

**Traffic Impact Study**

**For**

**Royal Pine Apartments**

**(At Union/Powers)**

Colorado Springs, CO

11/15/2023

PREPARED FOR:

DBG Properties, LLC

2164 SW Park Place

Portland, OR 97206

Attn: Eric Grodahl, Partner

PREPARED BY:

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Contact:

Derek Schuler, P.E., PTOE

*Drexel Barrell Project Number:21754-02*

## 1.0 Introduction

This memorandum serves to analyze the traffic impacts of the proposed Royal Pine Apartments Development (site) on the adjacent roadway system. This study was conducted to determine the future traffic impacts on the surrounding transportation system and if the proposed development will cause any significant operational or safety problems.

A traffic impact study (TIS) is required per the City of Colorado Springs (City), Engineering Criteria Manual, Appendix A (TIS Guidelines). The following existing intersections will be analyzed in this study:

1. Union Blvd/Royal Pine Dr. (signalized)
2. Royal Pine Dr/Site Access Drive (right in/out only)
3. Royal Pine Dr/Purple Plum Way (roundabout)
4. Royal Pine Dr/Pine Manor Dr (T-intersection)

## 2.0 Area Conditions

The site is generally located in the northwest corner of the interchange of Powers Blvd (CO-21, freeway) and Union Blvd (principal arterial). Access to the site will be on Royal Pine Drive, a three-lane collector street with center two-way left turn lane (TWLTL), from existing intersections 2 and 3 above. At the signalized intersection with Union Blvd, this street transitions to more like a divided arterial facility with raised median. These street classifications are per the City's Major Thoroughfare Plan. There are existing private local streets on the site which will be expanded/modified.

The existing land use of the site is vacant but has adjacent small commercial uses. These are the Pine Creek Veterinary Hospital and Alligator Allergy & Asthma. The adjacent land to the north and west are existing single family residential neighborhoods. Commercial and institutional uses are to the south and east including big box retail stores and a hospital.

This current submittal of the TIS contains new traffic data provided by the City, which was collected following the start of the current K-12 school year. The average daily traffic (ADT) data for Royal Pine Dr was collected for a full week from August 22-28. The weekday ADT was determined from an average of the Tuesday-Thursday counts (it was confirmed that Friday – Monday ADT was lower). The intersection turning movement data was collected on a Tuesday, Wednesday, and Thursday (September 5-7) for intersection #'s 1, 3, and 4 shown above. The city also provided traffic data that was previously collected for the adjacent residential streets and analyzed with this study. All traffic data reports are in the Appendix.

Existing traffic conditions are shown on traffic figures summarizing all traffic turning movements (see Appendix). Level of Service (LOS) Analysis for existing conditions are presented in Table 2a later in the report.

The existing traffic conditions are summarized by the following. The weekday ADT on Royal Pine Drive is 4,378 vehicles per day (vpd). The signalized intersection of Union/Royal Pine currently operates at LOS C. Union Blvd contains three through lanes in each direction plus separate right and left turn lanes. There is additional pavement to create dual left turn lanes in both directions if/when needed in the future. The single lane roundabout at Royal Pine/Purple Plum Way currently operates at LOS A. There are existing sidewalks on the adjacent streets that will be connected to proposed sidewalks within the site.

### 3.0 Proposed Development

The roughly 8 acre residential in-fill site is shown on conceptual site plan with vicinity map on Figure 1 in the Appendix. Currently, there are three existing uses within the overall development:

- Urgent Care Center/Medical Office Building – 14,800 sf
- Medical/Dental Office Building – 4,600 sf
- Animal Hospital/Veterinary Clinic – 6,000 sf

In addition to these existing land uses, the following land uses are proposed for the remaining undeveloped property:

- Apartments (Multi-family housing (low rise)
- Leasing Office/Clubhouse (resident use only)

Sight distance at the existing access points appears adequate and will be verified with the final site plans. Royal Pine Dr is posted at 30-mph.

### 4.0 Projected Traffic

Trip Generation:

Trip generation for the existing and proposed land uses was determined using the Trip Generation Manual, 11<sup>th</sup> Edition (2021) published by the Institute of Transportation Engineers. See Table 1 below for the calculation of the revised site trips. Based on full buildout of the overall site with the land uses described above, the development is estimated to generate 2,257 total weekday trips. Table 1 is also shown in the Appendix at larger size.

The previous Condition of Record on the approved Concept Plan for the overall development established a trip generation budget of 8,441 weekday trips. As noted above, the revised land uses generate significantly fewer trips (2,257 trips) than the maximum allowed (8,441 trips). Per Table 1, the proposed site is anticipated to generate 149 trips (57 in/92 out) in the morning

peak hour and 184 trips (101 in/83 out) in the evening peak hour. The previously submitted Trip Generation Comparison letter by Drexel Barrell & Co (June 2023) is included in the appendix.

Table 1 - Trip Generation Estimate for Royal Pine Apartments, Colorado Springs, CO																
ITE Code / Land Use		Size		Trip Generation Rates <sup>1</sup>			Trips Generated									
							Average Weekday	AM Peak-Hour (7 - 9)			PM Peak-Hour (4 - 6)					
								Trips	% Trips	Trips	% Trips	Trips	% Trips	Trips	% Trips	Trips
Existing:																
#650 Free-Standing Emergency Room	14.8	KSF	24.94	1.12	1.52	369	50%	8.3	50%	8.3	17	46%	10.3	54%	12.1	22
#720 Medical/Dental Office Bldg	4.6	KSF	36.00	3.10	3.93	166	79%	11.3	21%	3.0	14	30%	5.4	70%	12.7	18
#640 Animal Hospital/ Vet Clinic	6.0	KSF	21.50	3.64	3.53	129	67%	14.6	33%	7.2	22	40%	8.5	60%	12.7	21
Proposed:																
#220 Multi-Family Housing (Low-Rise) <sup>2</sup>	232	DU	6.74	0.40	0.51	1,564	24%	22.3	76%	70.5	93	63%	74.5	37%	43.8	118
#N/A Leasing/Clubhouse <sup>3</sup>	1	LS	30	4	4	30	24%	1.0	76%	3.0	4	63%	2.5	37%	1.5	4
Total Trips						2,257		57		92	149		101		83	184

<sup>1</sup>Source: "Trip Generation" Institute of Transportation Engineers, 11th Edition, 2021; KSF = 1000 SF of gross floor area.

<sup>2</sup>This code accounts for apartments of various sizes with average of 2.72 residents per dwelling unit (DU). This is considered conservative for this site's mix of one, two, and three bedroom apartments.

<sup>3</sup>This is an estimated value based on a staff of 2 employees seeing potential residents. Clubhouse is restricted to site residents only.

### Trip Distribution:

The projected distribution of site traffic is 80% to/from Union Blvd. More specifically regarding Union Blvd, 45% will be to/from the northeast (and mostly access Powers Blvd), 25% to/from the southwest, and 10% continuing across Royal Pine Drive with access to large commercial developments. The remaining distribution to/from the internal neighborhood as shown in Figure 3.

The site build out opening year is expected to be 2025 and a future horizon of 2045 were analyzed. This current submittal uses traffic counts from the current K-12 school year. Therefore, the previously used volume adjustment factors are no longer applied. Traffic growth factors for the site build out and 2045 traffic models are included in section 5.0 of this report. An associated Synchro V11 Traffic Software Model (synchro) was created for the years 2025 and 2045 with the trip generation/distribution from the site added to these models. The resulting intersection LOS values are in a separate column in Table 4. "AM & PM" refer to the morning and afternoon peak hour periods. Traffic Figures and synchro reports for this model are included in the Appendix.

### 5.0 Traffic Analysis

The current background traffic was discussed in section 2.0. The site build out is expected by 2025. Therefore the opening year background traffic is not much different than existing conditions. Please note that trips from the existing overall site uses are accounted for with the traffic counts recently collected and shown in Figure 2 in the Appendix.

The 2025 traffic conditions with site development have been analyzed in detail. 80% of site outbound trips exit the site via the existing roundabout and then are added to the southeast approach to the signalized intersection with Union Blvd. This six lane principal arterial street currently contains relatively low traffic volume, and can adequately handle the additional traffic. The inbound trips will follow the reverse pattern except most will utilize the right in/out access prior to the roundabout. The small amount of remaining trips are to/from the existing neighborhood along Royal Pine Drive. See Figures 3 and 4 in the Appendix.

The existing access intersections will all have acceptable LOS in all columns of Table 2a. All movements are LOS C or better. The 2025 total traffic conditions include only minor increases in delay and no changes in the LOS rating compared with existing conditions. For example, the signalized intersection's SE movements (outbound) had delay increases in 2025 and are shown in bold in Table 2a. The signal was modeled using the existing timings that were provided by the city. There is a 94 second cycle length with a protected/permissive left turn phase for the NE left and SE left movements from Union Blvd onto Royal Pine Dr. The right in/out entrance was not included in the table as all movements are LOS A with minimal delay. The 2045 total traffic conditions are also projected to operate at LOS C or better for all the intersection movements. An annual growth factor of 2% was applied to the background traffic which caused most of the approaches to have a slight increase in average delay per vehicle as shown in the table below. Background traffic LOS is shown in the expanded Table 2b in the Appendix.

A Synchro model was also analyzed for the year 2025 using the site generated traffic from the previous study which had a significantly greater number of trips. Overall, the intersections all operated at a very similar LOS to the current proposed site but with slightly greater delays per vehicles for all the approaches. The associated synchro model reports are in the Appendix.

Emergency vehicular site egress to the arterial roadway system is shown in Figure 8 in the Appendix. The primary egress route is only 600 feet long via Royal Pine Drive to Union Blvd. Two secondary routes exist to Briargate Pkwy and Chapel Hills Drive. The route to Briargate Pkwy is roughly 1 mile long using Pine Manor Drive. The route to Chapel Hills Drive is roughly 1.5 miles long using Royal Pine Drive in northwest direction. Additional site access points from N Union Blvd and/or N Powers Blvd have been suggested but are not feasible. An access from N Union Blvd would not meet minimum spacing requirements from the nearby signalized intersections. An access from N Powers Blvd would require a break in the highway limited access line and there are also issues with existing steep grades and a retaining wall.

Table 2a Level of Service Analysis / Average Delay in Seconds								
Intersection	Approach	Control	2023		2025		2045	
			Existing		Total Traffic		Total Traffic	
			AM	PM	AM	PM	AM	PM
Purple Plum Way / Royal Pine Dr	Intersection	Roundabout	<u>A / 3.5</u>	<u>A / 3.8</u>	<u>A / 3.7</u>	<u>A / 4.1</u>	<u>A / 4.3</u>	<u>A / 5.1</u>
	EB		A / 3.7	A / 3.8	A / 4.0	A / 4.1	A / 4.8	A / 5.2
	SB		A / 2.9	A / 3.4	A / 3.5	A / 3.9	A / 3.8	A / 5.1
	NW		A / 3.4	A / 4.0	A / 3.5	A / 4.2	A / 3.9	A / 5.1
	NE		A / 3.4	A / 3.2	A / 3.7	A / 3.4	A / 4.2	A / 4.2
Royal Pine Dr / N Union Blvd	Intersection	Signalized	<u>B / 16.0</u>	<u>B / 16.2</u>	<u>B / 15.7</u>	<u>B / 16.8</u>	<u>B / 17.4</u>	<u>C / 20.6</u>
	SEL		B / 18.4	B / 17.3	B / 18.6	B / 17.7	C / 23.0	C / 21.9
	SET		C / 21.0	B / 18.6	B / 18.2	B / 18.8	C / 22.7	C / 22.9
	SER		C / 24.1	B / 19.5	B / 20.0	B / 19.9	C / 26.3	C / 24.7
	NWL		B / 16.5	B / 17.8	B / 19.9	B / 18.3	C / 24.7	C / 22.3
	NWT		B / 19.7	B / 19.9	C / 21.2	C / 20.7	C / 27.1	C / 25.8
	NWR		C / 20.6	C / 23.9	C / 22.6	C / 24.6	C / 31.0	C / 32.2
	NEL		B / 12.4	B / 12.1	B / 12.0	B / 12.9	B / 12.9	B / 15.3
	NET		B / 14.3	B / 16.0	B / 13.9	B / 16.5	B / 14.0	B / 19.8
	NER		B / 13.7	B / 14.1	B / 13.2	B / 14.5	B / 13.1	B / 16.3
	SWL		B / 11.9	B / 12.4	B / 11.5	B / 13.1	B / 11.2	B / 16.2
	SWT		B / 15.8	B / 15.3	B / 15.6	B / 16.2	B / 16.7	B / 19.8
	SWR		B / 14.0	B / 14.6	B / 13.9	B / 15.7	B / 14.0	B / 19.2
Pine Manor Dr / Royal Pine Dr	Intersection	Stop	<u>A / 2.8</u>	<u>A / 3.1</u>	<u>A / 3.7</u>	<u>A / 4.5</u>	<u>A / 4.2</u>	<u>A / 5.4</u>
	EB		A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0
	WB	Stop	A / 1.3	A / 2.6	A / 3.7	A / 3.7	A / 3.9	A / 3.9
	NB		A / 9.3	A / 9.7	B / 10.2	B / 10.8	B / 12.0	B / 14.2

\*Please see table 2b for background traffic

## 6.0 Roundabout & Queuing Analysis

The existing roundabout at the intersection of Royal Pine Dr and Purple Plum Way was analyzed for traffic operations and safety. As shown in the previous section, the single lane roundabout provides LOS A for all the approaches. A queuing analysis was created using Synchro Traffic Simulation and the results are shown below in Table 3. The calculated queue lengths are adequately provided for with the existing spacing between intersections.

The roundabout geometry was examined by reviewing previous construction drawings and aerial images. The layout of the approaches and circulating roadway appear to meet all the design standards according to the Colorado Springs Engineering Criteria Manual. The truck apron was designed to contrast from the roadway and central island with patterned concrete.

Table 3 also provides a check of queuing conditions for the Union/Royal Pine signalized intersection. All queues are contained within the existing turn bays.

Table 3 Turn Lane Queue Analysis Results				
Intersection Turn Lane	Existing Calculated Queue	Existing Turn Lane Length	2025 Total Traffic Calculated Queue	2045 Total Traffic Calculated Queue
Right-In / Right-Out Access & Royal Pine Drive Southbound	5'	*	27'	27'
Purple Plum Way & Royal Pine Drive Eastbound	33'	*	25'	49'
Westbound	7'	*	21'	36'
Northbound	21'	*	20'	33'
Southbound	14'	*	27'	49'
Pine Manor Drive & Royal Pine Drive Westbound (L)	23'	*	54'	78'
Northbound (LR)	56'	*	72'	83'
N Union Boulevard & Royal Pine Drive Westbound(L)	82'	190'	68'	140'
Westbound (R)	48'	125'	65'	71'
Eastbound (L)	53'	170'	48'	55'
Eastbound (R)	39'	110'	42'	87'
Southbound (L)	73'	275'	71'	180'
Southbound (R)	30'	300'	24'	31'
Northbound (L)	61'	275'	74'	103'
Northbound (R)	47'	250'	57'	58'

\* Single lane approach for all movements

### 7.0 Bike and Pedestrian Safety

There are existing bike lanes along both sides of Royal Pine Drive starting from N Union Blvd and extending beyond the study area. The approaches for the single lane roundabout on Royal Pine Dr have bike ramps which allow bicyclists the option to transition onto the sidewalk. Purple Plum Way is a low volume/low speed local road where bicyclists can share the roadway with vehicles.

There are sidewalks on both sides of the Royal Pine Drive within the study area. Pedestrians can safely cross Royal Pine Drive using the crosswalks at the roundabout or the signalized intersection of N Union Blvd. The crosswalks at the single lane roundabout all meet the minimum 25' offset requirement from the outer edge of the circulatory lane and have the proper signing and striping. The sidewalk leading into the proposed site has not been constructed but is included in the proposed site layout. The lighting

at the existing roundabout could be improved to provide greater safety for pedestrians as there is currently only one streetlight at the roundabout.

### 8.0 Existing Residential Street Analysis

This site is adjacent to existing residential streets and this section will focus on traffic impacts and recommended mitigation. City provided traffic data was reviewed and confirms that existing conditions may warrant consideration of traffic calming measures to address vehicular speeding and cut-thru volume. The city has a Neighborhood Traffic Management Program (NTMP) (see website: [Neighborhood Traffic Calming | City of Colorado Springs](#)) and their process should be followed for further study and potential installation of improvements. As presented previously in this report, the portion of site traffic projected to use these residential streets (not going straight towards Union Blvd) is minor but could exacerbate existing concerns with traffic safety. The addition of traffic calming measures to these streets could be used to control speeding and discourage use as a cut-thru route.

Speed counts were conducted at following three (3) locations:

1. Pine Manor Drive west of Sand Flower Drive
2. Pine Manor Drive east of Sycamore Glen Trail
3. Royal Pine Drive south of Pinedale Drive

The speed limit on Pine Manor Drive is posted at 25 mph. The average speeds recorded were 35 mph west of Sand Flower Drive and 36 mph east of Sycamore Glen Trail. The top 15% of speeds all exceeded 41 mph with higher speeds for the westbound vehicles. The excessive speeding relative to the posted speed limit is mainly attributed to the wide roadway width of 36' without any on street parking. The speed limit on Royal Pine Drive is posted at 30 mph. The average speeds recorded were 37 mph with the top 15% of speeds exceeding 40 mph. These results were very similar to those on Pine Manor Drive but with less of a difference from the posted speed limit. There was one speed related accident reported over the last 3 years on this roadway section. The full speed count results are included in the appendix.

There have already been speed bumps installed on Pine Manor Drive west of Sycamore Glen Trail. Speed bumps/humps are no longer used per City Policy so other options should be explored. Radar speed check signs could be installed which are highly effective at reducing average roadway speeds. Another option to reduce speeds could be changing the intersection of Pine Manor Dr and Sycamore Glen Trail from two-way stop control to an all-way stop.

### 9.0 Conclusions and Recommendations

This report shows that the proposed site traffic from this infill development can be accommodated by the surrounding street network. The overall site will contain significantly fewer trips than approved with the previously approved concept plan. The site utilizes two existing accesses along Royal Pine Drive (collector street). Ultimate access to the arterial



system is from the intersection with Union Blvd, which is already signalized. Union Blvd is currently under capacity for a six-lane arterial and can accommodate the additional site traffic. The single lane roundabout is appropriate for a collector street intersection with the site access and Purple Plum Way (local neighborhood street). The site is adjacent to existing residential streets that will serve a minor percentage of site generated traffic. The installation of traffic calming measures should be considered through the City's NTMP program.



**Traffic Engineer's Statement:**

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the city for traffic reports.

A handwritten signature in blue ink, appearing to read "Derek Schuler", is placed over a grey rectangular background.

\_\_\_\_ 11/15/23 (Fifth Submittal) \_\_\_\_

*Derek Schuler, Colorado P.E. #40125  
For and on behalf of Drexel, Barrell & Co.*

## APPENDIX

1. Trip Generation Table & LOS Table 2b
2. Traffic Figures
3. Traffic Counts
4. Speed Counts
5. Synchro Reports
6. Trip Generation Comparison letter

Table 1 - Trip Generation Estimate for Royal Pine Apartments, Colorado Springs, CO																
ITE Code / Land Use		Trip Generation Rates <sup>1</sup>			Trips Generated											
					Average Weekday Trips	AM Peak-Hour (7 - 9)				PM Peak-Hour (4 - 6)				Total		
						Inbound		Outbound		Inbound		Outbound				
Size	Avg. Weekday	AMPEAK	PMPEAK	% Trips	Trips	% Trips	Trips	% Trips	Trips	% Trips	Trips	% Trips	Trips	Total		
Existing:																
#650 Free-Standing Emergency Room	14.8 KSF	24.94	1.12	1.52	369	50%	8.3	50%	8.3	17	46%	10.3	54%	12.1	22	
#720 Medical/Dental Office Bldg	4.6 KSF	36.00	3.10	3.93	166	79%	11.3	21%	3.0	14	30%	5.4	70%	12.7	18	
#640 Animal Hospital/Vet Clinic	6.0 KSF	21.50	3.64	3.53	129	67%	14.6	33%	7.2	22	40%	8.5	60%	12.7	21	
Proposed:																
#220 Multi-Family Housing(Low-Rise) <sup>2</sup>	232 DU	6.74	0.40	0.51	1,564	24%	22.3	76%	70.5	93	63%	74.5	37%	43.8	118	
#N/A Leasing/Clubhouse <sup>3</sup>	1 LS	30	4	4	30	24%	1.0	76%	3.0	4	63%	2.5	37%	1.5	4	
<b>Total Trips</b>					<b>2,257</b>		<b>57</b>		<b>92</b>	<b>149</b>		<b>101</b>		<b>83</b>	<b>184</b>	

<sup>1</sup>Source: "Trip Generation" Institute of Transportation Engineers, 11th Edition, 2021; KSF = 1000 SF of gross floor area.

<sup>2</sup>This code accounts for apartments of various sizes with average of 2.72 residents per dwelling unit (DU). This is considered conservative for this site's mix of one, two, and three bedroom apartments.

<sup>3</sup>This is an estimated value based on a staff of 2 employees seeing potential residents. Clubhouse is restricted to site residents only.

