

TRAILBLAZER ELEMENTARY TO
ELDORADO ELEMENTARY
CONSOLIDATION

Traffic Impact Study

Project Number: 1124175

Prepared For: Douglas County
School District

March 21, 2025



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Project Number: 1124175

Prepared For: Douglas County School District
Planning and Construction
2808 Highway 85, Building B
Castle Rock, Colorado 80109

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EXECUTIVE SUMMARY

Douglas County School District is considering options for consolidating schools in Highlands Ranch, Colorado. One option being considered is moving Trailblazer Elementary into Eldorado Elementary. This traffic impact study addresses existing traffic conditions and potential traffic challenges at Eldorado Elementary, while considering the anticipated increase in traffic caused by the school consolidation.

Eldorado has a parking area to the southwest of the school, with two access points on Timbervale Trail, and a designated drop-off lane/bus loop with two access points on Westridge Knolls Avenue. Pedestrian crosswalks are located near the southern access point of the parking lot on Timbervale Trail, and at the intersection of Timbervale Trail and Westridge Knolls Avenue. School bus service is not provided at Eldorado but will be provided for Trailblazer students who qualify after relocating to Eldorado.

The projected 2028-2029 combined enrollment is 781 students. These projected combined enrollment numbers are 33 percent more than the previous maximum Eldorado enrollment. When the existing traffic is relocated to the new school, additional students will be eligible to take the bus. It is anticipated that about 2/3 of the Trailblazer students will be newly eligible to take the bus to school. Students who currently walk to Trailblazer are unlikely to walk to Eldorado due to distance and crossing a major roadway, therefore, it is assumed that these students will now be driven to school and count as a new vehicular trip to Eldorado. Taking into account the estimated street parking trips, the ingress/egress trips, pedestrians and bicyclists converted to vehicle trips, anticipated carpooling and the subtraction of new bus ridership, the resulting increase in trip demand for Eldorado is about 160 trips during the morning peak hour and 172 trips during the afternoon peak hour.

Traffic will be increased with the additional enrollment, but additional bus service will be offered, limiting the impact of the increased enrollment. The consolidation of the two schools is anticipated to add about 160 morning peak hour trips and 172 afternoon peak hour trips to the school. Consolidation of the schools will increase traffic at Eldorado with more vehicles using on-street parking, the school parking lot, and the pick-off/drop-off lanes. This will increase impacts to the surrounding roadways during pick-up and drop-off times.

Although increased traffic is expected around Eldorado with the increased enrollment, no traffic mitigation measures are recommended. Douglas County recognizes there will be increased delays around the school during 15-minute peak periods at pick-up and drop-off times.

1. INTRODUCTION

1.1 Study Purpose and Scope

The purpose of this Traffic Impact Study (TIS) is to discuss the existing traffic patterns at Eldorado Elementary (Eldorado) and potential mitigation measures for current traffic and potential increased traffic due to increased enrollment caused by school consolidations. A potential school consolidation option includes having Trailblazer Elementary (Trailblazer) consolidate into Eldorado.

The scope of this TIS includes assessing school driveways, nearby intersections, school parking lots, school drop-off and pick-up locations, traffic flow, bicycle and pedestrian facilities, and general traffic challenges at Eldorado.

1.2 Study Area

Eldorado Elementary School is located at 1305 Timbervale Trail in the western region of Highlands Ranch. This is near the intersection of Westridge Knolls Avenue at Timbervale Trail. The parcel number for the property is 222909418001. A vicinity map showing the school's location is provided as **Figure 1**.

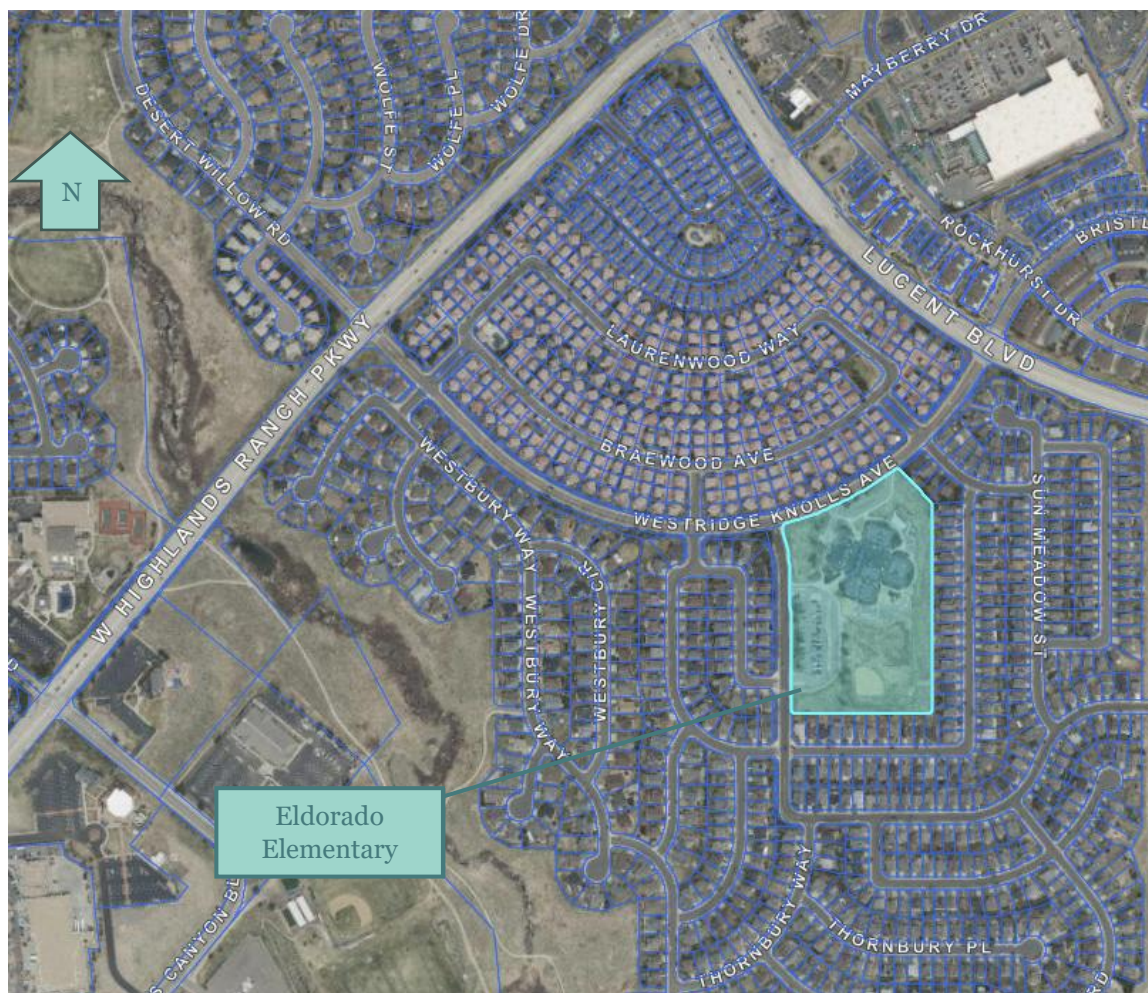


Figure 1 – Vicinity Map

The study area was determined through consultation with Douglas County School District (DCSD)) and Douglas County and potentially impacted intersections were identified. Each school access and adjacent streets are included in the TIS study area as well as the following intersections:

- Highlands Ranch Parkway at Desert Willow Road/Westridge Knolls Avenue
- Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway
- Highlands Ranch Parkway at Foothills Canyon Boulevard
- Westridge Knolls Avenue at Timbervale Trail

Neighborhood local and collector streets are analyzed for safety challenges, bicycle and pedestrian facilities, parking availability, and queueing lengths. Larger intersections at arterial streets are analyzed for the same items, but also for accident history and traffic signal warrant criteria if a traffic signal is not present.

1.3 School Description

Eldorado

Eldorado has a start time of 8:30 AM and an end time of 3:30 PM. The school is located in the neighborhood to the south of the intersection of Highlands Ranch Parkway at Kendrick Castillo Way (Lucent Boulevard). Eldorado has a parking area to the southwest of the school, with two access points on Timbervale Trail, and a designated drop-off lane/bus loop with two access points on Westridge Knolls Avenue. Pedestrian crosswalks are located near the southern access point of the parking lot on Timbervale Trail, and at the intersection of Timbervale Trail and Westridge Knolls Avenue. Eldorado has a maximum Capacity of 800 students but the largest enrollment since 2013 is 588 students.

School bus service is not provided at Eldorado. **Figure 2** depicts Eldorado's local attendance boundary in red with the orange circle representing the walking radius. As depicted, the entire local attendance boundary is within one mile, so no local bus service is provided.

Trailblazer

Trailblazer has a start time of 8:30 AM and an end time of 3:30 PM. The school is located in the neighborhood to the northwest of the intersection of Wildcat Reserve Parkway at Highlands Ranch Parkway. Trailblazer has a maximum Capacity of 800 students but the largest enrollment since 2013 is 508 students.

School bus service is provided for individuals within Trailblazer's attendance boundary but is restricted to individuals living more than one mile from the school. **Figure 3** depicts Trailblazer's local attendance boundary in grey with the orange circle representing the walking radius. As depicted, the entire local attendance boundary is within one mile, so no local bus service is provided. However, Trailblazer does serve a portion of the developing Sterling Ranch neighborhood to the southwest and one school bus route is provided from that neighborhood to Trailblazer. As of November 2024, 20 individuals are eligible to receive bus service, and 14 individuals have used the bus service which is a 70 percent rate. Most of the students attending Trailblazer do not live within 1 mile of Eldorado. Therefore, they would qualify for bus service to Eldorado.

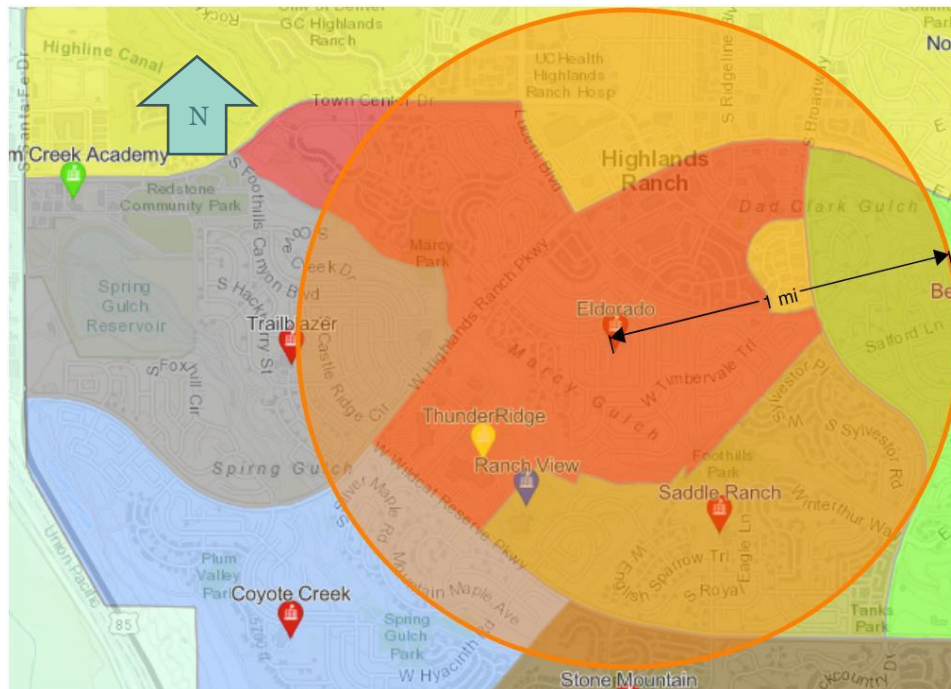


Figure 2 – Eldorado Bus Service Map

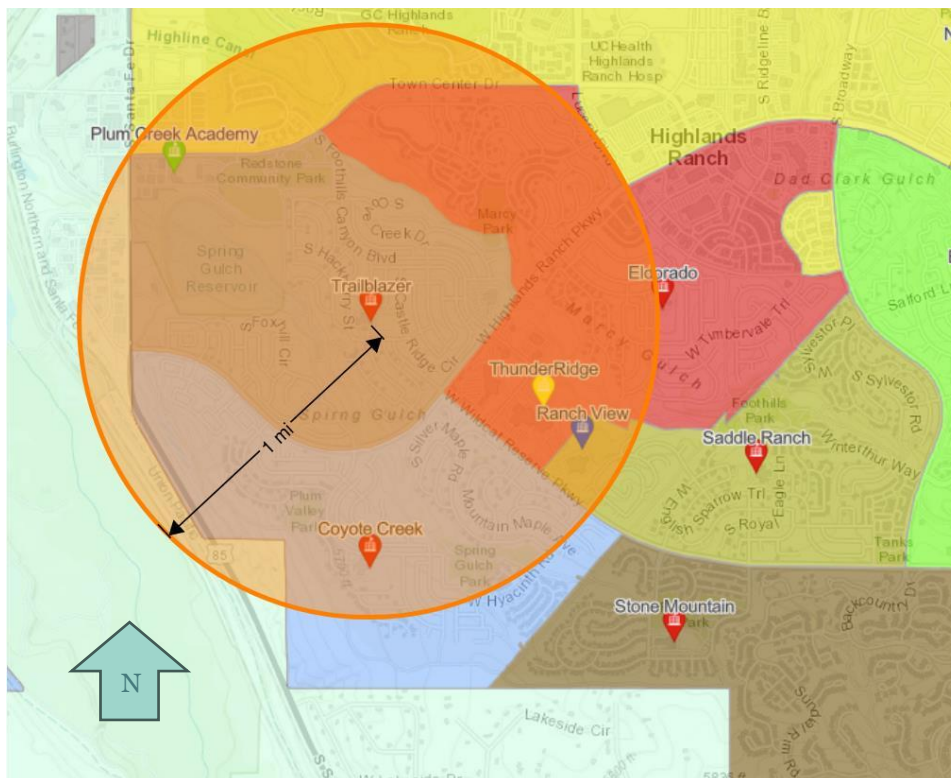


Figure 3 – Trailblazer Bus Service Map

2. EXISTING CONDITIONS

2.1 Site Observation

A site observation was performed at Eldorado on November 11, 2024. Field notes from the site observation are included in **Appendix A**. The morning site observation was conducted from 7:45 AM through 9:15 AM and the afternoon site observation was conducted from 2:45 PM through 4:15 PM. Key observations included:

- Long queues on Timbervale Trail
- Increased congestion on Westridge Knolls Avenue
- Sight visibility challenges while exiting the parking lot
- Inadequate space for turning movements from drop-off aisle

2.2 Roadway Network

The Highlands Ranch roadway network is maintained by Douglas County. Eldorado is situated within a built-out neighborhood and is surrounded by local and neighborhood collector streets. The main accesses to the neighborhood are from Highlands Ranch Parkway at Westridge Knolls Avenue, Kendrick Castillo Way (Lucent Boulevard) at Westridge Knolls Avenue, and Kendrick Castillo Way (Lucent Boulevard) at Timbervale Trail with Kendrick Castillo Way (Lucent Boulevard) being the main arterial street closest to the school. Westridge Knolls Avenue extends from the school entrance to a signalized intersection at Highlands Ranch Parkway and a non-signalized intersection at Kendrick Castillo Way (Lucent Boulevard).

Trailblazer traffic driving to Eldorado will mainly use Highlands Ranch Parkway, mainly from either Spring Hill Parkway or from Foothills Canyon Boulevard. **Figure 4** depicts the most likely route that would be taken from Trailblazer to Eldorado.

School zone flashers operate from 8:10 to 8:50 AM and from 3:20 to 4:00PM. One flasher is located on Timbervale Trail and two are located on Westridge Knolls Avenue, each direction from the school. Flashers are approximately 100 feet off the school property line.

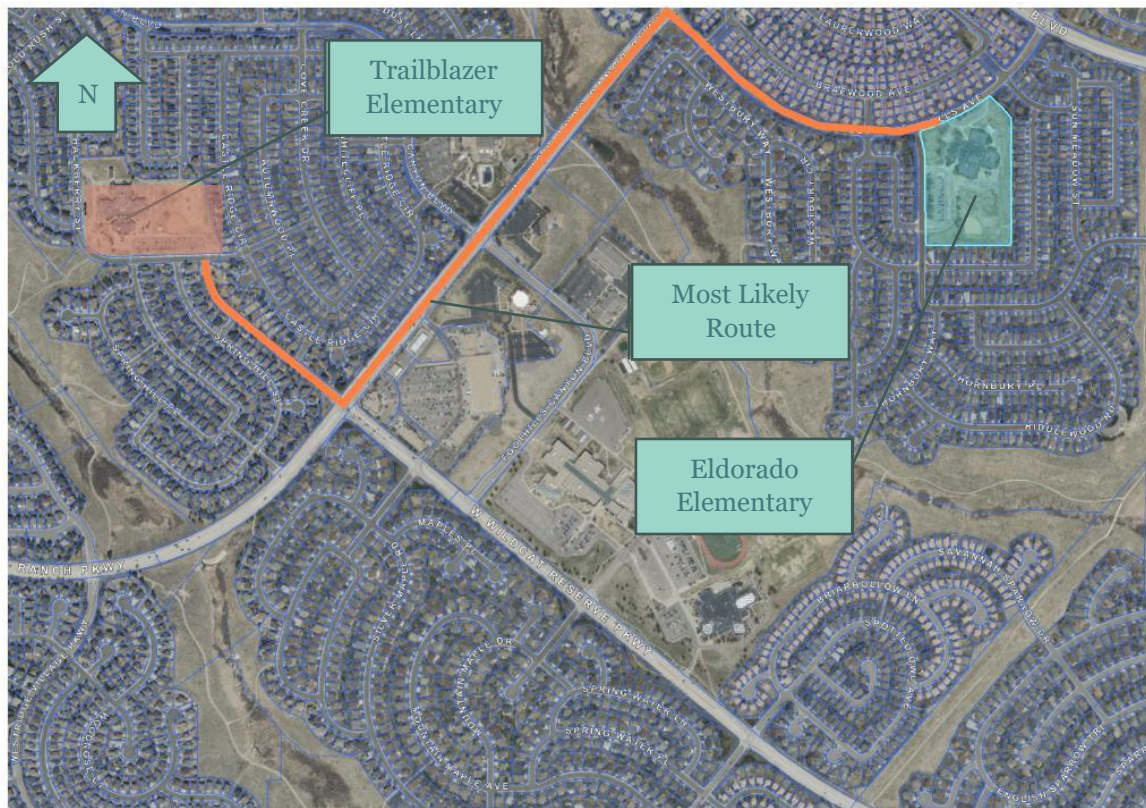


Figure 4 – Route from Trailblazer to Eldorado

Highlands Ranch Parkway at Desert Willow Road/ Westridge Knolls Avenue

The intersection of Highlands Ranch Parkway at Westridge Knolls Avenue is signalized with permissive left-turn lanes/phases for all approaches. **Figure 5** shows an aerial of the intersection with the current intersection layout.

Eastbound Highlands Ranch Parkway has two through lanes and a dedicated left-turn lane. The left turn lane has approximately 140 feet of storage with a 90-foot taper before transitioning to a striped median. There is no dedicated right turn lane. Westbound Highlands Ranch Parkway has two through lanes with a dedicated left-turn lane. The left turn lane has approximately 130 feet of storage with a 150-foot taper before transitioning to a striped median. There is no dedicated right turn lane on this approach. There is a bike lane in each direction on Highlands Ranch Parkway.

Northbound Westridge Knolls Avenue has one through lane and a dedicated left-turn lane with approximately 145 feet of storage and a 45-foot taper. Southbound Desert Willow Road has a shared through and right turn lane. The dedicated left-turn lane has approximately 90 feet of storage and a 50-foot taper. Bike lanes are present on Westridge Knolls Avenue, but they merge with vehicle traffic prior to the intersection.



Figure 5 – Highlands Ranch Parkway at Westridge Knolls Avenue/Desert Willow Road

Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway

The intersection of Highlands Ranch Parkway at Wildcat Reserve Parkway is signalized with protected/permissive left-turn lanes/phases all approaches. **Figure 6** shows an aerial of the intersection with the current intersection layout.

Highlands Ranch Parkway left-turn lanes have approximately 125 feet of storage length and 75 feet of taper length for eastbound traffic, and approximately 220 feet of storage length and 80 feet of taper length for westbound traffic, before transitioning to a striped median. There are two through lanes and one bike lane provided for each direction of traffic with a dedicated right-turn lane in each direction. The westbound dedicated right-turn lane is a drop lane starting at Foothills Canyon Boulevard.

Wildcat Reserve Parkway extends to the southeast and Spring Hill Parkway extends to the northwest of the intersection. Each approach provides one through lane and a bike lane in each direction. Wildcat Reserve Parkway has dual dedicated left turn lanes, which combine to provide approximately 770 feet of storage, and a dedicated right turn lane. The left turn lane on Spring Hill Parkway contains 150 feet of storage with a 100 feet taper.

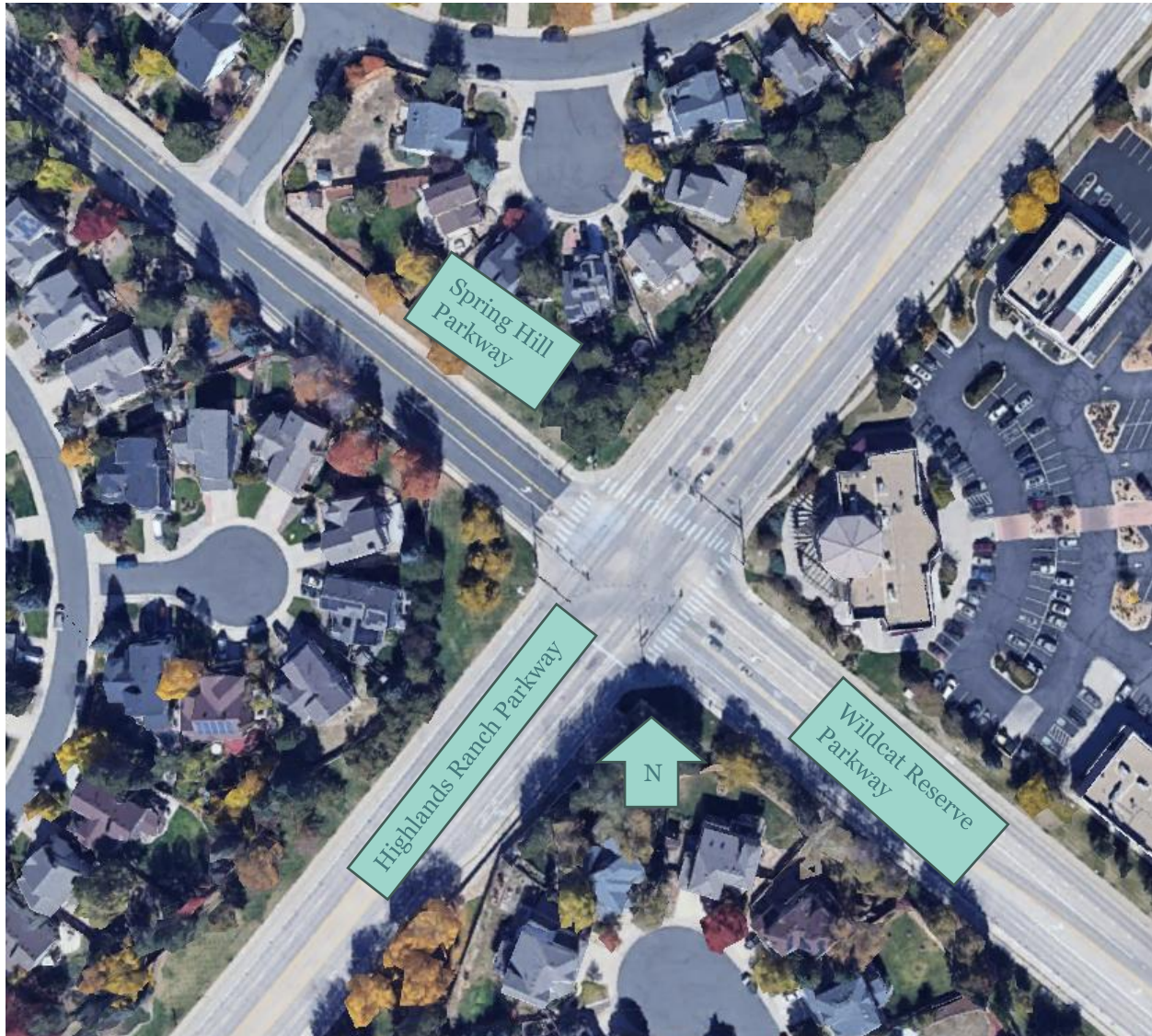


Figure 6 – Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway

Highlands Ranch Parkway at Foothills Canyon Boulevard

The intersection of Highlands Ranch Parkway at Foothills Canyon Boulevard is signalized with protected/permissive left-turn lanes/phases for traffic on both Highlands Ranch Parkway and on Foothills Canyon Boulevard. **Figure 7** shows an aerial of the intersection with the current intersection layout.

