

Traffic Impact Study

Travel Center Palmer Lake

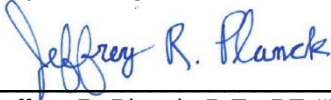
El Paso County, Colorado

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Traffic Engineer's Statement

The attached 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 County for traffic reports.



Jeffrey R. Planck, P.E., PE #53006

November 19, 2024

Date

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

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Date

Travel Center Palmer Lake

El Paso County, Colorado

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November 2024

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1.0 EXECUTIVE SUMMARY

Travel Center Palmer Lake is proposed to be located on the southeast corner of the County Line Road (Palmer Divide Road) and Beacon Lite Road intersection in El Paso County, Colorado. The travel center project is proposed to contain a gas station with 120 fueling positions and an approximate 74,000 square foot convenience store. It is expected that the project will be completed in the next several years. Therefore, analysis was conducted for the 2028 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with El Paso County and State of Colorado Department of Transportation (CDOT) standards and requirements:

- County Line Road and Beacon Lite Road (#1)
- I-25 Southbound Ramp and County Line Road (#2)
- I-25 Northbound Ramp and County Line Road (#3)
- County Line Road and Monument Hill Road (#4)

In addition, the two (2) proposed full movement accesses along Beacon Lite Road and the right-out only access along County Line Road will be included in the evaluation.

Regional access to the site will be provided by Interstate 25 (I-25) and Highway 105. Primary access will be provided by County Line Road. Direct access will be provided by two full movement accesses along Beacon Lite Road and a right-out only access along County Line Road.

Travel Center Palmer Lake is anticipated to generate a total of approximately 22,150 daily weekday trips with 1,236 of these trips occurring during the morning peak and 1,679 trips occurring during the afternoon peak hour. Accounting for diverted link trips, expected net new trips (non-diverted link trips) to the surrounding street network results in approximately 3,322 new weekday daily trips, of which 185 and 252 new trips are anticipated during the weekday morning and afternoon peak hours, respectively.



Based on the analysis presented in this report, Kimley-Horn believes Travel Center Palmer Lake will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

2028 Recommendations

- With construction of the project, the I-25 and County Line Road interchange ramp terminals will need to be converted to a signal or a roundabout. Traffic signals are the preferred intersection control recommended by this study. In order to utilize the existing bridge deck (approximately 72 feet), a traditional diamond interchange can provide two westbound through lanes, a westbound left turn lane, an eastbound left turn lane, and a single eastbound through lane between the two ramps at 12 feet per lane. Additionally, the northbound off-ramp will require a separate left turn lane, and the southbound off-ramp will require a separate right turn lane.
- The County Line Road and Beacon Lite Road (#1) intersection is recommended to be realigned by converting the major through movements to the existing east (County Line Road) and south (Beacon Lite Road) legs of this intersection while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound right turn movements and westbound left turn movements into the major through movements. This realigned intersection will either need to be signalized or provide roundabout control. As a signal, the west leg minor approach is recommended to provide a separate left and right turn lane while the major approaches would provide two northbound and southbound through lanes, a separate northbound left turn lane, and a separate right turn lane. However, as a roundabout, the northbound/southbound realigned roadway is recommended to provide two approach lanes, and the eastbound approach is recommended to provide a single lane for shared movements.
- Two full movement project accesses are being proposed along Beacon Lite Road while one right-out only access is proposed along County Line Road. The follow summarizes the recommendations of the three proposed project accesses:
 - o A right-out only access along County Line Road (#5) is recommended to provide a R1-1 “STOP” sign on the northbound approach with a R3-1 No Left Turn sign below the R1-1 sign. The exiting approach of this access should also be oriented to only allow exiting right turn movements.

- o The north access (#6) along Beacon Lite Road should be signalized as a T-intersection. Dual southbound left turn lanes are identified by the project team to be provided due to the high volume of entering left turn movements. The inside left turn lane is recommended to provide a length of 200 feet with a 150-foot taper while the outside left turn lane will be continuous drop lane from the inside through lane. The westbound approach will provide separate left and right turn lanes with the right turn movement operating under free-flowing conditions.
- o A full movement access (#7) is proposed on the south end of the site along Beacon Lite Road. The intersection can operate with stop control on the westbound approach. A southbound left turn lane is recommended to be installed to provide a length of 150 feet with a 120-foot taper.
- The church on the southwest corner of the County Line Road and Beacon Lite Road intersection currently has a full movement access along Beacon Lite Road and no other points of access. This access to the church along Beacon Lite Road is proposed to be restricted to right-in/right-out movements due to the proximity to the future realigned intersection of County Line Road and Beacon Lite Road. Therefore, the project team will coordinate with the church and El Paso County regarding the possibility of incorporating a second point of access along County Line Road for the church.
- Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane.

2045 Recommendations

- As identified in other traffic studies, the County Line Road and Monument Hill Road intersection is expected to be signalized in the long-term horizon.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the El Paso County, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023.

2.0 INTRODUCTION

Kimley-Horn has prepared this report to document the results of a Traffic Impact Study for a travel center proposed to be located on the southeast corner of the County Line Road (Palmer Divide Road) and Beacon Lite Road intersection in El Paso County, Colorado. A vicinity map illustrating the project development location is shown in **Figure 1**. The travel center project is proposed to contain a gas station with 120 fueling positions and an approximate 74,000 square foot convenience store. A conceptual site plan is attached in **Appendix A**. It is expected that the project will be completed in the next several years; therefore, analysis was conducted for the 2028 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with El Paso County and CDOT standards and requirements:

- County Line Road and Beacon Lite Road (#1)
- I-25 Southbound Ramp and County Line Road (#2)
- I-25 Northbound Ramp and County Line Road (#3)
- County Line Road and Monument Hill Road (#4)

In addition, the two (2) proposed full movement accesses along Beacon Lite Road and the right-out only access along County Line Road will be included in the evaluation.

Regional access to the site will be provided by Interstate 25 (I-25) and Highway 105. Primary access will be provided by County Line Road. Direct access will be provided by two full movement accesses along Beacon Lite Road and a right-out only access along County Line Road.

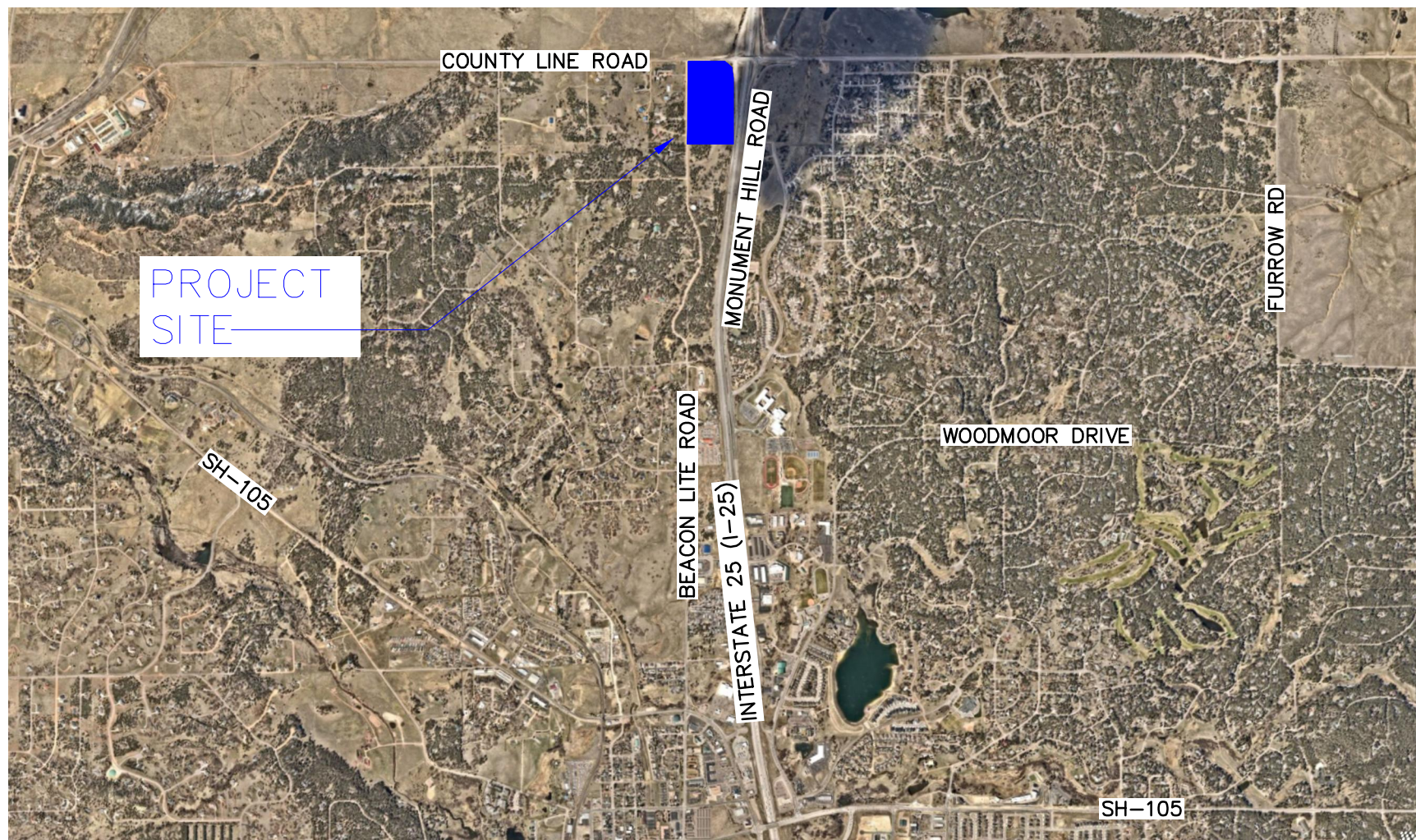


FIGURE 1
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
VICINITY MAP

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is currently vacant. Directly to the east is Interstate 25 and to the west are single ranch style family homes and Tri-Lakes Church. To the south is the Town of Palmer Lake and to the west is the Town of Palmer Lake. North of the site is open space with minimal development for more than six (6) miles. The extended area to the east contains single family residences.

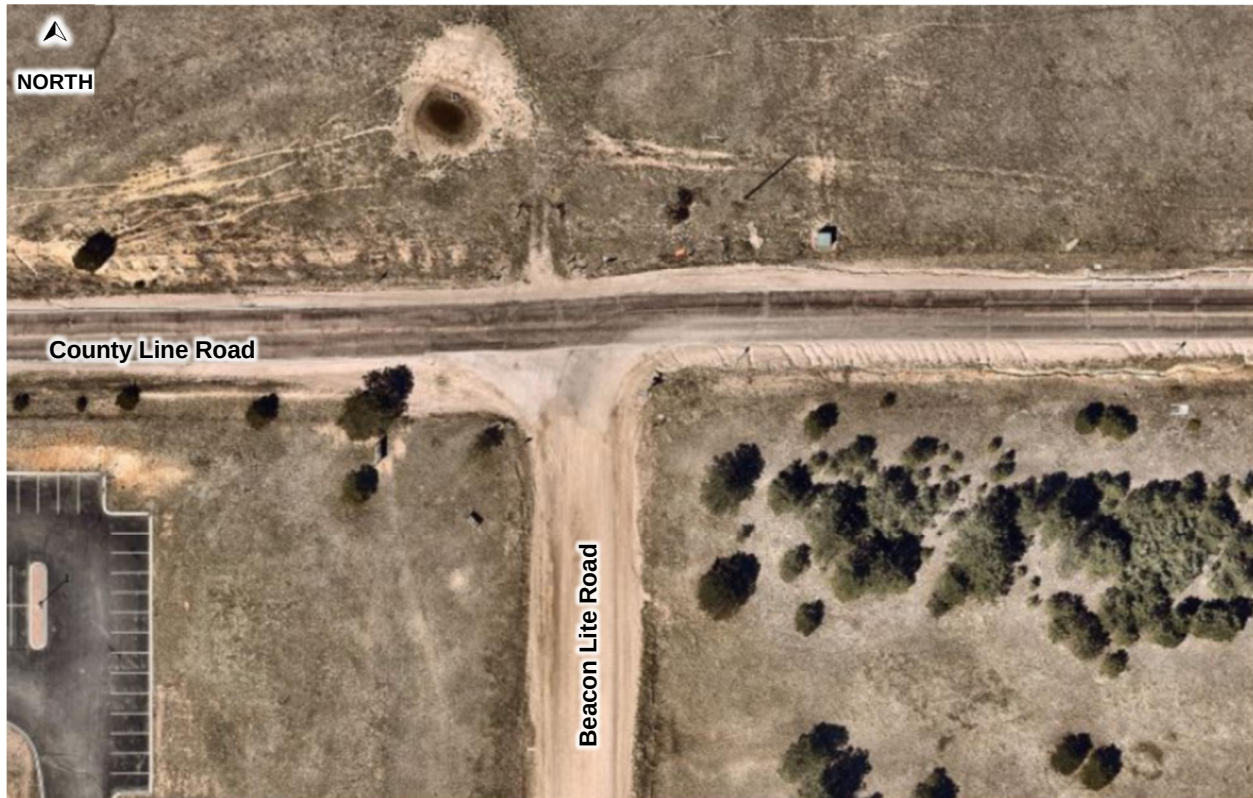
3.2 Existing and Future Roadway Network

County Line Road extends in the east/west direction as a two-lane roadway. The posted speed limit is 35 miles per hour near the study intersections and 45 miles per hour east of Monument Hill Road. Currently there are roadway construction plans for Beacon Lite Road which includes widening County Line Road to a three-section roadway between Beacon Lite Road and the I-25 Southbound Off-Ramp.

Beacon Lite Road extends northbound and southbound with one through lane in each direction. The roadway is not paved and has a posted speed limit of 35 miles per hour. As mentioned previously, Beacon Lite Road currently has approved construction plans to pave the roadway to Wakonda Way.

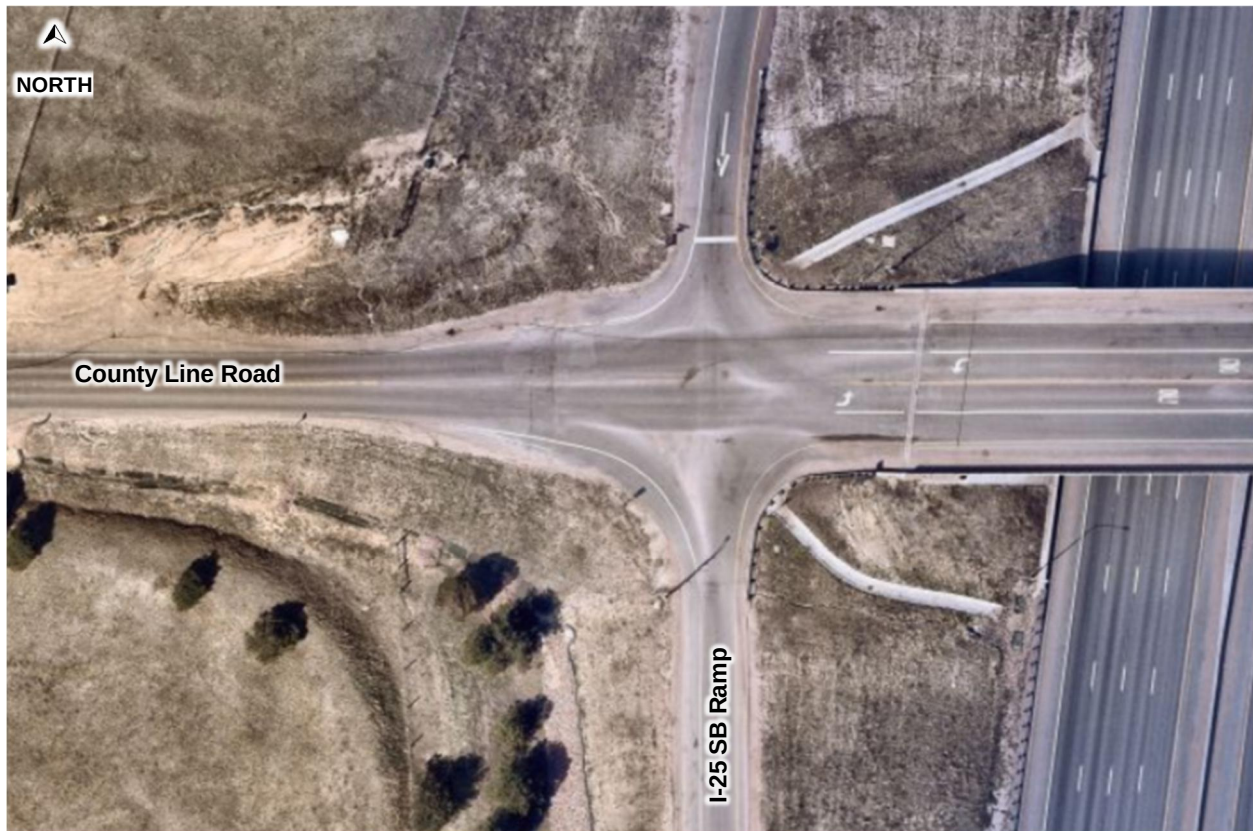
Monument Hill Road is a north-south roadway and provides one through lane in each direction. The Monument Hill Road south of County Line Road serves as a frontage road to I-25. North of County Line Road the roadway name changes to Andrews Road. The posted speed limit along Monument Hill Road is 45 miles per hour and along Andrews Road is 30 miles per hour.

The T-intersection of County Line Road and Beacon Lite Road is unsignalized and operates with stop control on the northbound approach of Beacon Lite Road. All three approaches provide a single lane for shared turning movements. An aerial photo of the existing intersection configuration is below.



County Line Road & Beacon Lite Road

The unsignalized intersection of County Line Road and the I-25 Southbound Ramp operates with stop control on the southbound off-ramp. The eastbound approach of County Line Road provides a single lane for shared through and right turn movements while the westbound approach provides a left turn lane and a through lane. The southbound off-ramp provides a single lane approach. An aerial photo of the existing intersection configuration is below.



County Line Road & I-25 Southbound Ramp

The unsignalized intersection of County Line Road and the I-25 Northbound Ramp operates with stop control on the northbound off-ramp. The eastbound approach of County Line Road provides a left turn lane and a through lane while the westbound approach provides a storage lane for spill back queues at the westbound left southbound on-ramp and a shared through/right turn lane. The northbound off-ramp provides a single lane approach. An aerial photo of the existing intersection configuration is below.



County Line Road & I-25 Northbound Ramp

The unsignalized intersection of County Line Road and Monument Hill Road operates with stop control on the northbound Monument Hill Road approach and the southbound Andrews Road approach. All four approaches provide a single lane for shared turning movements. An aerial photo of the existing intersection configuration is below.



County Line Road & Monument Hill Road

The intersection lane configuration and control for the study area intersections are shown in **Figure 2**.

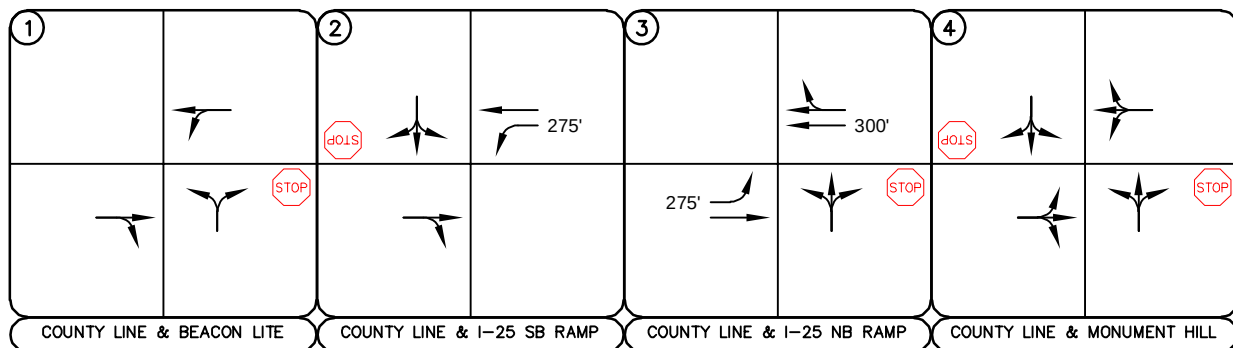
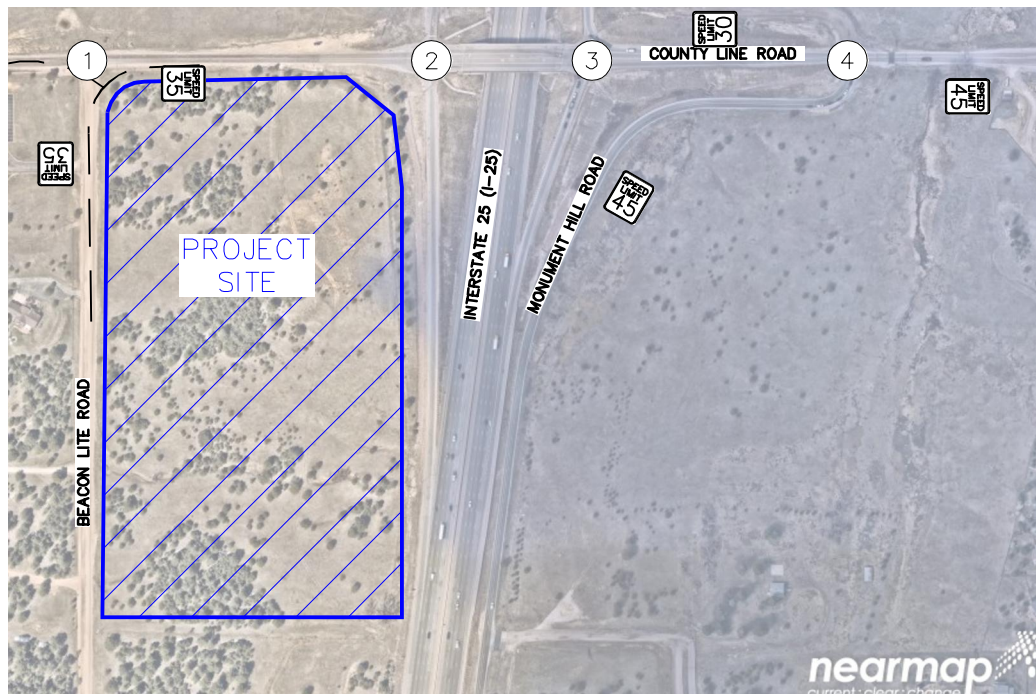
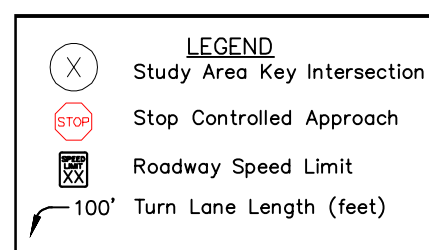


FIGURE 2
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 EXISTING GEOMETRY AND CONTROL

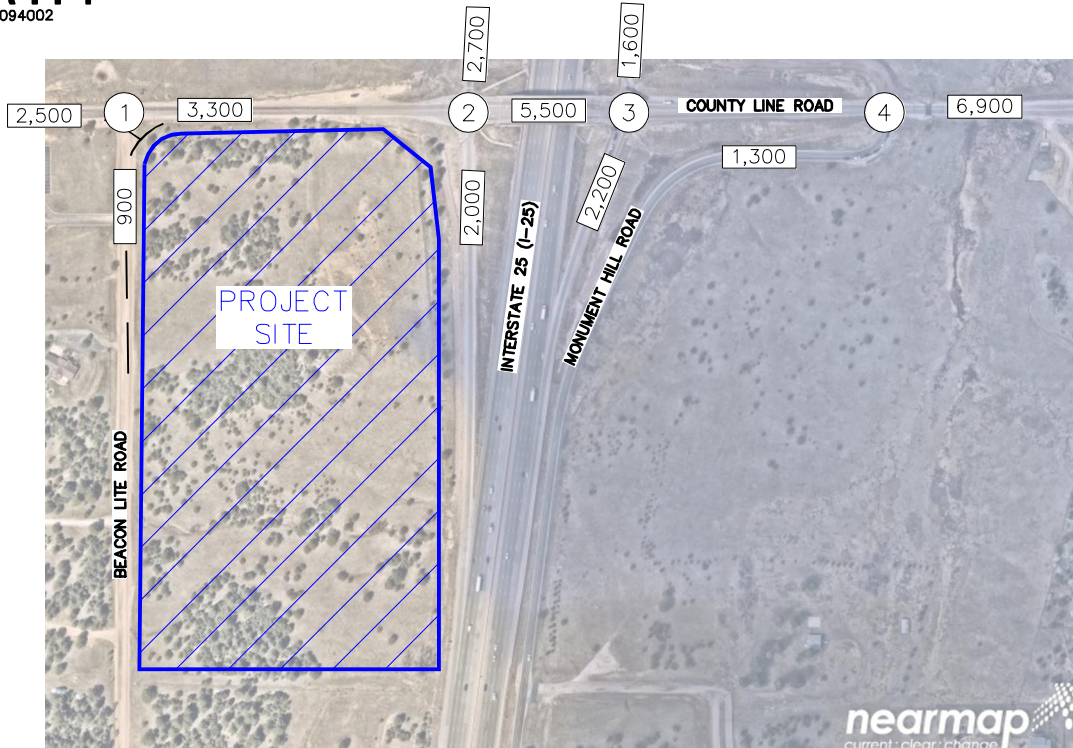


3.3 Existing Traffic Volumes

Existing turning movement counts were conducted at the study intersections on Wednesday, May 8, 2024 during the weekday morning and afternoon peak hours. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. The existing intersection traffic volumes are shown in **Figure 3** with count sheets provided in **Appendix B**.

3.4 Unspecified Development Traffic Growth

According to traffic projections from the El Paso County 2016 Major Transportation Corridor Plan Update (MTCP) traffic model, the area surrounding the site is expected to have an average 25-year growth factor of 1.80. This growth factor equates to an annual growth rate of 2.37 percent. Future traffic volume projections and growth rate calculations are provided in **Appendix C**. This annual growth rate was used to calculate future traffic volumes at the study area intersections. This annual growth rate was used to estimate short-term 2028 and long-term 2045 traffic volume projections at the key intersections. As mentioned previously, construction plans and improvements are planned prior to buildout of the proposed site for Beacon Lite Road. Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane. Therefore, the future roadway geometry and configuration used in the short-term background horizon is shown in **Figure 4**. The calculated background traffic volumes for 2028 and 2045 are shown in **Figure 5** and **Figure 6**, respectively.



1	2	3	4
← 108(104) ← 11(39) 126(143) → 0(1) ↘ 1(3) ↗ 21(47) ↗	17(33) ↖ 5(2) ↓ 75(239) ↘ 102(98) → 45(71) ↘ ← 102(87) ← 239(125)	216(126) ↖ ← 291(157) 34(35) ↗ 143(293) → 49(60) ↖ 0(1) ↑ 58(166) ↗	1(6) ↖ 1(0) ↓ 0(3) ↘ 3(10) ↗ 121(407) → 78(38) ↘ 2(2) ↖ ← 448(235) 65(15) ↘ 47(47) ↖ 1(0) ↑ 18(28) ↗
COUNTY LINE & BEACON LITE	COUNTY LINE & I-25 SB RAMP	COUNTY LINE & I-25 NB RAMP	COUNTY LINE & MONUMENT HILL
Wed, May 8, 2024 7:15 to 8:15AM (4:00 to 5:00PM)	Wed, May 8, 2024 7:15 to 8:15AM (4:30 to 5:30PM)	Wed, May 8, 2024 7:15 to 8:15AM (4:00 to 5:00PM)	Wed, May 8, 2024 7:00 to 8:00AM (4:00 to 5:00PM)

FIGURE 3
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2024 EXISTING TRAFFIC VOLUMES

LEGEND	
(X)	Study Area Key Intersection
xxx(xxx)	Weekday AM(PM) Peak Hour Traffic Volumes
xx,x00	Estimated Daily Traffic Volume

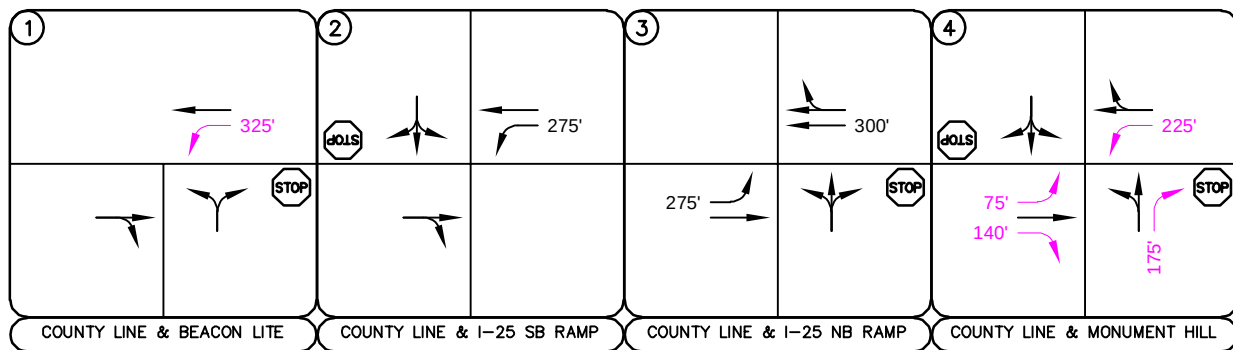
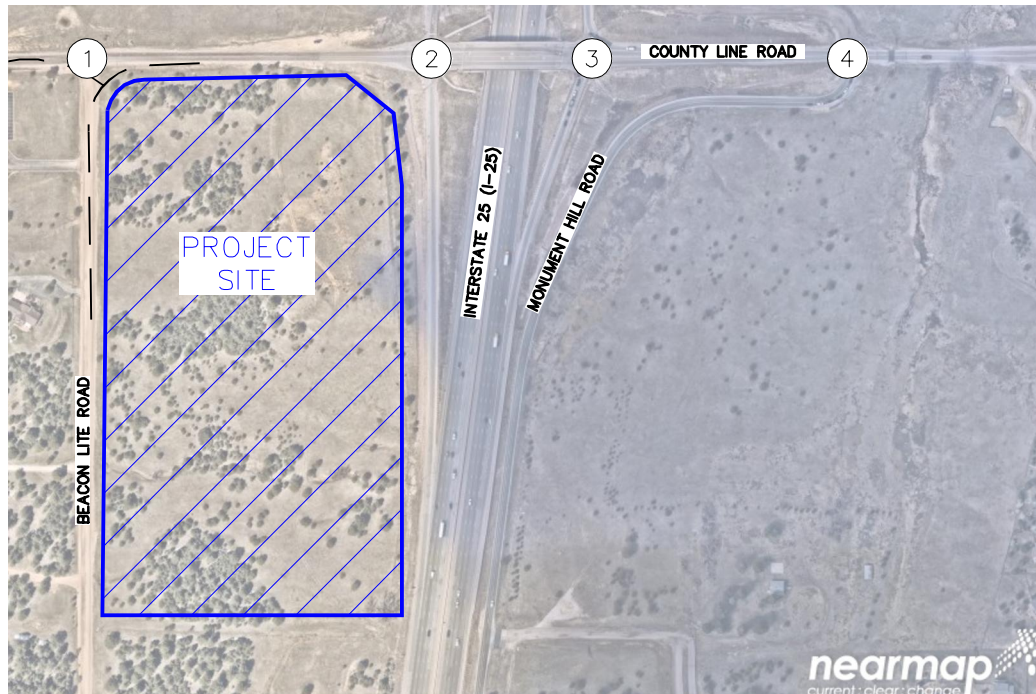
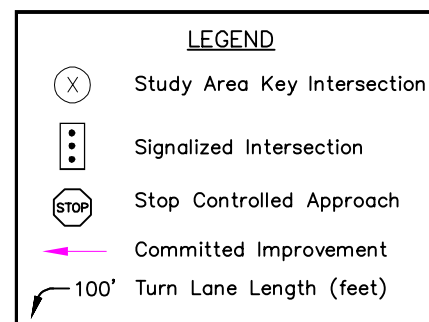
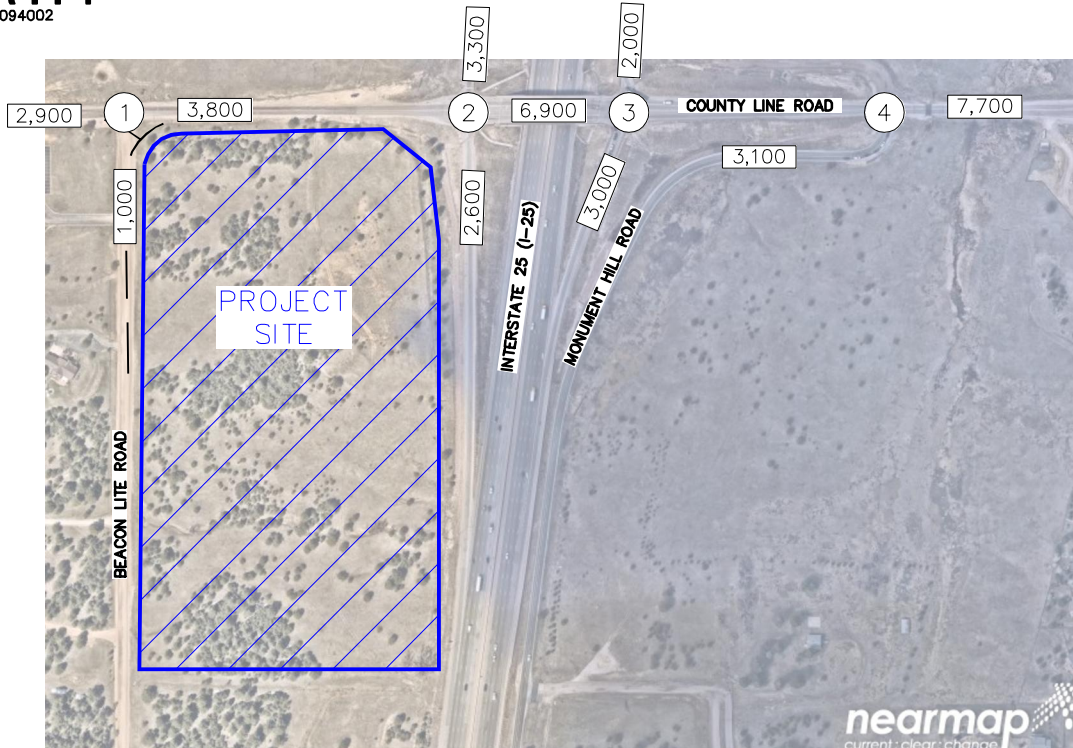


FIGURE 4
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2028 BACKGROUND
 GEOMETRY AND CONTROL



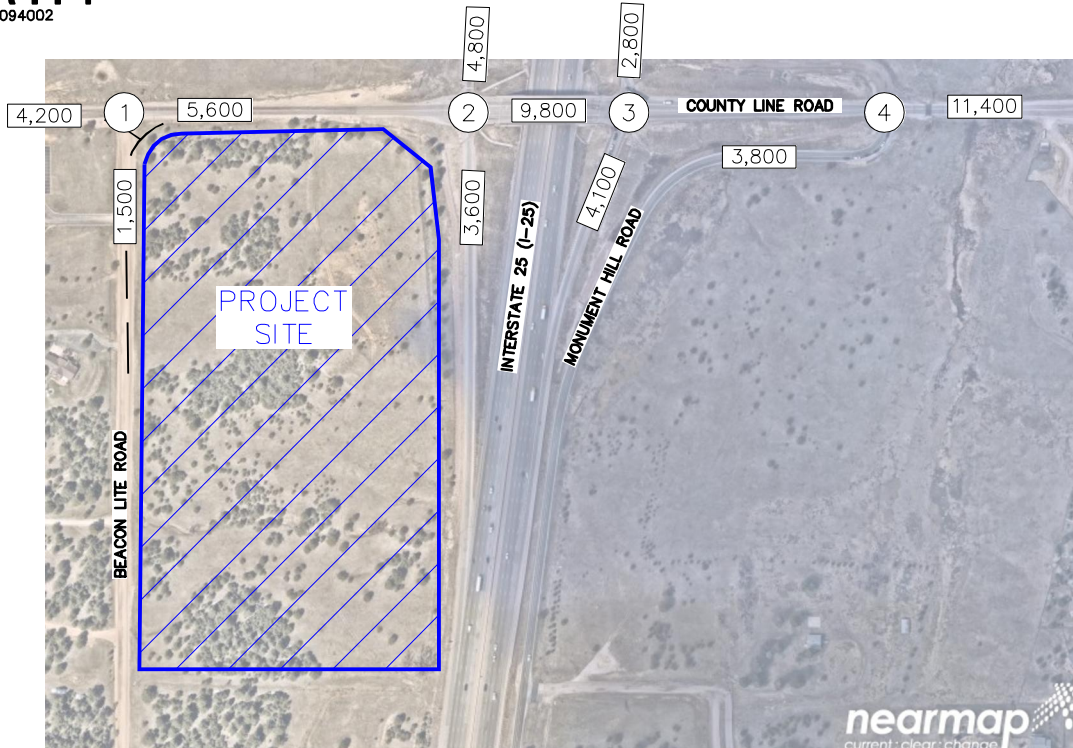


1	2	3	4
← 125(117) ← 12(43) 141(167) → 0(1) → 1(3) → 23(52) →	19(36) 5(2) 94(290) ← 118(99) ← 316(178) 115(118) → 49(78) →	264(157) ← 380(216) 37(38) → 172(360) → 54(55) → 0(1) → 87(240) →	1(7) 1(0) 0(3) 2(2) ← 492(258) ← 74(23) 3(11) → 133(447) → 124(138) → 139(115) → 1(0) → 26(34) →
COUNTY LINE & BEACON LITE	COUNTY LINE & I-25 SB RAMP	COUNTY LINE & I-25 NB RAMP	COUNTY LINE & MONUMENT HILL

LEGEND

- (X) Study Area Key Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

FIGURE 5
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2028 BACKGROUND TRAFFIC VOLUMES



1	2	3	4
← 183(173) ← 18(64) 209(244) → 0(2) → 2(5) → 34(77) →	28(54) 8(3) 135(419) ← 173(145) ← 445(245) 170(170) → 74(116) →	380(225) ← 536(301) 56(57) → 249(517) → 80(82) → 0(2) → 118(329) →	2(10) 2(0) 0(5) 3(3) ← 733(384) ← 109(32) 5(16) 198(666) → 166(158) → 164(140) → 2(0) → 35(49) →
COUNTY LINE & BEACON LITE	COUNTY LINE & I-25 SB RAMP	COUNTY LINE & I-25 NB RAMP	COUNTY LINE & MONUMENT HILL

LEGEND

- (X) Study Area Key Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

FIGURE 6
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2045 BACKGROUND TRAFFIC VOLUMES

4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, trip generation estimates were developed using trip information from other travel center sites operated by the same ownership as this site. Data collected at 15 sites over two-years old were used in developing average trips rates and to estimate trips for this site. It is understood that the travel center may have abnormal traffic influxes within the first two years but after two-years, the trips to the site will normalize. It is important to note that due to the total number of fueling positions for this development, ITE data was not used for project trip generation estimates. The average number of fueling positions for the applicable use with ITE Trip Generation is 14 fueling positions which is well under the proposed 120 fueling positions for this travel center.

