C	41.8	1069.0	0.73	0.66	1.06	28.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 2040 Plus Project AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (veh/h)	712	225	291	206	125	685
Future Volume (veh/h)	712	225	291	206	125	685
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	742	234	303	215	130	714
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	876	402	1018	908	481	1648
Arrive On Green	0.30	0.30	0.30	0.30	0.08	0.48
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	742	234	303	215	130	714
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	11.9	7.4	3.4	3.3	2.4	6.9
Cycle Q Clear(g_c), s	11.9	7.4	3.4	3.3	2.4	6.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	876	402	1018	908	481	1648
V/C Ratio(X)	0.85	0.58	0.30	0.24	0.27	0.43
Avail Cap(c_a), veh/h	1453	667	2314	1486	1015	4011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	15.0	13.6	4.8	9.5	8.5
Incr Delay (d2), s/veh	1.1	0.5	0.1	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	5.6	1.1	1.7	0.7	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.7	15.5	13.7	4.8	9.7	8.6
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	976		518			844
Approach Delay, s/veh	17.2		10.0			8.7
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.3	20.9		20.1		30.2
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+14), s	14.4	5.4		13.9		8.9
Green Ext Time (p_c), s	0.2	1.1		1.1		2.5

Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	22.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	496	64	5	997	135	9
Future Vol, veh/h	496	64	5	997	135	9
Conflicting Peds, #/hr	0	0	2	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	533	69	5	1072	145	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	604	0	1652 573
Stage 1	-	-	-	-	570 -
Stage 2	-	-	-	-	1082 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	974	-	~ 108 519
Stage 1	-	-	-	-	566 -
Stage 2	-	-	-	-	325 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	972	-	~ 107 517
Mov Cap-2 Maneuver	-	-	-	-	~ 107 -
Stage 1	-	-	-	-	565 -
Stage 2	-	-	-	-	323 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	266.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	107	517	-	-	972	-
HCM Lane V/C Ratio	1.357	0.019	-	-	0.006	-
HCM Control Delay (s)	283.1	12.1	-	-	8.7	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	10.1	0.1	-	-	0	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

MOVEMENT SUMMARY

 Site: 101 [2040 Plus Project PM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.427	16.6	LOS C	2.2	56.3	0.70	0.78	0.95	31.8
8	T1	480	3.0	0.427	11.5	LOS B	2.2	56.4	0.70	0.78	0.95	32.6
18b	R3	90	3.0	0.427	11.5	LOS B	2.2	56.4	0.70	0.78	0.95	31.0
Approach		571	3.2	0.427	11.5	LOS B	2.2	56.4	0.70	0.78	0.95	32.3
SouthEast: RoadName												
3bx	L3	55	3.0	0.723	21.8	LOS C	6.7	175.3	0.83	1.15	1.79	28.7
3ax	L1	17	100.0	0.723	26.7	LOS D	6.7	175.3	0.83	1.15	1.79	27.6
18ax	R1	900	3.0	0.723	21.5	LOS C	6.9	176.5	0.84	1.15	1.78	28.2
Approach		972	4.7	0.723	21.6	LOS C	6.9	176.5	0.84	1.15	1.78	28.2
North: Deer Valley Drive												
7u	U	247	3.0	0.722	13.4	LOS B	7.5	192.4	0.53	0.29	0.53	30.6
7a	L1	469	3.0	0.722	13.4	LOS B	7.5	192.4	0.53	0.29	0.53	29.7
4	T1	429	3.0	0.722	8.7	LOS A	7.5	192.4	0.37	0.20	0.37	32.9
14	R2	10	100.0	0.197	7.2	LOS A	0.8	22.4	0.23	0.11	0.23	34.4
Approach		1156	3.8	0.722	11.6	LOS B	7.5	192.4	0.47	0.26	0.47	31.1
West: Transit Center												
5	L2	10	100.0	0.151	17.8	LOS C	0.2	11.1	0.67	0.67	0.67	29.4
12a	R1	17	100.0	0.151	17.8	LOS C	0.2	11.1	0.67	0.67	0.67	29.0
12	R2	10	100.0	0.151	17.8	LOS C	0.2	11.1	0.67	0.67	0.67	28.4
Approach		37	100.0	0.151	17.8	LOS C	0.2	11.1	0.67	0.67	0.67	29.0
All Vehicles		2735	5.3	0.723	15.2	LOS C	7.5	192.4	0.65	0.69	1.04	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: FEHR AND PEERS | Processed: Wednesday, March 3, 2021 3:06:54 PM

Project: P:\20-2245 Snow Park Development\Analysis\SIDRA\DeerValleyDrRoundabout.sip8

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 2040 Plus Project PM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶↷	↷	↶↷	↷	↶↷	↶↷
Traffic Volume (veh/h)	538	155	807	828	290	490
Future Volume (veh/h)	538	155	807	828	290	490
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	560	161	841	862	302	510
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	645	296	1532	1018	373	2169
Arrive On Green	0.22	0.22	0.45	0.45	0.12	0.64
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	560	161	841	862	302	510
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	14.0	8.0	13.7	32.8	6.6	4.9
Cycle Q Clear(g_c), s	14.0	8.0	13.7	32.8	6.6	4.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	645	296	1532	1018	373	2169
V/C Ratio(X)	0.87	0.54	0.55	0.85	0.81	0.24
Avail Cap(c_a), veh/h	962	441	1532	1018	617	2656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	26.3	15.3	9.6	13.6	5.9
Incr Delay (d2), s/veh	4.0	0.6	0.2	6.4	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	4.8	17.3	2.4	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.5	26.8	15.5	16.0	16.6	6.0
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	721		1703			812
Approach Delay, s/veh	31.3		15.8			9.9
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	4.2	40.0		21.8		54.2
Change Period (Y+Rc), s	5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	26	34.1		24.9		59.1
Max Q Clear Time (g_c+I), s	13.6	34.8		16.0		6.9
Green Ext Time (p_c), s	0.5	0.0		0.7		1.7