Eastbound Highlands Ranch Parkway has two through lanes and a dedicated left-turn lane. The left-turn lane has approximately 140 feet of storage length with 60 feet of taper length, before transitioning to a striped median. There is no dedicated right turn lane. Westbound Highlands Ranch Parkway has two

through lanes with a dedicated left-turn lane. The left-turn lane has approximately 180 feet of storage length with 100 feet of taper length, before transitioning to a striped median. There is a dedicated right turn lane with 120 feet of storage length and a 200 feet taper length. Highlands Ranch Parkway has a bike lane for each direction.

Northbound Foothills Canyon Boulevard has one through lane and a dedicated right-turn lane with approximately 170 feet of storage length and 110 feet of taper length. The left-turn lane has approximately 170 feet of storage length and 80 feet of taper length. Southbound Foothills Canyon Parkway has a shared through and right-turn lane and a dedicated left-turn lane. The dedicated left-turn lane has approximately 100 feet of storage length and 100 feet of taper length. There is a bike lane in each direction, but they merge with vehicle traffic lanes prior to the intersection.



Figure 7 – Highlands Ranch Parkway at Foothills Canyon Boulevard

Westridge Knolls Avenue at Timbervale Trail

The intersection of Westridge Knolls Avenue at Timbervale Trail is an unsignalized, 3-way intersection with a stop sign on the Timbervale Trail approach. **Figure 8** shows an aerial of the intersection with the current intersection layout. Each approach to the intersection contains only two lanes, as there are no dedicated lanes for left or right turns. Bike lanes are present on Westridge Knolls Avenue in each direction.



Figure 8 – Westridge Knolls Avenue at Timbervale Trail

Roadway Characteristics

General features of the roadways along the most likely route from Trailblazer to Eldorado are summarized in **Table 1**

Table 1 – Roadway Characteristics

Roadway	Spring Hill Parkway	Foothills Canyon Parkway	Highlands Ranch Parkway	Westridge Knolls Avenue	Timbervale Trail
Speed Limit	25 mph	25 mph	45 mph	30 mph	25 mph
Number of Through Lanes	2	2	4	2	2
Lane Width	12 feet	12 feet	12 feet	12 feet	17 feet*
Bike Lane Width	5 feet	6 feet	4-5 feet	5 feet	None
Median	None	None	Striped	None	None
On-Street Parking	None	None	None	Yes, on South Side near Eldorado	Both Sides

*Lane width is defined as distance from centerline to edge of pavement

2.3 Traffic Volumes

Traffic data collection was conducted by Rekor Systems (All Traffic Data) on Wednesday, November 13, 2024. Traffic volumes were collected at the following applicable intersections:

- Highlands Ranch Parkway at Westridge Knolls Avenue
- Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway
- Highlands Ranch Parkway at Foothills Canyon Boulevard
- Westridge Knolls Avenue at Timbervale Trail
- Westridge Knolls Avenue at E Bus Access
- Westridge Knolls Avenue at W Bus Access
- Timbervale Trail at N Parking Lot Access
- Timbervale Trail at S Parking Lot Access

Traffic count data is summarized in **Table 2** and is included in **Appendix B**. The existing traffic is shown in **Figure 9**.

2.4 Existing Level of Service

The existing capacity analysis for the key intersections included in **Table 2** was evaluated using Synchro 11 Software (Synchro). The resulting level of service (LOS) and delay are summarized in **Table 8** provided in **Section 4** of this report for comparison to the future projected traffic capacity analysis.

Existing traffic signal timing plans provided by Douglas County are included in **Appendix C**.

Level of service reports from Synchro are included in **Appendix D**.

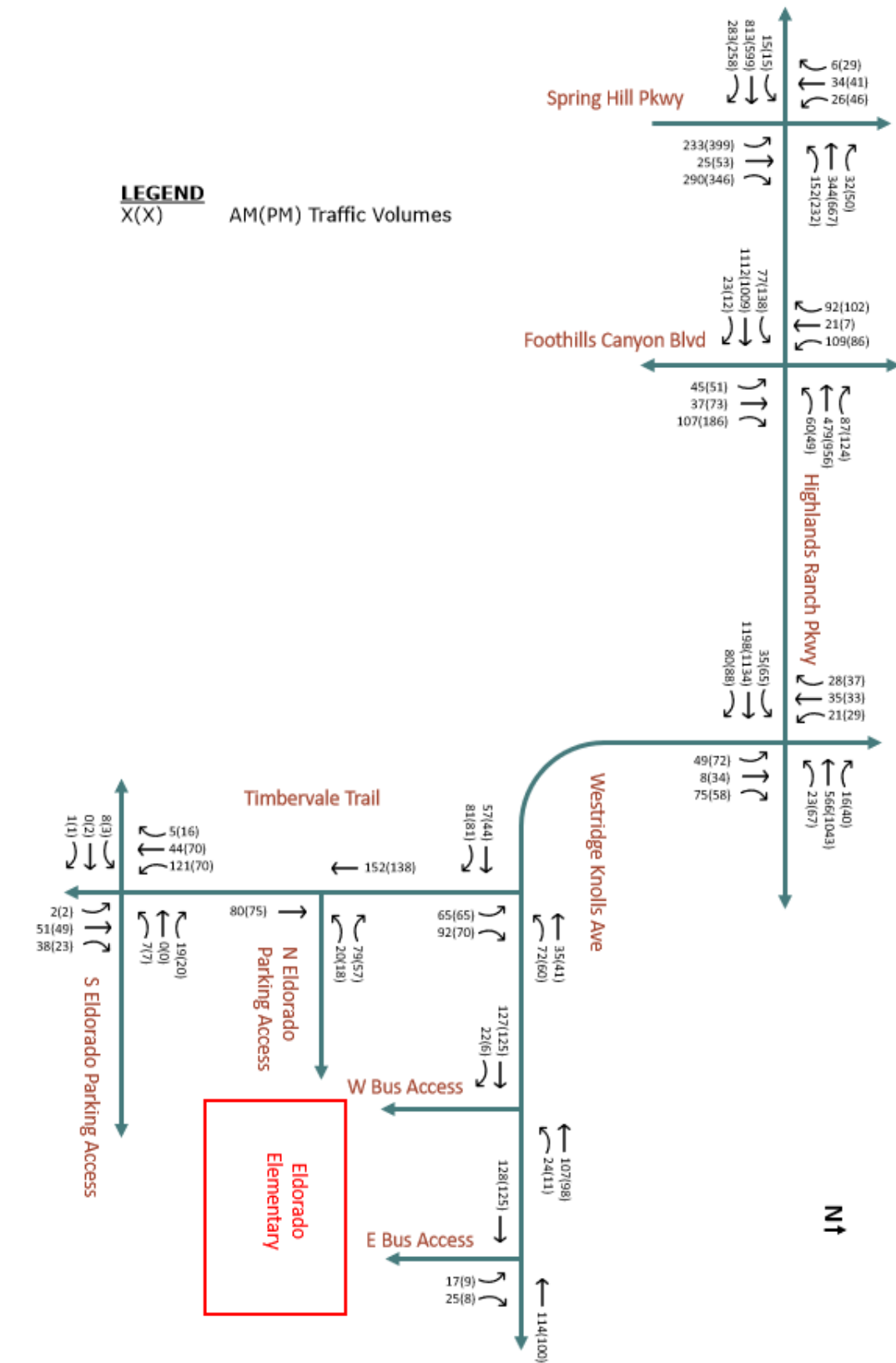


Figure 9 – Existing Traffic

Table 2 – Traffic Volume Summary

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Highlands Ranch Pkwy & Westridge Village Pkwy	AM	3	743	108	98	451	36	123	5	197	82	5	7
	PM	7	637	122	185	841	78	90	3	175	69	5	5
Highlands Ranch Pkwy & Springhill Pkwy	AM	15	813	283	152	344	32	233	25	290	26	34	6
	PM	15	599	258	232	667	50	399	53	346	46	41	29
Highlands Ranch Pkwy & Foothills Canyon Blvd	AM	77	1112	23	60	479	87	45	37	107	109	21	92
	PM	138	1009	12	49	956	124	51	73	186	86	7	102
Westridge Village Pkwy & Baneberry Ct	AM	-	70	88	19	101	-	91	-	16	-	-	-
	PM	-	114	94	13	77	-	103	-	16	-	-	-
Baneberry Pl & Baneberry Ct	AM	4	0	5	9	2	62	2	37	18	78	11	16
	PM	7	0	1	16	2	77	4	30	13	53	33	19
Westridge Village Pkwy & E Bus Access	AM	-	40	-	-	108	-	44	-	32	-	-	-
	PM	-	101	-	-	71	-	19	-	14	-	-	-
Westridge Village Pkwy & W Bus Access	AM	10	37	36	39	109	5	-	-	-	3	0	9
	PM	21	97	15	18	73	2	-	-	-	3	2	17

2.5 Traffic Safety Analysis

Intersection Crash Analysis

Crash history was reviewed at the intersections of Highlands Ranch Parkway at Wildcat Reserve Parkway, Highlands Ranch Parkway at Foothills Canyon Boulevard, and Highlands Ranch Parkway at Westridge Knolls Avenue. Crashes were reviewed for the period between 2019 and 2024. **Table 3** Summarizes the year-by-year crash data for the intersections.

Crash diagrams and a listing of crashes are provided in **Appendix E**.

Highlands Ranch Parkway at Wildcat Reserve Parkway

There was a total of 42 crashes at Highlands Ranch Parkway and Wildcat Reserve Parkway over the course of the study period. Nine of these involved injuries. Of the 42 crashes, 22 involved a left turn, and 6 were at night. Two of these accidents involved a 3rd vehicle and one involved a bicycle.

Highlands Ranch Parkway at Foothills Canyon Boulevard

There was a total of 37 crashes at Highlands Ranch Parkway and Foothills Canyon Boulevard over the course of the study period. Six of these involved injuries. Of the 37 crashes, 12 involved a left turn, and 6 were at night. Two of these accidents involved a 3rd vehicle and two involved a bicycle.

Highlands Ranch Parkway at Westridge Knolls Avenue

There was a total of 22 crashes at Highlands Ranch Parkway and Westridge Knolls Avenue over the course of the study period. Five of these involved injuries. Of the 22 crashes, 5 involved a left turn, and 3 were at night. One of these accidents involved a bicycle and none involved a 3rd vehicle. Four of the five left turn accidents resulted in injuries.

Table 3 – Annual Crash Summary

Year	Highlands Ranch Pkwy & Wildcat Reserve Pkwy	Highlands Ranch Pkwy & Foothills Canyon Blvd	Highlands Ranch Pkwy & Westridge Knolls Ave
2019	8	5	6
2020	5	2	5
2021	8	7	3
2022	10	6	1
2023	6	11	2
2024	5	6	5

School Safety

Students are picked up and dropped off primarily via the parking lot to the southwest of the school building. A two-lane, one-way aisle facilitates traffic, with the right lane used to pick-up and drop-off students, and the left lane used to exit the queue. On-street parking is provided for both sides of Timbervale Trail and the south side of Westridge Knolls Avenue. Bike lanes are present on Westridge Knolls Avenue, but these become partially impeded by street parking. A tree hinders visibility at the south exit for left-turning vehicles exiting the parking lot to Timbervale Trail.

Eldorado was provided with a questionnaire to provide any feedback related to traffic and school safety. Eldorado administration generally stated that there are no major concerns, but that they would like another crosswalk. Responses to the questionnaire are provided in **Appendix G**.

3. TRIP PROJECTIONS

3.1 Projected Traffic

Douglas County School District (DCSD) is considering a potential school consolidation option that would consolidate Trailblazer Elementary into Eldorado. **Table 4** provides data on student enrollment for Trailblazer and Eldorado.

Table 4 – School Enrollment

School	Ideal Capacity per DCSD	Maximum Historic Enrollment	2023-2024 Enrollment Count*	Projected 2028-2029 Enrollment*
Trailblazer	437	508	314	403
Eldorado	506	588	404	378
Combined	-	-	-	781

*Enrollment values include Pre-School through 6th Grade.

The projected 2028-2029 combined enrollment is 781 students. The projected combined enrollment numbers are 33 percent more than the previous maximum Eldorado enrollment.

3.2 Trip Generation

Trip generation calculations were performed based on the number of additional students that will be transferring from Trailblazer to Eldorado. For the purposes of this report, it is assumed the existing 2024 Eldorado traffic and enrollment will see negligible changes by the 2025-2026 school year. Therefore, the trip generation calculations do not focus on the total future enrollment for Eldorado with the addition of Trailblazer students. The trip generation calculations are therefore only based on the Trailblazer existing traffic and enrollment. The trip generation was calculated multiple ways to account for the transfer of

Trailblazer students to Eldorado. First the Institute of Transportation Engineers (ITE) Trip Generation web-based application was used to calculate the trip generation for three different types of elementary schools or land use codes (LUC) as follows:

- Public Elementary School (LUC 520)
- Private School K-8 (LUC 530)
- Charter School (LUC 536)

The relocation of students from one elementary school to the other has similarities to each of the three land uses evaluated using the ITE Trip Generation approach, however, this is a unique scenario and therefore the three land uses are not entirely representative of this scenario. A unique approach was therefore evaluated using existing traffic data and field observations at Trailblazer to understand the current traffic demand at the school and how that traffic demand is anticipated to change when relocated to Eldorado. The following considerations were taken into account to determine the anticipated number of trips added to Eldorado for this scenario:

- Calculate the existing ingress and egress traffic for parent drop-off and pick-up in the designated parking areas (parking lot and bus areas) using the existing traffic data collected
- Field observations of street parking adjacent to the school for drop-off and pick-up of students
- Students walking or riding a bike to/from the school using the existing traffic data collected
- Current bus ridership
- New bus ridership eligibility (outside 1 mile radius)
- Anticipated number of students “carpooling” with siblings or classmates after subtracting trips accounted for with existing traffic data, bus ridership, pedestrians/bicyclists and estimated street parking drop-off/pick-up from the student population.

The results of these considerations are summarized in the following table:

Table 5 – Trailblazer Existing Traffic Considerations

Peak Hour	Enrollment	Existing Bus Riders	Traffic Data Ingress/Egress	Ped & Bike	Estimated Street Parking	Calculated Carpooling
AM	314	14	137	39	49	75
PM			112	83		56

When the existing traffic at Trailblazer is relocated to Eldorado, additional students will be eligible to take the bus. It is anticipated that about **1/3** of the Trailblazer students will be newly eligible to take the bus to school. Assuming the ridership percentage remains the same as it is currently, ridership for these newly eligible students will also be about **70%** which results in an additional **74** students riding the bus to school for a total of **88** students from Trailblazer taking the bus to Eldorado.

Students who currently walk to Trailblazer are unlikely to walk to Eldorado due to distance and crossing a major roadway, therefore, it is assumed that these students will now be driven to school and count as a new vehicular trip to Eldorado. Taking into account the estimated street parking trips, the ingress/egress trips, pedestrians and bicyclists converted to vehicle trips, anticipated carpooling and the subtraction of new bus ridership, the resulting increase in trip demand for Eldorado is about **270** trips during the morning peak hour and **290** trips during the afternoon peak hour.

A summary of the trip generation comparison is summarized in **Table 6**.

Table 6 – Trip Generation Comparison

ITE LUC	Description	Units	Quant	AM Peak - Generator Peak			PM Peak - Generator Peak		
				Total	Ingress	Egress	Total	Ingress	Egress
-	Existing Data Based Calculation	Students	314	270	135	135	290	145	145
520	Public Elementary School	Students	314	236	127	108	141	65	76
530	Private School (K-8)	Students	314	317	178	140	188	89	100
536	Charter Elementary School	Students	314	336	178	158	226	111	115

3.3 Trip Distribution/Assignment

The trip distribution and assignment was evaluated by first reviewing the attendance boundaries for Trailblazer to get an idea of the population density within the boundary limits. Then the distribution of traffic within the Trailblazer boundary and the directions of approach for arriving at Eldorado was estimated by percentage. Note a small percentage of traffic was assumed to come from outside the Trailblazer boundaries based on the existing traffic trends. The resulting Trip Distribution percentages are shown in **Figure 10**.



Figure 10 – Trip Distribution

Based on the Trip Distribution, the trips turning movements were then assigned to the key intersections evaluated as a part of this TIS.

- Highlands Ranch Parkway at Westridge Knolls Avenue
- Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway
- Highlands Ranch Parkway at Foothills Canyon Boulevard
- Westridge Knolls Avenue at Timbervale Trail
- Westridge Knolls Avenue at E Bus Access
- Westridge Knolls Avenue at W Bus Access
- Timbervale Trail at N Parking Lot Access
- Timbervale Trail at S Parking Lot Access

The resulting trip assignment is shown in **Figure 11**.

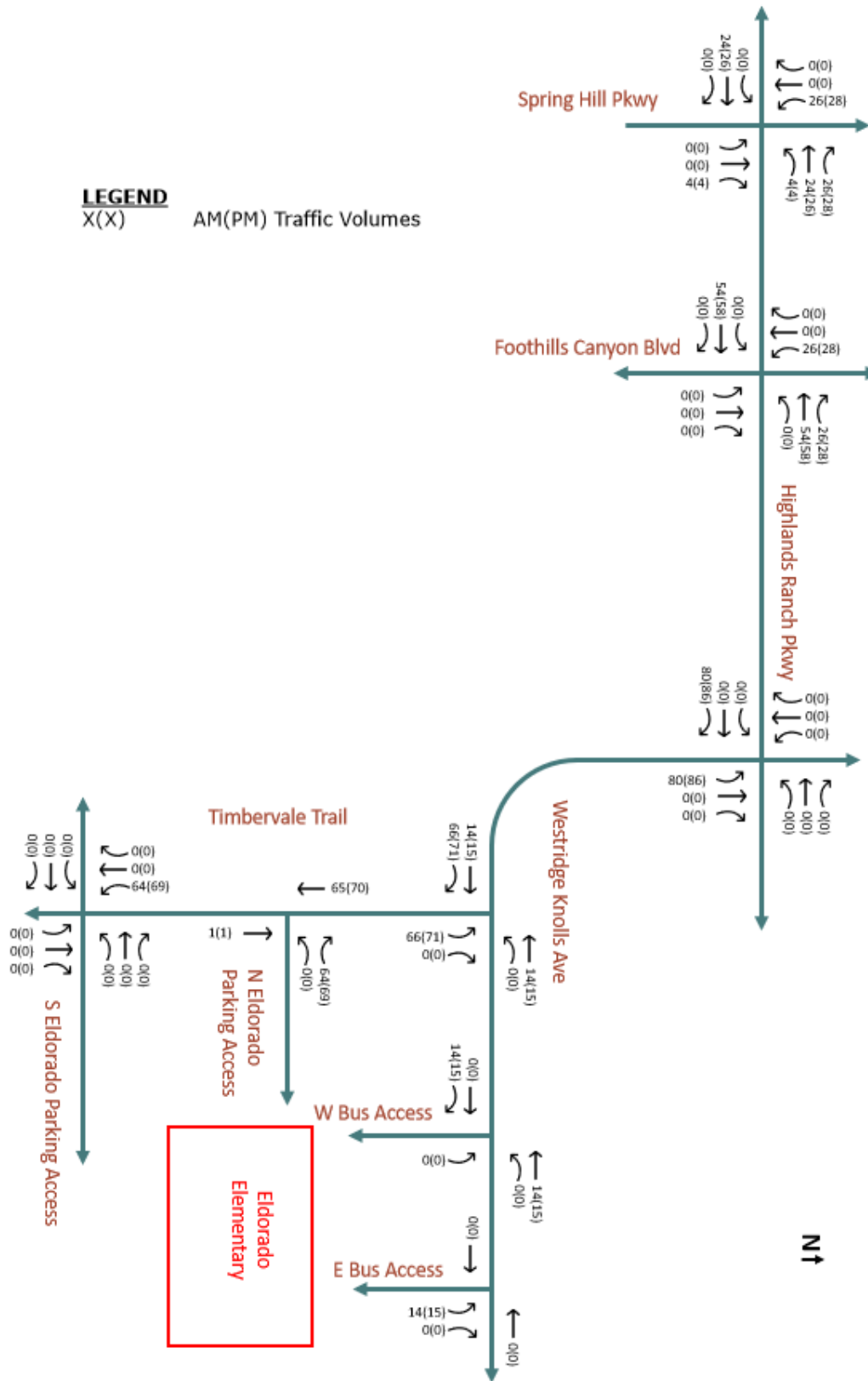


Figure 11 – Trip Assignment

In addition to the new anticipated trips for Trailblazer students transferring to Eldorado, the existing trips to Trailblazer will also be removed for a few of the key intersections. Certain turning movements accounting for the current arrival of drivers to Trailblazer would be reduced in this new scenario. Using the trip distribution and the existing distribution of ingress and egress trips for Trailblazer, the estimated reduction for certain turning movements was estimated. The resulting reductions are summarized in **Table 7**.

Table 7 – Turning Movement Reductions

Intersection	Peak Hour	EBL	EBT	WBT	WBR	NBT	SBL	SBT	SBR
Spring Hill Pkwy & Highlands Ranch Pkwy	AM	-5			-15	-16	-18	-20	-7
	PM	-10			-18	-18	-25	-22	-15
Westridge Village Pkwy & Highland Ranch Pkwy	AM		-5	-3	-4		-5		-5
	PM		-2	-7	-8		-3		-2
Highlands Ranch Pkwy & Foothills Canyon Blvd	AM	-18							-15
	PM	-25							-18

4. PROJECTED SITE TRAFFIC IMPACTS

4.1 Total Traffic (2028-2029 School Year)

The total anticipated future traffic for the 2028 to 2029 school year for Eldorado with the addition of Trailblazer students was calculated by adding the trip assignment to the existing Eldorado traffic data and then subtracting the anticipated turning movement reductions. The resulting total traffic is shown in **Figure 12**.

4.2 Projected Level of Service

The capacity analysis for the total projected traffic from the transfer of Trailblazer students to Eldorado was evaluated using Synchro. The resulting LOS and delay are summarized in **Table 8** for both the existing conditions (without Trailblazer traffic) and for the total traffic conditions (with Trailblazer traffic). Project level of service reports from Synchro are included in **Appendix F**.