**Table 2b**  
**Level of Service Analysis / Average Delay in Seconds**

Intersection	Approach	Control	2023		2025		2025		2045		2045	
			Existing		Background Traffic		Total Traffic		Background Traffic		Total Traffic	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
<b>Purple Plum Way / Royal Pine Dr</b>	Intersection	Roundabout	<u>A / 3.5</u>	<u>A / 3.8</u>	<u>A / 3.6</u>	<u>A / 3.9</u>	<u>A / 3.7</u>	<u>A / 4.1</u>	<u>A / 4.1</u>	<u>A / 4.8</u>	<u>A / 4.3</u>	<u>A / 5.1</u>
	EB		A / 3.7	A / 3.8	A / 3.7	A / 3.8	A / 4.0	A / 4.1	A / 4.4	A / 4.9	A / 4.8	A / 5.2
	SB		A / 2.9	A / 3.4	A / 2.9	A / 3.4	A / 3.5	A / 3.9	A / 3.2	A / 4.7	A / 3.8	A / 5.1
	NW		A / 3.4	A / 4.0	A / 3.4	A / 4.1	A / 3.5	A / 4.2	A / 3.9	A / 4.9	A / 3.9	A / 5.1
	NE		A / 3.4	A / 3.2	A / 3.5	A / 3.2	A / 3.7	A / 3.4	A / 4.0	A / 4.0	A / 4.2	A / 4.2
<b>Royal Pine Dr / N Union Blvd</b>	Intersection	Signalized	<u>B / 16.0</u>	<u>B / 16.2</u>	<u>B / 15.2</u>	<u>B / 16.4</u>	<u>B / 15.7</u>	<u>B / 16.8</u>	<u>B / 16.8</u>	<u>C / 20.0</u>	<u>B / 17.4</u>	<u>C / 20.6</u>
	SEL		B / 18.4	B / 17.3	B / 18.1	B / 17.5	B / 18.6	B / 17.7	C / 22.8	C / 21.4	C / 23.0	C / 21.9
	SET		C / 21.0	B / 18.6	B / 18.1	B / 18.9	B / 18.2	B / 18.8	C / 22.6	C / 22.8	C / 22.7	C / 22.9
	SER		C / 24.1	B / 19.5	B / 19.6	B / 19.9	B / 20.0	B / 19.9	C / 25.7	C / 24.4	C / 26.3	C / 24.7
	NWL		B / 16.5	B / 17.8	B / 19.4	B / 18.1	B / 19.9	B / 18.3	C / 24.1	C / 22.1	C / 24.7	C / 22.3
	NWT		B / 19.7	B / 19.9	C / 20.5	C / 20.2	C / 21.2	C / 20.7	C / 26.4	C / 25.3	C / 27.1	C / 25.8
	NWR		C / 20.6	C / 23.9	C / 22.0	C / 24.4	C / 22.6	C / 24.6	C / 30.3	C / 32.0	C / 31.0	C / 32.2
	NEL		B / 12.4	B / 12.1	B / 11.7	B / 12.2	B / 12.0	B / 12.9	B / 12.3	B / 14.5	B / 12.9	B / 15.3
	NET		B / 14.3	B / 16.0	B / 13.6	B / 16.2	B / 13.9	B / 16.5	B / 13.7	B / 19.6	B / 14.0	B / 19.8
	NER		B / 13.7	B / 14.1	B / 13.0	B / 14.2	B / 13.2	B / 14.5	B / 12.7	B / 16.1	B / 13.1	B / 16.3
	SWL		B / 11.9	B / 12.4	B / 11.2	B / 12.5	B / 11.5	B / 13.1	B / 10.8	B / 15.6	B / 11.2	B / 16.2
	SWT		B / 15.8	B / 15.3	B / 15.1	B / 15.4	B / 15.6	B / 16.2	B / 16.2	B / 18.7	B / 16.7	B / 19.8
	SWR		B / 14.0	B / 14.6	B / 13.3	B / 14.7	B / 13.9	B / 15.7	B / 13.4	B / 17.7	B / 14.0	B / 19.2
<b>Pine Manor Dr / Royal Pine Dr</b>	Intersection	Stop	<u>A / 2.8</u>	<u>A / 3.1</u>	<u>A / 3.6</u>	<u>A / 4.5</u>	<u>A / 3.7</u>	<u>A / 4.5</u>	<u>A / 4.1</u>	<u>A / 5.3</u>	<u>A / 4.2</u>	<u>A / 5.4</u>
	EB		A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0
	WB		A / 1.3	A / 2.6	A / 3.6	A / 3.7	A / 3.7	A / 3.7	A / 3.8	A / 3.9	A / 3.9	A / 3.9
	NB	Stop	A / 9.3	A / 9.7	B / 10.2	B / 1.	B / 10.2	B / 10.8	B / 11.9	B / 13.9	B / 12.0	B / 14.2

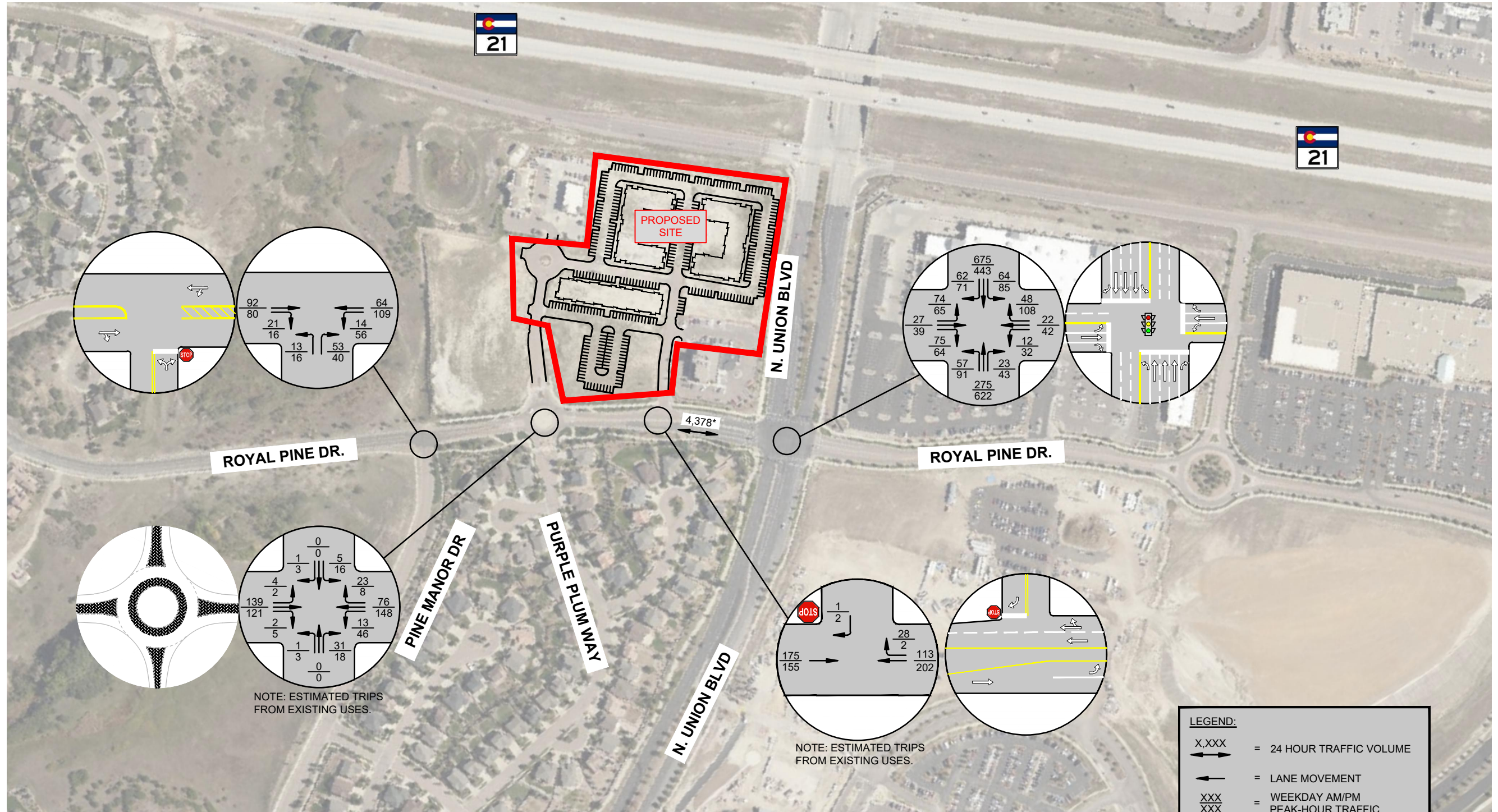


N.T.S.



OVERALL STUDY AREA / VICINITY MAP  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 1
JOB NO: 21754-02	



NOTE: ESTIMATED TRIPS FROM EXISTING USES.

NOTE: ESTIMATED TRIPS FROM EXISTING USES.

**NOTES:**  
 1. TRAFFIC COUNTS WERE CONDUCTED SEPT 5-7 2023 BY ALL TRAFFIC DATA SERVICES (ATD).  
 \*WEEKDAY AADT 4,378 , WEEKEND AADT 3,707

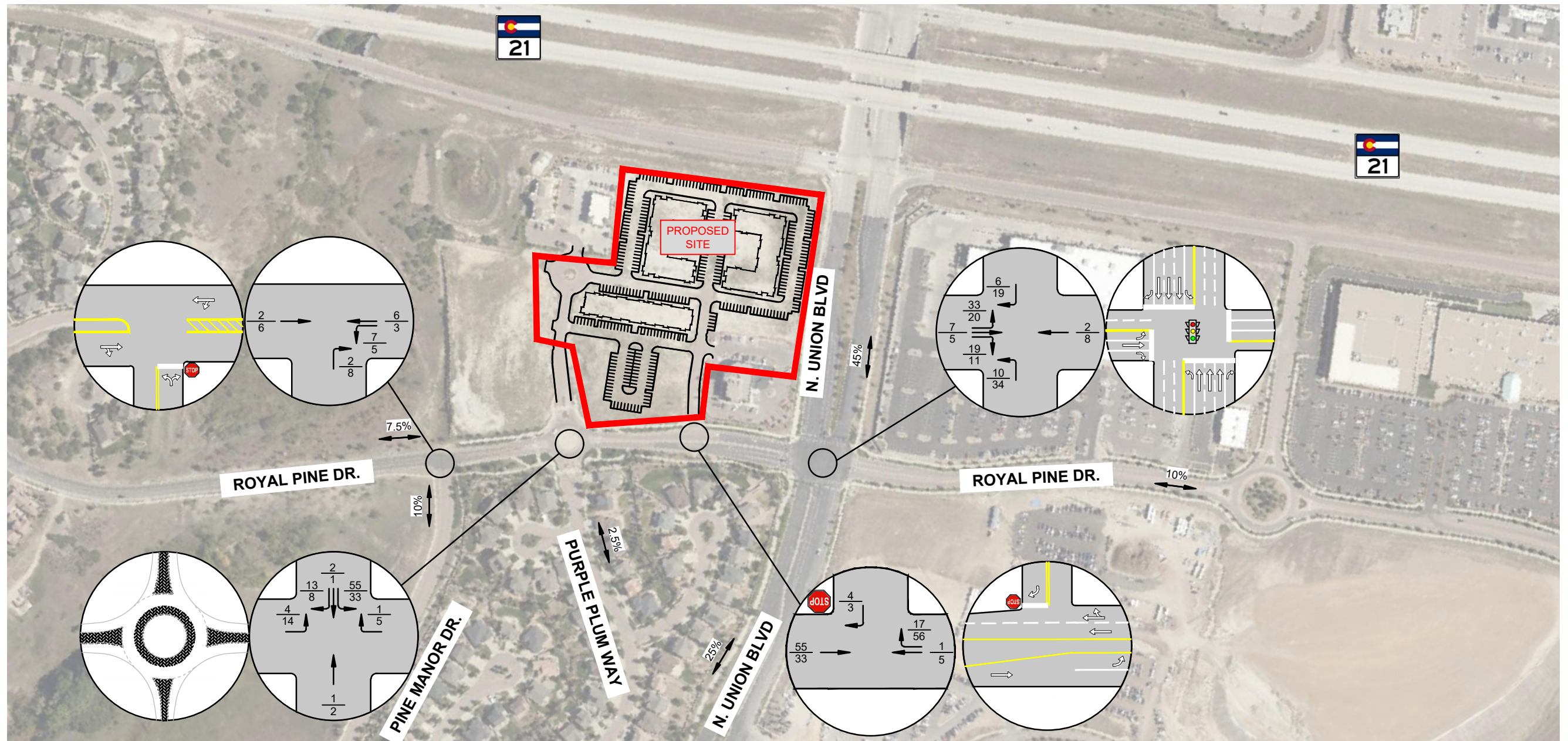
**LEGEND:**

- X,XXX = 24 HOUR TRAFFIC VOLUME
- ← → = LANE MOVEMENT
- XXX / XXX = WEEKDAY AM/PM PEAK-HOUR TRAFFIC
- STOP SIGN = STOP SIGN
- TRAFFIC SIGNAL = TRAFFIC SIGNAL



**2023 EXISTING CONDITIONS  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO**

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 2
JOB NO: 21754-02	



SITE GENERATED TRAFFIC SUMMARY:

		AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Union North	45.0%	10	33	34	20
Union South	25.0%	6	19	19	11
Royal Pine East	10.0%	2	7	8	5
Royal Pine West	7.5%	2	6	6	3
Pine Manor South	10.0%	2	7	8	5
Purple Plum	2.5%	1	2	2	1
<b>Total</b>		<b>23</b>	<b>74</b>	<b>77</b>	<b>45</b>

**LEGEND:**

- XX% = SITE DISTRIBUTION
- ← → = LANE MOVEMENT
- ← = LANE MOVEMENT
- XXX = WEEKDAY AM/PM PEAK-HOUR TRAFFIC
- STOP = STOP SIGN
- 🚦 = TRAFFIC SIGNAL

N.T.S.

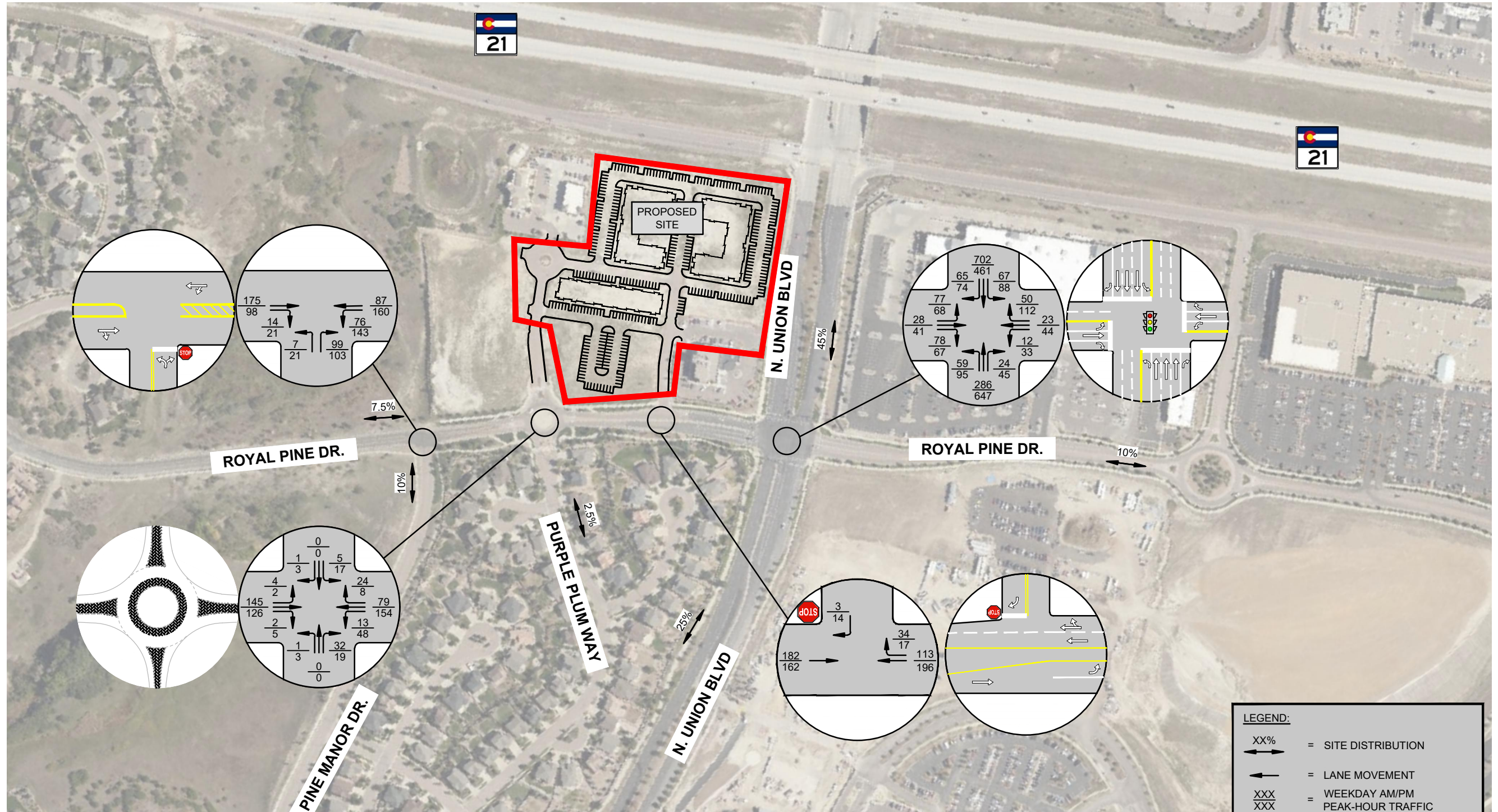


SITE GENERATED TRAFFIC  
ROYAL PINE APARTMENTS  
COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co.  
Engineers•Surveyors

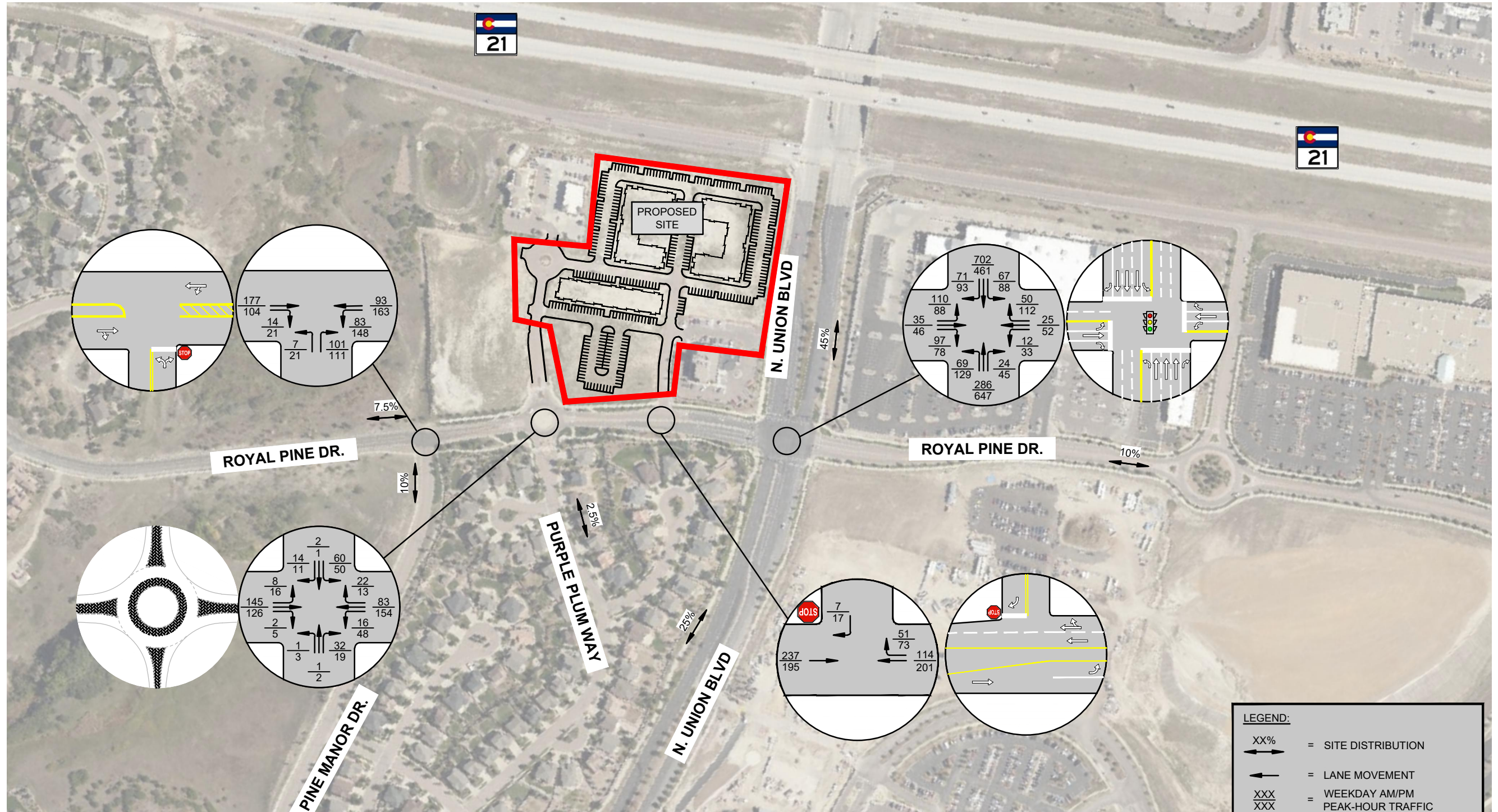
DATE: 09-18-2023  
JOB NO: 21754-02

DWG. NO: FIGURE 3



2025 BACKGROUND TRAFFIC  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 4
JOB NO: 21754-02	



21

21

**LEGEND:**

- XX% = SITE DISTRIBUTION
- ← = LANE MOVEMENT
- XXX  
XXX = WEEKDAY AM/PM  
PEAK-HOUR TRAFFIC
- STOP = STOP SIGN
- 🚦 = TRAFFIC SIGNAL

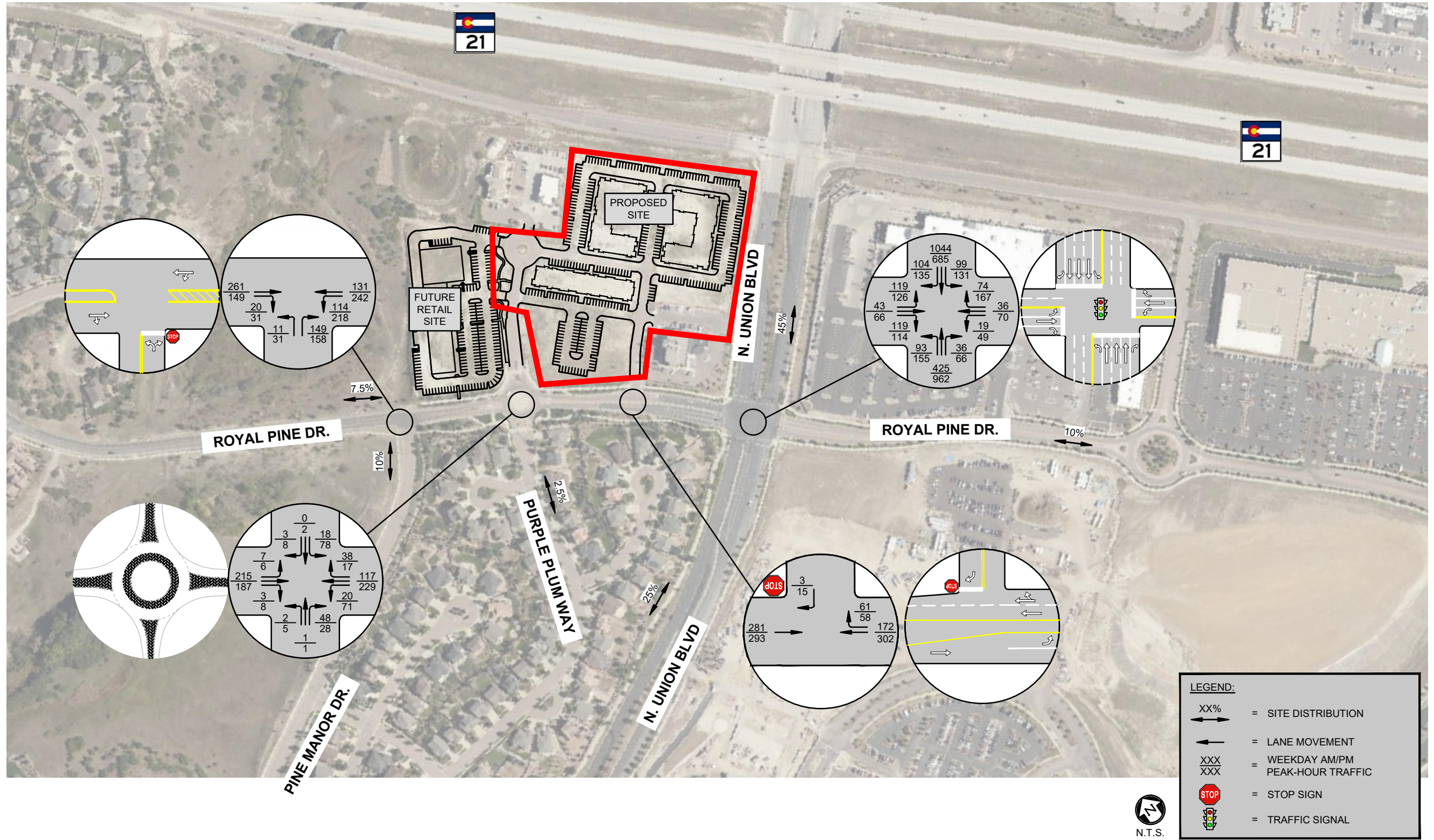
N.T.S.



2025 TOTAL TRAFFIC  
ROYAL PINE APARTMENTS  
COLORADO SPRINGS, COLORADO

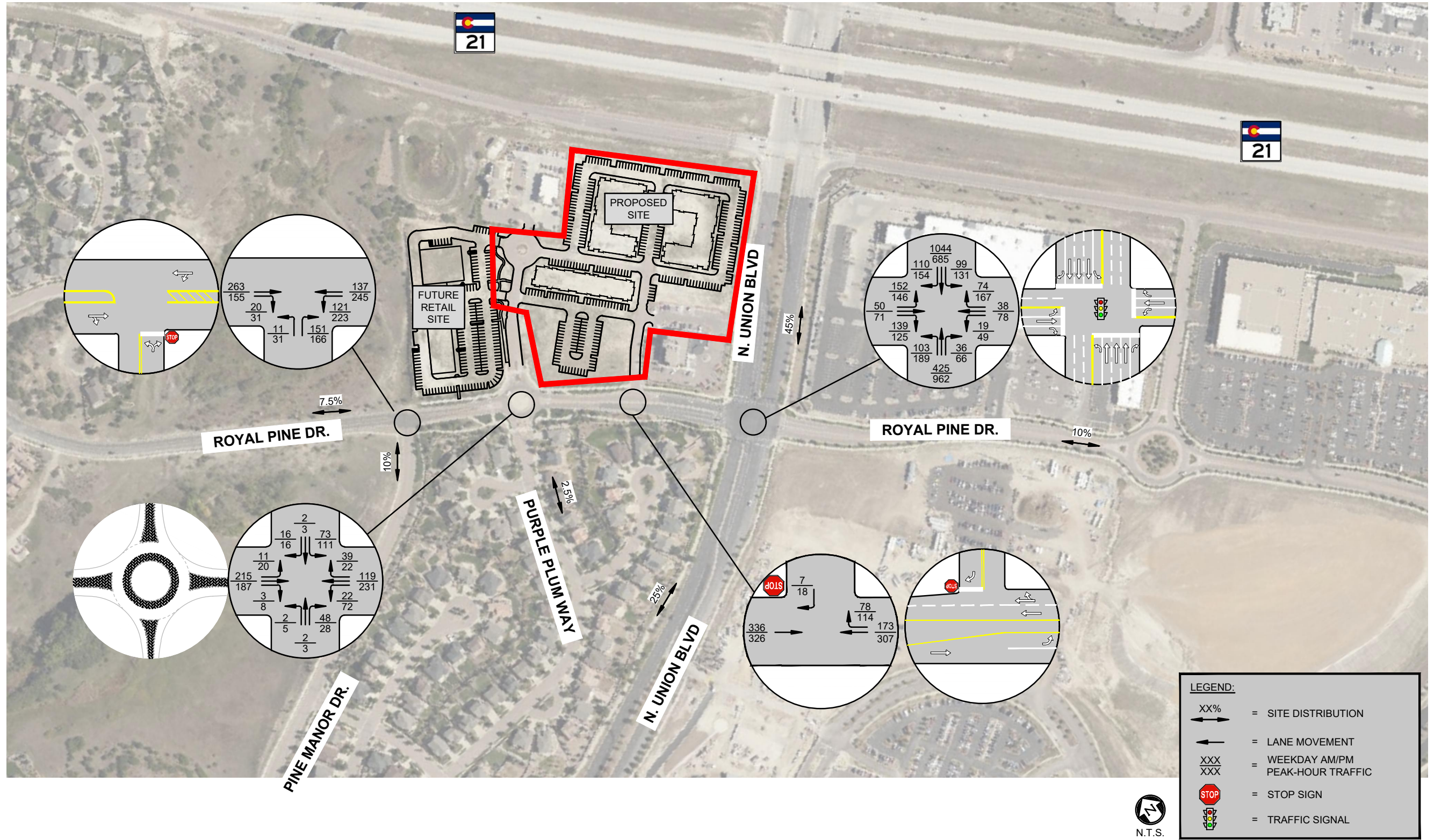
Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 5
JOB NO: 21754-02	





2045 BACKGROUND TRAFFIC  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 6
JOB NO: 21754-02	



2045 TOTAL TRAFFIC  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 7
JOB NO: 21754-02	



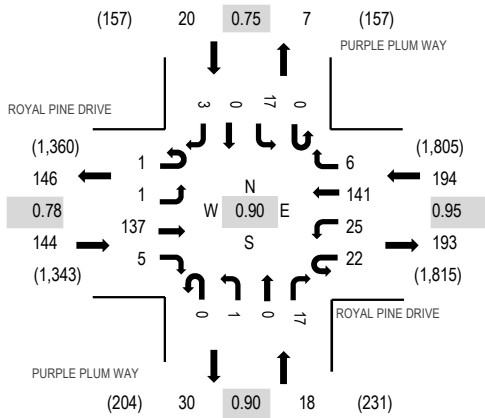
N.T.S.