Since the project is a travel center adjacent to an interstate freeway, diverted link trips are expected with the proposed development. These diverted link trips are vehicles already on the roadway network that divert their route to stop at the proposed development while in route to another destination. Diverted trip rates were obtained from user specific data. A diverted link rate of 85 percent was applied for the morning peak hour and the afternoon peak hour for the proposed travel center.

Travel Center Palmer Lake is anticipated to generate a total of approximately 22,150 daily weekday trips with 1,236 of these trips occurring during the morning peak and 1,679 trips occurring during the afternoon peak hour. Accounting for diverted trips, expected net new trips (non diverted trips) to the surrounding street network results in approximately 3,322 new weekday daily trips, of which 185 and 252 new trips are anticipated during the weekday morning and

¹ Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.

afternoon peak hours, respectively. **Table 1** summarizes the estimated trip generation for the site. The trip generation worksheets are included in **Appendix D**.

Table 1 – Travel Center Palmer Lake Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
New Trips (Non-Diverted Link Trips)	3,322	96	89	185	126	126	252
Diverted Link Trips	18,828	547	504	1,051	714	713	1,427
Total Project Trips	22,150	643	593	1,236	840	839	1,679

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The new project trip distribution for the proposed development trips which accounts for 15 percent of the overall trips is illustrated in **Figure 7** while the diverted trip distribution which accounts for 85 percent of the overall trips is illustrated in **Figure 8**. The following summarizes the overall trip distributions for the development:

- Interstate 25: 93.25%
- West County Line Road: 3.0%
- East County Line Road: 0.75%
- South Beacon Lite: 1.5%
- South Monument Hill Road: 1.5%

4.3 Traffic Assignment

Traffic assignment was obtained by applying the distributions from **Figure 7** and **Figure 8** to the estimated traffic generation of the project shown in **Table 1**. The total traffic assignment is shown in **Figure 9**. Of note, the County Line Road and Beacon Lite Road intersection is proposed to be realigned as part of project development with the east leg of County Line Road and the south leg of Beacon Lite Road aligning as the major through movements while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound

right turn movements and westbound left turn movements into the major through movements. Therefore, the realignment volumes are provided in Figure 9 for reference.

4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2028 buildout horizon and long-term 2045 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2028 and 2045 horizon years in **Figures 10** and **11**, respectively.

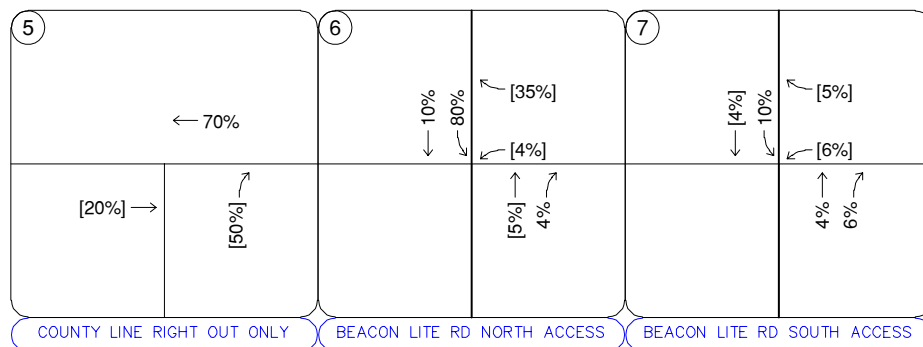
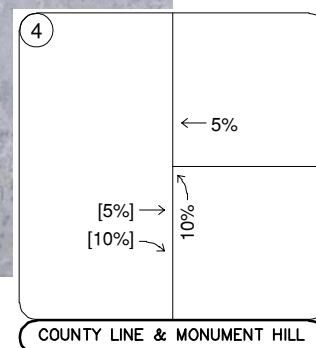
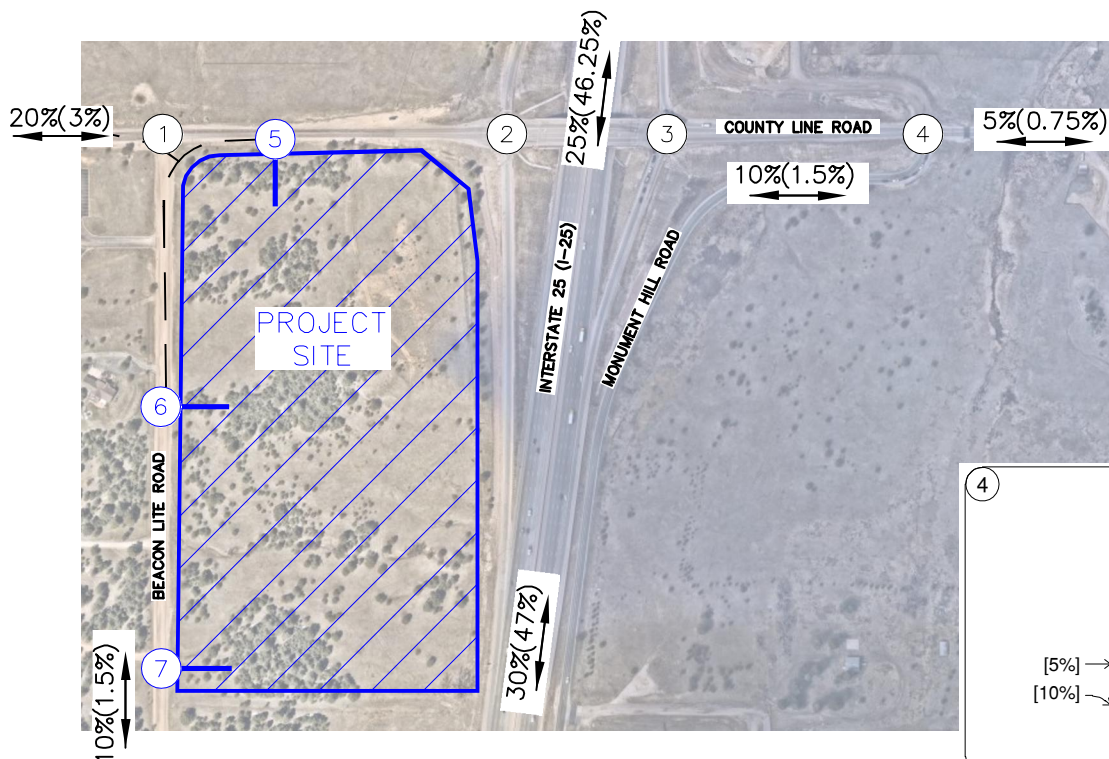
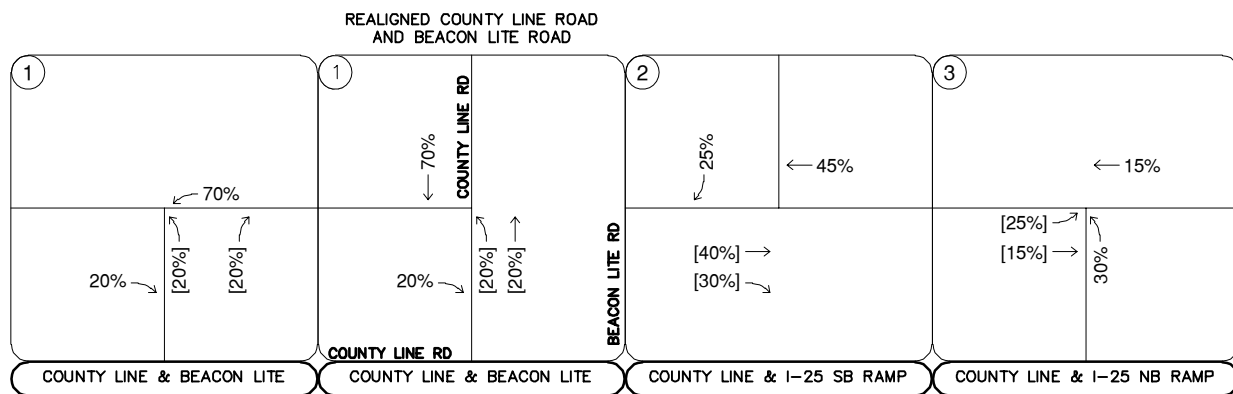


FIGURE 7
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
NEW PROJECT TRIP DISTRIBUTION
(15% OF OVERALL TRIPS)

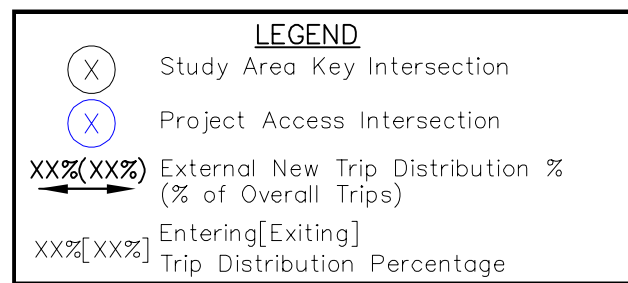
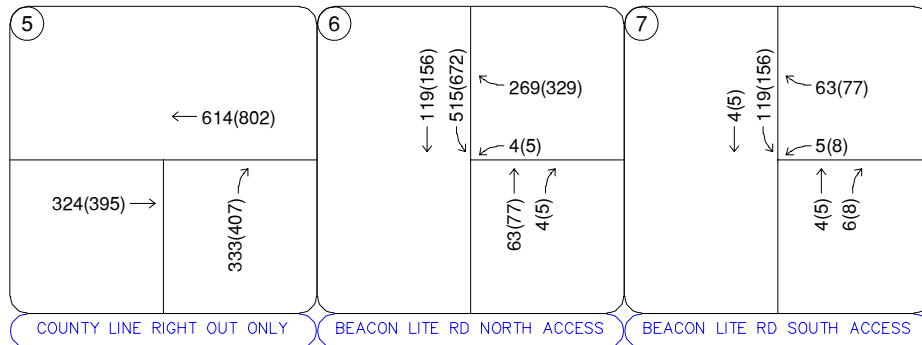
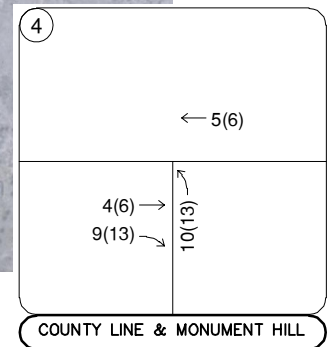
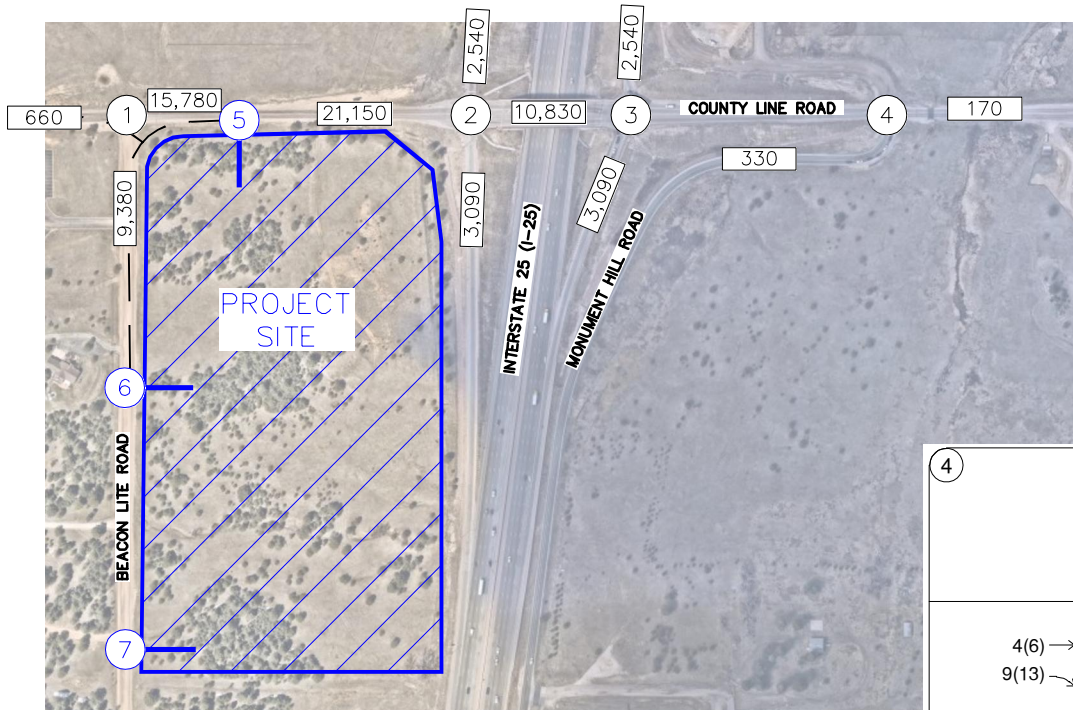
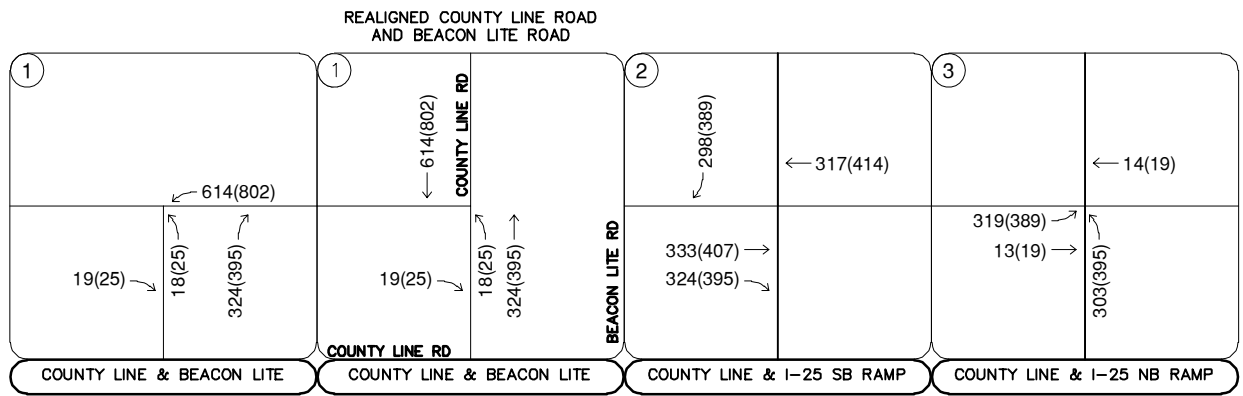




FIGURE 8

TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
DIVERTED LINK PROJECT TRIP DISTRIBUTION
(85% OF OVERALL TRIPS)

LEGEND	
(X)	Study Area Key Intersection
(X)	Project Access Intersection
XX%(XX%)	External Diverted Trip Distribution % (% of Overall Trips)
XX%[XX%]	Entering[Exiting] Trip Distribution Percentage



LEGEND

- (X) Study Area Key Intersection
- (X) Project Access Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

FIGURE 9
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
PROJECT TRAFFIC ASSIGNMENT



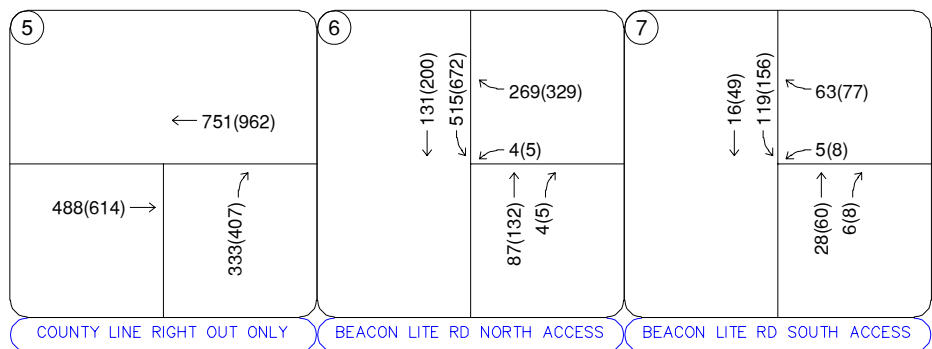
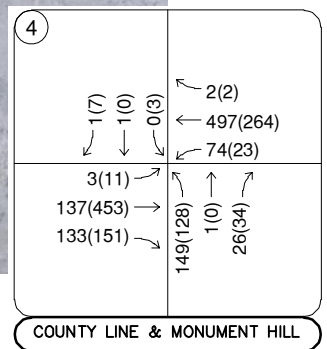
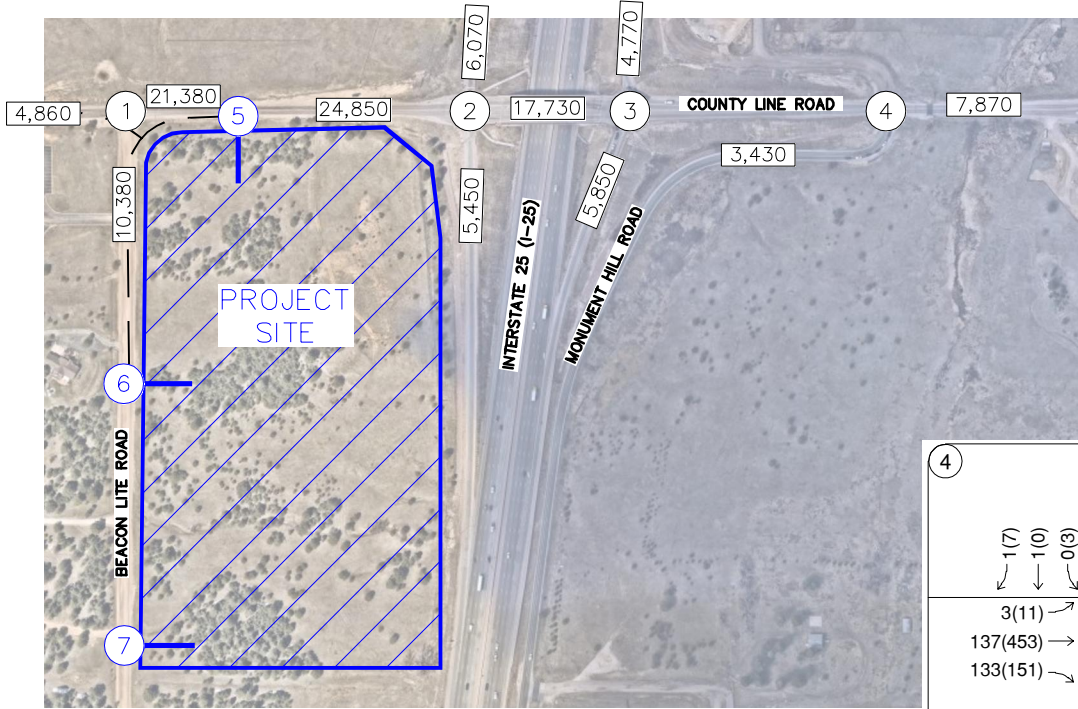
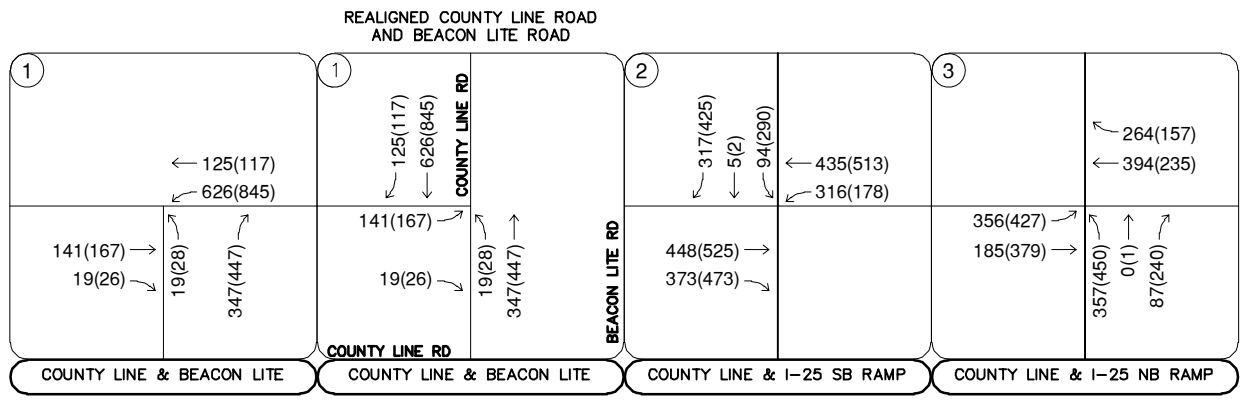


FIGURE 10
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2028 TOTAL TRAFFIC VOLUMES

LEGEND

- (X) Study Area Key Intersection
- (X) Project Access Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

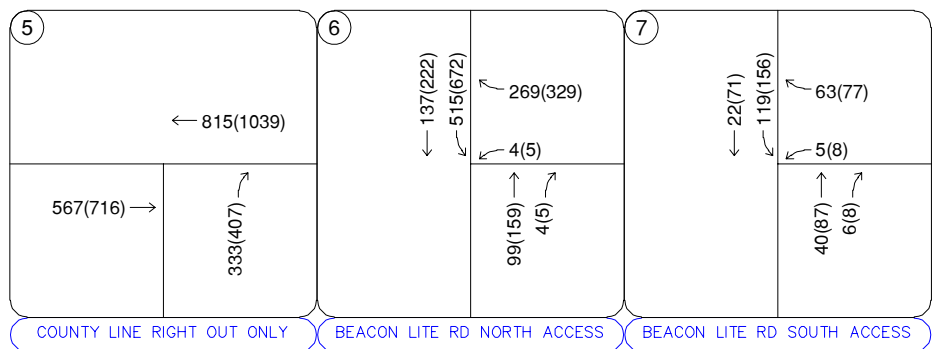
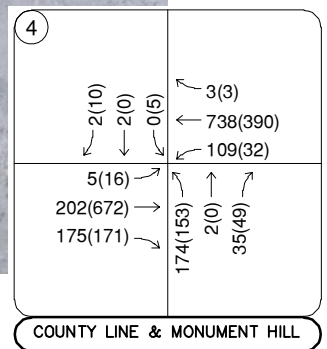
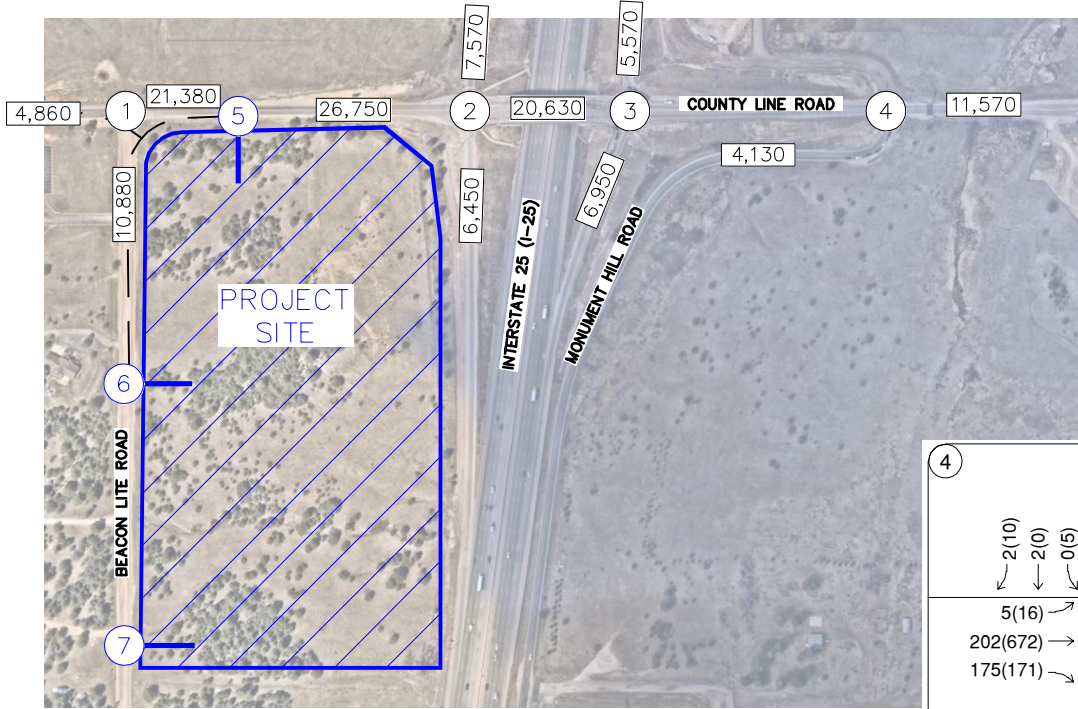
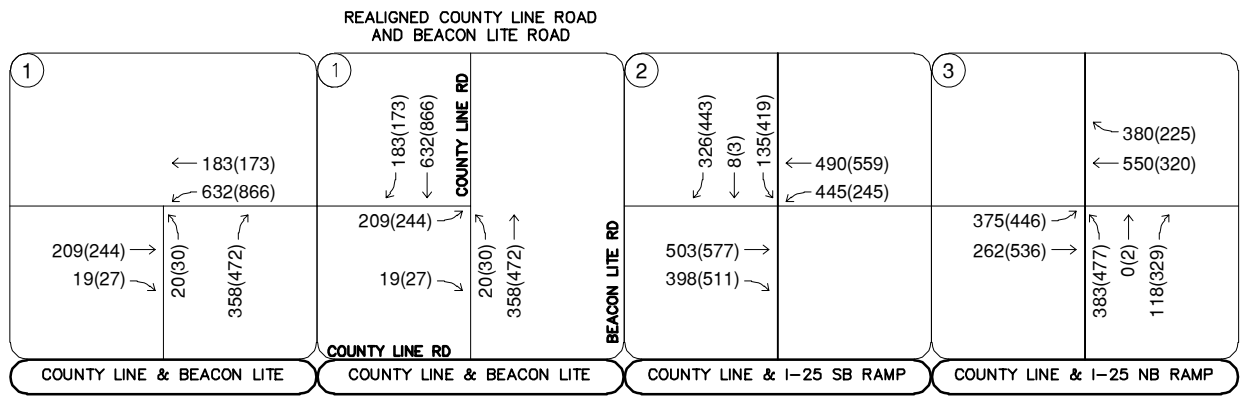


FIGURE 11
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 2045 TOTAL TRAFFIC VOLUMES

LEGEND

(X) Study Area Key Intersection

(X) Project Access Intersection

XXX(XXX) Weekday AM(PM)
 Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume



5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2028 and 2045 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the *Highway Capacity Manual (HCM)*².

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). Based on El Paso County standards, the threshold for acceptable LOS is not less than LOS D during the peak hours. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for signalized, roundabout, and all-way stop controlled intersections are defined for each approach and for the overall intersection.

² Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersections for the study area are provided in **Appendix E**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2**. Existing peak hour factors were utilized in the existing and 2028 horizon analysis years while the El Paso County standard of 0.95 was used for the long-term 2045 horizon analysis. The existing heavy vehicle percentages obtained from the turning movement counts were also used in each horizon year. Synchro traffic analysis software was used to analyze the signalized and unsignalized key intersections for HCM level of service.

Prior to the intersection operational analysis for the I-25 interchange at County Line Road, the Federal Highway Administration (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) 2018 tool was used to determine the optimal (based on volume over capacity only) operational interchange configuration. The CAP-X outputs identified the partial cloverleafs, diverging diamond, diamond, and single point interchanges as potential configurations for this interchange. Additionally, a Colorado Intersection Control Assessment Tool (ICAT) analysis was completed for the southbound and northbound ramp intersections. The CAP-X analysis does not consider existing constraints at the interchange as part of its evaluation. The partial cloverleaf and diverging diamond interchange configurations considered by the CAP-X analysis would require acquisition of significant area of Right of Way and require construction of large retaining walls and/or significant roadway embankment. The highest-ranking interchange configuration, from the CAP-X analysis, that is feasible to construct is the diamond interchange. These output sheets are provided in **Appendix H** for reference.

County Line Road and Beacon Lite Road

The T-intersection of County Line Road and Beacon Lite Road is unsignalized and operates with stop control on the northbound approach of Beacon Lite Road. The intersection movements operate acceptably at LOS A during both peak hours under existing conditions. However, as mentioned previously, a westbound left turn lane is planned to be included with the Beacon Lite Road improvement plans. Therefore, the background conditions and the short-term 2028 total conditions was analyzed with the planned improvement. With project traffic, the intersection configuration is not expected to operate acceptably as a T-intersection under stop control. Therefore, the project is recommending realigning the roadway for the east leg of County Line Road and the south leg of Beacon Lite Road to be the major roadway and the west leg of County

Line Road to be the minor roadway. The realigned intersection is recommended to be signalized in order for acceptable intersection operations. With traffic projections, this intersection meets the MUTCD Four Hour Warrant for signalization. The signal warrant analysis worksheet is included in **Appendix F**. Therefore, with signalization, two through lanes are recommended in each direction for the realigned major roadway while separate left and right turn lanes are recommended on the County Line Road minor eastbound approach. Further, a northbound to westbound left turn lane and southbound to westbound right turn lane are recommended at this intersection. With this configuration, the intersection is anticipated to operate at LOS A during both peak hours with signalization. However, a two-lane entry roundabout configuration can also operate acceptably with the project traffic and realignment of the intersection. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – County Line Road & Beacon Lite Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	9.1	A	9.4	A
Westbound Left	7.5	A	7.6	A
2028 Background #				
Northbound Approach	9.3	A	9.6	A
Westbound Left	7.6	A	7.7	A
2028 Background Plus Project #				
Northbound Approach	52.9	F	>300	F
Westbound Left	10.3	B	12.7	B
2028 Background Plus Project Signalized (Realigned)	6.5	A	6.3	A
2028 Background Plus Project Roundabout (Realigned)	5.6	A	7.0	A
2045 Background #				
Northbound Approach	9.9	A	10.5	B
Westbound Left	7.8	A	7.9	A
2028 Background Plus Project Signalized (Realigned)	9.0	A	8.0	A
2028 Background Plus Project Roundabout (Realigned)	6.3	A	8.2	A

= Includes WB Left Turn Lane Part of Beacon Lite Road Improvement Plans

Realigned: Signalized with Two NB/SB Through Lanes, Separate EB Left and Right Turn Lanes

Realigned Two by One Roundabout

County Line Road and I-25 Southbound Ramp

The unsignalized intersection of County Line Road and the I-25 Southbound Ramp operates with stop control on the southbound off-ramp. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. With project traffic the intersection will need to be converted from stop control to signal control or a roundabout.

Therefore, two intersection types were studied with the addition of project traffic: standard diamond interchange and the CDOT requested roundabout intersection. These configurations allow the existing bridge deck width of 72 feet to be maintained and do not require widening of the bridge. Therefore, with at most five 12-foot lanes, the total lane width of 60 feet allows for 6-foot shoulders on each side. The standard diamond intersection assumed an eastbound right turn lane, a through lane, and a lane for spill back storage for the downstream eastbound left turn lane, a westbound left turn lane, and two westbound through lanes. The southbound approach was studied as a shared left/through/right and a separate right turn lane. The MUTCD Four Hour Signal Warrant Analysis was completed and identified all four hours meet the volumes to warrant a signal. The signal warrant analysis is provided in **Appendix F**. With signal control and recommended lane configuration, the intersection is expected to operate acceptably with LOS B during both peak hours through the long-term 2045 horizon.

The roundabout configuration was studied, as requested by CDOT. However, the inscribed circle diameter required for the roundabout cannot feasibly be accommodated within the existing right-of-way. The analysis assumed two eastbound and westbound through lanes with an eastbound right turn bypass lane. The southbound approach assumed a shared left/through/right turn lane and a separate right turn lane.. The roundabout configuration operates acceptably at LOS B or better during both peak hours through the long-term 2045 horizon. As part of the evaluation of the roundabout control the project team developed a conceptual layout of the roundabout configuration. The inscribed circle diameter required for the roundabout cannot be accommodated within the existing right-of-way. Due to the Right of Way constraint, the roundabout is not recommended as the preferred intersection control. **Table 4** provides the results of the LOS analysis conducted at this intersection.

Table 4 – County Line Road & I-25 Southbound Ramp LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Westbound Left	8.1	A	7.8	A
Southbound Approach	21.6	C	19.8	C
2028 Background				
Westbound Left	8.3	A	8.0	A
Southbound Approach	40.8	E	43.4	E
2028 Background Plus Project				
Westbound Left	14.0	B	12.4	B
Southbound Approach	>300	F	>300	F
2028 Background Plus Project Signalized	18.8	B	20.5	C
2028 Background Plus Project Roundabout	5.8	A	7.7	A
2045 Background				
Northbound Left	9.5	A	8.6	A
Westbound Approach	>300	F	>300	F
2045 Background Plus Project Signalized	19.7	B	22.1	C
2045 Background Plus Project Roundabout	7.6	A	12.7	B

Signalized with Two EB and WB Through Lanes, Separate EB Right and WB Left Turn Lane, and Separate SB Right Turn Lane

Two by One Roundabout

County Line Road and I-25 Northbound Ramp

The unsignalized intersection of County Line Road and the I-25 Northbound Ramp operates with stop control on the northbound off-ramp. The intersection movements operate acceptably at LOS B or better during both peak hours under existing conditions. With project traffic, the northbound approach is anticipated to operate with long vehicle delays. Therefore, similar to the southbound interchange, this intersection is recommended to provide signal control by the buildout horizon. However, roundabout controlled was studied as requested by CDOT.