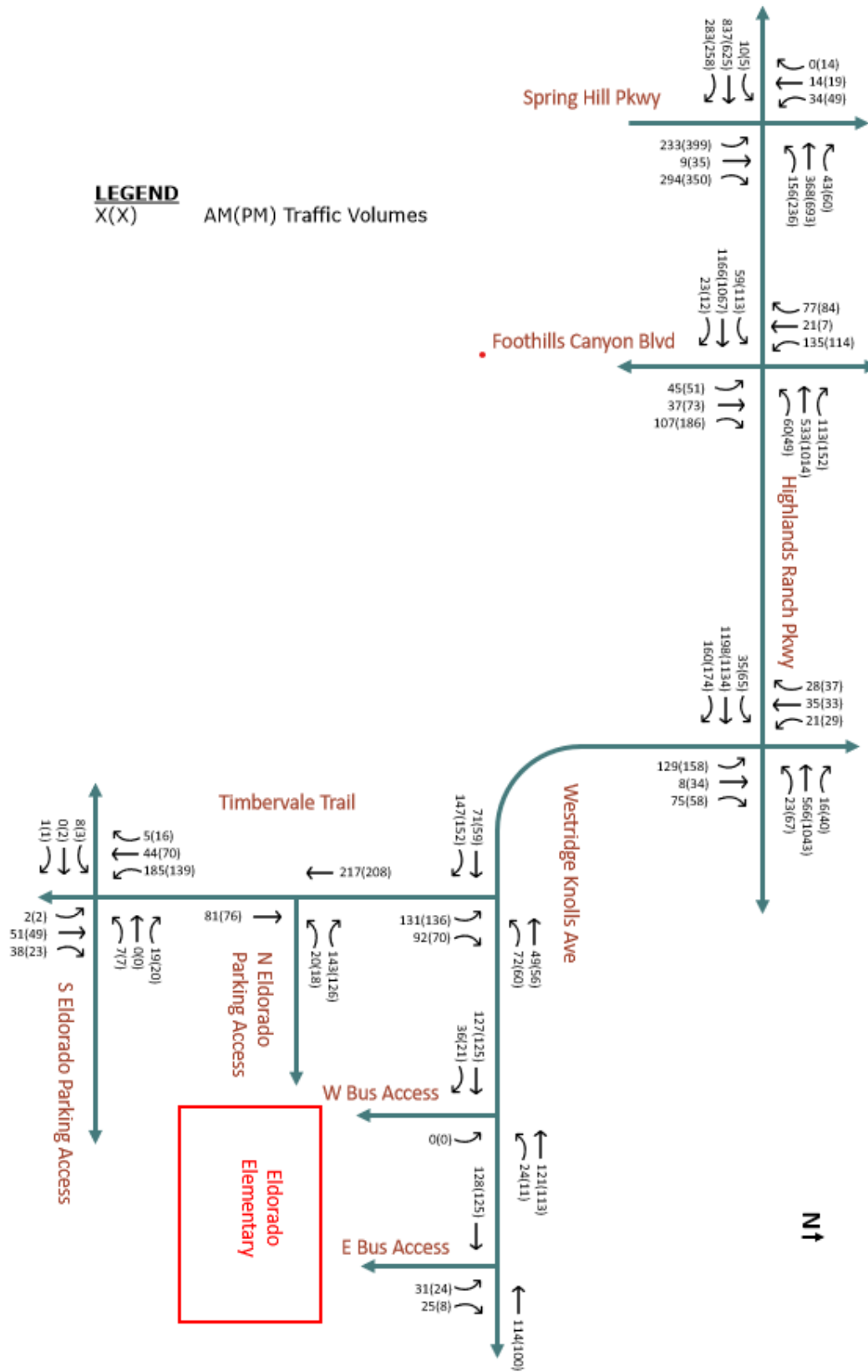


Figure 12: Total Traffic

Table 8 – LOS and Delay Results

Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Highland Ranch Pwky & Desert Willow Rd/Westridge Knolls Ave	Signal	Overall	C	C	28.5	31.0	-	-	C	C	34.5	34.0	+6.0	+3.0	-	-
		NBL	B	B	15.1	16.3	39.0	54.0	B	B	16.9	18.5	+1.8	+2.2	34	110
		NBT	B	B	12.6	12.6	52.0	56	B	B	12.6	12.6	0	0	589	56
		NBR	B	B	12.6	12.6	52.0	56	B	B	12.6	12.6	0	0	589	56
		SBL	B	B	14.5	15.3	21.0	27	B	B	14.5	15.3	0	0	34	27
		SBT	A	B	9.6	10.5	36.0	40	A	B	9.6	10.5	0	0	172	40
		SBR	A	B	6.9	10.5	36.0	40	A	B	9.6	10.5	+2.7	0	172	40
		EBL	B	F	17.3	80.9	34.0	118	B	F	17.3	80.9	0	0	88	118
		EBT	D	C	35.9	32.2	532.0	472	D	D	46.3	39.4	+10.4	+7.2	52	553
		EBR	D	C	35.9	32.2	532.0	472	D	D	46.3	39.4	+10.4	+7.2	52	553
		WBL	C	F	29.3	104.0	34.0	125	C	F	29.3	104.0	0	0	21	125
		WBT	B	C	18.9	26.5	172.0	375	B	C	18.9	26.5	0	0	36	375
		WBR	B	C	18.9	26.5	172.0	375	B	C	18.9	26.5	0	0	36	375
Highlands Ranch Pkwy & Springhill Pkwy	Signal	Overall	A	A			-	-	D	C	47.7	30.2	+47.7	+30.2	-	-
		NBL	C	C	21.5	23.1	87.0	151.0	C	C	21.5	32.2	0.0	+9.1	87.0	151
		NBT	C	C	29.8	30.5	36.0	65.0	C	C	29.5	30.3	-0.3	-0.2	26.0	56
		NBR	A	A	5.4	6.4	1.0	45.0	A	A	5.3	5.4	-0.1	-1.0	0.0	33
		SBL	C	C	24.4	25.3	26.0	43.0	C	C	23.0	23.7	-1.4	-1.6	11	24
		SBT	D	D	50.8	46.6	54.0	80.0	D	C	35.7	34.1	-15.1	-12.5	38	61
		SBR	D	D	50.8	46.6	54.0	7.0	D	C	35.7	34.1	-15.1	-12.5	38	61
		EBL	C	C	20.3	20.5	21.0	21.0	C	C	21.3	22.1	+1.0	+1.6	47	45
		EBT	F	D	83.6	48.5	541.0	325.0	F	D	98.6	50.5	+15.0	+2.0	584	352
		EBR	C	B	20.8	10.9	178.0	105.0	C	B	20.8	12.8	0.0	+1.9	178	119
		WBL	C	C	20.8	21.9	60.0	91.0	C	C	20.8	22.0	0.0	+0.1	60	91
		WBT	C	D	33.1	39.4	164.0	343.0	C	D	33.6	40.6	+0.5	+1.2	183	370
		WBR	A	A	0.2	0.3	0.0	0.0	A	A	0.1	0.2	-0.1	-0.1	0	0
Highlands Ranch Pkwy & Foothills Canyon Blvd	Signal	Overall	C	B	20.7	19.3	-	-	C	B	20.5	19.5	-0.2	+0.2	-	-
		NBL	C	C	27.8	25.5	35.0	43.0	C	C	28.9	25.5	+1.1	0.0	35.0	73
		NBT	C	C	23.9	24.5	29.0	56.0	C	C	23.9	24.5	0.0	0.0	29.0	297
		NBR	B	B	18.9	18.6	9.0	51.0	B	B	18.9	18.6	0.0	0.0	9.0	297
		SBL	C	C	27.2	26.0	94.0	76.0	C	C	27.2	26.0	0.0	0.0	94	26
		SBT	A	A	8.1	6.4	41.0	32.0	A	A	7.4	6.4	-0.7	0.0	43	284
		SBR	A	A	8.1	6.4	41.0	32.0	A	A	7.4	6.4	-0.7	0.0	43	37
		EBL	A	B	8.7	17.2	37.0	58.0	A	C	9.1	21.4	+0.4	+4.2	45	43
		EBT	C	C	25.3	20.8	372.0	297.0	C	C	25.3	20.8	0.0	0.0	372	56
		EBR	C	C	25.3	20.8	372.0	297.0	C	C	25.3	20.8	0.0	0.0	372	51
		WBL	B	A	12.3	9.7	29.0	26.0	B	A	12.3	9.7	0.0	0.0	29	76
		WBT	B	C	15.5	20.4	122.0	284.0	B	C	15.5	20.4	0.0	0.0	122	32
		WBR	A	A	3.6	4.7	25.0	37.0	A	A	3.6	4.7	0.0	0.0	25	32

Continued																
Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Westridge Knolls Ave & Timbervale Trl	Unsignalized (TWSC or AWSC)	Overall					-	-			-	-	-	-	-	-
		NBL	B	B	10.7	10.4	16	14	B	B	13.0	12.6	+2.3	+2.2	32	28
		NBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBR	B	B	10.7	10.4	16	14	B	B	13.0	12.6	+2.3	+2.2	32	28
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		EBR	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		WBL	A	A	7.7	7.6	4	2	A	A	7.9	7.8	+0.2	+0.2	4	4
		WBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Westridge Knolls Ave & W Bus Access	Unsignalized (TWSC or AWSC)	Overall	C	C	15.1	15.1	-	-			-	-	-	-	-	-
		NBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		EBR	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		WBL	A	A	7.6	7.5	2	0	A	A	7.6	7.5	0	0	2	0
		WBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Westridge Knolls Ave & E Bus Exit	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	A	A	9.6	9.5	4	2	A	A	9.7	9.6	+0.1	+0.1	4	2
		NBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBR	A	A	9.6	9.5	4	2	A	A	9.7	9.6	+0.1	+0.1	4	2
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		EBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	0
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Continued																
Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Timbervale Trl & N Eldorado Parking Access	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	
		NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	A	A	0.0	0.0	0	0	A	A	0	0	0	0	0	
		SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBL	B	A	10.0	9.9	2	2	B	A	10.0	9.9	0	0	2	2
		WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WBR	A	A	9.1	8.9	6	4	A	A	9.4	9.3	+0.3	+0.4	12	10		
Timbervale Trl & S Eldorado Parking Access	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	A	A	7.3	7.4	0.0	0	A	A	7.3	7.4	0	0	0	0
		NBT	A	A	0.0	0.0	0.0	0	A	A	0	0	0	0	0	0
		NBR	A	A	0.0	0.0	0.0	0	A	A	0	0	0	0	0	0
		SBL	A	A	7.6	7.5	6.0	4	A	A	7.8	7.6	+0.2	+0.1	10	6
		SBT	A	A	0.0	0.0	0.0	0	A	A	0	0	0	0	0	0
		SBR	A	A	0.0	0.0	0.0	0	A	A	0	0	0	0	0	0
		EBL	B	B	11.8	10.8	2.0	0	B	B	13.7	12.4	+1.9	+1.6	2	0
		EBT	A	B	0.0	10.8	0.0	0	A	A	0	0	0	-10.8	0	0
		EBR	B	B	11.8	10.8	0.0	0	B	B	13.7	12.4	+1.9	+1.6	2	0
		WBL	B	B	12.0	10.9	0.0	0	B	B	14.0	12.8	+2.0	+1.9	2	0
		WBT	A	A	0.0	0.0	0.0	0	A	A	0	0	0	0	0	0
WBR	A	A	8.7	8.7	2.0	2	A	A	8.7	8.7	0	0	2	2		

4.3 Mitigation

Signal Warrant Analysis

The intersection of Westridge Knolls Avenue at Timbervale Trail was analyzed for potential signal needs. Warrants 3 (Peak Hour) and 7 (Crash experience) from the Manual on Uniform Traffic Control Devices (MUTCD) were used for this study.

Based on the analysis, it was determined that this intersection did not meet either warrant for signal installation.

Auxiliary Lane Analysis

Right turn lanes were evaluated for the intersections of Highlands Ranch Parkway at Wildcat Reserve Parkway/Spring Hill Parkway, Highlands Ranch Parkway at Westridge Knolls Avenue/Desert Willow Road, and Highlands Ranch Parkway at Foothills Canyon Boulevard. A right-turn lane is recommended on an arterial street when the LOS operates at an unacceptable level.

The existing traffic data collected shows that the westbound approach of Highlands Ranch Parkway at Westridge Knolls Avenue/Desert Willow Road has 16 right turns during the morning peak hour and 40 during the afternoon peak hour while the eastbound approach has 80 right turns during the morning peak and 88 during the afternoon peak. However, these turning movements are operating at an LOS of A and no right-turn lane is warranted.

Site Analysis

Based on site observations and feedback from the Eldorado Administration, Eldorado faces the following challenges:

- Long queues on Timbervale Trail
- Increased congestion on Westridge Knolls Avenue
- Sight visibility challenges while exiting the parking lot due to parked vehicles

To address the queueing on Timbervale Trail, the parking lot could be rerouted to increase the number of vehicles that queue onsite. This could be done by closing the entrance at the south end of the parking lot and converting the left-turn exit lane to the parking lot entrance at the north end as seen in **Figure 13**. However, this creates many new inefficiencies. First, if the queue ultimately still extends on to Timbervale Trail, then valuable on-street parking will be lost. Secondly, this creates an inefficiency in the parking lot as the queue will be blocking parking spaces and there will be only one exit lane. Due to these items, it is not recommended to adjust the parking lot.



Figure 13 – Mitigation Measures for Eldorado

5. CONCLUSIONS/RECOMMENDATIONS

This Traffic Impact Study addresses existing traffic pattern concerns and potential traffic challenges at Eldorado Elementary School, while considering the anticipated increase in traffic due to possible consolidations with Trailblazer Elementary.

Traffic will be increased with the additional enrollment, but additional bus service will be offered, limiting the impact of the increased enrollment. Consolidation of the schools will increase traffic at Eldorado with more vehicles using on-street parking, the school parking lot, and the pick-off/drop-off lanes. This will increase impacts to the surrounding roadways during pick-up and drop-off times.

Although increased traffic is expected around Eldorado with the increased enrollment, no traffic mitigation measures are recommended. Douglas County recognizes there will be increased delays around the school during 15-minute peak periods at pick-up and drop-off times.



Appendix A Site Observation Notes



TRAFFIC OBSERVATION REPORT

Project Name	DCSD Traffic Study	Project No.	1124175
Observer	Nate Hittle		
Location	Trailblazer Elementary School		
Time	7:45 - 9:15 AM	AM / PM	
		DATE	###
		M	T W Th F S S

Queueing Data

Start Time: 8:05 AM

End Time: 8:39 AM

Maximum Queueing Length: 550 ft

Total Storage Length Available: 430 ft

Comments:

The main drop-off point was the parking lot to the southeast of the building, on the north side of S Hackberry St. This parking lot contains a two-lane, one-way, drop-off aisle. The right lane is intended for drop-off and pick-up, while the left lane is intended for through traffic. The first vehicles were observed entering the queue at 8:05 AM. By 8:22 AM, a steady stream of traffic was entering the lot. The queue reached its maximum length around 8:35 AM. At this time there were three cars waiting to turn left into the parking lot from S Hackberry St.

On-Street Parking Locations and Availability

Comments:

Street parking is available on both sides of S Hackberry St. Parking on the north and east sides of the street was mostly full by 8:10 AM. Parking on the south and west sides was utilized during drop-off by. Some parents parked on the street with their hazards on and walked the students across the street. Street parking is available on the nearby side streets but was seldom used.

Crosswalk Locations and Usage

Comments:

There are four locations within the immediate vicinity of the school to cross S Hackberry St. These are located at S Spring Hill Pkwy, Spring Hill Dr, Golden Eagle Ave, and at the northern access of the bus loop. There are also crosswalks across the parking lot and two across the drop-off aisle. Crossing guards were present at several of these crosswalks. Crosswalks were generally used appropriately to cross S Hackberry St. However, one crossing guard stated that the crosswalks across the drop-off aisle are often not used.



Roadway Characteristics

Speed Limit(s) and Location(s):

The speed limit on S Hackberry St is 25 mph. Two school zone speed limit signs are present, with a flasher that operates from 8:10 to 8:50 AM. The school zone speed limit is 20 mph.

Signage:

Signage present on the public roads includes speed limit signs, school zone speed limit signs, stop signs, No Parking signs, and school crossing signs. Signs in the drop-off aisle indicate how the lanes are intended to be used.

Bike Lanes:

Bike lanes are not present on S Hackberry St.

Other Comments:

There is a bus drop-off zone to the west of the school. Standard passenger cars are not permitted here.

Sight Visibility Challenges

Comments:

Drivers exiting the parking lot were observed shielding their eyes from the sun, as they were required to look east to be able to make a turn. Adjacent parking also obstructs the sight line looking east.

Congestion Areas

Comments:

The intersection of S Hackberry St and S Spring Hill Pkwy, at the entrance of the parking lot, experienced mild congestions. Queues formed on eastbound S Hackberry St, on northbound S Spring Hill Pkwy, consisting of vehicles waiting to enter the parking lot.

General Traffic Observations

Comments:



TRAFFIC OBSERVATION REPORT

Project Name	DCSD Traffic Study	Project No.	1124175
Observer	Nick Westphal		
Location	Trailblazer Elementary School		
Time	2:45 - 4:00 PM	AM / PM	
		DATE	19-Nov-24
		M	T W Th F S S

Queueing Data

Start Time: 3:05 PM

End Time: 3:37 AM

Maximum Queueing Length: 500 ft

Total Storage Length Available: 430 ft

Comments:

The main drop-off point was the parking lot to the southeast of the building, on the north side of S Hackberry St. This parking lot contains a two-lane, one-way, drop-off aisle. The right lane is intended for drop-off and pick-up, while the left lane is intended for through traffic. The first vehicles were observed entering the queue at 3:05. The pickup lane became full at 3:32, just after the bell rang. More vehicles park on the street and walk to pickup their students at the door than drive through the pick-up lane. There is also a bus loop that is signed as student pick-up. This is not as heavily used, but some pick-up at this location.

On-Street Parking Locations and Availability

Comments:

Street parking is available on both sides of S Hackberry St. Parking on the north and east sides of the street was mostly full by 3:30, but there was still parking available.

Crosswalk Locations and Usage

Comments:

There are four locations within the immediate vicinity of the school to cross S Hackberry St. These are located at S Spring Hill Pkwy, Spring Hill Dr, Golden Eagle Ave, and at the northern access of the bus loop. There are also crosswalks across the parking lot and two across the drop-off aisle. Crossing guards were present at the west exit from the parking lot and at the entrance to the bus loop. Most people used the crosswalks, but some crossed the street at unmarked locations. A crossing guard was also present at the internal crosswalk across the drop off loop.

Roadway Characteristics

Speed Limit(s) and Location(s):

The speed limit on S Hackberry St is 25 mph. Two school zone speed limit signs are present, with a flasher that operates from 8:10 to 8:50 AM. The school zone speed limit is 20 mph.

Signage:

Signage present on the public roads includes speed limit signs, school zone speed limit signs, stop signs, No Parking signs, and school crossing signs. Signs in the drop-off aisle indicate how the lanes are intended to be used.

Bike Lanes:

Bike lanes are not present on S Hackberry St.

Other Comments:

There is a bus drop-off zone to the west of the school. This appears to be signed for student drop off and pick-up as well.

Sight Visibility Challenges

Comments:

No major sight visibility issues were observed in the afternoon.

Congestion Areas

Comments:

There was some back up on Spring Hill Parkway at the stop sign, presumably from the Wildcat intersection. Most of the congestion was after the pick-up lane started exiting at the west exit of the parking lot. The main congestion lasted about 5 minutes.

General Traffic Observations

Comments:

More vehicles appear to park on the street than use the pick-up lane. There appears to be plenty of parking and queueing capacity with good sight lines. The sidewalk and curb ramps adjacent to school property appear to be fairly new. It was noted that high school/middle school students use the school property as a cut through rather than staying on the roadway sidewalk.



TRAFFIC OBSERVATION REPORT

Project Name	DCSD Traffic Study	Project No.	1124175
Observer	Nate Hittle		
Location	Eldorado Elementary School		
Time	8:30 AM	AM / PM	
		DATE	November 11, 2024
		M	T W Th F S S

Queueing Data

Start Time: 8:20 AM

End Time: 8:45 AM

Maximum Queueing Length: 450 ft

Total Storage Length Available: 450 ft

Comments:

The drop-off lane in the parking lot on the east side of W Timbervale Trail was the most utilized location for parents to drop off students. The cars queued up in the right lane, and the left lane was often used by exiting vehicles to bypass the other queueing vehicles. The drop off at S Westridge Knolls Avenue was less popular, due to its smaller queue storage capacity. However, the queue for this location extended into S Westridge Knolls Avenue. At one point, traffic was at a standstill in both directions for vehicles trying to turn into this area.

On-Street Parking Locations and Availability

Comments:

On-street parking is provided on both sides of W Timbervale Trail. On-street parking was available on S Westridge Knolls Avenue adjacent to the bike lane. The cars parked in this area partially obstructed the bike lane. This was likely due to the snow on the side of the road taking up space in the parking lane. On-street parking was also available on some of the side streets, but it did not appear that these spaces were utilized.

Crosswalk Locations and Usage

Comments:

Crosswalks were located at various locations around the school. The most used crosswalks existed at the intersection of Timbervale Trail and S Westridge Knolls Ave, and at the exit of the parking lot on W Timbervale Trail. Crossing guards were present at both of these locations.

Roadway Characteristics

Speed Limit(s) and Location(s):

The speed limits on S Westridge Knolls Ave and W Timbervale Trail are respectively 30 and 25 mph. The school zone speed limit is 15 mph on both streets.

Signage:

Signage present on the public roads includes speed limit signs, school zone speed limit signs, stop signs, No Parking signs, school crossing signs, "No U turns in School Zone" signs, and bike lane signs. One-way signs, 10 mph speed advisory signs, and student drop-off signs were present within the parking lot.

Bike Lanes:

Bike lanes are present on S Westridge Knolls Ave. As previously mentioned parked vehicles often impeded this lane,

Other Comments:

The drop-off lane constricts significantly near the end, only allowing one vehicle to pass at once. This constriction can cause difficulties exiting for vehicles in the left drop-off lane.

Sight Visibility Challenges

Comments:

The left sight line for turning on to Timbervale Trail from the northern access to the parking lot is obstructed by a tree.

Congestion Areas

Comments:

W Timbervale Trail becomes congested in the northbound direction, approaching S Westridge Knolls Ave. The queue length for this approach was estimated to be as long as 200 ft at its peak.

General Traffic Observations

Comments:

The weather at the time of observation was approximately 35° and sunny. The sidewalks were mostly clear of snow. However, some snow present on the sides of the road may have made crossing the road more difficult for pedestrians.



TRAFFIC OBSERVATION REPORT

Project Name	DCSD Traffic Study	Project No.	1124175
Observer	Nate Hittle		
Location	Eldorado Elementary School		
Time	3:30 PM	AM / PM	
		DATE	November 11, 2024
		M	T W Th F S S

Queueing Data

Start Time: 3:10 PM

End Time: 3:40 PM

Maximum Queueing Length: 670 ft

Total Storage Length Available: 450 ft

Comments:

Vehicles began arriving to the parking lot around 3:00 PM and parked in parking spaces. The lot was completely full by 3:20. Vehicles began parking outside of parking spots, but did not obstruct the flow of traffic. As the queue approached the southern access to W Timbervale Trail, cars began turning around. Eventually, the queue backed up into Timbervale Trail and extended to W Mulberry Ln.

On-Street Parking Locations and Availability

Comments:

On-street parking is provided on both sides of W Timbervale Trail. Both sides of the street were utilized for parking. On-street parking was available on S Westridge Knolls Avenue adjacent to the bike lane. The cars parked in this area partially obstructed the bike lane. This was likely due to the snow on the side of the road taking up space in the parking lane. On-street parking was also available on some of the side streets, but it did not appear that these spaces were utilized.

Crosswalk Locations and Usage

Comments:

Crosswalks were located at various locations around the school. The most used crosswalks existed at the intersection of Timbervale Trail and S Westridge Knolls Ave, and at the exit of the parking lot on W Timbervale Trail. Crossing guards were present at both of these locations. Pedestrians with cars parked on the west side of W Timbervale Trail often did not use a crosswalk.

Roadway Characteristics

Speed Limit(s) and Location(s):

The speed limits on S Westridge Knolls Ave and W Timbervale Trail are respectively 30 and 25 mph. The school zone speed limit is 15 mph on both streets.

Signage:

Signage present on the public roads includes speed limit signs, school zone speed limit signs, stop signs, No Parking signs, school crossing signs, "No U turns in School Zone" signs, and bike lane signs. One-way signs, 10 mph speed advisory signs, and student drop-off signs were present within the parking lot.

Bike Lanes:

Bike lanes are present on S Westridge Knolls Ave. As previously mentioned parked vehicles often impeded this lane,

Other Comments:

The drop-off lane constricts significantly near the end, only allowing one vehicle to pass at once. This constriction can cause difficulties exiting for vehicles in the left drop-off lane.

Sight Visibility Challenges

Comments:

The left sight line for turning on to Timbervale Trail from the northern access to the parking lot is obstructed by a tree.

Congestion Areas

Comments:

W Timbervale Trail becomes congested in the northbound direction, approaching S Westridge Knolls Ave. The queue length for this approach was estimated to be 250 ft at its peak. There was also an instance of congestion on southbound Timbervale Trail, which was caused by cars attempting to turn left into the parking lot.