Intersection Summary

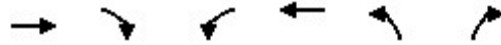
HCM 6th Ctrl Delay		17.8				
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 2040 Plus Project AM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	856	164	2	364	43	3
Future Volume (veh/h)	856	164	2	364	43	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	911	174	2	387	46	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1093	209	300	1340	181	161
Arrive On Green	0.72	0.72	0.72	0.72	0.10	0.10
Sat Flow, veh/h	1526	292	520	1870	1781	1585
Grp Volume(v), veh/h	0	1085	2	387	46	3
Grp Sat Flow(s),veh/h/ln	0	1818	520	1870	1781	1585
Q Serve(g_s), s	0.0	20.7	0.1	3.7	1.2	0.1
Cycle Q Clear(g_c), s	0.0	20.7	20.9	3.7	1.2	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1302	300	1340	181	161
V/C Ratio(X)	0.00	0.83	0.01	0.29	0.25	0.02
Avail Cap(c_a), veh/h	0	1949	485	2006	654	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.9	12.3	2.5	20.4	20.0
Incr Delay (d2), s/veh	0.0	2.1	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.0	0.0	0.6	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	7.0	12.3	2.6	21.2	20.0
LnGrp LOS	A	A	B	A	C	C
Approach Vol, veh/h	1085			389	49	
Approach Delay, s/veh	7.0			2.7	21.1	
Approach LOS	A			A	C	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		39.8			39.8	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		52.9			52.9	18.1
Max Q Clear Time (g_c+I1), s		22.7			22.9	3.2
Green Ext Time (p_c), s		12.6			2.7	0.1
Intersection Summary						
HCM 6th Ctrl Delay			6.3			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

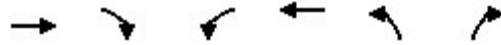
Snow Park Village
 2040 Plus Project PM - Signal



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	496	64	5	997	135	9
Future Volume (veh/h)	496	64	5	997	135	9
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	533	69	5	1072	145	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1119	145	588	1290	223	198
Arrive On Green	0.69	0.69	0.69	0.69	0.13	0.13
Sat Flow, veh/h	1623	210	817	1870	1781	1585
Grp Volume(v), veh/h	0	602	5	1072	145	10
Grp Sat Flow(s),veh/h/ln	0	1833	817	1870	1781	1585
Q Serve(g_s), s	0.0	7.4	0.1	20.2	3.8	0.3
Cycle Q Clear(g_c), s	0.0	7.4	7.5	20.2	3.8	0.3
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1264	588	1290	223	198
V/C Ratio(X)	0.00	0.48	0.01	0.83	0.65	0.05
Avail Cap(c_a), veh/h	0	1810	831	1847	660	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.5	5.2	5.5	20.2	18.7
Incr Delay (d2), s/veh	0.0	0.3	0.0	2.3	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.0	4.6	1.6	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	3.8	5.2	7.8	23.4	18.8
LnGrp LOS	A	A	A	A	C	B
Approach Vol, veh/h	602			1077	155	
Approach Delay, s/veh	3.8			7.7	23.1	
Approach LOS	A			A	C	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		38.0			38.0	10.6
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		48.0			48.0	18.0
Max Q Clear Time (g_c+I1), s		9.4			22.2	5.8
Green Ext Time (p_c), s		5.0			11.3	0.3
Intersection Summary						
HCM 6th Ctrl Delay			7.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Existing Plus Project AM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	711	136	1	293	34	3
Future Volume (veh/h)	711	136	1	293	34	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	756	145	1	312	36	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	960	184	354	1177	236	210
Arrive On Green	0.63	0.63	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1525	293	618	1870	1781	1585
Grp Volume(v), veh/h	0	901	1	312	36	3
Grp Sat Flow(s),veh/h/ln	0	1818	618	1870	1781	1585
Q Serve(g_s), s	0.0	13.8	0.0	2.8	0.7	0.1
Cycle Q Clear(g_c), s	0.0	13.8	13.8	2.8	0.7	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1144	354	1177	236	210
V/C Ratio(X)	0.00	0.79	0.00	0.27	0.15	0.01
Avail Cap(c_a), veh/h	0	1824	586	1877	854	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	10.2	3.1	14.5	14.2
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.0	0.5	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.4	10.2	3.2	14.8	14.3
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	901			313	39	
Approach Delay, s/veh	6.4			3.3	14.8	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		28.3			28.3	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		37.9			37.9	18.1
Max Q Clear Time (g_c+I1), s		15.8			15.8	2.7
Green Ext Time (p_c), s		8.0			1.9	0.1
Intersection Summary						
HCM 6th Ctrl Delay			5.9			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [Existing Plus Project AM_TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.167	14.1	LOS B	0.6	15.3	0.64	0.64	0.64	33.5
8	T1	127	3.0	0.167	8.3	LOS A	0.6	15.4	0.64	0.64	0.64	34.1
18b	R3	66	3.0	0.167	8.3	LOS A	0.6	15.4	0.64	0.64	0.64	32.3
Approach		194	3.5	0.167	8.3	LOS A	0.6	15.4	0.64	0.64	0.64	33.5
SouthEast: RoadName												
3bx	L3	34	3.0	0.153	4.4	LOS A	0.6	16.0	0.29	0.17	0.29	35.9
3ax	L1	20	100.0	0.153	7.2	LOS A	0.6	16.0	0.29	0.17	0.29	34.4
18ax	R1	291	3.0	0.153	4.4	LOS A	0.6	16.5	0.30	0.17	0.30	35.5
Approach		346	8.7	0.153	4.5	LOS A	0.6	16.5	0.30	0.17	0.30	35.5
North: Deer Valley Drive												
7u	U	23	3.0	0.775	15.6	LOS C	9.6	246.7	0.58	0.30	0.58	29.9
7a	L1	845	3.0	0.775	15.6	LOS C	9.6	246.7	0.58	0.30	0.58	29.0
4	T1	378	3.0	0.775	8.3	LOS A	9.6	246.7	0.33	0.16	0.33	33.4
14	R2	12	100.0	0.212	7.3	LOS A	0.9	24.5	0.21	0.10	0.21	34.4
Approach		1257	3.9	0.775	13.3	LOS B	9.6	246.7	0.50	0.26	0.50	30.3
West: Transit Center												
5	L2	2	100.0	0.175	19.7	LOS C	0.3	12.8	0.69	0.69	0.69	29.2
12a	R1	26	100.0	0.175	19.7	LOS C	0.3	12.8	0.69	0.69	0.69	28.8
12	R2	13	100.0	0.175	19.7	LOS C	0.3	12.8	0.69	0.69	0.69	28.2
Approach		40	100.0	0.175	19.7	LOS C	0.3	12.8	0.69	0.69	0.69	28.6
All Vehicles		1837	6.9	0.775	11.3	LOS B	9.6	246.7	0.48	0.29	0.48	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.
















HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

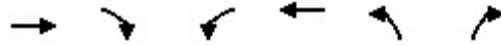
HCM 6th Signalized Intersection Summary
3: Deer Valley Dr & Bonanza Dr

Snow Park Village
Existing Plus Project AM - Signal - TDM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	562	198	275	156	105	653
Future Volume (veh/h)	562	198	275	156	105	653
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	585	206	286	162	109	680
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	731	335	1103	871	530	1755
Arrive On Green	0.25	0.25	0.32	0.32	0.08	0.51
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	585	206	286	162	109	680
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.7	6.3	2.9	2.4	1.7	5.6
Cycle Q Clear(g_c), s	8.7	6.3	2.9	2.4	1.7	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	731	335	1103	871	530	1755
V/C Ratio(X)	0.80	0.61	0.26	0.19	0.21	0.39
Avail Cap(c_a), veh/h	1574	722	2507	1497	1125	4344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.5	11.6	4.8	7.9	6.8
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.1	0.9	1.0	0.5	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.1	16.1	11.7	4.8	8.0	6.9
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h			448			789
Approach Delay, s/veh			9.2			7.0
Approach LOS			A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.9	20.9		16.7		29.8
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+I1), s	3.7	4.9		10.7		7.6
Green Ext Time (p_c), s	0.1	1.0		0.9		2.3
Intersection Summary						
HCM 6th Ctrl Delay			11.4			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Existing Plus Project PM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	393	50	5	818	110	8
Future Volume (veh/h)	393	50	5	818	110	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	54	5	880	118	9
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	983	126	631	1132	251	224
Arrive On Green	0.60	0.60	0.60	0.60	0.14	0.14
Sat Flow, veh/h	1625	208	917	1870	1781	1585
Grp Volume(v), veh/h	0	477	5	880	118	9
Grp Sat Flow(s),veh/h/ln	0	1833	917	1870	1781	1585
Q Serve(g_s), s	0.0	4.9	0.1	12.4	2.2	0.2
Cycle Q Clear(g_c), s	0.0	4.9	5.0	12.4	2.2	0.2
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1109	631	1132	251	224
V/C Ratio(X)	0.00	0.43	0.01	0.78	0.47	0.04
Avail Cap(c_a), veh/h	0	1707	930	1742	905	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	5.1	5.2	14.0	13.1
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.2	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	2.4	0.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	4.0	5.1	6.5	15.4	13.2
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	477			885	127	
Approach Delay, s/veh	4.0			6.4	15.2	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		25.9			25.9	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		33.0			33.0	18.0
Max Q Clear Time (g_c+I1), s		6.9			14.4	4.2
Green Ext Time (p_c), s		3.4			7.0	0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.4			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [Existing Plus Project PM_TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.352	13.9	LOS B	1.6	40.5	0.65	0.67	0.72	32.8
8	T1	454	3.0	0.352	9.3	LOS A	1.6	40.5	0.65	0.67	0.72	33.7
18b	R3	64	3.0	0.352	9.3	LOS A	1.6	40.5	0.65	0.67	0.72	32.0
Approach		518	3.2	0.352	9.3	LOS A	1.6	40.5	0.65	0.67	0.72	33.5
SouthEast: RoadName												
3bx	L3	38	3.0	0.576	14.8	LOS B	4.0	104.1	0.75	0.93	1.27	31.5
3ax	L1	14	100.0	0.576	19.6	LOS C	4.0	104.1	0.75	0.93	1.27	30.1
18ax	R1	753	3.0	0.576	14.7	LOS B	4.1	105.0	0.76	0.93	1.27	30.8
Approach		805	4.7	0.576	14.8	LOS B	4.1	105.0	0.76	0.93	1.27	30.8
North: Deer Valley Drive												
7u	U	242	3.0	0.630	10.5	LOS B	5.5	140.6	0.38	0.19	0.38	31.8
7a	L1	386	3.0	0.630	10.5	LOS B	5.5	140.6	0.38	0.19	0.38	30.8
4	T1	398	3.0	0.630	7.2	LOS A	5.5	140.6	0.28	0.13	0.28	33.6
14	R2	6	100.0	0.172	6.9	LOS A	0.7	19.2	0.19	0.08	0.19	34.5
Approach		1032	3.6	0.630	9.2	LOS A	5.5	140.6	0.34	0.16	0.34	32.1
West: Transit Center												
5	L2	5	100.0	0.083	14.5	LOS B	0.1	6.2	0.62	0.62	0.62	30.9
12a	R1	13	100.0	0.083	14.5	LOS B	0.1	6.2	0.62	0.62	0.62	30.4
12	R2	5	100.0	0.083	14.5	LOS B	0.1	6.2	0.62	0.62	0.62	29.8
Approach		23	100.0	0.083	14.5	LOS B	0.1	6.2	0.62	0.62	0.62	30.4
All Vehicles		2379	4.8	0.630	11.2	LOS B	5.5	140.6	0.55	0.54	0.74	31.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.













HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

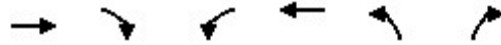
HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Existing Plus Project PM - Signal - TDM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	423	129	766	656	251	471
Future Volume (veh/h)	423	129	766	656	251	471
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	441	134	798	683	261	491
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	554	254	1410	917	408	2116
Arrive On Green	0.19	0.19	0.41	0.41	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	441	134	798	683	261	491
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	8.3	5.2	10.3	18.6	4.5	3.7
Cycle Q Clear(g_c), s	8.3	5.2	10.3	18.6	4.5	3.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	554	254	1410	917	408	2116
V/C Ratio(X)	0.80	0.53	0.57	0.75	0.64	0.23
Avail Cap(c_a), veh/h	1269	582	2021	1189	796	3503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	21.0	12.9	8.3	10.1	4.9
Incr Delay (d2), s/veh	1.0	0.6	0.1	1.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.9	3.3	8.1	1.3	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.3	21.7	13.1	9.5	11.2	4.9
LnGrp LOS	C	C	B	A	B	A
Approach Vol, veh/h	575		1481			752
Approach Delay, s/veh	22.9		11.4			7.1
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.9	29.7		16.0		41.6
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+I1), s	6.5	20.6		10.3		5.7
Green Ext Time (p_c), s	0.4	3.1		0.6		1.6
Intersection Summary						
HCM 6th Ctrl Delay			12.6			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Opening Year Plus Project AM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	721	138	2	299	35	3
Future Volume (veh/h)	721	138	2	299	35	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	767	147	2	318	37	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	967	185	350	1186	233	207
Arrive On Green	0.63	0.63	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1525	292	611	1870	1781	1585
Grp Volume(v), veh/h	0	914	2	318	37	3
Grp Sat Flow(s),veh/h/ln	0	1818	611	1870	1781	1585
Q Serve(g_s), s	0.0	14.2	0.1	2.9	0.7	0.1
Cycle Q Clear(g_c), s	0.0	14.2	14.3	2.9	0.7	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1153	350	1186	233	207
V/C Ratio(X)	0.00	0.79	0.01	0.27	0.16	0.01
Avail Cap(c_a), veh/h	0	1800	567	1852	842	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	10.4	3.1	14.8	14.5
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.0	0.5	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.5	10.4	3.2	15.1	14.5
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	914			320	40	
Approach Delay, s/veh	6.5			3.2	15.0	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		28.8			28.8	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		37.9			37.9	18.1
Max Q Clear Time (g_c+I1), s		16.2			16.3	2.7
Green Ext Time (p_c), s		8.1			2.0	0.1
Intersection Summary						
HCM 6th Ctrl Delay			5.9			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [2022 Plus Project _TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.182	14.8	LOS B	0.6	16.6	0.65	0.65	0.65	33.4
8	T1	128	3.0	0.182	8.8	LOS A	0.7	16.8	0.65	0.65	0.65	33.7
18b	R3	68	3.0	0.182	8.7	LOS A	0.7	16.8	0.65	0.65	0.65	32.1
Approach		201	5.6	0.182	8.9	LOS A	0.7	16.8	0.65	0.65	0.65	33.1
SouthEast: RoadName												
3bx	L3	34	3.0	0.161	4.5	LOS A	0.6	16.8	0.31	0.19	0.31	35.8
3ax	L1	22	100.0	0.161	7.4	LOS A	0.6	16.8	0.31	0.19	0.31	34.3
18ax	R1	299	3.0	0.161	4.5	LOS A	0.7	17.4	0.32	0.19	0.32	35.4
Approach		355	9.1	0.161	4.7	LOS A	0.7	17.4	0.32	0.19	0.32	35.4
North: Deer Valley Drive												
7u	U	27	3.0	0.804	17.2	LOS C	10.6	271.2	0.67	0.37	0.67	29.3
7a	L1	860	3.0	0.804	17.2	LOS C	10.6	271.2	0.67	0.37	0.67	28.4
4	T1	383	3.0	0.804	9.2	LOS A	10.6	271.2	0.38	0.20	0.38	33.0
14	R2	16	100.0	0.220	7.4	LOS A	0.9	25.4	0.23	0.11	0.23	34.4
Approach		1285	4.2	0.804	14.7	LOS B	10.6	271.2	0.58	0.32	0.58	29.7
West: Transit Center												
5	L2	5	100.0	0.220	21.4	LOS C	0.4	16.3	0.71	0.71	0.71	28.4
12a	R1	29	100.0	0.220	21.4	LOS C	0.4	16.3	0.71	0.71	0.71	28.0
12	R2	16	100.0	0.220	21.4	LOS C	0.4	16.3	0.71	0.71	0.71	27.5
Approach		50	100.0	0.220	21.4	LOS C	0.4	16.3	0.71	0.71	0.71	27.9
All Vehicles		1891	7.8	0.804	12.4	LOS B	10.6	271.2	0.54	0.34	0.54	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Opening Year Plus Project AM - Signal - TDM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕	↗	↖	↕
Traffic Volume (veh/h)	579	210	277	165	110	652
Future Volume (veh/h)	579	210	277	165	110	652
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	603	219	289	172	115	679
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	748	343	1091	874	524	1744
Arrive On Green	0.25	0.25	0.32	0.32	0.08	0.51
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	603	219	289	172	115	679
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	9.0	6.8	3.0	2.5	1.9	5.7
Cycle Q Clear(g_c), s	9.0	6.8	3.0	2.5	1.9	5.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	748	343	1091	874	524	1744
V/C Ratio(X)	0.81	0.64	0.26	0.20	0.22	0.39
Avail Cap(c_a), veh/h	1557	714	2479	1494	1108	4297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	15.6	11.9	4.8	8.1	7.0
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.1	0.9	1.1	0.5	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.2	16.3	11.9	4.8	8.2	7.1
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	822		461			794
Approach Delay, s/veh	17.0		9.3			7.2
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.0	20.9		17.1		29.9
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+I1), s	3.9	5.0		11.0		7.7
Green Ext Time (p_c), s	0.2	1.0		0.9		2.3

Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 Opening Year Plus Project PM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	405	51	5	831	112	9
Future Volume (veh/h)	405	51	5	831	112	9
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	435	55	5	894	120	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	993	126	625	1141	248	221
Arrive On Green	0.61	0.61	0.61	0.61	0.14	0.14
Sat Flow, veh/h	1628	206	906	1870	1781	1585
Grp Volume(v), veh/h	0	490	5	894	120	10
Grp Sat Flow(s),veh/h/ln	0	1833	906	1870	1781	1585
Q Serve(g_s), s	0.0	5.1	0.1	12.8	2.2	0.2
Cycle Q Clear(g_c), s	0.0	5.1	5.2	12.8	2.2	0.2
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1119	625	1141	248	221
V/C Ratio(X)	0.00	0.44	0.01	0.78	0.48	0.05
Avail Cap(c_a), veh/h	0	1685	905	1719	893	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	5.1	5.2	14.3	13.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.4	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	2.5	0.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	4.0	5.1	6.6	15.7	13.5
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	490			899	130	
Approach Delay, s/veh	4.0			6.6	15.6	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		26.4			26.4	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		33.0			33.0	18.0
Max Q Clear Time (g_c+I1), s		7.1			14.8	4.2
Green Ext Time (p_c), s		3.6			7.1	0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [2022 Plus Project PM_TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.366	14.4	LOS B	1.7	43.5	0.66	0.69	0.77	32.6
8	T1	460	3.0	0.366	9.7	LOS A	1.7	43.5	0.66	0.69	0.77	33.5
18b	R3	68	3.0	0.366	9.7	LOS A	1.7	43.5	0.66	0.69	0.77	31.8
Approach		528	3.2	0.366	9.7	LOS A	1.7	43.5	0.66	0.69	0.77	33.3
SouthEast: RoadName												
3bx	L3	42	3.0	0.598	15.7	LOS C	4.2	111.5	0.76	0.96	1.34	31.1
3ax	L1	16	100.0	0.598	20.6	LOS C	4.2	111.5	0.76	0.96	1.34	29.8
18ax	R1	763	3.0	0.598	15.6	LOS C	4.4	112.5	0.77	0.96	1.34	30.4
Approach		821	4.9	0.598	15.7	LOS C	4.4	112.5	0.77	0.96	1.34	30.4
North: Deer Valley Drive												
7u	U	242	3.0	0.647	11.0	LOS B	5.8	148.1	0.42	0.21	0.42	31.6
7a	L1	392	3.0	0.647	11.0	LOS B	5.8	148.1	0.42	0.21	0.42	30.6
4	T1	404	3.0	0.647	7.6	LOS A	5.8	148.1	0.31	0.15	0.31	33.4
14	R2	10	100.0	0.177	7.0	LOS A	0.7	19.7	0.20	0.09	0.20	34.6
Approach		1048	3.9	0.647	9.7	LOS A	5.8	148.1	0.37	0.19	0.37	31.9
West: Transit Center												
5	L2	10	100.0	0.132	15.7	LOS C	0.2	9.9	0.63	0.63	0.63	30.2
12a	R1	16	100.0	0.132	15.7	LOS C	0.2	9.9	0.63	0.63	0.63	29.8
12	R2	10	100.0	0.132	15.7	LOS C	0.2	9.9	0.63	0.63	0.63	29.2
Approach		36	100.0	0.132	15.7	LOS C	0.2	9.9	0.63	0.63	0.63	29.7
All Vehicles		2434	5.5	0.647	11.8	LOS B	5.8	148.1	0.57	0.56	0.79	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.
















HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

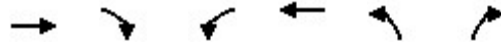
HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 Opening Year Plus Project PM - Signal - TDM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	439	140	767	675	265	471
Future Volume (veh/h)	439	140	767	675	265	471
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	457	146	799	703	276	491
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	566	260	1427	930	408	2131
Arrive On Green	0.19	0.19	0.42	0.42	0.12	0.62
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	457	146	799	703	276	491
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	9.0	5.9	10.7	20.1	4.9	3.8
Cycle Q Clear(g_c), s	9.0	5.9	10.7	20.1	4.9	3.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	566	260	1427	930	408	2131
V/C Ratio(X)	0.81	0.56	0.56	0.76	0.68	0.23
Avail Cap(c_a), veh/h	1214	557	1933	1156	766	3351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	22.0	13.3	8.5	10.6	5.0
Incr Delay (d2), s/veh	1.1	0.7	0.1	1.6	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.5	3.5	9.1	1.5	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.3	22.7	13.4	10.1	11.9	5.0
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	603		1502			767
Approach Delay, s/veh	23.9		11.9			7.5
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.4	31.1		16.7		43.5
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+I1), s	6.9	22.1		11.0		5.8
Green Ext Time (p_c), s	0.4	3.1		0.6		1.6
Intersection Summary						
HCM 6th Ctrl Delay			13.2			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 2040 Plus Project AM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	845	159	2	357	42	3
Future Volume (veh/h)	845	159	2	357	42	3
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	899	169	2	380	45	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1087	204	306	1328	184	164
Arrive On Green	0.71	0.71	0.71	0.71	0.10	0.10
Sat Flow, veh/h	1531	288	528	1870	1781	1585
Grp Volume(v), veh/h	0	1068	2	380	45	3
Grp Sat Flow(s),veh/h/ln	0	1819	528	1870	1781	1585
Q Serve(g_s), s	0.0	19.9	0.1	3.6	1.1	0.1
Cycle Q Clear(g_c), s	0.0	19.9	20.1	3.6	1.1	0.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1291	306	1328	184	164
V/C Ratio(X)	0.00	0.83	0.01	0.29	0.24	0.02
Avail Cap(c_a), veh/h	0	1992	510	2049	668	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.9	12.0	2.5	19.9	19.4
Incr Delay (d2), s/veh	0.0	1.8	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.6	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	6.7	12.0	2.7	20.6	19.5
LnGrp LOS	A	A	B	A	C	B
Approach Vol, veh/h	1068			382	48	
Approach Delay, s/veh	6.7			2.7	20.5	
Approach LOS	A			A	C	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		38.8			38.8	9.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		52.9			52.9	18.1
Max Q Clear Time (g_c+I1), s		21.9			22.1	3.1
Green Ext Time (p_c), s		12.4			2.7	0.1
Intersection Summary						
HCM 6th Ctrl Delay			6.1			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [2040 Plus Project AM_TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles	of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	5	100.0	0.228	17.4	LOS C	0.8	20.5	0.69	0.69	0.69	32.6
8	T1	128	3.0	0.228	10.6	LOS B	0.8	20.8	0.69	0.69	0.69	32.8
18b	R3	89	3.0	0.228	10.5	LOS B	0.8	20.8	0.69	0.69	0.69	31.3
Approach		222	5.3	0.228	10.7	LOS B	0.8	20.8	0.69	0.69	0.69	32.2
SouthEast: RoadName												
3bx	L3	50	3.0	0.190	4.8	LOS A	0.7	20.3	0.32	0.20	0.32	35.4
3ax	L1	28	100.0	0.190	7.7	LOS A	0.7	20.3	0.32	0.20	0.32	34.0
18ax	R1	341	3.0	0.190	4.8	LOS A	0.8	21.1	0.32	0.20	0.32	35.2
Approach		419	9.4	0.190	5.0	LOS A	0.8	21.1	0.32	0.20	0.32	35.2
North: Deer Valley Drive												
7u	U	27	3.0	0.912	27.4	LOS D	36.4	931.3	1.00	0.87	1.48	25.9
7a	L1	982	3.0	0.912	27.4	LOS D	36.4	931.3	1.00	0.87	1.48	25.3
4	T1	399	3.0	0.912	11.9	LOS B	36.4	931.3	0.49	0.37	0.64	31.8
14	R2	16	100.0	0.249	7.9	LOS A	1.1	29.5	0.27	0.15	0.27	34.2
Approach		1423	4.1	0.912	22.8	LOS C	36.4	931.3	0.85	0.72	1.23	26.9
West: Transit Center												
5	L2	5	100.0	0.279	26.4	LOS D	0.5	21.9	0.75	0.83	0.98	26.8
12a	R1	34	100.0	0.279	26.4	LOS D	0.5	21.9	0.75	0.83	0.98	26.4
12	R2	16	100.0	0.279	26.4	LOS D	0.5	21.9	0.75	0.83	0.98	25.9
Approach		55	100.0	0.279	26.4	LOS D	0.5	21.9	0.75	0.83	0.98	26.3
All Vehicles		2120	7.8	0.912	18.1	LOS C	36.4	931.3	0.73	0.62	0.99	28.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary

3: Deer Valley Dr & Bonanza Dr

Snow Park Village
2040 Plus Project AM - Signal - TDM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↖	↕↕
Traffic Volume (veh/h)	709	225	287	205	125	677
Future Volume (veh/h)	709	225	287	205	125	677
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	739	234	299	214	130	705
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	873	400	1019	907	483	1650
Arrive On Green	0.30	0.30	0.30	0.30	0.08	0.48
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	739	234	299	214	130	705
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	11.9	7.4	3.4	3.3	2.4	6.8
Cycle Q Clear(g_c), s	11.9	7.4	3.4	3.3	2.4	6.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	873	400	1019	907	483	1650
V/C Ratio(X)	0.85	0.58	0.29	0.24	0.27	0.43
Avail Cap(c_a), veh/h	1455	668	2317	1486	1018	4016
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	15.0	13.5	4.8	9.4	8.4
Incr Delay (d2), s/veh	1.1	0.5	0.1	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.1	1.1	1.7	0.7	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	15.5	13.6	4.8	9.6	8.5
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	973		513			835
Approach Delay, s/veh	17.1		9.9			8.7
Approach LOS	B		A			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.3	20.9		20.0		30.2
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+l1), s	4.4	5.4		13.9		8.8
Green Ext Time (p_c), s	0.2	1.1		1.1		2.4

Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 1: Deer Valley Dr S & Deer Valley Dr N

Snow Park Village
 2040 Plus Project PM - Signal - TDM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	482	59	5	981	132	9
Future Volume (veh/h)	482	59	5	981	132	9
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	518	63	5	1055	142	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1121	136	602	1282	222	197
Arrive On Green	0.69	0.69	0.69	0.69	0.12	0.12
Sat Flow, veh/h	1636	199	833	1870	1781	1585
Grp Volume(v), veh/h	0	581	5	1055	142	10
Grp Sat Flow(s),veh/h/ln	0	1835	833	1870	1781	1585
Q Serve(g_s), s	0.0	6.9	0.1	19.3	3.6	0.3
Cycle Q Clear(g_c), s	0.0	6.9	7.0	19.3	3.6	0.3
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1257	602	1282	222	197
V/C Ratio(X)	0.00	0.46	0.01	0.82	0.64	0.05
Avail Cap(c_a), veh/h	0	1861	876	1897	678	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	3.4	5.1	5.4	19.7	18.2
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.9	3.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.3	0.0	4.2	1.6	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	3.7	5.1	7.3	22.8	18.4
LnGrp LOS	A	A	A	A	C	B
Approach Vol, veh/h	581			1060	152	
Approach Delay, s/veh	3.7			7.3	22.5	
Approach LOS	A			A	C	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		36.9			36.9	10.4
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		48.0			48.0	18.0
Max Q Clear Time (g_c+I1), s		8.9			21.3	5.6
Green Ext Time (p_c), s		4.8			11.2	0.3
Intersection Summary						
HCM 6th Ctrl Delay			7.4			
HCM 6th LOS			A			

MOVEMENT SUMMARY

 Site: 101 [2040 Plus Project PM_TDM]