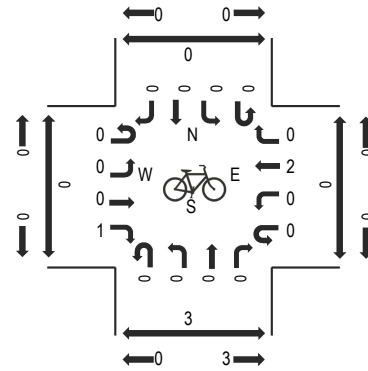
EMERGENCY EGRESS  
 ROYAL PINE APARTMENTS  
 COLORADO SPRINGS, COLORADO

Drexel, Barrell & Co. Engineers•Surveyors	
DATE: 09-18-2023	DWG. NO: FIGURE 8
JOB NO: 21754-02	

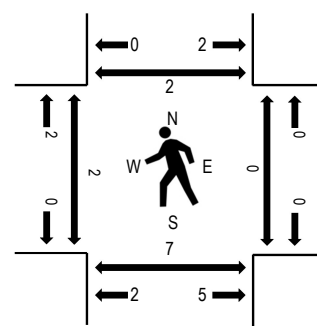
**Peak Hour - Motorized Vehicles**



**Peak Hour - Bicycles**



**Peak Hour - Pedestrians**



Note: Total study counts contained in parentheses.

**Traffic Counts - Motorized Vehicles**

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				PURPLE PLUM WAY Northbound				PURPLE PLUM WAY 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
	6:00 AM	0	0	7	0	1	0	3	1	0	0	0	3	0	0	0			0	15	98	0
6:15 AM	0	0	12	0	0	0	2	0	0	0	0	3	0	0	0	0	17	120	0	0	0	0
6:30 AM	0	0	22	0	0	0	3	0	0	0	0	5	0	0	0	0	30	192	0	0	0	0
6:45 AM	0	1	20	0	0	1	9	2	0	0	0	3	0	0	0	0	36	265	0	0	0	0
7:00 AM	0	0	19	0	0	2	5	4	0	0	0	7	0	0	0	0	37	300	0	0	0	0
7:15 AM	0	2	42	1	1	2	25	6	0	0	0	10	0	0	0	0	89	319	0	0	0	0
7:30 AM	0	2	44	0	0	4	35	6	0	0	0	9	0	2	0	1	103	283	0	0	0	1
7:45 AM	1	1	29	0	1	3	17	7	0	1	0	7	0	3	0	1	71	249	1	0	0	1
8:00 AM	0	0	22	0	0	2	19	3	0	1	0	8	0	1	0	0	56	237	0	0	0	0
8:15 AM	0	1	29	0	1	1	14	1	0	0	0	6	0	0	0	0	53	241	0	0	0	0
8:30 AM	0	0	35	0	4	1	20	4	0	0	0	3	0	1	0	1	69	252	0	0	0	0
8:45 AM	0	1	24	1	5	2	16	5	0	0	0	3	0	1	0	1	59	243	0	0	0	0
9:00 AM	0	0	17	1	5	3	24	4	1	1	0	1	0	3	0	0	60	262	1	1	0	1
9:15 AM	0	0	34	0	4	2	14	4	0	1	0	3	0	2	0	0	64	262	1	1	0	1
9:30 AM	0	0	24	0	7	2	25	1	0	0	0	0	0	0	0	1	60	230	0	1	0	0
9:45 AM	0	1	27	1	3	3	24	7	0	1	0	8	0	3	0	0	78	223	0	0	0	0
10:00 AM	1	1	22	0	6	4	15	0	0	0	0	2	0	8	0	1	60	219	0	0	0	0
10:15 AM	0	0	15	0	4	0	9	1	0	0	0	2	0	1	0	0	32	237	0	0	0	0
10:30 AM	0	1	23	0	4	3	15	1	0	0	0	4	0	0	0	2	53	283	0	0	1	0
10:45 AM	0	2	26	0	6	3	19	5	0	1	1	5	0	5	0	1	74	310	0	0	3	0
11:00 AM	1	2	22	1	5	5	33	0	0	0	0	3	0	5	0	1	78	307	0	0	0	0
11:15 AM	0	0	28	0	7	4	26	3	0	0	0	6	0	3	1	0	78	280	0	0	4	0
11:30 AM	0	0	26	0	4	1	34	3	0	1	0	7	0	3	0	1	80	257	0	0	1	0
11:45 AM	0	2	19	0	8	3	29	7	0	0	0	1	0	2	0	0	71	249	0	1	3	0
12:00 PM	0	0	21	1	5	3	15	1	0	0	0	1	0	3	0	1	51	254	0	1	2	0
12:15 PM	0	1	21	0	1	3	18	2	0	1	0	5	0	3	0	0	55	264	0	0	1	0
12:30 PM	0	0	28	1	4	2	25	2	0	0	0	2	0	6	0	2	72	265	0	0	0	0
12:45 PM	0	0	36	0	2	2	23	2	0	0	0	4	0	6	1	0	76	259	0	0	0	0
1:00 PM	0	0	22	0	4	4	19	2	0	0	1	3	0	6	0	0	61	280	0	0	0	0
1:15 PM	0	1	17	0	4	3	22	3	0	0	0	5	0	1	0	0	56	269	0	0	0	0
1:30 PM	0	0	23	0	3	6	25	2	0	0	0	2	0	4	0	1	66	283	0	0	0	0
1:45 PM	1	0	21	2	8	5	39	5	0	0	0	8	0	7	0	1	97	284	0	0	0	0
2:00 PM	0	1	17	1	3	2	18	2	0	0	0	6	0	0	0	0	50	273	0	0	0	0
2:15 PM	0	0	29	0	6	5	20	3	0	0	0	1	0	4	0	2	70	313	0	0	0	0

2:30 PM	0	0	21	1	5	4	23	1	0	0	0	11	0	0	0	1	67	324	0	0	2	0
2:45 PM	0	0	25	1	7	8	36	6	0	0	0	1	0	1	0	1	86	343	0	0	1	0
3:00 PM	0	1	26	0	3	8	40	4	0	0	0	5	0	2	0	1	90	356	0	0	3	0
3:15 PM	0	0	26	1	2	4	38	3	0	1	0	5	0	1	0	0	81	366	0	0	0	0
3:30 PM	0	0	22	0	7	2	46	2	0	2	0	2	0	3	0	0	86	354	0	0	1	0
3:45 PM	0	0	35	2	6	4	39	4	0	0	0	6	0	2	0	1	99	338	0	0	1	0
4:00 PM	0	0	33	1	8	2	45	2	0	2	0	1	0	4	0	2	100	344	0	0	0	0
4:15 PM	0	0	23	0	6	6	28	1	0	0	0	2	0	3	0	0	69	337	0	0	0	0
4:30 PM	0	0	23	2	3	1	36	2	0	0	0	1	0	2	0	0	70	344	0	0	2	0
4:45 PM	0	0	36	1	5	7	40	4	0	0	0	5	0	6	0	1	105	376	0	0	0	0
5:00 PM	0	0	34	1	11	4	33	0	0	0	0	3	0	7	0	0	93	351	0	0	2	0
5:15 PM	0	1	24	1	2	6	33	1	0	1	0	3	0	2	0	2	76	331	2	0	2	2
5:30 PM	1	0	43	2	4	8	35	1	0	0	0	6	0	2	0	0	102	313	0	0	3	0
5:45 PM	0	0	22	0	1	10	39	1	0	0	0	6	0	1	0	0	80	270	0	0	2	0
6:00 PM	1	0	18	1	0	6	43	0	0	0	0	2	0	1	0	1	73	255	0	0	0	0
6:15 PM	0	0	17	0	0	3	31	0	0	0	0	6	0	0	0	1	58		0	0	0	0
6:30 PM	0	1	21	0	0	3	29	1	0	0	0	2	0	2	0	0	59		0	0	4	1
6:45 PM	0	0	17	1	1	4	37	0	0	0	0	1	0	3	0	1	65		0	1	7	1
Count Total	6	23	1,289	25	187	176	1,310	132	1	14	2	214	0	125	2	30	3,536		5	6	45	8
Peak Hour	1	1	137	5	22	25	141	6	0	1	0	17	0	17	0	3	376		2	0	7	2



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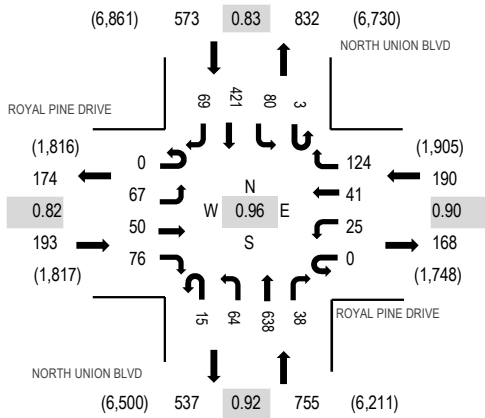
Location: 2 NORTH UNION BLVD & ROYAL PINE DRIVE AM

Date: Tuesday, September 5, 2023

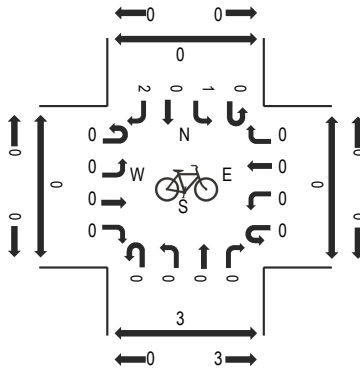
Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:00 PM - 05:15 PM

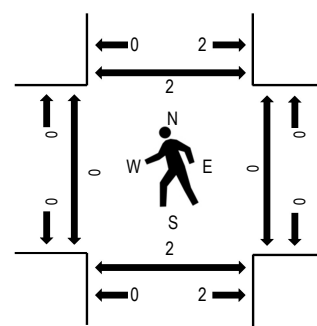
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				NORTH UNION BLVD Northbound				NORTH UNION BLVD 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
	6:00 AM	0	4	4	5	0	1	2	4	1	0	15	1	0	10	32			2	81	533	0
6:15 AM	0	5	2	7	0	0	1	7	1	0	19	0	0	7	57	1	107	704	0	0	0	0
6:30 AM	0	15	4	7	0	0	2	11	0	1	15	2	0	5	83	0	145	956	0	0	0	0
6:45 AM	0	12	4	8	0	2	4	12	2	3	29	1	1	5	111	6	200	1,250	0	0	1	0
7:00 AM	0	15	2	9	0	4	0	14	4	5	55	4	0	12	120	8	252	1,446	1	0	2	0
7:15 AM	0	32	3	17	0	3	10	12	0	12	70	3	0	16	167	14	359	1,500	0	0	0	0
7:30 AM	0	19	12	25	0	2	8	14	4	13	67	7	0	15	220	33	439	1,403	0	0	0	1
7:45 AM	0	15	8	16	0	1	6	11	4	13	68	6	0	21	213	14	396	1,266	0	0	0	1
8:00 AM	0	8	2	23	0	6	2	10	0	13	62	7	0	16	145	12	306	1,182	0	0	4	0
8:15 AM	0	11	9	16	0	2	4	9	1	10	55	5	0	11	118	11	262	1,142	2	0	0	0
8:30 AM	0	18	11	14	0	4	5	9	1	19	77	8	0	17	111	8	302	1,198	0	0	0	0
8:45 AM	0	8	6	16	0	5	9	11	2	12	79	10	0	20	125	9	312	1,181	0	0	0	0
9:00 AM	0	14	5	11	0	6	13	13	4	10	56	9	0	21	89	15	266	1,190	3	0	2	0
9:15 AM	0	21	6	17	0	2	10	18	1	5	86	9	0	16	115	12	318	1,209	0	0	0	0
9:30 AM	0	13	7	10	0	6	13	17	3	10	62	17	1	25	88	13	285	1,155	0	0	4	0
9:45 AM	1	14	9	18	0	12	7	27	3	19	60	9	0	20	111	11	321	1,071	0	0	1	0
10:00 AM	0	12	4	19	0	8	5	28	6	13	68	13	0	18	87	4	285	1,060	0	0	0	0
10:15 AM	0	14	4	14	0	4	7	18	4	7	67	10	0	16	93	6	264	1,060	0	0	0	0
10:30 AM	0	14	3	8	0	5	5	18	1	10	56	7	0	14	51	9	201	1,112	0	0	0	0
10:45 AM	0	14	4	20	0	14	3	33	5	17	67	11	0	25	81	16	310	1,240	2	0	3	0
11:00 AM	0	19	5	15	0	7	8	30	3	18	57	10	0	16	83	14	285	1,259	0	0	0	0
11:15 AM	0	16	5	20	0	5	11	27	3	13	98	8	0	24	75	11	316	1,281	0	0	1	1
11:30 AM	0	16	9	16	0	15	9	27	1	24	86	14	0	22	79	11	329	1,279	0	0	0	0
11:45 AM	0	12	4	11	0	9	12	20	4	15	98	13	0	17	97	17	329	1,315	1	0	0	0
12:00 PM	0	12	9	13	0	9	5	29	4	11	91	14	0	18	86	6	307	1,311	1	0	1	0
12:15 PM	0	10	7	12	0	11	4	32	5	11	95	10	0	19	89	9	314	1,329	0	0	1	0
12:30 PM	0	11	9	19	0	15	10	28	6	10	99	11	0	26	108	13	365	1,329	0	0	1	0
12:45 PM	1	15	10	21	0	10	9	17	2	14	81	7	0	20	108	10	325	1,275	0	0	0	0
1:00 PM	0	10	7	19	0	9	5	32	4	13	96	13	1	16	91	9	325	1,295	0	0	0	0
1:15 PM	0	12	5	11	0	9	3	25	1	22	106	12	1	15	85	7	314	1,265	0	0	1	0
1:30 PM	0	8	6	17	0	9	10	16	1	24	97	13	0	15	88	7	311	1,296	0	0	0	0
1:45 PM	0	16	7	16	0	8	14	29	2	23	91	14	0	22	82	21	345	1,341	0	0	0	0
2:00 PM	0	7	11	15	0	9	6	18	0	8	99	19	0	17	72	14	295	1,389	0	0	0	0
2:15 PM	0	13	5	22	0	12	7	27	1	12	117	6	0	18	94	11	345	1,535	0	0	0	0

2:30 PM	0	12	6	18	0	8	4	24	1	13	120	16	1	21	99	13	356	1,609	0	1	0	0
2:45 PM	0	6	9	16	0	8	10	25	7	20	136	15	0	23	89	29	393	1,687	0	0	0	0
3:00 PM	0	10	5	23	0	11	12	33	5	19	132	15	1	21	132	22	441	1,710	0	0	0	0
3:15 PM	0	10	8	13	0	4	7	30	3	20	167	7	0	20	103	27	419	1,667	0	0	0	0
3:30 PM	0	22	6	8	0	8	11	36	5	21	126	17	1	20	133	20	434	1,597	0	0	0	0
3:45 PM	0	17	11	23	0	9	17	23	4	17	129	10	0	16	120	20	416	1,547	0	0	0	0
4:00 PM	0	21	8	17	0	6	10	32	3	17	150	13	0	21	77	23	398	1,568	0	0	0	0
4:15 PM	0	14	8	14	0	7	8	19	3	14	125	7	1	17	96	16	349	1,617	0	0	0	0
4:30 PM	0	14	3	11	0	6	4	28	9	23	138	16	0	24	95	13	384	1,656	0	1	0	0
4:45 PM	0	14	16	22	0	7	14	28	7	12	161	7	2	23	100	24	437	1,711	0	0	0	0
5:00 PM	0	14	15	22	0	11	11	40	1	15	178	12	1	17	98	12	447	1,662	0	0	0	0
5:15 PM	0	13	8	10	0	2	9	32	2	16	147	9	0	22	100	18	388	1,570	0	0	2	2
5:30 PM	0	26	11	22	0	5	7	24	5	21	152	10	0	18	123	15	439	1,465	0	0	0	0
5:45 PM	0	13	10	7	0	8	9	28	2	22	132	6	0	23	108	20	388	1,303	2	0	0	2
6:00 PM	0	9	8	3	0	8	8	30	1	25	129	8	0	13	98	15	355	1,189	0	0	0	0
6:15 PM	0	10	3	10	0	4	8	23	1	13	103	3	0	13	79	13	283		0	1	0	0
6:30 PM	0	4	9	10	0	2	8	32	1	15	94	4	0	17	71	10	277		0	0	0	1
6:45 PM	0	12	3	8	0	3	10	28	5	12	91	5	1	6	71	19	274		0	0	0	1
Count Total	2	696	355	764	0	341	396	1,168	149	725	4,854	483	12	910	5,246	693	16,794		12	3	24	9
Peak Hour	0	67	50	76	0	25	41	124	15	64	638	38	3	80	421	69	1,711		0	0	2	2



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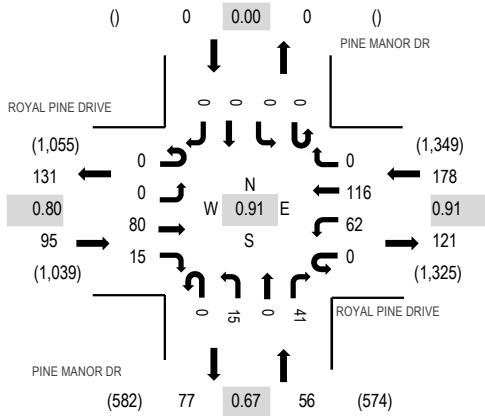
Location: 3 PINE MANOR DR & ROYAL PINE DRIVE AM

Date: Tuesday, September 5, 2023

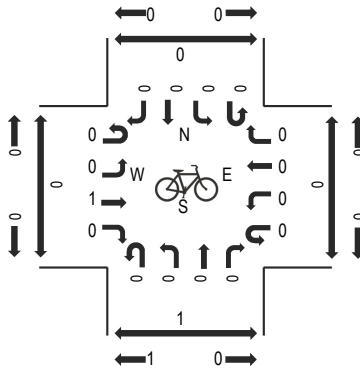
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM

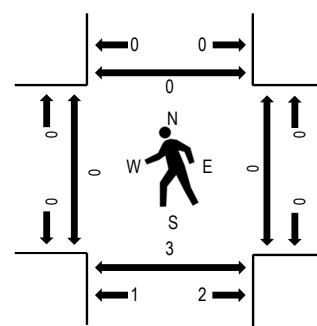
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

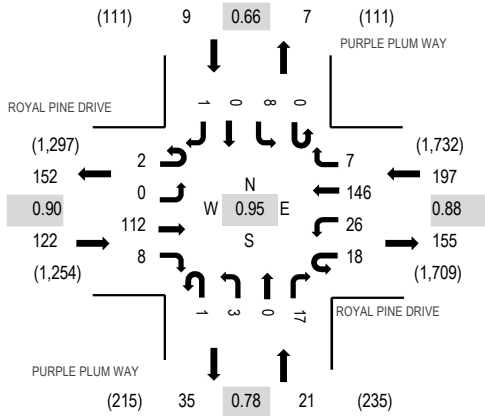
Traffic Counts - Motorized Vehicles

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				PINE MANOR DR Northbound				PINE MANOR DR 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
6:00 AM	0	0	4	0	0	0	3	0	0	0	0	3	0	0	0	0	10	88	0	0	0	0
6:15 AM	0	0	6	1	0	1	1	0	0	0	0	6	0	0	0	0	15	106	0	0	3	0
6:30 AM	0	0	11	3	0	1	2	0	0	1	0	12	0	0	0	0	30	170	0	0	0	0
6:45 AM	0	0	14	3	0	6	3	0	0	1	0	6	0	0	0	0	33	232	0	0	1	0
7:00 AM	0	0	11	1	0	0	5	0	0	3	0	8	0	0	0	0	28	260	0	0	4	0
7:15 AM	0	0	27	5	0	5	20	0	0	3	0	19	0	0	0	0	79	275	0	0	0	0
7:30 AM	0	0	31	7	0	4	32	0	0	4	0	14	0	0	0	0	92	249	0	0	2	0
7:45 AM	0	0	24	9	0	5	15	0	0	1	0	7	0	0	0	0	61	217	0	1	2	1
8:00 AM	0	0	17	1	0	5	13	0	0	2	0	5	0	0	0	0	43	206	0	0	7	0
8:15 AM	0	0	21	4	0	6	9	0	0	4	0	9	0	0	0	0	53	209	0	0	4	0
8:30 AM	0	0	21	2	0	5	16	0	0	2	0	14	0	0	0	0	60	211	0	0	6	0
8:45 AM	0	0	18	4	0	5	12	0	0	2	0	9	0	0	0	0	50	204	0	0	1	0
9:00 AM	0	0	8	2	0	10	16	0	0	1	0	9	0	0	0	0	46	214	0	0	2	0
9:15 AM	0	0	20	1	0	4	11	0	0	5	0	14	0	0	0	0	55	210	0	0	4	0
9:30 AM	0	0	20	1	0	12	14	0	0	1	0	5	0	0	0	0	53	155	0	0	3	0
9:45 AM	0	0	20	4	0	6	19	0	0	3	0	8	0	0	0	0	60	149	0	0	1	0
10:00 AM	0	0	13	2	0	1	16	0	0	2	0	8	0	0	0	0	42	141	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168	0	0	0	0
10:30 AM	0	0	18	5	0	6	11	0	0	2	0	5	0	0	0	0	47	225	0	0	3	0
10:45 AM	0	0	19	2	0	5	16	0	0	1	0	9	0	0	0	0	52	247	0	0	0	0
11:00 AM	0	0	19	5	0	15	20	0	0	2	0	8	0	0	0	0	69	252	0	0	1	0
11:15 AM	0	0	19	4	0	7	19	0	0	0	0	8	0	0	0	0	57	222	0	0	3	0
11:30 AM	0	0	19	4	0	7	29	0	0	3	0	7	0	0	0	0	69	212	0	0	3	0
11:45 AM	0	0	17	3	0	8	21	0	0	4	0	4	0	0	0	0	57	203	0	0	4	0
12:00 PM	0	0	13	0	0	3	12	0	0	2	0	9	0	0	0	0	39	213	0	0	1	0
12:15 PM	0	0	13	3	0	6	14	0	0	2	0	9	0	0	0	0	47	223	0	0	1	0
12:30 PM	0	0	24	0	0	12	15	0	0	3	0	6	0	0	0	0	60	221	0	0	2	0
12:45 PM	0	0	23	5	0	7	15	0	0	4	0	13	0	0	0	0	67	224	0	0	0	0
1:00 PM	0	0	18	4	0	5	14	0	0	4	0	4	0	0	0	0	49	227	0	0	1	0
1:15 PM	0	0	14	2	0	9	12	0	0	5	0	3	0	0	0	0	45	224	0	0	1	0
1:30 PM	0	0	15	6	0	6	21	0	0	6	0	9	0	0	0	0	63	235	0	0	0	0
1:45 PM	0	0	16	5	0	13	27	0	0	2	0	7	0	0	0	0	70	218	0	0	0	0
2:00 PM	0	0	15	3	0	5	14	0	0	5	0	4	0	0	0	0	46	213	0	0	0	0
2:15 PM	0	0	23	3	0	3	19	0	0	2	0	6	0	0	0	0	56	243	0	0	0	0