General Traffic Observations

Comments:

The weather at the time of observation was approximately 55° and sunny. The sidewalks were mostly clear of snow. However, some snow present on the sides of the road may have made crossing the road more difficult for pedestrians.



Appendix B Traffic Volume Counts



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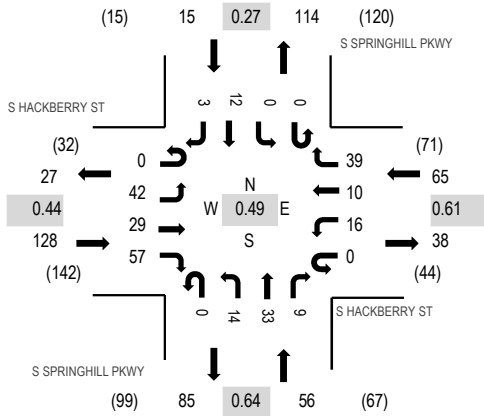
Location: 42 S SPRINGHILL PKWY & S HACKBERRY ST AM

Date: Wednesday, November 13, 2024

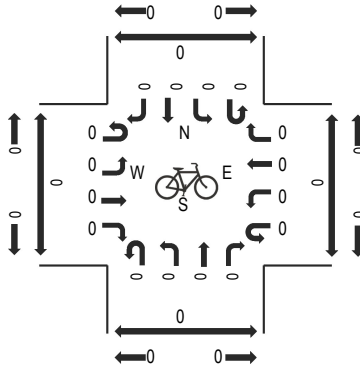
Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

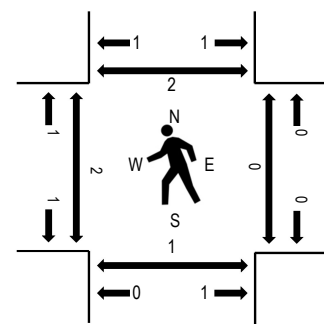
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S HACKBERRY ST Eastbound				S HACKBERRY ST Westbound				S SPRINGHILL PKWY Northbound				S SPRINGHILL PKWY Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	0	6	0	3	0	1	0	3	2	2	0	0	0	0	17	260	0	0	0	1
8:00 AM	0	2	1	6	0	7	1	2	0	3	6	2	0	0	0	0	30	264	1	0	0	1
8:15 AM	0	20	5	11	0	2	3	22	0	2	14	0	0	0	0	0	79	248	0	0	1	0
8:30 AM	0	19	19	35	0	5	6	14	0	7	10	5	0	0	11	3	134		0	0	0	1
8:45 AM	0	1	4	5	0	2	0	1	0	2	3	2	0	0	1	0	21		1	0	0	0
9:00 AM	0	1	3	4	0	1	0	1	0	2	1	1	0	0	0	0	14		0	0	0	1
Count Total	0	43	32	67	0	20	10	41	0	19	36	12	0	0	12	3	295		2	0	1	4
Peak Hour	0	42	29	57	0	16	10	39	0	14	33	9	0	0	12	3	264		2	0	1	2



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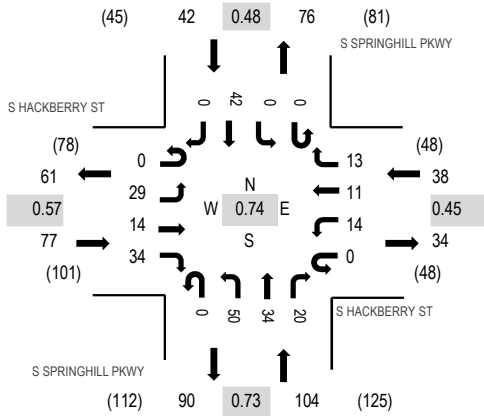
Location: 42 S SPRINGHILL PKWY & S HACKBERRY ST PM

Date: Wednesday, November 13, 2024

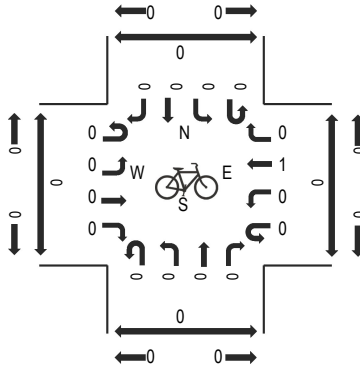
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

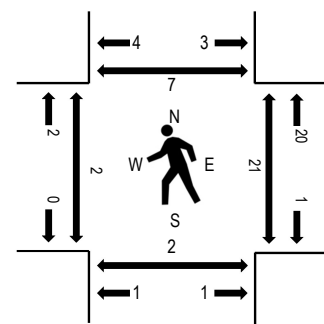
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S HACKBERRY ST Eastbound				S HACKBERRY ST Westbound				S SPRINGHILL PKWY Northbound				S SPRINGHILL PKWY Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	1	2	4	0	4	2	0	0	7	0	6	0	0	0	0	26	249	0	1	3	0
3:00 PM	0	5	1	3	0	2	2	1	0	18	11	7	0	0	1	0	51	261	0	16	2	4
3:15 PM	0	19	2	6	0	5	7	10	0	16	16	3	0	0	0	0	84	242	2	4	0	2
3:30 PM	0	5	10	22	0	4	1	2	0	9	6	6	0	0	23	0	88		0	1	0	0
3:45 PM	0	0	1	3	0	3	1	0	0	7	1	4	0	0	18	0	38		0	0	0	1
4:00 PM	0	1	6	10	0	1	2	1	0	6	2	0	0	0	3	0	32		0	0	0	3
Count Total	0	31	22	48	0	19	15	14	0	63	36	26	0	0	45	0	319		2	22	5	10
Peak Hour	0	29	14	34	0	14	11	13	0	50	34	20	0	0	42	0	261		2	21	2	7



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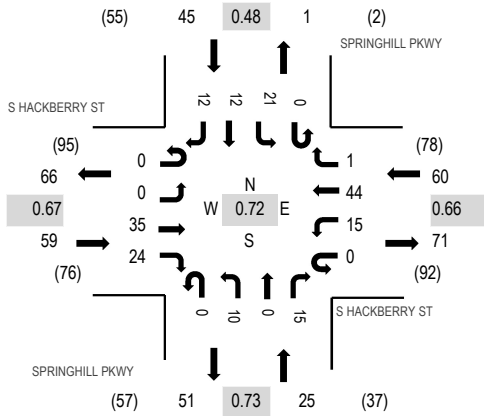
Location: 43 SPRINGHILL PKWY & S HACKBERRY ST PM

Date: Wednesday, November 13, 2024

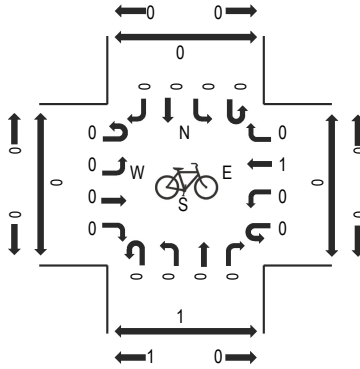
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

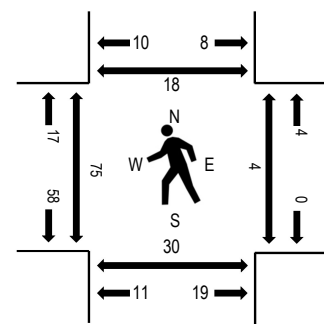
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S HACKBERRY ST				S HACKBERRY ST				SPRINGHILL PKWY				SPRINGHILL PKWY				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
2:45 PM	0	0	7	0	0	0	10	0	1	4	1	1	0	1	0	1	26	183	2	1	2	2
3:00 PM	0	0	5	5	0	2	14	1	0	3	0	3	0	1	1	1	36	189	3	0	7	5
3:15 PM	0	0	8	3	0	4	20	0	0	4	0	6	0	5	4	1	55	184	26	2	7	4
3:30 PM	0	0	18	4	0	6	6	0	0	1	0	5	0	14	6	6	66		41	1	14	5
3:45 PM	0	0	4	12	0	3	4	0	0	2	0	1	0	1	1	4	32		5	1	2	4
4:00 PM	0	0	7	3	0	2	6	0	0	3	0	2	0	3	0	5	31		2	1	3	4
Count Total	0	0	49	27	0	17	60	1	1	17	1	18	0	25	12	18	246		79	6	35	24
Peak Hour	0	0	35	24	0	15	44	1	0	10	0	15	0	21	12	12	189		75	4	30	18



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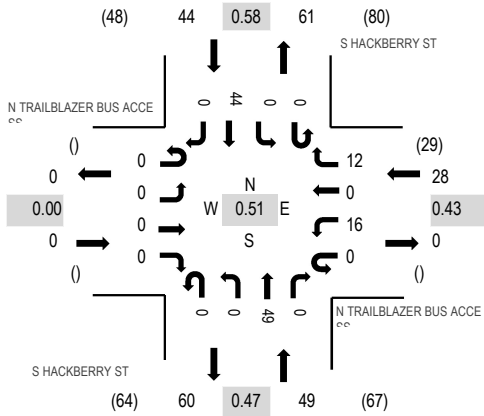
Location: 44 S HACKBERRY ST & N TRAILBLAZER BUS ACCESS AM

Date: Wednesday, November 13, 2024

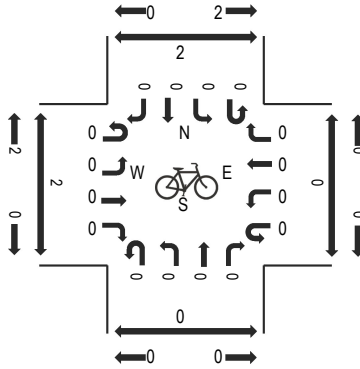
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

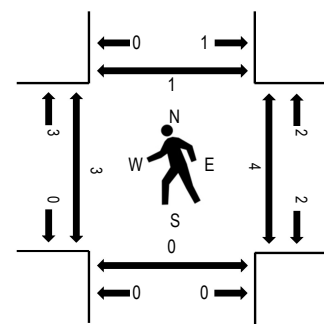
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	N TRAILBLAZER BUS ACCESS Eastbound				N TRAILBLAZER BUS ACCESS Westbound				S HACKBERRY ST Northbound				S HACKBERRY ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	7	0	13	121	1	2	0	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	6	0	0	0	5	0	12	120	0	0	0	0
8:15 AM	0	0	0	0	0	6	0	4	0	0	8	0	0	0	19	0	37	119	0	1	0	0
8:30 AM	0	0	0	0	0	9	0	8	0	0	29	0	0	0	13	0	59		2	1	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	9	0	0	0	2	0	12		1	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	2	0	11		0	0	0	0
Count Total	0	0	0	0	0	16	0	13	0	0	67	0	0	0	48	0	144		4	4	0	1
Peak Hour	0	0	0	0	0	16	0	12	0	0	49	0	0	0	44	0	121		3	4	0	1



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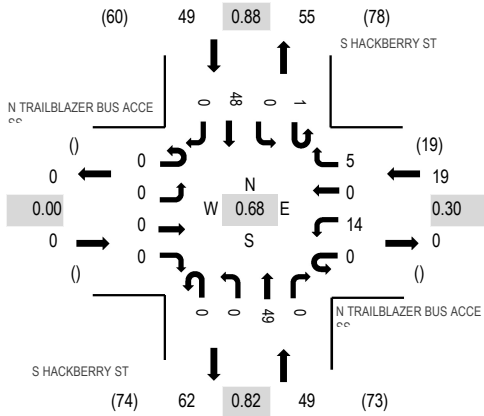
Location: 44 S HACKBERRY ST & N TRAILBLAZER BUS ACCESS PM

Date: Wednesday, November 13, 2024

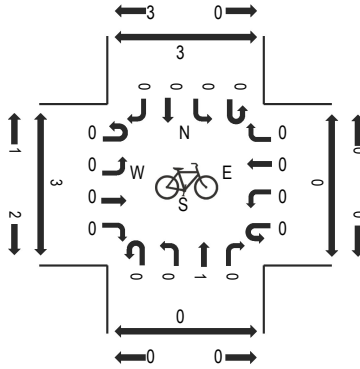
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

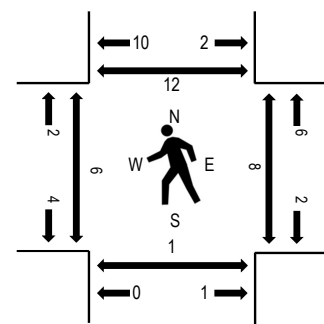
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	N TRAILBLAZER BUS ACCESS Eastbound				N TRAILBLAZER BUS ACCESS Westbound				S HACKBERRY ST Northbound				S HACKBERRY ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	0	0	0	0	0	0	0	0	13	0	0	0	5	0	18	106	1	1	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	9	0	23	117	0	3	0	0
3:15 PM	0	0	0	0	0	2	0	0	0	0	6	0	1	0	13	0	22	111	2	3	1	2
3:30 PM	0	0	0	0	0	11	0	5	0	0	15	0	0	0	12	0	43		4	2	0	10
3:45 PM	0	0	0	0	0	1	0	0	0	0	14	0	0	0	14	0	29		0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	1	0	10	0	0	0	6	0	17		1	2	0	1
Count Total	0	0	0	0	0	14	0	5	1	0	72	0	1	0	59	0	152		8	11	1	13
Peak Hour	0	0	0	0	0	14	0	5	0	0	49	0	1	0	48	0	117		6	8	1	12



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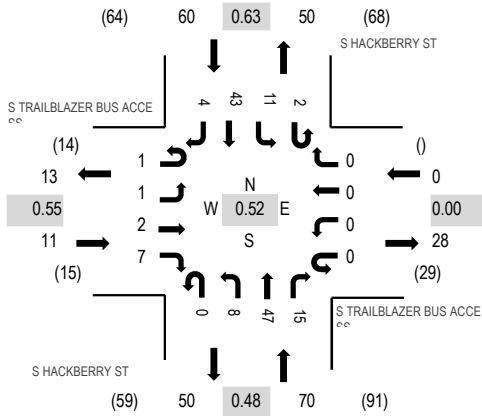
Location: 45 S HACKBERRY ST & S TRAILBLAZER BUS ACCESS AM

Date: Wednesday, November 13, 2024

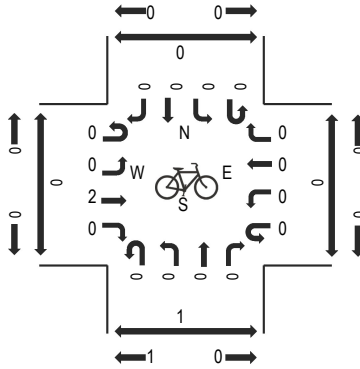
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

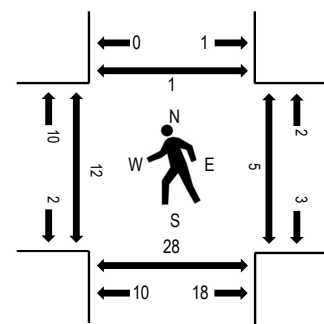
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S TRAILBLAZER BUS ACCESS Eastbound				S TRAILBLAZER BUS ACCESS Westbound				S HACKBERRY ST Northbound				S HACKBERRY ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	0	2	0	0	0	0	0	1	5	0	2	0	4	1	15	141	1	2	2	0
8:00 AM	1	0	0	1	0	0	0	0	0	2	6	1	0	0	6	0	17	141	0	2	1	0
8:15 AM	0	0	1	1	0	0	0	0	0	0	8	7	0	5	19	0	41	138	0	0	7	1
8:30 AM	0	1	1	3	0	0	0	0	0	5	28	7	0	6	14	3	68		11	1	18	0
8:45 AM	0	0	0	2	0	0	0	0	0	1	9	1	0	0	2	0	15		1	0	0	0
9:00 AM	0	0	0	2	0	0	0	0	1	0	9	0	0	0	2	0	14		0	0	0	0
Count Total	1	1	2	11	0	0	0	0	1	9	65	16	2	11	47	4	170		13	5	28	1
Peak Hour	1	1	2	7	0	0	0	0	0	8	47	15	2	11	43	4	141		12	5	28	1



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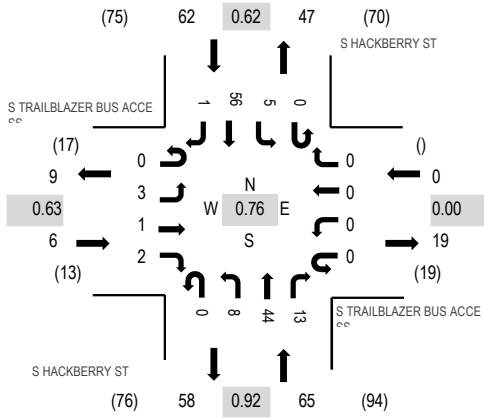
Location: 45 S HACKBERRY ST & S TRAILBLAZER BUS ACCESS PM

Date: Wednesday, November 13, 2024

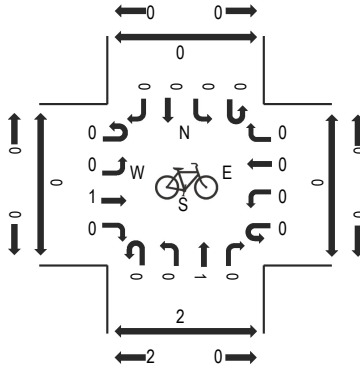
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

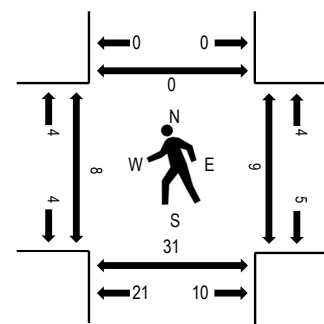
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S TRAILBLAZER BUS ACCESS Eastbound				S TRAILBLAZER BUS ACCESS Westbound				S HACKBERRY ST Northbound				S HACKBERRY ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	1	0	2	0	0	0	0	0	4	11	0	0	0	6	0	24	128	1	1	1	0
3:00 PM	0	0	0	0	0	0	0	0	0	3	14	1	0	0	9	0	27	133	1	0	3	0
3:15 PM	0	0	1	1	0	0	0	0	0	2	6	10	0	1	12	0	33	131	2	4	9	0
3:30 PM	0	0	0	0	0	0	0	0	0	3	15	1	0	4	20	1	44		5	5	16	0
3:45 PM	0	3	0	1	0	0	0	0	0	0	9	1	0	0	15	0	29		0	0	3	0
4:00 PM	0	0	0	4	0	0	0	0	0	3	11	0	0	0	6	1	25		1	2	3	0
Count Total	0	4	1	8	0	0	0	0	0	15	66	13	0	5	68	2	182		10	12	35	0
Peak Hour	0	3	1	2	0	0	0	0	0	8	44	13	0	5	56	1	133		8	9	31	0



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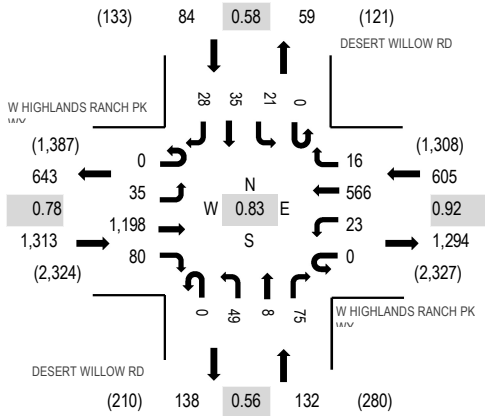
Location: 46 DESERT WILLOW RD & W HIGHLANDS RANCH PKWY AM

Date: Wednesday, November 13, 2024

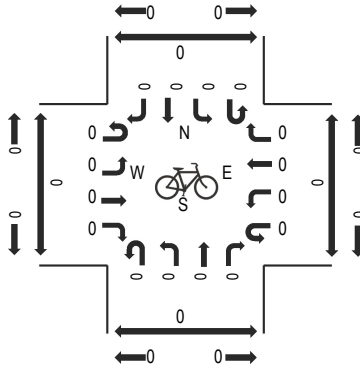
Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

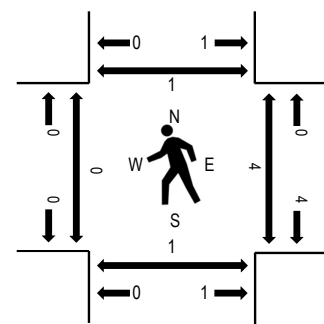
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W HIGHLANDS RANCH PKWY Eastbound				W HIGHLANDS RANCH PKWY Westbound				DESERT WILLOW RD Northbound				DESERT WILLOW RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:30 AM	0	17	378	25	0	7	152	1	0	21	1	18	0	7	2	10	639	2,134	0	0	0	0
7:45 AM	0	5	304	10	0	3	144	3	0	7	1	25	0	8	2	3	515	2,087	0	0	0	0
8:00 AM	0	4	241	17	0	6	136	3	0	11	0	13	0	4	3	6	444	2,068	0	1	1	0
8:15 AM	0	9	275	28	0	7	134	9	0	10	6	19	0	2	28	9	536	2,056	0	3	0	1
8:30 AM	0	5	310	15	0	6	153	3	0	25	24	26	0	4	11	10	592	1,911	1	1	1	0
8:45 AM	0	9	254	4	0	7	182	3	0	17	1	10	0	4	0	5	496		0	0	1	1
9:00 AM	0	4	207	5	0	8	168	8	0	13	0	10	0	4	1	4	432		0	0	0	0
9:15 AM	0	2	188	8	0	6	157	2	0	5	1	16	0	0	1	5	391		0	1	0	1
Count Total	0	55	2,157	112	0	50	1,226	32	0	109	34	137	0	33	48	52	4,045		1	6	3	3
Peak Hour	0	35	1,198	80	0	23	566	16	0	49	8	75	0	21	35	28	2,134		0	4	1	1



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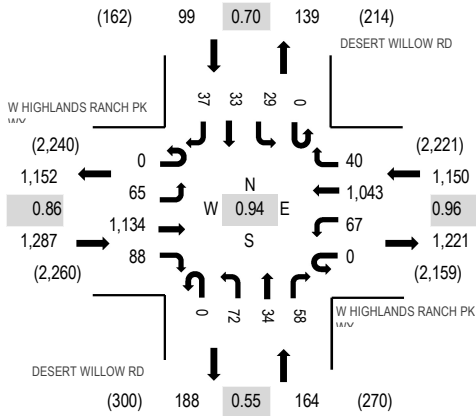
Location: 46 DESERT WILLOW RD & W HIGHLANDS RANCH PKWY PM

Date: Wednesday, November 13, 2024

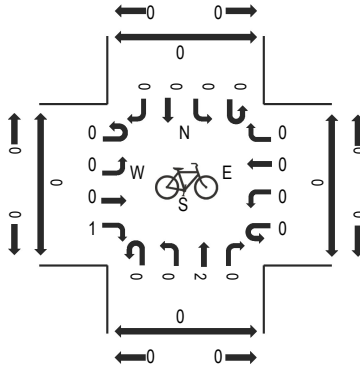
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

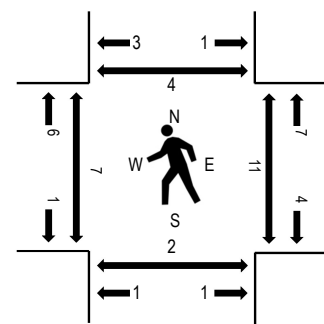
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W HIGHLANDS RANCH Pkwy Eastbound				W HIGHLANDS RANCH Pkwy Westbound				DESERT WILLOW RD Northbound				DESERT WILLOW RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:30 PM	0	4	168	6	1	14	249	5	0	19	1	8	0	4	0	8	487	2,455	0	0	1	1
2:45 PM	0	15	290	19	0	6	238	9	0	11	2	7	0	4	4	10	615	2,684	0	1	1	0
3:00 PM	0	22	331	32	0	22	232	12	0	15	1	10	0	7	6	10	700	2,700	1	0	2	1
3:15 PM	0	13	249	25	0	16	281	6	0	11	2	14	0	4	18	14	653	2,589	2	4	0	1
3:30 PM	0	19	288	20	0	17	260	11	0	33	26	18	0	8	7	9	716	2,458	2	0	0	2
3:45 PM	0	11	266	11	0	12	270	11	0	13	5	16	0	10	2	4	631		2	7	0	0
4:00 PM	0	14	241	16	0	17	253	7	0	9	4	15	0	2	2	9	589		1	0	0	0
4:15 PM	1	10	178	11	0	12	258	2	0	13	2	15	0	5	5	10	522		0	2	1	0
Count Total	1	108	2,011	140	1	116	2,041	63	0	124	43	103	0	44	44	74	4,913		8	14	5	5
Peak Hour	0	65	1,134	88	0	67	1,043	40	0	72	34	58	0	29	33	37	2,700		7	11	2	4