Deer Valley Drive / Marsac Avenue Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Marsac Avenue												
3	L2	1	100.0	0.419	16.1	LOS C	2.1	54.6	0.69	0.77	0.92	31.9
8	T1	480	3.0	0.419	11.1	LOS B	2.1	54.7	0.69	0.77	0.92	32.8
18b	R3	88	3.0	0.419	11.1	LOS B	2.1	54.7	0.69	0.77	0.92	31.2
Approach		569	3.2	0.419	11.2	LOS B	2.1	54.7	0.69	0.77	0.92	32.5
SouthEast: RoadName												
3bx	L3	53	3.0	0.708	20.9	LOS C	6.3	165.6	0.83	1.12	1.73	29.0
3ax	L1	16	100.0	0.708	25.8	LOS D	6.3	165.6	0.83	1.12	1.73	27.9
18ax	R1	884	3.0	0.708	20.7	LOS C	6.5	166.7	0.83	1.12	1.72	28.5
Approach		953	4.6	0.708	20.8	LOS C	6.5	166.7	0.83	1.12	1.72	28.5
North: Deer Valley Drive												
7u	U	247	3.0	0.709	12.9	LOS B	7.2	184.5	0.51	0.27	0.51	30.8
7a	L1	453	3.0	0.709	12.9	LOS B	7.2	184.5	0.51	0.27	0.51	29.9
4	T1	429	3.0	0.709	8.5	LOS A	7.2	184.5	0.36	0.19	0.36	33.0
14	R2	10	100.0	0.194	7.2	LOS A	0.8	21.9	0.22	0.11	0.22	34.5
Approach		1139	3.9	0.709	11.2	LOS B	7.2	184.5	0.45	0.24	0.45	31.2
West: Transit Center												
5	L2	10	100.0	0.144	17.4	LOS C	0.2	10.7	0.66	0.66	0.66	29.5
12a	R1	16	100.0	0.144	17.4	LOS C	0.2	10.7	0.66	0.66	0.66	29.1
12	R2	10	100.0	0.144	17.4	LOS C	0.2	10.7	0.66	0.66	0.66	28.6
Approach		36	100.0	0.144	17.4	LOS C	0.2	10.7	0.66	0.66	0.66	29.1
All Vehicles		2697	5.3	0.709	14.7	LOS B	7.2	184.5	0.64	0.67	1.00	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.
















HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th Signalized Intersection Summary
 3: Deer Valley Dr & Bonanza Dr

Snow Park Village
 2040 Plus Project PM - Signal - TDM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	534	155	797	825	290	481
Future Volume (veh/h)	534	155	797	825	290	481
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1589	1589	1796	1796	1796	1796
Adj Flow Rate, veh/h	556	161	830	859	302	501
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	21	21	7	7	7	7
Cap, veh/h	641	294	1536	1017	375	2172
Arrive On Green	0.22	0.22	0.45	0.45	0.12	0.64
Sat Flow, veh/h	2935	1346	3503	1522	1711	3503
Grp Volume(v), veh/h	556	161	830	859	302	501
Grp Sat Flow(s),veh/h/ln	1468	1346	1706	1522	1711	1706
Q Serve(g_s), s	13.8	8.0	13.4	32.5	6.6	4.7
Cycle Q Clear(g_c), s	13.8	8.0	13.4	32.5	6.6	4.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	641	294	1536	1017	375	2172
V/C Ratio(X)	0.87	0.55	0.54	0.84	0.80	0.23
Avail Cap(c_a), veh/h	964	442	1536	1017	621	2662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	26.3	15.1	9.6	13.5	5.9
Incr Delay (d2), s/veh	3.8	0.6	0.2	6.3	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.1	4.7	17.2	2.4	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.4	26.9	15.4	15.8	16.3	5.9
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	717		1689			803
Approach Delay, s/veh	31.1		15.6			9.8
Approach LOS	C		B			A
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	14.1	40.0		21.7		54.1
Change Period (Y+Rc), s	* 5.1	5.9		5.1		5.9
Max Green Setting (Gmax), s	* 20	34.1		24.9		59.1
Max Q Clear Time (g_c+I1), s	8.6	34.5		15.8		6.7
Green Ext Time (p_c), s	0.5	0.0		0.7		1.6
Intersection Summary						
HCM 6th Ctrl Delay			17.6			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Project: UT20-2245
 Description: Snow Park Transportation Study

Park City Minimum Parking Rates Based <i>Nonshared</i> Parking Demand Summary																		
Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
			Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj	Peak Mo Adj	Estimated Parking Demand	Peak Hr Adj	Peak Mo Adj	Estimated Parking Demand
	Quantity	Unit											6 AM	December		6 AM	December	
Retail																		
Retail (<400 ksf)	26,500	sf GLA	3.22	100%	100%	3.22	ksf GLA	3.20	100%	100%	3.20	ksf GLA	100%	100%	86	100%	100%	85
Employee			0.78	100%	100%	0.78		0.80	100%	100%	0.80		100%	100%	21	100%	100%	22
Food and Beverage																		
Entertainment and Institutions																		
Convention Center	40,000	sf GLA	5.73	100%	100%	5.73	ksf GLA	5.73	100%	100%	5.73	ksf GLA	100%	100%	230	100%	100%	230
Employee			0.52	100%	100%	0.52		0.52	100%	100%	0.52		100%	100%	21	100%	100%	21
Hotel and Residential																		
Hotel-Business		keys	0.87	100%	100%	0.87	key	0.87	100%	100%	0.87	key	100%	100%	-	100%	100%	-
Hotel-Leisure	192	keys	0.87	100%	100%	0.87	key	0.87	100%	100%	0.87	key	100%	100%	167	100%	100%	167
Hotel Employees	192	keys	0.13	100%	100%	0.13	key	0.13	100%	100%	0.13	key	100%	100%	25	100%	100%	25
Restaurant/Lounge	4,500	sf GLA	4.24	100%	100%	4.24	ksf GLA	4.26	100%	100%	4.26	ksf GLA	100%	100%	20	100%	100%	20
Meeting/Banquet (0 to 20 sq ft/key)		sf GLA	0.00	100%	100%	0.00	ksf GLA	0.00	100%	100%	0.00	ksf GLA	100%	100%	-	100%	100%	-
Meeting/Banquet (20 to 50 sq ft/key)		sf GLA	0.00	100%	100%	0.00	ksf GLA	0.00	100%	100%	0.00	ksf GLA	100%	100%	-	100%	100%	-
Meeting/Banquet (50 to 100 sq ft/key)		sf GLA	0.00	100%	100%	0.00	ksf GLA	0.00	100%	100%	0.00	ksf GLA	100%	100%	-	100%	100%	-
Convention (100 to 200 sq ft/key)		sf GLA	0.00	100%	100%	0.00	ksf GLA	5.50	100%	100%	5.50	ksf GLA	100%	100%	-	100%	100%	-
Convention (> 200 sq ft/key)		sf GLA	4.58	100%	100%	4.58	ksf GLA	4.58	100%	100%	4.58	ksf GLA	100%	100%	-	100%	100%	-
Restaurant/Meeting Employees	4,500	sf GLA	0.76	100%	100%	0.76	ksf GLA	0.74	100%	100%	0.74	ksf GLA	100%	100%	4	100%	100%	4
Residential, Urban															0%			
Studio Efficiency		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	100%	100%	-	100%	100%	-
1 Bedroom		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	100%	100%	-	100%	100%	-
2 Bedrooms	23	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	100%	100%	-	100%	100%	-
3+ Bedrooms	102	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	100%	100%	-	100%	100%	-
Reserved	100%	res spaces	1.44	100%	100%	1.44	unit	1.41	100%	100%	1.41	unit	100%	100%	180	100%	100%	176
Visitor	125	units	0.06	100%	100%	0.06	unit	0.08	100%	100%	0.08	unit	100%	100%	8	100%	100%	11
Office																		
Additional Land Uses																		
Ski Resort (as observed during data collection)	1	count	1,500	100%	100%	1,500	count	1,500	100%	100%	1,500	count	100%	100%	1,500	100%	100%	1,500
Employee			0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
													Customer/Visitor	2,011	Customer	2,013		
													Employee/Resident	71	Employee/Resident	72		
													Reserved	180	Reserved	176		
													Total	2,262	Total	2,261		