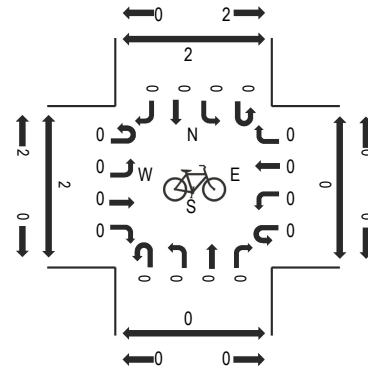


2:30 PM	0	0	14	0	0	7	17	0	0	0	0	8	0	0	0	0	46	264	0	0	1	0
2:45 PM	0	0	19	0	0	13	22	0	0	4	0	7	0	0	0	0	65	293	0	0	1	0
3:00 PM	0	0	18	4	0	11	30	0	0	4	0	9	0	0	0	0	76	315	0	0	2	0
3:15 PM	0	0	18	4	0	16	25	0	0	5	0	9	0	0	0	0	77	329	0	0	0	0
3:30 PM	0	0	13	2	0	21	27	0	0	3	0	9	0	0	0	0	75	311	0	0	1	0
3:45 PM	0	0	25	7	0	10	30	0	0	3	0	12	0	0	0	0	87	304	0	0	1	0
4:00 PM	0	0	24	2	0	15	34	0	0	4	0	11	0	0	0	0	90	297	0	0	1	0
4:15 PM	0	0	18	5	0	9	18	0	0	5	0	4	0	0	0	0	59	280	0	0	0	0
4:30 PM	0	0	10	2	0	20	17	0	0	2	0	17	0	0	0	0	68	286	0	0	3	0
4:45 PM	0	0	22	2	0	15	25	0	0	3	0	13	0	0	0	0	80	304	0	0	0	0
5:00 PM	0	0	24	2	0	12	21	0	0	2	0	12	0	0	0	0	73	295	0	0	4	0
5:15 PM	0	0	20	0	1	14	22	0	0	4	0	4	0	0	0	0	65	291	0	0	3	0
5:30 PM	0	0	29	1	0	14	21	0	0	3	0	18	0	0	0	0	86	282	0	0	1	0
5:45 PM	0	0	12	5	0	15	25	0	0	5	0	9	0	0	0	0	71	252	0	0	0	0
6:00 PM	0	0	13	4	0	16	27	0	0	2	0	7	0	0	0	0	69	241	0	0	5	0
6:15 PM	0	0	12	2	0	14	20	0	0	3	0	5	0	0	0	0	56		0	0	4	0
6:30 PM	0	0	16	3	0	7	22	0	0	2	0	6	0	0	0	0	56		0	0	9	1
6:45 PM	0	0	11	1	0	10	27	0	0	3	0	8	0	0	0	0	60		0	0	4	0
Count Total	0	0	889	150	1	432	916	0	0	139	0	435	0	0	0	0	2,962		0	1	100	2
Peak Hour	0	0	80	15	0	62	116	0	0	15	0	41	0	0	0	0	329		0	0	3	0

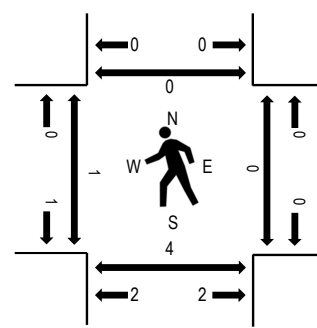
**Peak Hour - Motorized Vehicles**



**Peak Hour - Bicycles**



**Peak Hour - Pedestrians**



Note: Total study counts contained in parentheses.

**Traffic Counts - Motorized Vehicles**

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				PURPLE PLUM WAY Northbound				PURPLE PLUM WAY 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
	6:00 AM	0	0	9	0	1	0	2	0	0	0	0	4	0	0	0			0	16	112	0
6:15 AM	0	0	13	0	0	1	10	2	1	0	0	5	0	0	0	0	32	162	0	0	1	0
6:30 AM	0	0	15	0	0	1	6	1	0	0	0	4	0	1	0	0	28	202	0	0	3	0
6:45 AM	0	0	20	0	0	0	7	2	0	1	0	6	0	0	0	0	36	253	0	0	2	0
7:00 AM	0	1	43	0	1	1	8	4	0	0	0	8	0	0	0	0	66	300	0	0	5	0
7:15 AM	0	0	32	2	0	4	15	9	0	0	0	10	0	0	0	0	72	282	0	0	3	0
7:30 AM	0	0	41	0	0	2	24	3	0	1	0	5	0	3	0	0	79	266	0	0	3	0
7:45 AM	0	2	36	1	1	4	29	5	0	0	0	5	0	0	0	0	83	252	0	0	3	0
8:00 AM	0	0	20	1	2	1	16	1	1	2	0	4	0	0	0	0	48	216	0	1	3	0
8:15 AM	0	0	24	1	3	3	15	5	0	1	0	4	0	0	0	0	56	227	0	0	1	0
8:30 AM	0	2	31	3	2	2	17	1	0	0	0	5	0	2	0	0	65	236	0	0	3	0
8:45 AM	0	1	20	0	2	2	13	3	0	0	0	2	0	4	0	0	47	226	0	0	7	0
9:00 AM	0	0	28	0	4	2	19	1	0	0	0	1	0	4	0	0	59	239	0	1	3	0
9:15 AM	1	0	24	0	11	1	21	1	0	0	0	3	0	2	0	1	65	224	0	0	2	0
9:30 AM	0	0	22	0	1	2	19	2	0	0	0	5	0	3	0	1	55	216	0	0	2	0
9:45 AM	0	1	24	0	8	3	17	2	0	0	0	4	0	1	0	0	60	217	0	0	2	0
10:00 AM	0	0	18	0	2	2	16	2	0	1	0	2	0	1	0	0	44	206	0	0	6	0
10:15 AM	0	0	21	1	3	2	19	2	0	0	0	7	0	1	1	0	57	218	0	0	4	0
10:30 AM	1	0	20	0	8	3	18	2	0	1	0	1	0	2	0	0	56	226	0	0	2	0
10:45 AM	0	0	18	0	5	2	21	2	0	0	0	0	0	0	1	0	49	223	0	0	0	0
11:00 AM	0	0	16	1	4	2	25	0	0	1	0	6	0	0	0	1	56	233	0	0	3	0
11:15 AM	0	0	24	0	5	5	22	3	0	0	0	3	0	3	0	0	65	235	0	0	4	0
11:30 AM	1	0	16	0	5	4	22	1	0	0	0	3	0	0	0	1	53	231	0	0	2	0
11:45 AM	0	0	12	0	8	7	21	3	0	1	0	5	0	2	0	0	59	232	0	0	4	0
12:00 PM	0	0	17	0	7	5	15	1	0	1	0	7	0	5	0	0	58	229	1	0	4	0
12:15 PM	0	0	22	0	4	5	22	1	0	0	1	4	0	2	0	0	61	225	0	0	0	0
12:30 PM	0	1	20	0	4	5	19	2	0	0	0	1	0	2	0	0	54	226	0	0	0	0
12:45 PM	0	0	22	0	3	3	19	1	0	1	0	3	0	4	0	0	56	230	1	0	2	0
1:00 PM	0	0	21	0	2	3	17	2	0	1	0	5	0	3	0	0	54	238	0	0	1	0
1:15 PM	1	0	17	1	2	2	27	3	0	0	0	4	0	2	1	2	62	243	0	0	2	0
1:30 PM	0	0	18	0	5	2	24	1	0	0	0	3	0	4	0	1	58	253	0	0	0	0
1:45 PM	0	0	24	0	6	5	17	7	0	0	0	2	0	3	0	0	64	265	0	0	2	0
2:00 PM	0	1	22	1	3	0	19	5	0	0	0	3	0	5	0	0	59	279	0	0	1	0
2:15 PM	0	0	27	0	4	2	23	3	0	0	0	5	0	7	0	1	72	304	0	0	0	0

2:30 PM	1	0	20	2	3	2	34	1	0	2	0	2	0	2	0	1	70	324	0	0	2	0
2:45 PM	0	0	20	0	10	8	32	2	0	1	0	5	0	0	0	0	78	336	0	0	2	0
3:00 PM	1	0	23	1	5	8	39	2	0	1	0	3	0	1	0	0	84	349	0	0	0	0
3:15 PM	0	0	32	1	3	7	41	3	0	0	0	2	0	3	0	0	92	345	1	0	4	0
3:30 PM	0	0	25	2	3	5	39	1	0	0	0	5	0	1	0	1	82	346	0	0	0	0
3:45 PM	1	0	32	4	7	6	27	1	1	2	0	7	0	3	0	0	91	343	0	0	0	0
4:00 PM	1	0	28	1	4	9	28	0	0	0	0	7	0	2	0	0	80	333	0	0	0	2
4:15 PM	0	1	33	0	6	10	35	1	0	1	0	6	0	0	0	0	93	333	0	0	1	0
4:30 PM	0	0	25	0	7	1	37	1	0	0	0	6	0	2	0	0	79	332	0	0	2	4
4:45 PM	1	0	25	2	6	6	38	0	0	0	0	1	0	2	0	0	81	341	0	0	0	0
5:00 PM	0	0	21	0	12	3	40	0	0	0	0	2	0	2	0	0	80	331	0	0	0	0
5:15 PM	0	0	26	0	2	9	48	2	0	0	0	4	0	1	0	0	92	334	0	0	3	0
5:30 PM	1	0	28	1	2	9	36	2	0	0	0	4	0	4	0	1	88	301	0	0	2	0
5:45 PM	0	0	23	1	1	3	35	0	0	0	0	6	0	2	0	0	71	285	0	0	1	0
6:00 PM	0	0	24	0	7	1	45	0	0	0	0	3	0	2	0	1	83	267	1	0	1	1
6:15 PM	0	0	18	0	1	3	33	0	0	0	0	3	0	0	0	1	59		0	0	1	0
6:30 PM	0	0	33	0	0	3	30	1	0	0	0	4	0	0	0	1	72		1	0	3	1
6:45 PM	0	0	14	0	1	1	33	0	0	0	0	3	0	1	0	0	53		0	0	3	0
Count Total	10	10	1,207	27	196	182	1,254	100	3	19	1	212	0	94	3	14	3,332		5	2	106	8
Peak Hour	2	0	112	8	18	26	146	7	1	3	0	17	0	8	0	1	349		1	0	4	0



2:30 PM	0	7	10	12	0	13	9	20	5	14	117	8	1	11	83	12	322	1,517	0	0	0	0
2:45 PM	0	13	4	18	0	5	9	20	6	21	122	12	0	11	112	15	368	1,592	0	0	0	0
3:00 PM	1	9	7	14	0	8	9	23	3	17	130	12	0	24	115	24	396	1,626	0	0	0	0
3:15 PM	0	13	7	19	0	8	5	25	2	27	155	13	0	23	111	23	431	1,623	1	0	0	0
3:30 PM	0	12	4	18	0	2	9	29	4	22	139	11	0	21	108	18	397	1,645	0	0	0	0
3:45 PM	0	20	12	19	0	7	7	26	3	16	108	7	1	19	139	18	402	1,612	0	0	0	0
4:00 PM	0	17	7	16	0	10	9	24	6	11	142	8	0	21	101	21	393	1,626	0	0	0	0
4:15 PM	0	13	20	14	0	5	13	30	2	21	158	16	0	18	126	17	453	1,658	0	0	1	1
4:30 PM	0	11	7	20	0	7	8	17	3	23	135	12	0	18	92	11	364	1,629	0	0	0	0
4:45 PM	1	19	7	9	0	12	8	22	3	25	145	10	0	28	113	14	416	1,668	0	0	0	0
5:00 PM	0	14	9	14	0	10	14	31	2	15	155	10	0	21	114	16	425	1,594	0	0	0	0
5:15 PM	0	13	8	12	0	12	16	26	5	28	156	9	0	19	104	16	424	1,492	0	0	1	0
5:30 PM	0	13	11	14	0	5	11	24	7	12	148	11	0	19	104	24	403	1,378	0	0	1	0
5:45 PM	0	11	8	11	0	6	9	32	2	17	118	8	1	24	83	12	342	1,250	0	0	0	0
6:00 PM	0	16	10	12	0	8	12	26	5	22	92	10	0	20	77	13	323	1,170	1	0	0	0
6:15 PM	0	11	4	5	0	4	7	26	2	19	115	6	0	15	82	14	310		0	2	0	1
6:30 PM	0	18	5	14	0	2	5	24	4	8	105	2	0	13	56	19	275		0	0	3	1
6:45 PM	0	6	7	6	0	7	9	21	4	9	84	2	0	18	73	16	262		0	0	1	1
Count Total	4	613	327	765	0	356	400	1,142	149	708	4,732	500	11	947	5,136	628	16,418		3	7	18	10
Peak Hour	1	59	35	49	0	39	49	103	17	80	604	40	0	87	435	70	1,668		0	0	2	0



2:30 PM	0	0	15	3	0	11	27	0	0	4	0	7	0	0	0	67	286	0	0	1	0
2:45 PM	0	0	13	3	0	7	25	0	0	2	0	7	0	0	0	57	291	0	0	2	0
3:00 PM	0	0	16	7	0	14	28	0	0	5	0	10	0	0	0	80	314	0	0	0	0
3:15 PM	0	0	26	3	0	14	27	0	0	6	0	6	0	0	0	82	301	0	0	4	0
3:30 PM	0	0	15	1	0	13	27	0	0	4	0	12	0	0	0	72	294	0	0	0	0
3:45 PM	0	0	27	8	0	10	20	0	0	5	0	10	0	0	0	80	285	0	0	0	0
4:00 PM	0	0	23	5	0	7	22	0	0	1	0	9	0	0	0	67	279	0	0	1	0
4:15 PM	0	0	22	5	0	12	25	0	0	0	0	11	0	0	0	75	279	0	0	1	0
4:30 PM	0	0	21	3	0	12	22	0	0	1	0	4	0	0	0	63	284	0	0	0	0
4:45 PM	0	0	18	3	0	11	31	0	0	2	0	9	0	0	0	74	295	0	0	1	0
5:00 PM	0	0	16	4	0	17	23	0	0	2	0	5	0	0	0	67	292	0	0	0	0
5:15 PM	0	0	16	3	0	18	30	0	0	3	0	10	0	0	0	80	308	0	0	3	0
5:30 PM	0	0	16	2	0	13	24	0	0	5	0	14	0	0	0	74	291	0	0	3	0
5:45 PM	0	0	15	5	0	10	25	0	0	7	0	9	0	0	0	71	292	0	0	0	0
6:00 PM	0	0	17	8	0	15	31	0	0	3	0	9	0	0	0	83	271	0	0	4	0
6:15 PM	0	0	11	9	0	13	20	0	0	3	0	7	0	0	0	63		0	0	0	0
6:30 PM	0	0	19	9	0	17	15	0	0	2	0	13	0	0	0	75		0	0	4	0
6:45 PM	0	0	8	2	0	12	21	0	0	1	0	6	0	0	0	50		0	0	6	0
Count Total	0	0	859	160	0	406	891	0	2	136	0	395	0	0	0	2,849		0	0	97	1
Peak Hour	0	0	84	19	0	51	102	0	0	20	0	38	0	0	0	314		0	0	4	0

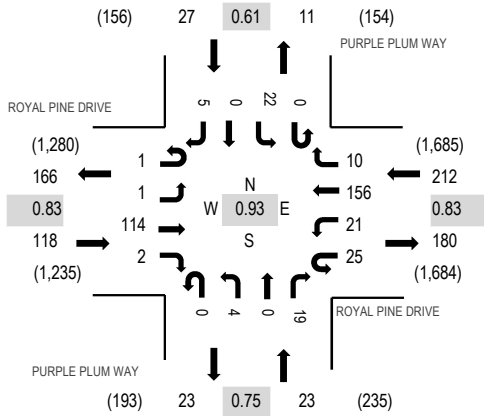
Location: 1 PURPLE PLUM WAY & ROYAL PINE DRIVE AM

Date: Thursday, September 7, 2023

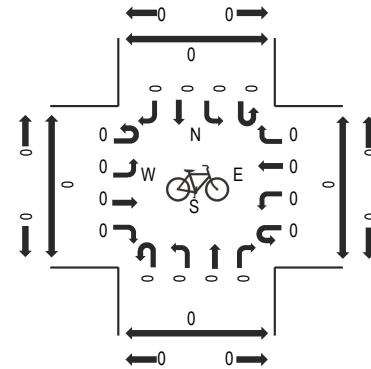
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 05:00 PM - 05:15 PM

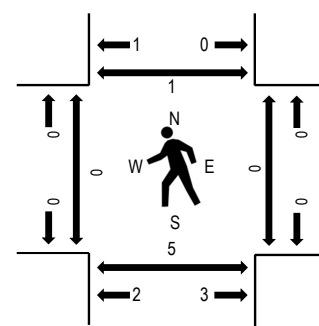
### Peak Hour - Motorized Vehicles



### Peak Hour - Bicycles



### Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

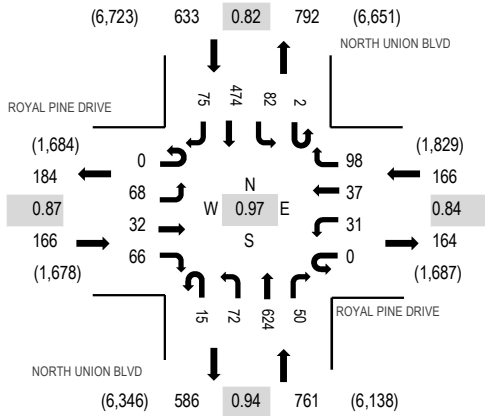
### Traffic Counts - Motorized Vehicles

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				PURPLE PLUM WAY Northbound				PURPLE PLUM WAY 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
	6:00 AM	0	0	10	0	1	0	1	0	0	0	0	3	0	0	0			0	15	95	0
6:15 AM	0	0	8	0	0	2	4	0	0	0	0	4	0	0	0	0	18	136	0	0	1	0
6:30 AM	0	0	22	0	0	1	3	0	0	0	0	2	0	0	0	0	28	189	0	0	3	0
6:45 AM	0	0	17	1	0	1	7	3	0	2	0	3	0	0	0	0	34	250	0	0	0	0
7:00 AM	0	1	29	0	0	0	10	5	0	0	0	11	0	0	0	0	56	281	0	0	4	0
7:15 AM	0	1	34	1	0	3	12	10	0	0	0	9	0	1	0	0	71	280	0	0	0	0
7:30 AM	0	1	40	0	0	4	27	4	0	1	0	7	0	5	0	0	89	264	0	0	4	0
7:45 AM	0	0	28	0	1	4	20	6	0	0	0	4	1	1	0	0	65	233	0	0	5	0
8:00 AM	0	0	31	0	1	2	11	1	0	0	0	8	0	1	0	0	55	221	0	0	2	2
8:15 AM	0	1	23	1	0	2	15	3	0	3	2	4	0	1	0	0	55	228	0	0	2	2
8:30 AM	0	0	29	2	2	0	17	3	0	0	0	1	0	4	0	0	58	217	0	0	2	0
8:45 AM	0	0	26	0	3	0	14	5	0	0	0	2	0	3	0	0	53	211	0	0	5	0
9:00 AM	0	1	23	0	4	2	23	3	0	0	0	3	0	1	1	1	62	208	0	0	4	0
9:15 AM	0	1	19	0	7	1	11	2	0	0	0	2	0	1	0	0	44	193	0	0	2	0
9:30 AM	0	0	25	0	3	2	13	1	0	0	0	5	0	3	0	0	52	203	0	1	3	0
9:45 AM	0	0	17	0	4	4	14	4	0	1	0	4	0	1	1	0	50	202	0	0	3	0
10:00 AM	0	1	21	1	1	0	14	3	0	0	0	4	0	2	0	0	47	211	0	0	4	0
10:15 AM	0	0	16	0	4	0	20	0	0	0	0	6	0	6	2	0	54	234	0	0	1	0
10:30 AM	0	0	17	1	6	4	13	2	0	0	0	6	0	2	0	0	51	248	0	0	1	0
10:45 AM	0	3	23	0	2	3	17	3	0	0	0	2	0	5	1	0	59	272	0	0	2	0
11:00 AM	0	0	27	0	5	4	25	4	0	0	0	5	0	0	0	0	70	282	0	0	1	0
11:15 AM	0	0	18	1	4	1	36	2	0	0	0	4	0	0	0	2	68	271	0	0	1	0
11:30 AM	0	0	26	0	4	8	26	4	0	0	0	4	0	3	0	0	75	271	0	0	1	0
11:45 AM	0	1	22	0	5	1	30	3	0	0	0	3	0	4	0	0	69	257	0	0	3	0
12:00 PM	0	0	16	0	3	1	34	0	0	1	0	0	0	4	0	0	59	248	0	0	2	0
12:15 PM	2	2	20	0	2	5	30	1	0	0	0	3	0	2	0	1	68	247	1	0	2	3
12:30 PM	0	0	19	0	3	3	21	4	0	0	0	6	0	5	0	0	61	231	0	0	1	0
12:45 PM	0	0	23	0	1	3	17	3	0	0	0	5	0	7	0	1	60	214	0	1	2	0
1:00 PM	0	1	19	1	4	2	20	2	0	1	0	3	0	5	0	0	58	219	0	0	0	0
1:15 PM	0	0	16	1	2	4	20	4	0	0	0	1	0	4	0	0	52	227	0	0	1	0
1:30 PM	0	0	13	0	5	4	14	2	0	0	0	2	0	4	0	0	44	250	0	0	1	0
1:45 PM	0	0	17	0	3	4	29	8	0	1	0	3	0	0	0	0	65	274	0	0	0	0
2:00 PM	0	0	23	0	5	0	32	2	0	0	0	2	0	2	0	0	66	285	0	0	1	0
2:15 PM	0	2	30	0	3	5	28	3	0	0	0	4	0	0	0	0	75	311	0	0	0	0

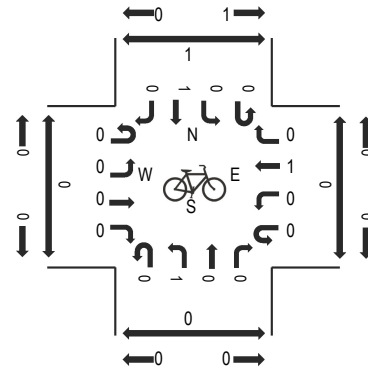


2:30 PM	0	0	22	1	5	3	27	0	0	0	0	8	0	2	0	0	68	312	1	0	1	1
2:45 PM	0	0	22	0	5	5	27	7	0	1	0	4	0	5	0	0	76	328	0	0	0	0
3:00 PM	0	1	34	0	2	4	39	1	0	2	0	3	0	5	0	1	92	337	0	0	0	0
3:15 PM	0	1	19	3	1	3	39	3	0	3	0	4	0	0	0	0	76	329	0	0	0	0
3:30 PM	0	1	22	1	3	8	35	2	0	2	0	6	0	4	0	0	84	345	0	0	0	1
3:45 PM	1	0	30	2	4	3	30	2	0	1	0	5	0	7	0	0	85	352	0	0	0	0
4:00 PM	0	0	23	1	9	10	28	5	0	0	0	3	0	4	0	1	84	362	1	0	0	1
4:15 PM	1	0	28	1	4	2	49	1	0	1	0	1	0	4	0	0	92	380	0	0	0	0
4:30 PM	0	1	29	0	6	6	34	1	0	2	0	6	0	4	0	2	91	366	0	0	1	1
4:45 PM	0	0	32	1	3	4	30	8	0	1	0	5	0	9	0	2	95	357	0	0	1	0
5:00 PM	0	0	25	0	12	9	43	0	0	0	0	7	0	5	0	1	102	340	0	0	3	0
5:15 PM	0	0	25	0	7	2	37	1	0	0	0	4	0	2	0	0	78	302	0	0	0	0
5:30 PM	0	0	33	1	3	4	35	0	0	1	0	3	0	2	0	0	82	289	0	0	0	0
5:45 PM	0	0	25	0	1	7	41	0	0	1	0	2	0	1	0	0	78	264	0	0	1	0
6:00 PM	0	0	16	2	3	2	35	0	0	1	0	3	0	2	0	0	64	222	0	0	1	0
6:15 PM	0	0	25	2	0	2	27	0	0	0	0	6	0	3	0	0	65		0	0	1	0
6:30 PM	1	0	18	1	0	4	31	0	0	0	0	1	0	1	0	0	57		0	0	0	0
6:45 PM	0	0	8	1	0	3	22	0	0	0	0	1	0	1	0	0	36		0	0	1	0
Count Total	5	20	1,183	27	156	161	1,237	131	0	26	2	207	1	138	5	12	3,311		3	2	75	11
Peak Hour	1	1	114	2	25	21	156	10	0	4	0	19	0	22	0	5	380		0	0	5	1

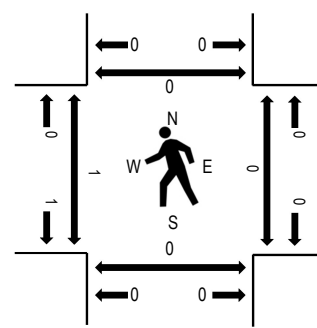
**Peak Hour - Motorized Vehicles**



**Peak Hour - Bicycles**



**Peak Hour - Pedestrians**



Note: Total study counts contained in parentheses.