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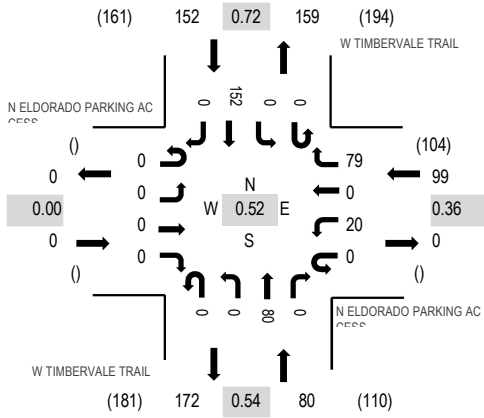
Location: 48 W TIMBERVALE TRAIL & N ELDORADO PARKING ACCESS AM

Date: Wednesday, November 13, 2024

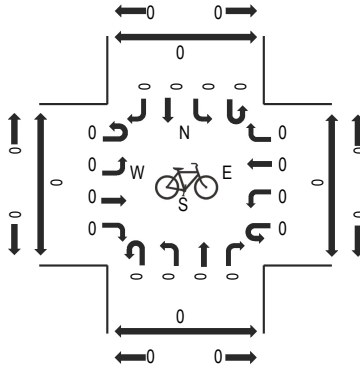
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

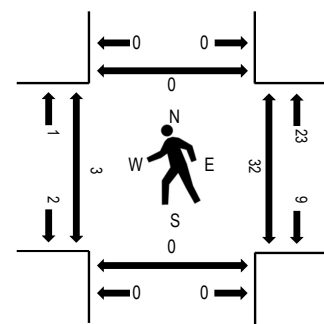
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	N ELDORADO PARKING ACCESS Eastbound				N ELDORADO PARKING ACCESS Westbound				W TIMBERVALE TRAIL Northbound				W TIMBERVALE TRAIL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	0	0	0	0	0	5	0	0	13	0	0	0	25	0	43	331	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	3	0	0	13	0	0	0	23	0	40	316	0	0	0	0
8:15 AM	0	0	0	0	0	3	0	19	0	0	14	0	0	0	53	0	89	292	3	5	0	0
8:30 AM	0	0	0	0	0	16	0	52	0	0	40	0	0	0	51	0	159		0	27	0	0
8:45 AM	0	0	0	0	0	0	0	4	0	0	20	0	0	0	4	0	28		0	0	0	0
9:00 AM	0	0	0	0	0	0	0	1	0	0	10	0	0	0	5	0	16		0	0	0	0
Count Total	0	0	0	0	0	20	0	84	0	0	110	0	0	0	161	0	375		3	32	0	0
Peak Hour	0	0	0	0	0	20	0	79	0	0	80	0	0	0	152	0	331		3	32	0	0



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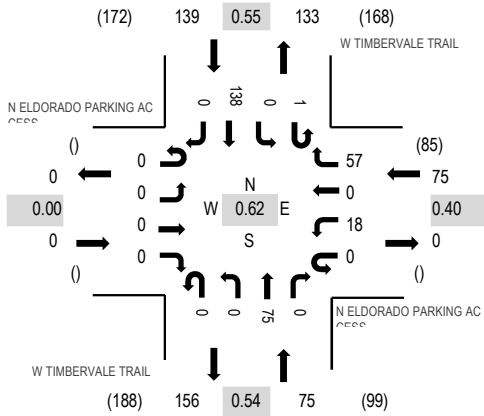
Location: 48 W TIMBERVALE TRAIL & N ELDORADO PARKING ACCESS PM

Date: Wednesday, November 13, 2024

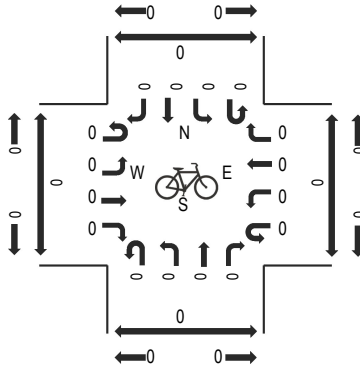
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

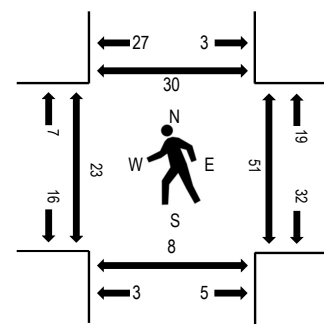
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	N ELDORADO PARKING ACCESS Eastbound				N ELDORADO PARKING ACCESS Westbound				W TIMBERVALE TRAIL Northbound				W TIMBERVALE TRAIL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	1	0	12	0	20	270	3	0	0	0
3:00 PM	0	0	0	0	0	1	0	0	0	0	12	0	0	0	38	0	51	289	2	0	0	0
3:15 PM	0	0	0	0	0	6	0	4	0	0	9	0	1	0	63	0	83	285	6	20	5	6
3:30 PM	0	0	0	0	0	9	0	43	0	0	37	0	0	0	27	0	116		14	26	3	21
3:45 PM	0	0	0	0	0	2	0	10	0	0	17	0	0	0	10	0	39		1	5	0	3
4:00 PM	0	0	0	0	0	0	0	10	0	0	17	0	0	0	20	0	47		5	8	0	4
Count Total	0	0	0	0	0	18	0	67	0	0	99	0	2	0	170	0	356		31	59	8	34
Peak Hour	0	0	0	0	0	18	0	57	0	0	75	0	1	0	138	0	289		23	51	8	30



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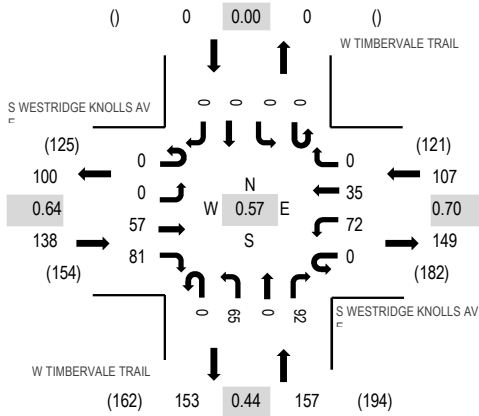
Location: 50 W TIMBERVALE TRAIL & S WESTRIDGE KNOLLS AVE AM

Date: Wednesday, November 13, 2024

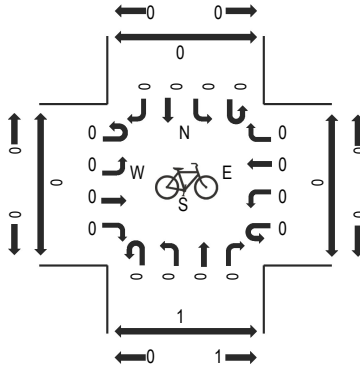
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

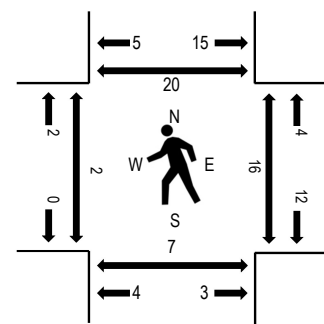
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE Eastbound				S WESTRIDGE KNOLLS AVE Westbound				W TIMBERVALE TRAIL Northbound				W TIMBERVALE TRAIL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	11	9	0	16	5	0	0	6	0	12	0	0	0	0	59	402	0	0	0	1
8:00 AM	0	0	13	7	0	16	7	0	0	5	0	11	0	0	0	0	59	386	0	1	1	2
8:15 AM	0	0	17	37	0	18	7	0	0	17	0	12	0	0	0	0	108	351	2	8	0	10
8:30 AM	0	0	16	28	0	22	16	0	0	37	0	57	0	0	0	0	176		0	7	6	7
8:45 AM	0	0	10	1	0	3	3	0	0	11	0	15	0	0	0	0	43		0	0	0	0
9:00 AM	0	0	3	2	0	3	5	0	0	6	0	5	0	0	0	0	24		0	0	0	1
Count Total	0	0	70	84	0	78	43	0	0	82	0	112	0	0	0	0	469		2	16	7	21
Peak Hour	0	0	57	81	0	72	35	0	0	65	0	92	0	0	0	0	402		2	16	7	20



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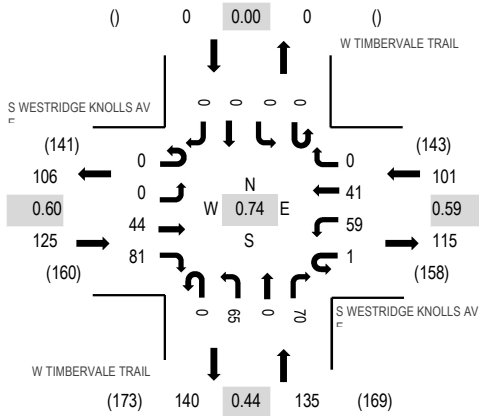
Location: 50 W TIMBERVALE TRAIL & S WESTRIDGE KNOLLS AVE PM

Date: Wednesday, November 13, 2024

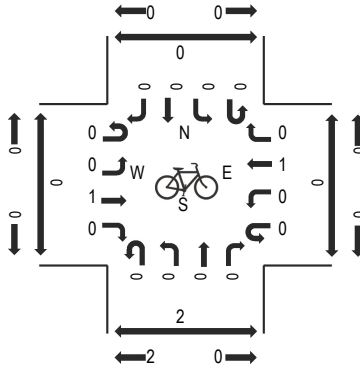
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

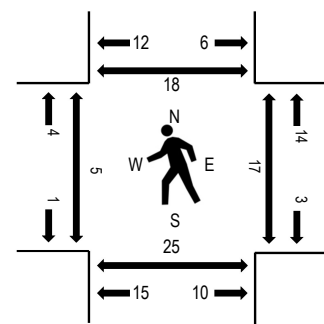
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE				WESTRIDGE KNOLLS AVE				W TIMBERVALE TRAIL				W TIMBERVALE TRAIL				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
2:45 PM	0	0	9	7	0	7	10	0	0	5	0	2	0	0	0	0	40	349	0	0	0	0
3:00 PM	0	0	12	26	0	14	14	0	0	7	0	4	0	0	0	0	77	361	1	0	1	0
3:15 PM	0	0	15	39	1	32	12	0	0	5	0	6	0	0	0	0	110	355	3	3	8	5
3:30 PM	0	0	11	10	0	11	5	0	0	43	0	42	0	0	0	0	122		1	9	15	6
3:45 PM	0	0	6	6	0	2	10	0	0	10	0	18	0	0	0	0	52		0	5	1	7
4:00 PM	0	0	14	5	0	14	11	0	0	9	0	18	0	0	0	0	71		0	0	0	5
Count Total	0	0	67	93	1	80	62	0	0	79	0	90	0	0	0	0	472		5	17	25	23
Peak Hour	0	0	44	81	1	59	41	0	0	65	0	70	0	0	0	0	361		5	17	25	18



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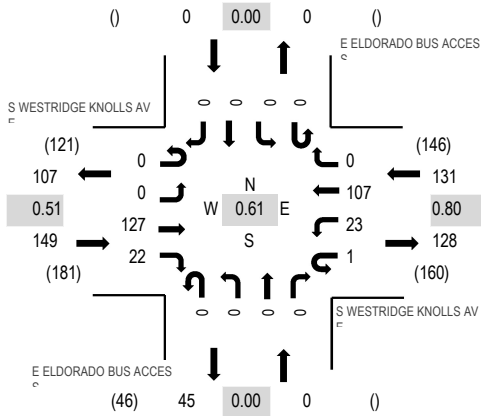
Location: 51 E ELDORADO BUS ACCESS & S WESTRIDGE KNOLLS AVE AM

Date: Wednesday, November 13, 2024

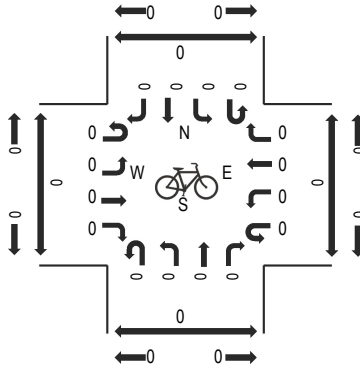
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

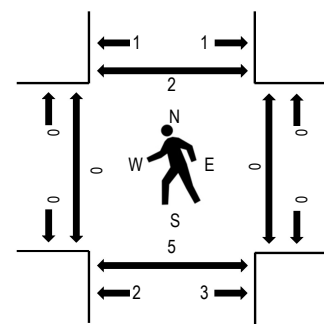
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE				W WESTRIDGE KNOLLS AVE				E ELDORADO BUS ACCESS				E ELDORADO BUS ACCESS				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:45 AM	0	0	22	1	1	4	21	0	0	0	0	0	0	0	0	0	49	280	0	0	0	1
8:00 AM	0	0	21	3	0	0	23	0	0	0	0	0	0	0	0	0	47	262	0	0	2	1
8:15 AM	0	0	21	7	0	14	27	0	0	0	0	0	0	0	0	0	69	231	0	0	0	0
8:30 AM	0	0	63	11	0	5	36	0	0	0	0	0	0	0	0	0	115		0	0	3	0
8:45 AM	0	0	24	0	0	1	6	0	0	0	0	0	0	0	0	0	31		0	0	0	0
9:00 AM	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	16		0	0	0	1
Count Total	0	0	159	22	1	24	121	0	0	0	0	0	0	0	0	0	327		0	0	5	3
Peak Hour	0	0	127	22	1	23	107	0	0	0	0	0	0	0	0	0	280		0	0	5	2

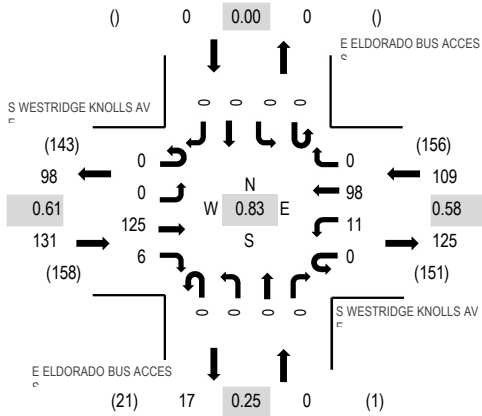
Location: 51 E ELDORADO BUS ACCESS & S WESTRIDGE KNOLLS AVE PM

Date: Wednesday, November 13, 2024

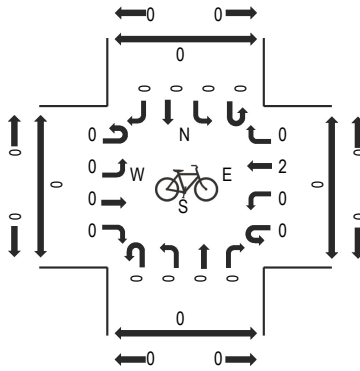
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

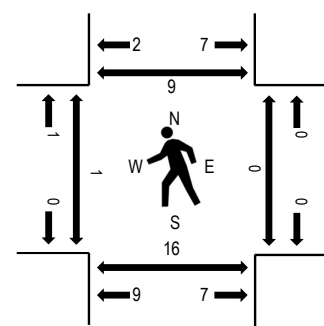
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE Eastbound				S WESTRIDGE KNOLLS AVE Westbound				E ELDORADO BUS ACCESS Northbound				E ELDORADO BUS ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
2:45 PM	0	0	10	1	0	1	16	0	0	1	0	0	0	0	0	0	0	29	218	0	0	0	0
3:00 PM	0	0	15	1	1	1	28	0	0	0	0	0	0	0	0	0	0	46	226	0	0	1	0
3:15 PM	0	0	20	1	0	5	45	0	0	0	0	0	0	0	0	0	0	71	240	0	0	1	2
3:30 PM	0	0	53	1	0	2	16	0	0	0	0	0	0	0	0	0	0	72		0	0	3	3
3:45 PM	0	0	21	3	0	0	13	0	0	0	0	0	0	0	0	0	0	37		0	0	2	2
4:00 PM	0	0	31	1	0	4	24	0	0	0	0	0	0	0	0	0	0	60		1	0	10	2
Count Total	0	0	150	8	1	13	142	0	0	1	0	0	0	0	0	0	0	315		1	0	17	9
Peak Hour	0	0	125	6	0	11	98	0	0	0	0	0	0	0	0	0	0	240		1	0	16	9



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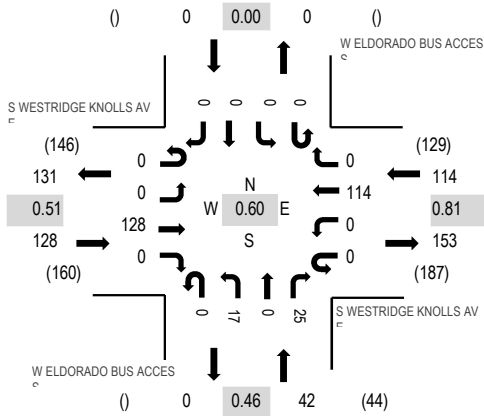
Location: 52 W ELDORADO BUS ACCESS & S WESTRIDGE KNOLLS AVE AM

Date: Wednesday, November 13, 2024

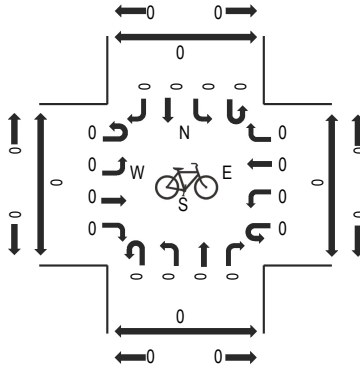
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

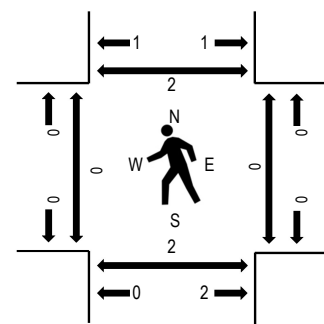
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE Eastbound				S WESTRIDGE KNOLLS AVE W Westbound				W ELDORADO BUS ACCESS Northbound				W ELDORADO BUS ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	23	0	0	0	25	0	0	1	0	3	0	0	0	0	52	284	0	0	0	1
8:00 AM	0	0	21	0	0	0	22	0	0	1	0	2	0	0	0	0	46	263	0	0	0	1
8:15 AM	0	0	21	0	0	0	35	0	0	6	0	6	0	0	0	0	68	235	0	0	2	0
8:30 AM	0	0	63	0	0	0	32	0	0	9	0	14	0	0	0	0	118		0	0	0	0
8:45 AM	0	0	24	0	0	0	7	0	0	0	0	0	0	0	0	0	31		0	0	0	0
9:00 AM	0	0	8	0	0	0	8	0	0	0	0	2	0	0	0	0	18		0	1	0	0
Count Total	0	0	160	0	0	0	129	0	0	17	0	27	0	0	0	0	333		0	1	2	2
Peak Hour	0	0	128	0	0	0	114	0	0	17	0	25	0	0	0	0	284		0	0	2	2



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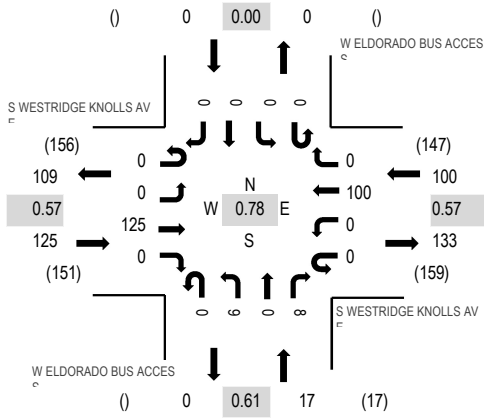
Location: 52 W ELDORADO BUS ACCESS & S WESTRIDGE KNOLLS AVE PM

Date: Wednesday, November 13, 2024

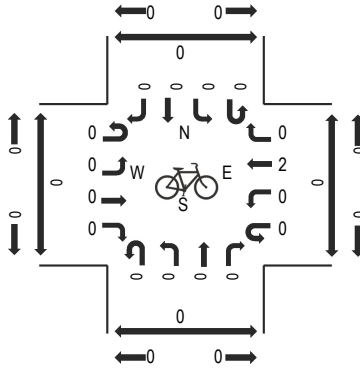
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

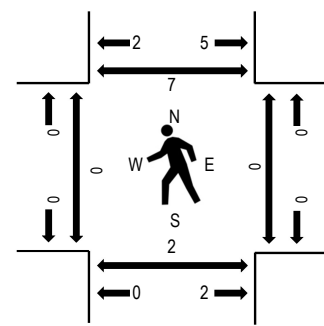
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S WESTRIDGE KNOLLS AVE				WESTRIDGE KNOLLS AVE W				ELDORADO BUS ACCESSW				ELDORADO BUS ACCESS				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
2:45 PM	0	0	10	0	0	0	17	0	0	0	0	0	0	0	0	0	27	219	0	0	0	0
3:00 PM	0	0	16	0	0	0	30	0	0	0	0	0	0	0	0	0	46	228	0	0	1	4
3:15 PM	0	0	18	0	0	0	49	0	0	1	0	0	0	0	0	0	68	242	0	0	0	2
3:30 PM	0	0	55	0	0	0	16	0	0	2	0	5	0	0	0	0	78		0	0	0	3
3:45 PM	0	0	21	0	0	0	9	0	0	5	0	1	0	0	0	0	36		0	0	1	1
4:00 PM	0	0	31	0	0	0	26	0	0	1	0	2	0	0	0	0	60		0	0	1	1
Count Total	0	0	151	0	0	0	147	0	0	9	0	8	0	0	0	0	315		0	0	3	11
Peak Hour	0	0	125	0	0	0	100	0	0	9	0	8	0	0	0	0	242		0	0	2	7



ALL TRAFFIC DATA SERVICES

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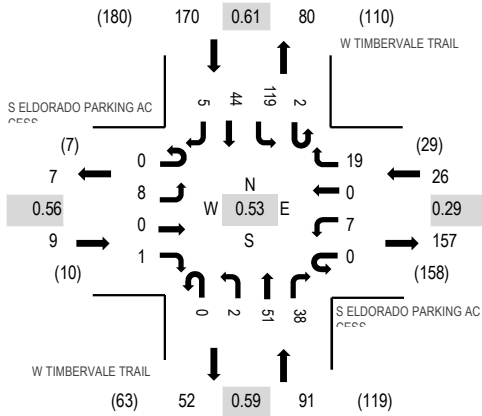
Location: 53 W TIMBERVALE TRAIL & S ELDORADO PARKING ACCESS AM

Date: Wednesday, November 13, 2024

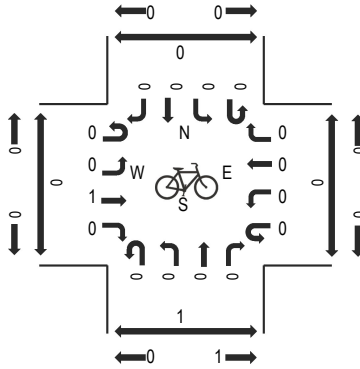
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