The diamond intersection configuration includes an eastbound left turn lane, an eastbound through lane, a westbound through, a shared westbound through/right turn lane, a separate northbound left and a shared left/through/right turn lane. The MUTCD Four Hour Signal Warrant Analysis was completed and identified all four hours meet the volumes to warrant a signal. The signal warrant analysis is provided in **Appendix F**. The roundabout configuration is similar to the southbound ramp intersection with two eastbound and westbound through lanes, and a separate northbound left turn lane (southbound right at southbound ramp) and shared left/through/right turn lane. As part of the evaluation of the roundabout control, the project team developed a conceptual layout of the roundabout configuration. There is approximately 40 feet of vertical elevation from the existing grade of the overpass to the existing grade of the frontage road. An approximately 40-foot retaining wall would be required to construct the roundabout. Due to the existing geometric and ROW constraints, the roundabout is not recommended as the preferred intersection control. The two intersection configuration options are anticipated to operate with LOS D or better in 2028 and 2045. **Table 5** provides the results of the LOS analysis conducted at this intersection.

Table 5 – County Line Road & I-25 Northbound Ramp LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	11.3	B	13.2	B
Eastbound Left	8.8	A	7.9	A
2028 Background				
Northbound Approach	12.2	B	17.1	C
Eastbound Left	9.4	A	8.2	A
2028 Background Plus Project				
Northbound Approach	>300	F	>300	F
Eastbound Left	13.2	B	10.2	A
2028 Background Plus Project Signalized	28.9	C	24.6	C

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2028 Background Plus Project Roundabout	9.5	A	11.6	B
2045 Background				
Northbound Approach	17.8	C	59.5	F
Eastbound Left	11.1	B	8.8	A
2045 Background Plus Project Signalized	35.7	D	31.0	C
2045 Background Plus Project Roundabout	16.6	C	21.0	C

Signalized with One EB and Two WB Through Lanes, Separate EB Left, and Separate NB Left Turn Lane

Two by One Roundabout

County Line Road and Monument Hill Road

The unsignalized intersection of County Line Road and Monument Hill Road operates with stop control on the northbound Monument Hill Road approach and the southbound Andrews Road approach. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. However, with the proposed development on the southeast corner of County Line Road and Monument Hill Road, Monument Ridge East, a separate eastbound left and right turn lane, a separate westbound left turn lane, and a separate northbound right turn lane is planned to be constructed. With project traffic and the background lane geometry, all movements are anticipated to continue operating at an acceptable level of service through the short-term horizon. However, if 2045 volumes are realized, the shared northbound left/through may operate with unacceptable delays. Therefore, as identified in the Monument Ridge East Traffic Study, the intersection has been recommended to signal control. With signalization, the intersection is anticipated to operate at LOS A during both peak hours. **Table 6** provides the results of the LOS analysis conducted at this intersection.

Table 6 – County Line Road & Monument Hill Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	21.3	C	17.3	C
Eastbound Left	8.6	A	7.8	A
Westbound Left	7.9	A	8.4	A
Southbound Approach	15.9	C	12.4	B
2028 Background #				
Northbound Left/Through	30.3	D	18.5	C
Northbound Right	9.2	A	11.6	B
Eastbound Left	8.7	A	7.8	A
Westbound Left	8.1	A	8.9	A
Southbound Approach	14.8	B	11.7	B
2028 Background Plus Project #				
Northbound Left/Through	33.0	D	19.5	C
Northbound Right	9.2	A	11.7	B
Eastbound Left	8.8	A	7.9	A
Westbound Left	8.1	A	9.0	A
Southbound Approach	14.9	B	11.8	B
2045 Background #				
Northbound Left/Through	168.1	F	35.7	E
Northbound Right	9.8	A	14.7	B
Eastbound Left	9.8	A	8.2	A
Westbound Left	8.6	A	10.0	A
Southbound Approach	20.6	C	15.2	C
2045 Background Plus Project #	8.9	A	8.5	A

= Includes background study improvements: Separate EBL, EBR, WBL, and NBR

\$ = Signalized

Project Accesses

With completion of the Travel Center Palmer Lake project, an outbound only access along County Line Road and two full movement access along Beacon Lite Road will be constructed. The Palmer Divide right-out only access is recommended to provide a R1-1 “STOP” sign and a R3-1 No Left Turn sign on the exiting approach while the exiting approach should also be oriented to only allow right-turn movements. Of note, the heavy inbound traffic projected for the site is recommended to provide dual southbound left turn lanes into the project site at the Beacon Lite Road North Access. The westbound right movement of this north access along Beacon Lite Road will operate with free flow movements by providing a westbound to northbound acceleration lane. Therefore, to accommodate dual southbound left turn lanes, the intersection will need to be signalized. Of note, the traffic volumes are not anticipated to warrant signalization, but signal control could be provided if supported by El Paso County due to the high volume of southbound left turn movements and dual left turn lanes should not be implemented with stop control. The southern access is recommended to operate with stop control on the westbound approach, exiting the site. The westbound approach of this southern access operates acceptably with a shared left/right turn lane and should operate under stop control with a R1-1 “STOP” sign installed on the exiting approach. A southbound left turn lane is recommended to be provided for entering the site at the south access. **Table 7** provides the results of the level of service for the project access intersections. As shown in the table, the project access intersections are anticipated to have all movements operating with acceptable LOS C or better during the peak hours in both the buildout year 2028 and the 2045 long-term horizons.

Table 7 – Project Access Level of Service Results

Intersection	2028 Total				2045 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
County Line Rd RO Access Northbound Approach	14.6	A	20.7	C	15.9	C	24.5	C
Beacon Lite North Access	1.4	A	1.5	A	1.4	A	1.6	A
Beacon Lite South Access Westbound Approach Southbound Left	8.9 7.5	A A	9.4 7.7	A A	9.0 7.5	A A	9.6 7.7	B A

5.3 El Paso County Turn Lane Requirement Analysis

The El Paso County Engineering Criteria Manual (ECM) was used to determine if left and right turn lanes are warranted along Beacon Lite Road at the project accesses. El Paso County classifies County Line Road as a minor arterial roadway while Beacon Lite Road is a collector roadway. According to El Paso County ECM guidelines for Minor Arterials and Lower Classifications, a left turn lane is required for any access with a projected peak hour left turning volume of 25 vehicles per hour or greater, a right turn lane is required for any access with a projected peak hour right turning volume of 50 vehicles per hour or greater, and a right turn acceleration lane is generally not required.

Based on the Beacon Lite Road providing a posted speed limit of 35 miles per hour, the turn lane requirements that the project traffic contributes to are as follows:

Beacon Lite Road North Access (#6)

- A southbound left turn lane is warranted based on projected 2028 background plus project traffic volumes being 672 southbound left turns during the peak hour and the threshold being 25 vph. Based on the 35 mile per hour speed limit, the deceleration length is 150 feet, plus a 120-foot taper. However, with 672 vehicles dual southbound left turn lanes are recommended with the outside lane being a trapped turn lane and the inside lane provided 200 feet with a 120-foot taper.
- A northbound right turn lane is not warranted based on projected 2028 background plus project traffic volumes being 5 northbound right turns during the peak hour and the threshold being 50 vph.

Beacon Lite Road South Access (#7)

- A southbound left turn lane is warranted based on projected 2028 background plus project traffic volumes being 156 southbound left turns during the peak hour and the threshold being 25 vph. Based on the 35 mile per hour speed limit, the deceleration length is 150 feet, plus a 120-foot taper. Therefore, the southbound left turn lane is recommended to provide at least 150 feet of length with a 120-foot taper.
- A northbound right turn lane is not warranted based on projected 2028 background plus project traffic volumes being 8 northbound right turns during the peak hour and the threshold being 50 vph.

5.4 Vehicle Queuing Analysis

A vehicle queuing analysis was conducted for the study area intersections. The queuing analysis was performed using Synchro presenting the results of the 95th percentile queue lengths. Results are shown in the following **Table 8** with calculations provided within the level of service operational sheets of **Appendix E** for unsignalized intersections and **Appendix G** for signalized intersections. Of note, the minimum reported queue length is reported as 25 feet.

Table 8 – Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length	2028 Calculated Queue	2028 Recommended Length	2045 Calculated Queue	2045 Recommended Length
County Line & Beacon Lite (#1)					
Eastbound Left	DNE	155'	C	207'	C
Eastbound Right	DNE	25'	150'+120'T	25'	150'+120'T
Northbound Left	DNE	25'	150'+120'T	25'	150'+120'T
Southbound Right	DNE	25'	190'+120'T	25'	190'+120'T
County Line & I-25 SB (#2) <i>Signalized</i>					
Eastbound Right	DNE	25'	300'+120'T	25'	300'+120'T
Westbound Left	275'	179'	275'	275'	275'
County Line & I-25 NB (#3) <i>Signalized</i>					
Eastbound Left	275'	262'	275'	*341'	275'
County Line & I-25 SB (#2) <i>Roundabout</i>					
Eastbound Approach	DNE	50'	C	75'	C
Westbound Approach	DNE	85'	300'	220'	300'
County Line & I-25 NB (#3) <i>Roundabout</i>					
Eastbound Approach	DNE	25'	300'	25'	300'
Westbound Approach	DNE	100'	C	225'	C
County Line & Monument Hill (#4)					
Eastbound Left	DNE	25'	75'	25'	75'
Eastbound Right	DNE	25'	140'	25'	140'
Westbound Left	DNE	25'	225'	42'	225'
Northbound Right	DNE	25'	175'	25'	175'
Beacon Lite North Access (#6)					
Westbound Left	DNE	25'	C	25'	C
Westbound Right	DNE	25'	C	25'	C
Southbound Left	DNE	161' DL	200'/C	157' DL	200'/C
Beacon Lite South Access (#7)					
Southbound Left	DNE	25'	150'+120'T	25'	150'+120'T

DNE = Does Not Exist; C = Continuous; DL = Dual Left Turn Lanes; T = Taper; **Blue** Text = Recommendation; * = contained by external spillback lane

The vehicle queues are all anticipated to remain within the existing or recommended turn lane lengths through 2045. Of note, the eastbound left turn lane at the I-25 North Ramp intersection provides an additional eastbound through lane for spillback queue.

5.5 Access Spacing Requirements and Internal Roadway Classifications

According to El Paso County 2016 Major Transportation Corridors Plan Update, County Line Road is classified as a minor arterial roadway and Beacon Lite Road is classified as a collector roadway. The following identifies the intersection spacing requirements for the access intersections associated with the project:

County Line Road Right-Out Only Access

The proposed right-out is located approximately 500 feet west of the I-25 Southbound Ramp intersection (measured right-of-way line to centerline). According to the El Paso County Engineering Criteria Manual, spacing of intersections along minor arterial roadways should be a quarter-mile for a full movement access. However, since the access is proposing a right-out only access and restricting three other movements, the access spacing is deemed acceptable and removes trips from the County Line Road and Beacon Lite Road intersection and improves on-site circulation. A deviation will need to be provided to request for this proposed access to remain at the proposed location.

Beacon Lite North Access (Full)

The proposed full movement North Access is located approximately 740 feet south of County Line Road and Beacon Lite Road intersection (measured centerline to centerline). According to the El Paso County Engineering Criteria Manual, spacing of intersections along collector roadways from a local roadway (North Access) should be 330 feet from the right-of-way line of the local roadway to the centerline of the access roadway. Therefore, the proposed access location meets El Paso County's spacing requirements.

Beacon Lite South Access (Full)

The proposed full movement South Access is located approximately 550 feet south of the north access intersection (measured centerline to centerline) and 750 feet north of Bricker Road. According to the El Paso County Engineering Criteria Manual, spacing of intersections along collector roadways from a local roadway (North Access) should be 330 feet from the right-of-way

line of the local roadway to the centerline of the access roadway. Therefore, the proposed access location meets El Paso County's spacing requirements.

County Line Road meets El Paso County average daily traffic threshold standard of 40,000 vehicles per day for a four-lane arterial roadway between the north access and the I-25 Northbound Ramp. County Line Road west of Beacon Lite Road and east of I-25 Northbound Ramp meets the ADT threshold of 20,000 vehicles per day for a two-lane roadway. Likewise, Beacon Lite Road meets the average daily traffic threshold volumes of 10,000 vehicles per hour south of the project's north access. **Figure 12** illustrates the circulation plan and street classification map for roadways internal and external to the Travel Center project.

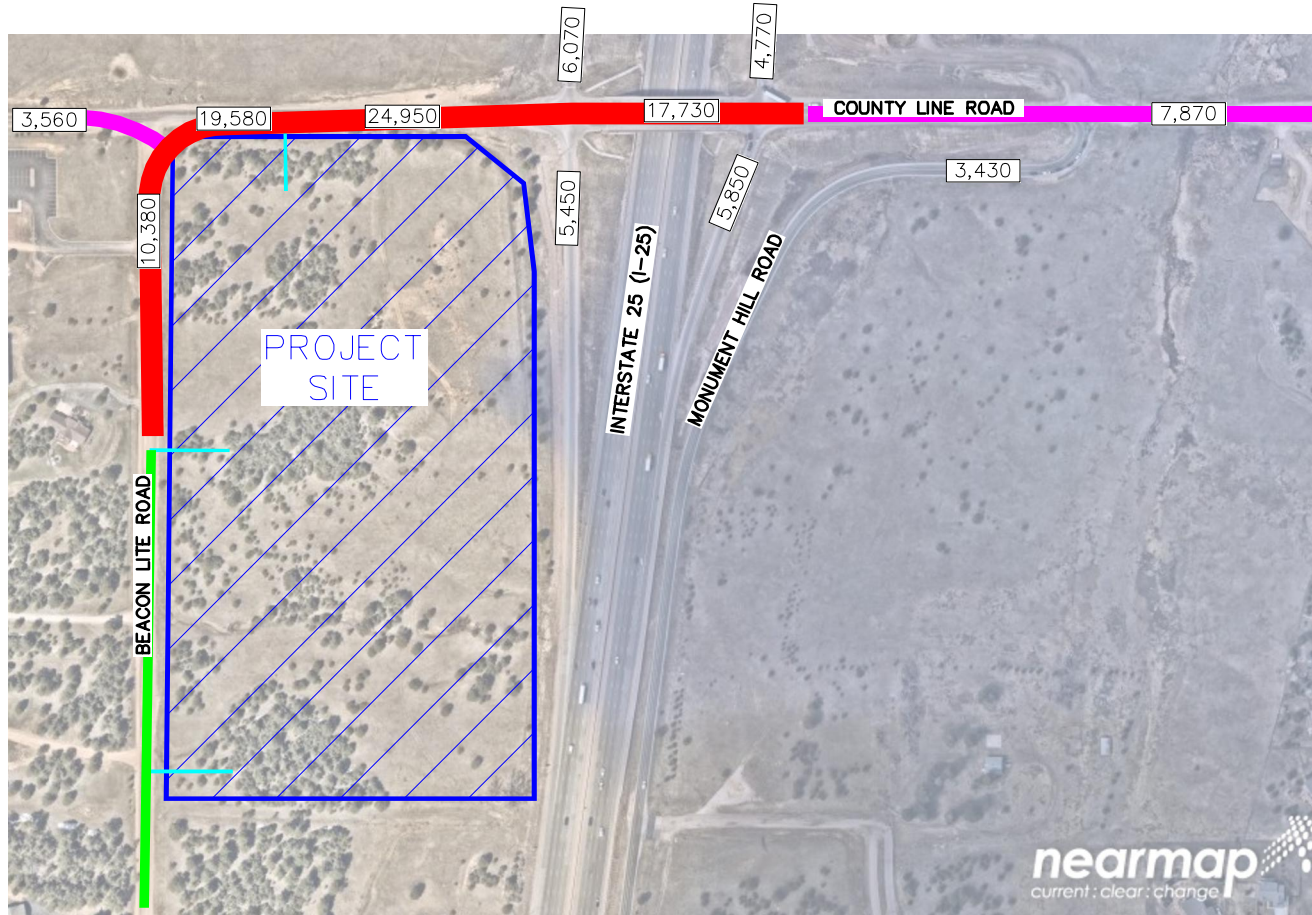
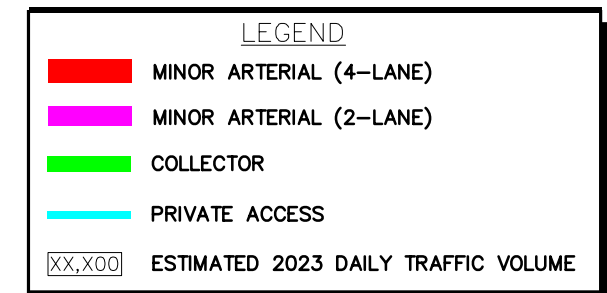


FIGURE 12
 TRAVEL CENTER PALMER LAKE
 EL PASO COUNTY, COLORADO
 STREET CLASSIFICATION MAP



5.6 Sight Distance Evaluation

It is recommended that sight triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. Landscaping and objects within sight triangles must not obstruct drivers' views of the adjacent travel lanes. El Paso County Engineering Criteria Manual (ECM) design intersection sight distances for left turn and right turning from stop were evaluated at the unsignalized project accesses along County Line Road and Beacon Lite Road. The following identifies sight distance requirements for the access intersections associated with the project:

County Line Road Right-Out Only Access

Based on ECM Table 2-21: Intersection Sight Distance with a speed of 35 mph, the sight distance for a vehicle turning right from stop is 390 feet. Therefore, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 13 feet from the edge of the major road traveled way and a line-of-sight distance of 390 feet located in the middle of the eastbound through lane along County Line Road. Therefore, it is believed that the proposed access along County Line Road is appropriately located to provide necessary sight distances.

Beacon Lite Road South Access

With El Paso County standards and a roadway speed of 35 miles per hour along Beacon Lite Road (consistent with ECM Table 2-21, speed limit of 35 mph), the intersection sight distance for a vehicle turning left and right from stop is 390 feet. Therefore, all obstructions for left turning vehicles from stop should be clear to the right within the triangle created with a vertex point located 13 feet from the edge of the major road traveled way and a line-of-sight distance of 390 feet located in the middle of the southbound through lane along Beacon Lite Road. Likewise, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 13 feet from the edge of the major road traveled way and a line-of-sight distance of 390 feet located in the middle of the northbound through lane along Beacon Lite Road. Therefore, it is believed that the proposed access along Beacon Lite Road is appropriately located to provide necessary sight distances.

5.7 Road Impact Fees

Road impact fees were evaluated based on the El Paso County Road Impact Fee Schedule. Based on these fee schedule guidelines, the fee per 1,000 square feet of convenience store is \$8,800. Therefore, the road impact fee for the proposed 73,400 square foot travel center is expected to be \$645,920. Road impact fee calculations are shown in **Table 9**. The project team will determine payment methods with the final plat.

Table 9 – Road Impact Fees

Use	KSF	Fee / KSF	Total Fee
Convenience Store	73.4	\$8,800	\$645,920

5.8 Improvement Summary

Based on the results of the intersection operational and vehicle queuing analysis, the key intersections recommended improvements and control for the 2028 horizon are shown in **Figure 13** while the project access recommended improvements are shown in **Figure 14**. Further, the key intersections recommended improvements and control for the 2045 horizon are shown in **Figure 15**.

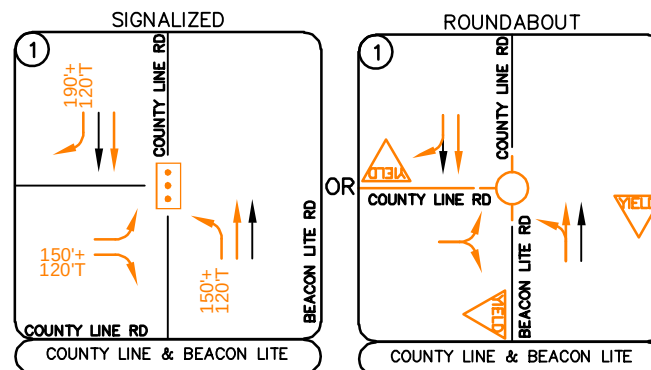
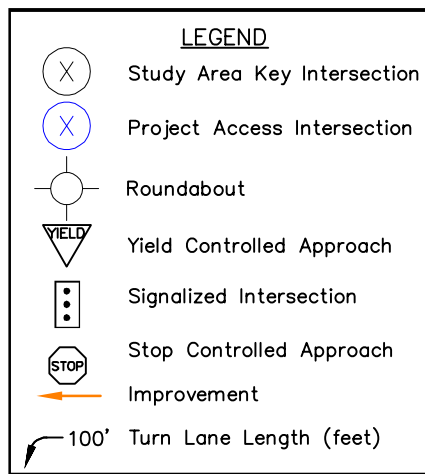
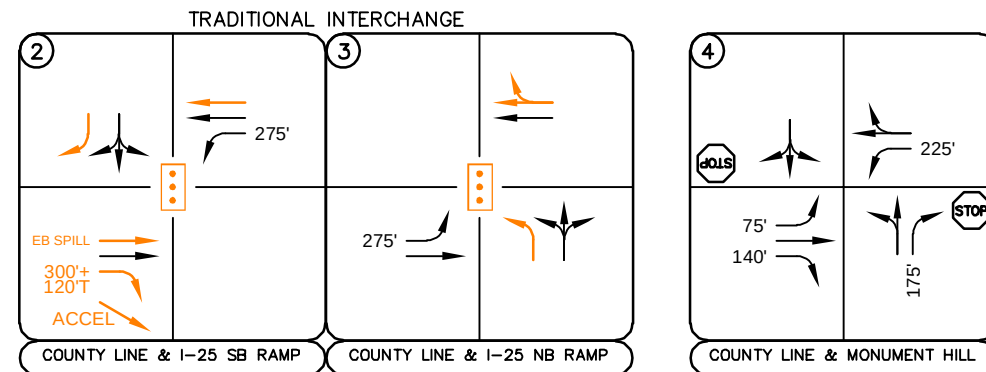
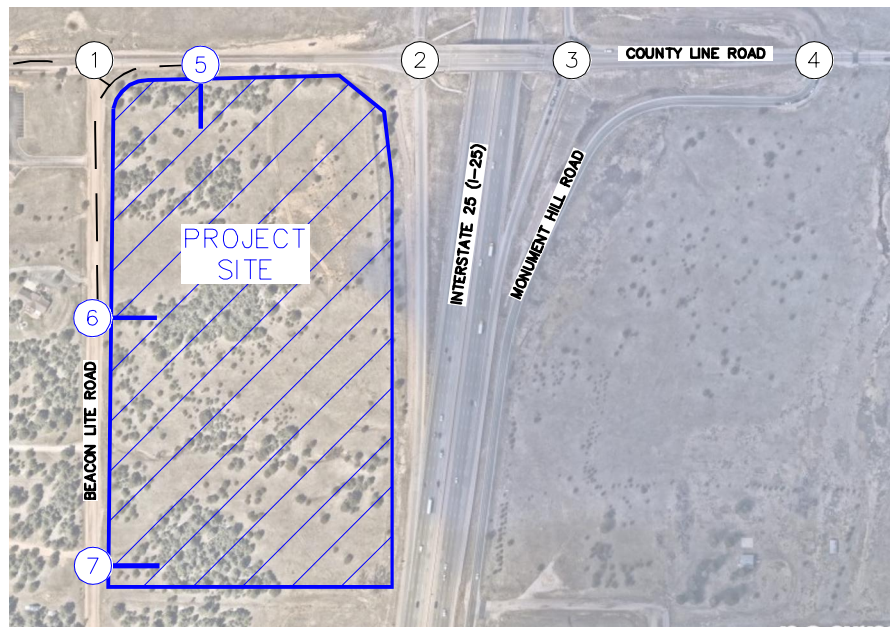


FIGURE 13
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
2028 KEY INTERSECTION RECOMMENDED GEOMETRY AND CONTROL



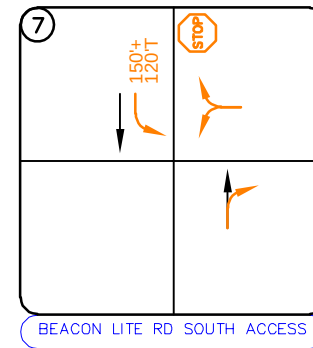
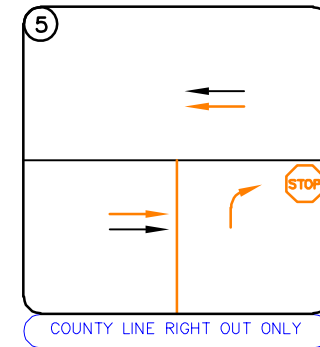
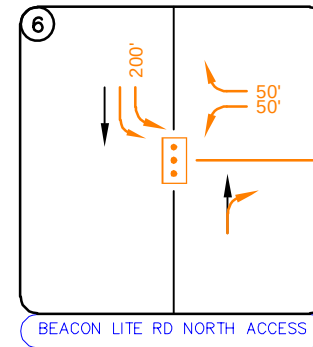
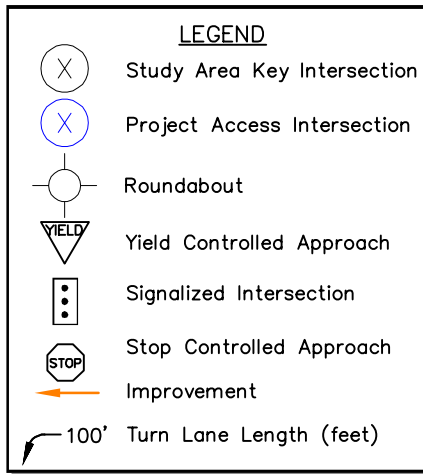
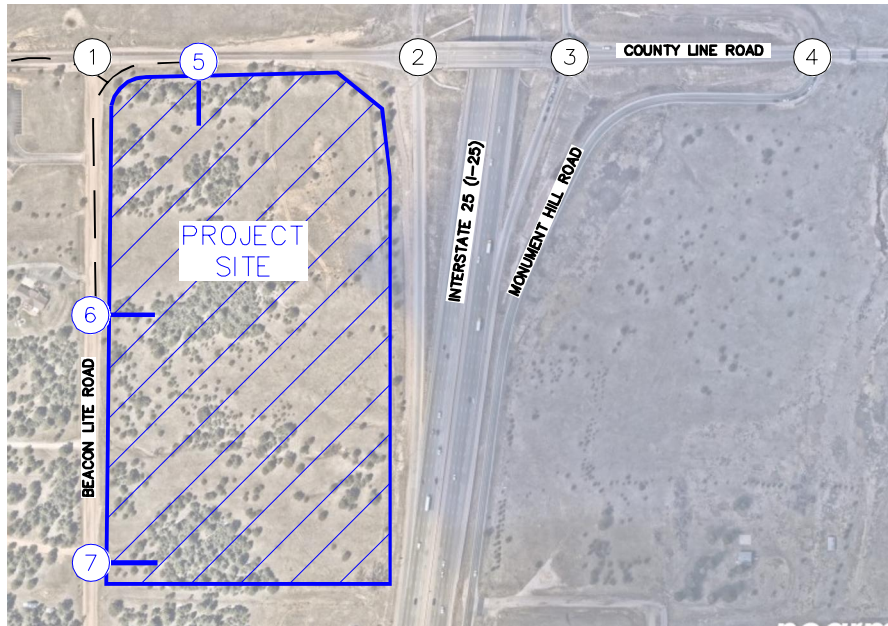


FIGURE 14
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
PROJECT ACCESS RECOMMENDED GEOMETRY AND CONTROL



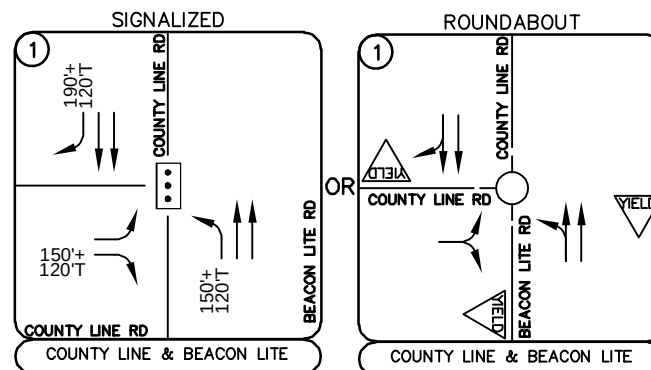
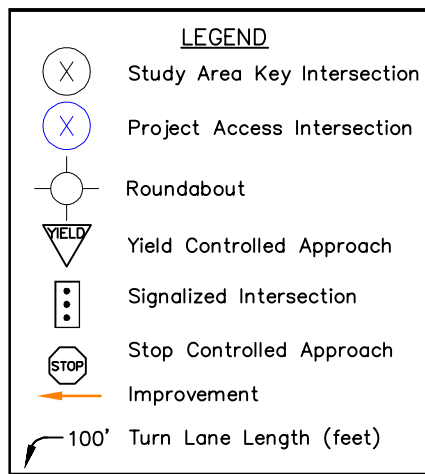
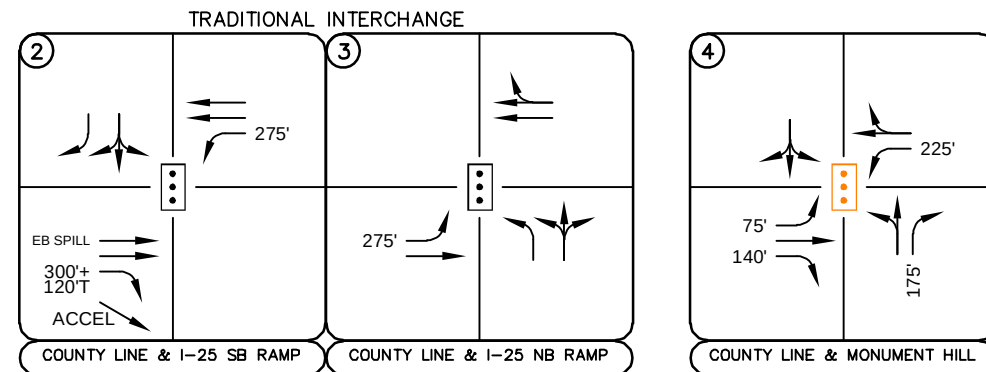
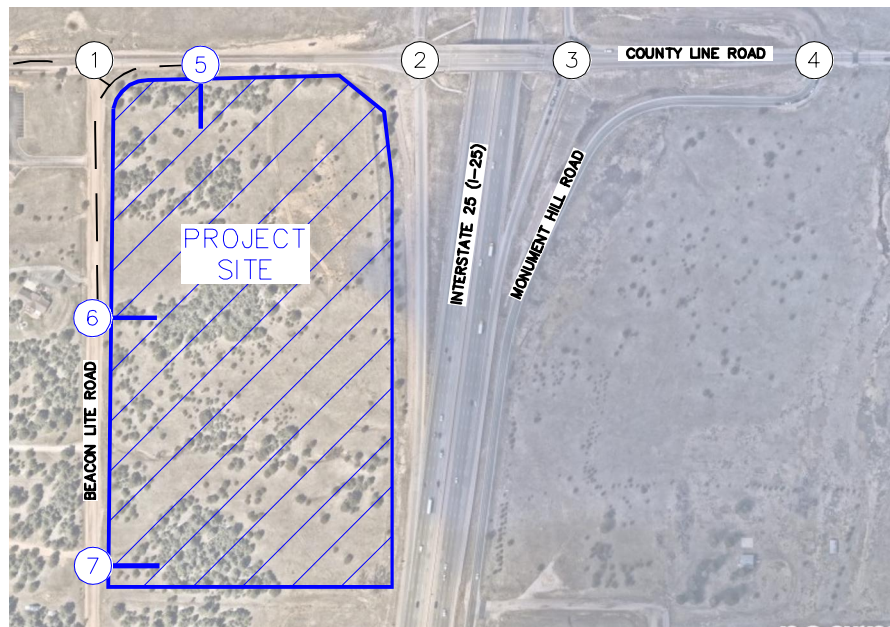


FIGURE 15
TRAVEL CENTER PALMER LAKE
EL PASO COUNTY, COLORADO
2045 KEY INTERSECTION RECOMMENDED GEOMETRY AND CONTROL



6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Travel Center Palmer Lake will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

2028 Recommendations

- With construction of the project, the I-25 and County Line Road interchange ramp terminals will need to be converted to a signal or a roundabout. Traffic signals are the preferred intersection control recommended by this study. In order to utilize the existing bridge deck (approximately 72 feet), a traditional diamond interchange can provide two westbound through lanes, a westbound left turn lane, an eastbound left turn lane, and a single eastbound through lane between the two ramps at 12 feet per lane. Additionally, the northbound off-ramp will require a separate left turn lane, and the southbound off-ramp will require a separate right turn lane.
- The County Line Road and Beacon Lite Road (#1) intersection is recommended to be realigned by converting the major through movements to the existing east (County Line Road) and south (Beacon Lite Road) legs of this intersection while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound right turn movements and westbound left turn movements into the major through movements. This realigned intersection will either need to be signalized or provide roundabout control. As a signal, the west leg minor approach is recommended to provide a separate left and right turn lane while the major approaches would provide two northbound and southbound through lanes, a separate northbound left turn lane, and a separate right turn lane. However, as a roundabout, the northbound/southbound realigned roadway is recommended to provide two approach lanes, and the eastbound approach is recommended to provide a single lane for shared movements.

- Two full movement project accesses are being proposed along Beacon Lite Road while one right-out only access is proposed along County Line Road. The follow summarizes the recommendations of the three proposed project accesses:
 - o A right-out only access along County Line Road (#5) is recommended to provide a R1-1 “STOP” sign on the northbound approach with a R3-1 No Left Turn sign below the R1-1 sign. The exiting approach of this access should also be oriented to only allow exiting right turn movements.
 - o The north access (#6) along Beacon Lite Road should be signalized as a T-intersection. Dual southbound left turn lanes are identified by the project team to be provided due to the high volume of entering left turn movements. The inside left turn lane is recommended to provide a length of 200 feet with a 150-foot taper while the outside left turn lane will be continuous drop lane from the inside through lane. The westbound approach will provide separate left and right turn lanes with the right turn movement operating under free-flowing conditions.
 - o A full movement access (#7) is proposed on the south end of the site along Beacon Lite Road. The intersection can operate with stop control on the westbound approach. A southbound left turn lane is recommended to be installed to provide a length of 150 feet with a 120-foot taper.
- The church on the southwest corner of the County Line Road and Beacon Lite Road intersection currently has a full movement access along Beacon Lite Road and no other points of access. This access to the church along Beacon Lite Road is proposed to be restricted to right-in/right-out movements due to the proximity to the future realigned intersection of County Line Road and Beacon Lite Road. Therefore, the project team will coordinate with the church and El Paso County regarding the possibility of incorporating a second point of access along County Line Road for the church.
- Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane.