Project: UT20-2245
 Description: Snow Park Transportation Study

Park City Minimum Parking Rates Based <i>Shared</i> Parking Demand Summary																		
Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
			Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj	Peak Mo Adj	Estimated Parking Demand	Peak Hr Adj	Peak Mo Adj	Estimated Parking Demand
	Quantity	Unit											1 PM	December		12 PM	December	
Retail																		
Retail (<400 ksf)	26,500	sf GLA	3.22	100%	96%	3.09	ksf GLA	3.20	100%	96%	3.08	ksf GLA	100%	100%	83	100%	100%	82
Employee			0.78	100%	100%	0.78		0.80	100%	100%	0.80		100%	100%	21	100%	100%	22
Food and Beverage																		
Entertainment and Institutions																		
Convention Center	40,000	sf GLA	5.73	100%	90%	5.15	ksf GLA	5.73	100%	90%	5.15	ksf GLA	100%	100%	207	100%	100%	207
Employee			0.52	100%	100%	0.52		0.52	100%	100%	0.52		100%	100%	21	100%	100%	21
Hotel and Residential																		
Hotel-Business		keys	0.87	49%	100%	0.42	key	0.87	53%	100%	0.46	key	55%	60%	-	55%	60%	-
Hotel-Leisure	192	keys	0.87	50%	100%	0.43	key	0.87	50%	100%	0.43	key	65%	50%	27	65%	50%	27
Hotel Employees	192	keys	0.13	100%	100%	0.13	key	0.13	100%	100%	0.13	key	100%	50%	13	100%	50%	13
Restaurant/Lounge	4,500	sf GLA	4.24	72%	90%	2.75	ksf GLA	4.26	72%	70%	2.15	ksf GLA	100%	100%	13	100%	100%	10
Meeting/Banquet (0 to 20 sq ft/key)		sf GLA	0.00	81%	90%	0.00	ksf GLA	0.00	36%	90%	0.00	ksf GLA	65%	100%	-	65%	100%	-
Meeting/Banquet (20 to 50 sq ft/key)		sf GLA	0.00	81%	90%	0.00	ksf GLA	0.00	36%	90%	0.00	ksf GLA	65%	100%	-	65%	100%	-
Meeting/Banquet (50 to 100 sq ft/key)		sf GLA	0.00	81%	90%	0.00	ksf GLA	0.00	36%	90%	0.00	ksf GLA	65%	100%	-	65%	100%	-
Convention (100 to 200 sq ft/key)		sf GLA	0.00	81%	90%	0.00	ksf GLA	5.50	36%	90%	1.78	ksf GLA	100%	100%	-	100%	100%	-
Convention (> 200 sq ft/key)		sf GLA	4.58	81%	90%	3.34	ksf GLA	4.58	36%	90%	1.49	ksf GLA	100%	100%	-	100%	100%	-
Restaurant/Meeting Employees	4,500	sf GLA	0.76	100%	100%	0.76	ksf GLA	0.74	100%	100%	0.74	ksf GLA	100%	100%	4	100%	100%	4
Residential, Urban																		
Studio Efficiency		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	50%	100%	-	68%	100%	-
1 Bedroom		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	50%	100%	-	68%	100%	-
2 Bedrooms	23	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	50%	100%	-	68%	100%	-
3+ Bedrooms	102	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	50%	100%	-	68%	100%	-
Reserved	100%	res spaces	1.44	100%	100%	1.44	unit	1.41	100%	100%	1.41	unit	100%	100%	180	100%	100%	176
Visitor	125	units	0.06	100%	100%	0.06	unit	0.08	100%	100%	0.08	unit	20%	100%	2	20%	100%	2
Office																		
Additional Land Uses																		
Ski Resort (as observed during data collection)	1	count	1,500	100%	100%	1,500	count	1,421	100%	100%	1,421	count	100%	100%	1,500	100%	100%	1,421
Employee			0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
													Customer/Visitor	1,831	Customer	1,749		
													Employee/Resident	59	Employee/Resident	60		
													Reserved	180	Reserved	176		
													Total	2,069	Total	1,984		