**Traffic Counts - Motorized Vehicles**

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				NORTH UNION BLVD Northbound				NORTH UNION BLVD 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
	6:00 AM	0	3	4	7	0	1	1	6	0	0	13	0	0	1	32			0	68	484	0
6:15 AM	0	5	1	5	0	1	4	5	1	1	19	1	0	7	41	1	92	667	0	0	0	0
6:30 AM	0	15	3	7	0	0	0	12	1	3	19	0	0	4	70	1	135	923	0	1	2	0
6:45 AM	0	9	3	8	0	1	2	12	1	5	35	6	0	12	90	5	189	1,192	0	0	0	0
7:00 AM	0	18	2	15	0	3	5	12	2	4	62	2	0	12	107	7	251	1,354	0	0	0	0
7:15 AM	0	24	6	18	0	4	5	12	0	11	68	5	1	12	169	13	348	1,392	0	0	0	0
7:30 AM	0	19	9	23	0	3	9	7	5	14	75	4	0	18	197	21	404	1,367	0	0	2	0
7:45 AM	0	13	10	12	0	3	5	9	3	17	78	7	0	15	165	14	351	1,258	1	0	2	0
8:00 AM	0	20	6	17	0	3	5	13	1	6	59	7	0	18	128	6	289	1,185	0	1	1	0
8:15 AM	0	13	4	9	0	3	4	18	0	8	73	4	0	22	152	13	323	1,167	0	0	0	0
8:30 AM	0	7	6	23	0	2	5	18	4	7	70	9	0	24	111	9	295	1,106	0	1	0	0
8:45 AM	0	11	9	10	0	4	8	16	0	12	65	11	0	26	101	5	278	1,066	0	0	1	0
9:00 AM	1	18	6	9	0	5	6	19	2	15	66	7	0	23	84	10	271	1,073	0	0	0	0
9:15 AM	0	12	4	14	0	4	2	28	2	13	61	8	1	14	95	4	262	1,075	0	0	0	0
9:30 AM	0	9	7	20	0	2	3	17	3	10	49	11	0	25	93	6	255	1,095	0	0	0	0
9:45 AM	0	10	6	9	0	4	15	24	6	7	66	12	0	19	97	10	285	1,120	0	0	1	0
10:00 AM	0	11	4	13	0	11	9	28	4	5	63	13	0	22	86	4	273	1,137	0	0	0	0
10:15 AM	0	10	8	15	0	10	4	20	6	11	69	13	0	18	89	9	282	1,175	0	0	0	0
10:30 AM	0	13	1	15	0	13	13	23	4	4	65	4	0	13	106	6	280	1,200	0	0	2	0
10:45 AM	0	13	3	17	0	7	5	27	1	12	78	14	0	16	98	11	302	1,245	0	0	0	0
11:00 AM	0	13	5	17	0	12	9	23	7	13	76	15	0	10	99	12	311	1,269	0	0	0	0
11:15 AM	0	10	5	11	0	7	14	15	4	18	87	13	1	26	83	13	307	1,261	0	0	2	0
11:30 AM	0	26	7	7	0	12	12	22	5	14	97	10	1	20	80	12	325	1,264	0	0	0	0
11:45 AM	0	14	6	13	0	5	2	21	3	15	96	16	0	27	88	20	326	1,229	0	0	0	0
12:00 PM	0	9	3	12	0	17	10	36	5	18	82	10	0	18	74	9	303	1,179	1	0	2	0
12:15 PM	0	9	5	12	0	4	8	30	3	10	97	8	0	19	84	21	310	1,192	0	0	0	1
12:30 PM	0	9	11	13	0	15	4	18	0	14	83	14	1	15	82	11	290	1,176	0	0	0	0
12:45 PM	0	16	5	14	0	9	9	19	1	13	77	14	0	21	75	3	276	1,181	0	0	0	0
1:00 PM	0	9	5	15	0	10	7	26	3	11	110	10	0	12	84	14	316	1,220	0	0	0	0
1:15 PM	0	9	5	12	0	7	6	29	1	13	88	8	2	17	87	10	294	1,196	1	0	1	0
1:30 PM	0	10	3	13	0	7	2	20	4	12	83	4	0	25	102	10	295	1,198	0	0	1	0
1:45 PM	0	7	4	11	0	9	8	18	5	28	87	13	3	21	89	12	315	1,246	0	0	0	0
2:00 PM	0	9	9	13	0	6	12	15	7	12	83	12	1	23	78	12	292	1,322	0	0	0	0
2:15 PM	0	14	7	14	0	4	11	24	6	17	89	13	0	16	71	10	296	1,440	0	0	0	0

2:30 PM	1	14	9	15	0	9	12	27	5	9	98	5	0	20	108	11	343	1,571	0	0	1	0
2:45 PM	0	14	7	14	0	7	8	28	4	23	137	5	0	27	103	14	391	1,641	0	0	0	0
3:00 PM	0	16	8	20	0	6	11	31	8	17	128	7	0	21	120	17	410	1,683	0	0	0	0
3:15 PM	0	12	2	8	0	5	8	31	4	15	162	14	0	26	113	27	427	1,689	0	0	0	0
3:30 PM	0	17	5	17	0	6	12	34	2	19	150	11	0	19	102	19	413	1,707	0	0	0	0
3:45 PM	0	23	4	17	0	11	7	21	5	13	133	13	0	21	145	20	433	1,726	0	0	0	0
4:00 PM	0	16	6	18	0	9	8	24	3	23	152	11	1	17	111	17	416	1,679	0	0	0	0
4:15 PM	0	10	8	18	0	8	9	28	1	20	170	13	0	27	110	23	445	1,702	0	0	0	0
4:30 PM	0	19	14	13	0	3	13	25	6	16	169	13	1	17	108	15	432	1,692	1	0	0	0
4:45 PM	1	21	8	14	0	4	5	28	1	19	140	6	2	19	101	17	386	1,671	0	1	1	0
5:00 PM	0	19	11	19	0	10	10	22	5	18	156	9	0	22	115	23	439	1,644	0	1	1	0
5:15 PM	0	15	5	15	0	12	11	29	5	21	161	9	0	19	118	15	435	1,530	0	0	0	0
5:30 PM	0	22	11	13	0	6	4	24	2	18	162	9	0	15	108	17	411	1,405	0	1	0	0
5:45 PM	0	7	8	15	0	4	13	39	2	22	120	6	2	21	85	15	359	1,282	0	0	1	0
6:00 PM	0	12	1	11	0	10	8	28	5	20	111	7	0	11	92	9	325	1,139	0	0	0	0
6:15 PM	0	14	8	12	0	6	5	20	6	12	110	6	0	18	80	13	310		0	0	0	0
6:30 PM	0	6	5	9	0	4	9	23	5	11	106	6	1	13	77	13	288		0	0	0	1
6:45 PM	0	4	1	3	0	1	6	13	4	7	84	4	1	8	67	13	216		0	0	0	0
Count Total	3	678	303	694	0	329	383	1,117	173	676	4,837	452	19	932	5,150	622	16,368		4	7	21	2
Peak Hour	0	68	32	66	0	31	37	98	15	72	624	50	2	82	474	75	1,726		1	0	0	0



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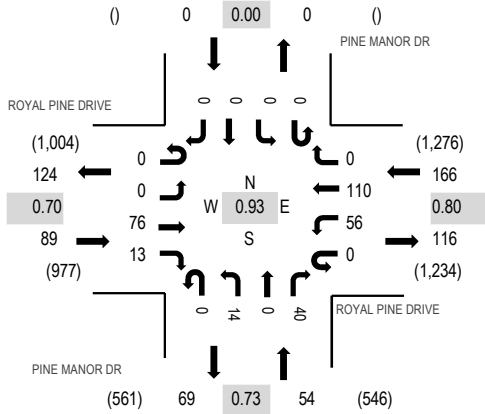
Location: 3 PINE MANOR DR & ROYAL PINE DRIVE AM

Date: Thursday, September 7, 2023

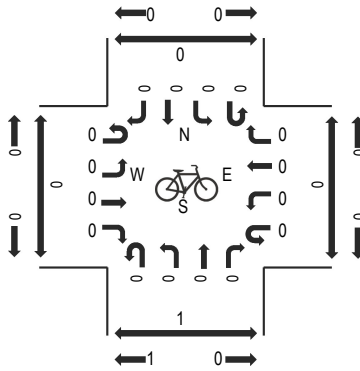
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

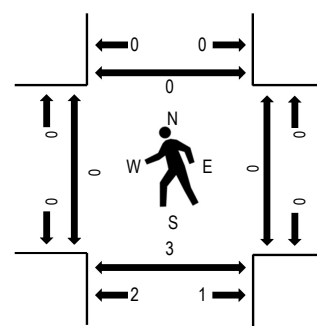
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ROYAL PINE DRIVE Eastbound				ROYAL PINE DRIVE Westbound				PINE MANOR DR Northbound				PINE MANOR DR 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
6:00 AM	0	0	9	1	0	1	0	0	0	1	0	1	0	0	0	0	13	80	0	0	0	0
6:15 AM	0	0	4	0	0	1	3	0	0	0	0	4	0	0	0	0	12	110	0	0	1	0
6:30 AM	0	0	12	1	0	1	2	0	0	0	0	10	0	0	0	0	26	155	0	0	2	0
6:45 AM	0	0	11	2	0	5	4	0	0	0	0	7	0	0	0	0	29	209	0	0	0	0
7:00 AM	0	0	13	2	0	1	9	0	0	1	0	17	0	0	0	0	43	239	0	0	5	1
7:15 AM	0	0	16	5	0	4	8	0	0	4	0	20	0	0	0	0	57	238	0	0	0	0
7:30 AM	0	0	30	8	0	1	26	0	0	4	0	11	0	0	0	0	80	240	0	0	0	0
7:45 AM	0	0	18	7	0	7	14	0	0	2	0	11	0	0	0	0	59	216	0	0	5	0
8:00 AM	0	0	20	3	0	2	7	0	0	0	0	10	0	0	0	0	42	203	0	0	2	0
8:15 AM	0	0	15	5	0	6	14	0	0	9	0	10	0	0	0	0	59	213	0	0	3	0
8:30 AM	0	0	26	2	0	5	12	0	0	4	0	7	0	0	0	0	56	187	0	0	4	0
8:45 AM	0	0	18	6	0	4	10	0	0	1	0	7	0	0	0	0	46	169	0	0	3	0
9:00 AM	0	0	19	2	0	7	17	0	0	3	0	4	0	0	0	0	52	159	0	0	0	0
9:15 AM	0	0	16	0	0	5	6	0	0	1	0	5	0	0	0	0	33	149	0	0	1	0
9:30 AM	0	0	15	2	0	4	8	0	0	0	0	9	0	0	0	0	38	154	0	0	3	0
9:45 AM	0	0	12	3	0	4	11	0	0	1	0	5	0	0	0	0	36	151	0	0	5	0
10:00 AM	0	0	19	1	0	5	8	0	0	4	0	5	0	0	0	0	42	163	0	0	2	0
10:15 AM	0	0	10	0	0	6	15	0	0	1	0	6	0	0	0	0	38	175	0	0	5	0
10:30 AM	0	0	12	4	0	2	10	0	0	1	0	6	0	0	0	0	35	200	0	0	1	0
10:45 AM	0	0	22	4	0	4	13	0	0	0	0	5	0	0	0	0	48	225	0	0	2	0
11:00 AM	0	0	15	3	0	6	18	0	0	1	0	11	0	0	0	0	54	237	0	0	1	0
11:15 AM	0	0	12	5	0	12	27	0	0	1	0	6	0	0	0	0	63	238	0	1	0	0
11:30 AM	0	0	18	4	0	6	18	0	0	4	0	10	0	0	0	0	60	235	0	0	2	0
11:45 AM	0	0	17	2	0	10	21	0	0	4	0	6	0	0	0	0	60	216	0	0	2	0
12:00 PM	0	0	9	0	0	9	27	0	0	5	0	5	0	0	0	0	55	206	0	0	0	0
12:15 PM	0	0	16	2	0	11	22	0	0	1	0	8	0	0	0	0	60	196	0	0	2	0
12:30 PM	0	0	11	0	0	3	17	0	0	2	0	8	0	0	0	0	41	177	0	0	1	0
12:45 PM	0	0	15	5	0	7	12	0	0	3	0	8	0	0	0	0	50	165	0	0	2	0
1:00 PM	0	0	17	3	0	11	9	0	0	1	0	4	0	0	0	0	45	169	0	0	0	0
1:15 PM	0	0	16	4	0	11	9	0	0	0	0	1	0	0	0	0	41	182	0	0	1	0
1:30 PM	0	0	10	1	0	3	10	0	0	2	0	3	0	0	0	0	29	204	0	0	1	0
1:45 PM	0	0	15	1	0	9	22	0	0	4	0	3	0	0	0	0	54	235	0	0	0	0
2:00 PM	0	0	12	1	0	10	22	0	0	3	0	10	0	0	0	0	58	235	0	0	1	0
2:15 PM	0	0	23	1	0	7	21	0	0	2	0	9	0	0	0	0	63	263	0	0	0	0

2:30 PM	0	0	14	2	0	9	18	0	0	7	0	10	0	0	0	60	272	0	0	0	0
2:45 PM	0	0	9	3	0	12	15	0	0	3	0	12	0	0	0	54	282	0	0	0	0
3:00 PM	0	0	22	4	0	14	27	0	0	6	0	13	0	0	0	86	306	0	0	0	0
3:15 PM	0	0	18	5	0	17	27	0	0	0	0	5	0	0	0	72	279	0	0	0	0
3:30 PM	0	0	15	3	0	12	24	0	0	7	0	9	0	0	0	70	290	0	0	1	0
3:45 PM	0	0	24	10	0	10	21	0	0	4	0	9	0	0	0	78	291	0	0	0	0
4:00 PM	0	0	19	2	0	10	19	0	0	2	0	7	0	0	0	59	290	0	0	0	1
4:15 PM	0	0	20	2	0	16	36	0	0	1	0	8	0	0	0	83	309	0	0	0	0
4:30 PM	0	0	21	1	0	13	25	0	0	2	0	9	0	0	0	71	291	0	0	2	0
4:45 PM	0	0	26	4	0	13	20	0	0	4	0	10	0	0	0	77	296	0	0	0	0
5:00 PM	0	0	9	6	0	14	29	0	0	7	0	13	0	0	0	78	293	0	0	1	0
5:15 PM	0	0	16	0	0	13	25	0	0	2	0	9	0	0	0	65	277	0	0	0	0
5:30 PM	0	0	18	4	0	11	24	0	0	3	0	16	0	0	0	76	276	0	0	0	0
5:45 PM	0	0	22	2	0	12	31	0	0	5	0	2	0	0	0	74	257	0	0	1	0
6:00 PM	0	0	14	2	0	13	22	0	0	6	0	5	0	0	0	62	219	0	0	2	0
6:15 PM	0	0	16	5	0	14	14	0	0	5	0	10	0	0	0	64		0	0	1	0
6:30 PM	0	0	15	1	0	9	23	0	0	4	0	5	0	0	0	57		0	0	0	0
6:45 PM	0	0	6	4	0	9	13	0	0	1	0	3	0	0	0	36		0	0	0	0
Count Total	0	0	827	150	0	411	865	0	0	139	0	407	0	0	0	2,799		0	1	65	2
Peak Hour	0	0	76	13	0	56	110	0	0	14	0	40	0	0	0	309		0	0	3	0

**All Traffic Data Services**  
 9660 W 44th Ave  
 Wheat Ridge, CO 80033  
[www.alltrafficdata.net](http://www.alltrafficdata.net)

Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	22-Aug-23 Tue	EB	WB	Total						
12:00 AM		15	2	17						
01:00		2	2	4						
02:00		1	1	2						
03:00		2	3	5						
04:00		5	13	18						
05:00		8	29	37						
06:00		40	75	115						
07:00		109	<b>223</b>	<b>332</b>						
08:00		88	169	257						
09:00		121	149	270						
10:00		131	167	298						
11:00		<b>155</b>	157	312						
12:00 PM		147	163	310						
01:00		139	141	280						
02:00		154	133	287						
03:00		<b>229</b>	174	<b>403</b>						
04:00		188	185	373						
05:00		199	<b>191</b>	390						
06:00		173	156	329						
07:00		124	86	210						
08:00		114	54	168						
09:00		82	31	113						
10:00		48	15	63						
11:00		14	7	21						
Total		2288	2326	4614						
Percent		49.6%	50.4%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	155	223	-	-	-	-	-	-	332
PM Peak	-	15:00	17:00	-	-	-	-	-	-	15:00
Vol.	-	229	191	-	-	-	-	-	-	403

**All Traffic Data Services**  
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 Wheat Ridge, CO 80033  
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Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	23-Aug-23 Wed	EB	WB							Total
12:00 AM		9	4							13
01:00		7	5							12
02:00		1	0							1
03:00		2	3							5
04:00		2	9							11
05:00		2	26							28
06:00		35	82							117
07:00		121	<b>212</b>							<b>333</b>
08:00		110	158							268
09:00		118	141							259
10:00		105	146							251
11:00		<b>144</b>	150							294
12:00 PM		133	158							291
01:00		141	139							280
02:00		136	122							258
03:00		<b>209</b>	166							<b>375</b>
04:00		179	164							343
05:00		184	<b>179</b>							363
06:00		185	111							296
07:00		80	59							139
08:00		131	55							186
09:00		67	26							93
10:00		33	9							42
11:00		16	4							20
Total		2150	2128							4278
Percent		50.3%	49.7%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	144	212	-	-	-	-	-	-	333
PM Peak	-	15:00	17:00	-	-	-	-	-	-	15:00
Vol.	-	209	179	-	-	-	-	-	-	375

**All Traffic Data Services**  
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Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	24-Aug-23 Thu	EB	WB							Total
12:00 AM		8	2							10
01:00		5	1							6
02:00		2	1							3
03:00		1	6							7
04:00		3	2							5
05:00		6	27							33
06:00		24	88							112
07:00		109	<b>221</b>							<b>330</b>
08:00		84	162							246
09:00		102	150							252
10:00		134	130							264
11:00		<b>160</b>	150							310
12:00 PM		127	121							248
01:00		132	139							271
02:00		155	147							302
03:00		197	<b>175</b>							<b>372</b>
04:00		<b>199</b>	170							369
05:00		154	151							305
06:00		116	100							216
07:00		104	79							183
08:00		117	52							169
09:00		103	38							141
10:00		51	14							65
11:00		16	6							22
Total		2109	2132							4241
Percent		49.7%	50.3%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	160	221	-	-	-	-	-	-	330
PM Peak	-	16:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	199	175	-	-	-	-	-	-	372



Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	25-Aug-23 Fri	EB	WB	Total						
12:00 AM		8	0	8						
01:00		6	0	6						
02:00		6	6	12						
03:00		4	4	8						
04:00		2	0	2						
05:00		10	25	35						
06:00		27	71	98						
07:00		97	195	292						
08:00		77	148	225						
09:00		112	172	284						
10:00		105	137	242						
11:00		155	162	317						
12:00 PM		134	150	284						
01:00		113	116	229						
02:00		162	138	300						
03:00		196	146	342						
04:00		137	144	281						
05:00		146	149	295						
06:00		127	104	231						
07:00		83	53	136						
08:00		103	56	159						
09:00		85	54	139						
10:00		41	28	69						
11:00		13	10	23						
Total		1949	2068	4017						
Percent		48.5%	51.5%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	11:00
Vol.	-	155	195	-	-	-	-	-	-	317
PM Peak	-	15:00	12:00	-	-	-	-	-	-	15:00
Vol.	-	196	150	-	-	-	-	-	-	342

**All Traffic Data Services**  
 9660 W 44th Ave  
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 www.alltrafficdata.net

Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	26-Aug-23 Sat	EB	WB	Total						
12:00 AM		10	9	19						
01:00		4	4	8						
02:00		4	2	6						
03:00		1	4	5						
04:00		4	7	11						
05:00		8	12	20						
06:00		10	19	29						
07:00		25	66	91						
08:00		55	108	163						
09:00		77	158	235						
10:00		116	129	245						
11:00		108	120	228						
12:00 PM		114	130	244						
01:00		108	119	227						
02:00		118	109	227						
03:00		115	117	232						
04:00		120	106	226						
05:00		129	110	239						
06:00		100	111	211						
07:00		64	38	102						
08:00		78	75	153						
09:00		71	64	135						
10:00		50	33	83						
11:00		30	24	54						
Total		1519	1674	3193						
Percent		47.6%	52.4%							
AM Peak	-	10:00	09:00	-	-	-	-	-	-	10:00
Vol.	-	116	158	-	-	-	-	-	-	245
PM Peak	-	17:00	12:00	-	-	-	-	-	-	12:00
Vol.	-	129	130	-	-	-	-	-	-	244



**All Traffic Data Services**  
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Site Code: 3  
 Station ID: 3  
 ROYAL PINE DR W.O. N UNION BLVD

Start Time	28-Aug-23 Mon	EB	WB	Total					
12:00 AM		7	1	8					
01:00		7	1	8					
02:00		1	0	1					
03:00		0	5	5					
04:00		7	13	20					
05:00		8	50	58					
06:00		23	65	88					
07:00		110	<b>197</b>	307					
08:00		105	163	268					
09:00		111	153	264					
10:00		110	136	246					
11:00		<b>153</b>	156	<b>309</b>					
12:00 PM		139	137	276					
01:00		125	139	264					
02:00		171	144	315					
03:00		201	166	367					
04:00		189	<b>179</b>	<b>368</b>					
05:00		<b>207</b>	158	365					
06:00		117	99	216					
07:00		101	66	167					
08:00		111	50	161					
09:00		56	34	90					
10:00		25	19	44					
11:00		19	4	23					
Total		2103	2135	4238					
Percent		49.6%	50.4%						
AM Peak	-	11:00	07:00	-	-	-	-	-	11:00
Vol.	-	153	197	-	-	-	-	-	309
PM Peak	-	17:00	16:00	-	-	-	-	-	16:00
Vol.	-	207	179	-	-	-	-	-	368
Grand Total		13493	13933						27426
Percent		49.2%	50.8%						
ADT		ADT 3,918	AADT 3,918						

# NTMP Data Summary Sheet: Pine Manor Dr. (E of Sycamore Glen Trl.)

## Project/Location:

Count Location:	Pine Manor Dr.	Average Speed (direction):	35mph (EB)
Count Date:	7/18/2019	Average Speed (direction):	38mph (WB)
Duration:	24 Hours	Mode Speed (direction):	30mph (EB)
Weather:	Fair	Mode Speed (direction):	35mph (WB)
ADT/Direction:	549/EB	% Exceeding Posted Speed (direction):	95.34% (EB)
ADT/Direction:	582/WB	% Exceeding Posted Speed (direction):	99.12% (WB)
ADT/Combined:	1131	Top 15% Speed Exceeds (direction) :	40.85 (EB)
Posted Speed:	25 mph	Top 15% Speed Exceeds (direction) :	43.76 (WB)
Roadway Width:	36 feet		

**Adjusted Avg. Speed:** 36mph  
**Average Travel Speed:** 37mph  
**Mode Speed Average:** 33mph

## Comments:

No Striping

No On-Street Parking

0 Reported Speed-Related Accidents (3YR)

# NTMP Data Summary Sheet: Pine Manor Dr. (W of Sand Flower Dr.)

## Project/Location:

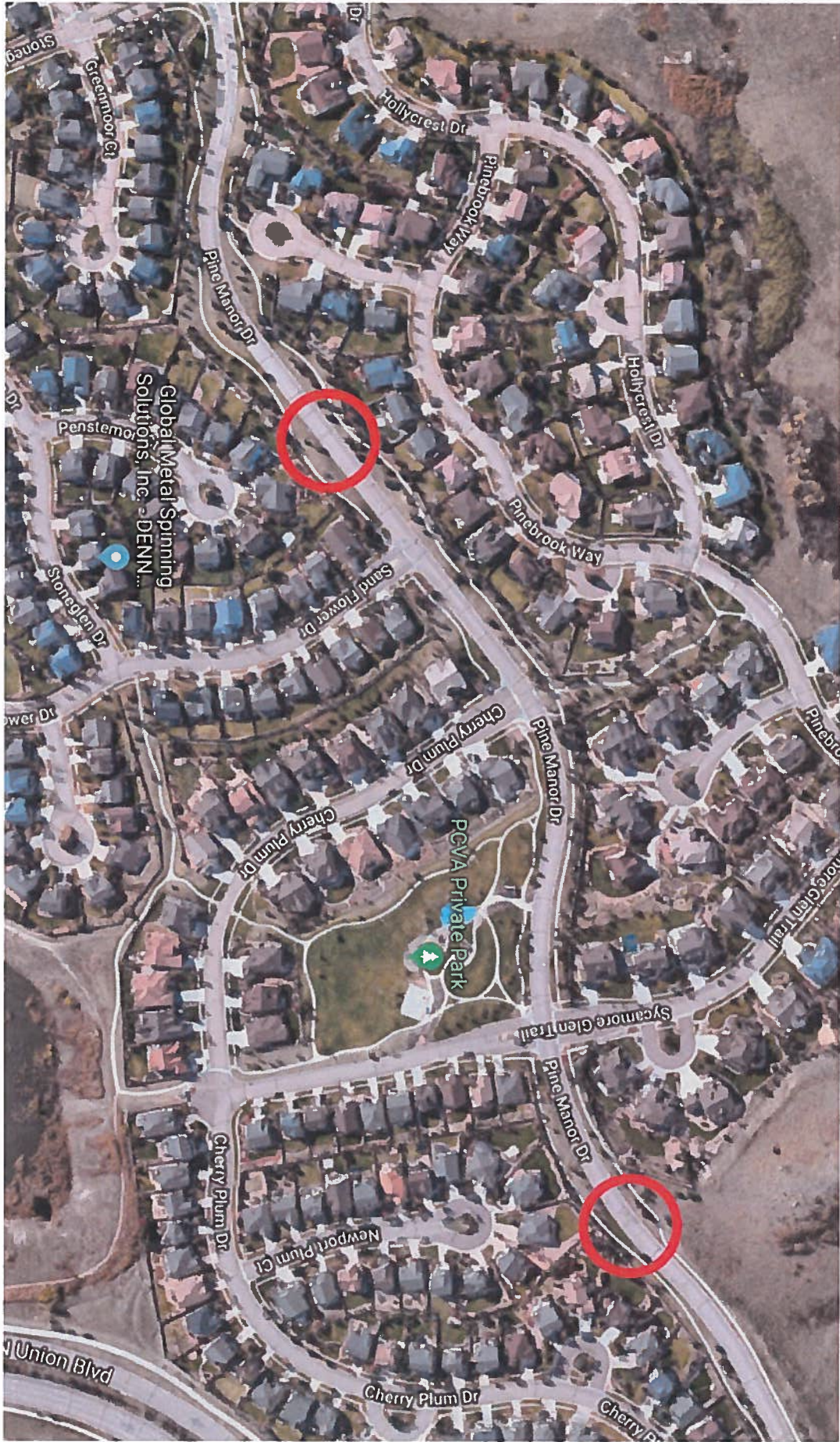
Count Location: Pine Manor Dr.  
Count Date: 7/18/2019  
Duration: 24 Hours  
Weather: Fair  
ADT/Direction: 534/EB  
ADT/Direction: 587/WB  
ADT/Combined: 1121  
Posted Speed: 25 mph  
Roadway Width: 36 feet

Average Speed (direction): 35mph (EB)  
Average Speed (direction): 35mph (WB)  
Mode Speed (direction): 30mph (EB)  
Mode Speed (direction): 30mph (WB)  
% Exceeding Posted Speed (direction): 90.41% (EB)  
% Exceeding Posted Speed (direction): 94.14% (WB)  
Top 15% Speed Exceeds (direction) : 42.00 (EB)  
Top 15% Speed Exceeds (direction) : 41.42 (WB)

**Adjusted Avg. Speed:** 35mph  
**Average Travel Speed:** 35mph  
**Mode Speed Average:** 30mph

## Comments:

- No Striping
- No On-Street Parking
- 0 Reported Speed-Related Accidents (3YR)



# NTMP Data Summary Sheet: Royal Pine Dr. (S of Pinedale Dr.)

## Project/Location:

Count Location: Royal Pine Dr.  
Count Date: 4/27/2022  
Duration: 24 Hours  
Weather: Fair  
ADT/Direction: 697/NB  
ADT/Direction: 595/SB  
ADT/Combined: 1292  
Posted Speed: 30 mph  
Roadway Width: 40 feet

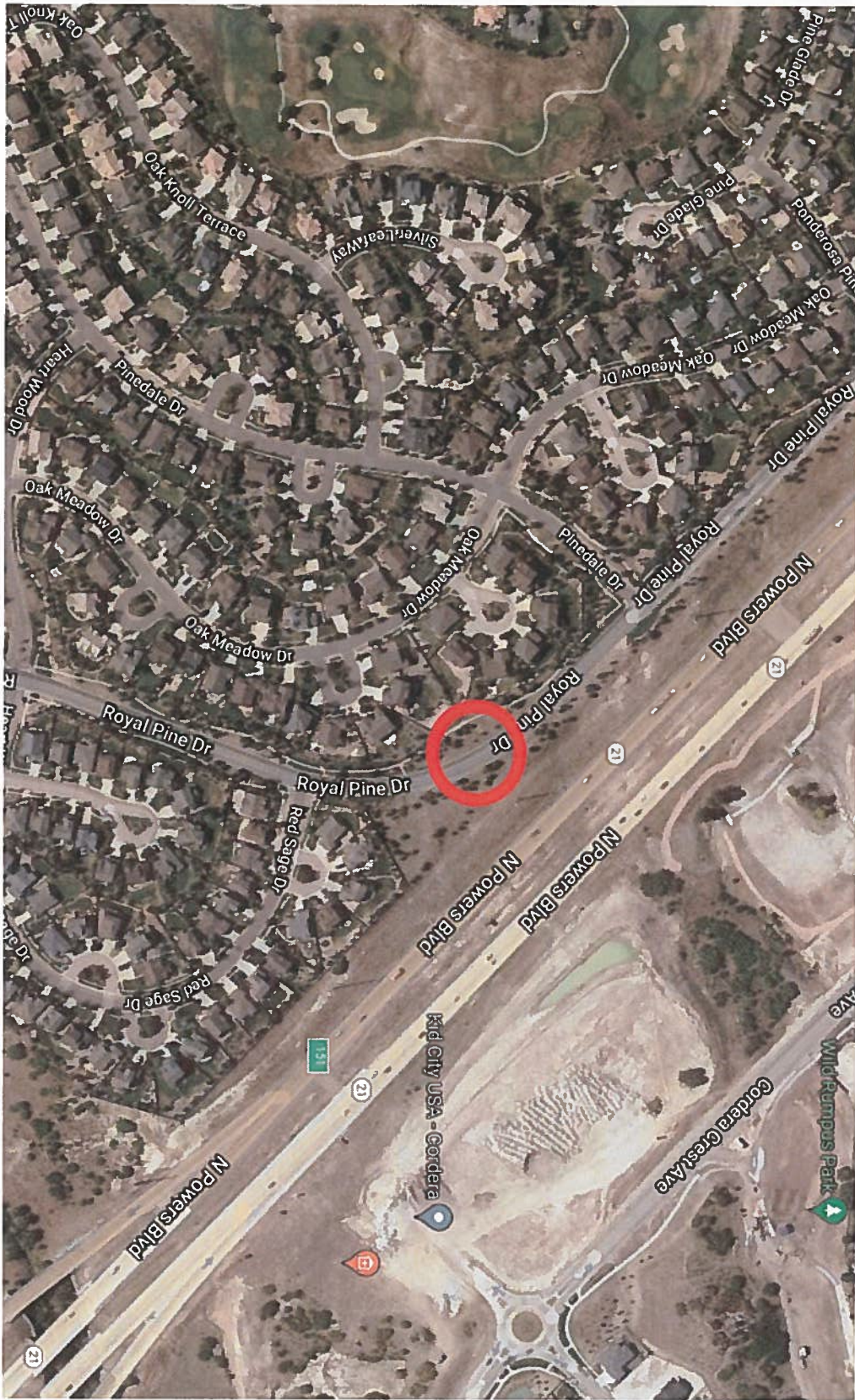
Average Speed (direction): 37mph (NB)  
Average Speed (direction): 36mph (SB)  
Mode Speed (direction): 36mph (NB)  
Mode Speed (direction): 35mph (SB)  
% Exceeding Posted Speed (direction): 95.30% (NB)  
% Exceeding Posted Speed (direction): 93.60% (SB)  
Top 15% Speed Exceeds (direction) : 41mph (NB)  
Top 15% Speed Exceeds (direction) : 40mph (SB)

Average Travel Speed: 37mph  
Mode Speed Average: 36mph

## Comments:

- Center Turn Lane/Bike Lanes
- No On-Street Parking
- 1 Speed-Related Accident Reported (3YR)





For Project:

Royal Pine Dr.

Project Notes:

S of Pinedale Dr.

Location/Name:

NB Royal Pine Dr.

Report Generated:

5/2/2022

13:20

Speed Intervals

1 MPH

Time Intervals

Instant

Traffic Report From

4/27/2022

00:00:00

through

4/27/2022

23:59:5

85th Percentile Speed

41 MPH

85th Percentile Vehicles

592

Max Speed

63 MPH

Total Vehicles

697

AADT:

697

## Volumes -

### weekly counts

Average Daily

Time

5 Day

7 Day

AM Peak

07:15

697

697

PM Peak

05:00

54

54

## Speed

Speed Limit:

30

85th Percentile Speed:

41

Average Speed:

36.84

Count over limit

N/A

% over limit

N/A

Avg Speeder

N/A

## Class Counts

VEH\_SM

N/A

VEH\_MED

N/A

VEH\_LG

N/A

[VEH\_SM=motorcycle,

VEH\_MED = sedan,

VEH\_LG = truck]

Monday	Tuesday	Wednesday	Thursday	Friday
N/A	N/A	664	N/A	N/A
N/A	N/A	95.3	N/A	N/A
N/A	N/A	37.3	N/A	N/A
Number				
%				
0		0		
687		98.6		
10		1.4		

For Project:

Project Notes:

Location/Name:

Report Generated:

Speed Intervals

Time Intervals

Traffic Report From

85th Percentile Speed

85th Percentile Vehicles

Max Speed

Total Vehicles

AADT:

Royal Pine Dr.  
S of Pinedale Dr.  
SB Royal Pine Dr.

5/2/2022

13:23

Instant

4/27/2022

00:00:00

through

4/27/2022

23:59:59

40 MPH

506

49 MPH

595

595

on

4/27/2022

07:08:07

## Volumes -

### Weekly counts

Average Daily

AM Peak

PM Peak

### Speed

Speed Limit:

85th Percentile Speed:

Average Speed:

Time

5 Day

7 Day

07:30  
02:30

595  
67  
63

595  
67  
63

30  
40  
36.29

Monday

Tuesday

Wednesday

Thursday

Friday

N/A  
N/A  
N/A

N/A  
N/A  
N/A

557  
93.6  
36.9

N/A  
N/A  
N/A

N/A  
N/A  
N/A

### Class Counts

Count over limit

% over limit

Avg Speeder

Number

%

VEH\_SM  
VEH\_MED  
VEH\_LG  
[VEH\_SM=motorcycle,

0  
584  
11  
VEH\_MED = sedan,

0  
98.2  
1.8  
VEH\_LG = truck]

HCM 6th Roundabout  
3: Purple Plum Way & Royal Pine Dr

AM Existing  
10/17/2023

Intersection				
Intersection Delay, s/veh	3.5			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	157	6	122	35
Demand Flow Rate, veh/h	160	6	125	36
Vehicles Circulating, veh/h	19	100	5	163
Vehicles Exiting, veh/h	87	29	194	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	2.9	3.4	3.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	160	6	125	36
Cap Entry Lane, veh/h	1353	1246	1373	1169
Entry HV Adj Factor	0.981	1.000	0.974	0.972
Flow Entry, veh/h	157	6	122	35
Cap Entry, veh/h	1328	1246	1337	1135
V/C Ratio	0.118	0.005	0.091	0.031
Control Delay, s/veh	3.7	2.9	3.4	3.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Timings  
6: N Union Blvd & Royal Pine Dr

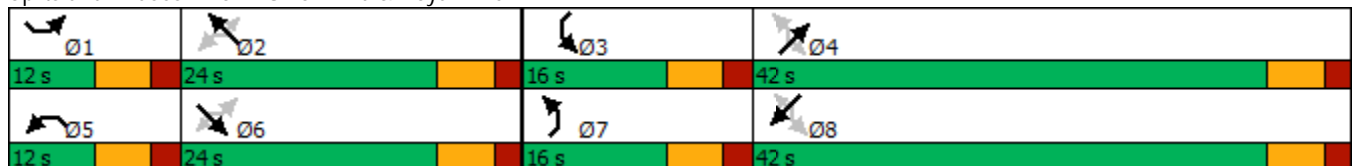
AM Existing  
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	74	27	75	12	22	48	57	275	23	64	675	62
Future Volume (vph)	74	27	75	12	22	48	57	275	23	64	675	62
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	13.5	12.6	12.6	11.4	8.9	8.9	20.2	21.1	21.1	19.7	20.9	20.9
Actuated g/C Ratio	0.29	0.27	0.27	0.25	0.19	0.19	0.44	0.46	0.46	0.43	0.45	0.45
v/c Ratio	0.19	0.06	0.15	0.03	0.07	0.12	0.12	0.13	0.03	0.12	0.32	0.08
Control Delay	17.4	21.2	0.5	16.5	26.3	0.5	8.7	14.3	0.1	8.7	15.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	21.2	0.5	16.5	26.3	0.5	8.7	14.3	0.1	8.7	15.3	0.2
LOS	B	C	A	B	C	A	A	B	A	A	B	A
Approach Delay		10.7			9.8			12.5			13.6	
Approach LOS		B			A			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 46.2  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.32  
 Intersection Signal Delay: 12.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 43.0%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

AM Existing  
10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	74	27	75	12	22	48	57	275	23	64	675	62
Future Volume (veh/h)	74	27	75	12	22	48	57	275	23	64	675	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	29	82	13	24	52	62	299	25	70	734	67
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	183	155	414	227	193	349	1362	423	489	1384	430
Arrive On Green	0.07	0.10	0.10	0.09	0.12	0.12	0.06	0.27	0.27	0.06	0.27	0.27
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	80	29	82	13	24	52	62	299	25	70	734	67
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	2.0	0.7	2.4	0.3	0.6	1.5	1.2	2.3	0.6	1.4	6.1	1.6
Cycle Q Clear(g_c), s	2.0	0.7	2.4	0.3	0.6	1.5	1.2	2.3	0.6	1.4	6.1	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	394	183	155	414	227	193	349	1362	423	489	1384	430
V/C Ratio(X)	0.20	0.16	0.53	0.03	0.11	0.27	0.18	0.22	0.06	0.14	0.53	0.16
Avail Cap(c_a), veh/h	489	677	573	467	677	573	604	3694	1147	736	3694	1147
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	20.6	21.3	16.5	19.5	19.9	12.1	14.2	13.6	11.7	15.4	13.8
Incr Delay (d2), s/veh	0.3	0.4	2.8	0.0	0.2	0.7	0.2	0.1	0.1	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.9	0.1	0.2	0.5	0.4	0.7	0.2	0.4	2.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	21.0	24.1	16.5	19.7	20.6	12.4	14.3	13.7	11.9	15.8	14.0
LnGrp LOS	B	C	C	B	B	C	B	B	B	B	B	B
Approach Vol, veh/h		191			89			386			871	
Approach Delay, s/veh		21.2			19.7			13.9			15.3	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	12.0	9.1	19.3	10.5	10.9	8.9	19.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	4.0	3.5	3.4	4.3	2.3	4.4	3.2	8.1				
Green Ext Time (p_c), s	0.0	0.2	0.1	2.0	0.0	0.3	0.0	5.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.0									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	92	21	14	64	13	53
Future Vol, veh/h	92	21	14	64	13	53
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	100	23	15	70	14	58

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	123	0	212
Stage 1	-	-	-	-	112
Stage 2	-	-	-	-	100
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1464	-	776
Stage 1	-	-	-	-	913
Stage 2	-	-	-	-	924
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1464	-	767
Mov Cap-2 Maneuver	-	-	-	-	767
Stage 1	-	-	-	-	913
Stage 2	-	-	-	-	914

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	901	-	-	1464	-
HCM Lane V/C Ratio	0.08	-	-	0.01	-
HCM Control Delay (s)	9.3	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th Roundabout  
3: Purple Plum Way & Royal Pine Dr

PM Existing  
10/17/2023

Intersection				
Intersection Delay, s/veh	3.8			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	139	20	220	23
Demand Flow Rate, veh/h	142	20	224	23
Vehicles Circulating, veh/h	68	218	5	154
Vehicles Exiting, veh/h	170	11	172	56
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	3.4	4.0	3.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	142	20	224	23
Cap Entry Lane, veh/h	1287	1105	1373	1179
Entry HV Adj Factor	0.979	1.000	0.982	0.997
Flow Entry, veh/h	139	20	220	23
Cap Entry, veh/h	1260	1105	1348	1176
V/C Ratio	0.110	0.018	0.163	0.020
Control Delay, s/veh	3.8	3.4	4.0	3.2
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Timings  
6: N Union Blvd & Royal Pine Dr

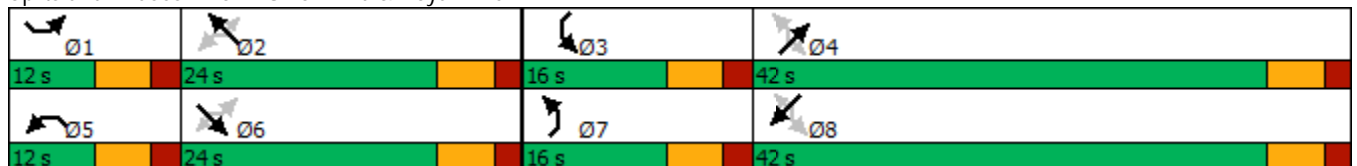
PM Existing  
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	65	39	64	32	42	108	91	622	43	85	443	71
Future Volume (vph)	65	39	64	32	42	108	91	622	43	85	443	71
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	13.1	11.3	11.3	12.2	9.3	9.3	21.0	20.3	20.3	20.3	19.9	19.9
Actuated g/C Ratio	0.27	0.23	0.23	0.25	0.19	0.19	0.43	0.42	0.42	0.42	0.41	0.41
v/c Ratio	0.17	0.10	0.14	0.08	0.13	0.26	0.18	0.32	0.06	0.18	0.23	0.10
Control Delay	17.0	23.5	0.6	16.2	25.5	3.5	9.4	16.9	0.2	9.6	16.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	23.5	0.6	16.2	25.5	3.5	9.4	16.9	0.2	9.6	16.7	0.3
LOS	B	C	A	B	C	A	A	B	A	A	B	A
Approach Delay		12.2			10.9			15.0			13.7	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 48.5  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.32  
 Intersection Signal Delay: 13.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 42.0%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

PM Existing  
10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	65	39	64	32	42	108	91	622	43	85	443	71
Future Volume (veh/h)	65	39	64	32	42	108	91	622	43	85	443	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	42	70	35	46	117	99	676	47	92	482	77
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	267	226	368	221	187	430	1299	403	380	1285	399
Arrive On Green	0.06	0.14	0.14	0.04	0.12	0.12	0.08	0.25	0.25	0.07	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	71	42	70	35	46	117	99	676	47	92	482	77
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	1.7	1.0	1.9	0.8	1.1	3.4	1.9	5.6	1.1	1.8	3.8	1.9
Cycle Q Clear(g_c), s	1.7	1.0	1.9	0.8	1.1	3.4	1.9	5.6	1.1	1.8	3.8	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	267	226	368	221	187	430	1299	403	380	1285	399
V/C Ratio(X)	0.19	0.16	0.31	0.10	0.21	0.62	0.23	0.52	0.12	0.24	0.37	0.19
Avail Cap(c_a), veh/h	483	689	584	517	689	584	660	3761	1168	615	3761	1168
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	18.4	18.8	17.7	19.5	20.5	11.9	15.7	14.0	12.1	15.1	14.4
Incr Delay (d2), s/veh	0.2	0.3	0.8	0.1	0.5	3.4	0.3	0.3	0.1	0.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.4	0.7	0.3	0.5	1.3	0.6	1.8	0.3	0.6	1.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	18.6	19.5	17.8	19.9	23.9	12.1	16.0	14.1	12.4	15.3	14.6
LnGrp LOS	B	B	B	B	B	C	B	B	B	B	B	B
Approach Vol, veh/h		183			198			822			651	
Approach Delay, s/veh		18.5			21.9			15.4			14.8	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	11.8	9.6	18.4	7.9	13.0	9.7	18.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	3.7	5.4	3.8	7.6	2.8	3.9	3.9	5.8				
Green Ext Time (p_c), s	0.0	0.4	0.1	4.9	0.0	0.3	0.1	3.5				

Intersection Summary

HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	80	16	56	109	16	40
Future Vol, veh/h	80	16	56	109	16	40
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	87	17	61	118	17	43

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	104	0	336 96
Stage 1	-	-	-	-	96 -
Stage 2	-	-	-	-	240 -
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	-	-	1488	-	659 960
Stage 1	-	-	-	-	928 -
Stage 2	-	-	-	-	800 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1488	-	630 960
Mov Cap-2 Maneuver	-	-	-	-	630 -
Stage 1	-	-	-	-	928 -
Stage 2	-	-	-	-	765 -

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	835	-	-	1488	-
HCM Lane V/C Ratio	0.073	-	-	0.041	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection				
Intersection Delay, s/veh	3.6			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	164	6	126	36
Demand Flow Rate, veh/h	167	6	129	37
Vehicles Circulating, veh/h	19	103	5	170
Vehicles Exiting, veh/h	90	31	202	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	2.9	3.4	3.5
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	167	6	129	37
Cap Entry Lane, veh/h	1353	1242	1373	1160
Entry HV Adj Factor	0.982	1.000	0.975	0.972
Flow Entry, veh/h	164	6	126	36
Cap Entry, veh/h	1329	1242	1338	1128
V/C Ratio	0.123	0.005	0.094	0.032
Control Delay, s/veh	3.7	2.9	3.4	3.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

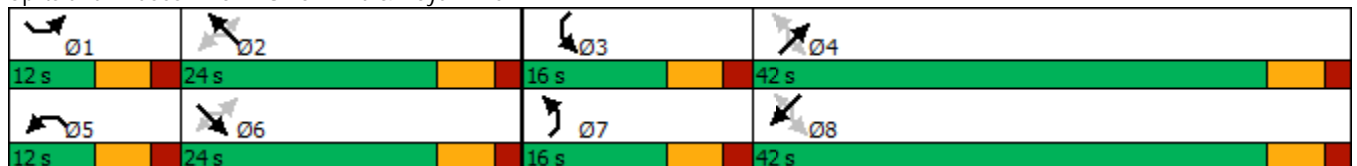
Timings  
6: N Union Blvd & Royal Pine Dr

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	77	28	78	12	23	50	59	286	24	67	702	65
Future Volume (vph)	77	28	78	12	23	50	59	286	24	67	702	65
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	13.3	12.4	12.4	11.2	8.6	8.6	21.0	21.6	21.6	20.5	21.4	21.4
Actuated g/C Ratio	0.28	0.26	0.26	0.24	0.18	0.18	0.45	0.46	0.46	0.44	0.46	0.46
v/c Ratio	0.21	0.06	0.16	0.03	0.07	0.12	0.13	0.13	0.03	0.12	0.33	0.09
Control Delay	17.7	21.4	0.6	16.8	26.6	0.6	8.7	14.2	0.1	8.7	15.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	21.4	0.6	16.8	26.6	0.6	8.7	14.2	0.1	8.7	15.3	0.2
LOS	B	C	A	B	C	A	A	B	A	A	B	A
Approach Delay		11.0			9.9			12.4			13.6	
Approach LOS		B			A			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 46.8  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.33  
 Intersection Signal Delay: 12.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 43.7%  
 ICU Level of Service A  
 Analysis Period (min) 15

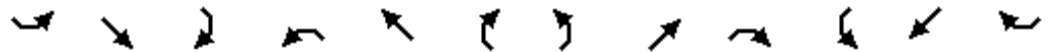
Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC AM 2025

10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	77	28	78	12	23	50	59	286	24	67	702	65
Future Volume (veh/h)	77	28	78	12	23	50	59	286	24	67	702	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	30	85	13	25	54	64	311	26	73	763	71
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	382	279	237	300	180	153	357	1419	441	503	1444	448
Arrive On Green	0.07	0.15	0.15	0.02	0.10	0.10	0.06	0.28	0.28	0.06	0.28	0.28
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	84	30	85	13	25	54	64	311	26	73	763	71
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	2.0	0.7	2.4	0.3	0.6	1.6	1.2	2.3	0.6	1.4	6.1	1.6
Cycle Q Clear(g_c), s	2.0	0.7	2.4	0.3	0.6	1.6	1.2	2.3	0.6	1.4	6.1	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	382	279	237	300	180	153	357	1419	441	503	1444	448
V/C Ratio(X)	0.22	0.11	0.36	0.04	0.14	0.35	0.18	0.22	0.06	0.15	0.53	0.16
Avail Cap(c_a), veh/h	477	690	585	490	690	585	616	3767	1169	754	3767	1169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	17.9	18.7	19.3	20.2	20.6	11.5	13.5	12.9	11.1	14.8	13.1
Incr Delay (d2), s/veh	0.3	0.2	0.9	0.1	0.3	1.4	0.2	0.1	0.1	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.3	0.8	0.1	0.3	0.6	0.4	0.7	0.2	0.4	1.9	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	18.1	19.6	19.4	20.5	22.0	11.7	13.6	13.0	11.2	15.1	13.3
LnGrp LOS	B	B	B	B	C	C	B	B	B	B	B	B
Approach Vol, veh/h		199			92			401			907	
Approach Delay, s/veh		18.7			21.3			13.3			14.6	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	10.7	9.1	19.6	6.8	13.3	8.9	19.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	4.0	3.6	3.4	4.3	2.3	4.4	3.2	8.1				
Green Ext Time (p_c), s	0.0	0.2	0.1	2.1	0.0	0.3	0.1	5.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.2									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	3.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	14	76	87	7	99
Future Vol, veh/h	175	14	76	87	7	99
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	190	15	83	95	8	108

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	205	0	459 198
Stage 1	-	-	-	-	198 -
Stage 2	-	-	-	-	261 -
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	-	-	1366	-	560 843
Stage 1	-	-	-	-	835 -
Stage 2	-	-	-	-	783 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1366	-	524 843
Mov Cap-2 Maneuver	-	-	-	-	524 -
Stage 1	-	-	-	-	835 -
Stage 2	-	-	-	-	733 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	810	-	-	1366	-
HCM Lane V/C Ratio	0.142	-	-	0.06	-
HCM Control Delay (s)	10.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Intersection				
Intersection Delay, s/veh	3.9			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	144	21	228	24
Demand Flow Rate, veh/h	147	21	232	24
Vehicles Circulating, veh/h	71	226	5	160
Vehicles Exiting, veh/h	176	11	179	58
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	3.4	4.1	3.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	147	21	232	24
Cap Entry Lane, veh/h	1283	1096	1373	1172
Entry HV Adj Factor	0.980	1.000	0.983	0.998
Flow Entry, veh/h	144	21	228	24
Cap Entry, veh/h	1257	1096	1349	1169
V/C Ratio	0.115	0.019	0.169	0.020
Control Delay, s/veh	3.8	3.4	4.1	3.2
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Timings  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC PM 2025

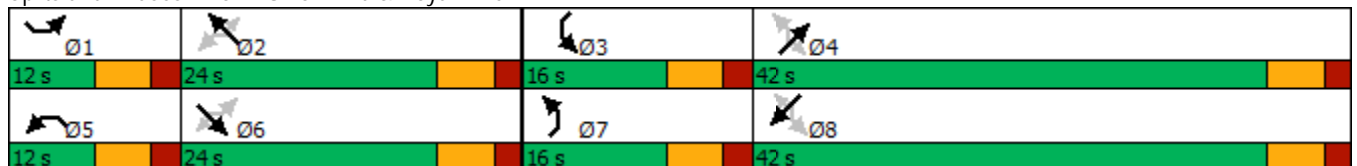
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	68	41	67	33	44	112	95	647	45	88	461	74
Future Volume (vph)	68	41	67	33	44	112	95	647	45	88	461	74
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	13.0	11.1	11.1	12.0	9.1	9.1	22.0	20.9	20.9	21.4	20.6	20.6
Actuated g/C Ratio	0.26	0.22	0.22	0.24	0.18	0.18	0.45	0.42	0.42	0.43	0.42	0.42
v/c Ratio	0.18	0.11	0.15	0.09	0.14	0.28	0.19	0.33	0.06	0.19	0.24	0.11
Control Delay	17.6	24.0	0.6	16.7	26.1	3.9	9.3	16.8	0.2	9.6	16.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	24.0	0.6	16.7	26.1	3.9	9.3	16.8	0.2	9.6	16.6	0.3
LOS	B	C	A	B	C	A	A	B	A	A	B	A
Approach Delay		12.6			11.3			15.0			13.7	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 49.4  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.33  
 Intersection Signal Delay: 13.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 42.8%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC PM 2025

10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	68	41	67	33	44	112	95	647	45	88	461	74
Future Volume (veh/h)	68	41	67	33	44	112	95	647	45	88	461	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	45	73	36	48	122	103	703	49	96	501	80
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	273	231	369	226	192	427	1328	412	376	1316	408
Arrive On Green	0.06	0.15	0.15	0.04	0.12	0.12	0.08	0.26	0.26	0.07	0.26	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	74	45	73	36	48	122	103	703	49	96	501	80
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	1.8	1.1	2.1	0.9	1.2	3.7	2.0	5.9	1.2	1.9	4.0	2.0
Cycle Q Clear(g_c), s	1.8	1.1	2.1	0.9	1.2	3.7	2.0	5.9	1.2	1.9	4.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	378	273	231	369	226	192	427	1328	412	376	1316	408
V/C Ratio(X)	0.20	0.16	0.32	0.10	0.21	0.64	0.24	0.53	0.12	0.25	0.38	0.20
Avail Cap(c_a), veh/h	477	674	572	513	674	572	649	3683	1143	602	3683	1143
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	18.7	19.1	18.0	19.8	20.9	11.9	15.8	14.1	12.2	15.2	14.5
Incr Delay (d2), s/veh	0.3	0.3	0.8	0.1	0.5	3.5	0.3	0.3	0.1	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.4	0.7	0.3	0.5	1.4	0.7	1.9	0.4	0.6	1.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	18.9	19.9	18.1	20.2	24.4	12.2	16.2	14.2	12.5	15.4	14.7
LnGrp LOS	B	B	B	B	C	C	B	B	B	B	B	B
Approach Vol, veh/h		192			206			855			677	
Approach Delay, s/veh		18.7			22.3			15.6			14.9	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	12.0	9.7	19.0	8.0	13.3	9.8	18.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	3.8	5.7	3.9	7.9	2.9	4.1	4.0	6.0				
Green Ext Time (p_c), s	0.0	0.5	0.1	5.1	0.0	0.3	0.1	3.7				

Intersection Summary

HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	21	143	160	21	103
Future Vol, veh/h	98	21	143	160	21	103
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	107	23	155	174	23	112

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	130	0	603 119
Stage 1	-	-	-	-	119 -
Stage 2	-	-	-	-	484 -
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	-	-	1455	-	462 933
Stage 1	-	-	-	-	906 -
Stage 2	-	-	-	-	620 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1455	-	407 933
Mov Cap-2 Maneuver	-	-	-	-	407 -
Stage 1	-	-	-	-	906 -
Stage 2	-	-	-	-	547 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	765	-	-	1455	-
HCM Lane V/C Ratio	0.176	-	-	0.107	-
HCM Control Delay (s)	10.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.4	-

HCM 6th Roundabout  
3: Purple Plum Way & Royal Pine Dr

TOTAL TRAFFIC AM 2025

10/17/2023

Intersection				
Intersection Delay, s/veh	3.7			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	169	82	134	37
Demand Flow Rate, veh/h	172	83	137	38
Vehicles Circulating, veh/h	85	110	11	236
Vehicles Exiting, veh/h	108	38	263	21
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	3.5	3.5	3.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	172	83	137	38
Cap Entry Lane, veh/h	1265	1233	1364	1085
Entry HV Adj Factor	0.983	0.988	0.976	0.973
Flow Entry, veh/h	169	82	134	37
Cap Entry, veh/h	1243	1219	1331	1056
V/C Ratio	0.136	0.067	0.100	0.035
Control Delay, s/veh	4.0	3.5	3.5	3.7
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Timings  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC AM 2025

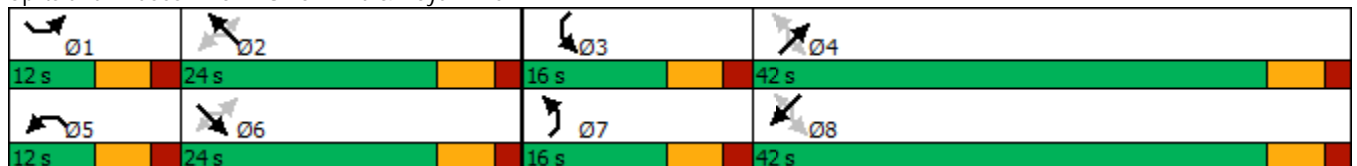
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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	110	35	97	12	25	50	69	286	24	67	702	71
Future Volume (vph)	110	35	97	12	25	50	69	286	24	67	702	71
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	13.6	12.5	12.5	11.2	8.4	8.4	25.0	25.2	25.2	22.7	21.9	21.9
Actuated g/C Ratio	0.27	0.25	0.25	0.22	0.17	0.17	0.50	0.50	0.50	0.45	0.43	0.43
v/c Ratio	0.32	0.08	0.20	0.04	0.09	0.13	0.15	0.12	0.03	0.12	0.34	0.10
Control Delay	20.4	21.7	2.2	17.0	26.8	0.7	8.7	14.0	0.1	8.6	16.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	21.7	2.2	17.0	26.8	0.7	8.7	14.0	0.1	8.6	16.6	0.3
LOS	C	C	A	B	C	A	A	B	A	A	B	A
Approach Delay		13.3			10.4			12.1			14.6	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 50.4  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.34  
 Intersection Signal Delay: 13.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 45.5%  
 ICU Level of Service A  
 Analysis Period (min) 15






























Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC AM 2025

10/17/2023

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations								  			  		
Traffic Volume (veh/h)	110	35	97	12	25	50	69	286	24	67	702	71	
Future Volume (veh/h)	110	35	97	12	25	50	69	286	24	67	702	71	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	120	38	105	13	27	54	75	311	26	73	763	77	
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	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	397	300	255	293	180	152	359	1432	445	501	1427	443	
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.06	0.28	0.28	0.06	0.28	0.28	
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585	
Grp Volume(v), veh/h	120	38	105	13	27	54	75	311	26	73	763	77	
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585	
Q Serve(g_s), s	3.0	0.9	3.0	0.3	0.7	1.6	1.4	2.3	0.6	1.4	6.3	1.8	
Cycle Q Clear(g_c), s	3.0	0.9	3.0	0.3	0.7	1.6	1.4	2.3	0.6	1.4	6.3	1.8	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	397	300	255	293	180	152	359	1432	445	501	1427	443	
V/C Ratio(X)	0.30	0.13	0.41	0.04	0.15	0.35	0.21	0.22	0.06	0.15	0.53	0.17	
Avail Cap(c_a), veh/h	466	671	569	476	671	569	599	3666	1138	743	3666	1138	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	18.2	18.0	18.9	19.9	20.8	21.2	11.7	13.8	13.2	11.3	15.3	13.7	
Incr Delay (d2), s/veh	0.4	0.2	1.1	0.1	0.4	1.4	0.3	0.1	0.1	0.1	0.3	0.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	0.4	1.0	0.1	0.3	0.6	0.5	0.7	0.2	0.5	2.0	0.6	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	18.6	18.2	20.0	19.9	21.2	22.6	12.0	13.9	13.2	11.5	15.6	13.9	
LnGrp LOS	B	B	B	B	C	C	B	B	B	B	B	B	
Approach Vol, veh/h		263			94			412			913		
Approach Delay, s/veh		19.1			21.8			13.5			15.1		
Approach LOS		B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	10.1	10.8	9.2	20.1	6.8	14.1	9.2	20.0					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0					
Max Q Clear Time (g_c+I1), s	5.0	3.6	3.4	4.3	2.3	5.0	3.4	8.3					
Green Ext Time (p_c), s	0.0	0.2	0.1	2.1	0.0	0.4	0.1	5.7					
<b>Intersection Summary</b>													
HCM 6th Ctrl Delay			15.7										
HCM 6th LOS			B										

Intersection						
Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	177	14	83	93	7	101
Future Vol, veh/h	177	14	83	93	7	101
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	192	15	90	101	8	110

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	207	0	481
Stage 1	-	-	-	-	200
Stage 2	-	-	-	-	281
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1364	-	544
Stage 1	-	-	-	-	834
Stage 2	-	-	-	-	767
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1364	-	506
Mov Cap-2 Maneuver	-	-	-	-	506
Stage 1	-	-	-	-	834
Stage 2	-	-	-	-	713

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	806	-	-	1364	-
HCM Lane V/C Ratio	0.146	-	-	0.066	-
HCM Control Delay (s)	10.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

HCM 6th Roundabout  
 3: Purple Plum Way & Royal Pine Dr

TOTAL TRAFFIC PM 2025

10/17/2023

Intersection				
Intersection Delay, s/veh	4.1			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	159	67	233	26
Demand Flow Rate, veh/h	162	68	237	26
Vehicles Circulating, veh/h	109	226	22	212
Vehicles Exiting, veh/h	185	33	216	59
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.1	3.9	4.2	3.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	162	68	237	26
Cap Entry Lane, veh/h	1235	1096	1349	1112
Entry HV Adj Factor	0.981	0.985	0.983	0.998
Flow Entry, veh/h	159	67	233	26
Cap Entry, veh/h	1212	1080	1326	1109
V/C Ratio	0.131	0.062	0.176	0.023
Control Delay, s/veh	4.1	3.9	4.2	3.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Timings  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC PM 2025

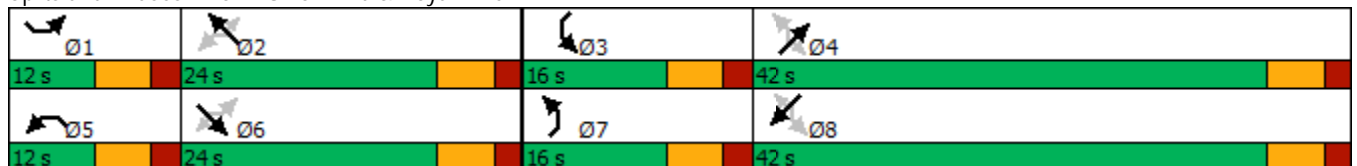
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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	88	46	78	33	52	112	129	647	45	88	461	93
Future Volume (vph)	88	46	78	33	52	112	129	647	45	88	461	93
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	16.0	13.9	13.9	13.6	9.5	9.5	22.7	21.4	21.4	21.2	20.7	20.7
Actuated g/C Ratio	0.31	0.27	0.27	0.26	0.18	0.18	0.43	0.41	0.41	0.41	0.40	0.40
v/c Ratio	0.22	0.10	0.16	0.09	0.17	0.28	0.25	0.34	0.07	0.20	0.25	0.14
Control Delay	17.5	23.4	0.6	16.5	26.7	3.9	10.5	18.2	0.2	10.4	18.3	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	23.4	0.6	16.5	26.7	3.9	10.5	18.2	0.2	10.4	18.3	1.1
LOS	B	C	A	B	C	A	B	B	A	B	B	A
Approach Delay		12.6			12.1			16.0			14.8	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 52.3  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.34  
 Intersection Signal Delay: 14.8  
 Intersection Capacity Utilization 43.9%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC PM 2025

10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↗	↘	↙	↕	↖	↗	↘	↙	↖	↗	↘
Traffic Volume (veh/h)	88	46	78	33	52	112	129	647	45	88	461	93
Future Volume (veh/h)	88	46	78	33	52	112	129	647	45	88	461	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	96	50	85	36	57	122	140	703	49	96	501	101
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	291	246	365	227	193	428	1319	409	372	1256	390
Arrive On Green	0.07	0.16	0.16	0.04	0.12	0.12	0.09	0.26	0.26	0.07	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	96	50	85	36	57	122	140	703	49	96	501	101
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	2.3	1.2	2.4	0.9	1.4	3.7	2.9	6.0	1.2	2.0	4.2	2.6
Cycle Q Clear(g_c), s	2.3	1.2	2.4	0.9	1.4	3.7	2.9	6.0	1.2	2.0	4.2	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	291	246	365	227	193	428	1319	409	372	1256	390
V/C Ratio(X)	0.25	0.17	0.34	0.10	0.25	0.63	0.33	0.53	0.12	0.26	0.40	0.26
Avail Cap(c_a), veh/h	466	665	563	506	665	563	628	3629	1127	593	3629	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	18.6	19.1	18.2	20.2	21.2	12.5	16.2	14.4	12.7	16.0	15.4
Incr Delay (d2), s/veh	0.3	0.3	0.8	0.1	0.6	3.4	0.4	0.3	0.1	0.4	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.5	0.8	0.3	0.6	1.4	1.0	2.0	0.4	0.7	1.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	18.8	19.9	18.3	20.7	24.6	12.9	16.5	14.5	13.1	16.2	15.7
LnGrp LOS	B	B	B	B	C	C	B	B	B	B	B	B
Approach Vol, veh/h		231			215			892			698	
Approach Delay, s/veh		18.8			22.5			15.8			15.7	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	12.2	9.7	19.1	8.0	13.9	10.3	18.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	4.3	5.7	4.0	8.0	2.9	4.4	4.9	6.2				
Green Ext Time (p_c), s	0.0	0.5	0.1	5.1	0.0	0.4	0.1	3.7				

Intersection Summary

HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	104	21	148	163	21	111
Future Vol, veh/h	104	21	148	163	21	111
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	113	23	161	177	23	121

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	136	0	624 125
Stage 1	-	-	-	-	125 -
Stage 2	-	-	-	-	499 -
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	-	449 926
Stage 1	-	-	-	-	901 -
Stage 2	-	-	-	-	610 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1448	-	394 926
Mov Cap-2 Maneuver	-	-	-	-	394 -
Stage 1	-	-	-	-	901 -
Stage 2	-	-	-	-	535 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	762	-	-	1448	-
HCM Lane V/C Ratio	0.188	-	-	0.111	-
HCM Control Delay (s)	10.8	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.4	-

Intersection				
Intersection Delay, s/veh	4.1			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	245	23	190	55
Demand Flow Rate, veh/h	250	23	194	56
Vehicles Circulating, veh/h	42	154	11	267
Vehicles Exiting, veh/h	135	51	312	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	3.2	3.9	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	250	23	194	56
Cap Entry Lane, veh/h	1322	1179	1364	1051
Entry HV Adj Factor	0.980	1.000	0.977	0.981
Flow Entry, veh/h	245	23	190	55
Cap Entry, veh/h	1296	1179	1333	1031
V/C Ratio	0.189	0.020	0.142	0.053
Control Delay, s/veh	4.4	3.2	3.9	4.0
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Timings  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC AM 2045

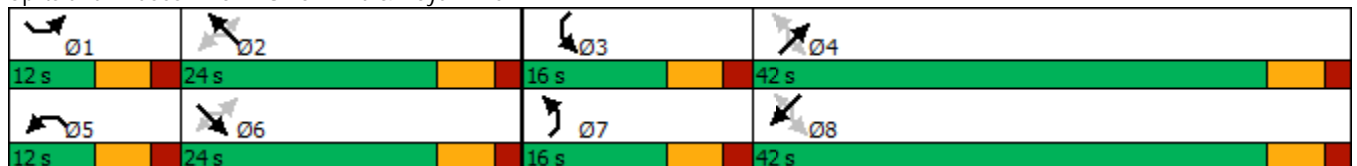
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	119	43	119	19	36	74	93	425	36	99	1044	104
Future Volume (vph)	119	43	119	19	36	74	93	425	36	99	1044	104
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	15.7	13.4	13.4	13.0	8.9	8.9	33.6	31.6	31.6	32.4	31.0	31.0
Actuated g/C Ratio	0.25	0.21	0.21	0.21	0.14	0.14	0.53	0.50	0.50	0.52	0.49	0.49
v/c Ratio	0.36	0.12	0.27	0.06	0.15	0.21	0.25	0.18	0.04	0.18	0.45	0.13
Control Delay	26.9	30.1	4.2	22.7	33.4	1.3	9.2	14.6	0.1	8.5	17.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	30.1	4.2	22.7	33.4	1.3	9.2	14.6	0.1	8.5	17.5	1.1
LOS	C	C	A	C	C	A	A	B	A	A	B	A
Approach Delay		17.8			13.5			12.7			15.4	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 62.9  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.45  
 Intersection Signal Delay: 14.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 53.6%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC AM 2045

10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	119	43	119	19	36	74	93	425	36	99	1044	104
Future Volume (veh/h)	119	43	119	19	36	74	93	425	36	99	1044	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	47	129	21	39	80	101	462	39	108	1135	113
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	277	235	268	162	137	319	1827	567	508	1836	570
Arrive On Green	0.09	0.15	0.15	0.02	0.09	0.09	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	129	47	129	21	39	80	101	462	39	108	1135	113
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	3.9	1.3	4.5	0.6	1.2	2.9	2.1	3.8	1.0	2.2	11.0	3.0
Cycle Q Clear(g_c), s	3.9	1.3	4.5	0.6	1.2	2.9	2.1	3.8	1.0	2.2	11.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	277	235	268	162	137	319	1827	567	508	1836	570
V/C Ratio(X)	0.36	0.17	0.55	0.08	0.24	0.58	0.32	0.25	0.07	0.21	0.62	0.20
Avail Cap(c_a), veh/h	383	561	475	402	561	475	495	3061	950	680	3061	950
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	22.3	23.7	24.0	25.6	26.4	11.8	13.6	12.7	10.6	15.8	13.3
Incr Delay (d2), s/veh	0.6	0.3	2.0	0.1	0.8	3.9	0.6	0.1	0.1	0.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.6	1.6	0.3	0.5	1.1	0.7	1.3	0.3	0.7	3.6	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	22.6	25.7	24.1	26.4	30.3	12.3	13.7	12.7	10.8	16.2	13.4
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		305			140			602			1356	
Approach Delay, s/veh		24.0			28.3			13.4			15.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	11.2	10.2	27.5	7.5	14.9	10.1	27.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	5.9	4.9	4.2	5.8	2.6	6.5	4.1	13.0				
Green Ext Time (p_c), s	0.0	0.3	0.1	3.2	0.0	0.5	0.1	8.6				

Intersection Summary

HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	261	20	114	131	11	149
Future Vol, veh/h	261	20	114	131	11	149
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	284	22	124	142	12	162

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	306	0	685 295
Stage 1	-	-	-	-	295 -
Stage 2	-	-	-	-	390 -
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	-	-	1255	-	414 744
Stage 1	-	-	-	-	755 -
Stage 2	-	-	-	-	684 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1255	-	370 744
Mov Cap-2 Maneuver	-	-	-	-	370 -
Stage 1	-	-	-	-	755 -
Stage 2	-	-	-	-	611 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	696	-	-	1255	-
HCM Lane V/C Ratio	0.25	-	-	0.099	-
HCM Control Delay (s)	11.9	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.3	-

Intersection				
Intersection Delay, s/veh	4.8			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	219	96	344	36
Demand Flow Rate, veh/h	223	98	351	37
Vehicles Circulating, veh/h	168	338	13	301
Vehicles Exiting, veh/h	268	26	325	90
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.9	4.7	4.9	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	223	98	351	37
Cap Entry Lane, veh/h	1163	978	1362	1015
Entry HV Adj Factor	0.982	0.980	0.981	0.970
Flow Entry, veh/h	219	96	344	36
Cap Entry, veh/h	1142	958	1336	985
V/C Ratio	0.192	0.100	0.258	0.036
Control Delay, s/veh	4.9	4.7	4.9	4.0
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0



Timings  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC PM 2045

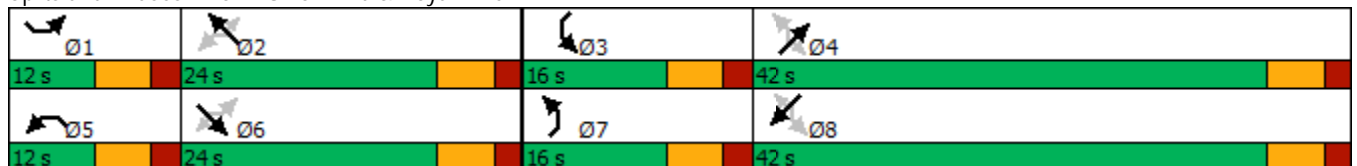
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	126	66	114	49	70	167	155	962	66	131	685	135
Future Volume (vph)	126	66	114	49	70	167	155	962	66	131	685	135
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	14.3	11.0	11.0	12.9	8.5	8.5	31.9	23.0	23.0	30.6	22.3	22.3
Actuated g/C Ratio	0.21	0.16	0.16	0.19	0.13	0.13	0.47	0.34	0.34	0.45	0.33	0.33
v/c Ratio	0.45	0.24	0.31	0.18	0.33	0.51	0.39	0.60	0.11	0.43	0.44	0.23
Control Delay	27.2	31.4	4.3	22.1	34.4	11.2	11.5	20.7	0.3	12.9	19.1	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	31.4	4.3	22.1	34.4	11.2	11.5	20.7	0.3	12.9	19.1	3.1
LOS	C	C	A	C	C	B	B	C	A	B	B	A
Approach Delay		19.6			18.7			18.4			16.0	
Approach LOS		B			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 67.5  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.60  
 Intersection Signal Delay: 17.7  
 Intersection Capacity Utilization 54.5%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

BACKGROUND TRAFFIC PM 2045

10/17/2023



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	126	66	114	49	70	167	155	962	66	131	685	135
Future Volume (veh/h)	126	66	114	49	70	167	155	962	66	131	685	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	72	124	53	76	182	168	1046	72	142	745	147
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	354	300	371	281	238	390	1637	508	323	1578	490
Arrive On Green	0.09	0.19	0.19	0.05	0.15	0.15	0.09	0.32	0.32	0.08	0.31	0.31
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	137	72	124	53	76	182	168	1046	72	142	745	147
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	4.2	2.1	4.5	1.6	2.4	7.3	4.1	11.5	2.1	3.5	7.8	4.7
Cycle Q Clear(g_c), s	4.2	2.1	4.5	1.6	2.4	7.3	4.1	11.5	2.1	3.5	7.8	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	354	300	371	281	238	390	1637	508	323	1578	490
V/C Ratio(X)	0.35	0.20	0.41	0.14	0.27	0.76	0.43	0.64	0.14	0.44	0.47	0.30
Avail Cap(c_a), veh/h	399	510	433	449	510	433	498	2787	865	453	2787	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	22.5	23.5	21.9	24.8	26.9	13.8	19.1	15.9	14.7	18.4	17.4
Incr Delay (d2), s/veh	0.5	0.3	0.9	0.2	0.5	5.1	0.8	0.4	0.1	0.9	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.9	1.6	0.7	1.0	2.8	1.5	4.1	0.7	1.3	2.7	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	22.8	24.4	22.1	25.3	32.0	14.5	19.6	16.1	15.6	18.7	17.7
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		333			311			1286			1034	
Approach Delay, s/veh		22.8			28.7			18.7			18.1	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	15.9	11.2	27.2	9.1	18.5	12.0	26.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	6.2	9.3	5.5	13.5	3.6	6.5	6.1	9.8				
Green Ext Time (p_c), s	0.0	0.6	0.1	7.6	0.0	0.5	0.1	5.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.0									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	5.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	149	31	218	242	31	158
Future Vol, veh/h	149	31	218	242	31	158
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	162	34	237	263	34	172

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	196	0	916 179
Stage 1	-	-	-	-	179 -
Stage 2	-	-	-	-	737 -
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	-	-	1377	-	302 864
Stage 1	-	-	-	-	852 -
Stage 2	-	-	-	-	473 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1377	-	241 864
Mov Cap-2 Maneuver	-	-	-	-	241 -
Stage 1	-	-	-	-	852 -
Stage 2	-	-	-	-	377 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	607	-	-	1377	-
HCM Lane V/C Ratio	0.338	-	-	0.172	-
HCM Control Delay (s)	13.9	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.6	-

HCM 6th Roundabout  
3: Purple Plum Way & Royal Pine Dr

TOTAL TRAFFIC AM 2045

10/17/2023

Intersection				
Intersection Delay, s/veh	4.3			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	249	98	195	56
Demand Flow Rate, veh/h	254	100	199	57
Vehicles Circulating, veh/h	107	158	16	332
Vehicles Exiting, veh/h	151	57	373	29
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.8	3.8	3.9	4.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	254	100	199	57
Cap Entry Lane, veh/h	1237	1174	1358	984
Entry HV Adj Factor	0.980	0.980	0.978	0.982
Flow Entry, veh/h	249	98	195	56
Cap Entry, veh/h	1213	1151	1327	966
V/C Ratio	0.205	0.085	0.147	0.058
Control Delay, s/veh	4.8	3.8	3.9	4.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0

Timings  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC AM 2045

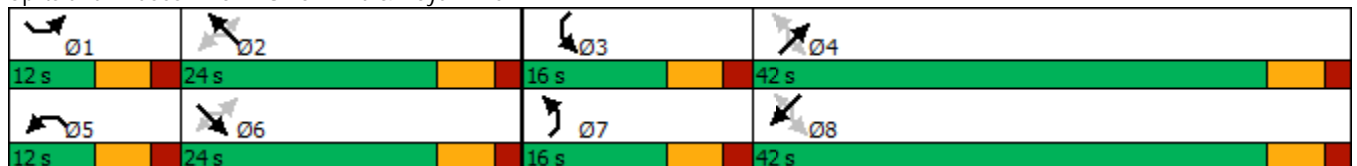
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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	152	50	139	19	38	74	103	425	36	99	1044	110
Future Volume (vph)	152	50	139	19	38	74	103	425	36	99	1044	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	15.9	13.7	13.7	13.2	9.2	9.2	34.1	32.0	32.0	32.6	31.3	31.3
Actuated g/C Ratio	0.25	0.22	0.22	0.21	0.14	0.14	0.54	0.50	0.50	0.51	0.49	0.49
v/c Ratio	0.46	0.14	0.32	0.06	0.15	0.21	0.27	0.18	0.04	0.18	0.45	0.14
Control Delay	29.9	30.2	6.6	22.8	33.4	1.3	9.5	14.6	0.1	8.6	17.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	30.2	6.6	22.8	33.4	1.3	9.5	14.6	0.1	8.6	17.7	1.3
LOS	C	C	A	C	C	A	A	B	A	A	B	A
Approach Delay		20.5			13.8			12.8			15.5	
Approach LOS		C			B			B			B	

Intersection Summary

Cycle Length: 94	
Actuated Cycle Length: 63.5	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	






























Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC AM 2045

10/17/2023

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations								  			  		
Traffic Volume (veh/h)	152	50	139	19	38	74	103	425	36	99	1044	110	
Future Volume (veh/h)	152	50	139	19	38	74	103	425	36	99	1044	110	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	165	54	151	21	41	80	112	462	39	108	1135	120	
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	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	374	298	252	262	161	136	317	1824	566	502	1819	565	
Arrive On Green	0.10	0.16	0.16	0.02	0.09	0.09	0.07	0.36	0.36	0.07	0.36	0.36	
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585	
Grp Volume(v), veh/h	165	54	151	21	41	80	112	462	39	108	1135	120	
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585	
Q Serve(g_s), s	5.1	1.5	5.4	0.7	1.3	3.0	2.4	3.9	1.0	2.3	11.3	3.2	
Cycle Q Clear(g_c), s	5.1	1.5	5.4	0.7	1.3	3.0	2.4	3.9	1.0	2.3	11.3	3.2	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	374	298	252	262	161	136	317	1824	566	502	1819	565	
V/C Ratio(X)	0.44	0.18	0.60	0.08	0.26	0.59	0.35	0.25	0.07	0.21	0.62	0.21	
Avail Cap(c_a), veh/h	374	548	465	392	548	465	483	2993	929	670	2993	929	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	22.1	22.4	24.0	24.6	26.2	27.0	12.2	14.0	13.0	11.0	16.4	13.8	
Incr Delay (d2), s/veh	0.8	0.3	2.3	0.1	0.8	4.0	0.7	0.1	0.1	0.2	0.4	0.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.1	0.7	2.0	0.3	0.6	1.2	0.8	1.3	0.3	0.8	3.8	1.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	23.0	22.7	26.3	24.7	27.1	31.0	12.9	14.0	13.1	11.2	16.7	14.0	
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B	
Approach Vol, veh/h		370			142			613			1363		
Approach Delay, s/veh		24.3			28.9			13.8			16.0		
Approach LOS		C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	12.0	11.3	10.2	27.9	7.5	15.8	10.3	27.9					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0					
Max Q Clear Time (g_c+I1), s	7.1	5.0	4.3	5.9	2.7	7.4	4.4	13.3					
Green Ext Time (p_c), s	0.0	0.3	0.1	3.2	0.0	0.5	0.1	8.6					
<b>Intersection Summary</b>													
HCM 6th Ctrl Delay			17.4										
HCM 6th LOS			B										

Intersection						
Int Delay, s/veh	4.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	263	20	121	137	11	151
Future Vol, veh/h	263	20	121	137	11	151
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	286	22	132	149	12	164

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	308	0	710	297
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	413	-
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	-	-	1253	-	400	742
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	668	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1253	-	354	742
Mov Cap-2 Maneuver	-	-	-	-	354	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	1253	-
HCM Lane V/C Ratio	0.255	-	-	0.105	-
HCM Control Delay (s)	12	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.4	-

Intersection				
Intersection Delay, s/veh	5.1			
Intersection LOS	A			
Approach	EB	SB	NW	NE
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	234	141	353	38
Demand Flow Rate, veh/h	238	143	360	39
Vehicles Circulating, veh/h	206	341	30	352
Vehicles Exiting, veh/h	278	49	361	92
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	5.1	5.1	4.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LR	LR	LR	LR
Assumed Moves	LR	LR	LR	LR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	238	143	360	39
Cap Entry Lane, veh/h	1118	975	1338	964
Entry HV Adj Factor	0.983	0.986	0.982	0.972
Flow Entry, veh/h	234	141	353	38
Cap Entry, veh/h	1100	961	1314	937
V/C Ratio	0.213	0.147	0.269	0.040
Control Delay, s/veh	5.2	5.1	5.1	4.2
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0



Timings  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC PM 2045

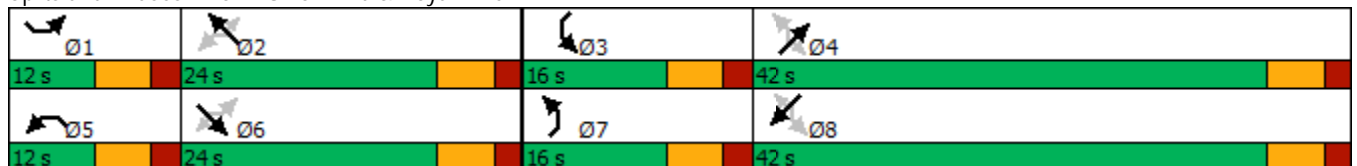
10/17/2023

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	146	71	125	49	78	167	189	962	66	131	685	154
Future Volume (vph)	146	71	125	49	78	167	189	962	66	131	685	154
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	12.0	24.0	24.0	12.0	24.0	24.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	12.8%	25.5%	25.5%	12.8%	25.5%	25.5%	17.0%	44.7%	44.7%	17.0%	44.7%	44.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	17.6	14.3	14.3	14.7	8.7	8.7	32.2	23.0	23.0	30.2	22.0	22.0
Actuated g/C Ratio	0.25	0.20	0.20	0.21	0.12	0.12	0.46	0.33	0.33	0.43	0.31	0.31
v/c Ratio	0.49	0.20	0.30	0.17	0.37	0.51	0.50	0.63	0.11	0.45	0.47	0.27
Control Delay	28.0	30.7	4.7	21.9	35.2	11.1	13.6	22.0	0.4	13.9	20.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	30.7	4.7	21.9	35.2	11.1	13.6	22.0	0.4	13.9	20.5	4.1
LOS	C	C	A	C	D	B	B	C	A	B	C	A
Approach Delay		20.1			19.3			19.5			17.0	
Approach LOS		C			B			B			B	

Intersection Summary

Cycle Length: 94  
 Actuated Cycle Length: 70.5  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 18.7  
 Intersection Capacity Utilization 55.6%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service B

























Splits and Phases: 6: N Union Blvd & Royal Pine Dr



HCM 6th Signalized Intersection Summary  
6: N Union Blvd & Royal Pine Dr

TOTAL TRAFFIC PM 2045

10/17/2023

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	146	71	125	49	78	167	189	962	66	131	685	154
Future Volume (veh/h)	146	71	125	49	78	167	189	962	66	131	685	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	77	136	53	85	182	205	1046	72	142	745	167
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	362	307	367	281	238	405	1630	506	323	1489	462
Arrive On Green	0.09	0.19	0.19	0.05	0.15	0.15	0.11	0.32	0.32	0.08	0.29	0.29
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	159	77	136	53	85	182	205	1046	72	142	745	167
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	5.0	2.3	5.0	1.6	2.7	7.3	5.2	11.7	2.2	3.6	8.1	5.6
Cycle Q Clear(g_c), s	5.0	2.3	5.0	1.6	2.7	7.3	5.2	11.7	2.2	3.6	8.1	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	362	307	367	281	238	405	1630	506	323	1489	462
V/C Ratio(X)	0.41	0.21	0.44	0.14	0.30	0.76	0.51	0.64	0.14	0.44	0.50	0.36
Avail Cap(c_a), veh/h	391	505	428	444	505	428	480	2759	857	448	2759	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	22.6	23.7	22.1	25.2	27.2	14.3	19.4	16.2	15.3	19.6	18.7
Incr Delay (d2), s/veh	0.7	0.3	1.0	0.2	0.6	5.0	1.0	0.4	0.1	0.9	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.0	1.8	0.7	1.2	2.9	1.9	4.1	0.7	1.4	2.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	22.9	24.7	22.3	25.8	32.2	15.3	19.8	16.3	16.2	19.8	19.2
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		372			320			1323			1054	
Approach Delay, s/veh		23.1			28.9			18.9			19.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	16.0	11.3	27.3	9.1	18.9	13.2	25.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	18.0	10.0	36.0	6.0	18.0	10.0	36.0				
Max Q Clear Time (g_c+I1), s	7.0	9.3	5.6	13.7	3.6	7.0	7.2	10.1				
Green Ext Time (p_c), s	0.0	0.7	0.1	7.6	0.0	0.6	0.1	5.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				20.6								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	155	31	223	245	31	166
Future Vol, veh/h	155	31	223	245	31	166
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	168	34	242	266	34	180

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	202	0	935 185
Stage 1	-	-	-	-	185 -
Stage 2	-	-	-	-	750 -
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	-	-	1370	-	295 857
Stage 1	-	-	-	-	847 -
Stage 2	-	-	-	-	467 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1370	-	234 857
Mov Cap-2 Maneuver	-	-	-	-	234 -
Stage 1	-	-	-	-	847 -
Stage 2	-	-	-	-	370 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	604	-	-	1370	-
HCM Lane V/C Ratio	0.355	-	-	0.177	-
HCM Control Delay (s)	14.2	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.6	-

Intersection: 3: Purple Plum Way & Royal Pine Dr

Movement	EB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	12	22
Average Queue (ft)	2	3
95th Queue (ft)	14	21
Link Distance (ft)	264	414
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	79	37	38	26	36	25	64	128	67	16	17	66
Average Queue (ft)	38	10	18	6	13	12	28	67	25	3	6	30
95th Queue (ft)	78	34	37	24	37	30	60	122	68	13	19	64
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	227	197	80	44
Average Queue (ft)	154	106	25	17
95th Queue (ft)	222	189	69	45
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

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Intersection: 9: Royal Pine Dr

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Movement

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 10: Pine Manor Dr & Royal Pine Dr

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Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	18	44
Average Queue (ft)	2	29
95th Queue (ft)	16	47
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 0

**Intersection: 3: Purple Plum Way & Royal Pine Dr**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	18	12	19	19
Average Queue (ft)	2	2	4	3
95th Queue (ft)	16	14	20	18
Link Distance (ft)	264	261	414	328
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	92	40	47	28	27	24	58	104	35	12	16	78
Average Queue (ft)	43	13	20	9	8	12	35	67	18	2	6	32
95th Queue (ft)	85	39	43	30	27	28	68	110	40	10	18	72
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)												
Queuing Penalty (veh)												

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	216	200	80	51
Average Queue (ft)	153	107	26	22
95th Queue (ft)	214	190	74	49
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Royal Pine Dr

Movement	SW
Directions Served	R
Maximum Queue (ft)	22
Average Queue (ft)	4
95th Queue (ft)	17
Link Distance (ft)	390
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Pine Manor Dr & Royal Pine Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	50	66
Average Queue (ft)	17	39
95th Queue (ft)	47	64
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0
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Intersection: 3: Purple Plum Way & Royal Pine Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	11	36	30
Average Queue (ft)	11	1	4	7
95th Queue (ft)	38	14	24	29
Link Distance (ft)	264	261	414	328
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	139	93	53	35	49	34	94	164	128	20	21	85
Average Queue (ft)	75	27	28	13	18	16	45	94	50	7	9	50
95th Queue (ft)	133	81	54	37	45	35	86	158	115	22	23	82
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)	0	0						1				
Queuing Penalty (veh)	1	0						1				

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	271	239	133	42
Average Queue (ft)	192	151	55	24
95th Queue (ft)	267	247	122	47
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			



Intersection: 9: Royal Pine Dr

Movement	SW
Directions Served	R
Maximum Queue (ft)	22
Average Queue (ft)	6
95th Queue (ft)	22
Link Distance (ft)	390
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Pine Manor Dr & Royal Pine Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	60	81
Average Queue (ft)	28	46
95th Queue (ft)	63	76
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2
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**Intersection: 3: Purple Plum Way & Royal Pine Dr**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	38	6	6	12
Average Queue (ft)	7	1	1	2
95th Queue (ft)	33	7	8	14
Link Distance (ft)	264	261	414	328
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	84	50	40	35	43	33	103	180	159	29	32	66
Average Queue (ft)	34	21	19	16	15	18	43	130	83	8	11	43
95th Queue (ft)	80	50	40	40	40	37	96	188	160	26	31	72
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)								1				
Queuing Penalty (veh)								1				

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	176	153	35	42
Average Queue (ft)	115	65	11	23
95th Queue (ft)	182	136	35	44
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Royal Pine Dr

Movement	SW
Directions Served	R
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	390
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Pine Manor Dr & Royal Pine Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	19	54
Average Queue (ft)	5	31
95th Queue (ft)	23	56
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1
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**Intersection: 3: Purple Plum Way & Royal Pine Dr**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	23	18	31
Average Queue (ft)	5	3	3	6
95th Queue (ft)	25	21	18	27
Link Distance (ft)	264	261	414	328
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	106	41	43	43	56	47	91	203	156	43	29	95
Average Queue (ft)	43	18	21	17	23	23	52	137	94	14	10	45
95th Queue (ft)	88	46	45	43	58	44	91	203	162	41	27	86
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)								2				
Queuing Penalty (veh)								2				

**Intersection: 6: N Union Blvd & Royal Pine Dr**

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	152	102	34	52
Average Queue (ft)	100	57	12	31
95th Queue (ft)	162	102	38	51
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Royal Pine Dr

Movement	SW
Directions Served	R
Maximum Queue (ft)	27
Average Queue (ft)	9
95th Queue (ft)	27
Link Distance (ft)	390
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Pine Manor Dr & Royal Pine Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	57	79
Average Queue (ft)	18	41
95th Queue (ft)	54	72
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2
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Intersection: 3: Purple Plum Way & Royal Pine Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	48	45	35	43
Average Queue (ft)	16	9	9	20
95th Queue (ft)	49	36	33	49
Link Distance (ft)	264	261	414	328
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SE	SE	SE	NW	NW	NW	NE	NE	NE	NE	NE	SW
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	137	74	59	51	62	66	198	262	223	136	36	103
Average Queue (ft)	72	30	26	23	32	33	103	178	138	61	16	60
95th Queue (ft)	132	68	51	52	64	63	195	256	223	143	34	103
Link Distance (ft)		264			707			437	437	437		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170		100	200		130	175				175	280
Storage Blk Time (%)	0	0					1	7		0		
Queuing Penalty (veh)	1	0					4	12		0		

Intersection: 6: N Union Blvd & Royal Pine Dr

Movement	SW	SW	SW	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	221	194	107	65
Average Queue (ft)	157	111	32	38
95th Queue (ft)	222	193	90	63
Link Distance (ft)	570	570	570	570
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Royal Pine Dr

Movement	SW
Directions Served	R
Maximum Queue (ft)	22
Average Queue (ft)	9
95th Queue (ft)	27
Link Distance (ft)	390
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Pine Manor Dr & Royal Pine Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	77	91
Average Queue (ft)	34	48
95th Queue (ft)	78	83
Link Distance (ft)	264	281
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 18
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**DREXEL, BARRELL & Co.**  
Engineers - Surveyors

**MEMORANDUM**

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**TO:** DBG Properties, LLC  
**Attn: Eric Grodahl, Partner**  
2164 SW Park Place  
Portland, OR 97206  
(503) 956-4355

**FROM:** Derek Schuler, P.E., PTOE

**DATE:** June 2, 2023

**RE:** Trip Generation Update Memo for Royal Pine Apartments  
(Union & Powers) Colorado Springs, Colorado

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This memorandum serves to update the overall site traffic trip generation for the subject site as it relates to the proposed concept plan amendment. Currently, there are three existing sites within the overall development:

- Urgent Care Center/Medical Office Building – 14,800 sf
- Medical/Dental Office Building – 4,600 sf
- Animal Hospital/Veterinary Clinic – 6,000 sf

In addition to these existing land uses, the following land uses are proposed for the remaining undeveloped property:

- Apartments (Multi-family housing (low rise))
- Leasing Office/Clubhouse (resident use only)

Trip generation for the existing and proposed land uses was determined using the Trip Generation Manual, 11<sup>th</sup> Edition (2021) published by the Institute of Transportation Engineers. See Table 1 below for the calculation of the revised site trips. Based on full buildout of the overall site with the land uses described above, the development is estimated to generate 2,257 total weekday trips.

The previous Condition of Record on the approved Concept Plan for the overall development established a trip generation budget of 8,441 weekday trips. As noted above, the revised land uses generate significantly fewer trips (2,257 trips) than the maximum allowed (8,441 trips). Per Table 1, the proposed site is anticipated to generate 149 trips (57 in/92 out) in the morning peak hour and 184 trips (101 in/83 out) in the evening peak hour.



# Trip Generation Update Memo for Royal Pine Apartments

Table 1 - Trip Generation Estimate for Royal Pine Apartments, Colorado Springs, CO																
ITE Code / Land Use		Trip Generation Rates <sup>1</sup>			Trips Generated											
					Average Weekday Trips	AM Peak-Hour (7 - 9)				PM Peak-Hour (4 - 6)				Total		
						% Trips	Inbound Trips	% Trips	Outbound Trips	% Trips	Inbound Trips	% Trips	Outbound Trips			
Size	Avg. Weekday	AM PEAK	PM PEAK													
Existing:																
#650 Free-Standing Emergency Room	14.8	KSF	24.94	1.12	1.52	369	50%	8.3	50%	8.3	17	46%	10.3	54%	12.1	22
#720 Medical/Dental Office Bldg	4.6	KSF	36.00	3.10	3.93	166	79%	11.3	21%	3.0	14	30%	5.4	70%	12.7	18
#640 Animal Hospital/Vet Clinic	6.0	KSF	21.50	3.64	3.53	129	67%	14.6	33%	7.2	22	40%	8.5	60%	12.7	21
Proposed:																
#220 Multi-Family Housing(Low-Rise) <sup>2</sup>	232	DU	6.74	0.40	0.51	1,564	24%	22.3	76%	70.5	93	63%	74.5	37%	43.8	118
#N/A Leasing/Clubhouse <sup>3</sup>	1	LS	30	4	4	30	24%	1.0	76%	3.0	4	63%	2.5	37%	1.5	4
Total Trips						2,257		57		92	149		101		83	184

<sup>1</sup>Source: "Trip Generation" Institute of Transportation Engineers, 11th Edition, 2021; KSF = 1000 SF of gross floor area.

<sup>2</sup>This code accounts for apartments of various sizes with average of 2.72 residents per dwelling unit (DU). This is considered conservative for this site's mix of one, two, and three bedroom apartments.

<sup>3</sup>This is an estimated value based on a staff of 2 employees seeing potential residents. Clubhouse is restricted to site residents only.

If you have any questions or would like to discuss my analysis further, please don't hesitate to contact me.

Sincerely,  
**Drexel, Barrell & Co.**



Derek Schuler, P.E., PTOE  
Transportation Group Leader