2045 Recommendations

- As identified in other traffic studies, the County Line Road and Monument Hill Road intersection is expected to be signalized in the long-term horizon.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the El Paso County, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023

APPENDICES

APPENDIX A

Conceptual Site Plan

APPENDIX B

Intersection Count Sheets

Beacon Lite Rd Palmer Divide Rd

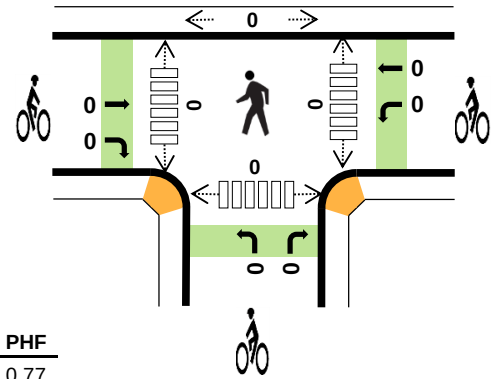
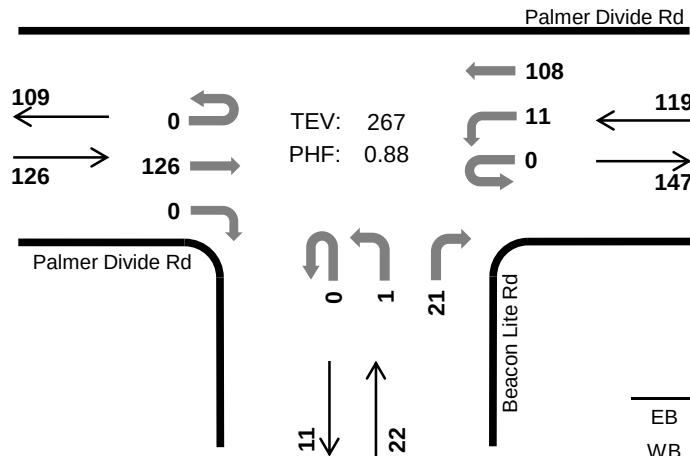


Peak Hour

Date: 05/08/2024

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	0.0%	0.77
WB	4.2%	0.68
NB	0.0%	0.50
SB	-	-
TOTAL	1.9%	0.88

Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	22	0	0	1	16	0	0	0	0	6	0	0	0	0	45	0
7:15 AM		0	0	41	0	0	1	20	0	0	1	0	10	0	0	0	0	73	0
7:30 AM		0	0	41	0	0	3	26	0	0	0	0	6	0	0	0	0	76	0
7:45 AM		0	0	23	0	0	4	40	0	0	0	0	4	0	0	0	0	71	265
8:00 AM		0	0	21	0	0	3	22	0	0	0	0	1	0	0	0	0	47	267
8:15 AM		0	0	22	1	0	4	25	0	0	0	0	9	0	0	0	0	61	255
8:30 AM		0	0	17	3	0	3	26	0	0	0	0	3	0	0	0	0	52	231
8:45 AM		0	0	29	1	0	5	17	0	0	0	0	12	0	0	0	0	64	224
Count Total		0	0	216	5	0	24	192	0	0	1	0	51	0	0	0	0	489	0
Peak Hour	All	0	0	126	0	0	11	108	0	0	1	0	21	0	0	0	0	267	0
	HV	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0
	HV%	-	-	0%	-	-	0%	5%	-	-	0%	-	0%	-	-	-	-	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0
8:45 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	7	6	1	0	14	0	0	0	0	0	0	0	0	0	0
Peak Hr	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	4
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
8:15 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	7
8:30 AM	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	3	10
8:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10
Count Total	0	0	6	1	0	0	6	0	0	0	0	1	0	0	0	0	14	0
Peak Hour	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			Beacon Lite Rd			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Beacon Lite Rd Palmer Divide Rd

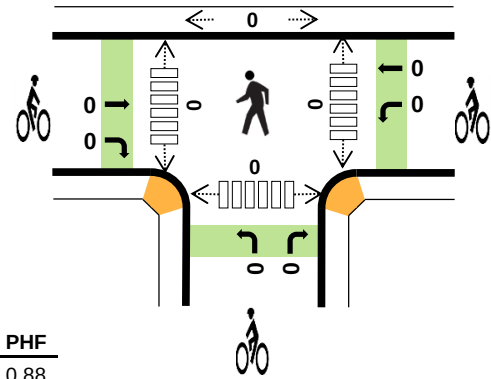
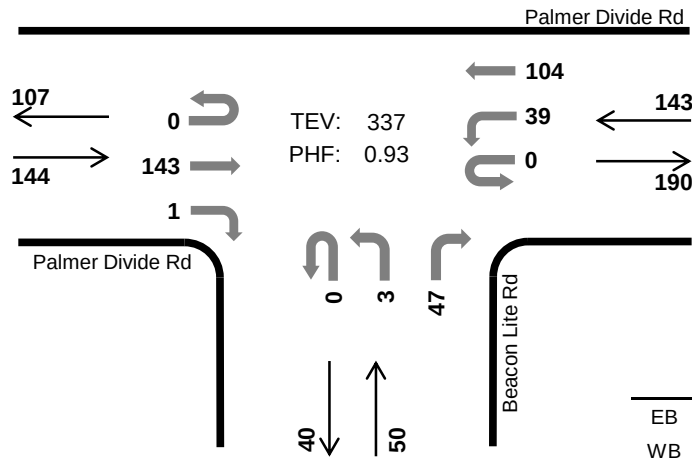


Peak Hour

Date: 05/08/2024

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	4.2%	0.88
WB	1.4%	0.89
NB	4.0%	0.78
SB	-	-
TOTAL	3.0%	0.93

Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	36	0	0	10	28	0	0	0	0	13	0	0	0	0	87	0
4:15 PM		0	0	35	1	0	13	27	0	0	0	0	9	0	0	0	0	85	0
4:30 PM		0	0	41	0	0	5	29	0	0	1	0	15	0	0	0	0	91	0
4:45 PM		0	0	31	0	0	11	20	0	0	2	0	10	0	0	0	0	74	337
5:00 PM		0	0	32	4	0	4	23	0	0	0	0	8	0	0	0	0	71	321
5:15 PM		0	0	31	0	0	9	25	0	0	0	0	3	0	0	0	0	68	304
5:30 PM		0	0	26	0	0	10	18	0	0	1	0	6	0	0	0	0	61	274
5:45 PM		0	0	32	3	0	12	27	0	0	0	0	13	0	0	0	0	87	287
Count Total		0	0	264	8	0	74	197	0	0	4	0	77	0	0	0	0	624	0
Peak Hour	All	0	0	143	1	0	39	104	0	0	3	0	47	0	0	0	0	337	0
	HV	0	0	5	1	0	1	1	0	0	0	0	2	0	0	0	0	10	0
	HV%	-	-	3%	100%	-	3%	1%	-	-	0%	-	4%	-	-	-	-	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
4:30 PM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	7	9	2	0	18	0	0	0	0	0	0	0	0	0	0
Peak Hr	6	2	2	0	10	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

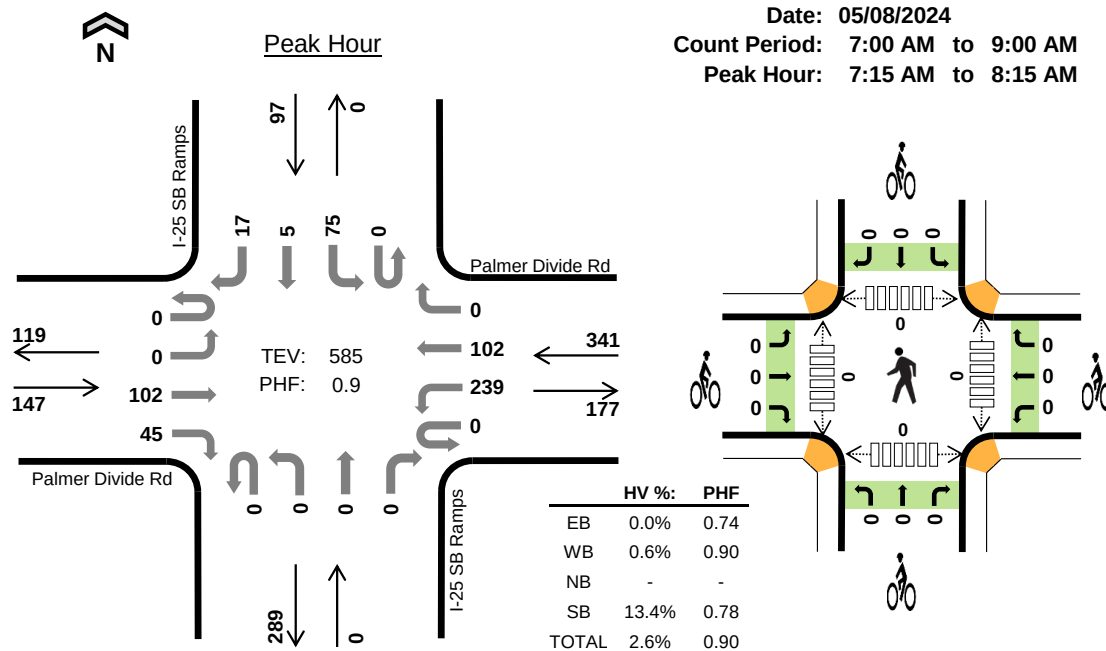
Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:30 PM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	10
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	10
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	9
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	6
5:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	8
Count Total	0	0	6	1	0	2	7	0	0	0	0	2	0	0	0	0	18	0
Peak Hour	0	0	5	1	0	1	1	0	0	0	0	2	0	0	0	0	10	0

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			Beacon Lite Rd			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

I-25 SB Ramps Palmer Divide Rd



Two-Hour Count Summaries

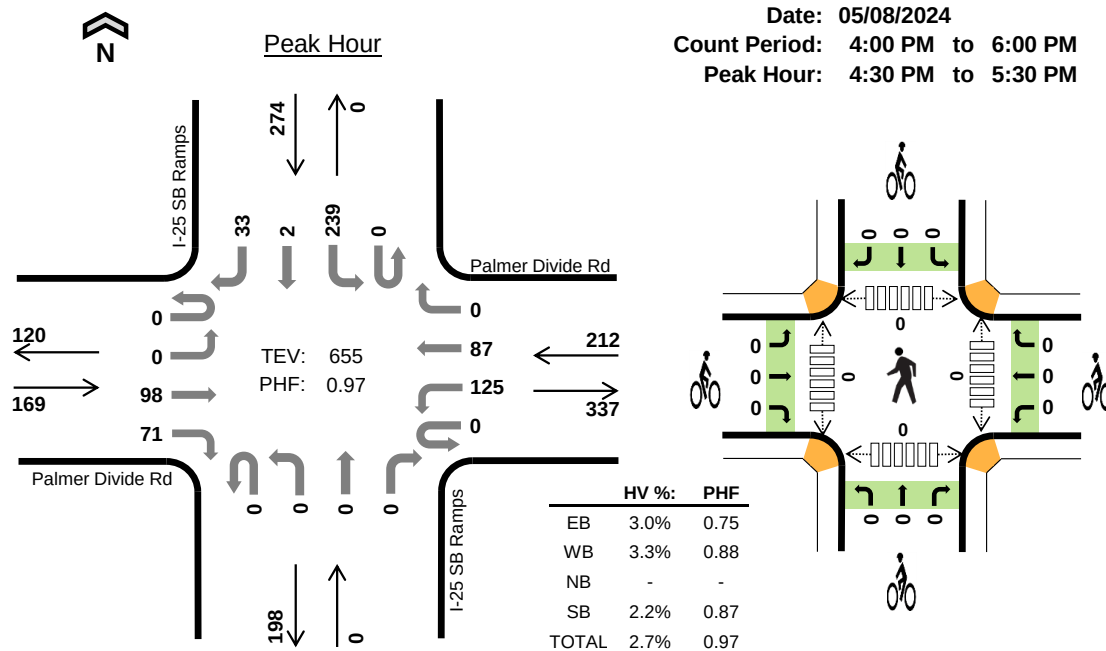
Interval Start		Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	20	9	0	46	16	0	0	0	0	0	0	20	1	1	113	0
7:15 AM		0	0	43	7	0	54	20	0	0	0	0	0	0	24	2	1	151	0
7:30 AM		0	0	29	19	0	61	28	0	0	0	0	0	0	21	1	3	162	0
7:45 AM		0	0	18	9	0	64	31	0	0	0	0	0	0	19	1	11	153	579
8:00 AM		0	0	12	10	0	60	23	0	0	0	0	0	0	11	1	2	119	585
8:15 AM		0	0	16	14	0	52	21	0	0	0	0	0	0	16	0	8	127	561
8:30 AM		0	0	11	10	0	48	27	0	0	0	0	0	0	11	1	1	109	508
8:45 AM		0	0	28	13	0	27	18	0	0	0	0	0	0	20	2	4	112	467
Count Total		0	0	177	91	0	412	184	0	0	0	0	0	0	142	9	31	1,046	0
Peak Hour	All	0	0	102	45	0	239	102	0	0	0	0	0	0	75	5	17	585	0
	HV	0	0	0	0	0	1	1	0	0	0	0	0	0	7	2	4	15	0
	HV%	-	-	0%	0%	-	0%	1%	-	-	-	-	-	-	9%	40%	24%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	7	8	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0
8:30 AM	2	2	0	3	7	0	0	0	0	0	0	0	0	0	0
8:45 AM	3	1	0	2	6	0	0	0	0	0	0	0	0	0	0
Count Total	7	6	0	20	33	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	2	0	13	15	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	1	3	8	14
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	15
8:15 AM	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	4	17
8:30 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	2	1	0	7	21
8:45 AM	0	0	3	0	0	1	0	0	0	0	0	0	0	0	2	0	0	6	19
Count Total	0	0	6	1	0	4	2	0	0	0	0	0	0	0	12	4	4	33	0
Peak Hour	0	0	0	0	0	1	1	0	0	0	0	0	0	0	7	2	4	15	0
Two-Hour Count Summaries - Bikes																			
Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 SB Ramps			I-25 SB Ramps			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Note: U-Turn volumes for bikes are included in Left-Turn, if any.																			

I-25 SB Ramps Palmer Divide Rd



Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	32	18	0	23	27	0	0	0	0	0	0	61	2	10	173	0
4:15 PM		0	0	29	17	0	26	36	0	0	0	0	0	0	40	1	8	157	0
4:30 PM		0	0	35	21	0	33	23	0	0	0	0	0	0	45	1	8	166	0
4:45 PM		0	0	20	20	0	26	13	0	0	0	0	0	0	63	0	16	158	654
5:00 PM		0	0	28	12	0	39	21	0	0	0	0	0	0	62	0	6	168	649
5:15 PM		0	0	15	18	0	27	30	0	0	0	0	0	0	69	1	3	163	655
5:30 PM		0	0	15	17	0	34	22	0	0	0	0	0	0	54	3	8	153	642
5:45 PM		0	0	29	16	0	23	31	0	0	0	0	0	0	48	1	10	158	642
Count Total		0	0	203	139	0	231	203	0	0	0	0	0	0	442	9	69	1,296	0
Peak Hour	All	0	0	98	71	0	125	87	0	0	0	0	0	0	239	2	33	655	0
	HV	0	0	5	0	0	6	1	0	0	0	0	0	0	4	0	2	18	0
	HV%	-	-	5%	0%	-	5%	1%	-	-	-	-	-	-	2%	0%	6%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

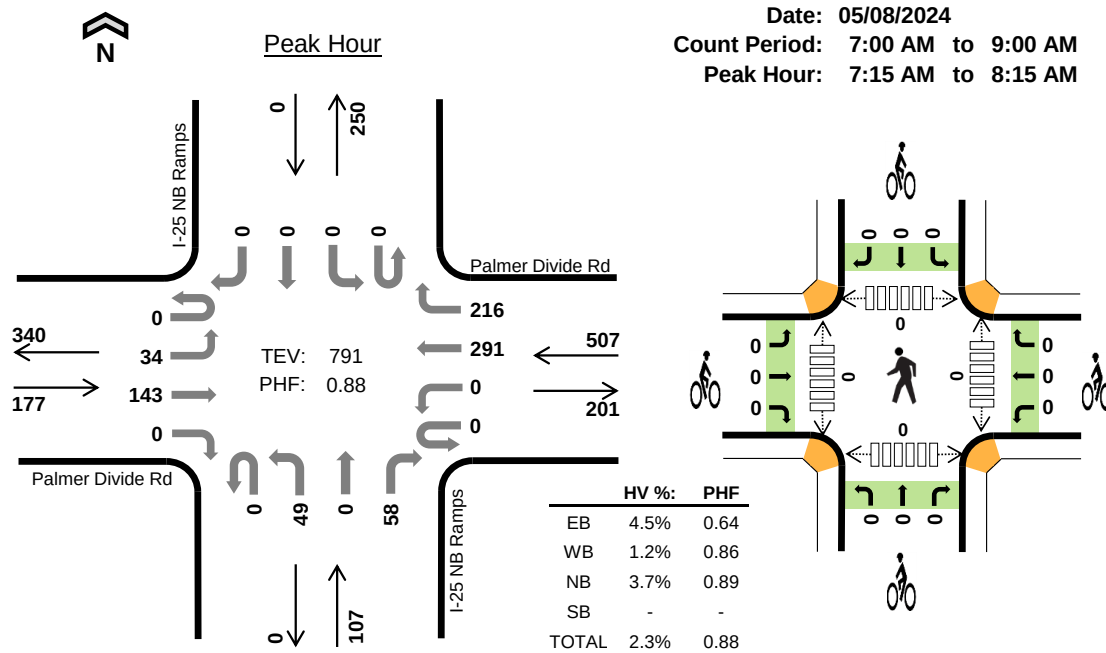
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	2	0	1	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	4	0	0	2	6	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	3	0	3	6	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	5	0	1	7	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	3	0	2	5	0	0	0	0	0	0	0	0	0	0
Count Total	8	17	0	11	36	0	0	0	0	0	0	0	0	0	0
Peak Hour	5	7	0	6	18	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
4:15 PM	0	0	0	1	0	2	0	0	0	0	0	0	0	0	1	0	0	4	0
4:30 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	6	0
4:45 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	15
5:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	2	6	19
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	3	18
5:30 PM	0	0	1	0	0	4	1	0	0	0	0	0	0	0	0	1	0	7	19
5:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	1	5	21
Count Total	0	0	6	2	0	12	5	0	0	0	0	0	0	0	5	2	4	36	0
Peak Hour	0	0	5	0	0	6	1	0	0	0	0	0	0	0	4	0	2	18	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
4:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
5:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
5:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
5:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
5:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
Count Total	0	0	0		0	0	0		0	0	0		0	0	0		0	0
Peak Hour	0	0	0		0	0	0		0	0	0		0	0	0		0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

I-25 NB Ramps Palmer Divide Rd



Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	11	30	0	0	0	59	52	0	3	2	8	0	0	0	0	165	0
7:15 AM		0	11	58	0	0	0	66	57	0	10	0	13	0	0	0	0	215	0
7:30 AM		0	8	42	0	0	0	75	72	0	11	0	17	0	0	0	0	225	0
7:45 AM		0	9	25	0	0	0	78	37	0	15	0	11	0	0	0	0	175	780
8:00 AM		0	6	18	0	0	0	72	50	0	13	0	17	0	0	0	0	176	791
8:15 AM		0	10	22	0	0	0	62	47	0	11	1	13	0	0	0	0	166	742
8:30 AM		0	5	17	0	0	0	58	47	0	16	0	22	0	0	0	0	165	682
8:45 AM		0	14	34	0	0	0	36	32	0	10	2	22	0	0	0	0	150	657
Count Total		0	74	246	0	0	0	506	394	0	89	5	123	0	0	0	0	1,437	0
Peak Hour	All	0	34	143	0	0	0	291	216	0	49	0	58	0	0	0	0	791	0
	HV	0	0	8	0	0	0	2	4	0	0	0	4	0	0	0	0	18	0
	HV%	-	0%	6%	-	-	-	1%	2%	-	0%	-	7%	-	-	-	-	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

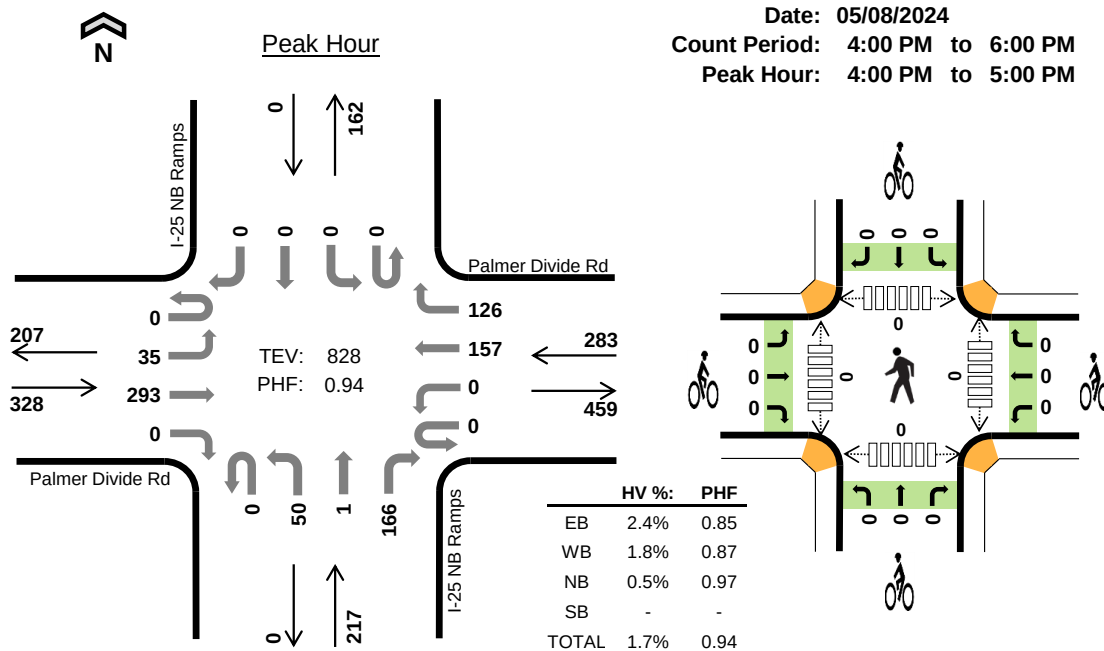
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	4	4	2	0	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
8:00 AM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	3	2	0	7	0	0	0	0	0	0	0	0	0	0
8:30 AM	4	4	3	0	11	0	0	0	0	0	0	0	0	0	0
8:45 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
Count Total	18	14	11	0	43	0	0	0	0	0	0	0	0	0	0
Peak Hour	8	6	4	0	18	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:30 AM	0	0	4	0	0	0	1	3	0	0	0	2	0	0	0	0	10	0
7:45 AM	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	4	18
8:00 AM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	18
8:15 AM	0	1	1	0	0	0	0	3	0	0	1	1	0	0	0	0	7	24
8:30 AM	0	1	3	0	0	0	1	3	0	2	0	1	0	0	0	0	11	25
8:45 AM	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	4	25
Count Total	0	4	14	0	0	0	4	10	0	2	1	8	0	0	0	0	43	0
Peak Hour	0	0	8	0	0	0	2	4	0	0	0	4	0	0	0	0	18	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 NB Ramps			I-25 NB Ramps			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

I-25 NB Ramps Palmer Divide Rd



Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	8	89	0	0	0	40	30	0	12	1	41	0	0	0	0	221	0
4:15 PM		0	9	61	0	0	0	45	36	0	16	0	40	0	0	0	0	207	0
4:30 PM		0	7	70	0	0	0	40	35	0	15	0	37	0	0	0	0	204	0
4:45 PM		0	11	73	0	0	0	32	25	0	7	0	48	0	0	0	0	196	828
5:00 PM		0	11	79	0	0	0	52	27	0	10	1	34	0	0	0	0	214	821
5:15 PM		0	5	80	0	0	0	46	20	0	8	1	40	0	0	0	0	200	814
5:30 PM		0	3	63	0	0	0	43	27	0	13	1	32	0	0	0	0	182	792
5:45 PM		0	7	70	0	0	0	40	22	0	15	0	41	0	0	0	0	195	791
Count Total		0	61	585	0	0	0	338	222	0	96	4	313	0	0	0	0	1,619	0
Peak Hour	All	0	35	293	0	0	0	157	126	0	50	1	166	0	0	0	0	828	0
	HV	0	4	4	0	0	0	3	2	0	1	0	0	0	0	0	0	14	0
	HV%	-	11%	1%	-	-	-	2%	2%	-	2%	0%	0%	-	-	-	-	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

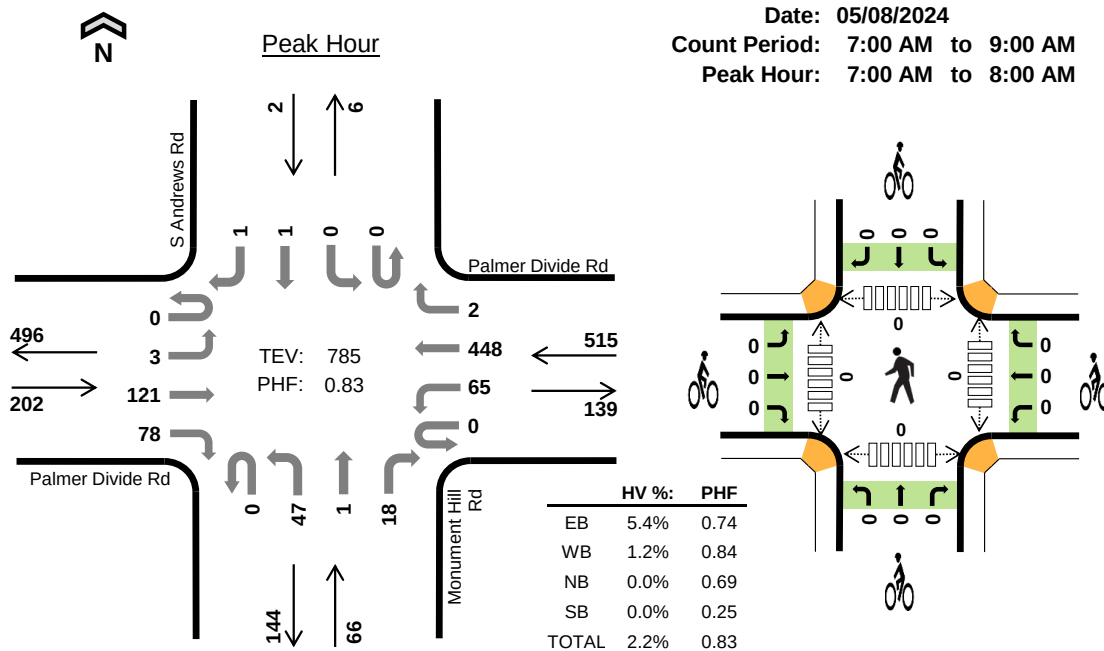
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	3	1	0	6	0	0	0	0	0	0	0	0	0	0
4:30 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	6	1	0	8	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	5	0	7	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	11	16	9	0	36	0	0	0	0	0	0	0	0	0	0
Peak Hour	8	5	1	0	14	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	1	0	0	0	1	2	0	1	0	0	0	0	0	0	6	0
4:30 PM	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
4:45 PM	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	4	14
5:00 PM	0	0	1	0	0	0	3	3	0	0	1	0	0	0	0	0	8	22
5:15 PM	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	4	20
5:30 PM	0	0	1	0	0	0	1	0	0	4	1	0	0	0	0	0	7	23
5:45 PM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	3	22
Count Total	0	4	7	0	0	0	11	5	0	6	3	0	0	0	0	0	36	0
Peak Hour	0	4	4	0	0	0	3	2	0	1	0	0	0	0	0	0	14	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 NB Ramps			I-25 NB Ramps						15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Monument Hill Rd Palmer Divide Rd



Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	19	18	0	14	99	0	0	16	0	1	0	0	0	0	167	0
7:15 AM		0	0	36	32	0	25	111	0	0	10	1	7	0	0	0	0	222	0
7:30 AM		0	1	36	21	0	22	131	1	0	16	0	8	0	0	0	0	236	0
7:45 AM		0	2	30	7	0	4	107	1	0	5	0	2	0	0	1	1	160	785
8:00 AM		0	0	29	4	0	3	112	0	0	9	0	1	0	1	0	2	161	779
8:15 AM		0	1	28	6	0	2	104	0	0	5	0	2	0	0	0	0	148	705
8:30 AM		0	1	36	4	0	4	94	0	0	8	0	2	0	0	0	1	150	619
8:45 AM		0	1	48	8	0	5	61	0	0	6	0	3	0	0	0	2	134	593
Count Total		0	6	262	100	0	79	819	2	0	75	1	26	0	1	1	6	1,378	0
Peak Hour	All	0	3	121	78	0	65	448	2	0	47	1	18	0	0	1	1	785	0
	HV	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0	17	0
	HV%	-	0%	9%	0%	-	0%	1%	0%	-	0%	0%	0%	-	-	0%	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	6	4	0	0	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0
8:00 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0
8:30 AM	4	2	2	0	8	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	22	12	2	0	36	0	0	0	0	0	0	0	0	0	0
Peak Hour	11	6	0	0	17	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	10	0
7:45 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	17
8:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	19
8:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	23
8:30 AM	0	0	4	0	0	0	2	0	0	2	0	0	0	0	0	0	8	21
8:45 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	3	19
Count Total	0	0	21	1	0	0	12	0	0	2	0	0	0	0	0	0	36	0
Peak Hour	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0	17	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Palmer Divide Rd			Palmer Divide Rd			Monument Hill Rd			S Andrews Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Monument Hill Rd Palmer Divide Rd

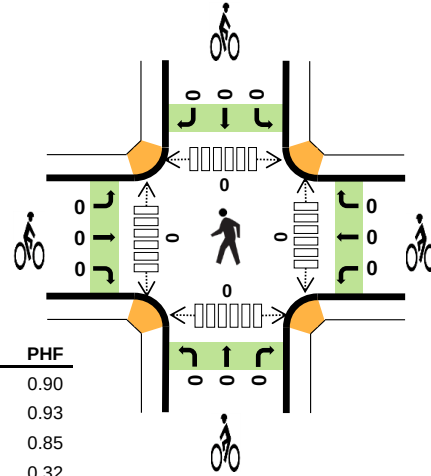
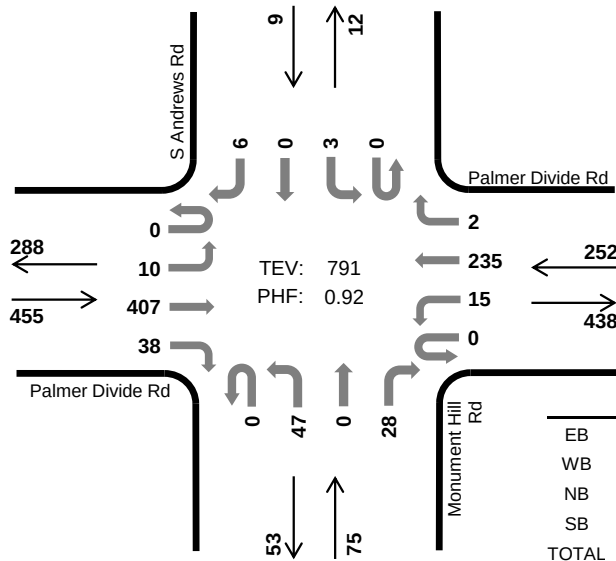


Peak Hour

Date: 05/08/2024

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:00 PM to 5:00 PM



Two-Hour Count Summaries

Interval Start		Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	113	12	0	3	62	0	0	11	0	10	0	0	0	2	214	0
4:15 PM		0	4	88	9	0	8	60	0	0	17	0	5	0	0	0	0	191	0
4:30 PM		0	1	98	8	0	0	61	2	0	11	0	6	0	0	0	0	187	0
4:45 PM		0	4	108	9	0	4	52	0	0	8	0	7	0	3	0	4	199	791
5:00 PM		0	2	104	9	0	2	68	0	0	4	0	4	0	1	0	4	198	775
5:15 PM		0	0	109	10	0	3	56	0	0	9	0	4	0	0	0	0	191	775
5:30 PM		0	1	90	7	0	1	59	0	0	8	0	7	0	1	0	1	175	763
5:45 PM		0	1	98	12	0	5	55	0	0	6	0	2	0	0	1	1	181	745
Count Total		0	14	808	76	0	26	473	2	0	74	0	45	0	5	1	12	1,536	0
Peak Hour	All	0	10	407	38	0	15	235	2	0	47	0	28	0	3	0	6	791	0
	HV	0	0	2	2	0	0	5	0	0	0	0	1	0	0	0	0	10	0
	HV%	-	0%	0%	5%	-	0%	2%	0%	-	0%	-	4%	-	0%	-	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	5	1	0	7	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	7	16	3	0	26	0	0	0	0	0	0	0	0	0	0
Peak Hour	4	5	1	0	10	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:15 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
4:45 PM	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3	10
5:00 PM	0	0	1	0	0	0	5	0	0	0	0	1		0	0	0	0	7	16
5:15 PM	0	0	1	0	0	0	3	0	0	0	0	0		0	0	0	0	4	16
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0		0	0	0	0	2	16
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	1		0	0	0	0	3	16
Count Total	0	0	5	2	0	0	16	0	0	0	0	3		0	0	0	0	26	0
Peak Hour	0	0	2	2	0	0	5	0	0	0	0	1		0	0	0	0	10	0

Two-Hour Count Summaries - Bikes																			
Interval Start	Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT				
4:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
4:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
4:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
5:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
5:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
5:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
5:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
Count Total	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
Peak Hour	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



APPENDIX C

Future Traffic Projections

MTCP Traffic Projections: Travel Center Monument

Location	2015	2040	Growth Factor	Annual Growth
Beacon Lite Road	4,900	8,800	1.80	2.37%
Total	4,900	8,800	1.80	2.37%



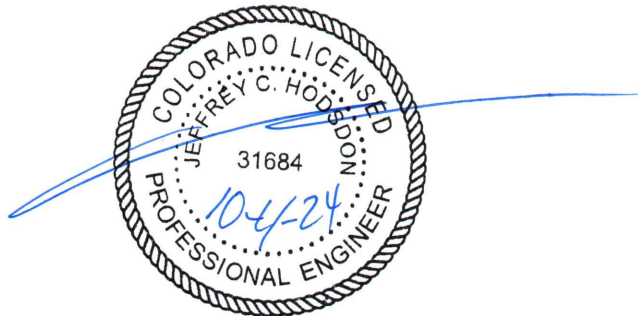
LSC TRANSPORTATION CONSULTANTS, INC.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Monument Ridge East Traffic Impact Study

EPC PCD File Nos. SP 241, P245, P246
(LSC #S234450)
October 4, 2024

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 County for traffic reports.