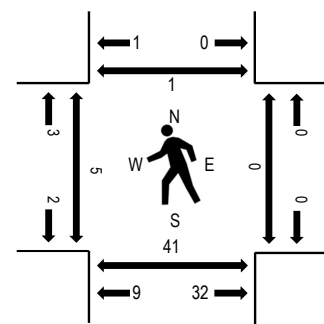
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S ELDORADO PARKING ACCESS Eastbound				S ELDORADO PARKING ACCESS Westbound				W TIMBERVALE TRAIL Northbound				W TIMBERVALE TRAIL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	3	0	0	0	0	0	0	0	0	11	0	0	18	7	0	39	296	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	15	8	0	35	283	0	0	3	0
8:15 AM	0	4	0	0	0	1	0	0	0	0	10	16	2	40	10	0	83	264	2	0	21	0
8:30 AM	0	1	0	1	0	6	0	19	0	2	18	22	0	46	19	5	139		3	0	17	1
8:45 AM	0	0	0	0	0	1	0	1	0	0	19	0	0	0	5	0	26		0	0	0	0
9:00 AM	0	1	0	0	0	1	0	0	0	0	9	0	0	1	4	0	16		0	0	0	0
Count Total	0	9	0	1	0	9	0	20	0	2	79	38	2	120	53	5	338		5	0	41	1
Peak Hour	0	8	0	1	0	7	0	19	0	2	51	38	2	119	44	5	296		5	0	41	1



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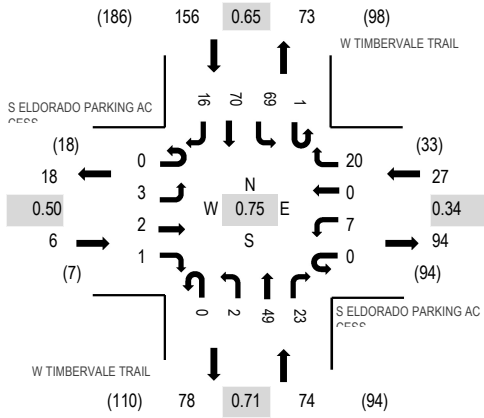
Location: 53 W TIMBERVALE TRAIL & S ELDORADO PARKING ACCESS PM

Date: Wednesday, November 13, 2024

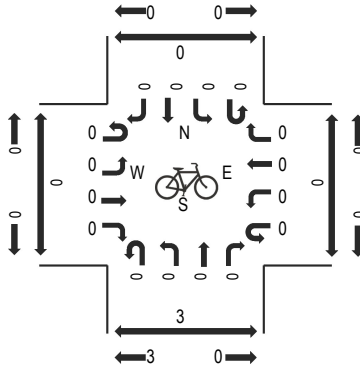
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

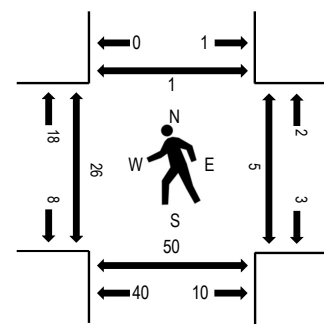
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S ELDORADO PARKING ACCESS Eastbound				S ELDORADO PARKING ACCESS Westbound				W TIMBERVALE TRAIL Northbound				W TIMBERVALE TRAIL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	1	0	10	0	18	249	3	0	0	0
3:00 PM	0	1	1	0	0	0	0	0	0	0	13	1	0	19	20	1	56	263	6	0	0	0
3:15 PM	0	1	0	0	0	0	0	0	0	2	9	15	1	42	16	1	87	246	6	1	7	0
3:30 PM	0	1	1	1	0	5	0	19	0	0	11	6	0	8	24	12	88		11	4	36	1
3:45 PM	0	0	0	0	0	2	0	1	0	0	16	1	0	0	10	2	32		3	0	7	0
4:00 PM	0	0	0	1	0	2	0	4	0	0	13	0	0	0	19	0	39		1	8	2	0
Count Total	0	3	2	2	0	9	0	24	0	2	69	23	2	69	99	16	320		30	13	52	1
Peak Hour	0	3	2	1	0	7	0	20	0	2	49	23	1	69	70	16	263		26	5	50	1



Appendix C Existing Traffic Signal Timing Plans

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

Phase [1.1.1]

	φ1	φ2 (ET)	φ3	φ4 (ST)	φ5	φ6 (WT)	φ7	φ8 (NT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Walk	0	5	0	5	0	5	0	5	0	0	0	0	0	0	0	0
Ped Clearance	0	10	0	22	0	10	0	22	0	0	0	0	0	0	0	0
Min Green	0	25	0	5	0	25	0	5	0	0	0	0	0	0	0	0
Gap Ext	0	3	0	2	0	3	0	2	0	0	0	0	0	0	0	0
Max1	0	45	0	25	0	45	0	45	0	0	0	0	0	0	0	0
Max2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clr	0	4.5	0	3	0	4.5	0	3	3	3	3	3	3	3	3	3
Red Clr	0	2	0	2	0	2	0	2	2	2	2	2	2	2	2	2
Red Revert	0	5	0	5	0	5	0	5	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto Flash Entry				ON				ON								
Auto Flash Exit		ON				ON										
Non-Actuated 1																
Non-Actuated 2																

Phase Option [1.1.2]

	φ1	φ2 (ET)	φ3	φ4 (ST)	φ5	φ6 (WT)	φ7	φ8 (NT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Enable		ON		ON		ON		ON								
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall																
Ped Recall																
Soft Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk		ON				ON										
Cond Service																
Add Init Calc																

Phase Option+ [1.1.3]/[1.1.5]

	φ1	φ2	φ3	φ4	φ5	φ6	φ7	φ8	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Reservice																
Ped Clr Thru Yellow																
Skip Red-NoCall																
Red Rest																
Max 2																
Max Inhibit																
Ped Delay																
Red Rest On Gap																
Conflicting P																
Green Ped Delay Time																
Omit Yel																
Ped Out																
Start Yel																
Inhibit P1																
Inhibit P2																
Inhibit P3																
Inhibit P4																
Inhibit P5																
Inhibit P6																
Inhibit P7																
Inhibit P8																
Call Phs1																
Call Phs2																
Redirect P Calls From 1																
Redirect P Calls To 1																
Redirect P Calls From 2																
Redirect P Calls To 2																
Redirect P Calls From 3																
Redirect P Calls To 3																
Redirect P Calls From 4																
Redirect P Calls To 4																

Prepared By / Date

Reviewed By / Date

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

Ring Sequence [1.2.4]

Ring	P1	P2	P3	P4	P5	P6	P7	P8
Ring 1	1	2	3	4				
Ring 2	5	6	7	8				
Ring 3								
Ring 4								

Unit Parameters [1.2.1]

StartUp Flash	Auto Ped Clear	Red Revert	Local Flash Start	Allow < 3 sec Yel	Allow Skip Yel	MCE Timeout	Enable Run	Start Red Time	Phase Mode	Startup Calls	Diamond Mode	Stop Time Over Preempt	Free Ring Sequence	Clearance Decide	Min Ped Clear Time	RingAlgo			
	OFF	5	RST	OFF	OFF		ON	6	STD8	OFF	4PH	OFF	1	OFF	OFF				

Alarms, Parameters [1.4.1]

Auto Flash Parameter

Yellow	Red	Mode	Source
	60		

Detector, Vehicle Parameters 1-16 [5.1]

Detector #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Yellow Lock																
Red Lock																
Extend	ON	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON
Added Initial																
Call	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON	ON
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	0	0	7.5	0	3	0	0	0	0	0	0

Detector, Vehicle Parameters 17-32 [5.1]

Detector #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Yellow Lock																
Red Lock																
Extend	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON				
Added Initial																
Call	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON				
Call Phase	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	7.5	0	3	0	0	0	0	0	0	0	0

Detector, Ped Detectors 1-16 [5.4]

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phase	0	2	0	4	0	6	0	8								
No Activity	0	0	0	0	0	0	0	0								
Max Presence	15	15	15	15	15	15	15	15								
Erratic Cnt	0	0	0	0	0	0	0	0								

11/27/2024 10:56:16 AM

Channels/SDLC, Assign to Phases [1.8.1]

[illegible][illegible]

Conflict Lock	Lock Inhibit	Program Card	Use Parent	Canadian Fast Flash
OFF	OFF	ON	ALWAYS	

Overlap	Included Phases							Modifier Phases							Type	Green	Yellow	Red
Overlap 1															-GRYEL		3.5	1.5
Overlap 2															-GRYEL		3.5	1.5
Overlap 3															NORMAL		3.5	1.5
Overlap 4															NORMAL		3.5	1.5
Overlap 5															NORMAL		3.5	1.5
Overlap 6															NORMAL		3.5	1.5
Overlap 7															NORMAL		3.5	1.5
Overlap 8															NORMAL		3.5	1.5

[illegible][illegible]

[illegible]

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Auto Flash	ON	ON				
Override Higher Preempt	ON	ON				
Flash in Dwell						
Link to Preempt	0	0	0	0	0	0
Delay	0	0	0	0	0	0
Min Duration	0	0	5	5	5	5
Min Green	0	0	5	5	5	5
Min Walk	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Track Green	0	0	0	0	0	0
Min Dwell	0	0	0	0	0	0
Max Presence	0	0	120	120	120	120
Track Veh 1	0	0	0	0	0	0
Track Veh 2	0	0	0	0	0	0
Track Veh 3	0	0	0	0	0	0
Track Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 1	0	0	2	4	6	4
Dwell Cyc Veh 2	0	0	0	8	0	8
Dwell Cyc Veh 3	0	0	0	0	0	0
Dwell Cyc Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 5	0	0	0	0	0	0
Dwell Cyc Veh 6	0	0	0	0	0	0
Dwell Cyc Veh 7	0	0	0	0	0	0
Dwell Cyc Veh 8	0	0	0	0	0	0
Dwell Cyc Veh 9	0	0	0	0	0	0
Dwell Cyc Veh 10	0	0	0	0	0	0
Dwell Cyc Veh 11	0	0	0	0	0	0
Dwell Cyc Veh 12	0	0	0	0	0	0
Dwell Cyc Ped1	0	0	0	0	0	0
Dwell Cyc Ped2	0	0	0	0	0	0
Dwell Cyc Ped3	0	0	0	0	0	0
Dwell Cyc Ped4	0	0	0	0	0	0
Dwell Cyc Ped5	0	0	0	0	0	0
Dwell Cyc Ped6	0	0	0	0	0	0
Dwell vPed7	0	0	0	0	0	0
Dwell Cyc Ped8	0	0	0	0	0	0
Exit 1	0	0	4	0	4	0
Exit 2	0	0	8	0	8	0
Exit 3	0	0	0	0	0	0
Exit 4	0	0	0	0	0	0

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	RAIL	RAIL	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell	0	0	0	0	0	0
Pattern	0	0	0	0	0	0
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1	0	0	0	0	0	0
Track Over 2	0	0	0	0	0	0
Track Over 3	0	0	0	0	0	0
Track Over 4	0	0	0	0	0	0
Track Over 5	0	0	0	0	0	0
Track Over 6	0	0	0	0	0	0
Track Over 7	0	0	0	0	0	0
Track Over 8	0	0	0	0	0	0
Track Over 9	0	0	0	0	0	0
Track Over 10	0	0	0	0	0	0
Track Over 11	0	0	0	0	0	0
Track Over 12	0	0	0	0	0	0
DwellCyc Over 1	0	0	0	0	0	0
DwellCyc Over 2	0	0	0	0	0	0
DwellCyc Over 3	0	0	0	0	0	0
DwellCyc Over 4	0	0	0	0	0	0
DwellCyc Over 5	0	0	0	0	0	0
DwellCyc Over 6	0	0	0	0	0	0
DwellCyc Over 7	0	0	0	0	0	0
DwellCyc Over 8	0	0	0	0	0	0
DwellCyc Over 9	0	0	0	0	0	0
DwellCyc Over 10	0	0	0	0	0	0
DwellCyc Over 11	0	0	0	0	0	0
DwellCyc Over 12	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Yellow	0	0	0	0	0	0
Red	0	0	0	0	0	0
Return Max	0	0	0	0	0	0

Preemption Adv Times[3.8]/Init Dwell [3.9]

Preempt	1	2	3	4	5	6
All Red B4 Preempt						
Reset Ext Dwell						
Reservice Preempt						
End Dwell						
DsblDwellCalls						
Enter Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Enter Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Dynamic Exit Threshold	0	0	0	0	0	0
Initial Dwell Phase 1	0	0	0	0	0	0
Initial Dwell Phase 2	0	0	0	0	0	0
Initial Dwell Phase 3	0	0	0	0	0	0
Initial Dwell Phase 4	0	0	0	0	0	0
Ped 1	0	0	0	0	0	0
Ped 2	0	0	0	0	0	0
Ped 3	0	0	0	0	0	0
Ped 4	0	0	0	0	0	0
Initial Dwell Overlap 1	0	0	0	0	0	0
Initial Dwell Overlap 2	0	0	0	0	0	0
Initial Dwell Overlap 3	0	0	0	0	0	0
Initial Dwell Overlap 4	0	0	0	0	0	0
Initial Dwell Overlap 5	0	0	0	0	0	0
Initial Dwell Overlap 6	0	0	0	0	0	0
Initial Dwell Overlap 7	0	0	0	0	0	0
Initial Dwell Overlap 8	0	0	0	0	0	0
Initial Dwell Overlap 9	0	0	0	0	0	0
Initial Dwell Overlap 10	0	0	0	0	0	0
Initial Dwell Overlap 11	0	0	0	0	0	0
Initial Dwell Overlap 12	0	0	0	0	0	0
Initial Dwell Overlap 13	0	0	0	0	0	0
Initial Dwell Overlap 14	0	0	0	0	0	0
Initial Dwell Overlap 15	0	0	0	0	0	0

Mode	Leave Before	Leave After	Recycle	Stop In Walk	External	Auto Reset	Latch Sec Off	Coord Easy Float	Yield Value	Coord NTCIP Yield Sign	Closed Loop Active	
RESERVED	TIMED	TIMED	NO_RECYCLE	ON	OFF	ON	OFF	OFF	0	+	ON	OFF

[illegible]

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)**Coordination, Pattern+ 9-16 [2.5]**

Pattern	9	10	11	12	13	14	15	16
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Pattern+ 17 - 24 [2.5]

Pattern	17	18	19	20	21	22	23	24
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Splits [2.7.1]

[illegible]

11/27/2024 10:56:16 AM

[illegible][illegible]

Douglas County Timing Sheet
Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

Timing Sheet
Rolls (Standard File)

11/27/2024 10:56:16 AM

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

TB Coor, Advanced Scheduler [4.3]

TB Coor, Day Plan [4.4]

[illegible]

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

11/27/2024 10:56:16 AM

[illegible]

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

TB Coor, Action Table [4.5]

Action	Pattern	Aux 1	Aux 2	Aux 3	Special 1	Special 2	Special 3	Special 4	Special 5	Special 6	Special 7	Special 8
1	1				0	0						
2	2				0	0						
3	3				0	0						
4	4				0	0						
5	5				0	0						
6	6				0	0						
7	7				0	0						
8	8				0	0						
9	9				0	0						
10	10				0	0						
11	11				0	0						
12	12				0	0						
13	13				0	0						
14	14				0	0						
15	15				0	0						
16	16				0	0						
17	17				0	0						
18	18				0	0						
19	19				0	0						
20	20				0	0						
21	21				0	0						
22	22				0	0						
23	23				0	0						
24	24				0	0						
25	25				0	0						
26	26				0	0						
27	27				0	0						
28	28				0	0						
29	29				0	0						
30	30				0	0						
31	31				0	0						
32	32				0	0						
33					0	0						
34					0	0						
35					0	0						
36					0	0						
37					0	0						
38					0	0						
39					0	0						
40					0	0						
41					0	0						
42					0	0						
43					0	0						
44					0	0						
45					0	0						
46					0	0						
47					0	0						
48					0	0						
49					0	0						
50					0	0						
51					0	0						
52					0	0						
53					0	0						
54					0	0						
55					0	0						
56					0	0						
57					0	0						
58					0	0						
59					0	0						
60					0	0						
61					0	0						
62					0	0						
63					0	0						
64					0	0						
99	254				0	0						
100	255				0	0						

Station : 100 - HR Pkwy & Desert Willow/Westridge Knolls (Standard File)

Alternate Phase Program 1, Interval Times [1.1.6.1]

[illegible]

Alternate Phase Program 2, Interval Times [1.1.6.1]

[illegible]

Alternate Phase Program 1, >Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 2, Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 3, Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 1, Calls and Redirection [1.1.6.3]

[illegible]

Alternate Phase Program 2, Calls and Redirection [1.1.6.3]

[illegible]

Detector Alternate Program 1, Vehicle Parameters [5.5.1]

Detector Alternate Program 2, Vehicle Parameters [5.5.1]

User Input map [1.8.9.1]

User Output map [1.8.9.2]

[illegible]



Appendix D Existing Level of Service Reports

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1198	80	23	566	16	49	8	75	21	35	28
Future Volume (vph)	35	1198	80	23	566	16	49	8	75	21	35	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	150		0	150		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.996			0.865			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3507	0	1770	3525	0	1770	1611	0	1770	1740	0
Flt Permitted	0.357			0.104			0.713			0.698		
Satd. Flow (perm)	665	3507	0	194	3525	0	1328	1611	0	1300	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			17			30	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		502			817			552			297	
Travel Time (s)		7.6			12.4			12.5			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	1302	87	25	615	17	53	9	82	23	38	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1389	0	25	632	0	53	91	0	23	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.5	31.5		31.5	31.5		32.0	32.0		32.0	32.0	
Total Split (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	38.5	38.5		38.5	38.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.5	38.5		38.5	38.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.44	0.44		0.44	0.44	
v/c Ratio	0.13	0.92		0.30	0.42		0.09	0.13		0.04	0.09	

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.3	35.9		29.3	18.9		15.1	12.6		14.5	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.3	35.9		29.3	18.9		15.1	12.6		14.5	9.6	
LOS	B	D		C	B		B	B		B	A	
Approach Delay		35.4			19.3			13.5			10.8	
Approach LOS		D			B			B			B	
Queue Length 50th (ft)	13	380		9	127		17	24		7	12	
Queue Length 95th (ft)	34	#532		34	172		39	52		21	36	
Internal Link Dist (ft)		422			737			472			217	
Turn Bay Length (ft)	130			150			150			100		
Base Capacity (vph)	284	1505		82	1510		590	725		577	790	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.92		0.30	0.42		0.09	0.13		0.04	0.09	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.5

Intersection LOS: C

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 36: Westridge Knolls Ave & Highlands Ranch Pkwy

 Ø2 (L)  Ø2 (R)  Ø6 45 s	 Ø4  Ø4  Ø8 45 s
--	--

Lanes, Volumes, Timings
67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	813	283	152	344	32	233	25	290	26	34	6
Future Volume (vph)	15	813	283	152	344	32	233	25	290	26	34	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		165	240		0	250		0	150		0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	1863	1583	1770	1822	0
Flt Permitted	0.532			0.104			0.550			0.734		
Satd. Flow (perm)	991	3539	1583	376	3539	1583	1988	1863	1583	1367	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			197			155			412		6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		705			1593			631			652	
Travel Time (s)		16.0			36.2			14.3			14.8	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.70	0.70	0.70	0.45	0.45	0.45
Adj. Flow (vph)	17	934	325	163	370	34	333	36	414	58	76	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	934	325	163	370	34	333	36	414	58	89	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		
Minimum Split (s)	10.0	30.5	30.5	10.0	31.5	31.5	10.0	38.5	38.5	10.0	24.5	
Total Split (s)	15.0	40.0	40.0	25.0	50.0	50.0	40.0	50.0	50.0	15.0	25.0	
Total Split (%)	11.5%	30.8%	30.8%	19.2%	38.5%	38.5%	30.8%	38.5%	38.5%	11.5%	19.2%	
Maximum Green (s)	10.0	33.5	33.5	20.0	43.5	43.5	35.0	43.5	43.5	10.0	18.5	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Flash Dont Walk (s)		19.0	19.0		20.0	20.0		27.0	27.0			
Pedestrian Calls (#/hr)		0	0		0	0		0	0			
Act Effct Green (s)	45.0	33.5	33.5	60.0	43.5	43.5	60.0	43.5	43.5	30.0	18.5	
Actuated g/C Ratio	0.35	0.26	0.26	0.46	0.33	0.33	0.46	0.33	0.33	0.23	0.14	
v/c Ratio	0.04	1.03	0.59	0.25	0.31	0.05	0.25	0.06	0.52	0.17	0.34	

Lanes, Volumes, Timings

67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.3	83.6	20.8	20.8	33.1	0.2	21.5	29.8	5.4	24.4	50.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	83.6	20.8	20.8	33.1	0.2	21.5	29.8	5.4	24.4	50.8	
LOS	C	F	C	C	C	A	C	C	A	C	D	
Approach Delay	66.8			27.6			13.4			40.4		
Approach LOS	E			C			B			D		
Queue Length 50th (ft)	8	~440	91	39	121	0	84	21	1	27	64	
Queue Length 95th (ft)	21	#541	178	60	164	0	87	36	1	26	54	
Internal Link Dist (ft)	625			1513			551			572		
Turn Bay Length (ft)	140		165	240			250			150		
Base Capacity (vph)	402	911	554	643	1184	632	1306	623	803	346	264	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.04	1.03	0.59	0.25	0.31	0.05	0.25	0.06	0.52	0.17	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

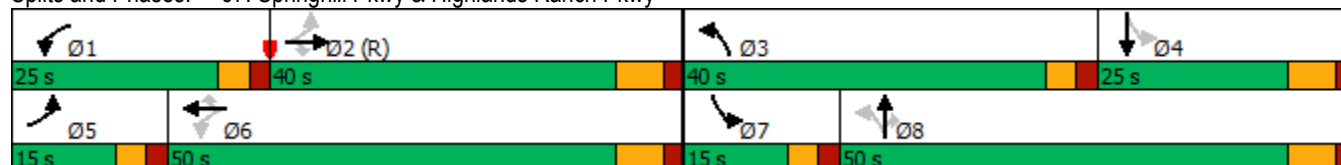
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 67: Springhill Pkwy & Highlands Ranch Pkwy



Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1112	23	60	479	87	45	37	107	109	21	92
Future Volume (vph)	77	1112	23	60	479	87	45	37	107	109	21	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	170		120	170		170	100		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850		0.878	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3539	1583	1770	1863	1583	1770	1635	0
Flt Permitted	0.448			0.104			0.666			0.682		
Satd. Flow (perm)	835	3529	0	194	3539	1583	1241	1863	1583	1270	1635	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				92			146		114	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1593			794			600			737	
Travel Time (s)		36.2			18.0			13.6			16.8	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.32	0.32	0.32	0.81	0.81	0.81
Adj. Flow (vph)	89	1278	26	63	504	92	141	116	334	135	26	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	1304	0	63	504	92	141	116	334	135	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		
Minimum Split (s)	10.0	31.5		10.0	31.5	31.5	34.0	34.0	34.0	33.0	33.0	
Total Split (s)	10.0	45.0		10.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Total Split (%)	11.8%	52.9%		11.8%	52.9%	52.9%	35.3%	35.3%	35.3%	35.3%	35.3%	
Maximum Green (s)	5.0	38.5		5.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5		5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		10.5			10.5	10.5	24.0	24.0	24.0	23.0	23.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	45.0	38.5		45.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Actuated g/C Ratio	0.53	0.45		0.53	0.45	0.45	0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.18	0.81		0.32	0.31	0.12	0.39	0.21	0.59	0.36	0.25	

Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.7	25.3		12.3	15.5	3.6	27.8	23.9	18.9	27.2	8.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.7	25.3		12.3	15.5	3.6	27.8	23.9	18.9	27.2	8.1	
LOS	A	C		B	B	A	C	C	B	C	A	
Approach Delay	24.2			13.5			22.0			17.4		
Approach LOS	C			B			C			B		
Queue Length 50th (ft)	19	305		13	86	0	60	46	82	57	10	
Queue Length 95th (ft)	37	372		29	122	25	35	29	9	94	41	
Internal Link Dist (ft)	1513			714			520			657		
Turn Bay Length (ft)	135			170		120	170		170	100		
Base Capacity (vph)	497	1600		195	1602	767	365	547	568	373	561	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.81		0.32	0.31	0.12	0.39	0.21	0.59	0.36	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 38.5 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 20.7

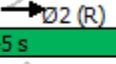
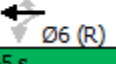
Intersection LOS: C

Intersection Capacity Utilization 62.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 70: Foothills Canyon Blvd & Highlands Ranch Pkwy