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

Date

Monument Ridge East

Traffic Impact Study

Prepared for:
Monument Ridge East, LLC
5050 List Drive
Colorado Springs, CO 80919
<via email>

OCTOBER 4, 2024

LSC Transportation Consultants, Inc.
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S234450

PCD File No.: P245

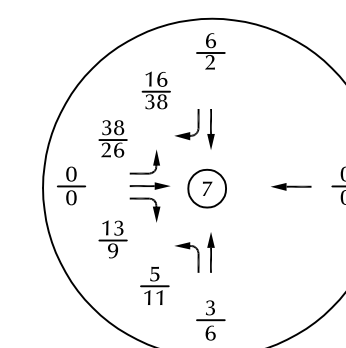
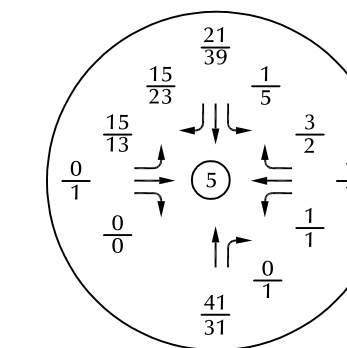
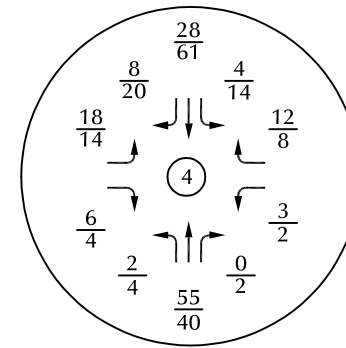
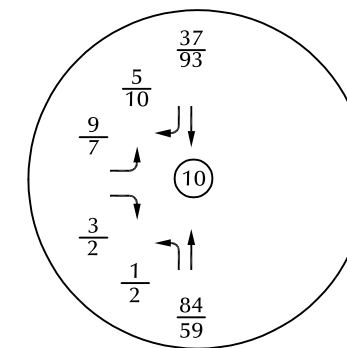
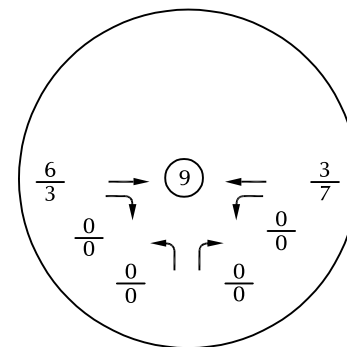
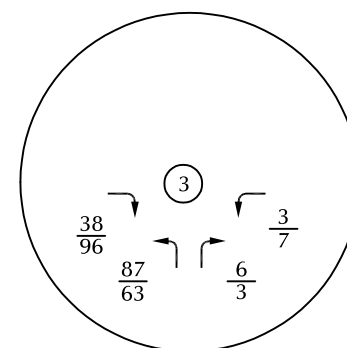
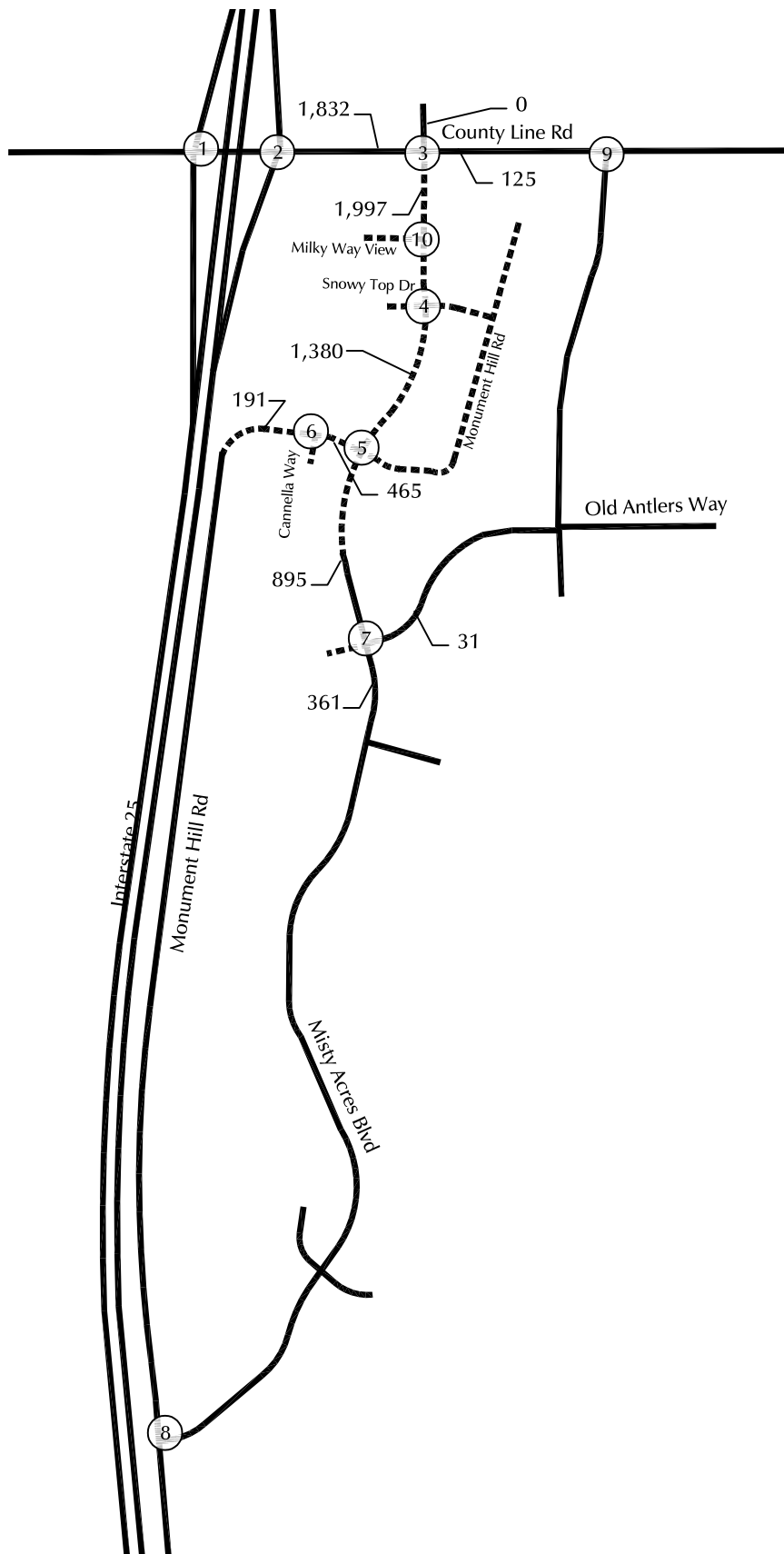
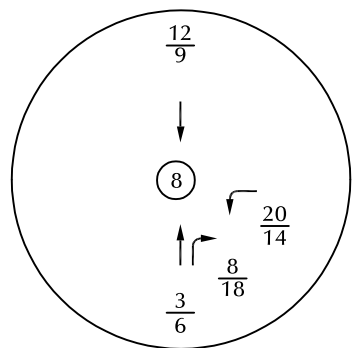
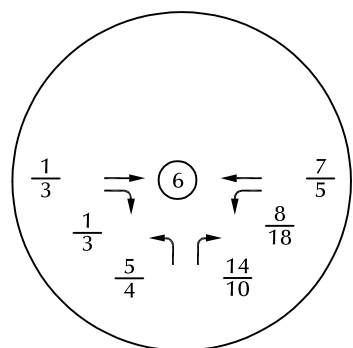
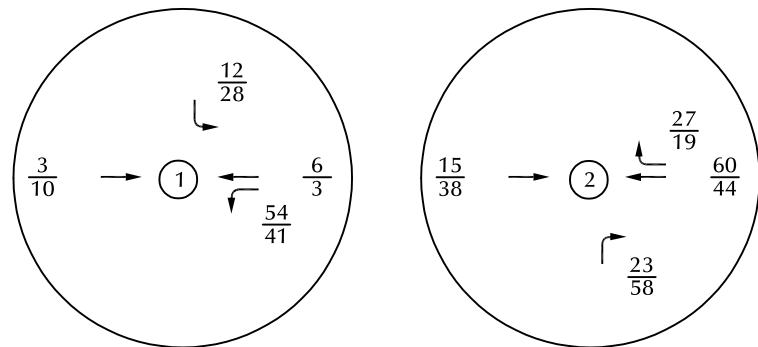




Figure 1

Vicinity

Monument Ridge East (LSC# S234450)



Approximate Scale
Scale: 1" = 3,000'

LEGEND:

$\frac{XX}{XX}$ = $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$

X,XXX = Average Daily Traffic (vehicles per day)

Roadways (as shown on Figure 3)

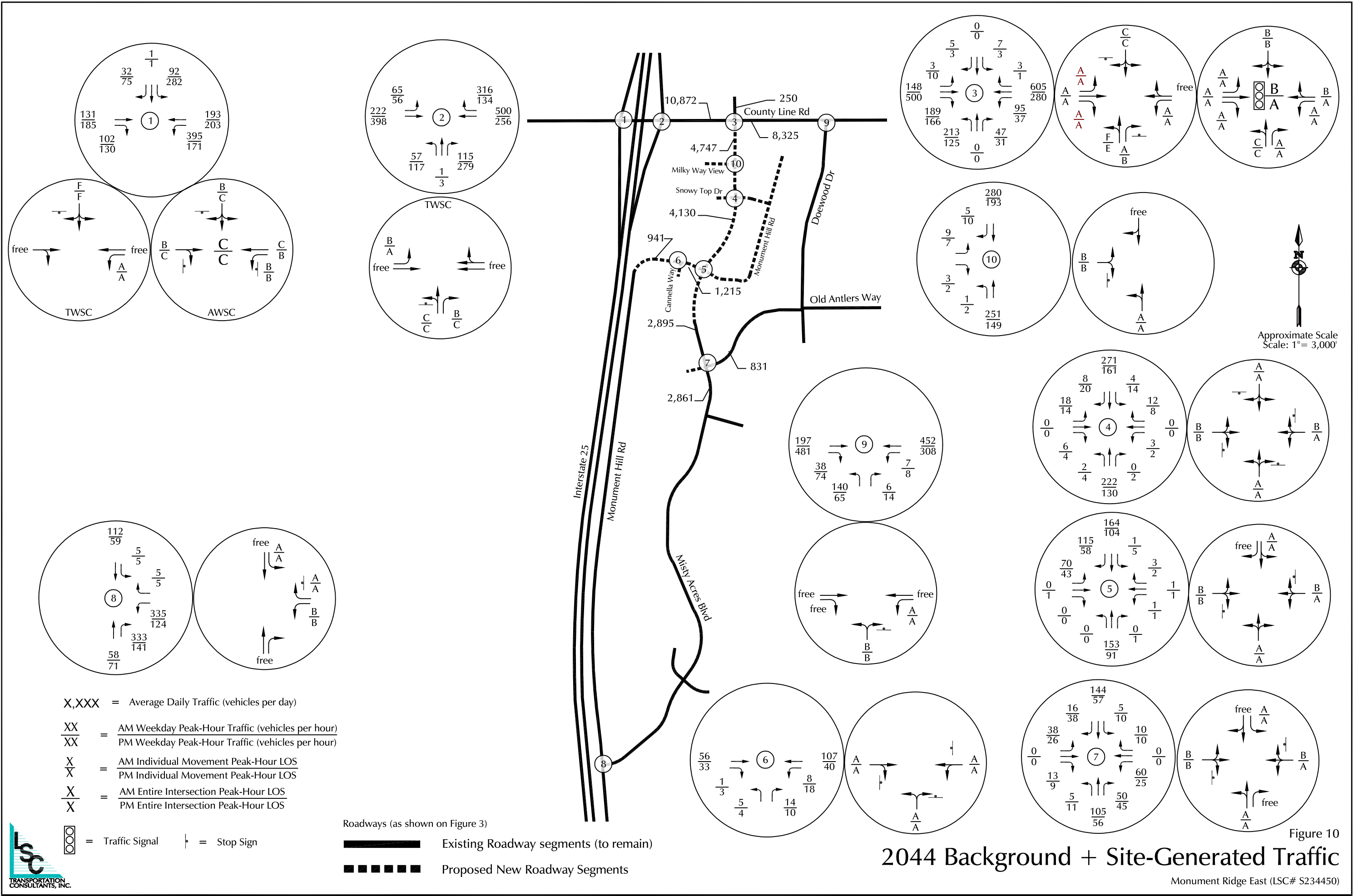
Existing Roadway segments (to remain)

Proposed New Roadway Segments



Figure 7
Site-Generated Traffic

Monument Ridge East (LSC# S234450)



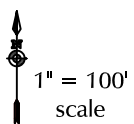


Note: All turn lane lengths have been adjusted for roadway grade per ECM Table 2-25

Proposed Laneage on County Line Rd

Monument Ridge East (LSC# S234450)

Figure 12





1" = 100'
 scale

Figure 13
 Proposed Laneage on Misty Acres Boulevard

Monument Ridge East (LSC# S234450)

APPENDIX D

Trip Generation Worksheets

Site	Freeway AADT	Fuel Pumps	Latitude	Longitude	Open Date	Data Collected (Start) Date	Weekday		Weekend	Weekday						
							Daily	% of AADT	Daily	Daily Rate	AM Rate	PM Rate	AM Enter %	AM Exit %	PM Enter %	PM Exit %
Calhoun, GA	66,000	120	34.440722	84.916833		7/16/2022	16,734	25%	24,520	139.45	7.21	9.79	53%	47%	50%	50%
Daytona Beach, FL	78,500	104	29.22379	81.10059		7/16/2023	22,945	29%	26,494	220.62	13.11	15.12	52%	48%	49%	51%
Leeds, AL	70,771	120	33.54452	86.58635		7/29/2022	17,444	25%	20,706	145.37	8.31	10.65	53%	47%	48%	52%
Loxley, AL	48,031	120	30.63444	87.67668		7/29/2022	17,550	37%	24,846	146.25	9.90	10.40	53%	47%	48%	52%
St Augustine, FL	101,500	104	29.98399	81.46386		7/16/2022	15,849	16%	19,351	152.39	9.67	10.65	52%	48%	49%	51%
Warner Robins, GA	75,300	116	32.58446	83.74033		7/16/2022	19,023	25%	25,637	163.99	9.29	11.45	53%	47%	48%	52%
Waller, TX	58,205	80	30.07198	95.93149		12/2/2015	24,314	42%	28,063	303.92	17.15	23.51	49%	51%	49%	51%
Texas City, TX	89,723	56	29.42856	95.06316		12/2/2015	20,364	23%	29,815	363.64	14.33	35.60	50%	50%	50%	50%
Baytown, TX	86,271	96	29.80095	94.99811		12/2/2015	19,095	22%	20,887	198.91	10.57	14.51	50%	50%	50%	50%
Terrell, TX	70,069	84	32.71731	96.31956		12/2/2015	14,789	21%	18,780	176.06	9.13	14.52	52%	48%	51%	49%
Luling, TX	36,657	64	29.65126	97.59244		12/2/2015	11,484	31%	16,625	179.44	11.65	12.79	53%	47%	51%	49%
New Braunfels, TX	99,816	120	29.72654	98.07826		12/2/2015	16,805	17%	26,775	56.87	3.08	4.46	61%	39%	61%	39%
Madisonville, TX	41,055	64	30.96617	95.88165		12/2/2015	16,786	41%	24,889	262.28	14.67	18.60	52%	48%	52%	48%
Fort Worth, TX	68,914	96	33.02445	97.27791		12/2/2015	13,251	19%	16,772	138.03	8.92	9.05	51%	49%	49%	51%
Katy, TX	109,000	124	29.78112	95.8421		12/2/2015	15,068	14%	13,482	121.52	7.47	8.82	49%	51%	47%	53%
All Sites Average	73,321	98					17,433	26%	22509	184.58	10.30	13.99	52%	48%	50%	50%
TX Sites Average	73,301	87					16,884	26%	21788	200.07	10.77	15.76	52%	48%	51%	49%
SE Sites Average	73,350	114					18,258	26%	23592	161.35	9.58	11.34	53%	47%	49%	51%
AL/GA Sites Average	65,026	119					17,688	28%	23,927	148.77	8.68	10.57	53%	47%	49%	52%

Oak Grove Trips	AADT*	Fuel Pumps		Daily	AM Total	PM Total	AM IN	AM OUT	PM IN	PM OUT
All Sites Average	75,000	120	19,500	22,150	1,236	1,679	643	593	840	840
TX Sites Average	75,000	120	19,500	24,008	1,292	1,891				
SE Sites Average	75,000	120	19,500	19,362	1,150	1,361				
AL/GA Sites Rates	40,200	120	11,256	17,852	1,042	1,268				

APPENDIX E

Intersection Analysis Worksheets

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	126	0	11	108	1	21
Future Vol, veh/h	126	0	11	108	1	21
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	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	143	0	13	123	1	24

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	143
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1427
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1427
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1427	-
HCM Lane V/C Ratio	0.028	-	-	0.009	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	143	1	39	104	3	47
Future Vol, veh/h	143	1	39	104	3	47
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	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	154	1	42	112	3	51
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	155	0	351	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1425	-	642	886
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1425	-	622	886
Mov Cap-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	806	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.1		9.4	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	864	-	-	1425	-	
HCM Lane V/C Ratio	0.062	-	-	0.029	-	
HCM Control Delay (s)	9.4	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	141	0	12	125	1	23
Future Vol, veh/h	141	0	12	125	1	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	160	0	14	142	1	26

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	160
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1407
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1407
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	872	-	-	1407	-
HCM Lane V/C Ratio	0.031	-	-	0.01	-
HCM Control Delay (s)	9.3	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	1	43	117	3	52
Future Vol, veh/h	167	1	43	117	3	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	180	1	46	126	3	56
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	181	0	399	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1394	-	603	857
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1394	-	583	857
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	787	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.1		9.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	836	-	-	1394	-	
HCM Lane V/C Ratio	0.071	-	-	0.033	-	
HCM Control Delay (s)	9.6	-	-	7.7	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

HCM 6th TWSC
1: Beacon Lite Rd & Palmer Divide Ave

2028 Total AM
11/14/2024

Intersection						
Int Delay, s/veh	20.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	141	19	626	125	19	347
Future Vol, veh/h	141	19	626	125	19	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	160	22	711	142	22	394
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	182	0	1735	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	1564	-
Critical Hdwy	-	-	4.14	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1381	-	96	873
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	190	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1381	-	47	873
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	92	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		8.6		52.9	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	457	-	-	1381	-	
HCM Lane V/C Ratio	0.91	-	-	0.515	-	
HCM Control Delay (s)	52.9	-	-	10.3	-	
HCM Lane LOS	F	-	-	B	-	
HCM 95th %tile Q(veh)	10.2	-	-	3.1	-	

Intersection						
Int Delay, s/veh	183.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	26	845	117	28	447
Future Vol, veh/h	167	26	845	117	28	447
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	180	28	909	126	30	481
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	208	0	2138	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	1944	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1363	-	53	842
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	121	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1363	-	~ 18	842
Mov Cap-2 Maneuver	-	-	-	-	~ 18	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	40	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		11.2		\$ 606.1	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	228	-	-	1363	-	
HCM Lane V/C Ratio	2.24	-	-	0.667	-	
HCM Control Delay (s)	\$ 606.1	-	-	12.7	-	
HCM Lane LOS	F	-	-	B	-	
HCM 95th %tile Q(veh)	40.1	-	-	5.5	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

2028 Total AM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	19	19	347	626	125
Future Volume (vph)	141	19	19	347	626	125
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	12.0	61.0	49.0	49.0
Total Split (%)	32.2%	32.2%	13.3%	67.8%	54.4%	54.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90

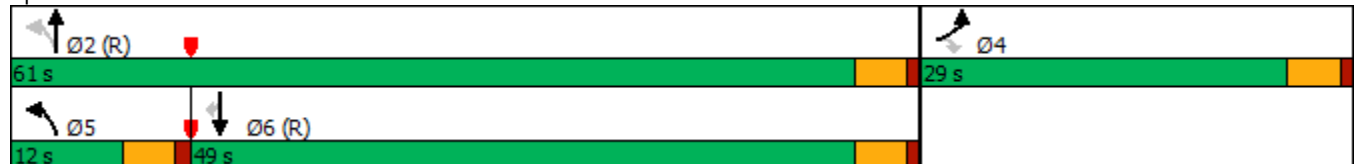
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave



HCM 6th Signalized Intersection Summary
10: Beacon Lite Rd & Palmer Divide Ave

2028 Total AM_Realigned

11/14/2024



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	141	19	19	347	626	125
Future Volume (veh/h)	141	19	19	347	626	125
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	160	22	22	394	711	142
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	202	179	583	2796	2495	1113
Arrive On Green	0.11	0.11	0.02	0.79	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	160	22	22	394	711	142
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	7.9	1.1	0.3	2.4	0.0	0.0
Cycle Q Clear(g_c), s	7.9	1.1	0.3	2.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	202	179	583	2796	2495	1113
V/C Ratio(X)	0.79	0.12	0.04	0.14	0.28	0.13
Avail Cap(c_a), veh/h	485	431	690	2796	2495	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	38.9	35.9	2.7	2.3	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.3	0.0	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.1	0.1	0.5	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.8	36.2	2.7	2.4	0.3	0.2
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	182			416	853	
Approach Delay, s/veh	44.6			2.4	0.3	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.3		14.7	6.6	68.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		56.5		24.5	7.5	44.5
Max Q Clear Time (g_c+l1), s		4.4		9.9	2.3	2.0
Green Ext Time (p_c), s		2.8		0.4	0.0	6.4
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Timings

2028 Total PM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	167	26	28	447	845	117
Future Volume (vph)	167	26	28	447	845	117
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	10.0	63.0	53.0	53.0
Total Split (%)	30.0%	30.0%	11.1%	70.0%	58.9%	58.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90

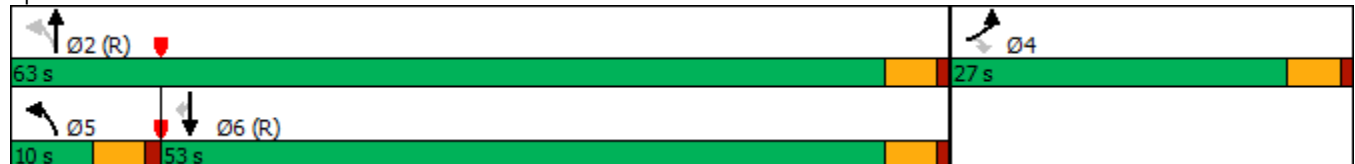
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave



HCM 6th Signalized Intersection Summary
10: Beacon Lite Rd & Palmer Divide Ave

2028 Total PM_Realigned
11/14/2024



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	167	26	28	447	845	117
Future Volume (veh/h)	167	26	28	447	845	117
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	190	30	32	508	960	133
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	233	207	490	2734	2409	1074
Arrive On Green	0.13	0.13	0.03	0.77	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	190	30	32	508	960	133
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	9.3	1.5	0.4	3.5	0.0	0.0
Cycle Q Clear(g_c), s	9.3	1.5	0.4	3.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	233	207	490	2734	2409	1074
V/C Ratio(X)	0.82	0.14	0.07	0.19	0.40	0.12
Avail Cap(c_a), veh/h	445	396	544	2734	2409	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	38.1	34.7	3.1	2.8	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.3	0.1	0.1	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	1.4	0.1	0.8	0.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.9	35.0	3.1	2.9	0.5	0.2
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	220			540	1093	
Approach Delay, s/veh	43.6			3.0	0.5	
Approach LOS	D			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	73.7			16.3	7.3	66.5
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	58.5			22.5	5.5	48.5
Max Q Clear Time (g_c+11), s	5.5			11.3	2.4	2.0
Green Ext Time (p_c), s	3.7			0.5	0.0	9.5
Intersection Summary						
HCM 6th Ctrl Delay			6.3			
HCM 6th LOS			A			

HCM 6th Roundabout
10: Beacon Lite Rd/County Line Rd & Coounty Line Rd

2028 Total AM_Roundabout

11/14/2024

Intersection					
Intersection Delay, s/veh	5.6				
Intersection LOS	A				
Approach	EB	NB		SB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	2	2		2	
Adj Approach Flow, veh/h	182	416		853	
Demand Flow Rate, veh/h	185	424		887	
Vehicles Circulating, veh/h	739	163		22	
Vehicles Exiting, veh/h	170	761		565	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	7.6	4.6		5.7	
Approach LOS	A	A		A	
Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.469	0.531	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	185	199	225	417	470
Cap Entry Lane, veh/h	758	1162	1236	1323	1394
Entry HV Adj Factor	0.984	0.983	0.980	0.961	0.961
Flow Entry, veh/h	182	196	221	401	452
Cap Entry, veh/h	745	1142	1212	1271	1340
V/C Ratio	0.244	0.171	0.182	0.315	0.337
Control Delay, s/veh	7.6	4.7	4.5	5.7	5.7
LOS	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2

HCM 6th Roundabout
10: Beacon Lite Rd/County Line Rd & Coounty Line Rd

2028 Total PM_Roundabout

11/14/2024

Intersection					
Intersection Delay, s/veh	7.0				
Intersection LOS	A				
Approach	EB	NB		SB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	2	2		2	
Adj Approach Flow, veh/h	220	540		1093	
Demand Flow Rate, veh/h	225	551		1136	
Vehicles Circulating, veh/h	998	194		33	
Vehicles Exiting, veh/h	171	1029		712	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	11.4	5.3		6.9	
Approach LOS	B	A		A	
Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	225	259	292	534	602
Cap Entry Lane, veh/h	608	1129	1204	1309	1381
Entry HV Adj Factor	0.978	0.980	0.980	0.962	0.962
Flow Entry, veh/h	220	254	286	514	579
Cap Entry, veh/h	594	1106	1180	1259	1328
V/C Ratio	0.370	0.229	0.242	0.408	0.436
Control Delay, s/veh	11.4	5.4	5.2	6.9	7.0
LOS	B	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	0	18	183	2	34
Future Vol, veh/h	209	0	18	183	2	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	238	0	20	208	2	39

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	238
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.236
Pot Cap-1 Maneuver	-	-	1317
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1317
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	779	-	-	1317	-
HCM Lane V/C Ratio	0.053	-	-	0.016	-
HCM Control Delay (s)	9.9	-	-	7.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	244	2	64	173	5	77
Future Vol, veh/h	244	2	64	173	5	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	262	2	69	186	5	83

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	264	0	587	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1300	-	469	771
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1300	-	444	771
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	690	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	738	-	-	1300	-
HCM Lane V/C Ratio	0.119	-	-	0.053	-
HCM Control Delay (s)	10.5	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Timings

2045 Total AM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	209	19	20	358	632	183
Future Volume (vph)	209	19	20	358	632	183
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	11.0	59.0	48.0	48.0
Total Split (%)	34.4%	34.4%	12.2%	65.6%	53.3%	53.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90

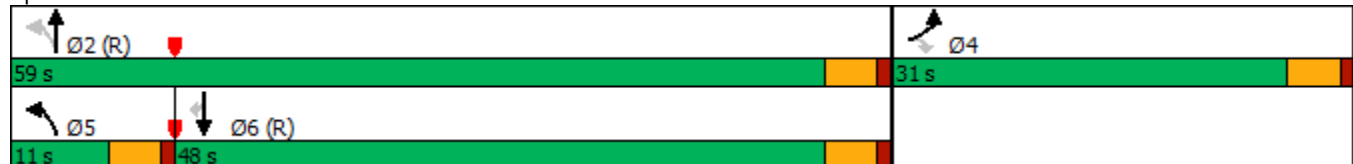
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave



HCM 6th Signalized Intersection Summary
10: Beacon Lite Rd & Palmer Divide Ave

2045 Total AM_Realigned

11/14/2024



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	209	19	20	358	632	183
Future Volume (veh/h)	209	19	20	358	632	183
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	238	22	23	407	718	208
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	282	251	526	2635	2333	1041
Arrive On Green	0.16	0.16	0.02	0.50	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	238	22	23	407	718	208
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	11.7	1.1	0.3	5.6	0.0	0.0
Cycle Q Clear(g_c), s	11.7	1.1	0.3	5.6	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	282	251	526	2635	2333	1041
V/C Ratio(X)	0.84	0.09	0.04	0.15	0.31	0.20
Avail Cap(c_a), veh/h	524	467	612	2635	2333	1041
HCM Platoon Ratio	1.00	1.00	0.67	0.67	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	36.8	32.3	3.8	7.3	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.1	0.0	0.1	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	1.0	0.1	1.8	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.5	32.5	3.8	7.4	0.3	0.4
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	260			430	926	
Approach Delay, s/veh	42.6			7.2	0.4	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		71.2		18.8	6.7	64.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		54.5		26.5	6.5	43.5
Max Q Clear Time (g_c+l1), s		7.6		13.7	2.3	2.0
Green Ext Time (p_c), s		2.9		0.6	0.0	6.8
Intersection Summary						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			

Timings

2045 Total PM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	244	27	30	472	866	173
Future Volume (vph)	244	27	30	472	866	173
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	30.0	30.0	10.0	60.0	50.0	50.0
Total Split (%)	33.3%	33.3%	11.1%	66.7%	55.6%	55.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave



HCM 6th Signalized Intersection Summary
10: Beacon Lite Rd & Palmer Divide Ave

2045 Total PM_Realigned

11/14/2024



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	244	27	30	472	866	173
Future Volume (veh/h)	244	27	30	472	866	173
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	277	31	34	536	984	197
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	321	286	439	2557	2230	995
Arrive On Green	0.18	0.18	0.03	0.72	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	277	31	34	536	984	197
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	13.6	1.5	0.5	4.5	0.0	0.0
Cycle Q Clear(g_c), s	13.6	1.5	0.5	4.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	321	286	439	2557	2230	995
V/C Ratio(X)	0.86	0.11	0.08	0.21	0.44	0.20
Avail Cap(c_a), veh/h	505	449	492	2557	2230	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	35.8	30.8	4.4	4.2	0.0	0.0
Incr Delay (d2), s/veh	8.9	0.2	0.1	0.2	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.4	0.2	1.3	0.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.7	31.0	4.5	4.4	0.6	0.4
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	308			570	1181	
Approach Delay, s/veh	43.3			4.4	0.6	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		69.3		20.7	7.4	61.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		55.5		25.5	5.5	45.5
Max Q Clear Time (g_c+l1), s		6.5		15.6	2.5	2.0
Green Ext Time (p_c), s		3.9		0.7	0.0	10.1
Intersection Summary						
HCM 6th Ctrl Delay			8.0			
HCM 6th LOS			A			

HCM 6th Roundabout
10: Beacon Lite Rd/County Line Rd & Coounty Line Rd

2045 Total AM_Roundabout

11/14/2024

Intersection					
Intersection Delay, s/veh	6.3				
Intersection LOS	A				
Approach	EB	NB		SB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	2	2		2	
Adj Approach Flow, veh/h	260	430		926	
Demand Flow Rate, veh/h	265	438		963	
Vehicles Circulating, veh/h	747	243		23	
Vehicles Exiting, veh/h	239	769		658	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	9.3	5.1		6.0	
Approach LOS	A	A		A	
Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	265	206	232	453	510
Cap Entry Lane, veh/h	753	1079	1155	1322	1393
Entry HV Adj Factor	0.981	0.981	0.982	0.961	0.963
Flow Entry, veh/h	260	202	228	435	491
Cap Entry, veh/h	738	1059	1134	1270	1341
V/C Ratio	0.352	0.191	0.201	0.343	0.366
Control Delay, s/veh	9.3	5.2	5.0	6.0	6.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

HCM 6th Roundabout
10: Beacon Lite Rd/County Line Rd & Coounty Line Rd

2045 Total PM_Roundabout

11/14/2024

Intersection					
Intersection Delay, s/veh	8.2				
Intersection LOS	A				
Approach	EB	NB		SB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	2	2		2	
Adj Approach Flow, veh/h	308	570		1181	
Demand Flow Rate, veh/h	315	582		1228	
Vehicles Circulating, veh/h	1023	283		35	
Vehicles Exiting, veh/h	240	1055		830	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	15.6	6.0		7.4	
Approach LOS	C	A		A	
Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.471	0.529	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	315	274	308	577	651
Cap Entry Lane, veh/h	595	1040	1116	1307	1378
Entry HV Adj Factor	0.978	0.978	0.981	0.962	0.961
Flow Entry, veh/h	308	268	302	555	626
Cap Entry, veh/h	582	1018	1096	1257	1325
V/C Ratio	0.529	0.263	0.276	0.441	0.472
Control Delay, s/veh	15.6	6.1	5.9	7.3	7.5
LOS	C	A	A	A	A
95th %tile Queue, veh	3	1	1	2	3

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↱						↲	
Traffic Vol, veh/h	0	102	45	239	102	0	0	0	0	75	5	17
Future Vol, veh/h	0	102	45	239	102	0	0	0	0	75	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	113	50	266	113	0	0	0	0	83	6	19
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	163	0	0				783	808	113
Stage 1	-	-	-	-	-	-				645	645	-
Stage 2	-	-	-	-	-	-				138	163	-
Critical Hdwy	-	-	-	4.12	-	-				6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-				5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1416	-	0				347	303	911
Stage 1	0	-	-	-	-	0				502	451	-
Stage 2	0	-	-	-	-	0				862	743	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1416	-	-				282	0	911
Mov Cap-2 Maneuver	-	-	-	-	-	-				282	0	-
Stage 1	-	-	-	-	-	-				502	0	-
Stage 2	-	-	-	-	-	-				700	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			5.7			21.6					
HCM LOS							C					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1416	-	323							
HCM Lane V/C Ratio	-	-	0.188	-	0.334							
HCM Control Delay (s)	-	-	8.1	-	21.6							
HCM Lane LOS	-	-	A	-	C							
HCM 95th %tile Q(veh)	-	-	0.7	-	1.4							

HCM 6th TWSC
2: Palmer Divide Ave & I-25 SB Ramp

2024 Existing PM
07/25/2024

Intersection												
Int Delay, s/veh	9.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻		↻	↻						↻	
Traffic Vol, veh/h	0	98	71	125	87	0	0	0	0	239	2	33
Future Vol, veh/h	0	98	71	125	87	0	0	0	0	239	2	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	101	73	129	90	0	0	0	0	246	2	34
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	174	0	0				486	522	90
Stage 1	-	-	-	-	-	-				348	348	-
Stage 2	-	-	-	-	-	-				138	174	-
Critical Hdwy	-	-	-	4.13	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1397	-	0				540	459	968
Stage 1	0	-	-	-	-	0				715	634	-
Stage 2	0	-	-	-	-	0				889	755	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1397	-	-				490	0	968
Mov Cap-2 Maneuver	-	-	-	-	-	-				490	0	-
Stage 1	-	-	-	-	-	-				715	0	-
Stage 2	-	-	-	-	-	-				807	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			4.6			19.8					
HCM LOS							C					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1397	-	521							
HCM Lane V/C Ratio	-	-	0.092	-	0.542							
HCM Control Delay (s)	-	-	7.8	-	19.8							
HCM Lane LOS	-	-	A	-	C							
HCM 95th %tile Q(veh)	-	-	0.3	-	3.2							

Intersection												
Int Delay, s/veh	10.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↑					↕		
Traffic Vol, veh/h	0	115	49	316	118	0	0	0	0	94	5	19
Future Vol, veh/h	0	115	49	316	118	0	0	0	0	94	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	128	54	351	131	0	0	0	0	104	6	21
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	182	0	0				988	1015	131
Stage 1	-	-	-	-	-	-				833	833	-
Stage 2	-	-	-	-	-	-				155	182	-
Critical Hdwy	-	-	-	4.12	-	-				6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-				5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1393	-	0				262	228	890
Stage 1	0	-	-	-	-	0				409	369	-
Stage 2	0	-	-	-	-	0				847	729	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1393	-	-				196	0	890
Mov Cap-2 Maneuver	-	-	-	-	-	-				196	0	-
Stage 1	-	-	-	-	-	-				409	0	-
Stage 2	-	-	-	-	-	-				634	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			6.2			40.8					
HCM LOS							E					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1393	-	226							
HCM Lane V/C Ratio	-	-	0.252	-	0.58							
HCM Control Delay (s)	-	-	8.5	-	40.8							
HCM Lane LOS	-	-	A	-	E							
HCM 95th %tile Q(veh)	-	-	1	-	3.3							

Intersection												
Int Delay, s/veh	19.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↱						↲	
Traffic Vol, veh/h	0	118	78	178	99	0	0	0	0	290	2	36
Future Vol, veh/h	0	118	78	178	99	0	0	0	0	290	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	122	80	184	102	0	0	0	0	299	2	37
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	202	0	0				632	672	102
Stage 1	-	-	-	-	-	-				470	470	-
Stage 2	-	-	-	-	-	-				162	202	-
Critical Hdwy	-	-	-	4.13	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1364	-	0				444	377	953
Stage 1	0	-	-	-	-	0				629	560	-
Stage 2	0	-	-	-	-	0				867	734	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1364	-	-				384	0	953
Mov Cap-2 Maneuver	-	-	-	-	-	-				384	0	-
Stage 1	-	-	-	-	-	-				629	0	-
Stage 2	-	-	-	-	-	-				750	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			5.2			43.4					
HCM LOS							E					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1364	-	411							
HCM Lane V/C Ratio	-	-	0.135	-	0.823							
HCM Control Delay (s)	-	-	8	-	43.4							
HCM Lane LOS	-	-	A	-	E							
HCM 95th %tile Q(veh)	-	-	0.5	-	7.6							

HCM 6th TWSC
2: Palmer Divide Ave & I-25 SB Ramp

2028 Total AM

11/14/2024

Intersection												
Int Delay, s/veh	244.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↱						↲	
Traffic Vol, veh/h	0	448	373	316	435	0	0	0	0	94	5	317
Future Vol, veh/h	0	448	373	316	435	0	0	0	0	94	5	317
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	498	414	351	483	0	0	0	0	104	6	352
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	912	0	0				1890	2097	483
Stage 1	-	-	-	-	-	-				1185	1185	-
Stage 2	-	-	-	-	-	-				705	912	-
Critical Hdwy	-	-	-	4.12	-	-				6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-				5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	747	-	0				~ 72	49	562
Stage 1	0	-	-	-	-	0				276	250	-
Stage 2	0	-	-	-	-	0				470	338	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	747	-	-				~ 38	0	562
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 38	0	-
Stage 1	-	-	-	-	-	-				276	0	-
Stage 2	-	-	-	-	-	-				249	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			5.9			\$ 1158.9					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	747	-	135							
HCM Lane V/C Ratio	-	-	0.47	-	3.424							
HCM Control Delay (s)	-	-	14		\$ 1158.9							
HCM Lane LOS	-	-	B	-	F							
HCM 95th %tile Q(veh)	-	-	2.5	-	44.8							
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM 6th TWSC
2: Palmer Divide Ave & I-25 SB Ramp