 Ø1	 Ø2 (R)	 Ø4
10 s	45 s	30 s
 Ø5	 Ø6 (R)	 Ø8
10 s	45 s	30 s

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1134	88	67	1043	40	72	34	58	29	33	37
Future Volume (vph)	65	1134	88	67	1043	40	72	34	58	29	33	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	150		0	150		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.995			0.905			0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3500	0	1770	3522	0	1770	1686	0	1770	1716	0
Flt Permitted	0.112			0.104			0.708			0.692		
Satd. Flow (perm)	209	3500	0	194	3522	0	1319	1686	0	1289	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			5			22			30	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		502			817			552			297	
Travel Time (s)		7.6			12.4			12.5			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1233	96	73	1134	43	78	37	63	32	36	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	1329	0	73	1177	0	78	100	0	32	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.5	31.5		31.5	31.5		24.0	24.0		24.0	24.0	
Total Split (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	38.5	38.5		38.5	38.5		39.0	39.0		39.0	39.0	
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.5	38.5		38.5	38.5		39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.43	0.43		0.43	0.43	
v/c Ratio	0.80	0.88		0.89	0.78		0.14	0.13		0.06	0.10	

Existing PM 4:45 pm 11/05/2024

Synchro 11 Report
Page 1

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	80.9	32.2		104.0	26.5		16.3	12.6		15.3	10.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	80.9	32.2		104.0	26.5		16.3	12.6		15.3	10.5	
LOS	F	C		F	C		B	B		B	B	
Approach Delay		34.6			31.0			14.2			11.9	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	34	352		37	292		26	26		10	15	
Queue Length 95th (ft)	#118	#472		#125	375		54	56		27	40	
Internal Link Dist (ft)		422			737			472			217	
Turn Bay Length (ft)	130			150			150			100		
Base Capacity (vph)	89	1503		82	1509		571	743		558	760	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.80	0.88		0.89	0.78		0.14	0.13		0.06	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 31.0

Intersection LOS: C

Intersection Capacity Utilization 76.8%

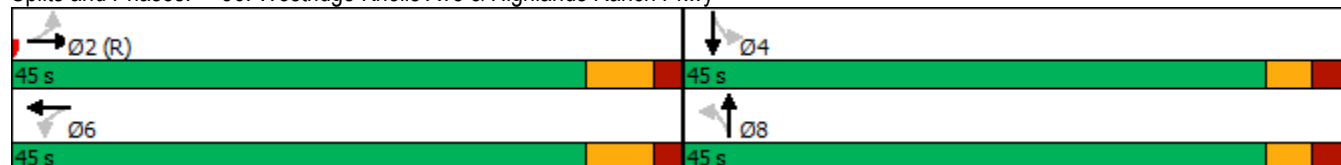
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 36: Westridge Knolls Ave & Highlands Ranch Pkwy



Lanes, Volumes, Timings
67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	599	258	232	667	50	399	53	346	46	41	29
Future Volume (vph)	15	599	258	232	667	50	399	53	346	46	41	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		165	240		0	250		0	150		0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	1863	1583	1770	1747	0
Flt Permitted	0.282			0.191			0.498			0.714		
Satd. Flow (perm)	525	3539	1583	690	3539	1583	1800	1863	1583	1330	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			232			155			413		23	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		705			1593			631			652	
Travel Time (s)		16.0			36.2			14.3			14.8	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.80	0.80	0.80	0.59	0.59	0.59
Adj. Flow (vph)	16	637	274	261	749	56	499	66	433	78	69	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	637	274	261	749	56	499	66	433	78	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		
Minimum Split (s)	10.0	30.5	30.5	10.0	31.5	31.5	10.0	38.5	38.5	10.0	24.5	
Total Split (s)	15.0	40.0	40.0	25.0	50.0	50.0	40.0	50.0	50.0	15.0	25.0	
Total Split (%)	11.5%	30.8%	30.8%	19.2%	38.5%	38.5%	30.8%	38.5%	38.5%	11.5%	19.2%	
Maximum Green (s)	10.0	33.5	33.5	20.0	43.5	43.5	35.0	43.5	43.5	10.0	18.5	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Flash Dont Walk (s)		19.0	19.0		20.0	20.0		27.0	27.0			
Pedestrian Calls (#/hr)		0	0		0	0		0	0			
Act Effct Green (s)	45.0	33.5	33.5	60.0	43.5	43.5	60.0	43.5	43.5	30.0	18.5	
Actuated g/C Ratio	0.35	0.26	0.26	0.46	0.33	0.33	0.46	0.33	0.33	0.23	0.14	
v/c Ratio	0.06	0.70	0.47	0.35	0.63	0.09	0.39	0.11	0.54	0.23	0.44	

Existing PM 4:45 pm 11/05/2024

Synchro 11 Report
Page 3

Lanes, Volumes, Timings

67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.5	48.5	10.9	21.9	39.4	0.3	23.1	30.5	6.4	25.3	46.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.5	48.5	10.9	21.9	39.4	0.3	23.1	30.5	6.4	25.3	46.6	
LOS	C	D	B	C	D	A	C	C	A	C	D	
Approach Delay	36.9			33.1			16.4			38.1		
Approach LOS	D			C			B			D		
Queue Length 50th (ft)	7	256	27	64	279	0	134	38	11	36	74	
Queue Length 95th (ft)	21	325	105	91	343	0	151	65	45	43	80	
Internal Link Dist (ft)	625			1513			551			572		
Turn Bay Length (ft)	140		165	240			250			150		
Base Capacity (vph)	277	911	580	740	1184	632	1270	623	804	340	268	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.70	0.47	0.35	0.63	0.09	0.39	0.11	0.54	0.23	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 13 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 29.3

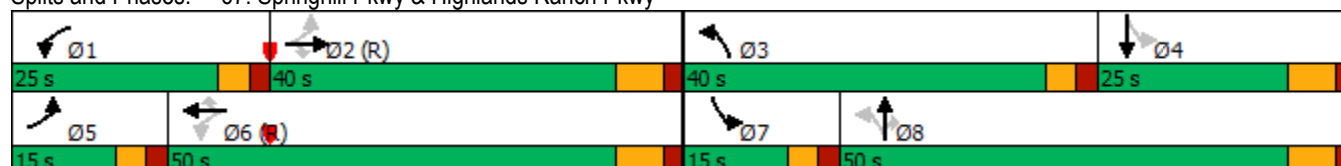
Intersection LOS: C

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 67: Springhill Pkwy & Highlands Ranch Pkwy



Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1009	12	49	956	124	51	73	186	86	7	102
Future Volume (vph)	138	1009	12	49	956	124	51	73	186	86	7	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	170		120	170		170	100		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850		0.860	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	1770	1863	1583	1770	1602	0
Flt Permitted	0.177			0.164			0.669			0.666		
Satd. Flow (perm)	330	3532	0	305	3539	1583	1246	1863	1583	1241	1602	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				111			167		128	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1593			794			600			737	
Travel Time (s)		36.2			18.0			13.6			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.52	0.52	0.52	0.80	0.80	0.80
Adj. Flow (vph)	145	1062	13	53	1039	135	98	140	358	108	9	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	1075	0	53	1039	135	98	140	358	108	137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		
Minimum Split (s)	10.0	31.5		10.0	31.5	31.5	34.0	34.0	34.0	33.0	33.0	
Total Split (s)	10.0	45.0		10.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Total Split (%)	11.8%	52.9%		11.8%	52.9%	52.9%	35.3%	35.3%	35.3%	35.3%	35.3%	
Maximum Green (s)	5.0	38.5		5.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5		5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		10.5			10.5	10.5	24.0	24.0	24.0	23.0	23.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	45.0	38.5		45.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Actuated g/C Ratio	0.53	0.45		0.53	0.45	0.45	0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.56	0.67		0.21	0.65	0.17	0.27	0.26	0.61	0.30	0.24	

Existing PM 4:45 pm 11/05/2024

Synchro 11 Report

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Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.2	20.8		9.7	20.4	4.7	25.5	24.5	18.6	26.0	6.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.2	20.8		9.7	20.4	4.7	25.5	24.5	18.6	26.0	6.4	
LOS	B	C		A	C	A	C	C	B	C	A	
Approach Delay		20.4			18.2			21.1			15.0	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	32	228		11	217	7	40	57	84	44	3	
Queue Length 95th (ft)	58	297		26	284	37	43	56	51	76	32	
Internal Link Dist (ft)		1513			714			520			657	
Turn Bay Length (ft)	135			170		120	170		170	100		
Base Capacity (vph)	259	1600		247	1602	777	366	547	583	365	561	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.67		0.21	0.65	0.17	0.27	0.26	0.61	0.30	0.24	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 13 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.3

Intersection LOS: B

Intersection Capacity Utilization 59.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 70: Foothills Canyon Blvd & Highlands Ranch Pkwy

 Ø1	 Ø2 (R)	 Ø4
10 s	45 s	30 s
 Ø5	 Ø6 (R)	 Ø8
10 s	45 s	30 s

HCM 2010 TWSC
40: Bus Access & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	22	24	107	0	0
Future Vol, veh/h	127	22	24	107	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	24	26	116	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	318	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	168	-
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	-	-	1417	-	675	896
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	862	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1417	-	662	896
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	845	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1417	-	
HCM Lane V/C Ratio	-	-	-	0.018	-	
HCM Control Delay (s)	0	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	-	-	-	0.1	-	

HCM 2010 TWSC
43: Bus Exit & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	128	0	0	114	17	25
Future Vol, veh/h	128	0	0	114	17	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	139	0	0	124	18	27
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	-	-	-	263	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	124	-
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	-	0	0	-	726	909
Stage 1	-	0	0	-	888	-
Stage 2	-	0	0	-	902	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	726	909
Mov Cap-2 Maneuver	-	-	-	-	726	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	902	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		9.6		
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	825	-	-			
HCM Lane V/C Ratio	0.055	-	-			
HCM Control Delay (s)	9.6	-	-			
HCM Lane LOS	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-			

HCM 2010 TWSC
45: Timbervale Trail & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	81	72	35	65	92
Future Vol, veh/h	57	81	72	35	65	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	88	78	38	71	100
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	150	0	300	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	194	-
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	-	-	1431	-	691	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	839	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1431	-	652	948
Mov Cap-2 Maneuver	-	-	-	-	652	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	792	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.2		10.7	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	798	-	-	1431	-	
HCM Lane V/C Ratio	0.214	-	-	0.055	-	
HCM Control Delay (s)	10.7	-	-	7.7	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.8	-	-	0.2	-	

HCM 2010 TWSC
46: Timbervale Trail & Eldorado N Parking Access

12/19/2024

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	79	80	0	0	152
Future Vol, veh/h	20	79	80	0	0	152
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	86	87	0	0	165
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	252	87	0	-	-	-
Stage 1	87	-	-	-	-	-
Stage 2	165	-	-	-	-	-
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	737	971	-	0	0	-
Stage 1	936	-	-	0	0	-
Stage 2	864	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	737	971	-	-	-	-
Mov Cap-2 Maneuver	737	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.3	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	737 971	-			
HCM Lane V/C Ratio	-	0.029 0.088	-			
HCM Control Delay (s)	-	10 9.1	-			
HCM Lane LOS	-	B A	-			
HCM 95th %tile Q(veh)	-	0.1 0.3	-			

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	1	7	0	19	2	51	38	121	44	5
Future Vol, veh/h	8	0	1	7	0	19	2	51	38	121	44	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	1	8	0	21	2	55	41	132	48	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	405	415	51	395	-	76	53	0	0	96	0	0
Stage 1	315	315	-	80	-	-	-	-	-	-	-	-
Stage 2	90	100	-	315	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	556	528	1017	565	0	985	1553	-	-	1498	-	-
Stage 1	696	656	-	929	0	-	-	-	-	-	-	-
Stage 2	917	812	-	696	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	506	479	1017	525	-	985	1553	-	-	1498	-	-
Mov Cap-2 Maneuver	506	479	-	525	-	-	-	-	-	-	-	-
Stage 1	695	596	-	928	-	-	-	-	-	-	-	-
Stage 2	897	811	-	632	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.8		9.6		0.2		5.4					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1553	-	-	536	525	985	1498	-	-			
HCM Lane V/C Ratio	0.001	-	-	0.018	0.014	0.021	0.088	-	-			
HCM Control Delay (s)	7.3	0	-	11.8	12	8.7	7.6	0	-			
HCM Lane LOS	A	A	-	B	B	A	A	A	-			
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0.3	-	-			

HCM 2010 TWSC
40: Bus Access & Westridge Knolls Ave

12/19/2024

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	6	11	98	0	0
Future Vol, veh/h	125	6	11	98	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	7	12	107	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	143
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1440
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1440
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1440	-
HCM Lane V/C Ratio	-	-	-	0.008	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 2010 TWSC
43: Bus Exit & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	125	0	0	100	9	8
Future Vol, veh/h	125	0	0	100	9	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	0	0	109	10	9
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	-	-	-	245	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	109	-
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	-	0	0	-	743	913
Stage 1	-	0	0	-	890	-
Stage 2	-	0	0	-	916	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	743	913
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	916	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		9.5		
HCM LOS				A		
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	814	-	-			
HCM Lane V/C Ratio	0.023	-	-			
HCM Control Delay (s)	9.5	-	-			
HCM Lane LOS	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-			

HCM 2010 TWSC
45: Timbervale Trail & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	44	81	60	41	65	70
Future Vol, veh/h	44	81	60	41	65	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	88	65	45	71	76
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	136	0	267	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	175	-
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	-	-	1448	-	722	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1448	-	689	965
Mov Cap-2 Maneuver	-	-	-	-	689	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	816	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	4.5		10.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	809	-	-	1448	-	
HCM Lane V/C Ratio	0.181	-	-	0.045	-	
HCM Control Delay (s)	10.4	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

HCM 2010 TWSC
46: Timbervale Trail & Eldorado N Parking Access

12/19/2024

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	57	75	0	0	138
Future Vol, veh/h	18	57	75	0	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	62	82	0	0	150
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	232	82	0	-	-	-
Stage 1	82	-	-	-	-	-
Stage 2	150	-	-	-	-	-
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	756	978	-	0	0	-
Stage 1	941	-	-	0	0	-
Stage 2	878	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	756	978	-	-	-	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.1	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	756 978	-			
HCM Lane V/C Ratio	-	0.026 0.063	-			
HCM Control Delay (s)	-	9.9 8.9	-			
HCM Lane LOS	-	A A	-			
HCM 95th %tile Q(veh)	-	0.1 0.2	-			

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	2	1	7	0	20	2	49	23	70	70	16
Future Vol, veh/h	3	2	1	7	0	20	2	49	23	70	70	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	2	1	8	0	22	2	53	25	76	76	17
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	318	319	85	308	-	66	93	0	0	78	0	0
Stage 1	237	237	-	70	-	-	-	-	-	-	-	-
Stage 2	81	82	-	238	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	635	598	974	644	0	998	1501	-	-	1520	-	-
Stage 1	766	709	-	940	0	-	-	-	-	-	-	-
Stage 2	927	827	-	765	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	596	566	974	615	-	998	1501	-	-	1520	-	-
Mov Cap-2 Maneuver	596	566	-	615	-	-	-	-	-	-	-	-
Stage 1	765	671	-	939	-	-	-	-	-	-	-	-
Stage 2	906	826	-	721	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.8		9.3		0.2		3.4					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1501	-	-	625 615 998	1520	-	-					
HCM Lane V/C Ratio	0.001	-	-	0.01 0.012 0.022	0.05	-	-					
HCM Control Delay (s)	7.4	0	-	10.8 10.9 8.7	7.5	0	-					
HCM Lane LOS	A	A	-	B B A	A	A	-					
HCM 95th %tile Q(veh)	0	-	-	0 0 0.1	0.2	-	-					



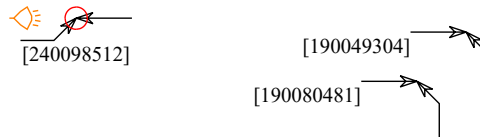
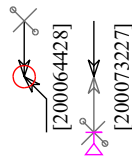
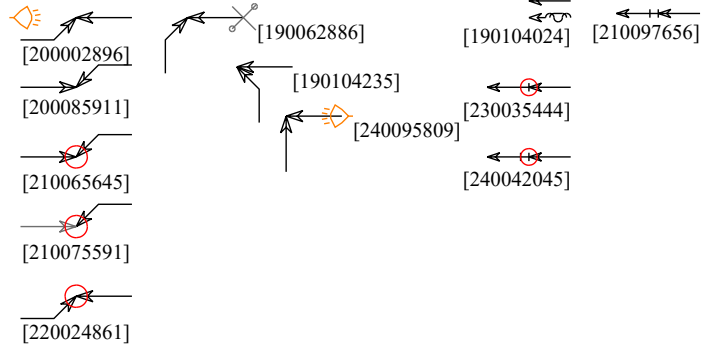
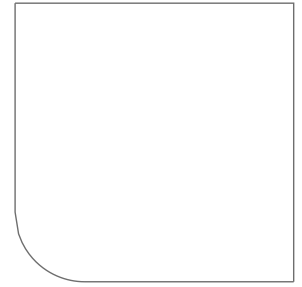
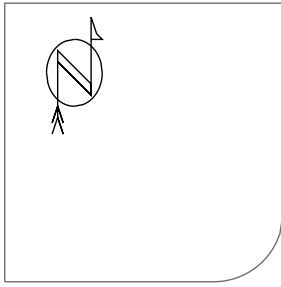
Appendix E Crash Diagrams and Listings

HIGHLANDS RANCH PKWY & WESTRIDGE KNOLLS AVE

2019 - 2024

22 Crashes

Clear



[240089353]

[240089341]

[200063208]

[190022017]



- ← Straight
- ←+ Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↗ Weaving
- ↗ Changing Ln
- ↗ Right turn
- ↗ Left turn
- ↗ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

- ◀ 3rd Vehicle
- ←M- Motorcycle
- ←○ Overturn

- Fixed objects:
- General
 - ⊗ Animal
 - ⊗ Public Obj
 - ⊗ Private Obj

Crash Magic Online 11/14/2024

HIGHLANDS RANCH PKWY & WESTRIDGE KNOLLS AVE

2019 - 2024

22 Crashes

[Clear](#)

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
190022017	11:38 am	2/20/2019	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Rear
190049304	12:23 pm	4/25/2019	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Side
190062886	2:22 pm	5/29/2019	WESTRIDGE KNOLLS AVE	HIGHLANDS RANCH PKWY		0	0	Front to Side
190080481	7:18 am	7/12/2019	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Side
190104024	6:35 pm	9/13/2019	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		0	0	Side to Side - Same Direction
190104235	2:08 pm	9/14/2019	DESERT WILLOW RD	HIGHLANDS RANCH PKWY		0	0	Front to Side
200002896	8:26 pm	1/8/2020	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		0	0	Front to Side
200063208	11:14 am	7/4/2020	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Rear
200064428	7:15 pm	7/7/2020	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		1	0	Bicycle / Motorized Bicycle
200073227	1:01 pm	8/6/2020	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		0	0	Bicycle / Motorized Bicycle
200085911	9:14 am	9/18/2020	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Side
210065645	3:05 pm	8/13/2021	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Side
210075591	3:24 pm	9/17/2021	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		3	0	Front to Side
210097656	1:23 pm	12/7/2021	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		0	0	Front to Rear
220024861	3:44 pm	3/31/2022	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Front
230035444	5:09 pm	4/26/2023	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Rear
230038020	6:35 pm	5/4/2023	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		1	0	Bicycle / Motorized Bicycle
240042045	5:02 pm	5/6/2024	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		2	0	Front to Rear
240089341	3:08 pm	9/27/2024	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Rear
240089353	3:41 pm	9/24/2024	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Rear
240095809	10:11 pm	10/15/2024	HIGHLANDS RANCH PKWY	WESTRIDGE KNOLLS AVE		0	0	Front to Side
240098512	8:54 pm	10/24/2024	HIGHLANDS RANCH PKWY	DESERT WILLOW RD		1	0	Front to Front

HIGHLANDS RANCH PKWY & WESTRIDGE VILLAGE PKWY

2019 - 2024

18 Crashes

Clear

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
190018334	7:52 am	2/12/2019	DEER CREEK ST	HIGHLANDS RANCH PKWY		0	0	Front to Rear
190116520	5:48 pm	10/15/2019	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Bicycle / Motorized Bicycle
190122567	8:32 am	10/31/2019	WESTRIDGE VILLAGE PKWY	HIGHLANDS RANCH PKWY		0	0	Front to Rear
200074616	5:10 pm	8/11/2020	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Rear
200110918	6:08 pm	12/15/2020	HIGHLANDS RANCH PKWY	DEER CREEK ST		1	0	Pedestrian
210013207	8:38 am	2/15/2021	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Side
210069654	2:42 pm	8/27/2021	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Rear
220003461	10:16 am	1/15/2022	WESTRIDGE VILLAGE PKWY	HIGHLANDS RANCH PKWY		0	0	Front to Rear
220012167	2:56 pm	2/15/2022	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Side
220030817	7:29 am	4/21/2022	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Side to Side - Opposite Direction
220050172	12:12 pm	6/25/2022	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		1	0	Front to Rear
230014534	7:50 am	2/22/2023	HIGHLANDS RANCH PKWY	DEER CREEK ST		0	0	Side to Side - Same Direction
230097045	11:03 pm	11/10/2023	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		3	0	Curb
230111137	8:22 am	12/30/2023	HIGHLANDS RANCH PKWY	DEER CREEK ST		0	0	Side to Side - Opposite Direction
240013037	8:26 am	2/9/2024	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Front
240057926	11:53 am	6/21/2024	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		2	0	Front to Front
240080192	3:02 pm	8/26/2024	WESTRIDGE VILLAGE PKWY	HIGHLANDS RANCH PKWY		2	0	Front to Side
240099612	3:49 pm	10/28/2024	HIGHLANDS RANCH PKWY	WESTRIDGE VILLAGE PKWY		0	0	Front to Rear



Appendix F Projected Level of Service Reports

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1198	160	23	566	16	129	8	75	21	35	28
Future Volume (vph)	35	1198	160	23	566	16	129	8	75	21	35	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	150		0	150		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.996			0.865			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3476	0	1770	3525	0	1770	1611	0	1770	1740	0
Flt Permitted	0.357			0.104			0.713			0.698		
Satd. Flow (perm)	665	3476	0	194	3525	0	1328	1611	0	1300	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			4			17			30	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		502			817			552			297	
Travel Time (s)		7.6			12.4			12.5			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	1302	174	25	615	17	140	9	82	23	38	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1476	0	25	632	0	140	91	0	23	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.5	31.5		31.5	31.5		32.0	32.0		32.0	32.0	
Total Split (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	38.5	38.5		38.5	38.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.5	38.5		38.5	38.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.44	0.44		0.44	0.44	
v/c Ratio	0.13	0.99		0.30	0.42		0.24	0.13		0.04	0.09	

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.3	46.3		29.3	18.9		16.9	12.6		14.5	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.3	46.3		29.3	18.9		16.9	12.6		14.5	9.6	
LOS	B	D		C	B		B	B		B	A	
Approach Delay		45.5			19.3			15.2			10.8	
Approach LOS		D			B			B			B	
Queue Length 50th (ft)	13	420		9	127		48	24		7	12	
Queue Length 95th (ft)	34	#589		34	172		88	52		21	36	
Internal Link Dist (ft)		422			737			472			217	
Turn Bay Length (ft)	130			150			150			100		
Base Capacity (vph)	284	1498		82	1510		590	725		577	790	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.99		0.30	0.42		0.24	0.13		0.04	0.09	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 34.5

Intersection LOS: C

Intersection Capacity Utilization 61.6%

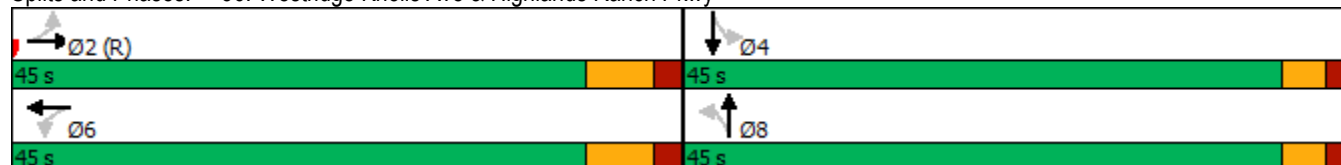
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 36: Westridge Knolls Ave & Highlands Ranch Pkwy