2028 Total PM

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Intersection												
Int Delay, s/veh	519.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↱						↲	
Traffic Vol, veh/h	0	525	473	178	513	0	0	0	0	290	2	425
Future Vol, veh/h	0	525	473	178	513	0	0	0	0	290	2	425
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	541	488	184	529	0	0	0	0	299	2	438
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	1029	0	0				1682	1926	529
Stage 1	-	-	-	-	-	-				897	897	-
Stage 2	-	-	-	-	-	-				785	1029	-
Critical Hdwy	-	-	-	4.13	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	671	-	0				~ 104	67	550
Stage 1	0	-	-	-	-	0				398	358	-
Stage 2	0	-	-	-	-	0				449	311	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	671	-	-				~ 76	0	550
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 76	0	-
Stage 1	-	-	-	-	-	-				398	0	-
Stage 2	-	-	-	-	-	-				326	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			3.2			\$ 1739.1					
HCM LOS	F											
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	671	-	156							
HCM Lane V/C Ratio	-	-	0.273	-	4.738							
HCM Control Delay (s)	-	-	12.4		\$ 1739.1							
HCM Lane LOS	-	-	B	-	F							
HCM 95th %tile Q(veh)	-	-	1.1	-	76.5							
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Timings 2: Palmer Divide Ave & I-25 SB Ramp

2028 Total AM_Realigned

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations	↑↑	↑	↑	↑↑	↔	↑	
Traffic Volume (vph)	448	373	316	435	5	317	
Future Volume (vph)	448	373	316	435	5	317	
Turn Type	NA	Perm	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		2	6			4	
Detector Phase	2	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	9.5
Total Split (s)	40.0	40.0	21.0	31.0	29.0	29.0	30.0
Total Split (%)	44.4%	44.4%	23.3%	34.4%	32.2%	32.2%	33%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

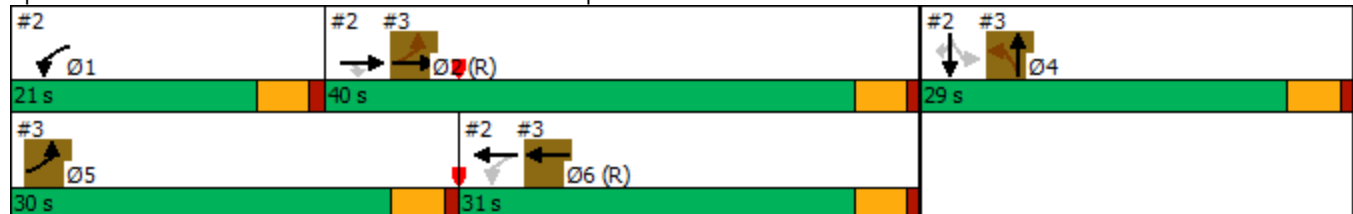
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp

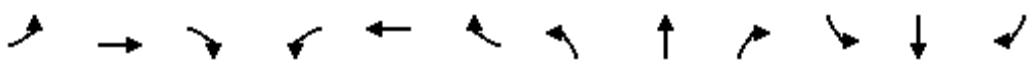


HCM Signalized Intersection Capacity Analysis

2028 Total AM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↓	↑
Traffic Volume (vph)	0	448	373	316	435	0	0	0	0	94	5	317
Future Volume (vph)	0	448	373	316	435	0	0	0	0	94	5	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.92	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (prot)		3539	1583	1770	3539						1437	1358
Flt Permitted		1.00	1.00	0.47	1.00						0.98	1.00
Satd. Flow (perm)		3539	1583	875	3539						1437	1358
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	498	414	351	483	0	0	0	0	104	6	352
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	0	0	46	164
Lane Group Flow (vph)	0	498	177	351	483	0	0	0	0	0	191	61
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	13%	13%	13%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		38.5	38.5	46.3	32.8						24.5	24.5
Effective Green, g (s)		38.5	38.5	46.3	32.8						24.5	24.5
Actuated g/C Ratio		0.43	0.43	0.51	0.36						0.27	0.27
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1513	677	584	1289						391	369
v/s Ratio Prot		c0.14		c0.09	0.14							
v/s Ratio Perm			0.11	c0.22							0.13	0.05
v/c Ratio		0.33	0.26	0.60	0.37						0.49	0.17
Uniform Delay, d1		17.1	16.6	13.2	21.1						27.5	25.0
Progression Factor		0.85	0.48	1.18	1.05						1.00	1.00
Incremental Delay, d2		0.6	0.9	1.5	0.7						4.3	1.0
Delay (s)		15.1	8.9	17.1	22.7						31.8	25.9
Level of Service		B	A	B	C						C	C
Approach Delay (s)		12.3			20.3			0.0			28.9	
Approach LOS		B			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			18.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			63.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2028 Total PM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations	↑↑	↑	↑	↑↑	↑↓	↑	
Traffic Volume (vph)	525	473	178	513	2	425	
Future Volume (vph)	525	473	178	513	2	425	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	42.0		12.0	28.0	36.0	36.0	26.0
Total Split (%)	46.7%		13.3%	31.1%	40.0%	40.0%	29%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

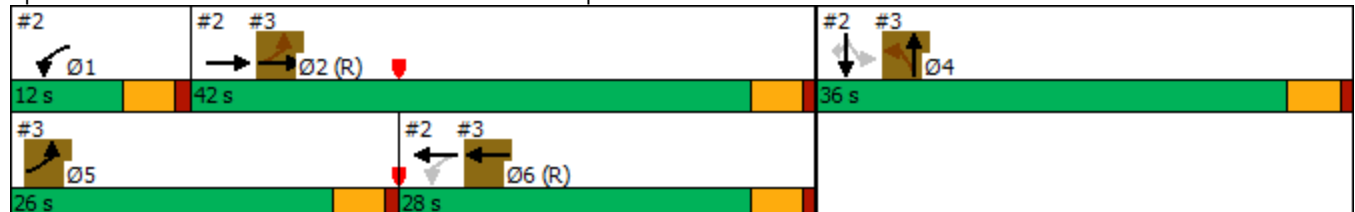
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp

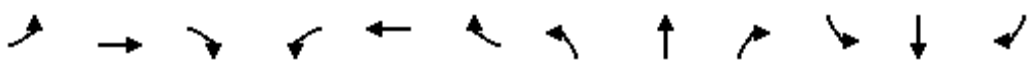


HCM Signalized Intersection Capacity Analysis

2028 Total PM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↓	↑
Traffic Volume (vph)	0	525	473	178	513	0	0	0	0	290	2	425
Future Volume (vph)	0	525	473	178	513	0	0	0	0	290	2	425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.97	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.96	1.00
Satd. Flow (prot)		3505	1568	1752	3505						1648	1504
Flt Permitted		1.00	1.00	0.45	1.00						0.96	1.00
Satd. Flow (perm)		3505	1568	831	3505						1648	1504
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	541	488	184	529	0	0	0	0	299	2	438
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	11	231
Lane Group Flow (vph)	0	541	488	184	529	0	0	0	0	0	373	124
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		37.6	90.0	33.9	26.5						31.5	31.5
Effective Green, g (s)		37.6	90.0	33.9	26.5						31.5	31.5
Actuated g/C Ratio		0.42	1.00	0.38	0.29						0.35	0.35
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1464	1568	388	1032						576	526
v/s Ratio Prot		0.15		0.04	c0.15							
v/s Ratio Perm			c0.31	0.14							0.23	0.08
v/c Ratio		0.37	0.31	0.47	0.51						0.65	0.24
Uniform Delay, d1		18.0	0.0	19.5	26.4						24.6	20.7
Progression Factor		0.81	1.00	1.32	1.24						1.00	1.00
Incremental Delay, d2		0.7	0.5	0.8	1.5						5.5	1.1
Delay (s)		15.3	0.5	26.5	34.3						30.1	21.8
Level of Service		B	A	C	C						C	C
Approach Delay (s)		8.3			32.3			0.0			26.1	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			20.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			72.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

 **Site: 2 [2028 Total AM (Site Folder: County Line & I-25 SB)]**

County Line Rd & I-25 SB Ramp

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
East: County Line Rd														
1	L2	316	3.0	343	3.0	0.304	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	35.5
6	T1	435	3.0	473	3.0	0.304	5.3	LOS A	0.0	0.0	0.00	0.00	0.00	37.9
Approach		751	3.0	816	3.0	0.304	5.4	LOS A	0.0	0.0	0.00	0.00	0.00	36.8
North: I-25 SB Ramp														
7	L2	94	3.0	102	3.0	0.353	10.9	LOS B	1.5	39.1	0.67	0.72	0.82	31.2
4	T1	5	3.0	5	3.0	0.353	10.9	LOS B	1.5	39.1	0.67	0.72	0.82	31.1
14	R2	317	3.0	345	3.0	0.353	10.3	LOS B	1.5	39.1	0.66	0.70	0.80	31.1
Approach		416	3.0	452	3.0	0.353	10.4	LOS B	1.5	39.1	0.66	0.71	0.80	31.2
West: County Line Rd														
2	T1	448	3.0	487	3.0	0.273	6.9	LOS A	1.1	29.0	0.52	0.48	0.52	34.3
12	R2	373	3.0	405	3.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.1
Approach		821	3.0	892	3.0	0.273	3.8	LOS A	1.1	29.0	0.29	0.26	0.29	35.5
All Vehicles		1988	3.0	2161	3.0	0.353	5.8	LOS A	1.5	39.1	0.26	0.26	0.29	35.0

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

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

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Project: K:\DEN_TPTO\196094002 - Buc-ee's Monument\Engineering\Analysis\Current Synchro 11\Interchange Roundabout.sip9

MOVEMENT SUMMARY

 **Site: 2 [2028 Total PM (Site Folder: County Line & I-25 SB)]**

County Line Rd & I-25 SB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
East: County Line Rd														
1	L2	178	3.0	193	3.0	0.279	5.2	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
6	T1	513	3.0	558	3.0	0.279	5.1	LOS A	0.0	0.0	0.00	0.00	0.00	37.6
Approach		691	3.0	751	3.0	0.279	5.1	LOS A	0.0	0.0	0.00	0.00	0.00	37.4
North: I-25 SB Ramp														
7	L2	290	3.0	315	3.0	0.574	15.7	LOS C	3.8	97.6	0.76	0.92	1.28	28.6
4	T1	2	3.0	2	3.0	0.574	15.7	LOS C	3.8	97.6	0.76	0.92	1.28	28.6
14	R2	425	3.0	462	3.0	0.574	14.6	LOS B	3.9	99.6	0.74	0.91	1.26	29.5
Approach		717	3.0	779	3.0	0.574	15.1	LOS C	3.9	99.6	0.75	0.92	1.27	29.1
West: County Line Rd														
2	T1	525	3.0	571	3.0	0.338	8.1	LOS A	1.4	36.9	0.58	0.56	0.58	33.7
12	R2	473	3.0	514	3.0	0.316	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.0
Approach		998	3.0	1085	3.0	0.338	4.3	LOS A	1.4	36.9	0.30	0.30	0.30	35.2
All Vehicles		2406	3.0	2615	3.0	0.574	7.7	LOS A	3.9	99.6	0.35	0.40	0.50	33.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

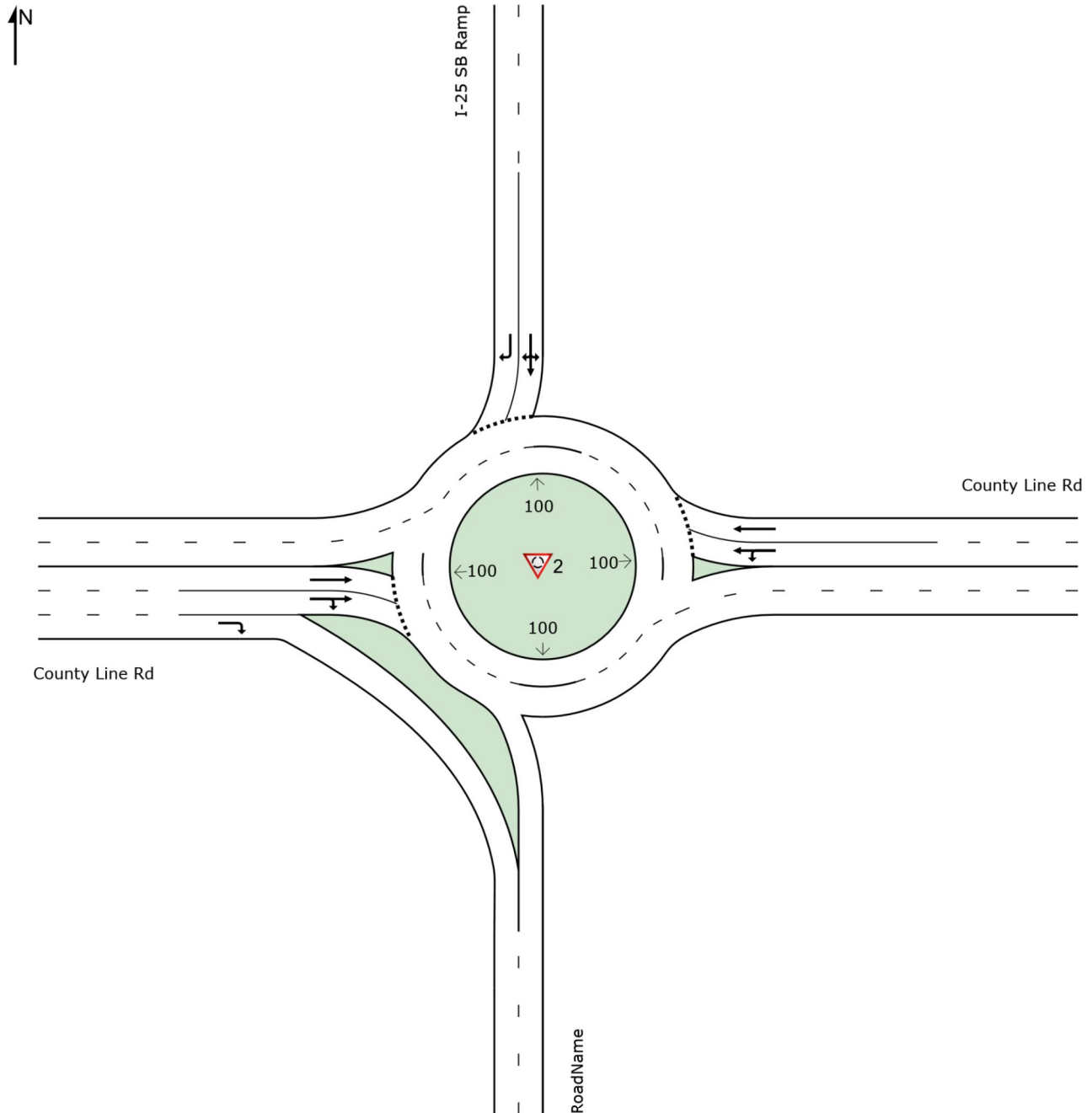
Site: 2 [2028 Total AM (Site Folder: County Line & I-25 SB)]

County Line Rd & I-25 SB Ramp

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Intersection												
Int Delay, s/veh	81.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	170	74	445	173	0	0	0	0	135	8	28
Future Vol, veh/h	0	170	74	445	173	0	0	0	0	135	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	189	82	494	192	0	0	0	0	150	9	31
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	271	0	0				1410	1451	192
Stage 1	-	-	-	-	-	-				1180	1180	-
Stage 2	-	-	-	-	-	-				230	271	-
Critical Hdwy	-	-	-	4.12	-	-				6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-				5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1292	-	0				~ 144	124	822
Stage 1	0	-	-	-	-	0				277	252	-
Stage 2	0	-	-	-	-	0				783	666	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1292	-	-				~ 89	0	822
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 89	0	-
Stage 1	-	-	-	-	-	-				277	0	-
Stage 2	-	-	-	-	-	-				484	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			6.8			\$ 468.6					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1292	-	105							
HCM Lane V/C Ratio	-	-	0.383	-	1.81							
HCM Control Delay (s)	-	-	9.5	-	\$ 468.6							
HCM Lane LOS	-	-	A	-	F							
HCM 95th %tile Q(veh)	-	-	1.8	-	15.3							
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Int Delay, s/veh	170.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↱	↱						↲	
Traffic Vol, veh/h	0	170	116	245	145	0	0	0	0	419	3	54
Future Vol, veh/h	0	170	116	245	145	0	0	0	0	419	3	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	175	120	253	149	0	0	0	0	432	3	56
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	295	0	0				890	950	149
Stage 1	-	-	-	-	-	-				655	655	-
Stage 2	-	-	-	-	-	-				235	295	-
Critical Hdwy	-	-	-	4.13	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1261	-	0				~ 313	260	898
Stage 1	0	-	-	-	-	0				517	463	-
Stage 2	0	-	-	-	-	0				804	669	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1261	-	-				~ 250	0	898
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 250	0	-
Stage 1	-	-	-	-	-	-				517	0	-
Stage 2	-	-	-	-	-	-				642	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			5.4			\$ 407.7					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1							
Capacity (veh/h)	-	-	1261	-	272							
HCM Lane V/C Ratio	-	-	0.2	-	1.804							
HCM Control Delay (s)	-	-	8.6	-	\$ 407.7							
HCM Lane LOS	-	-	A	-	F							
HCM 95th %tile Q(veh)	-	-	0.7	-	32.9							
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings

2045 Total AM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations	↑↑	↑	↑	↑↑	↔	↑	
Traffic Volume (vph)	503	398	445	490	8	326	
Future Volume (vph)	503	398	445	490	8	326	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	40.0		23.0	36.0	27.0	27.0	27.0
Total Split (%)	44.4%		25.6%	40.0%	30.0%	30.0%	30%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

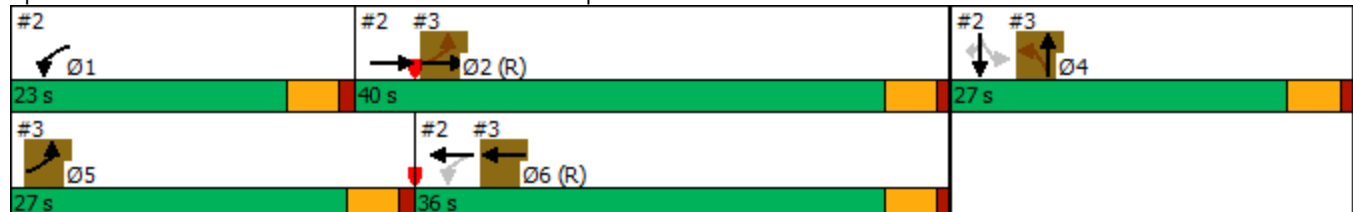
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp

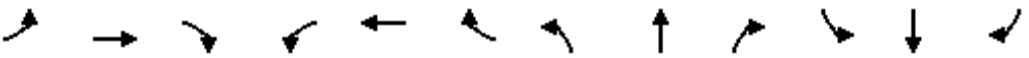


HCM Signalized Intersection Capacity Analysis

2045 Total AM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↓	↑
Traffic Volume (vph)	0	503	398	445	490	0	0	0	0	135	8	326
Future Volume (vph)	0	503	398	445	490	0	0	0	0	135	8	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.97	1.00
Satd. Flow (prot)		3539	1583	1770	3539						1459	1358
Flt Permitted		1.00	1.00	0.41	1.00						0.97	1.00
Satd. Flow (perm)		3539	1583	772	3539						1459	1358
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	559	442	494	544	0	0	0	0	150	9	362
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	28	190
Lane Group Flow (vph)	0	559	442	494	544	0	0	0	0	0	240	63
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	13%	13%	13%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		37.1	90.0	50.3	33.4						22.5	22.5
Effective Green, g (s)		37.1	90.0	50.3	33.4						22.5	22.5
Actuated g/C Ratio		0.41	1.00	0.56	0.37						0.25	0.25
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1458	1583	618	1313						364	339
v/s Ratio Prot		0.16		c0.15	0.15							
v/s Ratio Perm			c0.28	c0.30							0.16	0.05
v/c Ratio		0.38	0.28	0.80	0.41						0.66	0.19
Uniform Delay, d1		18.5	0.0	12.2	21.0						30.3	26.6
Progression Factor		0.84	1.00	1.49	1.03						1.00	1.00
Incremental Delay, d2		0.8	0.4	4.9	0.6						9.1	1.2
Delay (s)		16.3	0.4	23.1	22.3						39.4	27.8
Level of Service		B	A	C	C						D	C
Approach Delay (s)		9.3			22.7			0.0			33.7	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			19.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			71.7%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2045 Total PM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations	↑↑	↑	↑	↑↑	↔	↑	
Traffic Volume (vph)	577	511	245	559	3	443	
Future Volume (vph)	577	511	245	559	3	443	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	41.0		13.0	28.0	36.0	36.0	26.0
Total Split (%)	45.6%		14.4%	31.1%	40.0%	40.0%	29%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

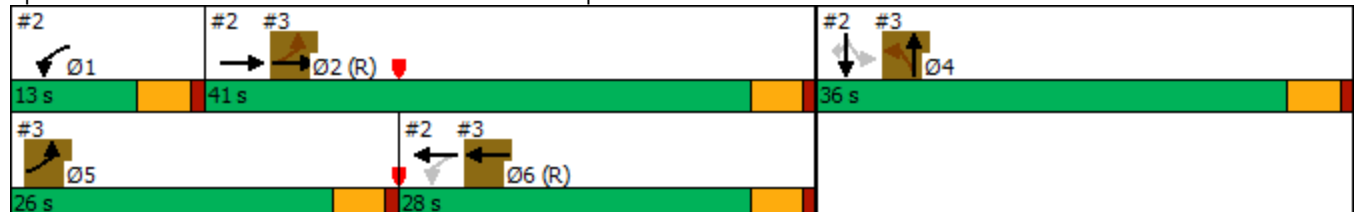
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp

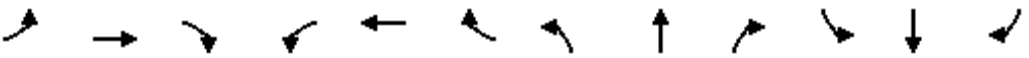


HCM Signalized Intersection Capacity Analysis

2: Palmer Divide Ave & I-25 SB Ramp

2045 Total PM_Realigned

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↓	↑
Traffic Volume (vph)	0	577	511	245	559	0	0	0	0	419	3	443
Future Volume (vph)	0	577	511	245	559	0	0	0	0	419	3	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.96	1.00
Satd. Flow (prot)		3505	1568	1752	3505						1669	1504
Flt Permitted		1.00	1.00	0.43	1.00						0.96	1.00
Satd. Flow (perm)		3505	1568	788	3505						1669	1504
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	595	527	253	576	0	0	0	0	432	3	457
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	5	267
Lane Group Flow (vph)	0	595	527	253	576	0	0	0	0	0	476	144
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		36.5	90.0	33.6	25.1						31.5	31.5
Effective Green, g (s)		36.5	90.0	33.6	25.1						31.5	31.5
Actuated g/C Ratio		0.41	1.00	0.37	0.28						0.35	0.35
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1421	1568	385	977						584	526
v/s Ratio Prot		0.17		c0.06	0.16							
v/s Ratio Perm			c0.34	c0.18							0.29	0.10
v/c Ratio		0.42	0.34	0.66	0.59						0.82	0.27
Uniform Delay, d1		19.2	0.0	20.7	28.0						26.6	21.0
Progression Factor		0.77	1.00	1.13	1.10						1.00	1.00
Incremental Delay, d2		0.9	0.6	3.0	1.9						11.9	1.3
Delay (s)		15.6	0.6	26.3	32.9						38.5	22.3
Level of Service		B	A	C	C						D	C
Approach Delay (s)		8.5			30.9			0.0			31.1	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			22.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			89.4%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

 **Site: 2 [2045 Total AM (Site Folder: County Line & I-25 SB)]**

County Line Rd & I-25 SB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
East: County Line Rd														
1	L2	445	3.0	484	3.0	0.378	6.3	LOS A	0.0	0.0	0.00	0.00	0.00	35.1
6	T1	490	3.0	533	3.0	0.378	6.1	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		935	3.0	1016	3.0	0.378	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
North: I-25 SB Ramp														
7	L2	135	3.0	147	3.0	0.478	16.0	LOS C	2.3	59.8	0.75	0.87	1.15	28.9
4	T1	8	3.0	9	3.0	0.478	16.0	LOS C	2.3	59.8	0.75	0.87	1.15	28.9
14	R2	326	3.0	354	3.0	0.478	14.8	LOS B	2.4	60.8	0.73	0.85	1.13	29.3
Approach		469	3.0	510	3.0	0.478	15.2	LOS C	2.4	60.8	0.74	0.85	1.13	29.2
West: County Line Rd														
2	T1	503	3.0	547	3.0	0.364	9.3	LOS A	1.7	42.4	0.63	0.66	0.72	33.1
12	R2	398	3.0	433	3.0	0.266	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.1
Approach		901	3.0	979	3.0	0.364	5.2	LOS A	1.7	42.4	0.35	0.37	0.40	34.7
All Vehicles		2305	3.0	2505	3.0	0.478	7.6	LOS A	2.4	60.8	0.29	0.32	0.39	34.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: 2 [2045 Total PM (Site Folder: County Line & I-25 SB)]**

County Line Rd & I-25 SB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
East: County Line Rd														
1	L2	245	3.0	266	3.0	0.325	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	36.2
6	T1	559	3.0	608	3.0	0.325	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	37.6
Approach		804	3.0	874	3.0	0.325	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	37.2
North: I-25 SB Ramp														
7	L2	419	3.0	455	3.0	0.801	30.9	LOS D	8.0	205.2	0.88	1.28	2.20	24.0
4	T1	3	3.0	3	3.0	0.801	30.9	LOS D	8.0	205.2	0.88	1.28	2.20	24.0
14	R2	443	3.0	482	3.0	0.751	24.3	LOS C	6.8	175.2	0.85	1.18	1.92	26.3
Approach		865	3.0	940	3.0	0.801	27.5	LOS D	8.0	205.2	0.86	1.23	2.06	25.1
West: County Line Rd														
2	T1	577	3.0	627	3.0	0.451	11.6	LOS B	2.4	62.0	0.69	0.78	0.97	32.0
12	R2	511	3.0	555	3.0	0.342	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.0
Approach		1088	3.0	1183	3.0	0.451	6.2	LOS A	2.4	62.0	0.36	0.41	0.51	34.1
All Vehicles		2757	3.0	2997	3.0	0.801	12.7	LOS B	8.0	205.2	0.41	0.55	0.85	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th TWSC
3: I-25 NB Ramp & Palmer Divide Ave

2024 Existing AM
07/25/2024

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Vol, veh/h	34	143	0	0	291	216	49	0	58	0	0	0
Future Vol, veh/h	34	143	0	0	291	216	49	0	58	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	39	163	0	0	331	245	56	0	66	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	576	0	-	-	-	0	407	817	163			
Stage 1	-	-	-	-	-	-	241	241	-			
Stage 2	-	-	-	-	-	-	166	576	-			
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-			
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338			
Pot Cap-1 Maneuver	978	-	0	0	-	-	581	307	875			
Stage 1	-	-	0	0	-	-	793	701	-			
Stage 2	-	-	0	0	-	-	842	497	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	978	-	-	-	-	-	558	0	875			
Mov Cap-2 Maneuver	-	-	-	-	-	-	558	0	-			
Stage 1	-	-	-	-	-	-	761	0	-			
Stage 2	-	-	-	-	-	-	842	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.7			0			11.3					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	694	978	-	-	-							
HCM Lane V/C Ratio	0.175	0.04	-	-	-							
HCM Control Delay (s)	11.3	8.8	-	-	-							
HCM Lane LOS	B	A	-	-	-							
HCM 95th %tile Q(veh)	0.6	0.1	-	-	-							

HCM 6th TWSC
3: I-25 NB Ramp & Palmer Divide Ave

2024 Existing PM
07/25/2024

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Vol, veh/h	35	293	0	0	157	126	50	1	166	0	0	0
Future Vol, veh/h	35	293	0	0	157	126	50	1	166	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	312	0	0	167	134	53	1	177	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	301	0	-	-	-	0	470	687	312			
Stage 1	-	-	-	-	-	-	386	386	-			
Stage 2	-	-	-	-	-	-	84	301	-			
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-			
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319			
Pot Cap-1 Maneuver	1258	-	0	0	-	-	537	369	727			
Stage 1	-	-	0	0	-	-	686	609	-			
Stage 2	-	-	0	0	-	-	930	664	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1258	-	-	-	-	-	521	0	727			
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	0	-			
Stage 1	-	-	-	-	-	-	666	0	-			
Stage 2	-	-	-	-	-	-	930	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.8			0			13.2					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	666	1258	-	-	-							
HCM Lane V/C Ratio	0.347	0.03	-	-	-							
HCM Control Delay (s)	13.2	7.9	-	-	-							
HCM Lane LOS	B	A	-	-	-							
HCM 95th %tile Q(veh)	1.5	0.1	-	-	-							

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	172	0	0	380	264	54	0	87	0	0	0
Future Vol, veh/h	37	172	0	0	380	264	54	0	87	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	42	195	0	0	432	300	61	0	99	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	732	0	-	-	-	0	495	1011	195			
Stage 1	-	-	-	-	-	-	279	279	-			
Stage 2	-	-	-	-	-	-	216	732	-			
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-			
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338			
Pot Cap-1 Maneuver	854	-	0	0	-	-	514	236	840			
Stage 1	-	-	0	0	-	-	762	675	-			
Stage 2	-	-	0	0	-	-	795	422	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	854	-	-	-	-	-	489	0	840			
Mov Cap-2 Maneuver	-	-	-	-	-	-	489	0	-			
Stage 1	-	-	-	-	-	-	725	0	-			
Stage 2	-	-	-	-	-	-	795	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.7			0			12.2					
HCM LOS							B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	659	854	-	-	-							
HCM Lane V/C Ratio	0.243	0.049	-	-	-							
HCM Control Delay (s)	12.2	9.4	-	-	-							
HCM Lane LOS	B	A	-	-	-							
HCM 95th %tile Q(veh)	0.9	0.2	-	-	-							

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	360	0	0	216	157	55	1	240	0	0	0
Future Vol, veh/h	38	360	0	0	216	157	55	1	240	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	383	0	0	230	167	59	1	255	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	397	0	-	-	-	0	578	860	383			
Stage 1	-	-	-	-	-	-	463	463	-			
Stage 2	-	-	-	-	-	-	115	397	-			
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-			
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319			
Pot Cap-1 Maneuver	1160	-	0	0	-	-	462	293	664			
Stage 1	-	-	0	0	-	-	633	563	-			
Stage 2	-	-	0	0	-	-	898	603	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1160	-	-	-	-	-	446	0	664			
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	0	-			
Stage 1	-	-	-	-	-	-	611	0	-			
Stage 2	-	-	-	-	-	-	898	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.8			0			17.1					
HCM LOS							C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	609	1160	-	-	-							
HCM Lane V/C Ratio	0.517	0.035	-	-	-							
HCM Control Delay (s)	17.1	8.2	-	-	-							
HCM Lane LOS	C	A	-	-	-							
HCM 95th %tile Q(veh)	3	0.1	-	-	-							

HCM 6th TWSC
3: I-25 NB Ramp & Palmer Divide Ave

2028 Total AM
11/14/2024

Intersection												
Int Delay, s/veh	455.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑			↑↑			↱				
Traffic Vol, veh/h	356	185	0	0	394	264	357	0	87	0	0	0
Future Vol, veh/h	356	185	0	0	394	264	357	0	87	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	405	210	0	0	448	300	406	0	99	0	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	748	0	- - - 0 1244 1768 210
Stage 1	-	-	- - - 1020 1020 -
Stage 2	-	-	- - - 224 748 -
Critical Hdwy	4.175	-	- - - 6.66 6.56 6.26
Critical Hdwy Stg 1	-	-	- - - 5.46 5.56 -
Critical Hdwy Stg 2	-	-	- - - 5.86 5.56 -
Follow-up Hdwy	2.2475	-	- - - 3.538 4.038 3.338
Pot Cap-1 Maneuver	842	-	0 0 - ~ 177 82 824
Stage 1	-	-	0 0 - ~ 343 310 -
Stage 2	-	-	0 0 - 787 415 -
Platoon blocked, %	-	-	- -
Mov Cap-1 Maneuver	842	-	- - - ~ 92 0 824
Mov Cap-2 Maneuver	-	-	- - - ~ 92 0 -
Stage 1	-	-	- - - ~ 178 0 -
Stage 2	-	-	- - - 787 0 -

Approach	EB	WB	NB
HCM Control Delay, s	8.7	0	\$ 1673.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	111	842	-	-	-
HCM Lane V/C Ratio	4.545	0.48	-	-	-
HCM Control Delay (s)	\$ 1673.4	13.2	-	-	-
HCM Lane LOS	F	B	-	-	-
HCM 95th %tile Q(veh)	52.8	2.6	-	-	-

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

HCM 6th TWSC
3: I-25 NB Ramp & Palmer Divide Ave

2028 Total PM

11/14/2024

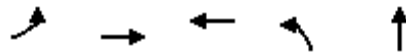
Intersection												
Int Delay, s/veh	907.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑			↑↑			↱				
Traffic Vol, veh/h	427	379	0	0	235	157	450	1	240	0	0	0
Future Vol, veh/h	427	379	0	0	235	157	450	1	240	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	454	403	0	0	250	167	479	1	255	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	417	0	-	-	-	0	1436	1728	403			
Stage 1	-	-	-	-	-	-	1311	1311	-			
Stage 2	-	-	-	-	-	-	125	417	-			
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-			
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319			
Pot Cap-1 Maneuver	1140	-	0	0	-	-	~ 135	88	647			
Stage 1	-	-	0	0	-	-	~ 251	228	-			
Stage 2	-	-	0	0	-	-	888	590	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1140	-	-	-	-	-	~ 81	0	647			
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 81	0	-			
Stage 1	-	-	-	-	-	-	~ 151	0	-			
Stage 2	-	-	-	-	-	-	888	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	5.4			0			\$ 2474					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	116	1140	-	-	-							
HCM Lane V/C Ratio	6.337	0.398	-	-	-							
HCM Control Delay (s)	\$ 2474	10.2	-	-	-							
HCM Lane LOS	F	B	-	-	-							
HCM 95th %tile Q(veh)	80.8	1.9	-	-	-							
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings

2028 Total AM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT	Ø1
Lane Configurations						
Traffic Volume (vph)	356	185	394	357	0	
Future Volume (vph)	356	185	394	357	0	
Turn Type	pm+pt	NA	NA	Perm	NA	
Protected Phases	5	2	6		4	1
Permitted Phases	2			4		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	30.0	40.0	31.0	29.0	29.0	21.0
Total Split (%)	33.3%	44.4%	34.4%	32.2%	32.2%	23%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	C-Max	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

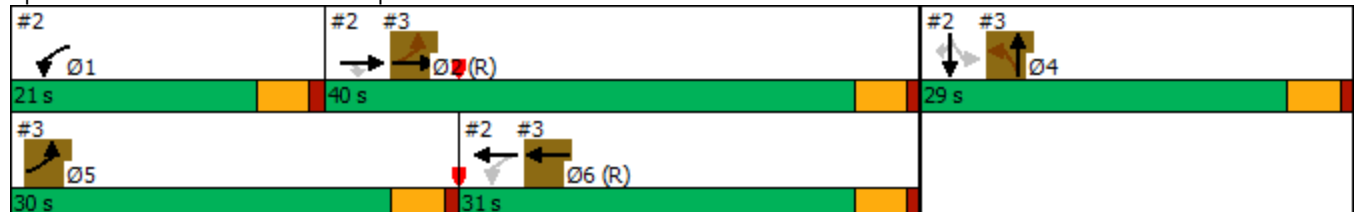
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



HCM Signalized Intersection Capacity Analysis

3: I-25 NB Ramp & Palmer Divide Ave

2028 Total AM_Realigned

11/14/2024

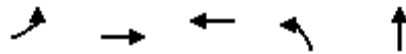
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 							
Traffic Volume (vph)	356	185	0	0	394	264	357	0	87	0	0	0
Future Volume (vph)	356	185	0	0	394	264	357	0	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5				
Lane Util. Factor	1.00	1.00			0.95		0.95	0.95				
Frt	1.00	1.00			0.94		1.00	0.94				
Flt Protected	0.95	1.00			1.00		0.95	0.97				
Satd. Flow (prot)	1719	1810			3326		1649	1583				
Flt Permitted	0.21	1.00			1.00		0.95	0.97				
Satd. Flow (perm)	380	1810			3326		1649	1583				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	405	210	0	0	448	300	406	0	99	0	0	0
RTOR Reduction (vph)	0	0	0	0	115	0	0	92	0	0	0	0
Lane Group Flow (vph)	405	210	0	0	633	0	260	153	0	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases	2						4					
Actuated Green, G (s)	56.5	38.5			32.8		24.5	24.5				
Effective Green, g (s)	56.5	38.5			32.8		24.5	24.5				
Actuated g/C Ratio	0.63	0.43			0.36		0.27	0.27				
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	524	774			1212		448	430				
v/s Ratio Prot	c0.16	0.12			0.19							
v/s Ratio Perm	c0.32						c0.16	0.10				
v/c Ratio	0.77	0.27			0.52		0.58	0.35				
Uniform Delay, d1	12.9	16.7			22.4		28.3	26.4				
Progression Factor	3.02	0.47			1.00		1.00	1.00				
Incremental Delay, d2	6.7	0.8			1.6		5.4	2.3				
Delay (s)	45.6	8.6			24.1		33.7	28.7				
Level of Service	D	A			C		C	C				
Approach Delay (s)		33.0			24.1			31.3			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM 2000 Control Delay			28.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			63.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2028 Total PM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT	Ø1
Lane Configurations						
Traffic Volume (vph)	427	379	235	450	1	
Future Volume (vph)	427	379	235	450	1	
Turn Type	pm+pt	NA	NA	Perm	NA	
Protected Phases	5	2	6		4	1
Permitted Phases	2			4		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	26.0	42.0	28.0	36.0	36.0	12.0
Total Split (%)	28.9%	46.7%	31.1%	40.0%	40.0%	13%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	C-Max	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

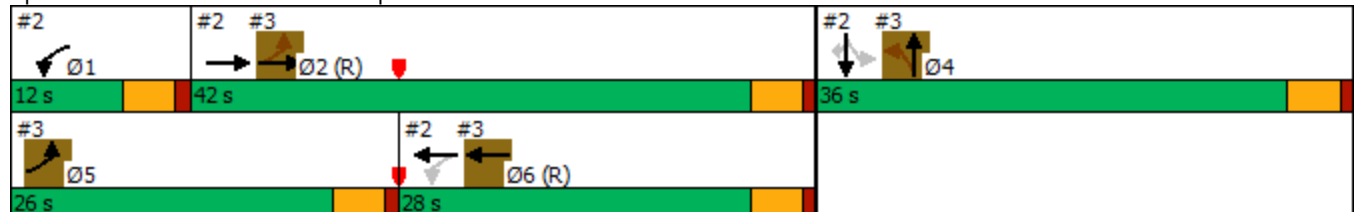
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



HCM Signalized Intersection Capacity Analysis

3: I-25 NB Ramp & Palmer Divide Ave

2028 Total PM_Realigned

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 							
Traffic Volume (vph)	427	379	0	0	235	157	450	1	240	0	0	0
Future Volume (vph)	427	379	0	0	235	157	450	1	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5				
Lane Util. Factor	1.00	1.00			0.95		0.95	0.95				
Frt	1.00	1.00			0.94		1.00	0.89				
Flt Protected	0.95	1.00			1.00		0.95	0.99				
Satd. Flow (prot)	1770	1863			3327		1681	1556				
Flt Permitted	0.36	1.00			1.00		0.95	0.99				
Satd. Flow (perm)	677	1863			3327		1681	1556				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	454	403	0	0	250	167	479	1	255	0	0	0
RTOR Reduction (vph)	0	0	0	0	118	0	0	105	0	0	0	0
Lane Group Flow (vph)	454	403	0	0	299	0	383	247	0	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases	2						4					
Actuated Green, G (s)	49.5	37.6			26.5		31.5	31.5				
Effective Green, g (s)	49.5	37.6			26.5		31.5	31.5				
Actuated g/C Ratio	0.55	0.42			0.29		0.35	0.35				
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	597	778			979		588	544				
v/s Ratio Prot	c0.16	0.22			0.09							
v/s Ratio Perm	c0.26						c0.23	0.16				
v/c Ratio	0.76	0.52			0.31		0.65	0.45				
Uniform Delay, d1	13.1	19.5			24.6		24.6	22.6				
Progression Factor	1.56	0.76			1.00		1.00	1.00				
Incremental Delay, d2	5.1	2.2			0.8		5.5	2.7				
Delay (s)	25.5	17.0			25.4		30.2	25.3				
Level of Service	C	B			C		C	C				
Approach Delay (s)		21.5			25.4			27.8			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM 2000 Control Delay		24.6			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		72.4%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

MOVEMENT SUMMARY

 **Site: 3 [2028 Total AM (Site Folder: County Line & I-25 NB)]**

County Line Rd & I-25 NB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: I-25 NB Ramp														
3	L2	357	3.0	388	3.0	0.307	8.2	LOS A	1.3	32.0	0.59	0.59	0.59	31.6
8	T1	1	3.0	1	3.0	0.307	7.8	LOS A	1.2	31.7	0.58	0.58	0.58	32.1
18	R2	87	3.0	95	3.0	0.307	7.8	LOS A	1.2	31.7	0.58	0.58	0.58	31.2
Approach		445	3.0	484	3.0	0.307	8.1	LOS A	1.3	32.0	0.59	0.59	0.59	31.5
East: County Line Rd														
6	T1	394	3.0	428	3.0	0.539	14.7	LOS B	3.4	85.9	0.74	0.88	1.20	30.7
16	R2	264	3.0	287	3.0	0.539	13.7	LOS B	3.4	85.9	0.73	0.87	1.18	30.1
Approach		658	3.0	715	3.0	0.539	14.3	LOS B	3.4	85.9	0.73	0.88	1.19	30.4
West: County Line Rd														
5	L2	356	3.0	387	3.0	0.281	5.0	LOS A	0.0	0.0	0.00	0.00	0.00	35.1
2	T1	185	3.0	201	3.0	0.153	4.0	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		541	3.0	588	3.0	0.281	4.7	LOS A	0.0	0.0	0.00	0.00	0.00	36.1
All Vehicles		1644	3.0	1787	3.0	0.539	9.5	LOS A	3.4	85.9	0.45	0.51	0.64	32.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: 3 [2028 Total PM (Site Folder: County Line & I-25 NB)]**

County Line Rd & I-25 NB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: I-25 NB Ramp														
3	L2	450	3.0	489	3.0	0.620	18.7	LOS C	4.2	108.2	0.78	0.98	1.44	27.7
8	T1	1	3.0	1	3.0	0.620	17.4	LOS C	4.2	108.2	0.78	0.98	1.42	28.8
18	R2	240	3.0	261	3.0	0.620	17.4	LOS C	4.2	108.2	0.78	0.98	1.42	28.0
Approach		691	3.0	751	3.0	0.620	18.2	LOS C	4.2	108.2	0.78	0.98	1.43	27.8
East: County Line Rd														
6	T1	235	3.0	255	3.0	0.378	12.5	LOS B	1.6	42.1	0.70	0.76	0.92	31.6
16	R2	157	3.0	171	3.0	0.378	11.5	LOS B	1.6	42.1	0.69	0.75	0.90	31.0
Approach		392	3.0	426	3.0	0.378	12.1	LOS B	1.6	42.1	0.69	0.76	0.91	31.4
West: County Line Rd														
5	L2	427	3.0	464	3.0	0.337	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	35.1
2	T1	379	3.0	412	3.0	0.314	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		806	3.0	876	3.0	0.337	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
All Vehicles		1889	3.0	2053	3.0	0.620	11.6	LOS B	4.2	108.2	0.43	0.52	0.71	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

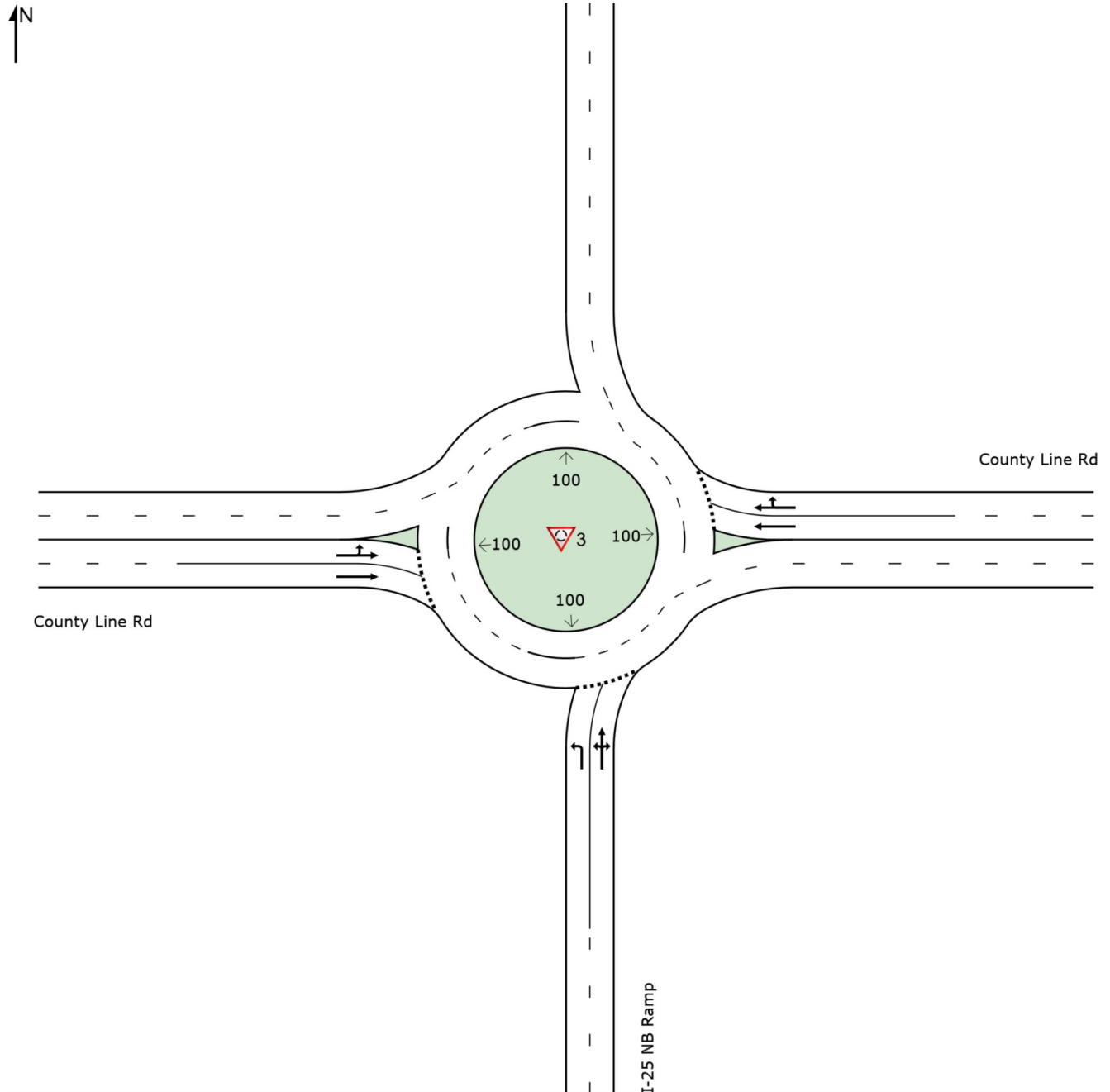
Site: 3 [2028 Total AM (Site Folder: County Line & I-25 NB)]

County Line Rd & I-25 NB Ramp

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑			↑↑			↱				
Traffic Vol, veh/h	56	249	0	0	536	380	80	0	118	0	0	0
Future Vol, veh/h	56	249	0	0	536	380	80	0	118	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	64	283	0	0	609	432	91	0	134	0	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	1041	0	- - - 0 716 1452 283
Stage 1	-	-	- - - 411 411 -
Stage 2	-	-	- - - 305 1041 -
Critical Hdwy	4.175	-	- - - 6.66 6.56 6.26
Critical Hdwy Stg 1	-	-	- - - 5.46 5.56 -
Critical Hdwy Stg 2	-	-	- - - 5.86 5.56 -
Follow-up Hdwy	2.2475	-	- - - 3.538 4.038 3.338
Pot Cap-1 Maneuver	651	- 0 0	- - - 377 128 750
Stage 1	-	- 0 0	- - - 663 590 -
Stage 2	-	- 0 0	- - - 717 303 -
Platoon blocked, %	-	-	- -
Mov Cap-1 Maneuver	651	- - -	- - - 340 0 750
Mov Cap-2 Maneuver	-	- - -	- - - 340 0 -
Stage 1	-	- - -	- - - 598 0 -
Stage 2	-	- - -	- - - 717 0 -

Approach	EB	WB	NB
HCM Control Delay, s	2	0	17.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	504	651	-	-	-
HCM Lane V/C Ratio	0.446	0.098	-	-	-
HCM Control Delay (s)	17.8	11.1	-	-	-
HCM Lane LOS	C	B	-	-	-
HCM 95th %tile Q(veh)	2.3	0.3	-	-	-

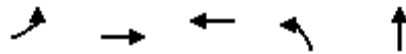
Intersection												
Int Delay, s/veh	16.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Vol, veh/h	57	517	0	0	301	225	82	2	329	0	0	0
Future Vol, veh/h	57	517	0	0	301	225	82	2	329	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	550	0	0	320	239	87	2	350	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	559	0	-	-	-	0	832	1231	550			
Stage 1	-	-	-	-	-	-	672	672	-			
Stage 2	-	-	-	-	-	-	160	559	-			
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-			
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319			
Pot Cap-1 Maneuver	1010	-	0	0	-	-	323	177	534			
Stage 1	-	-	0	0	-	-	506	454	-			
Stage 2	-	-	0	0	-	-	853	510	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1010	-	-	-	-	-	304	0	534			
Mov Cap-2 Maneuver	-	-	-	-	-	-	304	0	-			
Stage 1	-	-	-	-	-	-	476	0	-			
Stage 2	-	-	-	-	-	-	853	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.9			0			59.5					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	464	1010	-	-	-							
HCM Lane V/C Ratio	0.947	0.06	-	-	-							
HCM Control Delay (s)	59.5	8.8	-	-	-							
HCM Lane LOS	F	A	-	-	-							
HCM 95th %tile Q(veh)	11.4	0.2	-	-	-							

Timings

2045 Total AM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT	Ø1
Lane Configurations						
Traffic Volume (vph)	375	262	550	383	0	
Future Volume (vph)	375	262	550	383	0	
Turn Type	pm+pt	NA	NA	Perm	NA	
Protected Phases	5	2	6		4	1
Permitted Phases	2			4		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	27.0	40.0	36.0	27.0	27.0	23.0
Total Split (%)	30.0%	44.4%	40.0%	30.0%	30.0%	26%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	C-Max	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

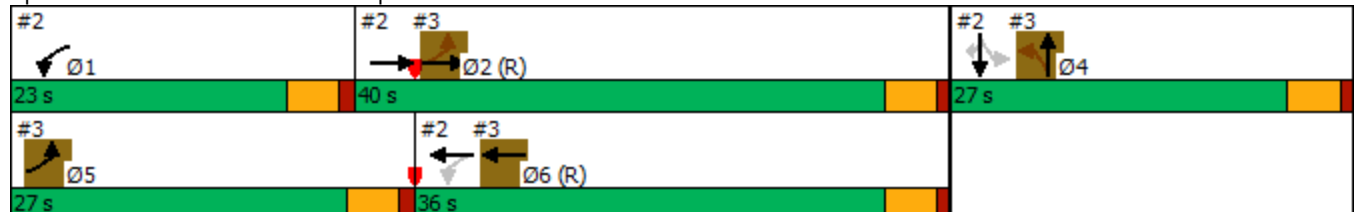
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



HCM Signalized Intersection Capacity Analysis

3: I-25 NB Ramp & Palmer Divide Ave

2045 Total AM_Realigned

11/14/2024

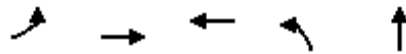
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	262	0	0	550	380	383	0	118	0	0	0
Future Volume (vph)	375	262	0	0	550	380	383	0	118	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5				
Lane Util. Factor	1.00	1.00			0.95		0.95	0.95				
Frt	1.00	1.00			0.94		1.00	0.93				
Flt Protected	0.95	1.00			1.00		0.95	0.97				
Satd. Flow (prot)	1719	1810			3322		1649	1569				
Flt Permitted	0.11	1.00			1.00		0.95	0.97				
Satd. Flow (perm)	195	1810			3322		1649	1569				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	426	298	0	0	625	432	435	0	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	134	0	0	55	0	0	0	0
Lane Group Flow (vph)	426	298	0	0	923	0	291	223	0	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases	2						4					
Actuated Green, G (s)	57.7	37.1			33.4		22.5	22.5				
Effective Green, g (s)	57.7	37.1			33.4		22.5	22.5				
Actuated g/C Ratio	0.64	0.41			0.37		0.25	0.25				
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	473	746			1232		412	392				
v/s Ratio Prot	c0.21	0.16			0.28							
v/s Ratio Perm	c0.37						c0.18	0.14				
v/c Ratio	0.90	0.40			0.75		0.71	0.57				
Uniform Delay, d1	24.5	18.6			24.7		30.7	29.5				
Progression Factor	1.98	0.50			1.00		1.00	1.00				
Incremental Delay, d2	18.7	1.5			4.2		9.8	5.9				
Delay (s)	67.2	10.8			28.9		40.5	35.4				
Level of Service	E	B			C		D	D				
Approach Delay (s)		44.0			28.9			38.0			0.0	
Approach LOS		D			C			D			A	
Intersection Summary												
HCM 2000 Control Delay			35.7				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		13.5			
Intersection Capacity Utilization			71.7%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2045 Total PM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT	Ø1
Lane Configurations						
Traffic Volume (vph)	446	536	320	477	2	
Future Volume (vph)	446	536	320	477	2	
Turn Type	pm+pt	NA	NA	Perm	NA	
Protected Phases	5	2	6		4	1
Permitted Phases	2			4		
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	26.0	41.0	28.0	36.0	36.0	13.0
Total Split (%)	28.9%	45.6%	31.1%	40.0%	40.0%	14%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	C-Max	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90

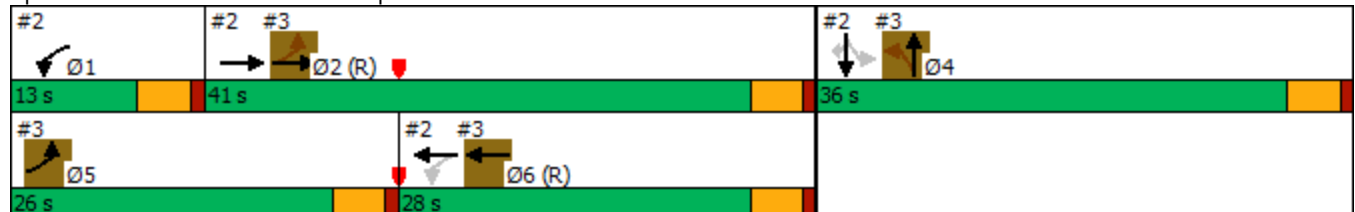
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



HCM Signalized Intersection Capacity Analysis

3: I-25 NB Ramp & Palmer Divide Ave

2045 Total PM_Realigned

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	536	0	0	320	225	477	2	329	0	0	0
Future Volume (vph)	446	536	0	0	320	225	477	2	329	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5				
Lane Util. Factor	1.00	1.00			0.95		0.95	0.95				
Frt	1.00	1.00			0.94		1.00	0.87				
Flt Protected	0.95	1.00			1.00		0.95	0.99				
Satd. Flow (prot)	1770	1863			3320		1681	1531				
Flt Permitted	0.24	1.00			1.00		0.95	0.99				
Satd. Flow (perm)	447	1863			3320		1681	1531				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	474	570	0	0	340	239	507	2	350	0	0	0
RTOR Reduction (vph)	0	0	0	0	137	0	0	228	0	0	0	0
Lane Group Flow (vph)	474	570	0	0	442	0	451	181	0	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases	2						4					
Actuated Green, G (s)	49.5	36.5			25.1		31.5	31.5				
Effective Green, g (s)	49.5	36.5			25.1		31.5	31.5				
Actuated g/C Ratio	0.55	0.41			0.28		0.35	0.35				
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	538	755			925		588	535				
v/s Ratio Prot	c0.19	0.31			0.13							
v/s Ratio Perm	c0.29						c0.27	0.12				
v/c Ratio	0.88	0.75			0.48		0.77	0.34				
Uniform Delay, d1	15.8	22.9			27.0		26.0	21.6				
Progression Factor	1.84	0.88			1.00		1.00	1.00				
Incremental Delay, d2	13.2	5.7			1.8		9.3	1.7				
Delay (s)	42.3	25.8			28.8		35.2	23.3				
Level of Service	D	C			C		D	C				
Approach Delay (s)		33.3			28.8			29.6			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM 2000 Control Delay			31.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		13.5			
Intersection Capacity Utilization			89.4%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

 **Site: 3 [2045 Total AM (Site Folder: County Line & I-25 NB)]**

County Line Rd & I-25 NB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: I-25 NB Ramp														
3	L2	383	3.0	416	3.0	0.381	10.1	LOS B	1.8	45.8	0.65	0.70	0.80	30.8
8	T1	1	3.0	1	3.0	0.381	9.6	LOS A	1.8	45.5	0.64	0.69	0.78	31.5
18	R2	118	3.0	128	3.0	0.381	9.6	LOS A	1.8	45.5	0.64	0.69	0.78	30.6
Approach		502	3.0	546	3.0	0.381	10.0	LOS A	1.8	45.8	0.65	0.70	0.79	30.8
East: County Line Rd														
6	T1	550	3.0	598	3.0	0.796	28.9	LOS D	8.6	220.8	0.88	1.28	2.17	25.7
16	R2	380	3.0	413	3.0	0.796	27.0	LOS D	8.6	220.8	0.88	1.28	2.17	25.5
Approach		930	3.0	1011	3.0	0.796	28.1	LOS D	8.6	220.8	0.88	1.28	2.17	25.6
West: County Line Rd														
5	L2	375	3.0	408	3.0	0.296	5.2	LOS A	0.0	0.0	0.00	0.00	0.00	35.1
2	T1	262	3.0	285	3.0	0.217	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		637	3.0	692	3.0	0.296	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	36.3
All Vehicles		2069	3.0	2249	3.0	0.796	16.6	LOS C	8.6	220.8	0.55	0.75	1.17	29.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 3 [2045 Total PM (Site Folder: County Line & I-25 NB)]

County Line Rd & I-25 NB Ramp
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: I-25 NB Ramp														
3	L2	477	3.0	518	3.0	0.863	42.5	LOS E	9.2	236.8	0.91	1.42	2.68	21.6
8	T1	2	3.0	2	3.0	0.863	39.5	LOS E	9.2	236.8	0.90	1.42	2.69	22.6
18	R2	329	3.0	358	3.0	0.863	39.5	LOS E	9.2	236.8	0.90	1.42	2.69	22.1
Approach		808	3.0	878	3.0	0.863	41.3	LOS E	9.2	236.8	0.91	1.42	2.69	21.8
East: County Line Rd														
6	T1	320	3.0	348	3.0	0.550	17.9	LOS C	3.1	78.5	0.77	0.92	1.29	29.4
16	R2	225	3.0	245	3.0	0.550	16.5	LOS C	3.1	78.5	0.75	0.91	1.27	29.0
Approach		545	3.0	592	3.0	0.550	17.3	LOS C	3.1	78.5	0.76	0.92	1.28	29.2
West: County Line Rd														
5	L2	446	3.0	485	3.0	0.397	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	35.3
2	T1	536	3.0	583	3.0	0.397	6.3	LOS A	0.0	0.0	0.00	0.00	0.00	38.0
Approach		982	3.0	1067	3.0	0.397	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	36.7
All Vehicles		2335	3.0	2538	3.0	0.863	21.0	LOS C	9.2	236.8	0.49	0.71	1.23	28.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 6th TWSC
4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

2024 Existing AM
07/25/2024

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	121	78	65	448	2	47	1	18	0	1	1
Future Vol, veh/h	3	121	78	65	448	2	47	1	18	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	146	94	78	540	2	57	1	22	0	1	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	542	0	0	240	0	0	899	899	193	910	945	541
Stage 1	-	-	-	-	-	-	201	201	-	697	697	-
Stage 2	-	-	-	-	-	-	698	698	-	213	248	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1012	-	-	1327	-	-	260	279	849	255	262	541
Stage 1	-	-	-	-	-	-	801	735	-	431	443	-
Stage 2	-	-	-	-	-	-	431	442	-	789	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1012	-	-	1327	-	-	241	254	849	231	239	541
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	254	-	231	239	-
Stage 1	-	-	-	-	-	-	797	731	-	429	406	-
Stage 2	-	-	-	-	-	-	393	405	-	764	697	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			21.3			15.9		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	300	1012	-	-	1327	-	-	332				
HCM Lane V/C Ratio	0.265	0.004	-	-	0.059	-	-	0.007				
HCM Control Delay (s)	21.3	8.6	0	-	7.9	0	-	15.9				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	1	0	-	-	0.2	-	-	0				

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	407	38	15	235	2	47	0	28	3	0	6
Future Vol, veh/h	10	407	38	15	235	2	47	0	28	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	442	41	16	255	2	51	0	30	3	0	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	257	0	0	483	0	0	777	774	463	788	793	256
Stage 1	-	-	-	-	-	-	485	485	-	288	288	-
Stage 2	-	-	-	-	-	-	292	289	-	500	505	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1308	-	-	1080	-	-	314	329	599	309	321	783
Stage 1	-	-	-	-	-	-	563	552	-	720	674	-
Stage 2	-	-	-	-	-	-	716	673	-	553	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1308	-	-	1080	-	-	305	319	599	287	312	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	319	-	287	312	-
Stage 1	-	-	-	-	-	-	556	545	-	711	663	-
Stage 2	-	-	-	-	-	-	698	662	-	519	534	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			17.3			12.4		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	373	1308	-	-	1080	-	-	497				
HCM Lane V/C Ratio	0.219	0.008	-	-	0.015	-	-	0.02				
HCM Control Delay (s)	17.3	7.8	0	-	8.4	0	-	12.4				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	133	124	74	492	2	139	1	26	0	1	1
Future Vol, veh/h	3	133	124	74	492	2	139	1	26	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	160	149	89	593	2	167	1	31	0	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	595	0	0	309	0	0	941	941	160	1031	1089	594
Stage 1	-	-	-	-	-	-	168	168	-	772	772	-
Stage 2	-	-	-	-	-	-	773	773	-	259	317	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	967	-	-	1252	-	-	243	263	885	211	215	505
Stage 1	-	-	-	-	-	-	834	759	-	392	409	-
Stage 2	-	-	-	-	-	-	392	409	-	746	654	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	967	-	-	1252	-	-	228	243	885	191	199	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	318	-	299	292	-
Stage 1	-	-	-	-	-	-	831	756	-	390	380	-
Stage 2	-	-	-	-	-	-	362	380	-	715	651	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.1			27			14.8		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	306	885	967	-	-	1252	-	-	370
HCM Lane V/C Ratio	0.551	0.035	0.004	-	-	0.071	-	-	0.007
HCM Control Delay (s)	30.3	9.2	8.7	-	-	8.1	-	-	14.8
HCM Lane LOS	D	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.1	0.1	0	-	-	0.2	-	-	0

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	447	138	23	258	2	115	0	34	3	0	7
Future Vol, veh/h	11	447	138	23	258	2	115	0	34	3	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	486	150	25	280	2	125	0	37	3	0	8
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	636	0	0	845	842	486	935	991	281
Stage 1	-	-	-	-	-	-	510	510	-	331	331	-
Stage 2	-	-	-	-	-	-	335	332	-	604	660	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1280	-	-	947	-	-	283	301	581	246	246	758
Stage 1	-	-	-	-	-	-	546	538	-	682	645	-
Stage 2	-	-	-	-	-	-	679	644	-	485	460	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1280	-	-	947	-	-	273	290	581	224	237	758
Mov Cap-2 Maneuver	-	-	-	-	-	-	391	392	-	331	335	-
Stage 1	-	-	-	-	-	-	541	533	-	676	628	-
Stage 2	-	-	-	-	-	-	654	627	-	450	456	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			16.9			11.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	391 581		1280	-	-	947	-	-	546			
HCM Lane V/C Ratio	0.32 0.064		0.009	-	-	0.026	-	-	0.02			
HCM Control Delay (s)	18.5 11.6		7.8	-	-	8.9	-	-	11.7			
HCM Lane LOS	C B		A	-	-	A	-	-	B			
HCM 95th %tile O(veh)	1.4 0.2		0	-	-	0.1	-	-	0.1			

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	137	133	74	497	2	149	1	26	0	1	1
Future Vol, veh/h	3	137	133	74	497	2	149	1	26	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	165	160	89	599	2	180	1	31	0	1	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	601	0	0	325	0	0	952	952	165	1047	1111	600
Stage 1	-	-	-	-	-	-	173	173	-	778	778	-
Stage 2	-	-	-	-	-	-	779	779	-	269	333	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	962	-	-	1235	-	-	239	259	879	206	209	501
Stage 1	-	-	-	-	-	-	829	756	-	389	407	-
Stage 2	-	-	-	-	-	-	389	406	-	737	644	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	962	-	-	1235	-	-	224	239	879	187	193	501
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	315	-	295	288	-
Stage 1	-	-	-	-	-	-	826	753	-	387	378	-
Stage 2	-	-	-	-	-	-	359	377	-	707	641	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.1			29.5			14.9		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	303 879		962	-	-	1235	-	-	366			
HCM Lane V/C Ratio	0.596 0.036		0.004	-	-	0.072	-	-	0.007			
HCM Control Delay (s)	33 9.2		8.8	-	-	8.1	-	-	14.9			
HCM Lane LOS	D A		A	-	-	A	-	-	B			
HCM 95th %tile Q(veh)	3.6 0.1		0	-	-	0.2	-	-	0			

HCM 6th TWSC
4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

2028 Total PM_Realigned

11/14/2024

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	453	151	23	264	2	128	0	34	3	0	7
Future Vol, veh/h	11	453	151	23	264	2	128	0	34	3	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	492	164	25	287	2	139	0	37	3	0	8
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	289	0	0	656	0	0	858	855	492	955	1018	288
Stage 1	-	-	-	-	-	-	516	516	-	338	338	-
Stage 2	-	-	-	-	-	-	342	339	-	617	680	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1273	-	-	931	-	-	277	296	577	238	237	751
Stage 1	-	-	-	-	-	-	542	534	-	676	641	-
Stage 2	-	-	-	-	-	-	673	640	-	477	451	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1273	-	-	931	-	-	267	285	577	217	228	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	386	388	-	325	327	-
Stage 1	-	-	-	-	-	-	537	529	-	670	624	-
Stage 2	-	-	-	-	-	-	648	623	-	442	447	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			17.9			11.8		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	386		577	1273	-	-	931	-	-	539		
HCM Lane V/C Ratio	0.36		0.064	0.009	-	-	0.027	-	-	0.02		
HCM Control Delay (s)	19.5		11.7	7.9	-	-	9	-	-	11.8		
HCM Lane LOS	C		B	A	-	-	A	-	-	B		
HCM 95th %tile Q(veh)	1.6		0.2	0	-	-	0.1	-	-	0.1		

Intersection												
Int Delay, s/veh	20.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	198	166	109	733	3	164	2	35	0	2	2
Future Vol, veh/h	5	198	166	109	733	3	164	2	35	0	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	239	200	131	883	4	198	2	42	0	2	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	887	0	0	439	0	0	1400	1400	239	1520	1598	885
Stage 1	-	-	-	-	-	-	251	251	-	1147	1147	-
Stage 2	-	-	-	-	-	-	1149	1149	-	373	451	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	751	-	-	1121	-	-	~ 118	140	800	97	106	344
Stage 1	-	-	-	-	-	-	753	699	-	242	274	-
Stage 2	-	-	-	-	-	-	242	273	-	648	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	751	-	-	1121	-	-	~ 105	123	800	82	93	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 174	198	-	178	180	-
Stage 1	-	-	-	-	-	-	747	693	-	240	242	-
Stage 2	-	-	-	-	-	-	210	241	-	607	566	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.1			140.5			20.6		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	174 800		751	-	-	1121	-	-	236			
HCM Lane V/C Ratio	1.149 0.053		0.008	-	-	0.117	-	-	0.02			
HCM Control Delay (s)	168.1 9.8		9.8	-	-	8.6	-	-	20.6			
HCM Lane LOS	F A		A	-	-	A	-	-	C			
HCM 95th %tile Q(veh)	10.4 0.2		0	-	-	0.4	-	-	0.1			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	666	158	32	384	3	140	0	49	5	0	10
Future Vol, veh/h	16	666	158	32	384	3	140	0	49	5	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	724	172	35	417	3	152	0	53	5	0	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	896	0	0	1252	1248	724	1360	1419	419
Stage 1	-	-	-	-	-	-	758	758	-	489	489	-
Stage 2	-	-	-	-	-	-	494	490	-	871	930	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1139	-	-	757	-	-	~ 149	173	426	126	137	634
Stage 1	-	-	-	-	-	-	399	415	-	561	549	-
Stage 2	-	-	-	-	-	-	557	549	-	346	346	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	757	-	-	~ 140	163	426	105	129	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	264	280	-	202	229	-
Stage 1	-	-	-	-	-	-	393	409	-	553	524	-
Stage 2	-	-	-	-	-	-	522	524	-	298	341	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.8			30.3			15.2		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	264	426	1139	-	-	757	-	-	370			
HCM Lane V/C Ratio	0.576	0.125	0.015	-	-	0.046	-	-	0.044			
HCM Control Delay (s)	35.7	14.7	8.2	-	-	10	-	-	15.2			
HCM Lane LOS	E	B	A	-	-	A	-	-	C			
HCM 95th %tile Q(veh)	3.3	0.4	0	-	-	0.1	-	-	0.1			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Timings

2045 Total AM_Realigned

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

11/14/2024

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	5	202	175	109	738	174	2	35	2
Future Volume (vph)	5	202	175	109	738	174	2	35	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		4	
Detector Phase	2	2	2	6	6	4	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.5	37.5	37.5	37.5	37.5	22.5	22.5	22.5	22.5
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 58.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

 Ø2	 Ø4
37.5 s	22.5 s
 Ø6	 Ø8
37.5 s	22.5 s

HCM 6th Signalized Intersection Summary

2045 Total AM_Realigned

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	202	175	109	738	3	174	2	35	0	2	2
Future Volume (veh/h)	5	202	175	109	738	3	174	2	35	0	2	2
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	1826	1826	1826	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	220	190	118	802	3	189	2	38	0	2	2
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, %	5	5	5	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	1180	1000	724	1203	5	386	3	281	0	152	152
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.18	0.18	0.18	0.00	0.18	0.18
Sat Flow, veh/h	660	1826	1547	976	1862	7	1386	15	1585	0	858	858
Grp Volume(v), veh/h	5	220	190	118	0	805	191	0	38	0	0	4
Grp Sat Flow(s),veh/h/ln	660	1826	1547	976	0	1869	1401	0	1585	0	0	1716
Q Serve(g_s), s	0.2	2.5	2.5	2.8	0.0	13.7	6.6	0.0	1.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	13.9	2.5	2.5	5.3	0.0	13.7	6.7	0.0	1.0	0.0	0.0	0.1
Prop In Lane	1.00		1.00	1.00		0.00	0.99		1.00	0.00		0.50
Lane Grp Cap(c), veh/h	391	1180	1000	724	0	1208	389	0	281	0	0	305
V/C Ratio(X)	0.01	0.19	0.19	0.16	0.00	0.67	0.49	0.00	0.14	0.00	0.00	0.01
Avail Cap(c_a), veh/h	391	1180	1000	724	0	1208	637	0	559	0	0	605
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	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	3.6	3.6	4.7	0.0	5.6	20.1	0.0	17.7	0.0	0.0	17.3
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.5	0.0	2.9	1.0	0.0	0.2	0.0	0.0	0.0
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	0.0	0.6	0.6	0.4	0.0	3.0	2.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	4.0	4.1	5.2	0.0	8.5	21.0	0.0	17.9	0.0	0.0	17.3
LnGrp LOS	A	A	A	A	A	A	C	A	B	A	A	B
Approach Vol, veh/h	415				923				229			
Approach Delay, s/veh	4.1				8.1				20.5			
Approach LOS	A				A				C			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	37.5			13.6			37.5			13.6		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	33.0			18.0			33.0			18.0		
Max Q Clear Time (g_c+l1), s	15.9			8.7			15.7			2.1		
Green Ext Time (p_c), s	1.8			0.7			5.6			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	8.9											
HCM 6th LOS	A											