Lanes, Volumes, Timings
67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	813	283	152	344	32	233	25	290	26	34	6
Future Volume (vph)	15	813	283	152	344	32	233	25	290	26	34	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		165	240		0	250		0	150		0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	1863	1583	1770	1822	0
Flt Permitted	0.532			0.104			0.550			0.734		
Satd. Flow (perm)	991	3539	1583	376	3539	1583	1988	1863	1583	1367	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			197			155			412		6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		705			1593			631			652	
Travel Time (s)		16.0			36.2			14.3			14.8	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.70	0.70	0.70	0.45	0.45	0.45
Adj. Flow (vph)	17	934	325	163	370	34	333	36	414	58	76	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	934	325	163	370	34	333	36	414	58	89	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		
Minimum Split (s)	10.0	30.5	30.5	10.0	31.5	31.5	10.0	38.5	38.5	10.0	24.5	
Total Split (s)	15.0	40.0	40.0	25.0	50.0	50.0	40.0	50.0	50.0	15.0	25.0	
Total Split (%)	11.5%	30.8%	30.8%	19.2%	38.5%	38.5%	30.8%	38.5%	38.5%	11.5%	19.2%	
Maximum Green (s)	10.0	33.5	33.5	20.0	43.5	43.5	35.0	43.5	43.5	10.0	18.5	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Flash Dont Walk (s)		19.0	19.0		20.0	20.0		27.0	27.0			
Pedestrian Calls (#/hr)		0	0		0	0		0	0			
Act Effct Green (s)	45.0	33.5	33.5	60.0	43.5	43.5	60.0	43.5	43.5	30.0	18.5	
Actuated g/C Ratio	0.35	0.26	0.26	0.46	0.33	0.33	0.46	0.33	0.33	0.23	0.14	
v/c Ratio	0.04	1.03	0.59	0.25	0.31	0.05	0.25	0.06	0.52	0.17	0.34	

Total AM 10:36 am 02/12/2024 Baseline

Synchro 11 Report
Page 3

Lanes, Volumes, Timings

67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.3	83.6	20.8	20.8	33.1	0.2	21.5	29.8	5.4	24.4	50.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	83.6	20.8	20.8	33.1	0.2	21.5	29.8	5.4	24.4	50.8	
LOS	C	F	C	C	C	A	C	C	A	C	D	
Approach Delay	66.8			27.6			13.4			40.4		
Approach LOS	E			C			B			D		
Queue Length 50th (ft)	8	~440	91	39	121	0	84	21	1	27	64	
Queue Length 95th (ft)	21	#541	178	60	164	0	87	36	1	26	54	
Internal Link Dist (ft)	625			1513			551			572		
Turn Bay Length (ft)	140		165	240			250			150		
Base Capacity (vph)	402	911	554	643	1184	632	1306	623	803	346	264	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.04	1.03	0.59	0.25	0.31	0.05	0.25	0.06	0.52	0.17	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

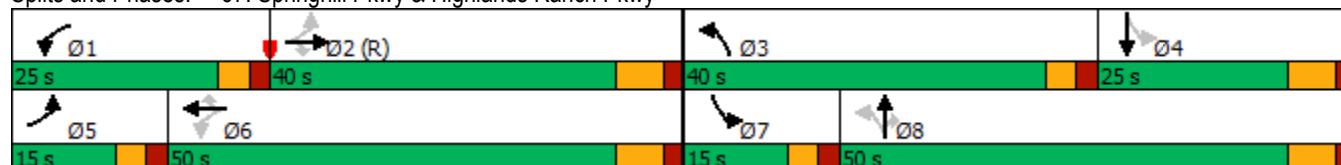
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 67: Springhill Pkwy & Highlands Ranch Pkwy



Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1112	23	60	479	87	45	37	107	109	21	92
Future Volume (vph)	77	1112	23	60	479	87	45	37	107	109	21	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	170		120	170		170	100		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850		0.878	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3539	1583	1770	1863	1583	1770	1635	0
Flt Permitted	0.448			0.104			0.666			0.682		
Satd. Flow (perm)	835	3529	0	194	3539	1583	1241	1863	1583	1270	1635	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				92			146		114	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1593			794			600			737	
Travel Time (s)		36.2			18.0			13.6			16.8	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.32	0.32	0.32	0.81	0.81	0.81
Adj. Flow (vph)	89	1278	26	63	504	92	141	116	334	135	26	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	1304	0	63	504	92	141	116	334	135	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		
Minimum Split (s)	10.0	31.5		10.0	31.5	31.5	34.0	34.0	34.0	33.0	33.0	
Total Split (s)	10.0	45.0		10.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Total Split (%)	11.8%	52.9%		11.8%	52.9%	52.9%	35.3%	35.3%	35.3%	35.3%	35.3%	
Maximum Green (s)	5.0	38.5		5.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5		5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		10.5			10.5	10.5	24.0	24.0	24.0	23.0	23.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effect Green (s)	45.0	38.5		45.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Actuated g/C Ratio	0.53	0.45		0.53	0.45	0.45	0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.18	0.81		0.32	0.31	0.12	0.39	0.21	0.59	0.36	0.25	

Total AM 10:36 am 02/12/2024 Baseline

Synchro 11 Report

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Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.7	25.3		12.3	15.5	3.6	27.8	23.9	18.9	27.2	8.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.7	25.3		12.3	15.5	3.6	27.8	23.9	18.9	27.2	8.1	
LOS	A	C		B	B	A	C	C	B	C	A	
Approach Delay		24.2			13.5			22.0			17.4	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	19	305		13	86	0	60	46	82	57	10	
Queue Length 95th (ft)	37	372		29	122	25	35	29	9	94	41	
Internal Link Dist (ft)		1513			714			520			657	
Turn Bay Length (ft)	135			170		120	170		170	100		
Base Capacity (vph)	497	1600		195	1602	767	365	547	568	373	561	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.81		0.32	0.31	0.12	0.39	0.21	0.59	0.36	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 38.5 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 20.7

Intersection LOS: C

Intersection Capacity Utilization 62.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 70: Foothills Canyon Blvd & Highlands Ranch Pkwy

 Ø1	 Ø2 (R)	 Ø4
10 s	45 s	30 s
 Ø5	 Ø6 (R)	 Ø8
10 s	45 s	30 s

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1134	174	67	1043	40	158	34	58	29	33	37
Future Volume (vph)	65	1134	174	67	1043	40	158	34	58	29	33	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	150		0	150		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.995			0.905			0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3468	0	1770	3522	0	1770	1686	0	1770	1716	0
Flt Permitted	0.112			0.104			0.708			0.692		
Satd. Flow (perm)	209	3468	0	194	3522	0	1319	1686	0	1289	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			5			22			30	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		502			817			552			297	
Travel Time (s)		7.6			12.4			12.5			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1233	189	73	1134	43	172	37	63	32	36	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	1422	0	73	1177	0	172	100	0	32	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	31.5	31.5		31.5	31.5		24.0	24.0		24.0	24.0	
Total Split (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	38.5	38.5		38.5	38.5		39.0	39.0		39.0	39.0	
Yellow Time (s)	4.5	4.5		4.5	4.5		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.5	38.5		38.5	38.5		39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.43	0.43		0.43	0.43	
v/c Ratio	0.80	0.95		0.89	0.78		0.30	0.13		0.06	0.10	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
Page 1

Lanes, Volumes, Timings

36: Westridge Knolls Ave & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	80.9	39.4		104.0	26.5		18.5	12.6		15.3	10.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	80.9	39.4		104.0	26.5		18.5	12.6		15.3	10.5	
LOS	F	D		F	C		B	B		B	B	
Approach Delay		41.4			31.0			16.3			11.9	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)	34	393		37	292		62	26		10	15	
Queue Length 95th (ft)	#118	#553		#125	375		110	56		27	40	
Internal Link Dist (ft)		422			737			472			217	
Turn Bay Length (ft)	130			150			150			100		
Base Capacity (vph)	89	1497		82	1509		571	743		558	760	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.80	0.95		0.89	0.78		0.30	0.13		0.06	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 60

Control Type: Pretimed

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.0

Intersection LOS: C

Intersection Capacity Utilization 81.5%

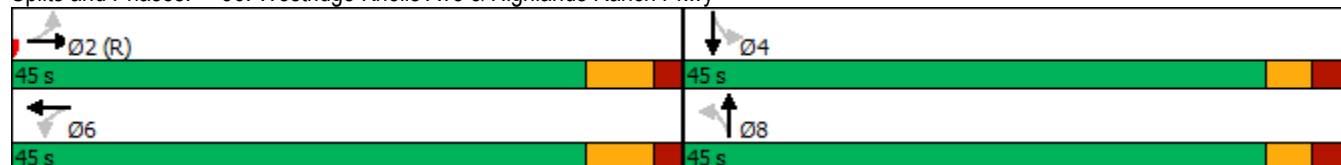
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 36: Westridge Knolls Ave & Highlands Ranch Pkwy



Lanes, Volumes, Timings
67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	599	258	232	667	50	399	53	346	46	41	29
Future Volume (vph)	15	599	258	232	667	50	399	53	346	46	41	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		165	240		0	250		0	150		0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	1863	1583	1770	1747	0
Flt Permitted	0.282			0.191			0.498			0.714		
Satd. Flow (perm)	525	3539	1583	690	3539	1583	1800	1863	1583	1330	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			232			155			413		23	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		705			1593			631			652	
Travel Time (s)		16.0			36.2			14.3			14.8	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.80	0.80	0.80	0.59	0.59	0.59
Adj. Flow (vph)	16	637	274	261	749	56	499	66	433	78	69	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	637	274	261	749	56	499	66	433	78	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		
Minimum Split (s)	10.0	30.5	30.5	10.0	31.5	31.5	10.0	38.5	38.5	10.0	24.5	
Total Split (s)	15.0	40.0	40.0	25.0	50.0	50.0	40.0	50.0	50.0	15.0	25.0	
Total Split (%)	11.5%	30.8%	30.8%	19.2%	38.5%	38.5%	30.8%	38.5%	38.5%	11.5%	19.2%	
Maximum Green (s)	10.0	33.5	33.5	20.0	43.5	43.5	35.0	43.5	43.5	10.0	18.5	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Flash Dont Walk (s)		19.0	19.0		20.0	20.0		27.0	27.0			
Pedestrian Calls (#/hr)		0	0		0	0		0	0			
Act Effct Green (s)	45.0	33.5	33.5	60.0	43.5	43.5	60.0	43.5	43.5	30.0	18.5	
Actuated g/C Ratio	0.35	0.26	0.26	0.46	0.33	0.33	0.46	0.33	0.33	0.23	0.14	
v/c Ratio	0.06	0.70	0.47	0.35	0.63	0.09	0.39	0.11	0.54	0.23	0.44	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
Page 3

Lanes, Volumes, Timings

67: Springhill Pkwy & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.5	48.5	10.9	21.9	39.4	0.3	23.1	30.5	6.4	25.3	46.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.5	48.5	10.9	21.9	39.4	0.3	23.1	30.5	6.4	25.3	46.6	
LOS	C	D	B	C	D	A	C	C	A	C	D	
Approach Delay	36.9			33.1			16.4			38.1		
Approach LOS	D			C			B			D		
Queue Length 50th (ft)	7	256	27	64	279	0	134	38	11	36	74	
Queue Length 95th (ft)	21	325	105	91	343	0	151	65	45	43	80	
Internal Link Dist (ft)	625			1513			551			572		
Turn Bay Length (ft)	140		165	240			250			150		
Base Capacity (vph)	277	911	580	740	1184	632	1270	623	804	340	268	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.70	0.47	0.35	0.63	0.09	0.39	0.11	0.54	0.23	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 13 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 29.3

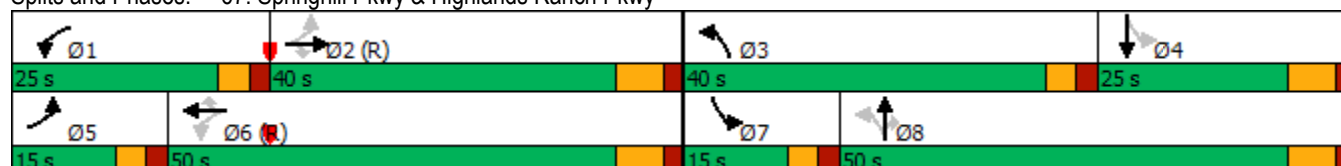
Intersection LOS: C

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 67: Springhill Pkwy & Highlands Ranch Pkwy



Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1009	12	49	956	124	51	73	186	86	7	102
Future Volume (vph)	138	1009	12	49	956	124	51	73	186	86	7	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	170		120	170		170	100		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850		0.860	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	1770	1863	1583	1770	1602	0
Flt Permitted	0.177			0.164			0.669			0.666		
Satd. Flow (perm)	330	3532	0	305	3539	1583	1246	1863	1583	1241	1602	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				111			167		128	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1593			794			600			737	
Travel Time (s)		36.2			18.0			13.6			16.8	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.52	0.52	0.52	0.80	0.80	0.80
Adj. Flow (vph)	145	1062	13	53	1039	135	98	140	358	108	9	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	1075	0	53	1039	135	98	140	358	108	137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8		8	4		
Minimum Split (s)	10.0	31.5		10.0	31.5	31.5	34.0	34.0	34.0	33.0	33.0	
Total Split (s)	10.0	45.0		10.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Total Split (%)	11.8%	52.9%		11.8%	52.9%	52.9%	35.3%	35.3%	35.3%	35.3%	35.3%	
Maximum Green (s)	5.0	38.5		5.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5		5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		10.5			10.5	10.5	24.0	24.0	24.0	23.0	23.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	45.0	38.5		45.0	38.5	38.5	25.0	25.0	25.0	25.0	25.0	
Actuated g/C Ratio	0.53	0.45		0.53	0.45	0.45	0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.56	0.67		0.21	0.65	0.17	0.27	0.26	0.61	0.30	0.24	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report

Page 5

Lanes, Volumes, Timings

70: Foothills Canyon Blvd & Highlands Ranch Pkwy

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.2	20.8		9.7	20.4	4.7	25.5	24.5	18.6	26.0	6.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.2	20.8		9.7	20.4	4.7	25.5	24.5	18.6	26.0	6.4	
LOS	B	C		A	C	A	C	C	B	C	A	
Approach Delay		20.4			18.2			21.1			15.0	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	32	228		11	217	7	40	57	84	44	3	
Queue Length 95th (ft)	58	297		26	284	37	43	56	51	76	32	
Internal Link Dist (ft)		1513			714			520			657	
Turn Bay Length (ft)	135			170		120	170		170	100		
Base Capacity (vph)	259	1600		247	1602	777	366	547	583	365	561	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.67		0.21	0.65	0.17	0.27	0.26	0.61	0.30	0.24	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 13 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.3

Intersection LOS: B

Intersection Capacity Utilization 59.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 70: Foothills Canyon Blvd & Highlands Ranch Pkwy

 Ø1	 Ø2 (R)	 Ø4
10 s	45 s	30 s
 Ø5	 Ø6 (R)	 Ø8
10 s	45 s	30 s

HCM 2010 TWSC
40: Bus Access & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	22	24	107	0	0
Future Vol, veh/h	127	22	24	107	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	24	26	116	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	318	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	168	-
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	-	-	1417	-	675	896
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	862	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1417	-	662	896
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	845	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1417	-	
HCM Lane V/C Ratio	-	-	-	0.018	-	
HCM Control Delay (s)	0	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	-	-	-	0.1	-	

HCM 2010 TWSC
43: Bus Exit & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	128	0	0	128	17	25
Future Vol, veh/h	128	0	0	128	17	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	139	0	0	139	18	27
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	278	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	139	-
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	-	0	0	-	712	909
Stage 1	-	0	0	-	888	-
Stage 2	-	0	0	-	888	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	712	909
Mov Cap-2 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	888	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		9.7	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	817	-	-			
HCM Lane V/C Ratio	0.056	-	-			
HCM Control Delay (s)	9.7	-	-			
HCM Lane LOS	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-			

HCM 2010 TWSC
45: Timbervale Trail & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	147	72	49	131	92
Future Vol, veh/h	71	147	72	49	131	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	160	78	53	142	100
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	237	0	366	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	209	-
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	-	-	1330	-	634	889
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1330	-	596	889
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	776	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.7		13	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	690	-	-	1330	-	
HCM Lane V/C Ratio	0.351	-	-	0.059	-	
HCM Control Delay (s)	13	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-	

HCM 2010 TWSC
46: Timbervale Trail & Eldorado N Parking Access

12/19/2024

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	143	80	0	0	152
Future Vol, veh/h	20	143	80	0	0	152
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	155	87	0	0	165
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	252	87	0	-	-	-
Stage 1	87	-	-	-	-	-
Stage 2	165	-	-	-	-	-
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	737	971	-	0	0	-
Stage 1	936	-	-	0	0	-
Stage 2	864	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	737	971	-	-	-	-
Mov Cap-2 Maneuver	737	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.5	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	737	971	-		
HCM Lane V/C Ratio	-	0.029	0.16	-		
HCM Control Delay (s)	-	10	9.4	-		
HCM Lane LOS	-	B	A	-		
HCM 95th %tile Q(veh)	-	0.1	0.6	-		

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕		↕		↕		↕		
Traffic Vol, veh/h	8	0	1	7	0	19	2	51	38	185	44	5
Future Vol, veh/h	8	0	1	7	0	19	2	51	38	185	44	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	1	8	0	21	2	55	41	201	48	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	543	553	51	533	-	76	53	0	0	96	0	0
Stage 1	453	453	-	80	-	-	-	-	-	-	-	-
Stage 2	90	100	-	453	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	451	441	1017	458	0	985	1553	-	-	1498	-	-
Stage 1	586	570	-	929	0	-	-	-	-	-	-	-
Stage 2	917	812	-	586	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	395	380	1017	409	-	985	1553	-	-	1498	-	-
Mov Cap-2 Maneuver	395	380	-	409	-	-	-	-	-	-	-	-
Stage 1	585	491	-	928	-	-	-	-	-	-	-	-
Stage 2	897	811	-	505	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.7		10.1		0.2		6.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1553	-	-	424 409 985 1498	-	-	-					
HCM Lane V/C Ratio	0.001	-	-	0.023 0.019 0.021 0.134	-	-	-					
HCM Control Delay (s)	7.3	0	-	13.7 14 8.7 7.8	0	-	-					
HCM Lane LOS	A	A	-	B B A A A	-	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 0.1 0.1 0.5	-	-	-					

HCM 2010 TWSC
40: Bus Access & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				 		
Traffic Vol, veh/h	125	6	11	98	0	0
Future Vol, veh/h	125	6	11	98	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	7	12	107	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	143	0	271	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	131	-
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	-	-	1440	-	718	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1440	-	712	908
Mov Cap-2 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	887	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1440	-	
HCM Lane V/C Ratio	-	-	-	0.008	-	
HCM Control Delay (s)	0	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 2010 TWSC
43: Bus Exit & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑↓	
Traffic Vol, veh/h	125	15	0	115	9	8
Future Vol, veh/h	125	15	0	115	9	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	16	0	125	10	9
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	269	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	125	-
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	-	-	0	-	720	903
Stage 1	-	-	0	-	883	-
Stage 2	-	-	0	-	901	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	720	903
Mov Cap-2 Maneuver	-	-	-	-	720	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	901	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		9.6	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	796	-	-	-		
HCM Lane V/C Ratio	0.023	-	-	-		
HCM Control Delay (s)	9.6	-	-	-		
HCM Lane LOS	A	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

HCM 2010 TWSC
45: Timbervale Trail & Westridge Knolls Ave

12/19/2024

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	59	152	60	56	136	70
Future Vol, veh/h	59	152	60	56	136	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	165	65	61	148	76
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	229	0	338	147
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	191	-
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	-	-	1339	-	658	900
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	841	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1339	-	625	900
Mov Cap-2 Maneuver	-	-	-	-	625	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	799	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4		12.6	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	697	-	-	1339	-	
HCM Lane V/C Ratio	0.321	-	-	0.049	-	
HCM Control Delay (s)	12.6	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-	

HCM 2010 TWSC
46: Timbervale Trail & Eldorado N Parking Access

12/19/2024

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	126	75	0	0	138
Future Vol, veh/h	18	126	75	0	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	137	82	0	0	150
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	232	82	0	-	-	-
Stage 1	82	-	-	-	-	-
Stage 2	150	-	-	-	-	-
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	756	978	-	0	0	-
Stage 1	941	-	-	0	0	-
Stage 2	878	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	756	978	-	-	-	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.4	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBT			
Capacity (veh/h)	-	756	978	-	-	-
HCM Lane V/C Ratio	-	0.026	0.14	-	-	-
HCM Control Delay (s)	-	9.9	9.3	-	-	-
HCM Lane LOS	-	A	A	-	-	-
HCM 95th %tile Q(veh)	-	0.1	0.5	-	-	-

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕		↕		↕		↕		
Traffic Vol, veh/h	3	2	1	7	0	20	2	49	23	139	70	16
Future Vol, veh/h	3	2	1	7	0	20	2	49	23	139	70	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	2	1	8	0	22	2	53	25	151	76	17
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	468	469	85	458	-	66	93	0	0	78	0	0
Stage 1	387	387	-	70	-	-	-	-	-	-	-	-
Stage 2	81	82	-	388	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	505	492	974	513	0	998	1501	-	-	1520	-	-
Stage 1	637	610	-	940	0	-	-	-	-	-	-	-
Stage 2	927	827	-	636	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	454	440	974	469	-	998	1501	-	-	1520	-	-
Mov Cap-2 Maneuver	454	440	-	469	-	-	-	-	-	-	-	-
Stage 1	636	546	-	939	-	-	-	-	-	-	-	-
Stage 2	906	826	-	566	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.4		9.8		0.2		4.7					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1501	-	-	493 469 998 1520	-	-	-					
HCM Lane V/C Ratio	0.001	-	-	0.013 0.016 0.022 0.099	-	-	-					
HCM Control Delay (s)	7.4	0	-	12.4 12.8 8.7 7.6	0	-	-					
HCM Lane LOS	A	A	-	B B A A A	-	-	-					
HCM 95th %tile Q(veh)	0	-	-	0 0 0.1 0.3	-	-	-					



Appendix G School Questionnaire

Review: DCSD Traffic and Pedestrian Safety Questionnaire

Respondent

9

Anonymous

13:53

Time to complete

1. What school do you represent?

Score / 0 pts

Eldorado

2. Please provide your name.

Score / 0 pts

Julie Crawford

3. Please provide your email.

Score / 0 pts

jccrawford@dcsdk12.org

4. Please provide feedback on crosswalks. Are crosswalks provided in adequate locations? Do families in general abide by crosswalk locations? Are additional crosswalk locations desired?

Score / 0 pts

I would love to have one more crosswalk but all in all our system runs really well.

5. Please provide feedback on pickup/drop-off. Where are your schools pickup and drop-off locations? Is there adequate length or do vehicle queues extend on to public roadways?

Score / 0 pts

We have two drop off locations. The front (called Kiss and Go) and the back (called the Quick and Go). I believe it is adequate length.

6. If available, can you provide your school's written pickup and drop-off procedures? Please send to nick.westphal@dibblecorp.com.

Score / 0 pts

Here is a google doc: https://docs.google.com/document/d/1bLLVnabfutQW2-y_Wm15D7BJJJeDhrxWI-TykAo-wkM/edit?tab=t.0

7. Please provide feedback on parking lot safety. Is there an adequate number of parking spaces? Are there any sight visibility challenges when exiting a parking lot (e.g. parked vehicles blocking views)? If so, where?

Score / 0 pts

We are all good

8. Please provide feedback on roadway safety. Do vehicles in general follow traffic laws such as speed limits, stop signs, no parking zones, etc.?

Score / 0 pts

Yes for the most part

9. Does your school have a designated bus drop-off area? Are there any conflicts between buses and other vehicles?

Score / 0 pts

Yes and yes sometimes since we have the quick and go in the back bus loop

10. Please provide any general information related to vehicle and pedestrian safety at or around your school that you would like to share.

Score / 0 pts

No answer provided.