Timings

2045 Total PM_Realigned

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

11/14/2024

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	16	672	171	32	390	153	0	49	5	0
Future Volume (vph)	16	672	171	32	390	153	0	49	5	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	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
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.5	37.5	37.5	37.5	37.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

 Ø2	 Ø4
37.5 s	22.5 s
 Ø6	 Ø8
37.5 s	22.5 s

HCM 6th Signalized Intersection Summary

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

2045 Total PM_Realigned

11/14/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	672	171	32	390	3	153	0	49	5	0	10
Future Volume (veh/h)	16	672	171	32	390	3	153	0	49	5	0	10
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	17	730	186	35	424	3	166	0	53	5	0	11
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	645	1187	1006	384	1178	8	356	0	304	111	37	126
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.00	0.19	0.19	0.00	0.19
Sat Flow, veh/h	961	1870	1585	610	1855	13	1134	0	1585	104	194	657
Grp Volume(v), veh/h	17	730	186	35	0	427	166	0	53	16	0	0
Grp Sat Flow(s),veh/h/ln	961	1870	1585	610	0	1868	1134	0	1585	955	0	0
Q Serve(g_s), s	0.4	12.1	2.5	1.9	0.0	5.6	0.1	0.0	1.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.0	12.1	2.5	14.0	0.0	5.6	7.8	0.0	1.5	7.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.31		0.69
Lane Grp Cap(c), veh/h	645	1187	1006	384	0	1186	356	0	304	274	0	0
V/C Ratio(X)	0.03	0.61	0.18	0.09	0.00	0.36	0.47	0.00	0.17	0.06	0.00	0.00
Avail Cap(c_a), veh/h	645	1187	1006	384	0	1186	573	0	549	506	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	5.7	3.9	9.8	0.0	4.5	20.1	0.0	17.6	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.4	0.4	0.1	0.0	0.2	0.9	0.0	0.3	0.1	0.0	0.0
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	0.1	3.6	0.6	0.2	0.0	1.0	1.8	0.0	0.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	8.1	4.3	9.9	0.0	4.7	21.1	0.0	17.8	17.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	B	B	A	A
Approach Vol, veh/h	933				462				219			
Approach Delay, s/veh	7.3				5.1				20.3			
Approach LOS	A				A				C			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	37.5			14.5			37.5			14.5		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	33.0			18.0			33.0			18.0		
Max Q Clear Time (g_c+l1), s	14.1			9.8			16.0			9.8		
Green Ext Time (p_c), s	5.9			0.6			2.5			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	8.5											
HCM 6th LOS	A											

HCM 6th TWSC
5: Right Out Only Access & Palmer Divide Ave

2028 Total AM_Realigned

11/14/2024

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	488	0	0	751	0	333
Future Vol, veh/h	488	0	0	751	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
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	530	0	0	816	0	362
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	-	-	-	-	265
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	733
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	733
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		14.6		
HCM LOS				B		
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	733	-	-			
HCM Lane V/C Ratio	0.494	-	-			
HCM Control Delay (s)	14.6	-	-			
HCM Lane LOS	B	-	-			
HCM 95th %tile Q(veh)	2.8	-	-			

HCM 6th TWSC
5: Right Out Only Access & Palmer Divide Ave

2028 Total PM_Realigned

11/14/2024

Intersection

Int Delay, s/veh 4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	614	0	0	962	0	407
Future Vol, veh/h	614	0	0	962	0	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
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	667	0	0	1046	0	442

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

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	662	-	-
HCM Lane V/C Ratio	0.668	-	-
HCM Control Delay (s)	20.7	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	5.1	-	-

HCM 6th TWSC
5: Right Out Only Access & Palmer Divide Ave

2045 Total AM_Realigned

11/14/2024

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	567	0	0	815	0	333
Future Vol, veh/h	567	0	0	815	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
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	616	0	0	886	0	362
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	-	-	-	-	308
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	688
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	688
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		15.9		
HCM LOS				C		
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	688	-	-			
HCM Lane V/C Ratio	0.526	-	-			
HCM Control Delay (s)	15.9	-	-			
HCM Lane LOS	C	-	-			
HCM 95th %tile Q(veh)	3.1	-	-			

HCM 6th TWSC
5: Right Out Only Access & Palmer Divide Ave

2045 Total PM_Realigned

11/14/2024

Intersection						
Int Delay, s/veh	4.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	716	0	0	1039	0	407
Future Vol, veh/h	716	0	0	1039	0	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
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	778	0	0	1129	0	442
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	-	-	-	-	389
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	610
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	610
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		24.9		
HCM LOS				C		
Minor Lane/Major Mvmt	NBLn1	EBT	WBT			
Capacity (veh/h)	610	-	-			
HCM Lane V/C Ratio	0.725	-	-			
HCM Control Delay (s)	24.9	-	-			
HCM Lane LOS	C	-	-			
HCM 95th %tile Q(veh)	6.1	-	-			

Timings

2028 Total AM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

	↙	↖	↑	↘	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↙	↖	↑	↘	↑
Traffic Volume (vph)	4	269	87	515	131
Future Volume (vph)	4	269	87	515	131
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90

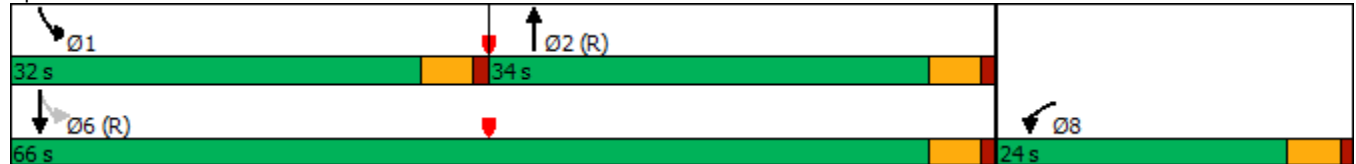
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access



HCM 6th Signalized Intersection Summary

6: Beacon Lite Rd & North Access

2028 Total AM_Realigned

11/14/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	269	87	4	515	131
Future Volume (veh/h)	4	269	87	4	515	131
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	0	95	4	560	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	9		1375	58	2320	1673
Arrive On Green	0.01	0.00	0.77	0.77	0.12	1.00
Sat Flow, veh/h	1781	1585	1782	75	3456	1870
Grp Volume(v), veh/h	4	0	0	99	560	142
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1857	1728	1870
Q Serve(g_s), s	0.2	0.0	0.0	1.2	2.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	1.2	2.5	0.0
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	9		0	1433	2320	1673
V/C Ratio(X)	0.42		0.00	0.07	0.24	0.08
Avail Cap(c_a), veh/h	386		0	1433	3125	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	44.6	0.0	0.0	2.5	1.0	0.0
Incr Delay (d2), s/veh	27.6	0.0	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.2	0.0	0.0	2.6	1.0	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	4		99			702
Approach Delay, s/veh	72.2		2.6			0.8
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	74.0			85.0	5.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+l1), s	4.5	3.2			2.0	2.2
Green Ext Time (p_c), s	2.0	0.5			0.8	0.0
Intersection Summary						
HCM 6th Ctrl Delay			1.4			
HCM 6th LOS			A			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2028 Total PM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

	↙	↖	↑	↘	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↘	↖	↑	↘↖	↑
Traffic Volume (vph)	5	329	132	672	200
Future Volume (vph)	5	329	132	672	200
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90

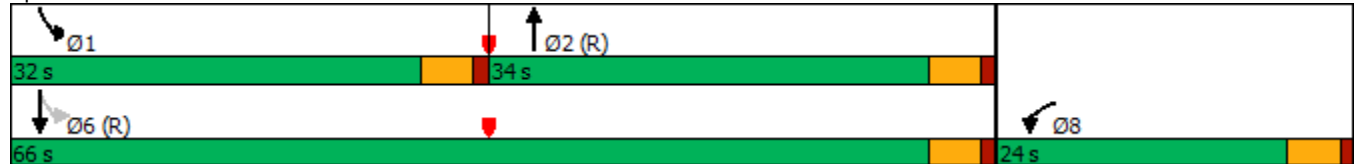
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access



HCM 6th Signalized Intersection Summary

6: Beacon Lite Rd & North Access

2028 Total PM_Realigned

11/14/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	329	132	5	672	200
Future Volume (veh/h)	5	329	132	5	672	200
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	0	143	5	730	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12		1347	47	2235	1671
Arrive On Green	0.01	0.00	0.75	0.75	0.16	1.00
Sat Flow, veh/h	1781	1585	1796	63	3456	1870
Grp Volume(v), veh/h	5	0	0	148	730	217
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1859	1728	1870
Q Serve(g_s), s	0.3	0.0	0.0	1.9	3.7	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	1.9	3.7	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	12		0	1394	2235	1671
V/C Ratio(X)	0.43		0.00	0.11	0.33	0.13
Avail Cap(c_a), veh/h	386		0	1394	2967	1671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.92	0.92
Uniform Delay (d), s/veh	44.5	0.0	0.0	3.1	1.1	0.0
Incr Delay (d2), s/veh	23.1	0.0	0.0	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.7	0.0	0.0	3.2	1.2	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	5		148			947
Approach Delay, s/veh	67.7		3.2			0.9
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.9	72.0			84.9	5.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+l1), s	5.7	3.9			2.0	2.3
Green Ext Time (p_c), s	2.7	0.7			1.3	0.0
Intersection Summary						
HCM 6th Ctrl Delay			1.5			
HCM 6th LOS			A			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2045 Total AM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

	↙	↖	↑	↘	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↙	↖	↑	↘	↓
Traffic Volume (vph)	4	269	99	515	137
Future Volume (vph)	4	269	99	515	137
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90

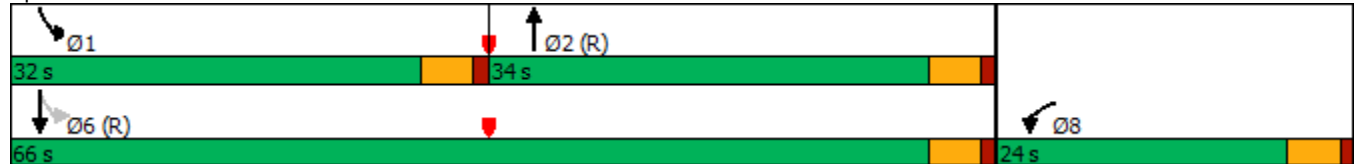
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access



HCM 6th Signalized Intersection Summary

6: Beacon Lite Rd & North Access

2045 Total AM_Realigned

11/14/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	269	99	4	515	137
Future Volume (veh/h)	4	269	99	4	515	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	0	108	4	560	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	9		1383	51	2293	1673
Arrive On Green	0.01	0.00	0.77	0.77	0.12	1.00
Sat Flow, veh/h	1781	1585	1792	66	3456	1870
Grp Volume(v), veh/h	4	0	0	112	560	149
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1858	1728	1870
Q Serve(g_s), s	0.2	0.0	0.0	1.3	2.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	1.3	2.5	0.0
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	9		0	1435	2293	1673
V/C Ratio(X)	0.42		0.00	0.08	0.24	0.09
Avail Cap(c_a), veh/h	386		0	1435	3098	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	44.6	0.0	0.0	2.5	1.0	0.0
Incr Delay (d2), s/veh	27.6	0.0	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.4	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.2	0.0	0.0	2.6	1.0	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	4		112			709
Approach Delay, s/veh	72.2		2.6			0.8
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	74.0			85.0	5.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+I1), s	4.5	3.3			2.0	2.2
Green Ext Time (p_c), s	2.0	0.5			0.9	0.0
Intersection Summary						
HCM 6th Ctrl Delay			1.4			
HCM 6th LOS			A			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2045 Total PM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

	↖	↗	↑	↘	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↖	↗	↑	↘	↓
Traffic Volume (vph)	5	329	159	672	222
Future Volume (vph)	5	329	159	672	222
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90

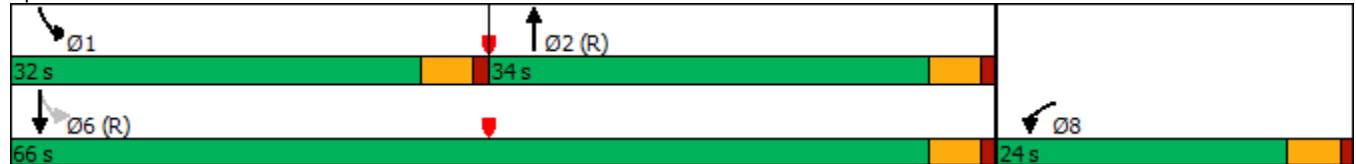
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access



HCM 6th Signalized Intersection Summary

6: Beacon Lite Rd & North Access

2045 Total PM_Realigned

11/14/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	329	159	5	672	222
Future Volume (veh/h)	5	329	159	5	672	222
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	0	173	5	730	241
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12		1356	39	2176	1671
Arrive On Green	0.01	0.00	0.75	0.75	0.16	1.00
Sat Flow, veh/h	1781	1585	1809	52	3456	1870
Grp Volume(v), veh/h	5	0	0	178	730	241
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1861	1728	1870
Q Serve(g_s), s	0.3	0.0	0.0	2.4	3.7	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	2.4	3.7	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	12		0	1396	2176	1671
V/C Ratio(X)	0.43		0.00	0.13	0.34	0.14
Avail Cap(c_a), veh/h	386		0	1396	2909	1671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.89	0.89
Uniform Delay (d), s/veh	44.5	0.0	0.0	3.1	1.1	0.0
Incr Delay (d2), s/veh	23.1	0.0	0.0	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.7	0.0	0.0	3.3	1.2	0.2
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	5		178			971
Approach Delay, s/veh	67.7		3.3			0.9
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.9	72.0			84.9	5.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+l1), s	5.7	4.4			2.0	2.3
Green Ext Time (p_c), s	2.7	0.9			1.5	0.0
Intersection Summary						
HCM 6th Ctrl Delay			1.6			
HCM 6th LOS			A			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	6.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	63	28	6	119	16
Future Vol, veh/h	5	63	28	6	119	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
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	5	68	30	7	129	17
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	309	34	0	0	37	0
Stage 1	34	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	683	1039	-	-	1574	-
Stage 1	988	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	1039	-	-	1574	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.9	0		6.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	991	1574	-	
HCM Lane V/C Ratio	-	-	0.075	0.082	-	
HCM Control Delay (s)	-	-	8.9	7.5	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-	

Intersection						
Int Delay, s/veh	5.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	77	60	8	156	49
Future Vol, veh/h	8	77	60	8	156	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
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	9	84	65	9	170	53
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	463	70	0	0	74	0
Stage 1	70	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	557	993	-	-	1526	-
Stage 1	953	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	495	993	-	-	1526	-
Mov Cap-2 Maneuver	495	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.4	0		5.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		907	1526	
HCM Lane V/C Ratio	-	-		0.102	0.111	
HCM Control Delay (s)	-	-		9.4	7.7	
HCM Lane LOS	-	-		A	A	
HCM 95th %tile Q(veh)	-	-		0.3	0.4	

Intersection						
Int Delay, s/veh	5.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	63	40	6	119	22
Future Vol, veh/h	5	63	40	6	119	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
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	5	68	43	7	129	24
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	329	47	0	0	50	0
Stage 1	47	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	665	1022	-	-	1557	-
Stage 1	975	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	610	1022	-	-	1557	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9	0		6.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	974	1557	-	
HCM Lane V/C Ratio	-	-	0.076	0.083	-	
HCM Control Delay (s)	-	-	9	7.5	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-	

Intersection						
Int Delay, s/veh	5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	77	87	8	156	71
Future Vol, veh/h	8	77	87	8	156	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
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	9	84	95	9	170	77
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	517	100	0	0	104	0
Stage 1	100	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	518	956	-	-	1488	-
Stage 1	924	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	956	-	-	1488	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.6	0		5.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	868	1488	-	
HCM Lane V/C Ratio	-	-	0.106	0.114	-	
HCM Control Delay (s)	-	-	9.6	7.7	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0.4	-	

APPENDIX F

Signal Warrant Analysis Worksheets

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET:

Beacon Lite/County Line

OF APPROACH LANES:

2

MINOR STREET:

County Line

OF APPROACH LANES:

1

CITY, STATE:

El Paso County, CO

COMMENTS:

2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					600	150		900	75		480	120		720	60			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	1,117	141	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
08:00 AM	TO	09:00 AM	1,005	127	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y		
09:00 AM	TO	10:00 AM	0	0														
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM																
04:00 PM	TO	05:00 PM	1,164	135	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
05:00 PM	TO	06:00 PM	1,293	150	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
06:00 PM	TO	07:00 PM																
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			4,579	553	4	1	1	4	4	4	4	4	4	4	4	4	3	0
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B					4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			NOT SATISFIED			NOT SATISFIED					NOT SATISFIED	NOT SATISFIED

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET:

Palmer Divide

OF APPROACH LANES:

2

MINOR STREET:

I-25 SB

OF APPROACH LANES:

1

CITY, STATE:

El Paso County, CO

COMMENTS:

2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					600	150		900	75		480	120		720	60			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	1,572	99	Y			Y	Y	Y	Y			Y	Y	Y	Y	
08:00 AM	TO	09:00 AM	1,415	90	Y			Y	Y	Y	Y			Y	Y	Y	Y	
09:00 AM	TO	10:00 AM	0	0														
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM																
04:00 PM	TO	05:00 PM	1,369	237	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
05:00 PM	TO	06:00 PM	1,521	263	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
06:00 PM	TO	07:00 PM																
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			5,877	689	4	2	2	4	4	4	4	2	2	4	4	4	4	2
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B					4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			NOT SATISFIED			NOT SATISFIED					SATISFIED	SATISFIED

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET:

Palmer Divide

OF APPROACH LANES:

2

MINOR STREET:

I-25 NB

OF APPROACH LANES:

1

CITY, STATE:

El Paso County, CO

COMMENTS:

2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					600	150		900	75		480	120		720	60			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	1,199	357	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
08:00 AM	TO	09:00 AM	1,080	321	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
09:00 AM	TO	10:00 AM	0	0														
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM																
04:00 PM	TO	05:00 PM	970	365	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
05:00 PM	TO	06:00 PM	1,078	406	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
06:00 PM	TO	07:00 PM																
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			4,327	1,449	4 4 4			4 4 4			4 4 4			4 4 4			4	4
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			NOT SATISFIED			NOT SATISFIED						SATISFIED	SATISFIED

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET:

Beacon Lite

OF APPROACH LANES:

2

MINOR STREET:

North Access

OF APPROACH LANES:

1

CITY, STATE:

El Paso County, CO

COMMENTS:

2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

N

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					600	150		900	75		480	120		720	60			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	737	4	Y						Y			Y				
08:00 AM	TO	09:00 AM	664	4	Y						Y							
09:00 AM	TO	10:00 AM	0	0														
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM																
04:00 PM	TO	05:00 PM	1,009	5	Y			Y			Y			Y				
05:00 PM	TO	06:00 PM	909	5	Y			Y			Y			Y				
06:00 PM	TO	07:00 PM																
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			3,319	18	4	0	0	2	0	0	4	0	0	3	0	0	0	0
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			NOT SATISFIED			NOT SATISFIED						NOT SATISFIED	NOT SATISFIED



APPENDIX G

Queue Analysis Worksheets

Queues

2028 Total AM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	160	22	22	394	711	142
v/c Ratio	0.61	0.09	0.04	0.15	0.29	0.13
Control Delay	45.0	13.4	3.6	3.5	5.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	13.4	3.6	3.5	5.5	1.8
Queue Length 50th (ft)	86	0	3	28	43	1
Queue Length 95th (ft)	137	19	7	36	107	19
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	481	446	565	2657	2441	1134
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.05	0.04	0.15	0.29	0.13
Intersection Summary						

Queues

2028 Total PM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	190	30	32	508	960	133
v/c Ratio	0.65	0.10	0.08	0.20	0.42	0.12
Control Delay	45.1	11.4	4.5	4.5	6.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	11.4	4.5	4.5	6.3	1.3
Queue Length 50th (ft)	102	0	5	44	76	0
Queue Length 95th (ft)	155	21	12	75	127	m11
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	442	418	414	2599	2300	1073
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.07	0.08	0.20	0.42	0.12

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2045 Total AM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	238	22	23	407	718	208
v/c Ratio	0.70	0.07	0.05	0.16	0.31	0.19
Control Delay	44.4	11.5	5.0	4.9	7.8	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	11.5	5.0	4.9	7.8	2.0
Queue Length 50th (ft)	127	0	4	35	66	2
Queue Length 95th (ft)	184	17	11	65	122	m23
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	521	481	511	2503	2287	1094
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.05	0.05	0.16	0.31	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2045 Total PM_Realigned

10: Beacon Lite Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	277	31	34	536	984	197
v/c Ratio	0.73	0.09	0.09	0.22	0.46	0.19
Control Delay	44.4	9.6	6.0	6.0	6.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	9.6	6.0	6.0	6.9	0.9
Queue Length 50th (ft)	148	0	6	56	80	0
Queue Length 95th (ft)	207	20	17	94	132	m5
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	501	470	367	2431	2141	1033
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.07	0.09	0.22	0.46	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2028 Total AM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	498	414	351	483	237	225
v/c Ratio	0.33	0.45	0.60	0.37	0.54	0.42
Control Delay	15.7	2.6	14.9	24.3	25.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	15.7	2.6	14.9	24.3	26.2	6.5
Queue Length 50th (ft)	96	1	112	89	87	0
Queue Length 95th (ft)	133	20	179	128	166	56
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1513	914	641	1289	437	533
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	13	0	0	0	41	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.45	0.55	0.37	0.60	0.42
Intersection Summary						

Queues

2028 Total PM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	541	488	184	529	384	355
v/c Ratio	0.37	0.31	0.47	0.51	0.65	0.47
Control Delay	15.5	0.6	20.6	35.7	29.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	0.6	20.6	35.7	29.8	4.7
Queue Length 50th (ft)	82	0	79	133	183	0
Queue Length 95th (ft)	116	2	m127	171	288	60
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1462	1568	390	1031	588	757
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	24	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.31	0.47	0.51	0.65	0.47

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2045 Total AM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	559	442	494	544	268	253
v/c Ratio	0.38	0.28	0.80	0.41	0.68	0.48
Control Delay	16.8	0.5	21.9	23.0	36.4	7.1
Queue Delay	0.0	0.0	0.0	0.3	3.6	0.0
Total Delay	16.8	0.5	21.9	23.4	40.0	7.1
Queue Length 50th (ft)	114	0	169	93	125	0
Queue Length 95th (ft)	148	0	m#275	m138	#218	61
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1460	1583	650	1314	392	529
Starvation Cap Reductn	0	0	0	309	0	0
Spillback Cap Reductn	12	0	0	0	62	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.28	0.76	0.54	0.81	0.48

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2045 Total PM_Realigned

2: Palmer Divide Ave & I-25 SB Ramp

11/14/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	595	527	253	576	481	411
v/c Ratio	0.42	0.34	0.66	0.59	0.82	0.52
Control Delay	15.8	0.6	23.0	33.7	39.4	4.9
Queue Delay	0.1	0.0	0.0	0.2	2.0	0.0
Total Delay	15.9	0.6	23.0	34.0	41.4	4.9
Queue Length 50th (ft)	101	0	103	135	255	0
Queue Length 95th (ft)	130	3	m145	171	#430	63
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1421	1568	385	978	589	793
Starvation Cap Reductn	0	0	0	71	0	0
Spillback Cap Reductn	136	0	0	0	36	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.34	0.66	0.64	0.87	0.52

Intersection Summary

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

Queue shown is maximum after two cycles.

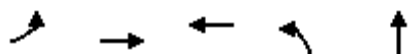
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2028 Total AM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



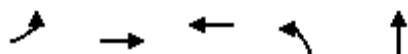
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	405	210	748	260	245
v/c Ratio	0.78	0.27	0.56	0.58	0.47
Control Delay	46.6	9.1	20.0	34.4	16.3
Queue Delay	0.6	0.0	0.0	0.0	0.0
Total Delay	47.2	9.1	20.0	34.4	16.3
Queue Length 50th (ft)	170	29	133	134	55
Queue Length 95th (ft)	262	46	205	212	123
Internal Link Dist (ft)		272	582		210
Turn Bay Length (ft)					
Base Capacity (vph)	617	774	1327	448	523
Starvation Cap Reductn	47	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.27	0.56	0.58	0.47
Intersection Summary					

Queues

2028 Total PM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



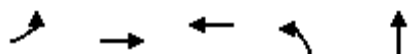
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	454	403	417	383	352
v/c Ratio	0.76	0.52	0.38	0.65	0.54
Control Delay	27.8	17.4	16.6	30.9	15.8
Queue Delay	0.0	0.6	0.0	0.0	0.0
Total Delay	27.8	18.0	16.6	30.9	15.8
Queue Length 50th (ft)	144	101	57	190	85
Queue Length 95th (ft)	230	154	102	295	174
Internal Link Dist (ft)		272	582		210
Turn Bay Length (ft)					
Base Capacity (vph)	633	777	1096	588	649
Starvation Cap Reductn	1	123	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.62	0.38	0.65	0.54
Intersection Summary					

Queues

2045 Total AM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	426	298	1057	291	278
v/c Ratio	0.90	0.40	0.77	0.71	0.62
Control Delay	64.8	11.2	24.8	41.5	28.8
Queue Delay	4.0	0.2	0.0	0.3	0.2
Total Delay	68.8	11.5	24.8	41.8	29.0
Queue Length 50th (ft)	226	49	230	158	108
Queue Length 95th (ft)	#341	70	301	246	190
Internal Link Dist (ft)		272	582		210
Turn Bay Length (ft)					
Base Capacity (vph)	506	746	1368	412	447
Starvation Cap Reductn	37	103	0	0	0
Spillback Cap Reductn	0	0	5	8	9
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.46	0.78	0.72	0.63

Intersection Summary

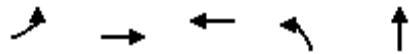
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2045 Total PM_Realigned

3: I-25 NB Ramp & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	474	570	579	451	408
v/c Ratio	0.88	0.75	0.54	0.77	0.53
Control Delay	44.6	26.6	20.7	36.3	7.1
Queue Delay	1.1	0.9	0.0	0.0	0.0
Total Delay	45.7	27.5	20.7	36.3	7.1
Queue Length 50th (ft)	204	165	99	236	23
Queue Length 95th (ft)	m#320	m424	153	#391	100
Internal Link Dist (ft)		272	582		210
Turn Bay Length (ft)					
Base Capacity (vph)	561	755	1063	588	763
Starvation Cap Reductn	16	47	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.81	0.54	0.77	0.53

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2045 Total AM_Realigned

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	220	190	118	805	191	38	4
v/c Ratio	0.02	0.19	0.18	0.16	0.69	0.64	0.10	0.01
Control Delay	6.0	6.2	1.7	6.5	13.0	29.7	6.8	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	6.2	1.7	6.5	13.0	29.7	6.8	12.8
Queue Length 50th (ft)	1	28	0	14	156	56	0	1
Queue Length 95th (ft)	5	67	22	42	#373	109	18	6
Internal Link Dist (ft)		582			1847	276		26
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	259	1129	1030	721	1160	417	515	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.18	0.16	0.69	0.46	0.07	0.01

Intersection Summary

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

Queue shown is maximum after two cycles.

Queues

2045 Total PM_Realigned

4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

11/14/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	17	730	186	35	427	166	53	16
v/c Ratio	0.03	0.57	0.16	0.09	0.33	0.56	0.14	0.05
Control Delay	5.5	9.4	1.6	6.3	6.5	26.8	6.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	9.4	1.6	6.3	6.5	26.8	6.5	5.3
Queue Length 50th (ft)	2	121	0	4	56	47	0	0
Queue Length 95th (ft)	10	286	22	17	132	95	21	8
Internal Link Dist (ft)		582			1847	276		26
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	630	1278	1144	379	1277	451	550	512
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.57	0.16	0.09	0.33	0.37	0.10	0.03
Intersection Summary								

Queues

2028 Total AM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

					
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	4	292	99	560	142
v/c Ratio	0.04	0.18	0.07	0.25	0.08
Control Delay	40.0	0.3	3.0	2.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.0	2.3	1.5
Queue Length 50th (ft)	2	0	7	0	0
Queue Length 95th (ft)	13	0	34	108	61
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1475	2505	1799
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.07	0.22	0.08
Intersection Summary					

Queues

2028 Total PM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

					
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	358	148	730	217
v/c Ratio	0.04	0.23	0.10	0.33	0.12
Control Delay	40.0	0.3	3.4	2.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.4	2.9	1.6
Queue Length 50th (ft)	3	0	11	1	0
Queue Length 95th (ft)	14	0	52	161	87
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1459	2440	1798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.23	0.10	0.30	0.12
Intersection Summary					

Queues

2045 Total AM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

					
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	4	292	112	560	149
v/c Ratio	0.04	0.18	0.08	0.25	0.08
Control Delay	40.0	0.3	3.0	2.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.0	2.1	1.4
Queue Length 50th (ft)	2	0	8	0	0
Queue Length 95th (ft)	13	0	38	105	58
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1475	2488	1799
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.08	0.23	0.08
Intersection Summary					

Queues

2045 Total PM_Realigned

6: Beacon Lite Rd & North Access

11/14/2024

					
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	358	178	730	241
v/c Ratio	0.04	0.23	0.12	0.34	0.13
Control Delay	40.0	0.3	3.4	2.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.4	2.7	1.6
Queue Length 50th (ft)	3	0	13	1	0
Queue Length 95th (ft)	14	0	61	157	94
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1460	2403	1798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.23	0.12	0.30	0.13
Intersection Summary					



APPENDIX H

Cap-X and ICAT Tool Worksheets

Capacity Analysis for Planning of Junctions

Dynamic Results Summary

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Pedestrian Accommodations	Bicycle Accommodations
Partial Cloverleaf B N-S	0.31	1	Good	Excellent
Partial Cloverleaf A N-S	0.35	2	Good	Excellent
Partial Cloverleaf A E-W	0.38	3	Good	Excellent
Diverging Diamond Interchange N-S	0.39	4	Good	Excellent
Partial Cloverleaf B E-W	0.42	5	Good	Excellent
Diverging Diamond Interchange E-W	0.44	6	Good	Excellent
Displaced Left Turn (Interchange) E-W	0.45	7	Good	Excellent
Diamond N-S	0.55	8	Good	Fair
Single Point N-S	0.57	9	Good	Excellent
Singe Point Diamond w/ RAB N-S	0.61	10	Good	Excellent

Use the "yes/no" drop-down menus in Step 2 (Base and Alt Selection) to exclude intersection types from summary rankings, if they are not applicable.



ICAT STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

Developed and Maintained in Cooperation with Georgia DOT

CDOT ICAT Version 1.2 | Release Date: 4/26/2021

CDOT Project Number: 0000000

Project Location: Palmer Divi @ NB Off-Ramp /

Existing Intersection Control: Conventional Minor Stop

County/Region: El Paso / CDOT Region 2

Area Type: Urban

Prepared by: 0

Date: 1/0/1900

Type of Project: Operational Improvement Project

Existing / Design Year No-Build Traffic Operations

Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	--select one--	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2024 Existing No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2024 Existing No-Build Peak Hr Intersection V/C ratio	0.00	0.00
2028 Design Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2028 Design Yr No-Build Peak Hr Intersection V/C ratio	0.00	0.00

Alternatives Analysis

Proposed Control Type Improvement:

Alternative 1	Alternative 2	Alternative 3
Displaced Left-Turn / CFI	Signalized Intersection	Multilane Roundabout
Add add'l description here	Add add'l description here	Add add'l description here

Project Cost (From Cost Worksheet)

Construction Cost	\$863,438	\$416,251	\$1,024,054
ROW Cost	\$32,829	\$2,296	\$400,918
Environmental Cost	\$0	\$0	\$0
Reimbursable Utility Cost	\$25,903	\$12,488	\$30,722
Design & Contingency Cost	\$259,031	\$124,875	\$307,216
Cost Adjustment (justification req'd)	0%	0%	0%
Total Cost	\$1,181,202	\$555,910	\$1,762,910

Traffic Operations

Traffic Analysis Software Used	--select one--		--select one--		--select one--	
Analysis Period	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr
2028 Design Yr Build Intersection Delay	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec
2028 Design Yr Build Intersection V/C	0.00	0.00	0.00	0.00	0.00	0.00

Safety Analysis

Predefined CRF: PDO	0%	39%	32%
Predefined CRF: Fatal/Inj	0%	40%	71%
Predefined CRF Source:	-	FHWA Clearinghouse IDs: 7982 / 7984	FHWA Clearinghouse IDs: 236 / 237
User Defined CRF: PDO			
User Defined CRF: Fatal/Inj			
User Defined CRF Source (write in if applicable):			

Environmental Impacts

Historic District/Property:	None	None	None
Archaeology Resources:	None	None	None
Graveyard:	None	None	None
Stream:	None	None	None
UST/Hazmat:	None	None	None
Park Land:	None	None	None
EJ Community:	None	None	None
Floodplain:	None	None	None
Wetland:	None	None	None
T&E Species Habitat:	None	None	None

Stakeholder Support:

Note: Be sure to go back to **Costs** worksheet to enter mitigation costs for each noted impact

Local Community Support	Unknown	Unknown	Unknown
CDOT Region Support	Unknown	Unknown	Unknown

Final ICAT Stage 2 Score:	2.8	3.5	2.2
Rank of Control Type Alternatives:	2	1	3

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary):



ICAT STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

Developed and Maintained in Cooperation with Georgia DOT

CDOT ICAT Version 1.2 | Release Date: 4/26/2021

CDOT Project Number: 0000000

Project Location: Palmer Divi @ Road 2 / SB Off-Ramp

Existing Intersection Control: Conventional Minor Stop

County/Region: El Paso / CDOT Region 2

Area Type: Urban

Prepared by: 0

Date: 1/0/1900

Type of Project: Operational Improvement Project

Existing / Design Year No-Build Traffic Operations

Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	--select one--	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2024 Existing No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2024 Existing No-Build Peak Hr Intersection V/C ratio	0.00	0.00
2028 Design Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2028 Design Yr No-Build Peak Hr Intersection V/C ratio	0.00	0.00

Alternatives Analysis

Proposed Control Type Improvement:

Alternative 1	Alternative 2	Alternative 3
Displaced Left-Turn / CFI	Signalized Intersection	Multilane Roundabout
Add add'l description here	Add add'l description here	Add add'l description here

Project Cost (From Cost Worksheet)

Construction Cost	\$863,438	\$416,251	\$804,054
ROW Cost	\$32,829	\$2,296	\$200,918
Environmental Cost	\$0	\$0	\$0
Reimbursable Utility Cost	\$25,903	\$12,488	\$24,122
Design & Contingency Cost	\$259,031	\$124,875	\$241,216
Cost Adjustment (justification req'd)	0%	0%	0%
Total Cost	\$1,181,202	\$555,910	\$1,270,310

Traffic Operations

Traffic Analysis Software Used	--select one--		--select one--		--select one--	
Analysis Period	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr
2028 Design Yr Build Intersection Delay	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec
2028 Design Yr Build Intersection V/C	0.00	0.00	0.00	0.00	0.00	0.00

Safety Analysis

Predefined CRF: PDO	0%	39%	32%
Predefined CRF: Fatal/Inj	0%	40%	71%
Predefined CRF Source:	-	FHWA Clearinghouse IDs: 7982 / 7984	FHWA Clearinghouse IDs: 236 / 237
User Defined CRF: PDO			
User Defined CRF: Fatal/Inj			
User Defined CRF Source (write in if applicable):			

Environmental Impacts

Historic District/Property:	None	None	None
Archaeology Resources:	None	None	None
Graveyard:	None	None	None
Stream:	None	None	None
UST/Hazmat:	None	None	None
Park Land:	None	None	None
EJ Community:	None	None	None
Floodplain:	None	None	None
Wetland:	None	None	None
T&E Species Habitat:	None	None	None

Stakeholder Support:

Note: Be sure to go back to **Costs** worksheet to enter mitigation costs for each noted impact

Local Community Support	Unknown	Unknown	Unknown
CDOT Region Support	Unknown	Unknown	Unknown

Final ICAT Stage 2 Score:	2.6	3.4	2.5
Rank of Control Type Alternatives:	2	1	3

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary):