



January 25, 2024

Mr. Zaker Alazzeah, P.E.
Traffic Engineering Manager/Deputy City Traffic Engineer
City of Colorado Springs
30 South Nevada Street
Colorado Springs, CO 80901

Re: Colorado Centre Addition No. 3 Annexation (Rezoning Application)
Trip Generation Comparison Cover Letter
NWC Bradley Road and Foreign Trade Zone Boulevard
Colorado Springs, Colorado

Dear Mr. McLean:

This traffic study cover letter documents a trip generation comparison for the uses evaluated in the Colorado Centre Addition No. 3 Annexation Traffic Study (rezoning traffic study) dated January 11, 2024 to the uses in the current bubble plan associated with the Aerospace Business Center. The subject site is comprised of approximately 32 acres and is located on the northwest corner of Bradley Road and Foreign Trade Zone Boulevard intersection in Colorado Springs, Colorado. The Aerospace Business Center (future site development plan submittals) is planned to be developed in the next 10 years to occupy the same 32 acres as the Colorado Centre Addition No.3 Annexation (rezoning process). The rezoning traffic study was recently updated with the known initial phase plans associated with the Aerospace Business Center. However, the remaining plan for the Aerospace Business Center is unknown at this time and currently filled with placeholder uses that could be expected in the future. The first building being proposed is Building A located in the northeast corner of the overall development area. Building A is anticipated to include 84,750 square feet of industrial use. The purpose of this letter is to document higher trips associated with the rezoning plan (Colorado Centre Addition No.3 Annexation) compared to conceptual plan currently being planned associated with the Aerospace Business Center.

TRIP GENERATION COMPARISON

The current rezoning plan utilized within the *Colorado Centre Addition No. 3 Annexation Traffic Study* prepared by Kimley-Horn in January 2024 included a gas station with 10 passenger fueling positions and four (4) truck fueling positions, 50,000 square feet of retail uses, 80,000 square feet of office space, 234,750 square feet of light industrial uses, and a 4,300 square foot restaurant. Building A is currently being proposed as part of the Aerospace Business Center as an industrial use with 84,750 square feet of building space. The remaining plan for Aerospace Business Center is unknown but has been identified with 238,650 square feet (323,400 square feet total when including known Building A) of industrial use and 71,610 square feet of retail use as a placeholder.

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. The trip generation for the rezoning plan was based on ITE Trip Generation, 11th Edition average rate and fitted-curve equations for General Light Industrial (ITE Code 110), General Office Building (ITE 710), Strip Retail Plaza (ITE 822), Fast

¹ Institute of Transportation Engineers, *Trip Generation: An Information Report*, Eleventh Edition, Washington DC, 2021.

Casual Restaurant (ITE 930), Gas Station with Convenience Store (ITE 945), and Truck Stop (ITE 950) land uses. The trip generation for the Aerospace Business Center plan was based on ITE Trip Generation, 11th Edition average rate and fitted-curve equations for General Light Industrial (ITE Code 110) and Strip Retail Plaza (ITE 822) land uses. The following **Table 1** summarizes the anticipated trip generation for the rezoning plan compared to the trip generation for the conceptual plan associated with the Aerospace Business Center.

Table 1 –Trip Generation Comparison

Use and Size	Daily Vehicle Trips	Weekday Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Original Traffic Study (Rezoning Plan) – Colorado Centre No. 3 Annexation							
Light Industrial (ITE 110) 234,750 Square Feet	934	143	20	163	9	65	74
Office Building (ITE 710) 80,000 Square Feet	956	121	17	138	23	115	138
Strip Retail (ITE 822) – 50,000 Square Feet	2,722	71	47	118	165	164	329
Fast-Casual Restaurant (ITE 930) – 4,300 Square Feet	418	3	3	6	30	24	54
Gas Station w/ Convenience (ITE 945)– 10 Fueling Positions	3,458	158	158	316	134	135	269
Truck Stop (ITE 950) 4 Fueling Positions	896	27	29	56	33	29	62
Total Project Trips	9,384	523	274	798	395	531	926
Current Proposal – Aerospace Business Center							
General Light Industrial (ITE 110) 323,400 SF	1,574	210	29	239	29	181	210
Strip Retail (ITE 822) – 71,610 Square Feet	3,900	101	68	169	236	236	472
Total Project Trips	5,474	311	97	408	265	417	682
Net Difference in Trips	-3,910	-212	-177	-390	-130	-114	-244

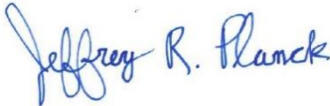
As summarized in **Table 1**, the current rezoning plan (including the initial known phase of the Aerospace Business Center) is expected to generate 3,910 more daily trips, 390 more morning peak hours trips, and 244 more afternoon peak hour trips than the conceptual plan currently provided for the Aerospace Business Center. Since the initial phase of the Aerospace Business Center is the only known plan at this point and trips are higher for the rezoning plan, the rezoning traffic study has remained with the more conservative plan to allow additional flexibility with future development plans. Therefore, the rezoning traffic study has been updated with known initial phase of the Aerospace Business Center but not the placeholder bubble plan associated with the remaining development.

CONCLUSION

In summary, the current proposal for the initial phase (Building A) within the future Aerospace Business Center and other placeholder development is expected to generate the fewer trips than the rezoning plan. Since the remaining development within Aerospace Business Center is unknown, the rezoning traffic study (Colorado Centre Addition No. 3 Annexation) has utilized the more conservative plan to allow additional flexibility with future development plans. Therefore, it is respectfully requested that the City of Colorado Springs allow the more conservative plan within the traffic study of the rezoning application due to only one of the parcels within the Aerospace Business Center being prepared for a development application at this time. The updated rezoning traffic study which included the plans for the initial phase of the Aerospace Business Center is attached. If you have any questions or require anything further, please feel free to call me.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.



Jeffrey R. Planck, P.E.
Project Traffic Engineer



Traffic Impact Study

Colorado Centre Addition No. 3 Annexation

Colorado Springs, Colorado

Prepared for:
Advance Concrete, Inc.

Kimley»Horn

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

Colorado Centre Addition No. 3 Annexation

Colorado Springs, Colorado

Prepared for
Advance Concrete, Inc.
5720 Observation Court
Colorado Springs, Colorado 80916

Prepared by
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2 North Nevada Avenue
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(719) 453-0180



January 2024

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1.0 EXECUTIVE SUMMARY

The Colorado Centre Addition No. 3 Annexation mixed-use development is proposed to be located on the northwest corner of the Bradley Road and Foreign Trade Zone Boulevard intersection in Colorado Springs, Colorado. For the purposes of this analysis, the project is anticipated to include a gas station with 10 passenger fueling positions and four (4) truck fueling positions, 50,000 square feet of retail uses, 80,000 square feet of office space, 234,750 square feet of light industrial uses, and a 4,300 square foot restaurant. It is expected that the northeast parcel of the overall development will be completed in the next couple of years; therefore, analysis was conducted for the initial phase 2025 horizon. The remaining development is proposed to be completed by 2030, therefore analysis was conducted for 2030 full buildout 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 the City of Colorado Springs and State of Colorado Department of Transportation (CDOT) standards and requirements:

- Bradley Road and Powers Boulevard (SH-21)
- Bradley Road and Foreign Trade Zone Boulevard
- Bradley Road and Marksheffel Road
- Aerospace Boulevard/Project Access and Foreign Trade Zone Boulevard

In addition, the proposed right-in/right-out accesses along Bradley Road and Foreign Trade Zone Boulevard and the full movement access along Foreign Trade Zone Boulevard were evaluated. Further, a full movement project access is proposed to align with Aerospace Boulevard along Foreign Trade Zone Boulevard.

Regional access to the Colorado Centre Addition No. 3 Annexation mixed use project will be provided by Interstate 25 (I-25), US-24, State Highway 21 (SH-21), SH-16, and SH-94. Primary access will be provided by Powers Boulevard (SH-21) and Marksheffel Road. Direct access will be provided by a full movement access and a right-in/right-out access along Foreign Trade Zone Boulevard and a right-in/right-out access along Bradley Road. Additionally, a future west leg at

the Aerospace Boulevard and Foreign Trade Zone Boulevard intersection will provide access to the site.

Colorado Centre Addition No. 3 Annexation is expected to be completed with a Phase I including the northeast development area and full build out for the whole development area. Phase I is anticipated to generate approximately 370 weekday daily trips, with 61 of these trips occurring during the morning peak hour and 36 of these trips occurring during the afternoon peak hour. Accounting for internal capture, the full build out of the development is expected to generate 8,522 weekday daily trips, with 749 of these trips occurring during the morning peak hour and 816 of these trips occurring during the afternoon peak hour with internal capture.

Based on the analysis presented in this report, Kimley-Horn believes Colorado Centre Addition No. 3 Annexation 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:

2025 Recommendations

- Based on traffic projections, the addition of the entire development on the east leg of Bradley Road along SH-21 (Powers Boulevard) is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection with project development.
- Phase I is anticipated to be built by 2025 and be provided by two (2) accesses. The west leg of Aerospace Boulevard will be constructed at the intersection with Foreign Trade Zone Boulevard and will serve as the primary access to the site. A R1-1 “STOP” sign is recommended to be placed on the eastbound approach of this access. Additionally, access to the site is proposed by a full movement access along the west side of Foreign Trade Zone Boulevard, approximately 700 feet north of the Aerospace Boulevard intersection. This north access is recommended to operate with stop control and an R1-1 “STOP” sign should be installed on the eastbound exiting approach. A northbound left turn lane with 150 feet of length is recommended at both of these accesses and will be constructed by the developer. Of note, the existing pavement width along Foreign Trade Zone Boulevard can accommodate a three-lane roadway with a center two-way left turn center lane extending from Aerospace Boulevard

to the north property limits; therefore, the developer will construct this center lane along Foreign Trade Zone Boulevard.

- To meet CDOT turn lane lengths, the northbound right turn lane at Bradley Road/Powers Boulevard (SH-21) is recommended to provide a length of 800 feet with a 300-foot taper. Likewise, the southbound left turn lane will need to be extended to 1,275 feet with a 300-foot taper.
- The south leg of the Bradley Road and Foreign Trade Zone intersection is currently being constructed by others. The traffic study for the development to the south identified a separate eastbound right turn lane, westbound left turn lane, and separate left, through, and right turn lanes on the north and south approaches of this intersection.

2030 Recommendations

- The full Foreign Trade Zone development is anticipated to be constructed by 2030 and include two (2) additional accesses. A right-in/right-out access is proposed along the west side of Foreign Trade Zone Boulevard between Bradley Road and Aerospace Boulevard. A R1-1 “STOP” sign is recommended to be provided on the eastbound exiting approach of this right-in/right-out access along Foreign Trade Zone Boulevard. Further, a R3-2 No Left Turn Sign could be placed below the R1-1 sign at the right-in/right-out access. Additionally, a right-in/right-out access is proposed along Bradley Road. It is recommended that a R1-1 “STOP” sign be installed on the exiting southbound approach. A R3-2 No Left Turn sign could be placed below the R1-1 sign and a R6-1L “ONE WAY” sign could be placed within the center median along Bradley Road to further inform drivers of the restricted movement. Through coordination with the City of Colorado Springs, the existing southbound to westbound right turn acceleration lane at Foreign Trade Boulevard along Bradley Road will be extended by the developer and drop as a forced right turn lane at the project access along Bradley Road.
- As stated in the adjacent developments’ traffic studies, the intersection of Bradley Road/Powers Boulevard (SH-21) is recommended to provide dual southbound left turn lanes. The dual southbound left turn lanes will operate with protected-only left turn phasing.

- The intersection of Bradley Road/Foreign Trade Zone Boulevard is anticipated to warrant signalization with buildout of the residential development to the south.

2045 Recommendations

- If 2045 volumes are realized at Bradley Road/Powers Boulevard (SH-21) intersection, the intersection may need to explore further improvements. The ConnectCOS identifies Powers Boulevard (SH-21) as being a freeway through the Bradley Road intersection. Therefore, a future grade separated interchange could be explored by CDOT and the City.
- The Bradley Road and Foreign Trade Zone Boulevard intersection is recommended to provide dual eastbound left turn lanes. These turn lanes can be accommodated within the existing pavement allocated to the second eastbound left turn lane. Two northbound receiving lanes will need to be provided with construction of dual eastbound left turn lanes. These can be accommodated within the existing pavement width with the inside through lane being dropped as a forced northbound left turn lane at the Aerospace Boulevard intersection.
- The Aerospace Boulevard and Foreign Trade Zone Boulevard intersection does not meet signal warrants but may have longer vehicle delays on the westbound approach by 2045. Therefore, a single-lane roundabout could be explored with build out of the development to the east.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Colorado Springs, Colorado Department of Transportation, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

2.0 INTRODUCTION

Kimley-Horn has prepared this report to document the results of a Traffic Impact Study for the Colorado Centre Addition No. 3 Annexation located on the northwest corner of the Bradley Road and Foreign Trade Zone Boulevard intersection in Colorado Springs, Colorado. A vicinity map illustrating the development location is shown in **Figure 1**. For the purposes of this analysis, the project is anticipated to include a gas station with 10 passenger fueling positions and four (4) truck fueling positions, 50,000 square feet of retail uses, 80,000 square feet of office space, 234,750 square feet of light industrial uses, and a 4,300 square foot restaurant. A conceptual site plan is attached in **Appendix G**. It is expected that the northeast parcel of the overall development will be completed in the next couple of years; therefore, analysis was conducted for the initial phase 2025 horizon. The remaining development is proposed to be completed by 2030, therefore analysis was conducted for 2030 full buildout 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 the City of Colorado Springs and CDOT standards and requirements:

- Bradley Road and Powers Boulevard (SH-21)
- Bradley Road and Foreign Trade Zone Boulevard
- Bradley Road and Marksheffel Road
- Aerospace Boulevard/Project Access and Foreign Trade Zone Boulevard

In addition, the proposed right-in/right-out accesses along Bradley Road and Foreign Trade Zone Boulevard and the full movement access along Foreign Trade Zone Boulevard were evaluated. Further, a full movement project access is proposed to align with Aerospace Boulevard along Foreign Trade Zone Boulevard.



FIGURE 1
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
VICINITY MAP

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is vacant. The surrounding area is mostly vacant or being developed as residential neighborhoods and mixed-use commercial. Single family communities currently exist east of the project and in the surrounding area to the southeast. Approximately three (3) miles northwest is the Colorado Springs Municipal Airport (COS).

3.2 Existing and Future Roadway Network

Regional access to the Colorado Centre Addition No. 3 Annexation will be provided by I-25, US-24, SH-21, SH-16, and SH-94. Primary access will be provided by Powers Boulevard (SH-21) and Marksheffel Road. Direct access will be provided by one full movement access and a right-in/right-out access along Foreign Trade Zone Boulevard and a right-in/right-out access along Bradley Road. Additionally, a future west leg at the Aerospace Boulevard and Foreign Trade Zone Boulevard intersection will provide access to the site.

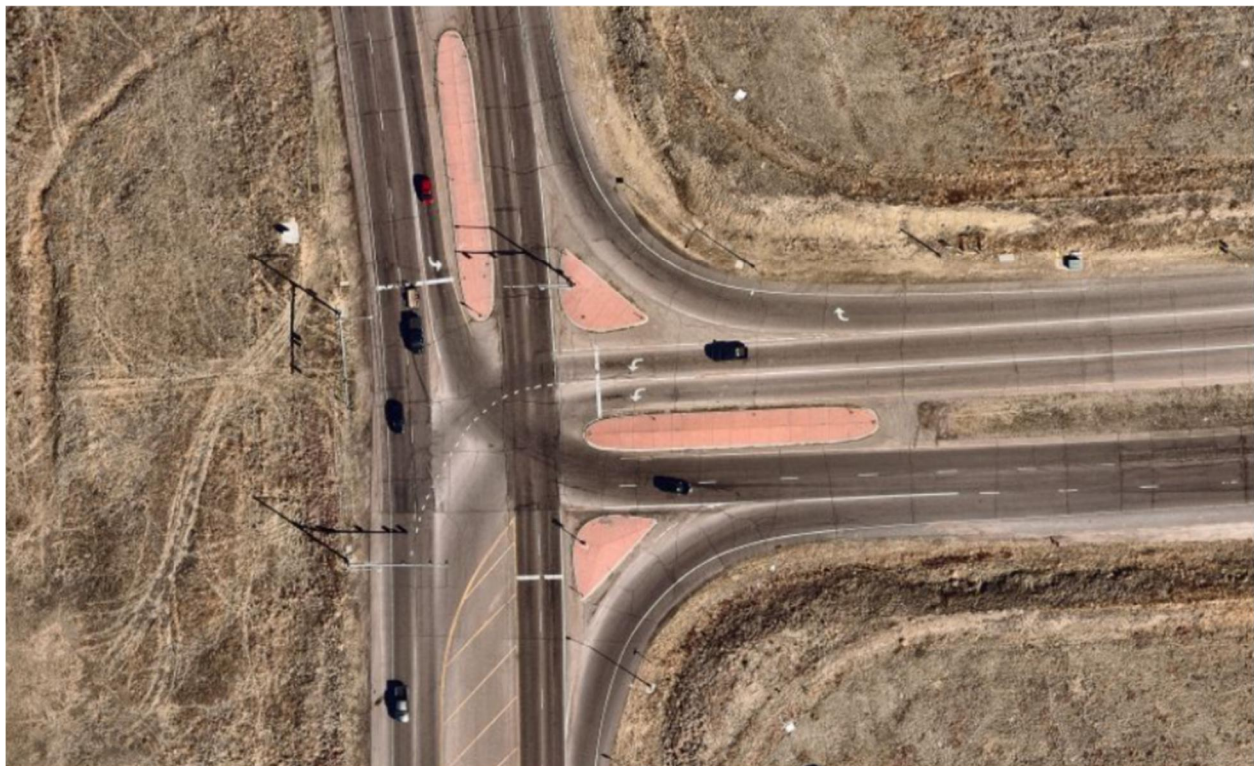
Powers Boulevard (SH-21) is a four-lane divided roadway providing two through lanes of travel, northbound and southbound, with a posted speed limit of 65 miles per hour through the study area. There are plans for future additional grade separation along Powers Boulevard (SH-21) to continue to improve the roadway towards a freeway facility in coming years, with the ConnectCOS major thoroughfare plan showing the roadway as a freeway facility throughout the entire Colorado Springs metropolitan area in the long-term horizon.

Bradley Road exists as an east-west four-lane divided roadway within the study area with a posted speed limit of 50 miles per hour. According to the ConnectCOS major thoroughfare plan, Bradley Road is anticipated to operate as a principal arterial through the 2045 horizon.

Marksheffel Road is a north-south roadway that provides two through lanes in each direction to the south of Bradley Road as well as from the Peterson Space Force Base – East Gate through US-24, with one through lane provided in each direction from Bradley Road to the Peterson Space Force Base – East Gate. The posted speed limit is 45 miles per hour near the Bradley Road intersection. This roadway is anticipated to operate as a principal arterial through the 2045 horizon according to ConnectCOS.

Foreign Trade Zone Boulevard is a north-south roadway that connects from Bradley Road to Drennan Road with one through lane in each direction and a posted speed limit of 25 miles per hour.

The Bradley Road and Powers Boulevard (SH-21) T-intersection is signalized with protected-permissive left turn phasing on the southbound Powers Boulevard (SH-21) approach. The westbound Bradley Road approach provides dual left turn lanes and a right turn lane that operates under free condition. The northbound approach provides two through lanes and a right turn lane with a northbound right to eastbound through acceleration lane. The southbound approach provides a left turn lane and two through lanes. By the long-term horizon, it is anticipated that a west leg of the intersection may be constructed. An aerial photo of the existing intersection configuration is below (north is up - typical).



Bradley Road & Powers Boulevard (SH-21)

The unsignalized 'T'-intersection of Bradley Road and Foreign Trade Zone Boulevard operates with stop control on the southbound Foreign Trade Zone Boulevard approach. The eastbound Bradley Road approach provides a left turn lane and two through lanes while the westbound approach provides two through lanes a right turn lane. The southbound approach provides a stop-controlled left turn lane a right turn lane operating under free conditions. The south leg will soon be open for traffic to access the future developments to the south of Bradley Road. An aerial photo of the existing intersection configuration is below.



Bradley Road & Foreign Trade Zone Boulevard

The intersection of Bradley Road and Marksheffel Road is signalized with protected-permitted left turn phasing on all four approaches to the intersection. All four approaches to the intersection provide a left turn lane, two through lanes, and a right turn lane. The right turn movements for the eastbound, westbound, and southbound approaches operate with free right turning movements while the northbound right turn movement on Marksheffel Road operates with yield control. An aerial photo of the existing intersection configuration is below.



Bradley Road & Marksheffel Road

The 'T'-intersection of Aerospace Boulevard and Foreign Trade Zone Boulevard operates with stop control on the westbound Aerospace Boulevard approach. All three approaches provide a single lane for shared movements. An aerial photo of the existing intersection configuration is below.



Bradley Road & Marksheffel Road

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

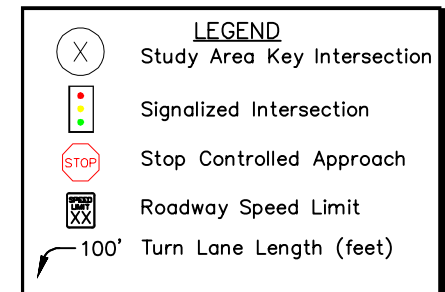
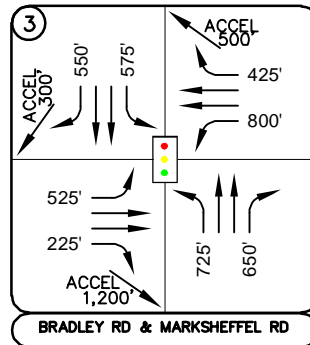
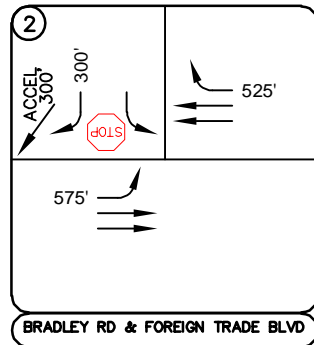
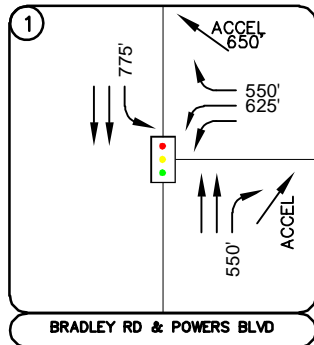
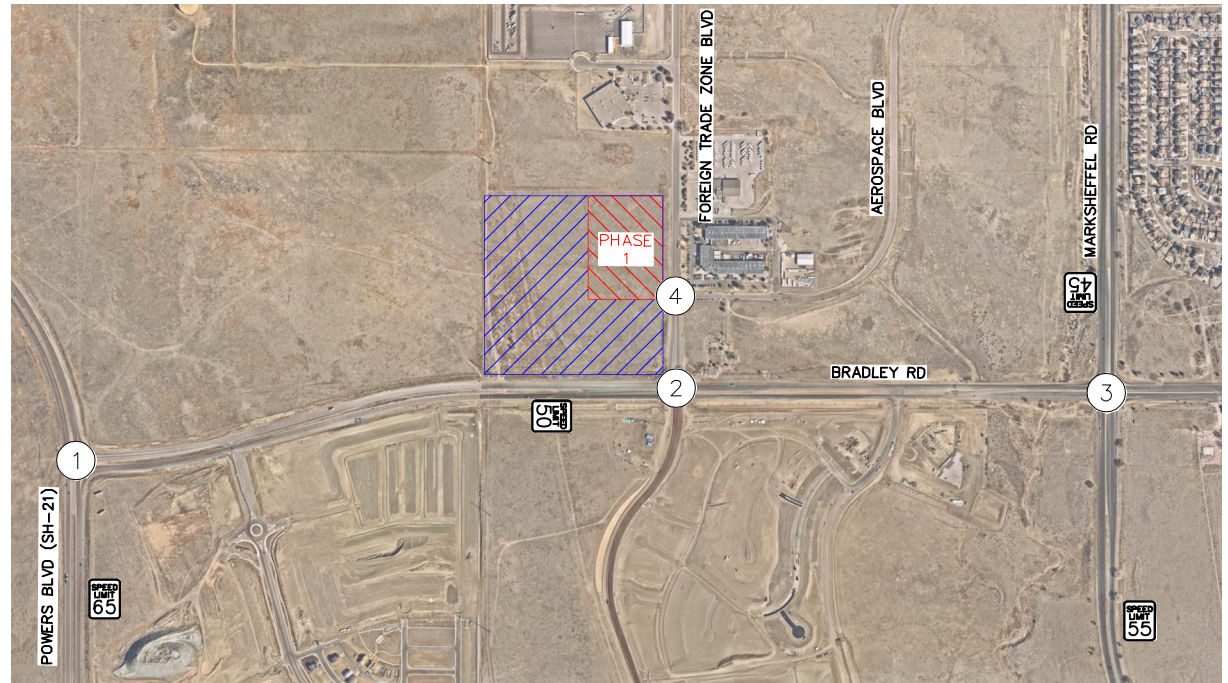
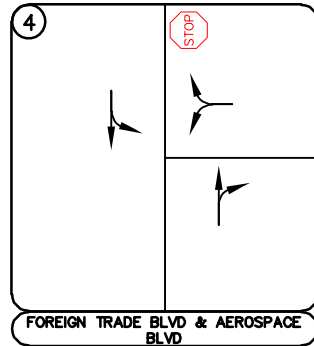


FIGURE 2
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2023 EXISTING GEOMETRY AND CONTROL

3.3 Existing Traffic Volumes

Existing turning movement counts along Bradley Road were conducted at the study intersections on Wednesday, October 10, 2022 and at the Aerospace Boulevard/Foreign Trade Zone Boulevard intersection on Thursday, June 22, 2023 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 A**.

3.4 Unspecified Development Traffic Growth

According to information provided on the website for the Colorado Department of Transportation (CDOT), the 20-year growth factor along Powers Boulevard (SH-21) is 1.14. This 20-year growth factor equates to annual growth rate of 0.66 percent. Traffic information from the CDOT Online Transportation Information System (OTIS) website is included in **Appendix B**. This annual growth rate was used to estimate background traffic volumes at the study area key intersections. In addition to this background growth rate and to account for anticipated known future developments, the project volumes associated with the following traffic studies completed by Kimley-Horn were added into the background traffic volumes at each of the study area intersections, as applicable:

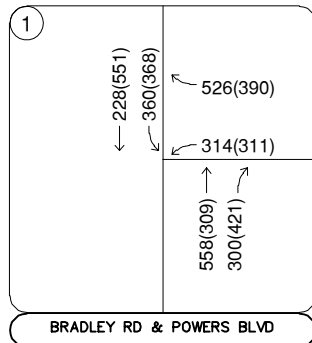
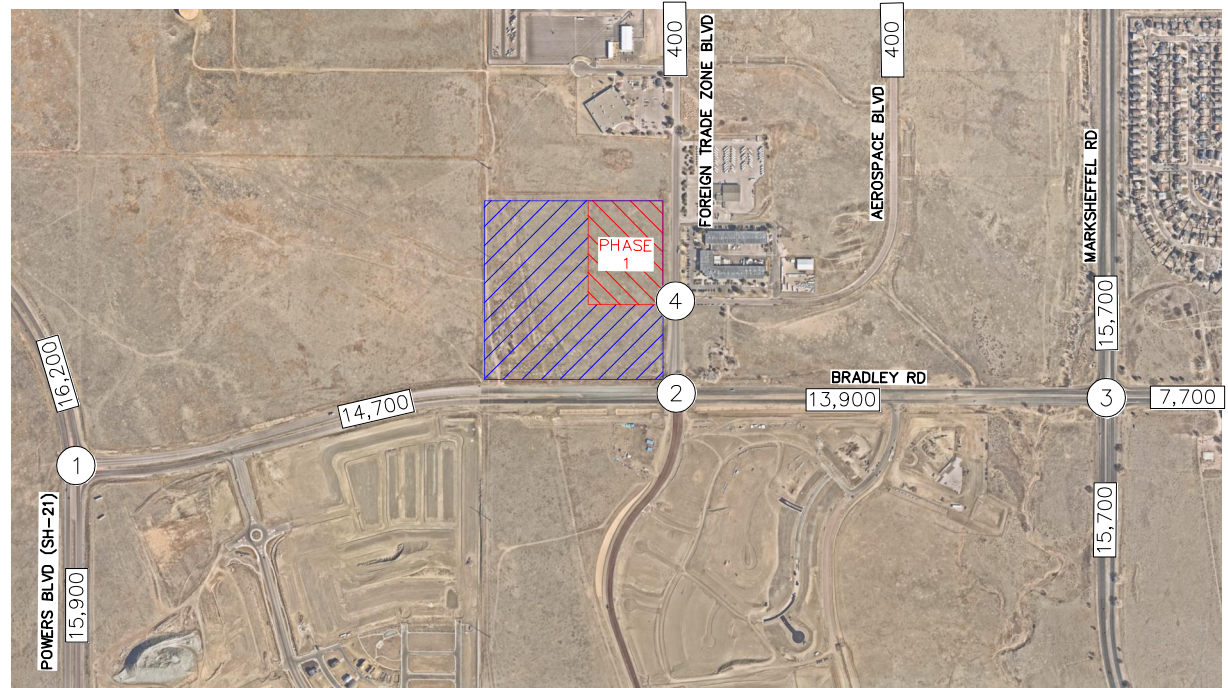
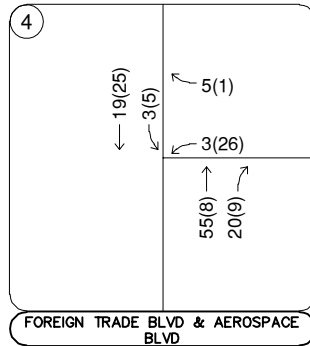
- Peak Airport East, completed in January 2023
- Peak Innovation Park, completed in May 2020
- Crossroads-Meadowbrook-Reagan Ranch, completed in February 2022
- Peak Innovation Park – Proby North, completed in November 2022

Additionally, the Bradley Heights Filing #1 Traffic Impact Analysis completed in April 2021, Waterview East Commercial Traffic Impact and Access Analysis completed in March 2023, Meadowworks Filing 1-4 Development Plan traffic Impact Study completed in March 2022, and the draft Villages at Waterview North Traffic Impact and Access Analysis completed in October 2022 were all included in the respective background traffic volumes associated with the buildout year for each development. A summary of the background traffic volumes and completion years is provided below.

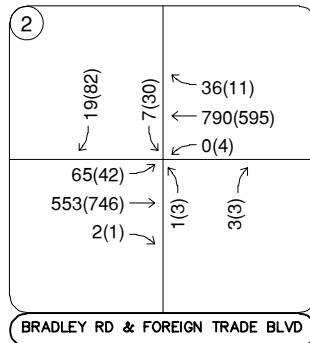
Traffic Study Development	Date of Study	Project Buildout Year
Bradley Heights Filing #1	April 2021	2026, 2040
Waterview East Commercial	March 2023	2026, 2043
Meadoworks Filing 1-4	March 2022	2024
Villages at Waterview North	October 2022	2026, 2040
Peak Airport East	January 2023	(20% in 2030) 2045
Peak Innovation Park	May 2020	2030, 2045
Crossroads-Meadowbrook-Reagan Ranch	February 2022	2026, 2040
Peak Innovation Park – Proby North	November 2022	2025, 2045

It should be noted that these eight (8) anticipated development areas are assumed to account for a substantial portion of the anticipated growth at these intersections over the next several years as development continues in the area. As such, with the use of these background traffic studies in addition to the 0.66 annual background traffic growth rate, it is anticipated that the intersection traffic volumes used in this study are conservative. The Phase I 2025 horizon development traffic volumes include Meadoworks Filing 1-4 and the initial phase of Peak Innovation Park – Proby North and are shown in **Figure 4**. The full buildout 2030 horizon background volumes include traffic volumes associated with all developments listed for the 2025 horizon, as well as Bradley Heights Filing #1, Waterview East Commercial Villages at Waterview North, a portion of Peak Airport East, Phase I of Peak Innovation Park, and Crossroads-Meadowbrook-Reagan Ranch and are shown in **Figure 5**. The anticipated 2045 background traffic volumes with the background studies are shown in **Figure 6**. Excerpts from each background study that was used in the traffic volume determination is included in **Appendix B**.

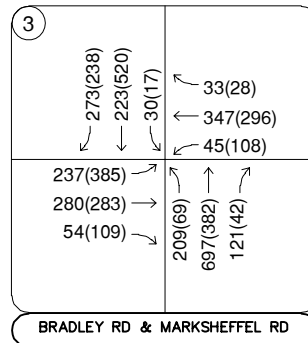
Thurs, June 22, 2023
7:15 to 8:15AM
(4:00 to 5:00PM)



Wed, Oct 10, 2022
7:00 to 8:00AM
(4:00 to 5:00PM)



Wed, Oct 10, 2022
7:00 to 8:00AM
(4:00 to 5:00PM)



Wed, Oct 10, 2022
7:00 to 8:00AM
(4:00 to 5:00PM)

LEGEND

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

FIGURE 3
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2022/2023 EXISTING TRAFFIC VOLUMES

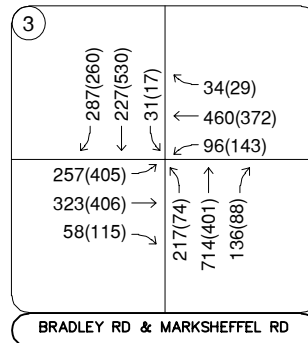
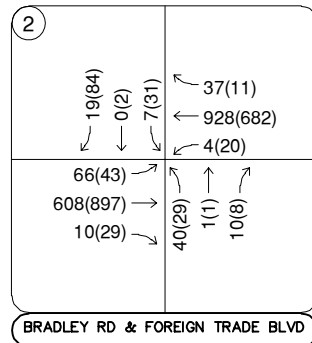
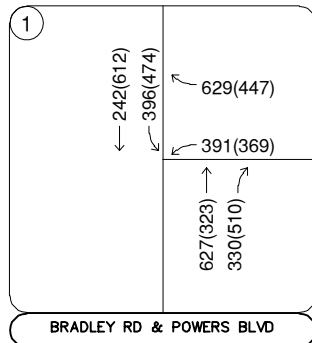
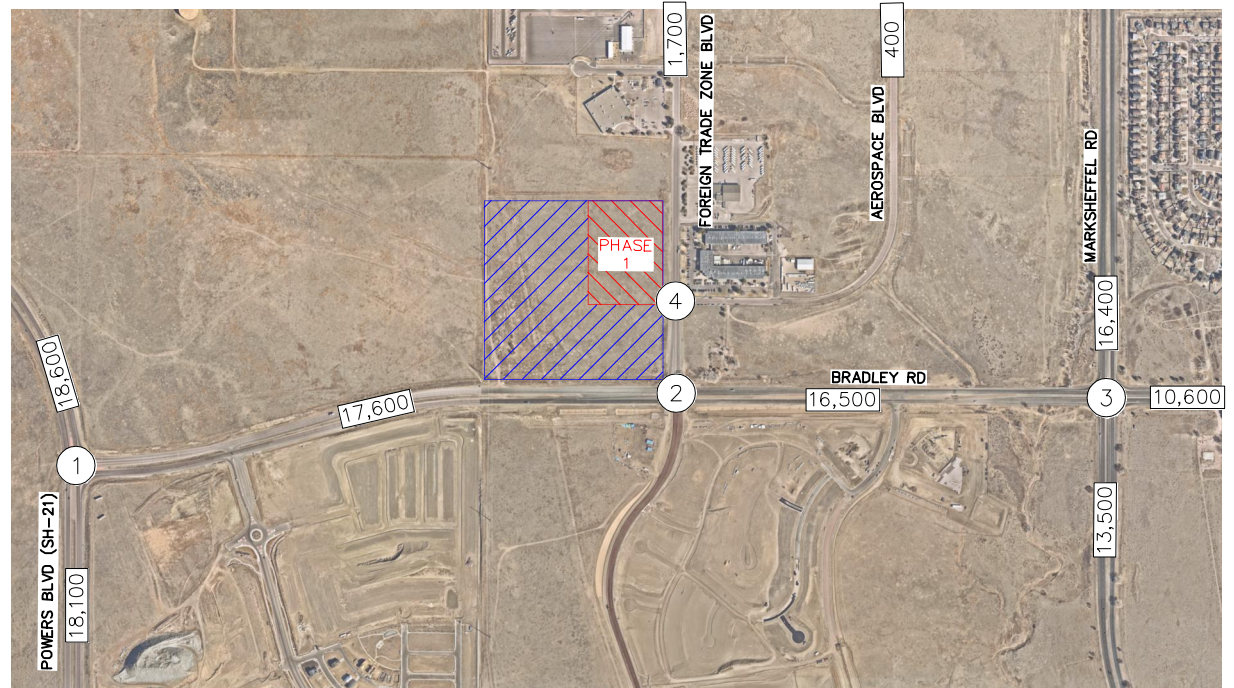
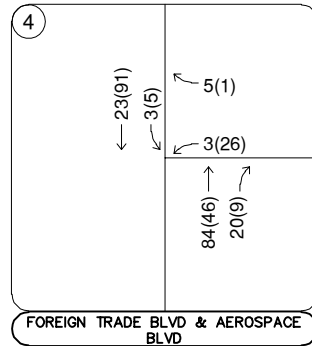
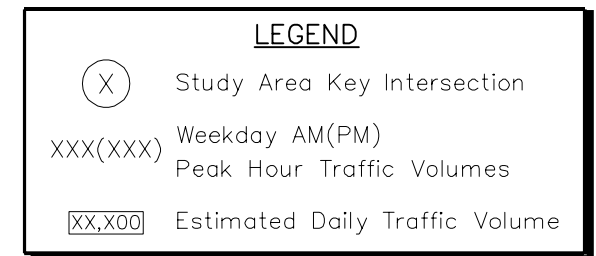


FIGURE 4
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2025 BACKGROUND TRAFFIC VOLUMES



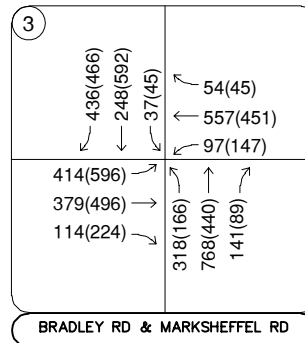
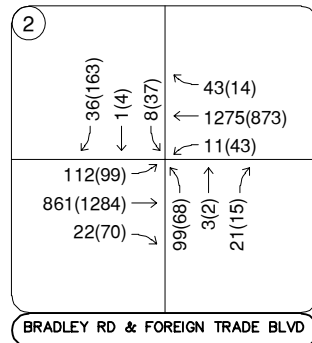
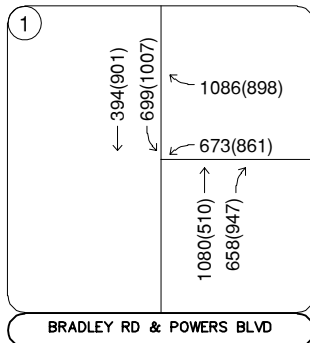
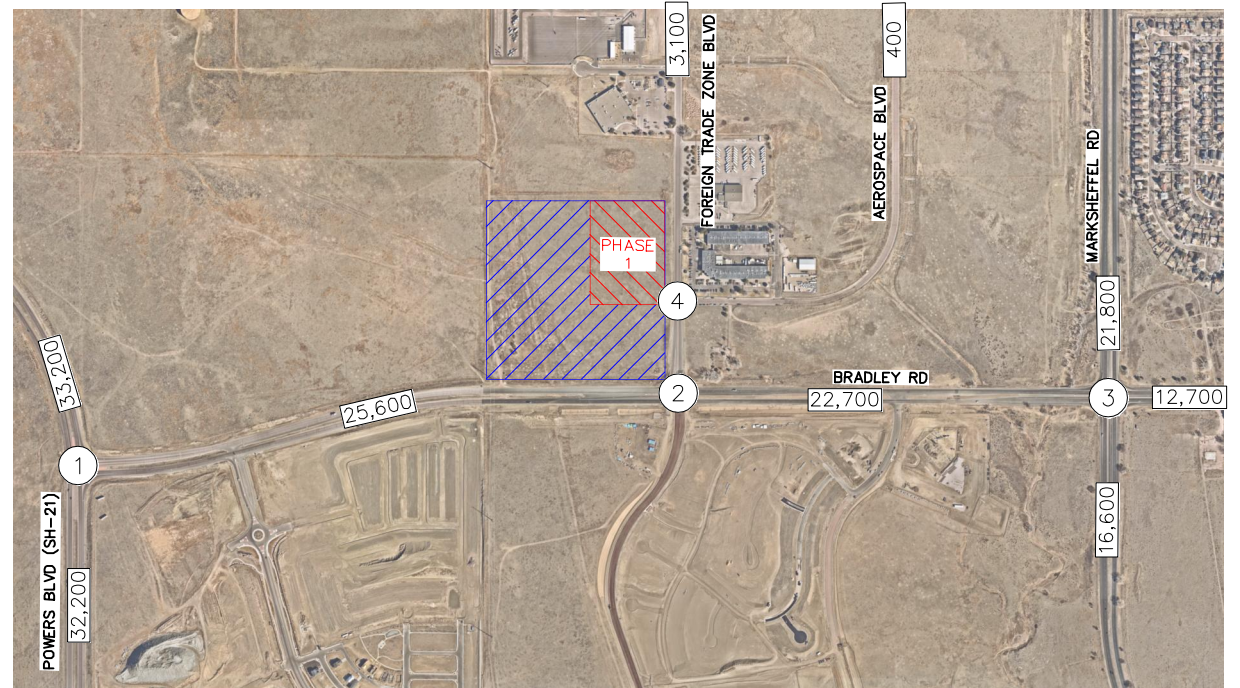
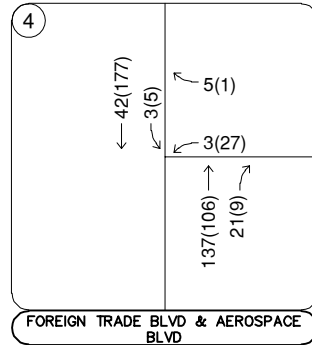
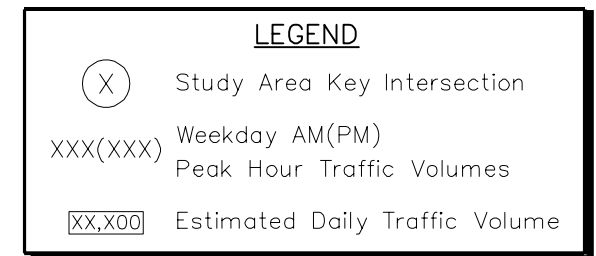
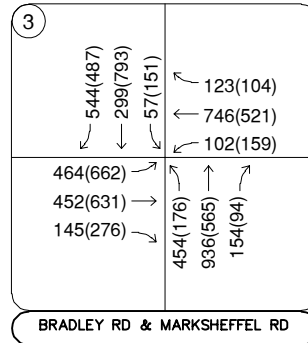
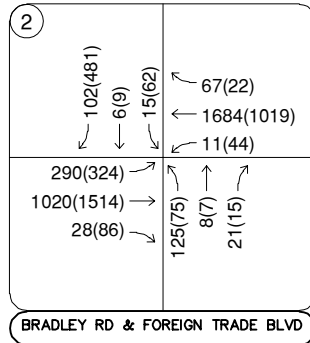
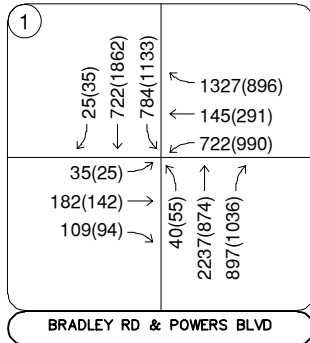
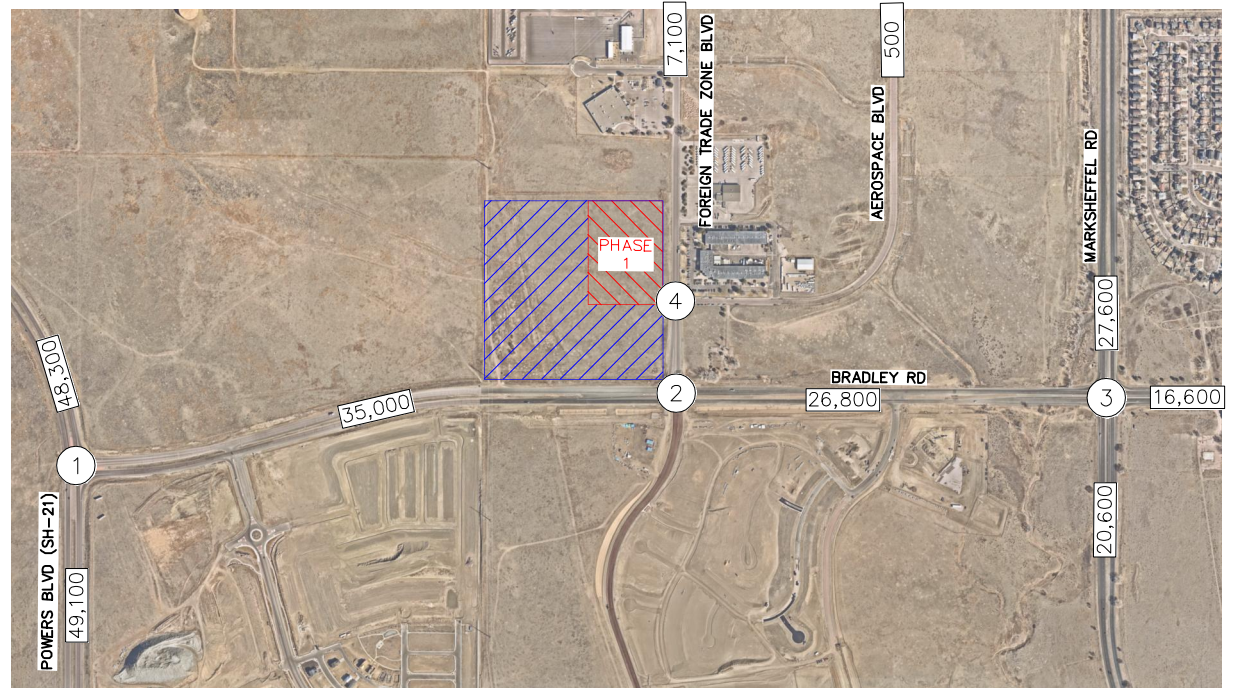
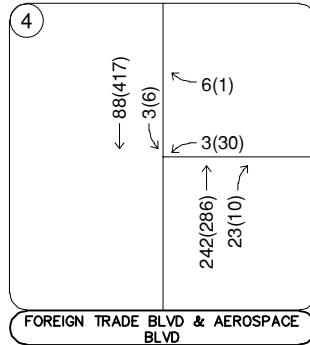


FIGURE 5
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2030 BACKGROUND TRAFFIC VOLUMES





LEGEND

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

FIGURE 6
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, 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, Kimley-Horn used the ITE Trip Generation Report average rates that apply to Strip Retail Plaza (ITE Land Use Code 822), Fast Casual Restaurant (ITE 930), Gas Station with Convenience Store (ITE 945), and Truck Stop (ITE 950) and fitted curve equations that apply to Light Industrial (ITE 110) and General Office Building (ITE 822) for traffic associated with the development.

Since the full buildout of the Colorado Centre Addition No. 3 Annexation is proposed to contain a mix of uses, internal capture trips are expected to occur on site as well.. These internal capture trips are shared trips from vehicles already within the internal street network. These shared trips reduce the number of total external trips and were calculated directly per the ITE procedure. Of note, Phase I in 2025 will not have internal capture trips with a single building proposed.

Colorado Centre Addition No. 3 Annexation is expected to be completed with a Phase I including the northeast development area and full build out for the whole development area. Phase I is anticipated to generate approximately 370 weekday daily trips, with 61 of these trips occurring during the morning peak hour and 36 of these trips occurring during the afternoon peak hour. Accounting for internal capture, the full build out of the development is expected to generate 8,522 weekday daily trips, with 749 of these trips occurring during the morning peak hour and 816 of these trips occurring during the afternoon peak hour with internal capture. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 11th Edition – Volume 1: User's Guide and Handbook*, 2021. **Table 1** summarizes the estimated trip generation for the Colorado Centre Addition No. 3 Annexation. The trip generation worksheets are included in **Appendix C**.

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

Table 1 – Colorado Centre Addition No. 3 Annexation Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Phase I (2025)							
Light Industrial (ITE 110) 84,750 Square Feet	370	54	7	61	4	32	36
Full Buildout (2030)							
Light Industrial (ITE 110) 234,750 Square Feet	934	143	20	163	9	65	74
Office Building (ITE 710) 80,000 Square Feet	956	121	17	138	23	115	138
Strip Retail (ITE 822) – 50,000 Square Feet	2,722	71	47	118	165	164	329
Fast-Casual Restaurant (ITE 930) – 4,300 Square Feet	418	3	3	6	30	24	54
Gas Station w/ Convenience (ITE 945)– 10 Fueling Positions	3,458	158	158	316	134	135	269
Truck Stop (ITE 950) 4 Fueling Positions	896	27	29	56	33	29	62
Total Project Trips	9,384	523	274	798	395	531	926
Total Trips with Internal Capture	8,522	499	250	749	340	476	816

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 project trip distribution for the Phase I development is illustrated in **Figure 7**.and for the full buildout is illustrated in **Figure 8**.

4.3 Traffic Assignment

Colorado Centre Addition No. 3 Annexation traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Traffic assignment is shown in **Figure 9** for Lot 5 and **Figure 10** for Lot 4.

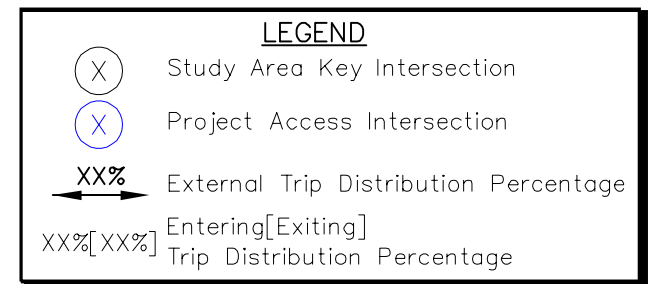
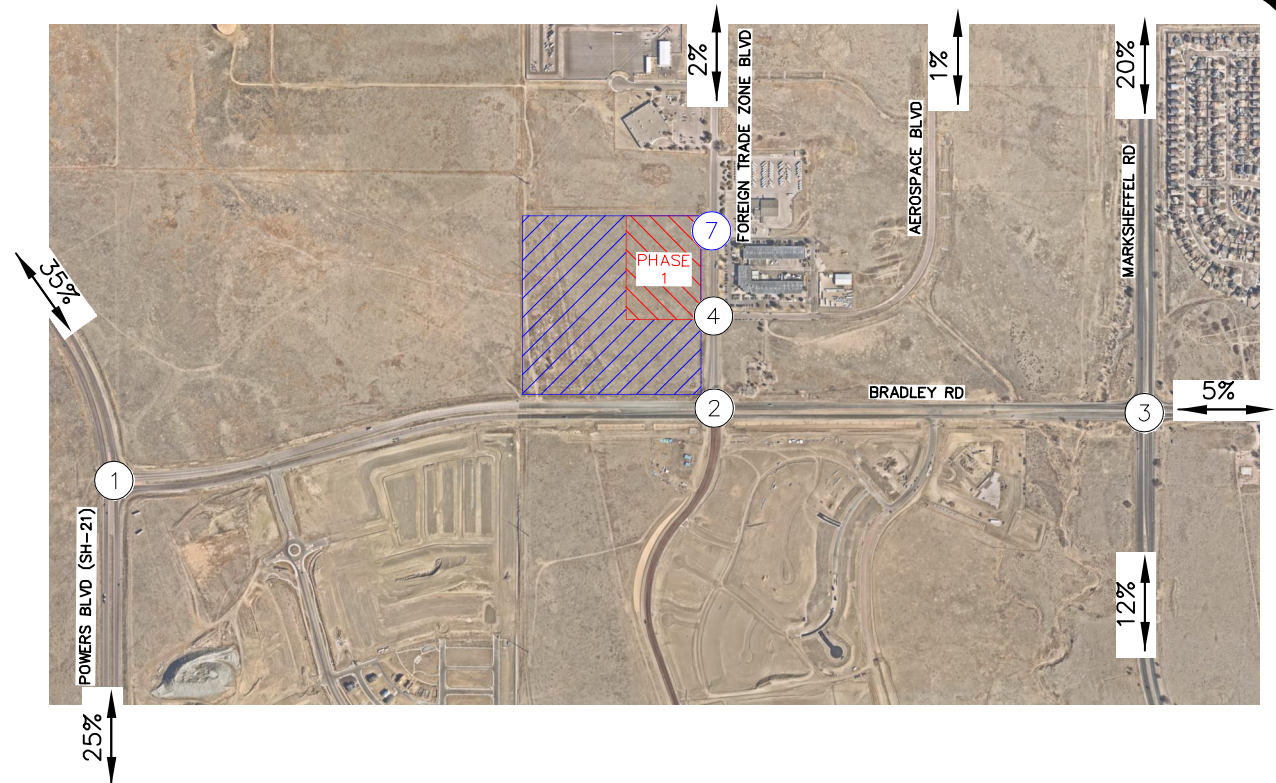
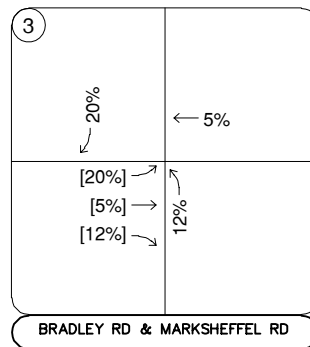
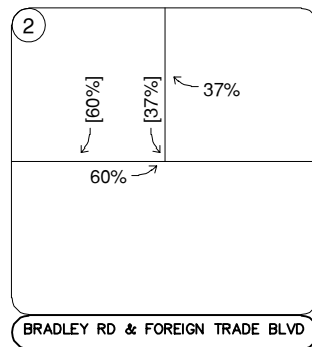
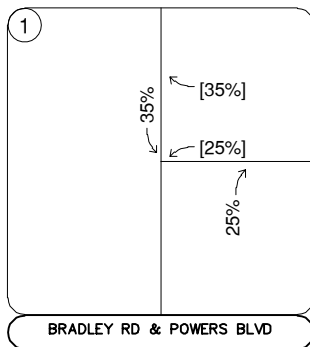
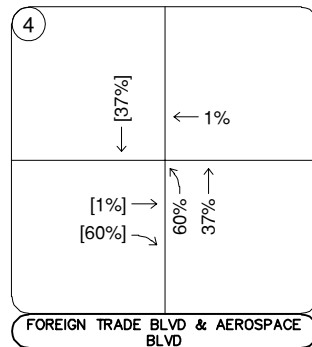
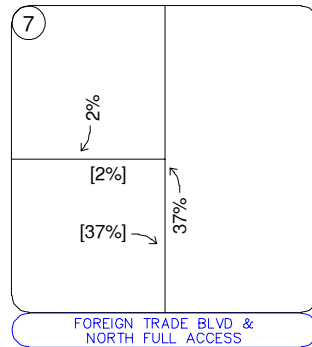


FIGURE 7
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
PROJECT TRIP DISTRIBUTION (PHASE I)

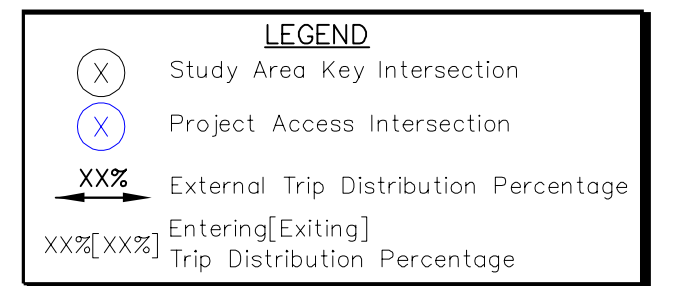
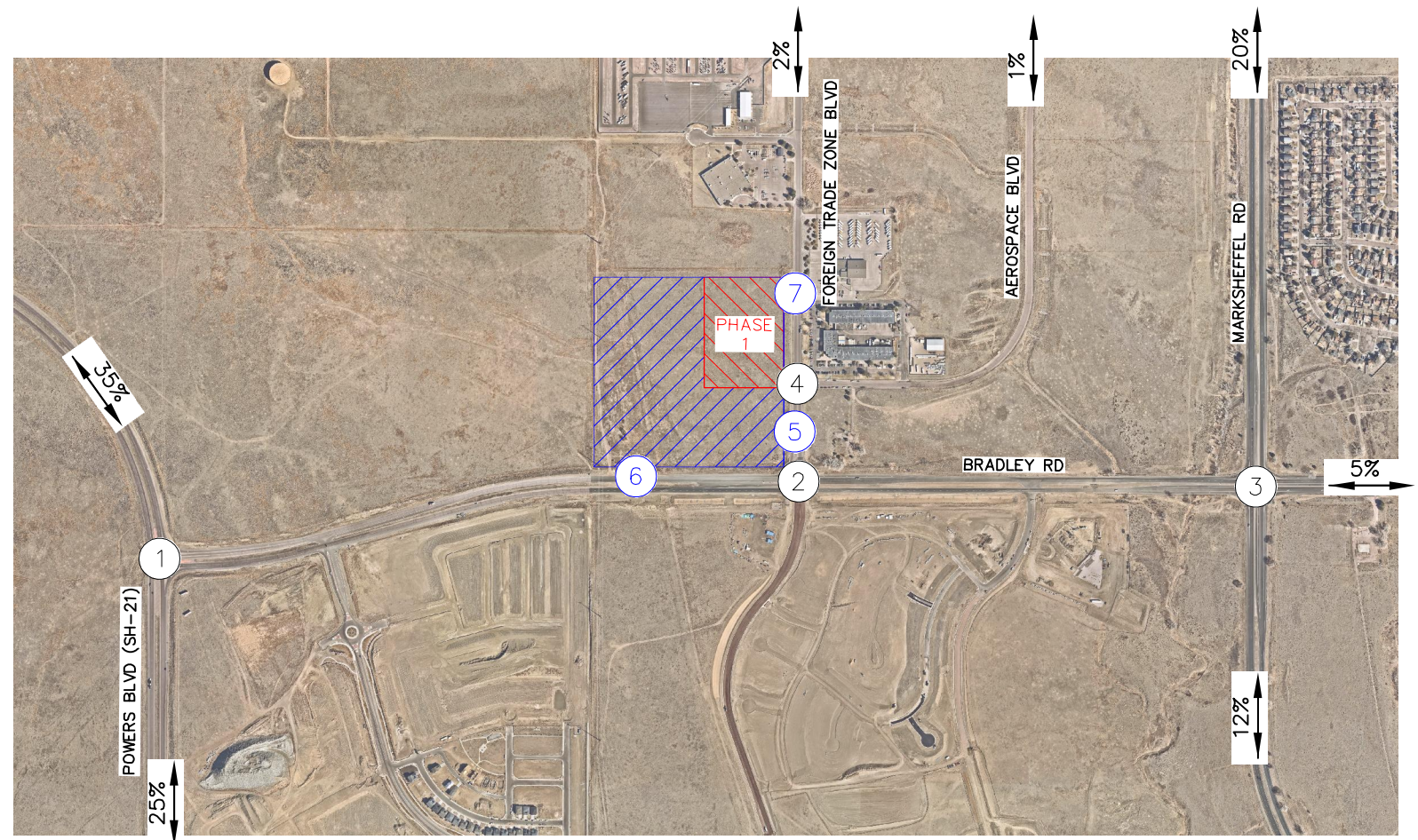
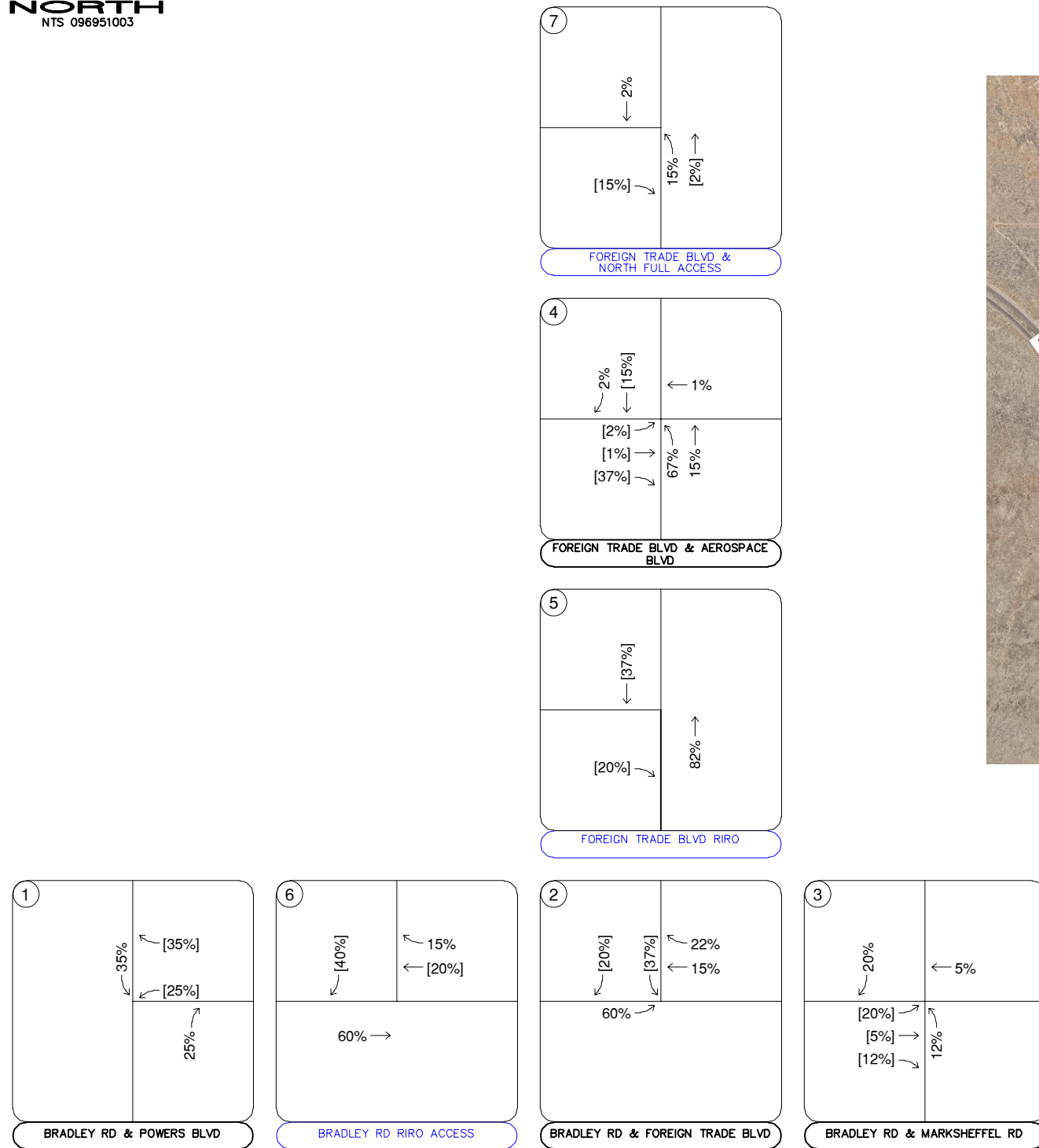
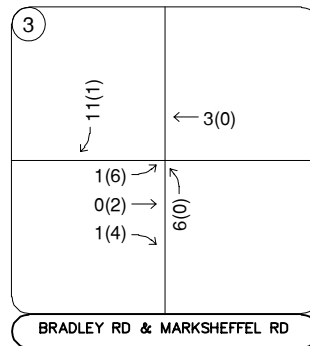
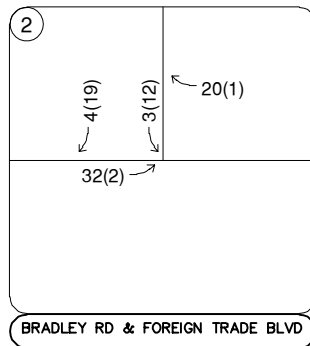
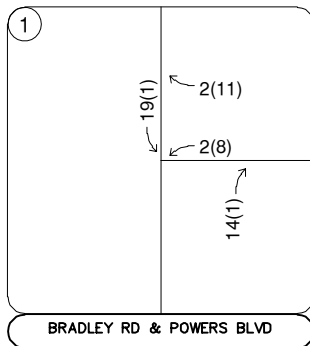
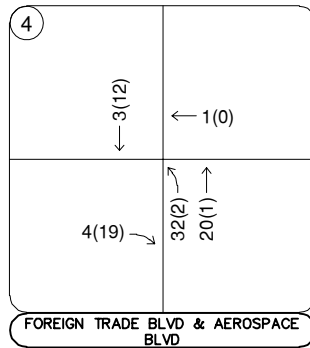
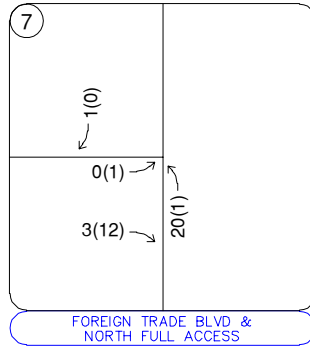


FIGURE 8
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
PROJECT TRIP DISTRIBUTION (FULL BUILDOUT)



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
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
PROJECT TRAFFIC ASSIGNMENT (PHASE I)

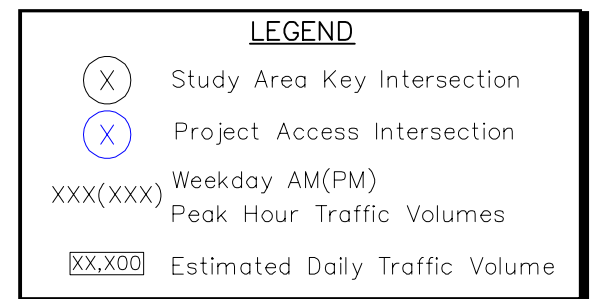
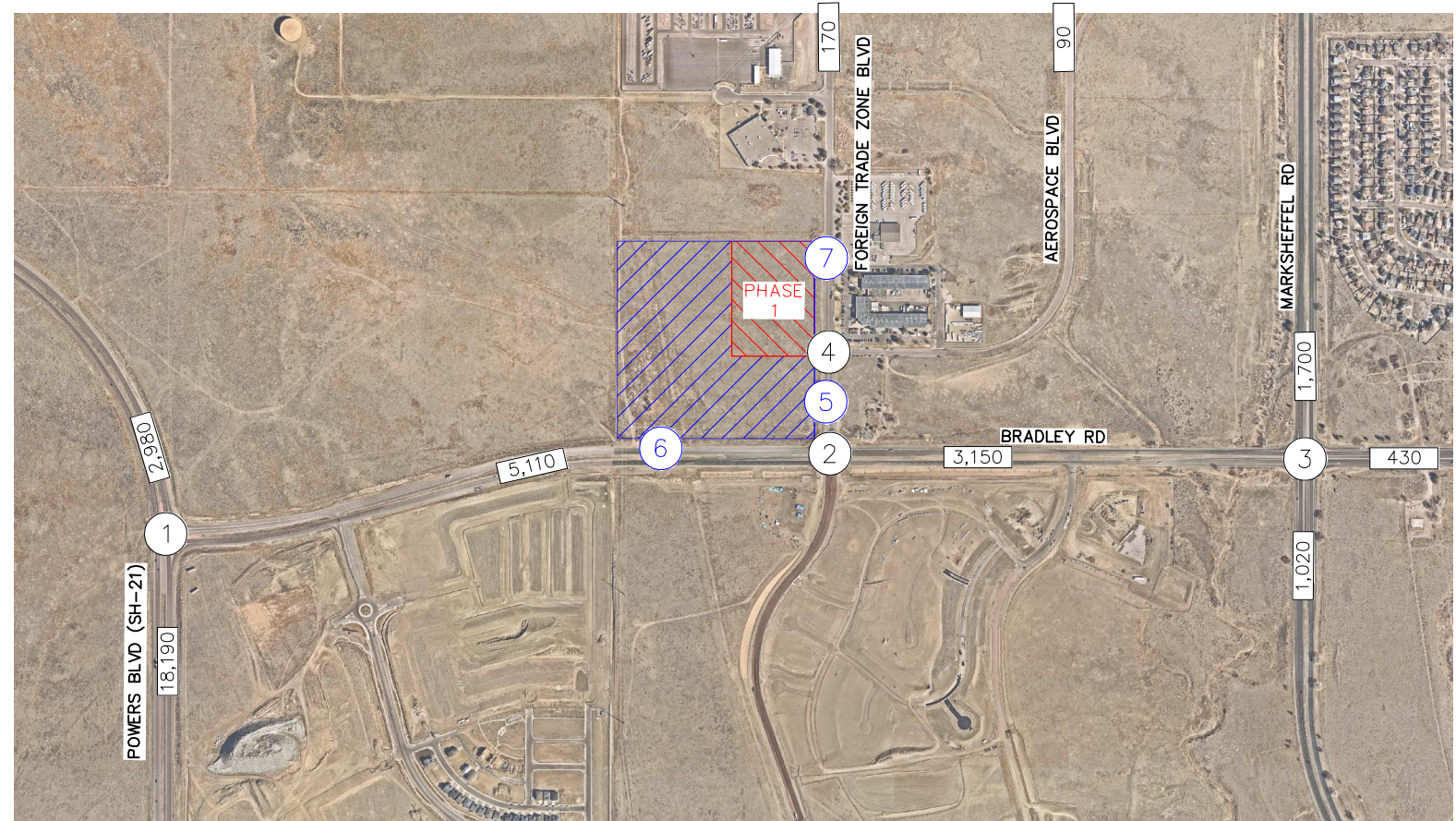
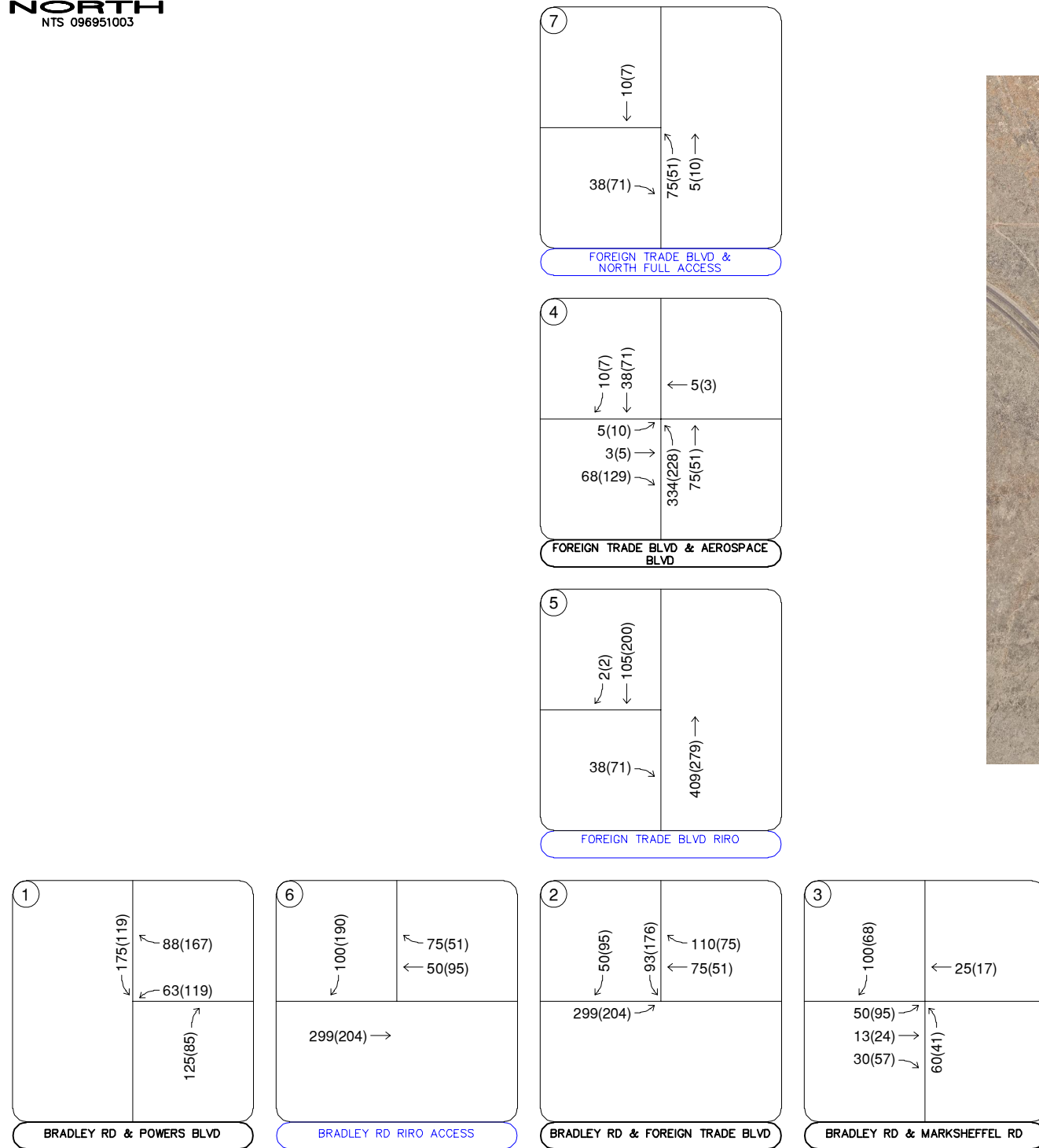


FIGURE 10
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
PROJECT TRAFFIC ASSIGNMENT (FULL BUILDOUT)

7	
1(1) ←	1(1) →
26(96) ←	20(1) →
3(12) →	89(47) →
FOREIGN TRADE BLVD & NORTH FULL ACCESS	

4	
1(1) ←	5(1) →
26(103) ←	1(0) →
3(5) →	3(26) →
1(1) →	32(2) →
1(1) →	104(47) →
4(19) →	20(9) →
FOREIGN TRADE BLVD & AEROSPACE BLVD	

1	
242(612) ←	631(458) →
415(475) ←	393(377) →
	627(323) →
	344(511) →
BRADLEY RD & POWERS BLVD	

2	
23(103) ←	57(12) →
0(2) ←	928(682) →
10(43) →	4(20) →
98(45) →	40(29) →
608(897) →	1(1) →
10(29) →	10(8) →
BRADLEY RD & FOREIGN TRADE BLVD	

3	
298(261) ←	34(29) →
227(530) ←	463(372) →
31(17) →	96(143) →
258(411) →	223(74) →
323(408) →	714(401) →
59(119) →	136(88) →
BRADLEY RD & MARKSHEFFEL RD	



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
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2025 TOTAL TRAFFIC VOLUMES

1	<div> <div> <div>← 394(901)</div> <div>← 874(1126)</div> </div> <div> <div>1174(1065)</div> <div>736(980)</div> </div> </div> <div> <div>1080(510)</div> <div>783(1032)</div> </div>
BRADLEY RD & POWERS BLVD	

6	<div> <div>← 100(190)</div> <div>← 75(51)</div> </div> <div> <div>1294(1657) →</div> <div>← 1460(1199)</div> </div>
BRADLEY RD RIRO ACCESS	

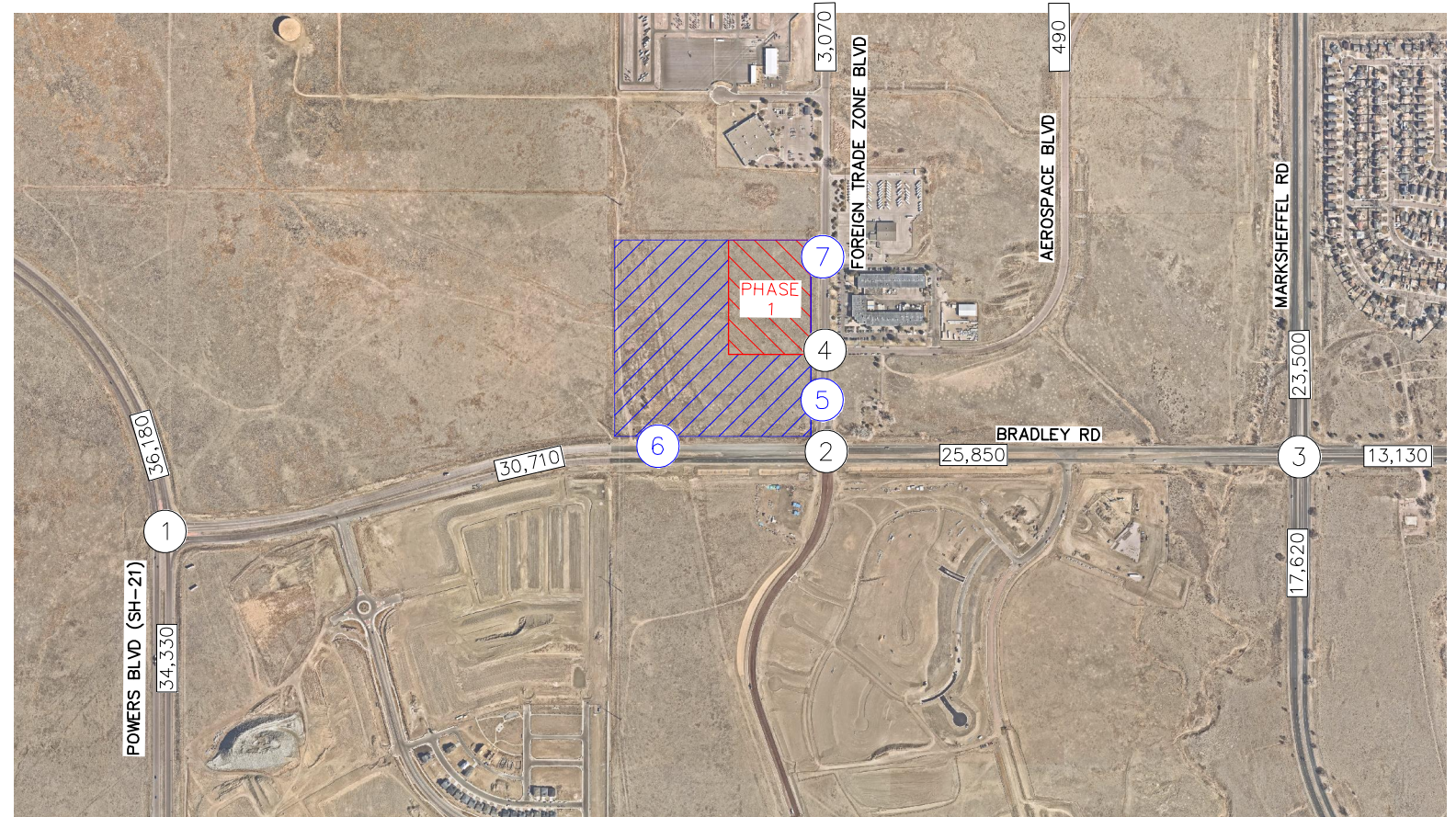
2	<div> <div>86(258)</div> <div>1(4)</div> <div>101(213)</div> </div> <div> <div>153(89)</div> <div>1350(924)</div> <div>11(43)</div> </div>	<div> <div>411(303)</div> <div>861(1284)</div> <div>22(70)</div> </div> <div> <div>99(68)</div> <div>3(2)</div> <div>21(15)</div> </div>
BRADLEY RD & FOREIGN TRADE BLVD		

3	<div> <div>536(534)</div> <div>248(592)</div> <div>37(45)</div> </div> <div> <div>54(45)</div> <div>582(468)</div> <div>97(147)</div> </div>	<div> <div>464(691)</div> <div>392(520)</div> <div>144(281)</div> </div> <div> <div>378(207)</div> <div>768(440)</div> <div>141(89)</div> </div>
BRADLEY RD & MARKSHEFFEL RD		

7	<div> <div>1(1)</div> <div>55(189)</div> </div> <div> <div>1(1)</div> <div>38(71)</div> </div>	<div> <div>75(51)</div> <div>147(117)</div> </div>
FOREIGN TRADE BLVD & NORTH FULL ACCESS		

4	<div> <div>10(7)</div> <div>80(248)</div> <div>3(5)</div> </div> <div> <div>5(1)</div> <div>5(3)</div> <div>3(27)</div> </div>	<div> <div>5(10)</div> <div>3(5)</div> <div>68(129)</div> </div> <div> <div>334(228)</div> <div>212(157)</div> <div>21(9)</div> </div>
FOREIGN TRADE BLVD & AEROSPACE BLVD		

5	<div> <div>2(2)</div> <div>150(404)</div> </div> <div> <div>38(71)</div> <div>567(394)</div> </div>
FOREIGN TRADE BLVD RIRO	



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 12
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2030 TOTAL TRAFFIC VOLUMES

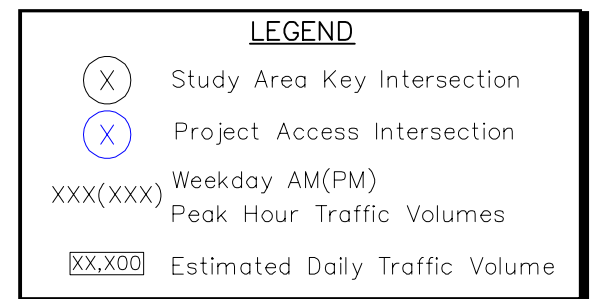
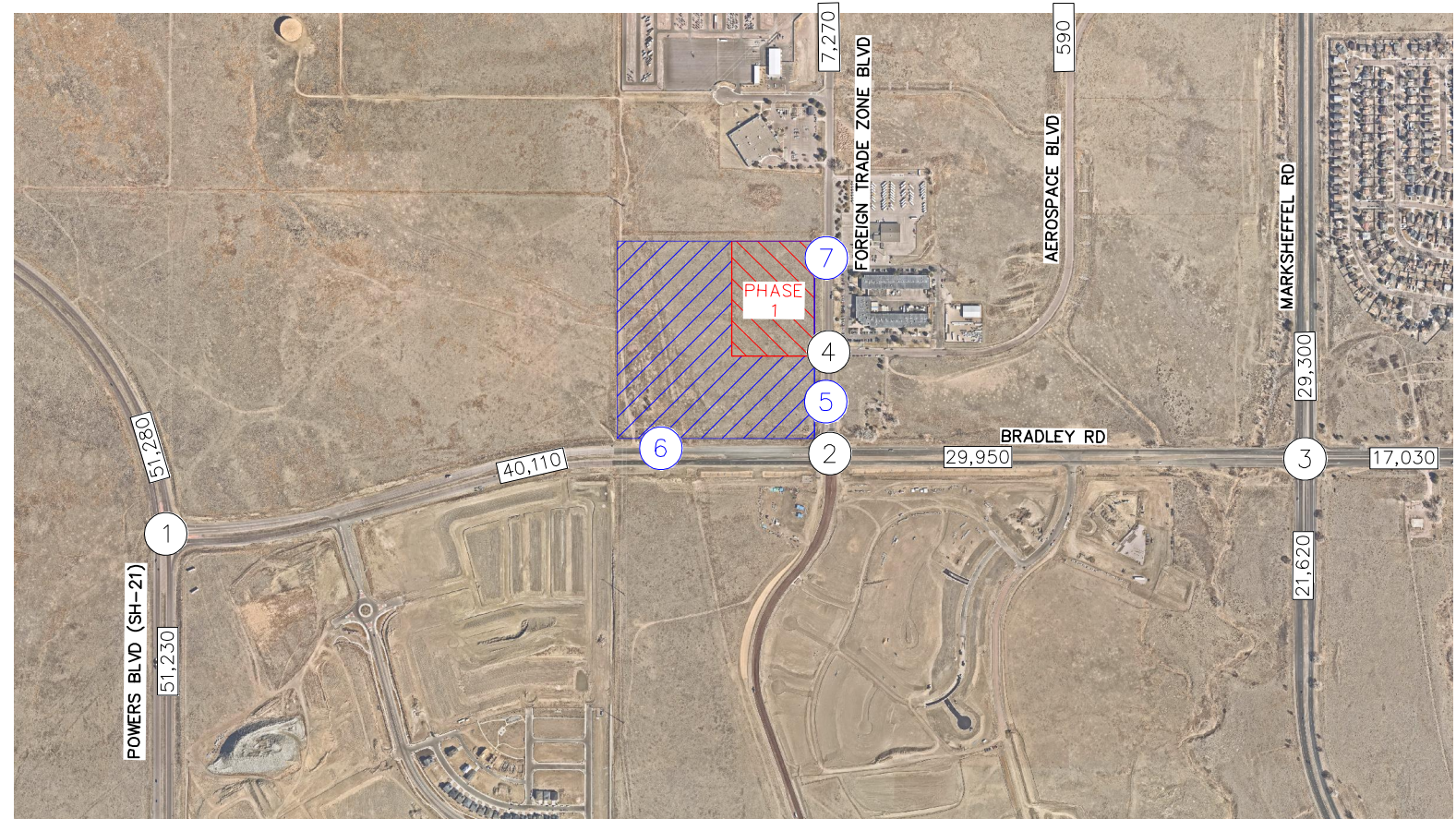
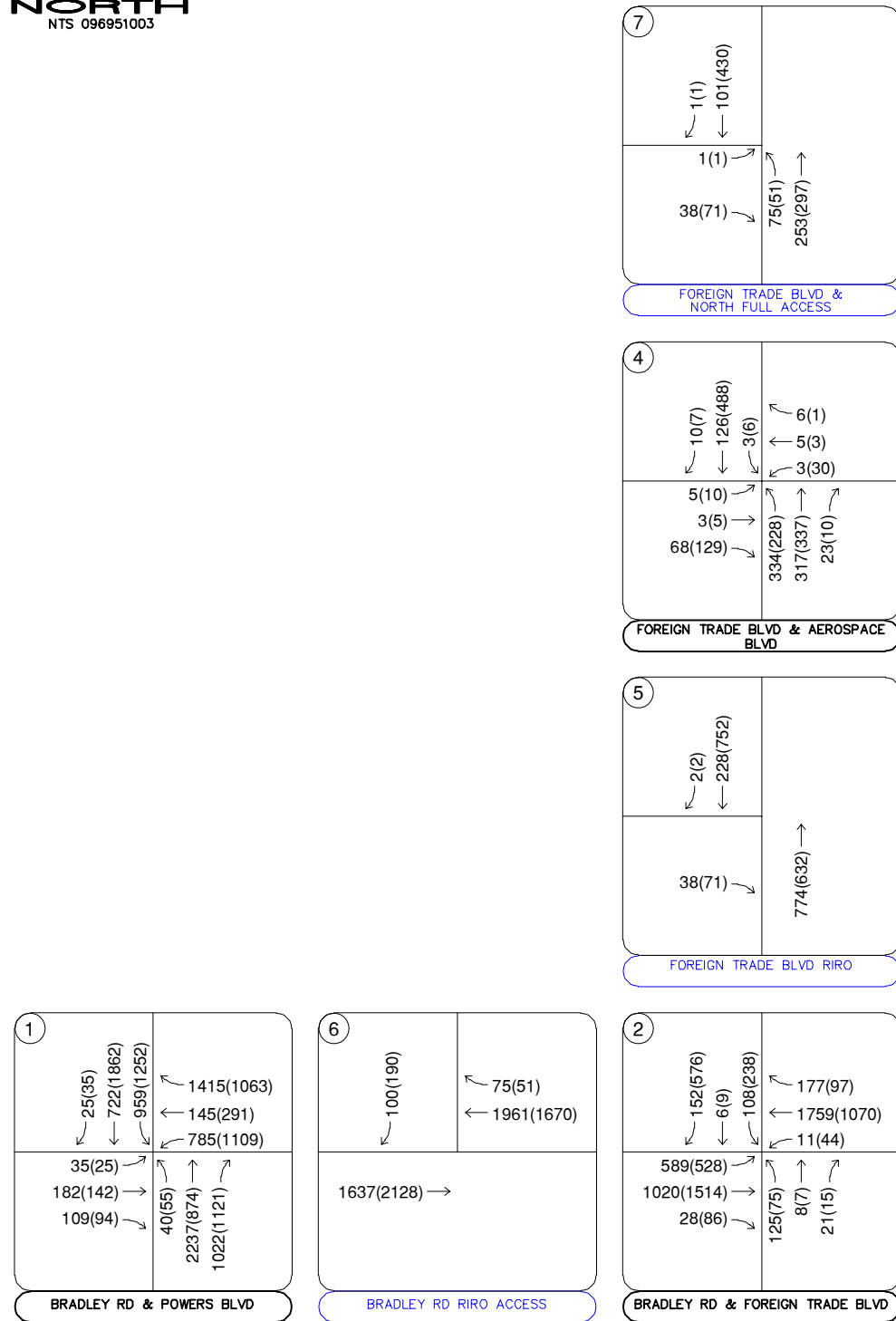


FIGURE 13
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2045 TOTAL TRAFFIC VOLUMES

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 2025, 2030, 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). For intersections and roadways in this study area, standard traffic engineering practice recommends overall intersection LOS D and movement/approach LOS E as the minimum desirable thresholds for acceptable operations. **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 D**. 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 2025 horizon analysis years while the HCM urban standard of 0.92 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. The signalized intersection analysis utilizes the observed cycle lengths with optimized phasing and timing. Synchro traffic analysis software was used to analyze the signalized and unsignalized key intersections for HCM level of service.

Bradley Road and Powers Boulevard (SH-21)

The Bradley Road and Powers Boulevard (SH-21) T-intersection is signalized with protected-permissive left turn phasing on the southbound Powers Boulevard (SH-21) approach. The intersection operates acceptably at LOS B during both peak hours under existing conditions.

By 2030, the surrounding traffic studies identified improving the intersection with dual southbound left turn lanes operating under protected-only left turn phasing. With this configuration the intersection is anticipated to operate with LOS D during the morning and afternoon peak hours.

It is anticipated that the west leg of this intersection will be constructed prior to 2045 as is shown in the ConnectCOS major thoroughfare plan. With the ultimate lane configuration with three northbound and southbound through lanes and two eastbound/westbound through lanes, the intersection is not expected to operate acceptably. The projected traffic volumes for the surrounding area will require the intersection to be grade separated. Of note, the ConnectCOS identifies Powers Boulevard (SH-21) as being a freeway through the Bradley Road intersection. Therefore, this intersection should be studied further in the future to determine the appropriate timing and configuration of the future grade separated intersection. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – Bradley Rd & Powers Blvd (SH-21) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Existing	17.1	B	13.7	B
2025 Background	19.7	B	14.6	B
2025 Background Plus Project	20.0	C	14.8	B
2030 Background #	36.2	D	32.0	D
2030 Background Plus Project #	51.0	D	41.5	D
2045 Background \$	122.8	F	87.2	F
2045 Background Plus Project \$	148.7	F	107.4	F

= Dual SB Left Turn Lanes

\$ = Ultimate Configuration

Bradley Road and Foreign Trade Zone Boulevard

The unsignalized 'T'-intersection of Bradley Road and Foreign Trade Zone Boulevard operates with stop control on the southbound Foreign Trade Zone Boulevard approach. Under existing conditions, the intersection movements operate with LOS B or better during the morning and afternoon peak hours.

The Bradley Heights development is currently constructing the south leg of the intersection with a separate left, through, and right turn lane by the short-term 2025 horizon. Additionally, the eastbound right turn lane and westbound left turn lanes will be provided. The north leg will match the south leg with three approach lanes designated as a separate left turn lane, one through lane, and a right turn lane. With this configuration, the intersection movements are anticipated to operate with LOS D or better with or without the project traffic in 2025.

By 2030, the intersection is expected to warrant signalization based future traffic projections and MUTCD Four Hour warrants. This recommendation is consistent with the Bradley Height development to the south. As a signalized intersection, the left turn movements should operate with protected-permitted phasing. The intersection is anticipated to operate with LOS c or better as a signal with or without project traffic. The signal warrant sheet is attached in **Appendix F**.

If 2045 volumes are realized, dual eastbound left turn lanes may be needed with traffic volume projections significantly exceeding 300 vehicles per hour. Two northbound receiving lanes will need to be provided with construction of dual eastbound left turn lanes. These can be accommodated within the existing pavement width with the inside through lane becoming dropped

as a forced northbound left turn lane at the Aerospace Boulevard intersection. The intersection is anticipated to operate at an acceptable level of service through the 2045 horizon with the addition of project traffic. **Table 4** provides the results of the LOS analysis conducted at this intersection.

Table 4 – Bradley Rd & Foreign Trade Zone Blvd LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Existing				
Eastbound Left	8.7	A	8.0	A
Southbound Left	14.4	B	12.8	B
Southbound Right	0.0	A	0.0	A
2025 Background #				
Northbound Left	18.2	C	26.3	D
Northbound Through	17.5	C	20.3	C
Northbound Right	10.4	B	12.2	B
Eastbound Left	9.1	A	8.2	A
Westbound Left	8.9	A	10.7	B
Southbound Left	17.1	C	16.3	C
Southbound Through	0.0	A	21.8	C
Southbound Right	0.0	A	0.0	A
2025 Background Plus Project #				
Northbound Left	20.5	C	26.5	D
Northbound Through	19.3	C	20.3	C
Northbound Right	10.4	B	12.2	B
Eastbound Left	9.4	A	8.2	A
Westbound Left	8.9	A	10.7	B
Southbound Left	18.8	C	16.9	C
Southbound Through	0.0	A	22.0	C
Southbound Right	0.0	A	0.0	A
2030 Background ##	10.8	B	16.6	B
2030 Background Plus Project ##	24.4	C	17.4	B
2045 Background \$	30.8	C	25.2	C
2045 Background Plus Project \$	51.0	D	35.1	D

= Addition of South Leg

= # + Signalized

\$ = # + ## + Dual EB Left Turn Lanes

Bradley Road and Marksheffel Road

The intersection of Bradley Road and Marksheffel Road is signalized with protected-permitted phasing on all four approaches to the intersection. As requested by the City of Colorado Springs, the yellow clearance time was set to 5.5 seconds and the all-red time was set to 2.0 seconds for this intersection. The intersection operates at LOS C during both peak hours under existing conditions and is expected to continue to operate acceptably through the 2025 horizon. However,

by 2030, dual eastbound left turn lanes are recommended at this intersection with future traffic volumes exceeding 300 vehicles per hour. With dual eastbound left turn lanes, the intersection may operate at LOS D during both peak hours. By 2045, dual northbound left turn lanes are recommended to be striped within the existing pavement provided. With this recommended intersection configuration, the intersection is anticipated to operate at an acceptable level of service through the 2045 horizon with the addition of project traffic. **Table 5** provides the results of the LOS analysis conducted at this intersection.

Table 5 – Bradley Rd & Marksheffel Rd LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Existing	29.6	C	32.3	C
2025 Background	32.7	C	34.1	C
2025 Background Plus Project	32.7	C	34.3	C
2030 Background #	35.1	D	33.2	C
2030 Background Plus Project #	38.5	D	40.4	D
2045 Background ##	43.1	D	41.5	D
2045 Background Plus Project ##	49.7	D	45.7	D

= Dual EB Left Turn Lanes

= # + Dual NB Left Turn Lanes

Aerospace Boulevard and Foreign Trade Zone Boulevard

The 'T'-intersection of Aerospace Boulevard and Foreign Trade Zone Boulevard operates with stop control on the westbound Aerospace Boulevard approach. The intersection movements operate at LOS A during both peak hours under existing conditions. With development of the project, the west leg will be constructed to access the site. A R1-1 "STOP" sign is proposed to be installed on the eastbound approach, exiting the development. A northbound left turn lane and southbound left turn lane will be striped within the existing pavement width. Of note, Foreign Trade Zone Boulevard provides sufficient pavement width to accommodate a two-way left turn center lane instead of providing turn lane storage pavement markings at the intersections. Separate eastbound and westbound left turn lanes could be provided to decrease the delay on the minor approaches if desired.

If 2045 volumes are realized, the minor westbound approach is expected to operate with long vehicle delays. Therefore, a single lane roundabout may be explored to accommodate future

traffic volumes and potential development on the east leg of the intersection. However, the long delay is reported on the westbound approach, which the project only contributes five (5) peak hours trips. As a single lane roundabout, the intersection is anticipated to operate with LOS B or better during both peak hours. **Table 6** provides the results of the LOS analysis conducted at this intersection.

Table 6 – Aerospace Boulevard & Foreign Trade Zone Boulevard LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Existing				
Westbound Approach	9.2	A	9.1	A
Southbound Left	8.1	A	7.4	A
2025 Background				
Westbound Approach	9.4	A	10.2	B
Southbound Left	8.2	A	7.5	A
2025 Background Plus Project #				
Northbound Left	7.3	A	7.5	A
Eastbound Approach	9.2	A	9.3	A
Westbound Approach	10.0	B	10.9	B
Southbound Left	8.3	A	7.5	A
2030 Background				
Westbound Approach	9.6	A	10.6	B
Southbound Left	8.3	A	7.6	A
2030 Background Plus Project #				
Northbound Left	8.2	A	8.5	A
Eastbound Approach	10.9	B	12.3	B
Westbound Approach	19.0	C	24.3	C
Southbound Left	8.6	A	7.7	A
2045 Background				
Westbound Approach	10.4	B	13.1	B
Southbound Left	8.7	A	8.0	A
2045 Background Plus Project #				
Northbound Left	8.4	A	9.6	A
Eastbound Approach	11.7	B	17.0	C
Westbound Approach	20.9	C	69.3	F
Southbound Left	9.0	A	8.2	A
2045 Background Plus Project \$	8.5	A	10.8	B

= Addition of East Leg, Separate NB and SB Left Turn Lanes

\$ = Single Lane Roundabout

5.3 Project Accesses

With completion of the Foreign Trade Zone project, two full movement accesses are proposed along the west side of Foreign Trade Zone Boulevard with the first phase of development with one access being located approximately 700 feet north of the Aerospace Boulevard intersection and the second access aligning with Aerospace Boulevard. It is recommended that R1-1 “STOP” signs be provided on the eastbound exiting approaches at both of these accesses. A northbound left turn lane with 150 feet of length is recommended at both of these accesses. Of note, the existing pavement width along Foreign Trade Zone Boulevard can accommodate a three-lane roadway with a center two-way left turn center lane extending from Aerospace Boulevard to the north property limits.

As mentioned above, the west leg of Aerospace Boulevard will be constructed at the intersection with Foreign Trade Zone Boulevard and will serve as primary access to the second phase (buildout) of the site. A right-in/right-out access is also proposed along Foreign Trade Zone Boulevard. An R1-1 “STOP” sign is recommended to be provided on the exiting eastbound approach of the right-in/right-out access with a R3-2 No Left Turn Sign placed below the R1-1 sign. Additionally, a right-in/right-out access is proposed along Bradley Road. It is recommended that a R1-1 “STOP” sign be installed on the exiting southbound approach. A R3-2 No Left Turn sign could be placed below the R1-1 sign and a R6-1L “ONE WAY” sign could be placed within the center median along Bradley Road to further inform drivers of the restricted movement. The existing southbound to westbound right turn acceleration lane at Foreign Trade Boulevard along Bradley Road will be extended as part of the project and drop as a forced right turn lane at the project access along Bradley Road. **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 acceptably during the peak hours in all three (3) horizons.

Table 7 – Project Access Level of Service Results

Intersection	2025 Total				2030 Total				2045 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		AM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Foreign Trade RIRO Eastbound Approach	Not Built Yet				9.3	A	11.7	B	9.8	A	17.0	C
Bradley Rd RIRO Southbound Right	Not Built Yet				14.8	B	14.6	B	31.3	D	26.1	D
Foreign Trade North Northbound Left	7.3	A	7.4	A	7.5	A	7.7	A	7.6	A	8.5	A
Eastbound Approach	8.7	A	8.9	A	8.8	A	9.8	A	9.1	A	12.0	B

5.4 CDOT Turn Bay Length Analysis

The threshold for requiring an access permit along Colorado Department of Transportation (CDOT) roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the east leg of Bradley Road along SH-21 (Powers Boulevard) is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection.

SH-21 is categorized as an E-X roadway with a 65 miles per hour speed limit, as such turn lanes requirements are to be designed per the State Highway Access Code (SHAC). According to the State Highway Access Code for category Expressway (E-X) roadways the turn lane warrants are as follows:

- A left turn deceleration lane is required for any access for any access with a projected daily left turn ingress volumes greater than 10. The transitions taper length will be included within the required deceleration length.
- A right turn lane with deceleration and taper lengths is required for any access with a projected peak hour right turn ingress turning volume greater than 10 vph.
- A right turn lane with acceleration and taper lengths is required for any access with a projected peak hour right turning volume greater than 10 vph.

Based on the 2025 and 2030 traffic volume projections, turn lane requirements at the Bradley Road and Powers Boulevard (SH-21) intersection are as follows:

- A southbound left turn lane **is** warranted and exists at the SH-21 and Bradley Road intersection based on projected 2025 background plus project traffic volumes being 475 southbound left turns during the peak hour and the threshold being 10 vpd. Based on the 65 mile per hour speed limit, the deceleration length is 800 feet plus 475 feet of storage (1,275 feet of total turn lane length), plus a 300-foot taper. The existing southbound left turn lane provides 775 feet of length. Therefore, the left turn lane should be extended to meet CDOT turn lane standards. However, dual southbound left turn lanes should be provided with 2030 background plus project traffic volumes reaching 1,126 southbound lefts per hour. Therefore, the dual southbound left turn lanes are recommended to each provide a deceleration length of 800 feet with 530 feet of storage (1,330 feet of total turn lane length) and 300 feet of taper.
- A northbound right turn lane **is** warranted and exists at the SH-21 and Bradley Road intersection based on projected 2025 background plus project traffic volumes being 511 northbound right turns during the peak hour and the threshold being 10 vph. The existing northbound right turn lane provides 550 feet of storage. Based on the 65 mile per hour speed limit, the deceleration length is recommended to provide 800 feet, plus a 300-foot taper. Therefore, the existing turn lane needs to be extended to meet CDOT turn lane standards.
- A northbound acceleration lane along SH-21 from the Bradley Road westbound right turn exists and **is** warranted based on projected 2025 background plus project traffic volumes being 631 westbound right turns during the peak hour and the threshold being 10 vph. The existing acceleration lane provides a length of 650 feet. Based on the 65 mile per hour speed limit, the acceleration lane length is recommended to provide 1,380 feet, plus a 220-foot taper. Therefore, the acceleration lane needs to be extended to meet CDOT turn lane lengths.

5.5 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 D** for unsignalized intersections and **Appendix E** for signalized intersections.

Table 8 – Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2025 Calculated Queue (feet)	2025 Rec. Length (feet)	2030 Calculated Queue (feet)	2030 Rec Length (feet)	2045 Calculated Queue (feet)	2045 Rec Length (feet)
Bradley & Powers							
Eastbound Left	DNE	-	-	-	-	Recommended Grade Separated Intersection	
Eastbound Right	DNE	-	-	-	-		
Westbound Left	625'/C	219' DL	625'/C	594' DL	625'/C		
Westbound Right	550'	95'	550'	504'	550'		
Northbound Left	DNE	-	DNE	-	DNE		
Northbound Right	550'	0'	800'+300'T	0'	800'+300'T		
Southbound Left	775'	300'	1,275+300'T	662' DL	1,330+300'T DL		
Southbound Right	DNE	-	DNE	-	DNE		
Bradley & Foreign Trade							
Eastbound Left	575'	25'	575'	385'	575'	326'	575' DL
Eastbound Right	DNE	25'	325'	0'	325'	9'	325'
Westbound Left	DNE	25'	300'	21'	300'	24'	300'
Westbound Right	525'	25'	525'	22'	525'	39'	525'
Northbound Left	DNE	25'	225'	121'	225'	189'	225'
Northbound Right	DNE	25'	150'	0'	150'	0'	150'
Southbound Left	DNE	25'	150'	219'	150'	255'	150'
Southbound Right	300'	25'	300'	0'	300'	0'	300'
Bradley & Marksheffel							
Eastbound Left	525'	202'	525'	403' DL	525' DL	456' DL	525' DL
Eastbound Right	225'	0'	225'	0'	225'	0'	225'
Westbound Left	800'	99'	800'	113'	800'	121'	800'
Westbound Right	425'	0'	425'	0'	425'	0'	425'
Northbound Left	725'	188'	725'	367'	725'	334' DL	725' DL
Northbound Right	650'	0'	650'	0'	650'	0'	650'
Southbound Left	575'	35'	575'	49'	575'	135'	575'
Southbound Right	550'	0'	550'	0'	550'	0'	550'
Foreign Trade & Aerospace							
Northbound Left	DNE	25'	150'	25'	150'	25'	150'
Southbound Left	DNE	25	150'	25'	150'	25'	150'
Foreign Trade North Access							
Northbound Left	DNE	25'	DNE	25'	DNE	25'	DNE
Foreign Trade North Access							
Northbound Left	DNE	25	DNE	25'	DNE	25'	DNE

DNE = Does Not Exist; C = Continuous Lane; **Blue** Text = Recommendation; DL = Dual Left Turn Lanes; DR = Dual Right Turn Lanes; T = Taper

The vehicle queues are all anticipated to remain within the existing or recommended turn lane lengths through the 2045 horizon. The new turn lanes along Bradley Road and Foreign Trade Zone Boulevard are based on the turn lane lengths outlined in the City of Colorado Springs Traffic Criteria Manual. The posted speed limit along Bradley Road is 50 miles per hour with a

deceleration length of 235 feet and Foreign Trade Zone Boulevard has a posted speed limit of 25 miles per hour with a deceleration length of 115 feet. The left turn lane storage lengths were determined by the number of peak hour volumes (1 vehicle = 1 foot of storage).

5.6 Improvement Summary

Based on the results of the intersection operational and vehicle queuing analysis, the key intersection recommended improvements and control are shown in **Figure 14** for 2025, **Figure 15** for 2030, and **Figure 16** for 2045 horizons.

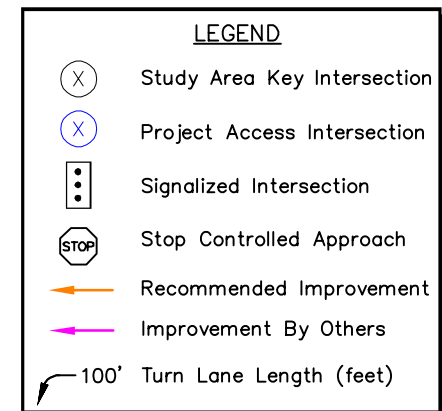
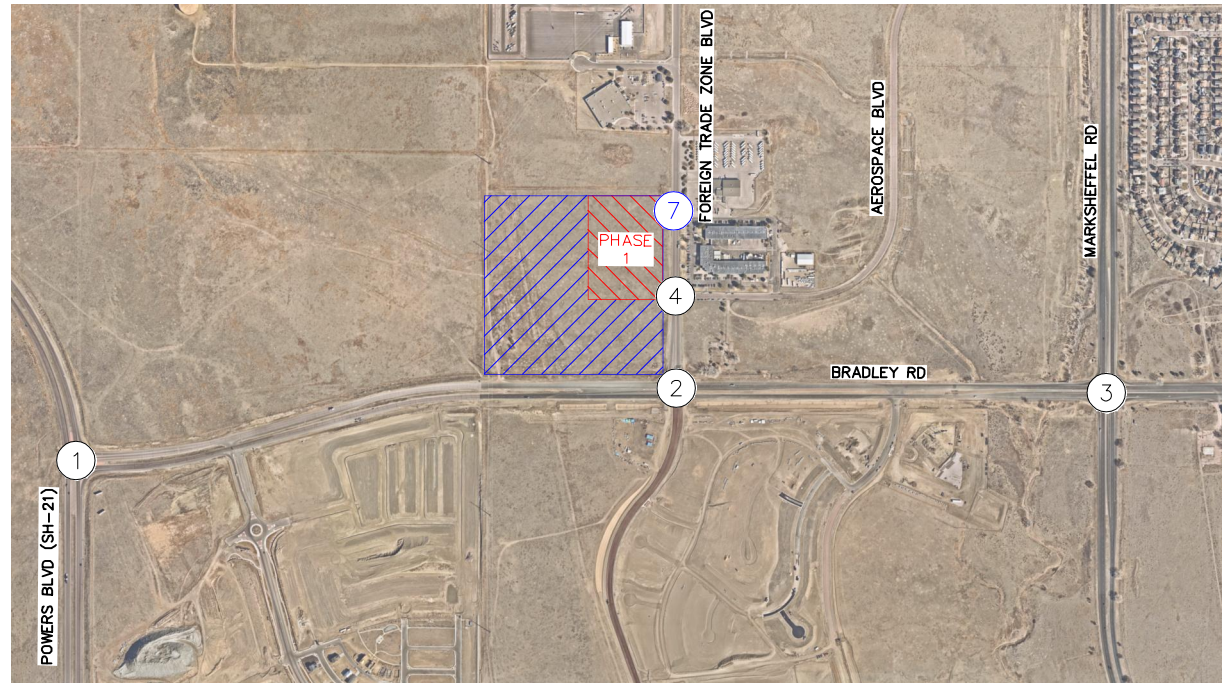
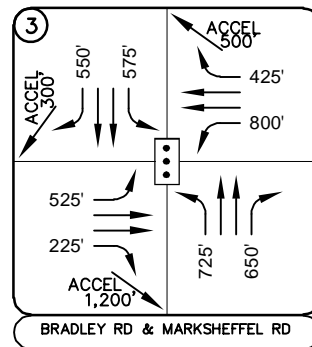
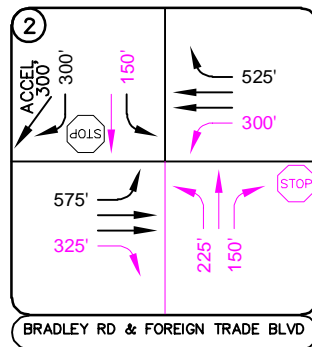
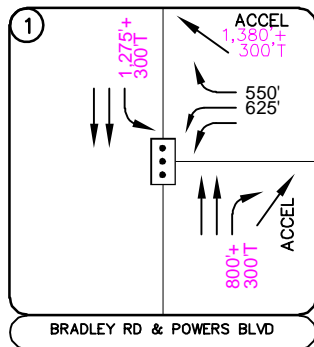
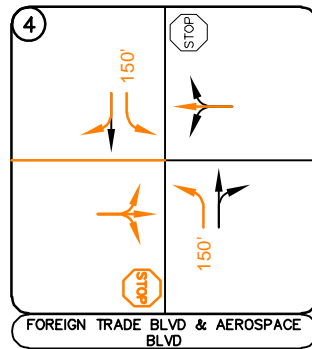
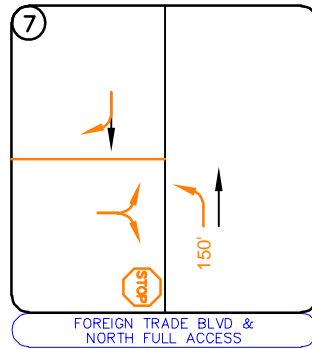


FIGURE 14
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2025 RECOMMENDED GEOMETRY AND CONTROL

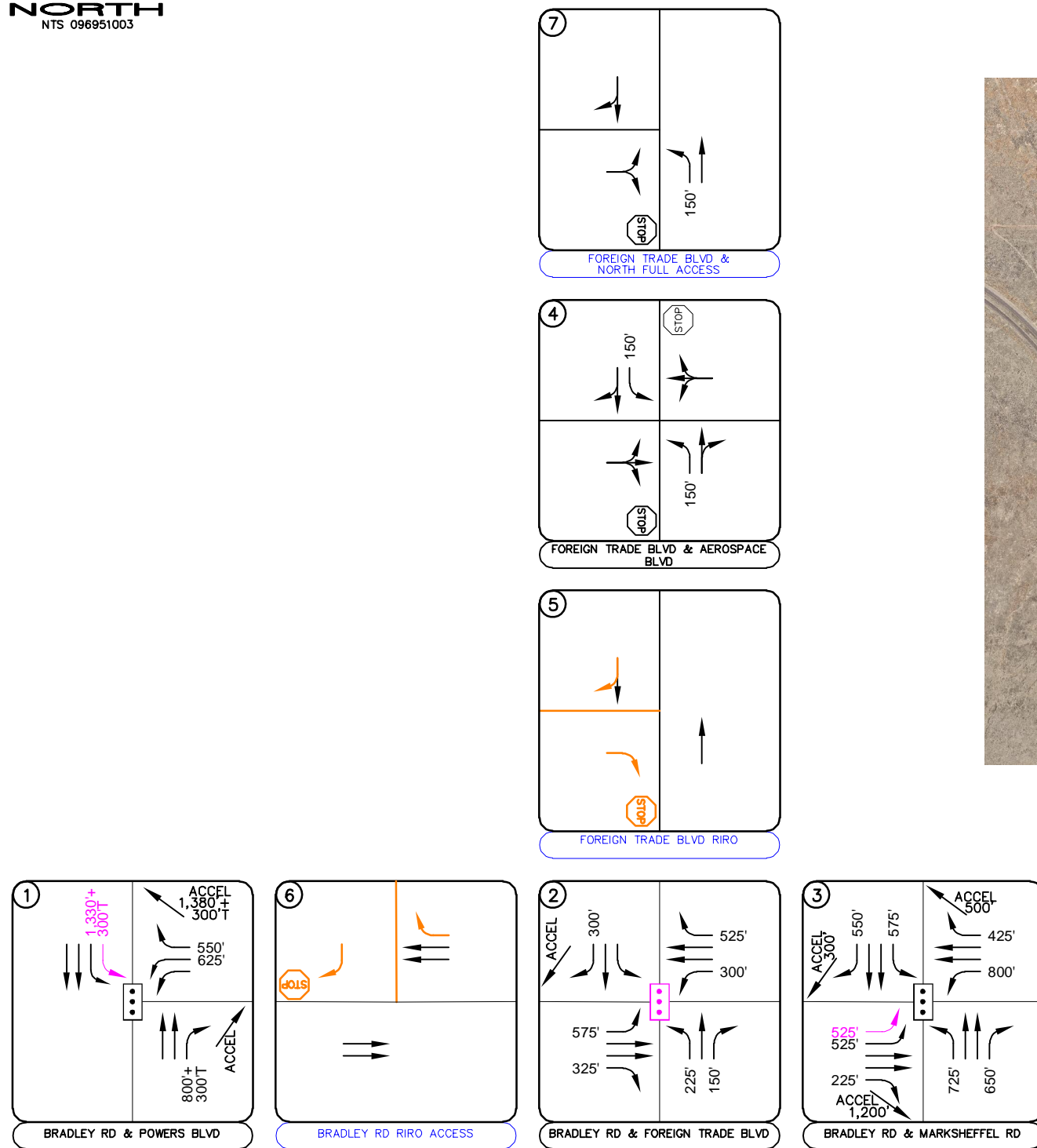
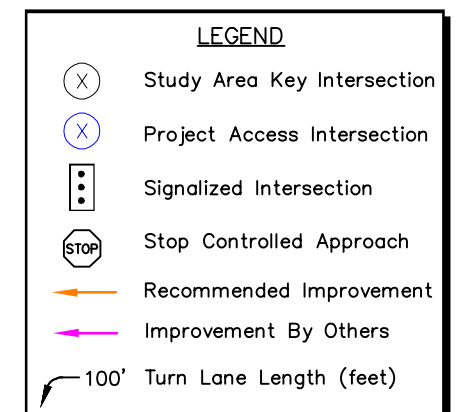


FIGURE 15
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2030 RECOMMENDED GEOMETRY AND CONTROL



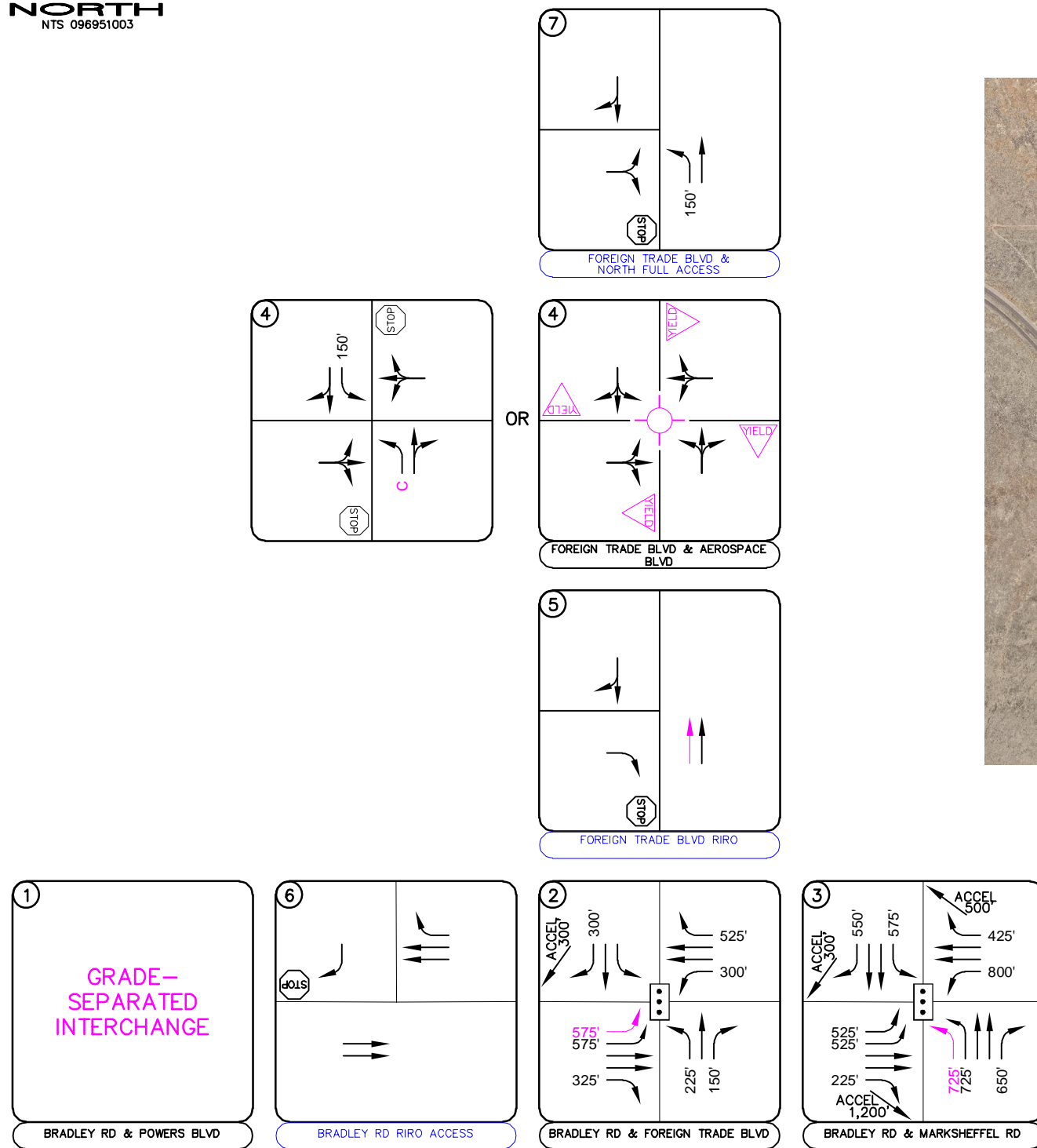
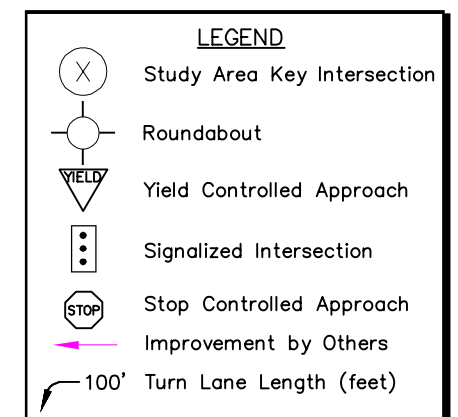


FIGURE 16
COLORADO CENTRE ADDITION NO. 3 ANNEXATION
COLORADO SPRINGS, COLORADO
2045 RECOMMENDED GEOMETRY AND CONTROL



6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Colorado Centre Addition No. 3 Annexation 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:

2025 Recommendations

- Based on traffic projections, the addition of the entire development on the east leg of Bradley Road along SH-21 (Powers Boulevard) is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection with project development.
- Phase I is anticipated to be built by 2025 and be provided by two (2) accesses. The west leg of Aerospace Boulevard will be constructed at the intersection with Foreign Trade Zone Boulevard and will serve as the primary access to the site. A R1-1 “STOP” sign is recommended to be placed on the eastbound approach of this access. Additionally, access to the site is proposed by a full movement access along the west side of Foreign Trade Zone Boulevard, approximately 700 feet north of the Aerospace Boulevard intersection. This north access is recommended to operate with stop control and an R1-1 “STOP” sign should be installed on the eastbound exiting approach. A northbound left turn lane with 150 feet of length is recommended at both of these accesses and will be constructed by the developer. Of note, the existing pavement width along Foreign Trade Zone Boulevard can accommodate a three-lane roadway with a center two-way left turn center lane extending from Aerospace Boulevard to the north property limits; therefore, the developer will construct this center lane along Foreign Trade Zone Boulevard.
- To meet CDOT turn lane lengths, the northbound right turn lane at Bradley Road/Powers Boulevard (SH-21) is recommended to provide a length of 800 feet with a 300-foot taper. Likewise, the southbound left turn lane will need to be extended to 1,275 feet with a 300-foot taper.

- The south leg of the Bradley Road and Foreign Trade Zone intersection is currently being constructed by others. The traffic study for the development to the south identified a separate eastbound right turn lane, westbound left turn lane, and separate left, through, and right turn lanes on the north and south approaches of this intersection.

2030 Recommendations

- The full Foreign Trade Zone development is anticipated to be constructed by 2030 and include two (2) additional accesses. A right-in/right-out access is proposed along the west side of Foreign Trade Zone Boulevard between Bradley Road and Aerospace Boulevard. A R1-1 “STOP” sign is recommended to be provided on the eastbound exiting approach of this right-in/right-out access along Foreign Trade Zone Boulevard. Further, a R3-2 No Left Turn Sign could be placed below the R1-1 sign at the right-in/right-out access. Additionally, a right-in/right-out access is proposed along Bradley Road. It is recommended that a R1-1 “STOP” sign be installed on the exiting southbound approach. A R3-2 No Left Turn sign could be placed below the R1-1 sign and a R6-1L “ONE WAY” sign could be placed within the center median along Bradley Road to further inform drivers of the restricted movement. Through coordination with the City of Colorado Springs, the existing southbound to westbound right turn acceleration lane at Foreign Trade Boulevard along Bradley Road will be extended by the developer and drop as a forced right turn lane at the project access along Bradley Road.
- As stated in the adjacent developments’ traffic studies, the intersection of Bradley Road/Powers Boulevard (SH-21) is recommended to provide dual southbound left turn lanes. The dual southbound left turn lanes will operate with protected-only left turn phasing.
- The intersection of Bradley Road/Foreign Trade Zone Boulevard is anticipated to warrant signalization with buildout of the residential development to the south.

2045 Recommendations

- If 2045 volumes are realized at Bradley Road/Powers Boulevard (SH-21) intersection, the intersection may need to explore further improvements. The ConnectCOS identifies Powers Boulevard (SH-21) as being a freeway through the Bradley Road intersection. Therefore, a future grade separated interchange could be explored by CDOT and the City.

- The Bradley Road and Foreign Trade Zone Boulevard intersection is recommended to provide dual eastbound left turn lanes. These turn lanes can be accommodated within the existing pavement allocated to the second eastbound left turn lane. Two northbound receiving lanes will need to be provided with construction of dual eastbound left turn lanes. These can be accommodated within the existing pavement width with the inside through lane being dropped as a forced northbound left turn lane at the Aerospace Boulevard intersection.
- The Aerospace Boulevard and Foreign Trade Zone Boulevard intersection does not meet signal warrants but may have longer vehicle delays on the westbound approach by 2045. Therefore, a single-lane roundabout could be explored with build out of the development to the east.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Colorado Springs, Colorado Department of Transportation, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

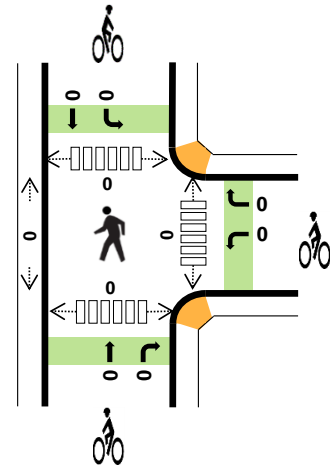
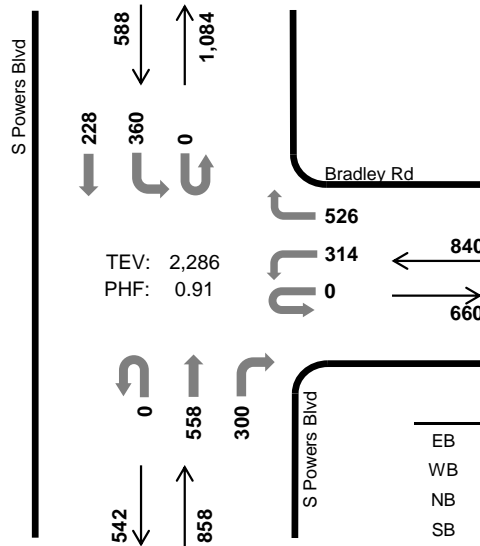
Intersection Count Sheets

S Powers Blvd Bradley Rd



Peak Hour

Date: 10/05/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	-	-
WB	4.8%	0.86
NB	3.1%	0.80
SB	7.8%	0.89
TOTAL	4.9%	0.91

Two-Hour Count Summaries

Interval Start		n/a				Bradley Rd				S Powers Blvd				S Powers Blvd				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	102	0	143	0	0	151	59	0	98	51	0	604	0
7:15 AM		0	0	0	0	0	79	0	159	0	0	180	89	0	80	38	0	625	0
7:30 AM		0	0	0	0	0	59	0	130	0	0	134	93	0	92	63	0	571	0
7:45 AM		0	0	0	0	0	74	0	94	0	0	93	59	0	90	76	0	486	2,286
8:00 AM		0	0	0	0	0	95	0	85	0	0	76	40	0	77	52	0	425	2,107
8:15 AM		0	0	0	0	0	85	0	84	0	0	74	61	0	65	82	0	451	1,933
8:30 AM		0	0	0	0	0	79	0	67	0	0	90	51	0	82	67	0	436	1,798
8:45 AM		0	0	0	0	0	66	0	74	0	0	83	42	0	48	51	0	364	1,676
Count Total		0	0	0	0	0	639	0	836	0	0	881	494	0	632	480	0	3,962	0
Peak Hour	All	0	0	0	0	0	314	0	526	0	0	558	300	0	360	228	0	2,286	0
	HV	0	0	0	0	0	24	0	16	0	0	9	18	0	31	15	0	113	0
	HV%	-	-	-	-	-	8%	-	3%	-	-	2%	6%	-	9%	7%	-	5%	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	11	8	11	30	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	12	3	7	22	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	3	8	11	22	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	14	8	17	39	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	12	2	12	26	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	10	13	5	28	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	6	9	25	40	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	12	13	19	44	0	0	0	0	0	0	0	0	0	0
Count Total	0	80	64	107	251	0	0	0	0	0	0	0	0	0	0
Peak Hr	0	40	27	46	113	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Bradley Rd				S Powers Blvd				S Powers Blvd				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	8	0	3	0	0	3	5	0	7	4	0	30	0
7:15 AM	0	0	0	0	0	7	0	5	0	0	2	1	0	4	3	0	22	0
7:30 AM	0	0	0	0	0	1	0	2	0	0	0	8	0	7	4	0	22	0
7:45 AM	0	0	0	0	0	8	0	6	0	0	4	4	0	13	4	0	39	113
8:00 AM	0	0	0	0	0	6	0	6	0	0	2	0	0	11	1	0	26	109
8:15 AM	0	0	0	0	0	4	0	6	0	0	3	10	0	2	3	0	28	115
8:30 AM	0	0	0	0	0	2	0	4	0	0	1	8	0	21	4	0	40	133
8:45 AM	0	0	0	0	0	4	0	8	0	0	5	8	0	11	8	0	44	138
Count Total	0	0	0	0	0	40	0	40	0	0	20	44	0	76	31	0	251	0
Peak Hour	0	0	0	0	0	24	0	16	0	0	9	18	0	31	15	0	113	0

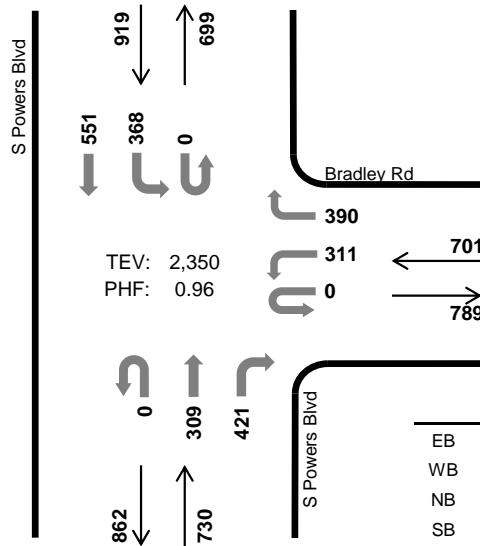
Two-Hour Count Summaries - Bikes																		
Interval Start	n/a			Bradley Rd			S Powers Blvd			S Powers Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	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	0
7:45 AM	0	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	0
8:15 AM	0	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	0
8:45 AM	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.

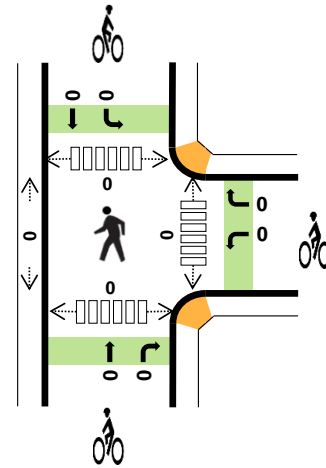
S Powers Blvd Bradley Rd



Peak Hour



Date: 10/05/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	2.9%	0.95
NB	4.9%	0.95
SB	3.3%	0.98
TOTAL	3.7%	0.96

Two-Hour Count Summaries

Interval Start		n/a				Bradley Rd				S Powers Blvd				S Powers Blvd				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	85	0	99	0	0	78	115	0	98	137	0	612	0
4:15 PM		0	0	0	0	0	75	0	93	0	0	88	77	0	99	134	0	566	0
4:30 PM		0	0	0	0	0	75	0	100	0	0	68	118	0	94	138	0	593	0
4:45 PM		0	0	0	0	0	76	0	98	0	0	75	111	0	77	142	0	579	2,350
5:00 PM		0	0	0	0	0	54	0	87	0	0	80	103	0	86	146	0	556	2,294
5:15 PM		0	0	0	0	0	71	0	101	0	0	90	93	0	91	131	0	577	2,305
5:30 PM		0	0	0	0	0	60	0	50	0	0	74	75	0	71	138	0	468	2,180
5:45 PM		0	0	0	0	0	66	0	54	0	0	78	88	0	72	121	0	479	2,080
Count Total		0	0	0	0	0	562	0	682	0	0	631	780	0	688	1,087	0	4,430	0
Peak Hour	All	0	0	0	0	0	311	0	390	0	0	309	421	0	368	551	0	2,350	0
	HV	0	0	0	0	0	9	0	11	0	0	14	22	0	26	4	0	86	0
	HV%	-	-	-	-	-	3%	-	3%	-	-	5%	5%	-	7%	1%	-	4%	0

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

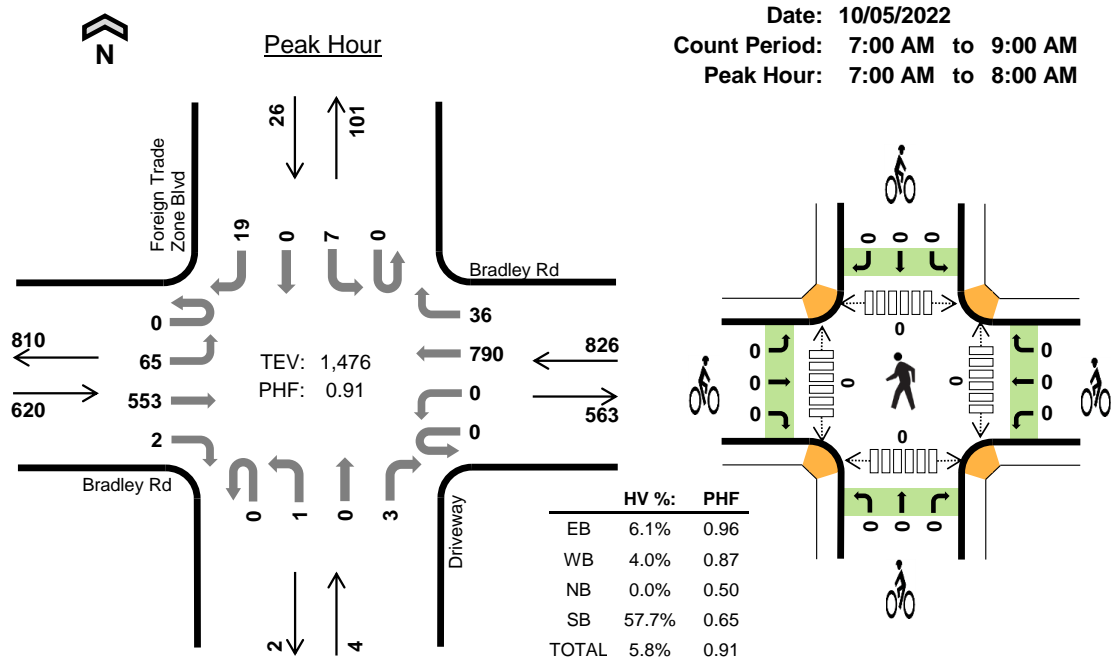
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	7	14	10	31	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	6	8	10	24	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	6	11	8	25	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	3	2	6	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	3	1	3	7	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	7	4	4	15	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	3	1	2	6	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	5	7	13	0	0	0	0	0	0	0	0	0	0
Count Total	0	34	47	46	127	0	0	0	0	0	0	0	0	0	0
Peak Hr	0	20	36	30	86	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Bradley Rd				S Powers Blvd				S Powers Blvd				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	4	0	3	0	0	3	11	0	9	1	0	31	0
4:15 PM	0	0	0	0	0	1	0	5	0	0	4	4	0	9	1	0	24	0
4:30 PM	0	0	0	0	0	3	0	3	0	0	5	6	0	6	2	0	25	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	2	1	0	2	0	0	6	86
5:00 PM	0	0	0	0	0	3	0	0	0	0	0	1	0	0	3	0	7	62
5:15 PM	0	0	0	0	0	0	0	7	0	0	2	2	0	2	2	0	15	53
5:30 PM	0	0	0	0	0	2	0	1	0	0	1	0	0	0	2	0	6	34
5:45 PM	0	0	0	0	0	0	0	1	0	0	2	3	0	2	5	0	13	41
Count Total	0	0	0	0	0	14	0	20	0	0	19	28	0	30	16	0	127	0
Peak Hour	0	0	0	0	0	9	0	11	0	0	14	22	0	26	4	0	86	0

Two-Hour Count Summaries - Bikes																		
Interval Start	n/a			Bradley Rd			S Powers Blvd			S Powers Blvd			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.

Foreign Trade Zone Blvd Bradley Rd



Two-Hour Count Summaries

Interval Start		Bradley Rd				Bradley Rd				Driveway				Foreign Trade Zone Blvd				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	14	143	0	0	0	221	11	0	1	0	1	0	1	0	9	401	0
7:15 AM		0	14	148	0	0	0	228	9	0	0	0	0	0	2	0	4	405	0
7:30 AM		0	21	141	0	0	0	172	9	0	0	0	0	0	3	0	1	347	0
7:45 AM		0	16	121	2	0	0	169	7	0	0	0	2	0	1	0	5	323	1,476
8:00 AM		1	17	96	0	0	1	169	5	0	0	0	0	0	0	0	3	292	1,367
8:15 AM		1	12	102	0	0	1	166	6	0	0	0	0	0	0	0	2	290	1,252
8:30 AM		1	24	100	1	0	2	113	4	0	1	0	0	0	0	0	11	257	1,162
8:45 AM		0	15	76	0	3	2	114	5	0	0	0	0	0	5	0	26	246	1,085
Count Total		3	133	927	3	3	6	1,352	56	0	2	0	3	0	12	0	61	2,561	0
Peak Hour	All	0	65	553	2	0	0	790	36	0	1	0	3	0	7	0	19	1,476	0
	HV	0	16	21	1	0	0	31	2	0	0	0	0	0	6	0	9	86	0
	HV%	-	25%	4%	50%	-	-	4%	6%	-	0%	-	0%	-	86%	-	47%	6%	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	9	5	0	7	21	0	0	0	0	0	0	0	0	0	0
7:15 AM	5	9	0	3	17	0	0	0	0	0	0	0	0	0	0
7:30 AM	13	3	0	2	18	0	0	0	0	0	0	0	0	0	0
7:45 AM	11	16	0	3	30	0	0	0	0	0	0	0	0	0	0
8:00 AM	20	12	0	3	35	0	0	0	0	0	0	0	0	0	0
8:15 AM	12	6	0	1	19	0	0	0	0	0	0	0	0	0	0
8:30 AM	27	2	1	2	32	0	0	0	0	0	0	0	0	0	0
8:45 AM	24	9	0	5	38	0	0	0	0	0	0	0	0	0	0
Count Total	121	62	1	26	210	0	0	0	0	0	0	0	0	0	0
Peak Hour	38	33	0	15	86	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Bradley Rd				Bradley Rd				Driveway				Foreign Trade Zone Blvd				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	2	7	0	0	0	4	1	0	0	0	0	0	1	0	6	21	0
7:15 AM	0	3	2	0	0	0	9	0	0	0	0	0	0	2	0	1	17	0
7:30 AM	0	7	6	0	0	0	3	0	0	0	0	0	0	2	0	0	18	0
7:45 AM	0	4	6	1	0	0	15	1	0	0	0	0	0	1	0	2	30	86
8:00 AM	0	5	15	0	0	0	12	0	0	0	0	0	0	0	0	3	35	100
8:15 AM	0	6	6	0	0	1	5	0	0	0	0	0	0	0	0	1	19	102
8:30 AM	0	17	10	0	0	0	1	1	0	1	0	0	0	0	0	2	32	116
8:45 AM	0	10	14	0	0	0	8	1	0	0	0	0	0	1	0	4	38	124
Count Total	0	54	66	1	0	1	57	4	0	1	0	0	0	7	0	19	210	0
Peak Hour	0	16	21	1	0	0	31	2	0	0	0	0	0	6	0	9	86	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Bradley Rd			Bradley Rd			Driveway			Foreign Trade Zone Blvd			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.

Foreign Trade Zone Blvd Bradley Rd

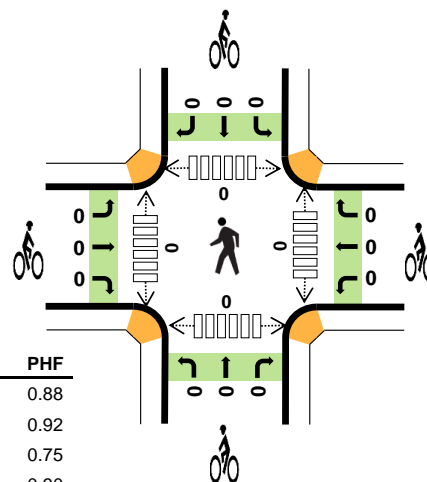
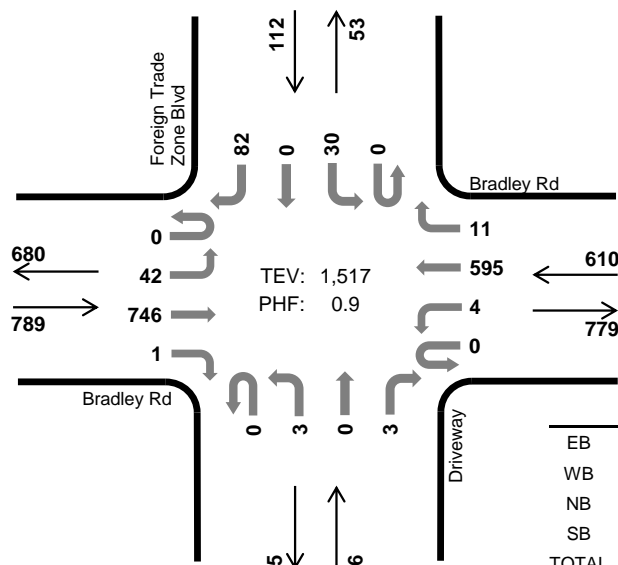


Peak Hour

Date: 10/05/2022

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

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



Two-Hour Count Summaries

Interval Start		Bradley Rd				Bradley Rd				Driveway				Foreign Trade Zone Blvd				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	21	202	1	0	0	159	7	0	1	0	1	0	8	0	21	421	0
4:15 PM		0	10	166	0	0	1	136	2	0	0	0	1	0	7	0	24	347	0
4:30 PM		0	7	197	0	0	3	150	0	0	1	0	0	0	6	0	21	385	0
4:45 PM		0	4	181	0	0	0	150	2	0	1	0	1	0	9	0	16	364	1,517
5:00 PM		0	2	186	0	0	0	116	0	0	3	0	2	0	6	0	11	326	1,422
5:15 PM		1	2	174	0	0	0	146	0	0	2	0	0	0	1	0	9	335	1,410
5:30 PM		0	0	157	1	0	0	107	0	0	0	0	0	0	3	0	4	272	1,297
5:45 PM		0	2	153	0	0	0	97	0	0	0	0	0	0	0	0	1	253	1,186
Count Total		1	48	1,416	2	0	4	1,061	11	0	8	0	5	0	40	0	107	2,703	0
Peak Hour	All	0	42	746	1	0	4	595	11	0	3	0	3	0	30	0	82	1,517	0
	HV	0	29	22	0	0	0	21	9	0	0	0	1	0	1	0	0	83	0
	HV%	-	69%	3%	0%	-	0%	4%	82%	-	0%	-	33%	-	3%	-	0%	5%	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	22	17	0	0	39	0	0	0	0	0	0	0	0	0	0
4:15 PM	13	6	1	0	20	0	0	0	0	0	0	0	0	0	0
4:30 PM	13	6	0	1	20	0	0	0	0	0	0	0	0	0	0
4:45 PM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0
5:15 PM	4	6	0	0	10	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0
Count Total	61	45	1	1	108	0	0	0	0	0	0	0	0	0	0
Peak Hour	51	30	1	1	83	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Bradley Rd				Bradley Rd				Driveway				Foreign Trade Zone Blvd				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	16	6	0	0	0	11	6	0	0	0	0	0	0	0	0	39	0
4:15 PM	0	9	4	0	0	0	4	2	0	0	0	1	0	0	0	0	20	0
4:30 PM	0	4	9	0	0	0	6	0	0	0	0	0	0	1	0	0	20	0
4:45 PM	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	4	83
5:00 PM	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	6	50
5:15 PM	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	10	40
5:30 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	24
5:45 PM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	25
Count Total	0	29	32	0	0	0	36	9	0	0	0	1	0	1	0	0	108	0
Peak Hour	0	29	22	0	0	0	21	9	0	0	0	1	0	1	0	0	83	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Bradley Rd			Bradley Rd			Driveway			Foreign Trade Zone Blvd			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	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.

S Marksheffel Blvd Bradley Rd

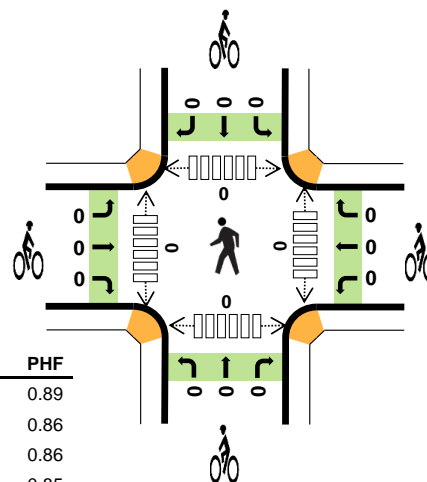
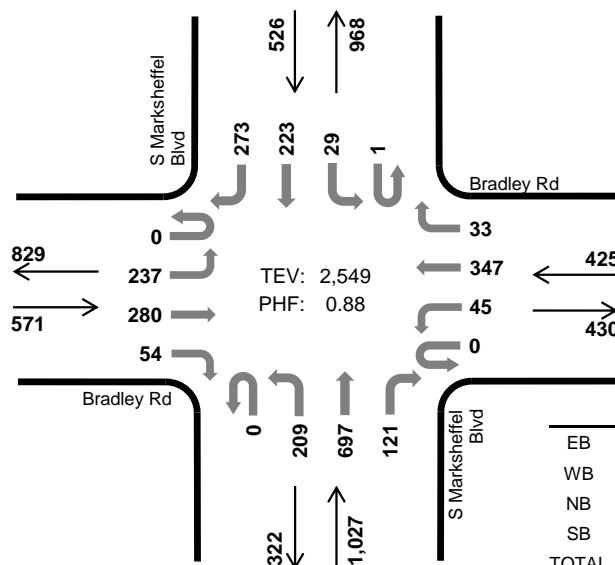


Peak Hour

Date: 10/05/2022

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

Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	4.4%	0.89
WB	3.5%	0.86
NB	1.9%	0.86
SB	4.2%	0.85
TOTAL	3.2%	0.88

Two-Hour Count Summaries

Interval Start		Bradley Rd				Bradley Rd				S Marksheffel Blvd				S Marksheffel Blvd				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	52	75	14	0	13	93	7	0	54	171	33	0	10	57	87	666	0
7:15 AM		0	72	78	10	0	14	101	9	0	70	196	34	1	8	65	63	721	0
7:30 AM		0	55	74	13	0	13	79	13	0	51	183	37	0	3	46	61	628	0
7:45 AM		0	58	53	17	0	5	74	4	0	34	147	17	0	8	55	62	534	2,549
8:00 AM		0	38	44	11	0	6	67	3	1	14	118	28	0	2	54	85	471	2,354
8:15 AM		0	43	47	11	0	6	61	3	0	22	98	13	0	3	62	92	461	2,094
8:30 AM		0	36	41	19	0	4	51	3	0	20	111	10	0	3	44	48	390	1,856
8:45 AM		0	30	40	10	0	8	46	3	1	21	82	7	0	2	41	57	348	1,670
Count Total		0	384	452	105	0	69	572	45	2	286	1,106	179	1	39	424	555	4,219	0
Peak Hour	All	0	237	280	54	0	45	347	33	0	209	697	121	1	29	223	273	2,549	0
	HV	0	7	6	12	0	3	11	1	0	9	10	0	0	0	10	12	81	0
	HV%	-	3%	2%	22%	-	7%	3%	3%	-	4%	1%	0%	0%	0%	4%	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
7:00 AM	8	4	6	5	23	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	2	5	10	19	0	0	0	0	0	0	0	0	0	0
7:30 AM	7	1	4	2	14	0	0	0	0	0	0	0	0	0	0
7:45 AM	8	8	4	5	25	0	0	0	0	0	0	0	0	0	0
8:00 AM	13	5	2	8	28	0	0	0	0	0	0	0	0	0	0
8:15 AM	5	4	3	7	19	0	0	0	0	0	0	0	0	0	0
8:30 AM	8	0	4	4	16	0	0	0	0	0	0	0	0	0	0
8:45 AM	9	2	7	8	26	0	0	0	0	0	0	0	0	0	0
Count Total	60	26	35	49	170	0	0	0	0	0	0	0	0	0	0
Peak Hour	25	15	19	22	81	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Bradley Rd				Bradley Rd				S Marksheffel Blvd				S Marksheffel Blvd				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	3	2	3	0	2	1	1	0	4	2	0	0	0	3	2	23	0
7:15 AM	0	1	0	1	0	0	2	0	0	1	4	0	0	0	6	4	19	0
7:30 AM	0	1	4	2	0	0	1	0	0	1	3	0	0	0	0	2	14	0
7:45 AM	0	2	0	6	0	1	7	0	0	3	1	0	0	0	1	4	25	81
8:00 AM	0	6	3	4	0	0	5	0	0	0	1	1	0	0	1	7	28	86
8:15 AM	0	1	3	1	0	1	3	0	0	1	2	0	0	0	4	3	19	86
8:30 AM	0	2	2	4	0	0	0	0	0	3	1	0	0	0	3	1	16	88
8:45 AM	0	2	2	5	0	2	0	0	0	5	2	0	0	0	3	5	26	89
Count Total	0	18	16	26	0	6	19	1	0	18	16	1	0	0	21	28	170	0
Peak Hour	0	7	6	12	0	3	11	1	0	9	10	0	0	0	10	12	81	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Bradley Rd			Bradley Rd			S Marksheffel Blvd			S Marksheffel Blvd			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.

S Marksheffel Blvd Bradley Rd

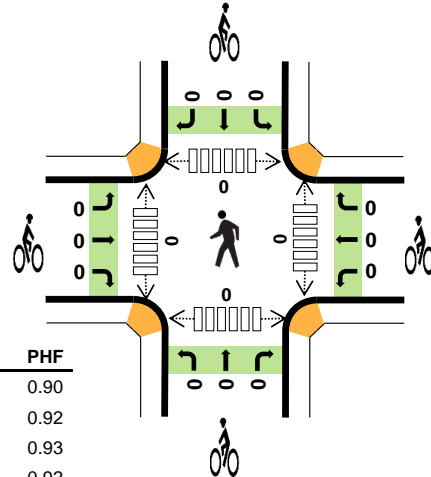
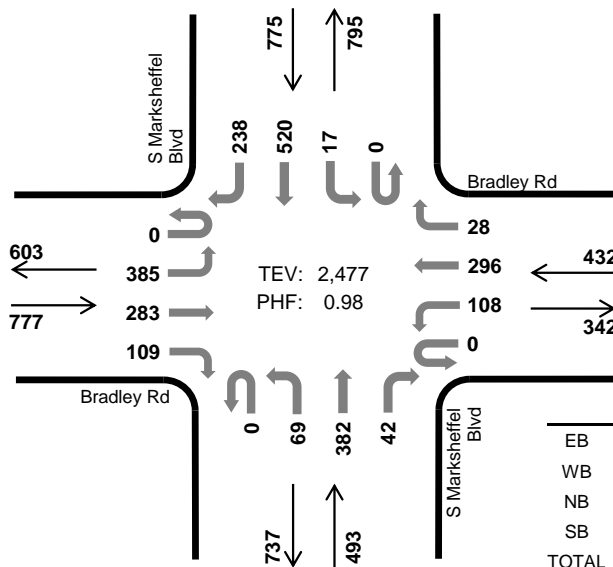


Peak Hour

Date: 10/05/2022

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

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



	HV %:	PHF
EB	3.3%	0.90
WB	1.9%	0.92
NB	6.1%	0.93
SB	2.2%	0.92
TOTAL	3.3%	0.98

Two-Hour Count Summaries

Interval Start		Bradley Rd				Bradley Rd				S Marksheffel Blvd				S Marksheffel Blvd				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	110	73	32	0	30	73	9	0	16	75	12	0	8	125	69	632	0
4:15 PM		0	77	69	30	0	23	69	6	0	16	97	15	0	4	152	55	613	0
4:30 PM		0	103	71	33	0	22	76	6	0	20	104	8	0	3	114	57	617	0
4:45 PM		0	95	70	14	0	33	78	7	0	17	106	7	0	2	129	57	615	2,477
5:00 PM		0	102	74	24	0	26	58	4	0	14	94	11	0	6	138	45	596	2,441
5:15 PM		0	78	78	23	0	18	58	3	0	18	117	9	1	3	157	71	634	2,462
5:30 PM		0	77	64	19	0	12	45	2	0	12	64	11	0	2	132	51	491	2,336
5:45 PM		0	60	66	24	0	10	24	5	0	15	69	16	0	2	126	56	473	2,194
Count Total		0	702	565	199	0	174	481	42	0	128	726	89	1	30	1,073	461	4,671	0
Peak Hour	All	0	385	283	109	0	108	296	28	0	69	382	42	0	17	520	238	2,477	0
	HV	0	16	8	2	0	1	6	1	0	15	12	3	0	0	6	11	81	0
	HV%	-	4%	3%	2%	-	1%	2%	4%	-	22%	3%	7%	-	0%	1%	5%	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	8	4	12	5	29	0	0	0	0	0	0	0	0	0	0
4:15 PM	5	1	6	5	17	0	0	0	0	0	0	0	0	0	0
4:30 PM	8	2	5	5	20	0	0	0	0	0	0	0	0	0	0
4:45 PM	5	1	7	2	15	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	4	6	10	0	0	0	0	0	0	0	0	0	0
5:15 PM	4	2	2	3	11	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	2	2	6	0	0	0	0	0	0	0	0	0	0
5:45 PM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0
Count Total	36	11	38	28	113	0	0	0	0	0	0	0	0	0	0
Peak Hour	26	8	30	17	81	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Bradley Rd				Bradley Rd				S Marksheffel Blvd				S Marksheffel Blvd				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	5	2	1	0	0	3	1	0	7	3	2	0	0	0	5	29	0
4:15 PM	0	2	2	1	0	0	1	0	0	3	3	0	0	0	3	2	17	0
4:30 PM	0	5	3	0	0	0	2	0	0	1	4	0	0	0	1	4	20	0
4:45 PM	0	4	1	0	0	1	0	0	0	4	2	1	0	0	2	0	15	81
5:00 PM	0	0	0	0	0	0	0	0	0	2	2	0	0	0	3	3	10	62
5:15 PM	0	4	0	0	0	0	2	0	0	1	1	0	0	0	1	2	11	56
5:30 PM	0	1	0	0	0	0	1	0	0	1	0	1	0	0	0	2	6	42
5:45 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	32
Count Total	0	25	9	2	0	1	9	1	0	19	15	4	0	0	10	18	113	0
Peak Hour	0	16	8	2	0	1	6	1	0	15	12	3	0	0	6	11	81	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Bradley Rd			Bradley Rd			S Marksheffel Blvd			S Marksheffel Blvd			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				

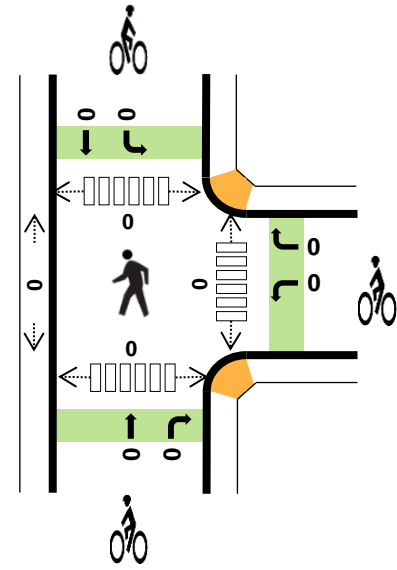
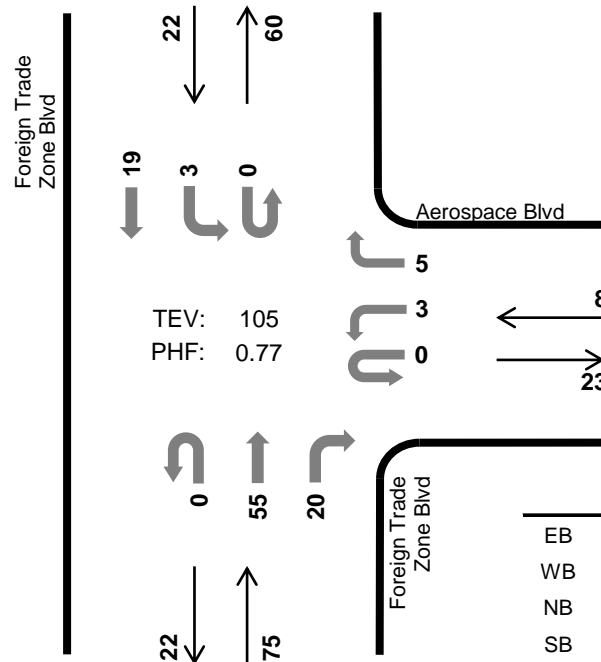
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Foreign Trade Zone Blvd Aerospace Blvd



Peak Hour

Date: 06/22/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



Two-Hour Count Summaries

Interval Start		n/a				Aerospace Blvd				Foreign Trade Zone Blvd				Foreign Trade Zone Blvd				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	15	7	0	0	0	0	22	0
7:15 AM		0	0	0	0	0	1	0	0	0	0	12	2	0	1	7	0	23	0
7:30 AM		0	0	0	0	0	0	0	3	0	0	17	7	0	0	7	0	34	0
7:45 AM		0	0	0	0	0	1	0	2	0	0	12	4	0	2	3	0	24	103
8:00 AM		0	0	0	0	0	1	0	0	0	0	14	7	0	0	2	0	24	105
8:15 AM		0	0	0	0	0	2	0	1	0	0	11	3	0	0	3	0	20	102
8:30 AM		0	0	0	0	0	2	0	0	0	0	22	2	0	0	4	0	30	98
8:45 AM		0	0	0	0	0	2	0	0	0	0	14	0	0	0	6	0	22	96
Count Total		0	0	0	0	0	9	0	6	0	0	117	32	0	3	32	0	199	0
Peak Hour	All	0	0	0	0	0	3	0	5	0	0	55	20	0	3	19	0	105	0
	HV	0	0	0	0	0	2	0	0	0	0	0	3	0	1	14	0	20	0
	HV%	-	-	-	-	-	67%	-	0%	-	-	0%	15%	-	33%	74%	-	19%	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	6	7	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	1	2	4	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	12	2	15	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	0	3	19	17	39	0	0	0	0	0	0	0	0	0	0
Peak Hr	0	2	3	15	20	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Aerospace Blvd				Foreign Trade Zone Blvd				Foreign Trade Zone Blvd				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	1	0	0	0	0	0	0	0	0	1	5	0	7
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	12	0	0	0	2	0	15
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Count Total	0	0	0	0	0	3	0	0	0	0	0	16	3	0	1	16	0	39
Peak Hour	0	0	0	0	0	2	0	0	0	0	0	0	3	0	1	14	0	20

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Aerospace Blvd			Foreign Trade Zone Blvd			Foreign Trade Zone Blvd			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

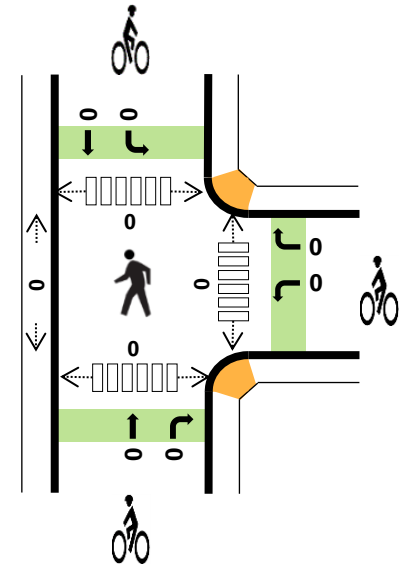
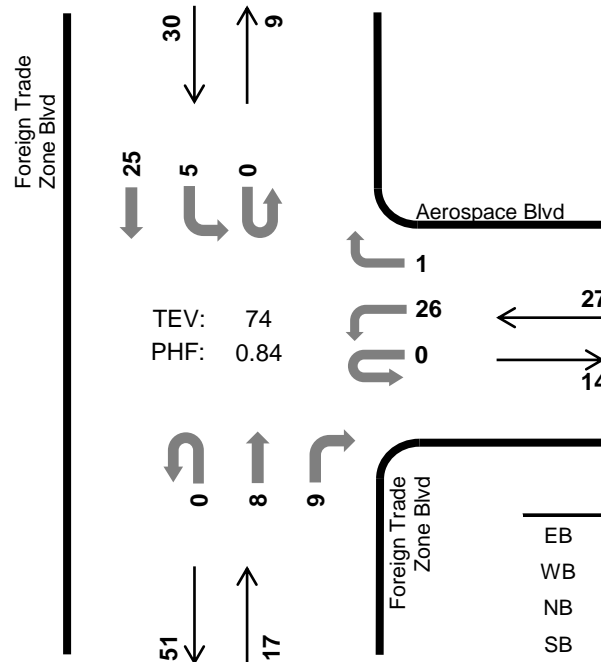
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Foreign Trade Zone Blvd Aerospace Blvd



Peak Hour

Date: 06/22/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	0.0%	0.61
NB	41.2%	0.47
SB	10.0%	0.68
TOTAL	13.5%	0.84

Two-Hour Count Summaries

Interval Start		n/a				Aerospace Blvd				Foreign Trade Zone Blvd				Foreign Trade Zone Blvd				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	11	0	0	0	0	5	4	0	1	1	0	22	0
4:15 PM		0	0	0	0	0	8	0	0	0	0	0	2	0	2	9	0	21	0
4:30 PM		0	0	0	0	0	1	0	0	0	0	0	0	0	1	7	0	9	0
4:45 PM		0	0	0	0	0	6	0	1	0	0	3	3	0	1	8	0	22	74
5:00 PM		0	0	0	0	0	2	0	0	0	0	2	2	0	2	13	0	21	73
5:15 PM		0	0	0	0	0	0	0	0	0	0	1	1	0	0	9	0	11	63
5:30 PM		0	0	0	0	0	3	0	0	0	0	2	1	0	0	13	0	19	73
5:45 PM		0	0	0	0	0	0	0	0	0	0	2	0	0	0	11	0	13	64
Count Total		0	0	0	0	0	31	0	1	0	0	15	13	0	7	71	0	138	0
Peak Hour	All	0	0	0	0	0	26	0	1	0	0	8	9	0	5	25	0	74	0
	HV	0	0	0	0	0	0	0	0	0	0	4	3	0	0	3	0	10	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	50%	33%	-	0%	12%	-	14%	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	6	0	6	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	1	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	1	2	3	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	2	2	0	2	0	0	2	0	0	0	0	0
5:30 PM	0	0	2	0	2	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	1	10	5	16	0	2	0	0	2	0	0	0	0	0
Peak Hr	0	0	7	3	10	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Aerospace Blvd				Foreign Trade Zone Blvd				Foreign Trade Zone Blvd				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	3	3	0	0	0	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	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	1	0	0	0	2	0	3	10
5:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2	6
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	7
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	9
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Count Total	0	0	0	0	0	1	0	0	0	0	7	3	0	0	5	0	16	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	4	3	0	0	3	0	10	0

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Aerospace Blvd			Foreign Trade Zone Blvd			Foreign Trade Zone Blvd			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	2	0	0	0	0	0	0	0	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	2	0	0	0	0	0	0	0	0	2	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.



APPENDIX B

Future Traffic Projections
Background Traffic Studies

CDOT OTIS: FOREIGN TRADE ZONE

ROUTE	REFPT	ENDREFPT	LENGTH	UPDATEYR	AADT	YR20FACTOR	ANNUAL GROWTH RATE	DHV	DD	LOCATION
021A	132.941	136.607	3.756	2021	16000	1.14	0.66%	10.5	55	ON POWERS BLVD S/O DRENNAN RD COLO SPGS

Bradley Heights Filing #1

Traffic Impact Analysis

Prepared for:
Challenger Homes
8605 Explorer Drive, Suite 250
Colorado Springs, CO 80920

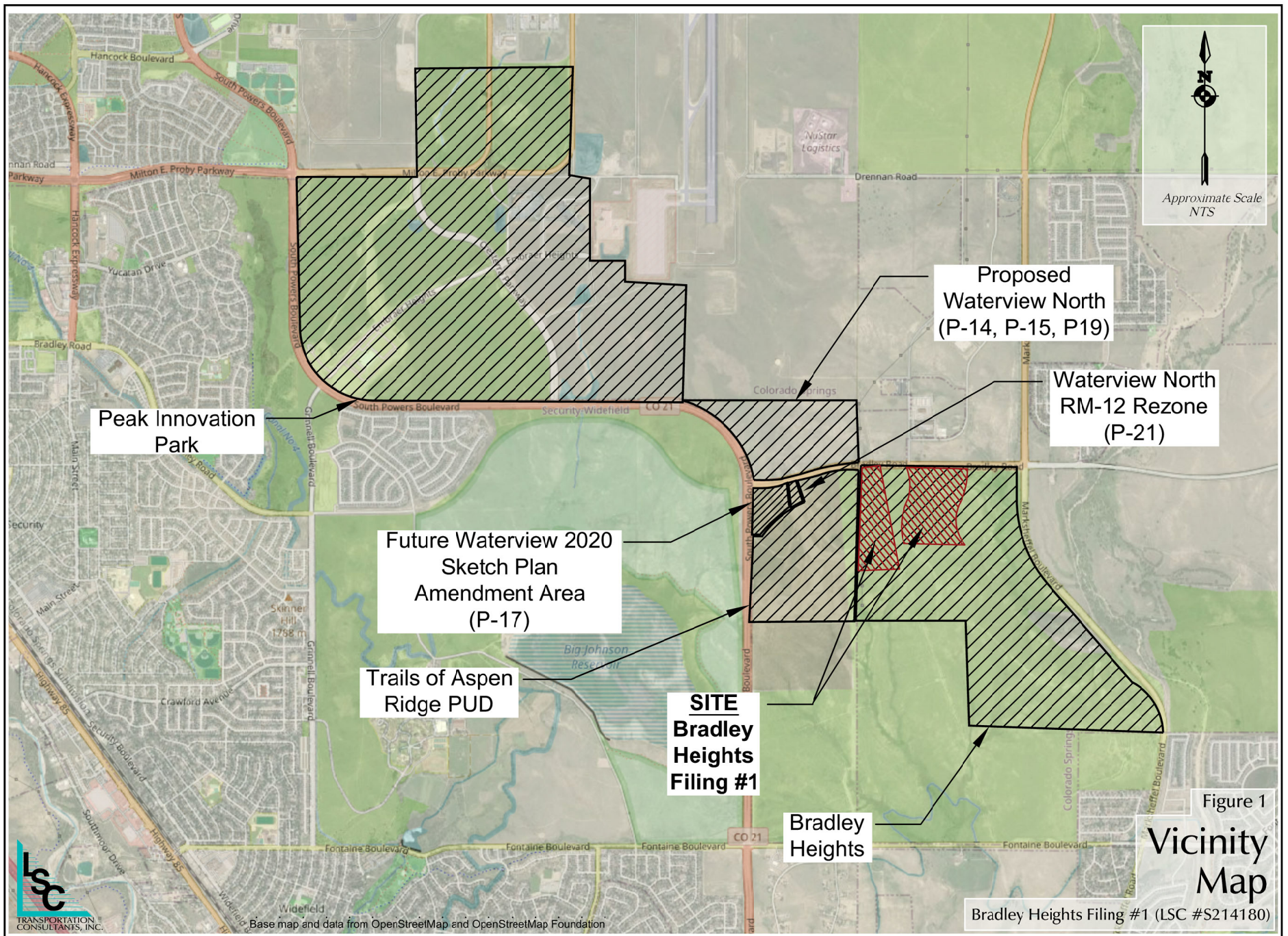
Contact: Mr. Jim Byers

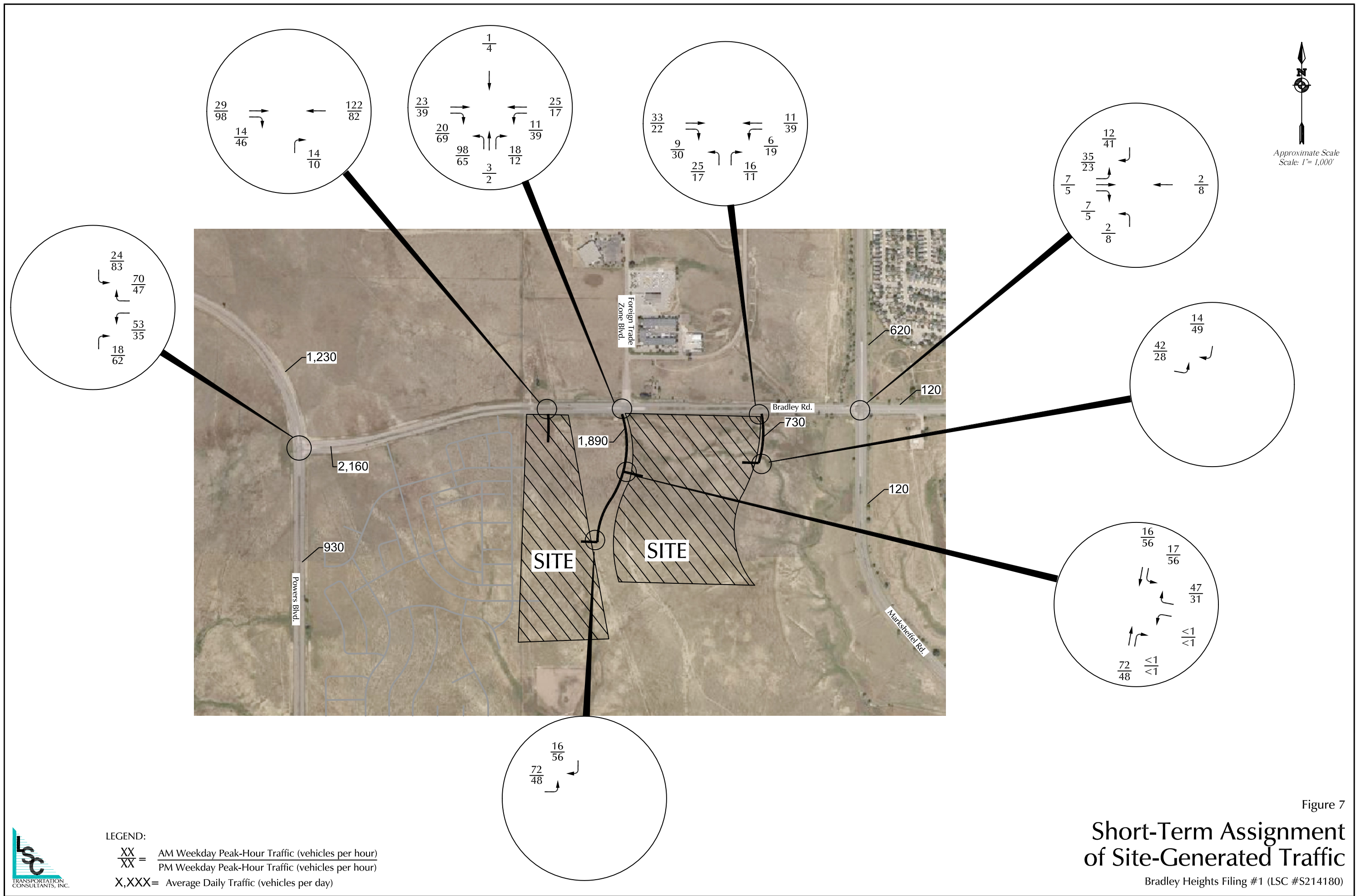
APRIL 5, 2021

LSC Transportation Consultants
Prepared by: Colleen Guillotte, P.E.
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #S214180







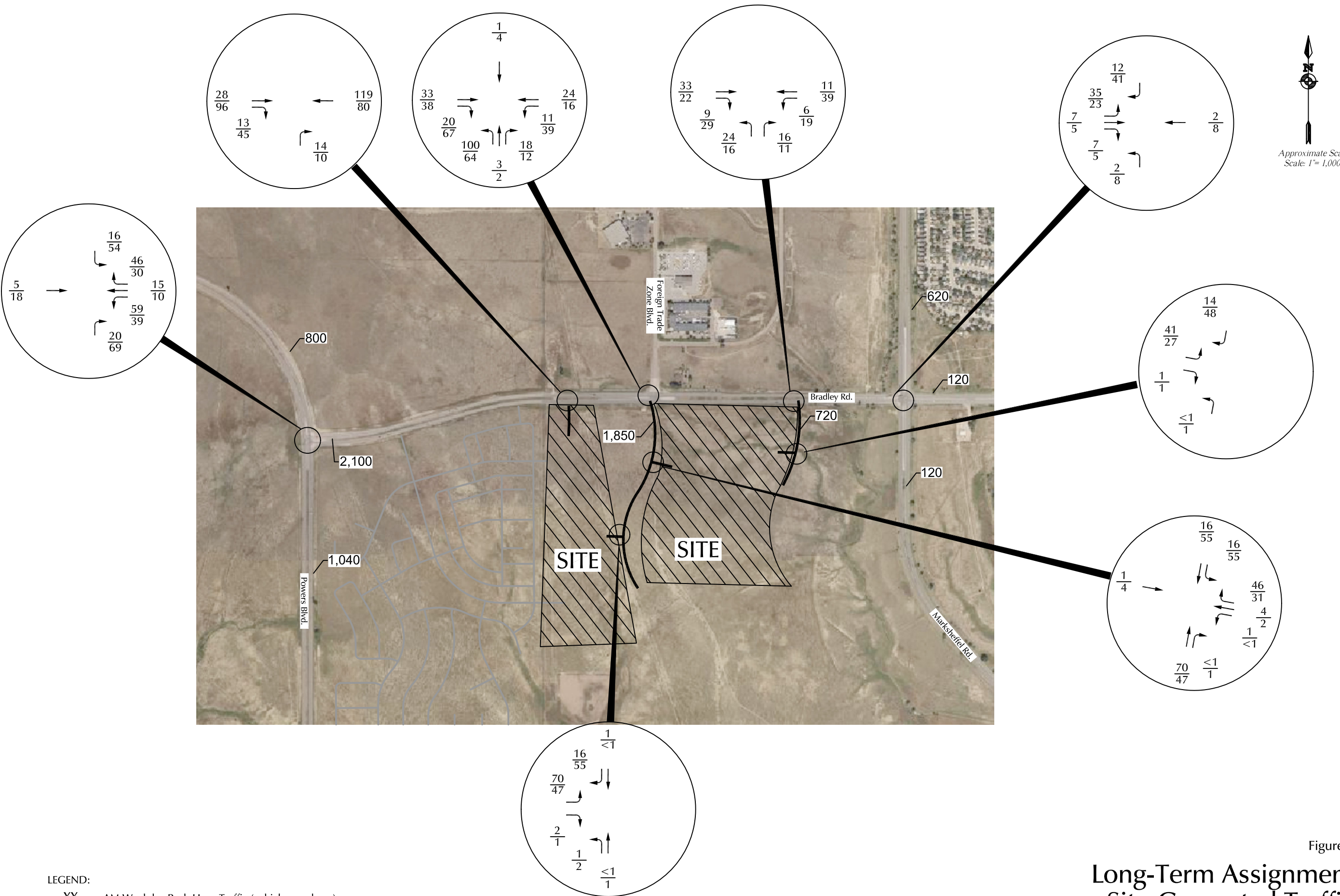
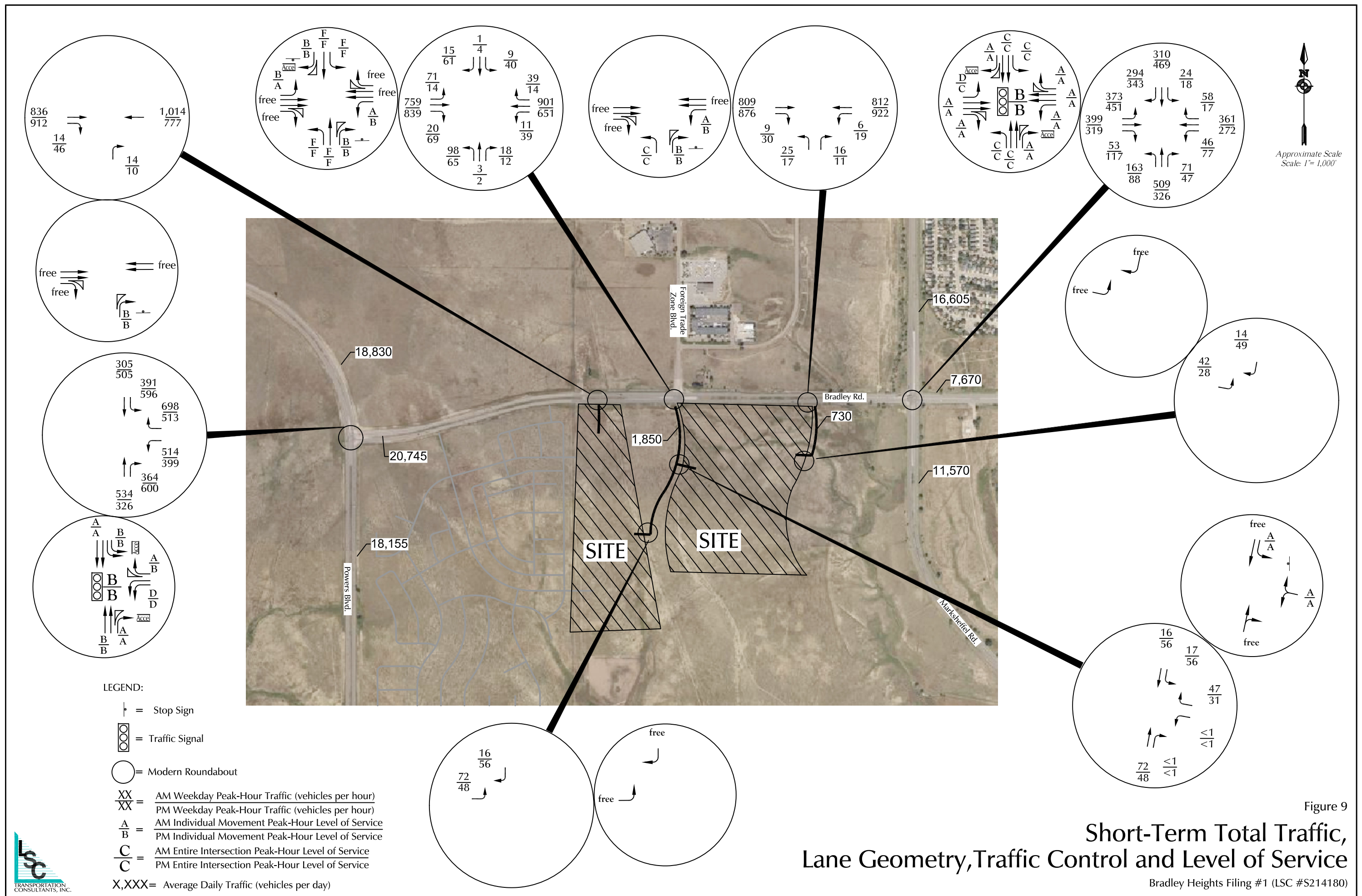
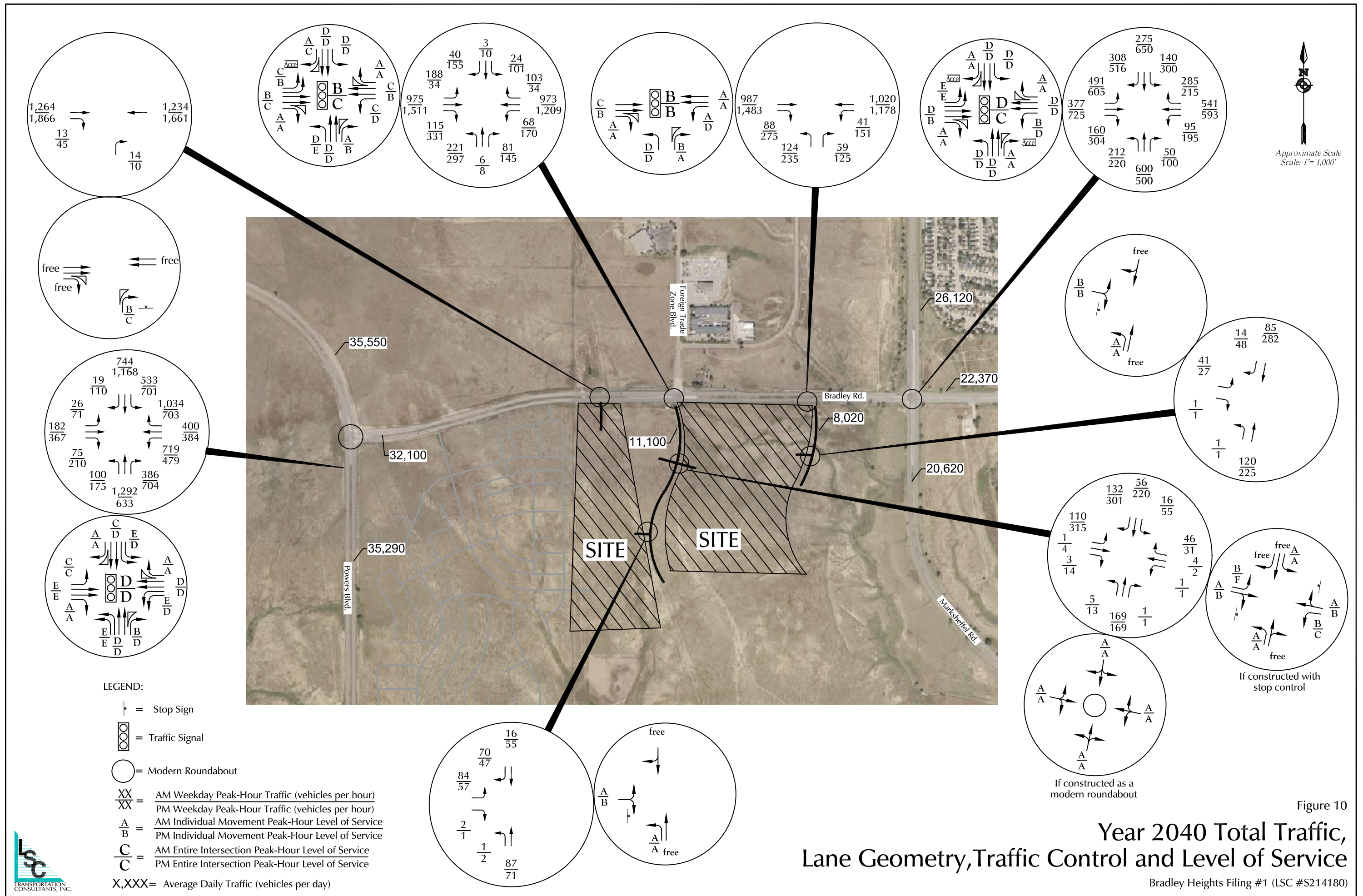


Figure 8
**Long-Term Assignment
 Site-Generated Traffic**

Bradley Heights Filing #1 (LSC #S214180)





TRAFFIC IMPACT STUDY

For

Meadoworks Filings 1-4 Development Plan Colorado Springs, Colorado

January 2022

Revised:

March 2022

Prepared for:

Norwood Development Group
111 South Tejon Street, Suite 222
Colorado Springs, CO 80903

Prepared by:



SM ROCHA, LLC

TRAFFIC AND TRANSPORTATION CONSULTANTS

8703 Yates Drive, Suite 210
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Colorado Springs, Colorado 80903
(719) 203-6639

Project Engineer / Manager:

Mike Rocha, Principal

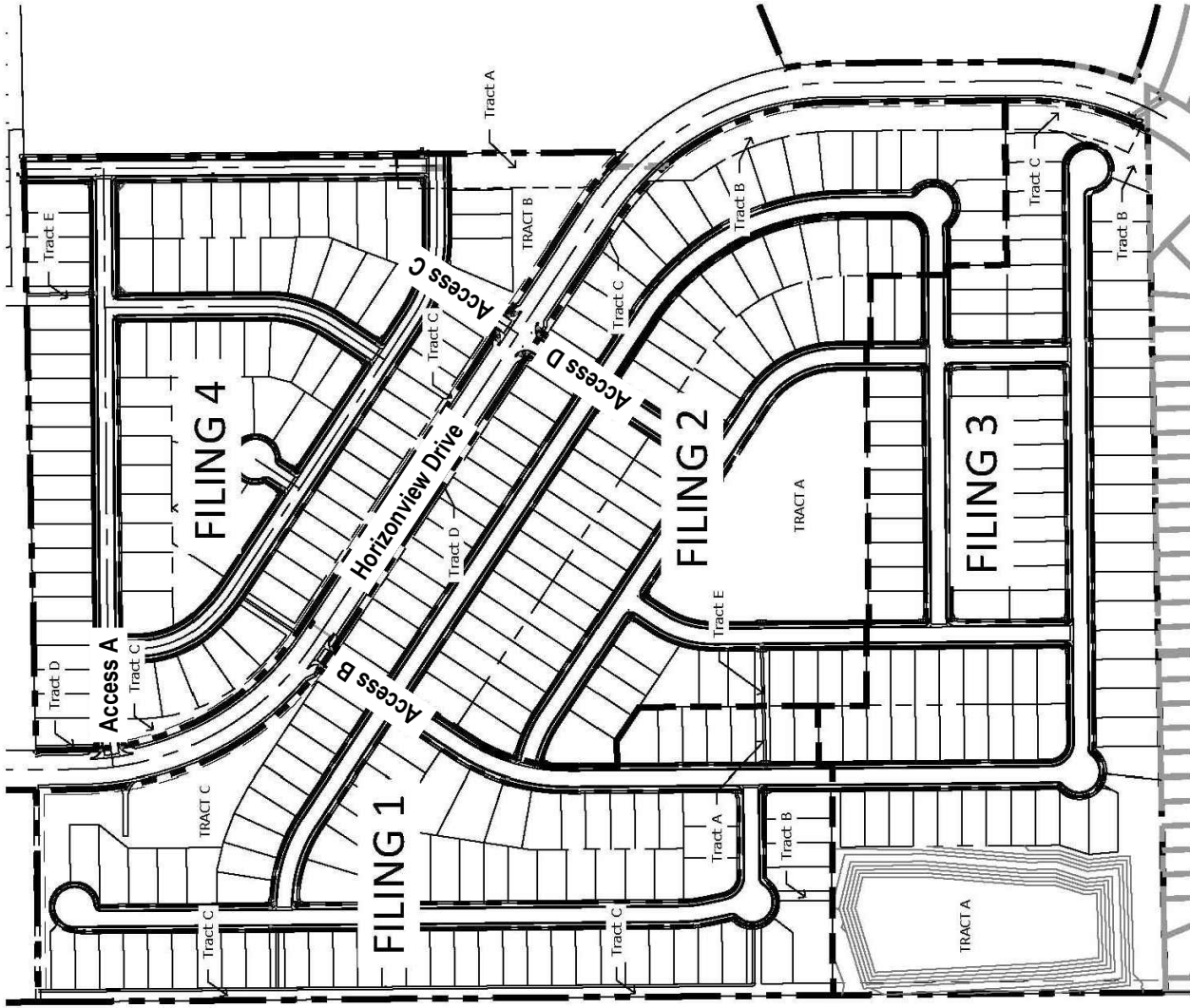
Stephen Simon, EIT

Engineer in Responsible Charge:

Fred Lantz, PE



21-081474





Not to Scale

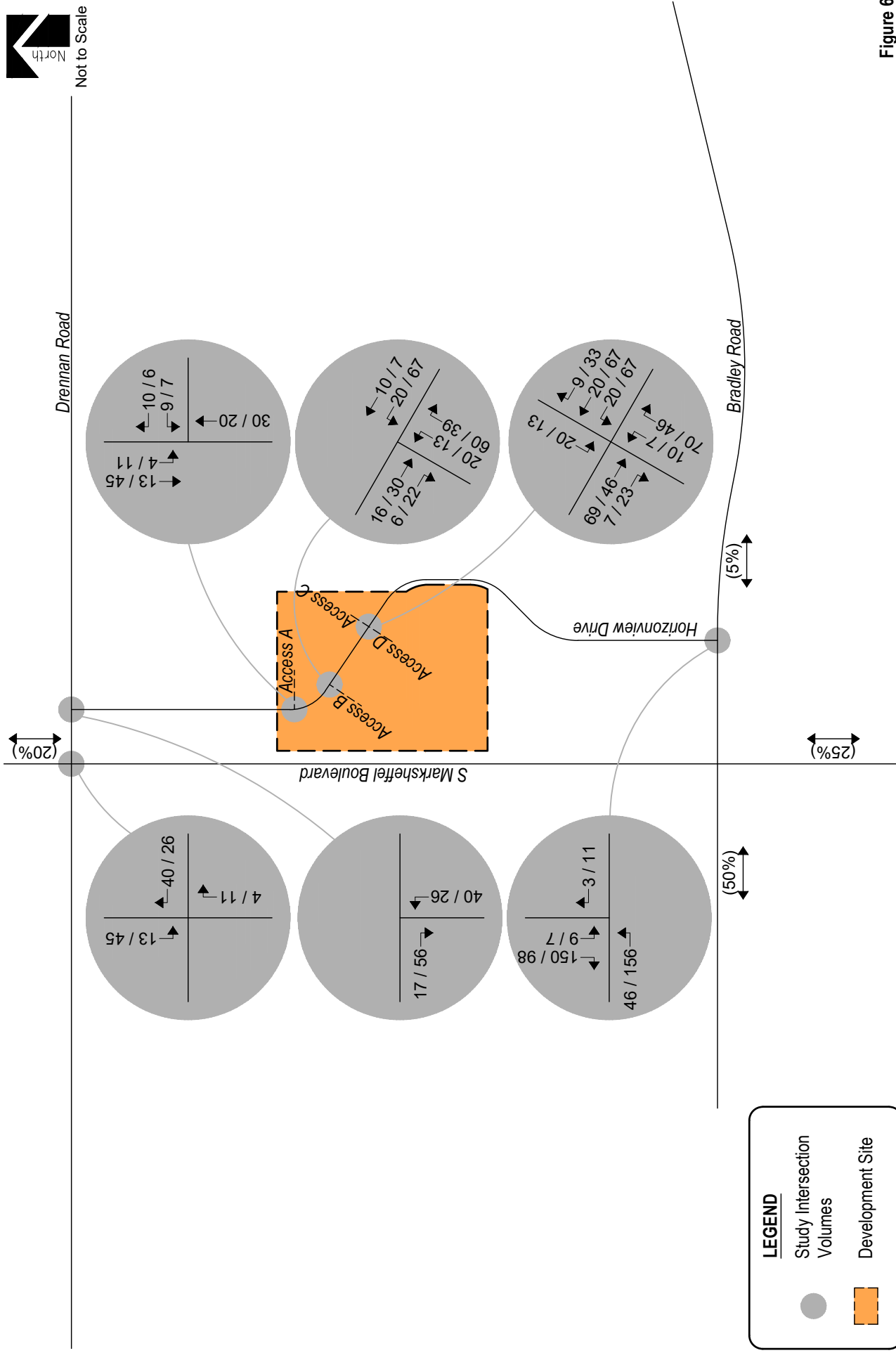


Figure 6

SITE DEVELOPMENT DISTRIBUTION
(%) : Overall

SITE-GENERATED
AM / PM Peak Hour

MEADWORKS FILINGS 1-4 DP
Traffic Impact Study



SM ROCHA, LLC

Traffic and Transportation Consultants

March 2022

Page 16

Master Traffic Impact Study

Peak Innovation Park – Proby North

Colorado Springs, Colorado

Prepared for:

Enertia Consulting Group, LLC

Kimley»Horn

Peak Innovation Park - Proby North

Colorado Springs, Colorado

Prepared for
Enertia Consulting Group, LLC
5950 South Willow Drive
Suite 225
Greenwood Village, Colorado 80111

Prepared by
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2 North Nevada Avenue
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(719) 453-0180



November 2022

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

- UA 11: General Light Industrial, 425,000 SF
- UA 12: Airport Parking Area
- UA 13: General Light Industrial, 215,000 SF
- UA 14: General Light Industrial, 750,000 SF
- UA 15: Hangar, 1,217,000 SF

During the short-term 2025 horizon, only Peak Innovation Park - Proby North UA 4 is anticipated to be completed, with the other areas developing afterwards. As such, the Peak Innovation Park - Proby North development is anticipated to generate 4,168 weekday daily trips, with 624 of these trips occurring during the morning peak hour and 546 of these trips occurring during the afternoon peak hour in 2025. The project traffic generation for this horizon is shown in **Table 1**.

Table 1 – Peak Innovation Park - Proby North 2025 Traffic Generation

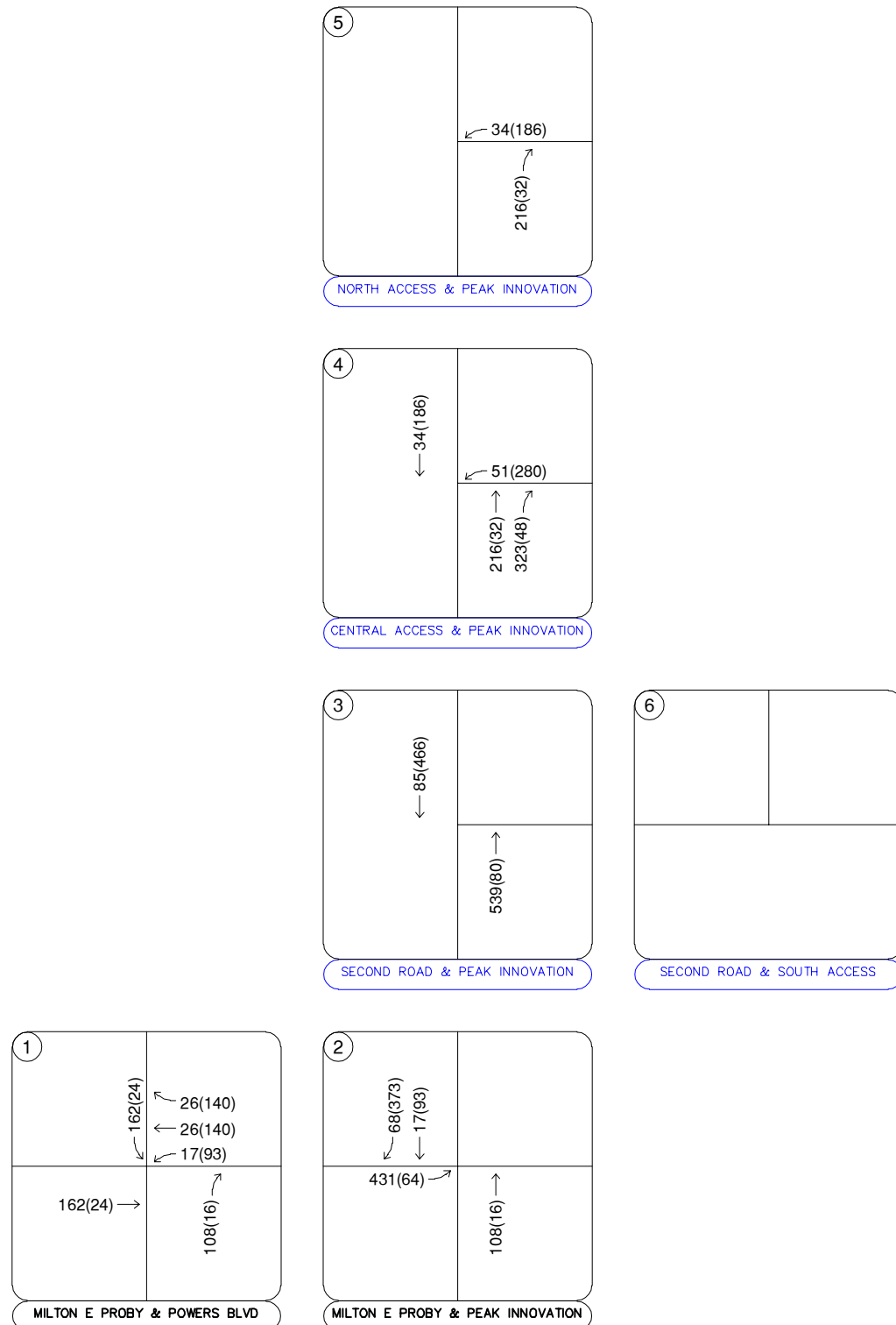
Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
General Light Industrial (ITE 110) – 805,000 Square Feet	3,920	524	72	596	73	450	523
Data Center (ITE 160) – 250,000 Square Feet	248	15	13	28	7	16	23
Total Project Trips	4,168	539	85	624	80	466	546

With full project buildout, Peak Innovation Park - Proby North is expected to generate approximately 75,036 weekday daily trips, with 4,060 of these trips occurring during the morning peak hour and 7,408 of these trips occurring during the afternoon peak hour. Accounting for pass-by trips, expected net new trips (non pass-by) to the surrounding street network results in approximately 61,360 weekday daily new trips, of which 3,731 are anticipated to be during the morning peak hour and 6,245 during the afternoon peak hour. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 11th Edition – Volume 1: User's Guide and Handbook*, 2021. **Table 2** summarizes the estimated total trip generation for full buildout of the Peak Innovation Park - Proby North project. The trip generation worksheets are included in **Appendix C**.

Table 2 – Peak Innovation Park - Proby North Full Buildout Traffic Generation

Zone	Land Use	Size	Weekday Vehicle Trips						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
UA-1	Shopping Plaza 40-150k SF (ITE 821)	96,000 SF							
	UA-1 Non Pass-By Trips		3,890	62	38	100	146	152	298
	UA-1 Pass-By Trips		2,592	41	25	66	98	102	200
	UA-1 Total Trips		6,482	103	63	166	244	254	498
UA-2	Hotel (ITE 310)	120 Rooms	958	31	24	55	36	35	71
	Shopping Plaza 40-150k SF (ITE 821)	136,000 SF	9,182	146	89	235	346	360	706
	UA-2 Non Pass-By Trips		6,468	119	77	196	244	251	495
	UA-2 Pass-By Trips		3,672	58	36	94	138	144	282
	UA-2 Total Trips		10,140	177	113	290	382	395	777
UA-3	General Light Industrial (ITE 110)	310,000 SF	1,510	202	27	229	28	174	202
UA-4	General Light Industrial (ITE 110)	805,000 SF	3,920	524	72	596	73	450	523
	Data Center (ITE 160)	250,000 SF	248	15	13	28	7	16	23
	UA-4 Total Trips		4,168	539	85	624	80	466	546
UA-5	General Light Industrial (ITE 110)	245,000 SF	1,194	159	22	181	22	137	159
UA-7	Aircraft Hangar*	260,000 SF	592	86	5	91	3	96	99
UA-8	Hotel (ITE 310)	300 Rooms	2,398	77	61	138	90	87	177
	Shopping Center >150k SF (ITE 820)	574,000 SF	21,244	299	183	482	937	1,015	1,952
	UA-8 Non Pass-By Trips		19,606	319	209	528	849	909	1,758
	UA-8 Pass-By Trips		4,036	57	35	92	178	193	371
	UA-8 Total Trips		23,642	376	244	620	1,027	1,102	2,129
UA-9	Shopping Center >150k SF (ITE 820)	480,000 SF							
	UA-9 Non Pass-By Trips		14,388	203	124	327	634	688	1,322
	UA-9 Pass-By Trips		3,376	48	29	77	149	161	310
	UA-9 Total Trips		17,764	251	153	404	783	849	1,632
UA-11	General Light Industrial (ITE 110)	425,000 SF	2,070	277	38	315	39	237	276
UA-13	General Light Industrial (ITE 110)	215,000 SF	1,048	140	19	159	20	120	140
UA-14	General Light Industrial (ITE 110)	750,000 SF	3,652	488	67	555	68	420	488
UA-15	Aircraft Hangar*	1,217,000 SF	2,774	400	26	426	14	448	462
Total Non Pass-By Trips			61,360	2,994	737	3,731	2,147	4,098	6,245
Total Pass-By Trips			13,676	204	125	329	563	600	1,163
Total Project Generated Trips			75,036	3,198	862	4,060	2,710	4,698	7,408

* = Aircraft Hangar estimated trip generation is based on traffic counts performed at Pilatus Business Aircraft Hangar in Broomfield, Colorado



PEAK INNOVATION PARK — PROBY NORTH
COLORADO SPRINGS, COLORADO
2025 PROJECT TRAFFIC ASSIGNMENT

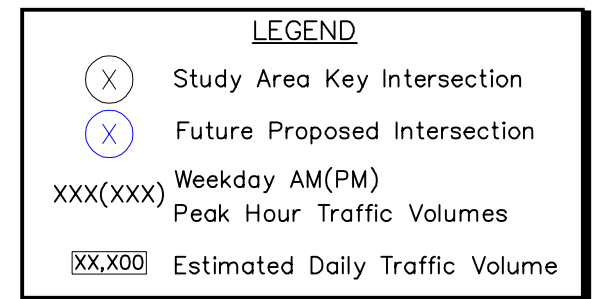
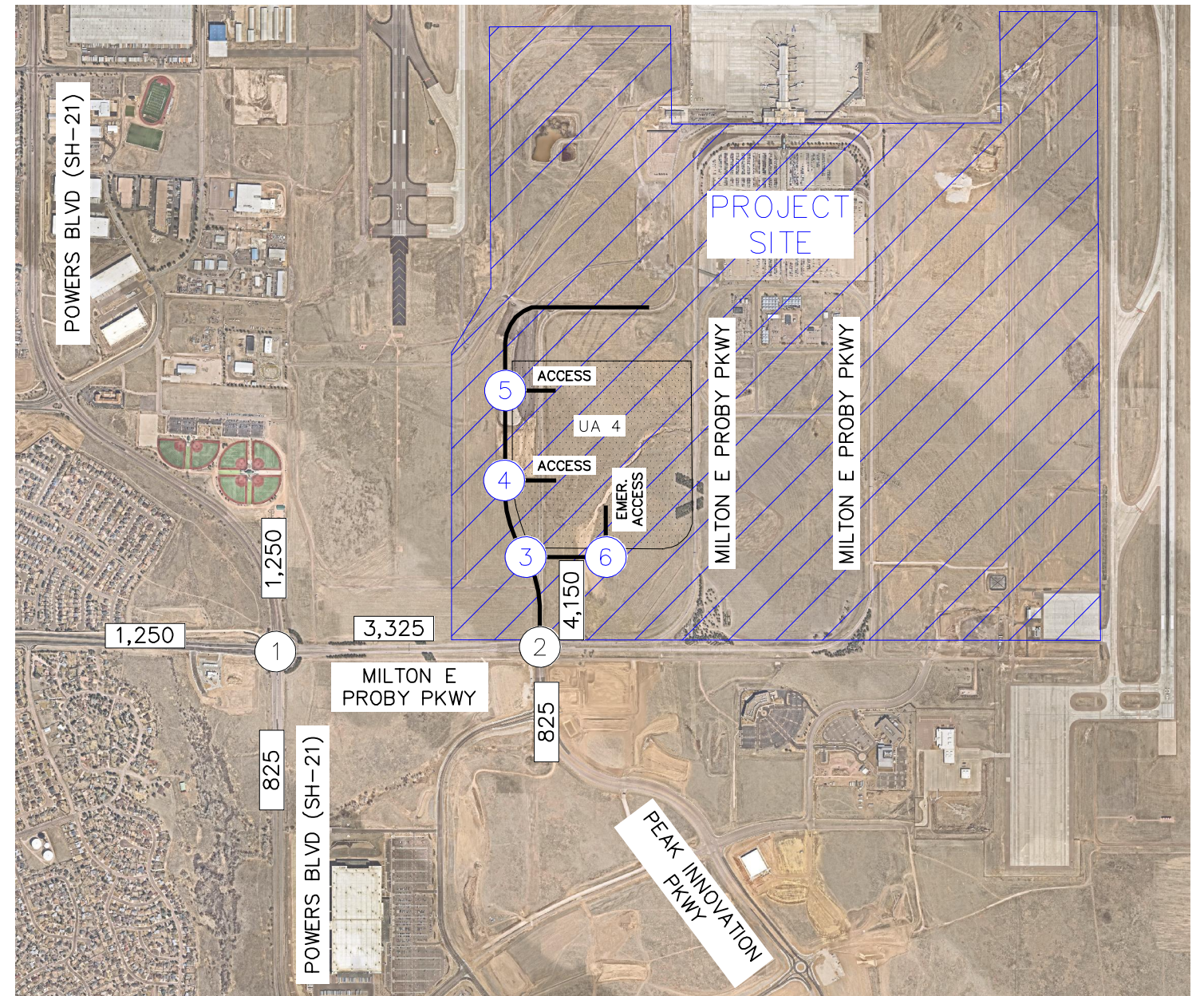
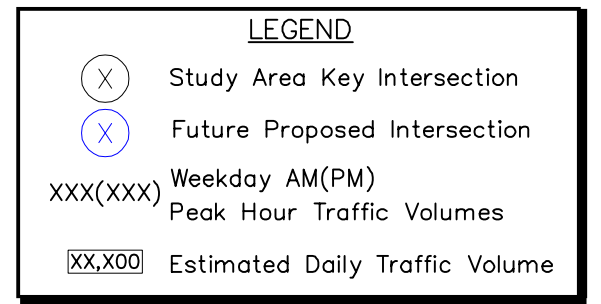
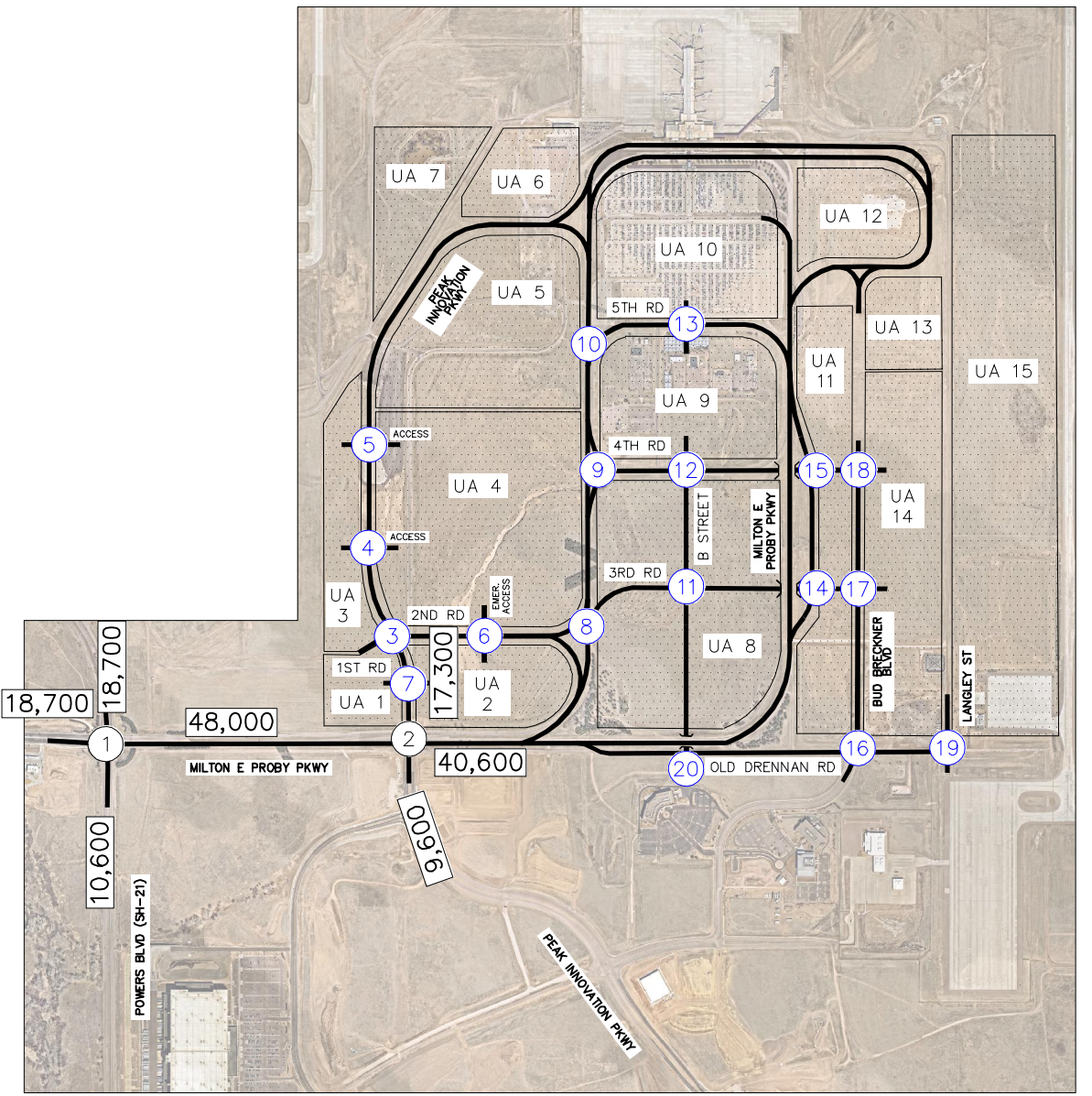
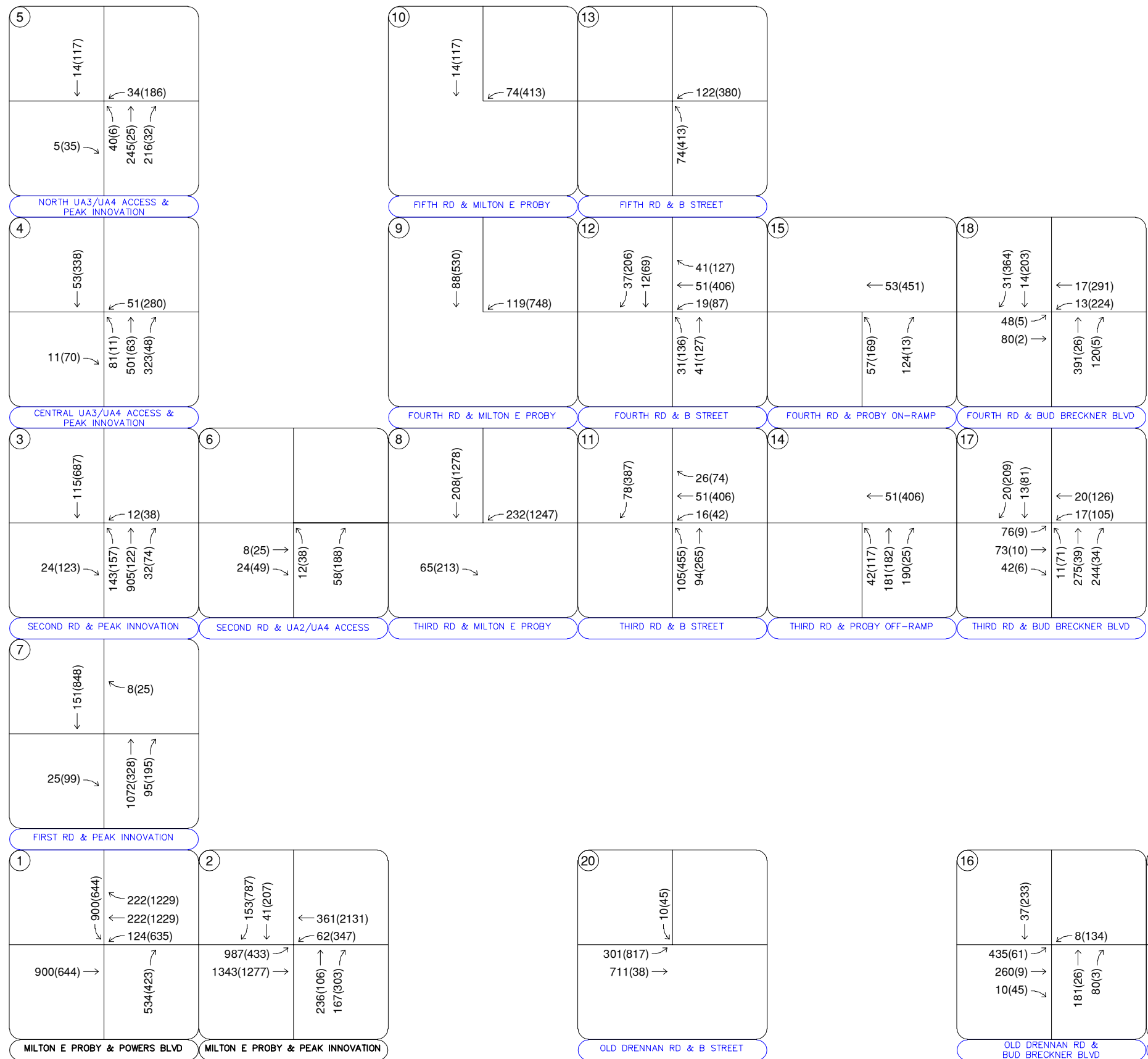


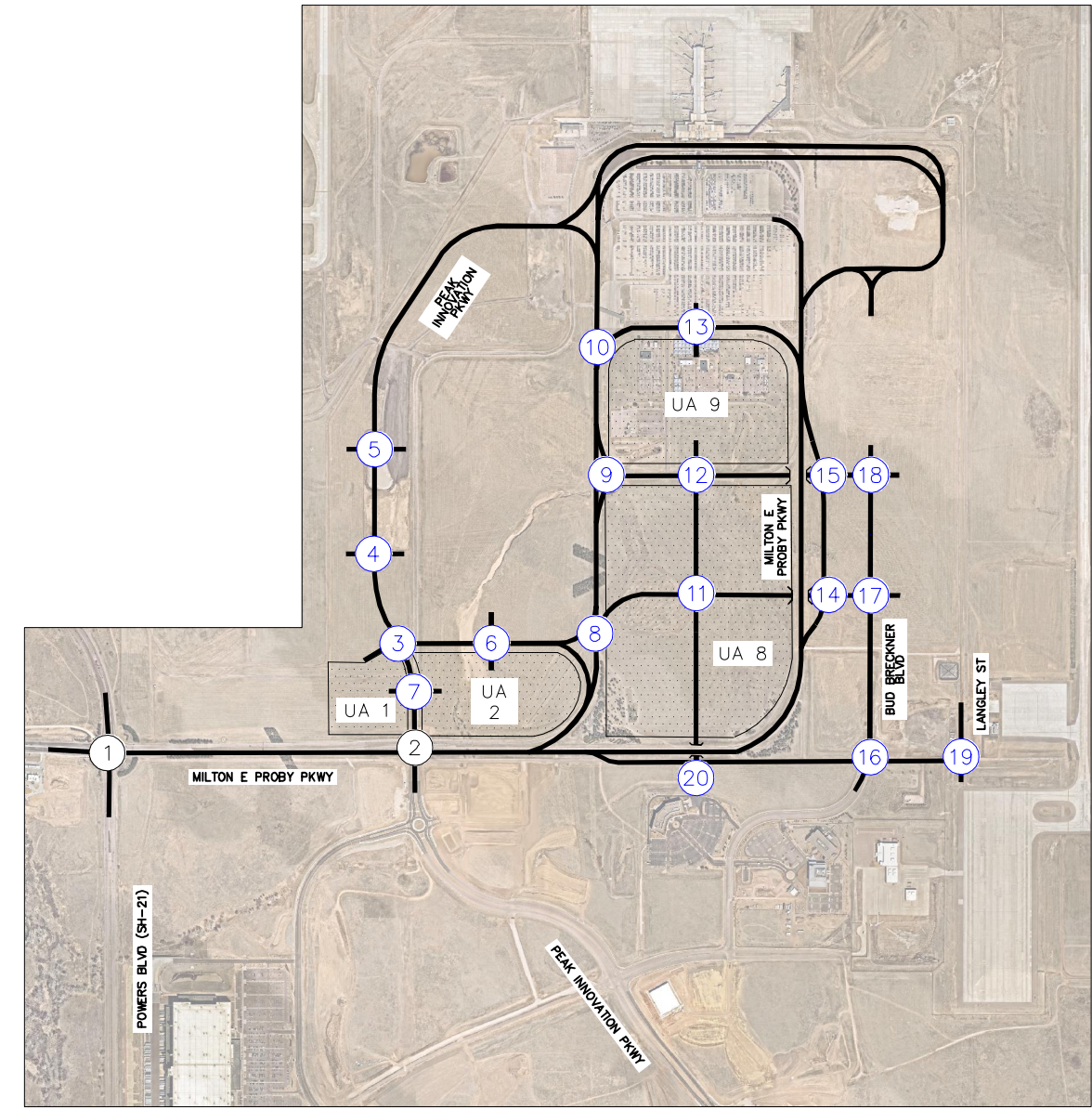
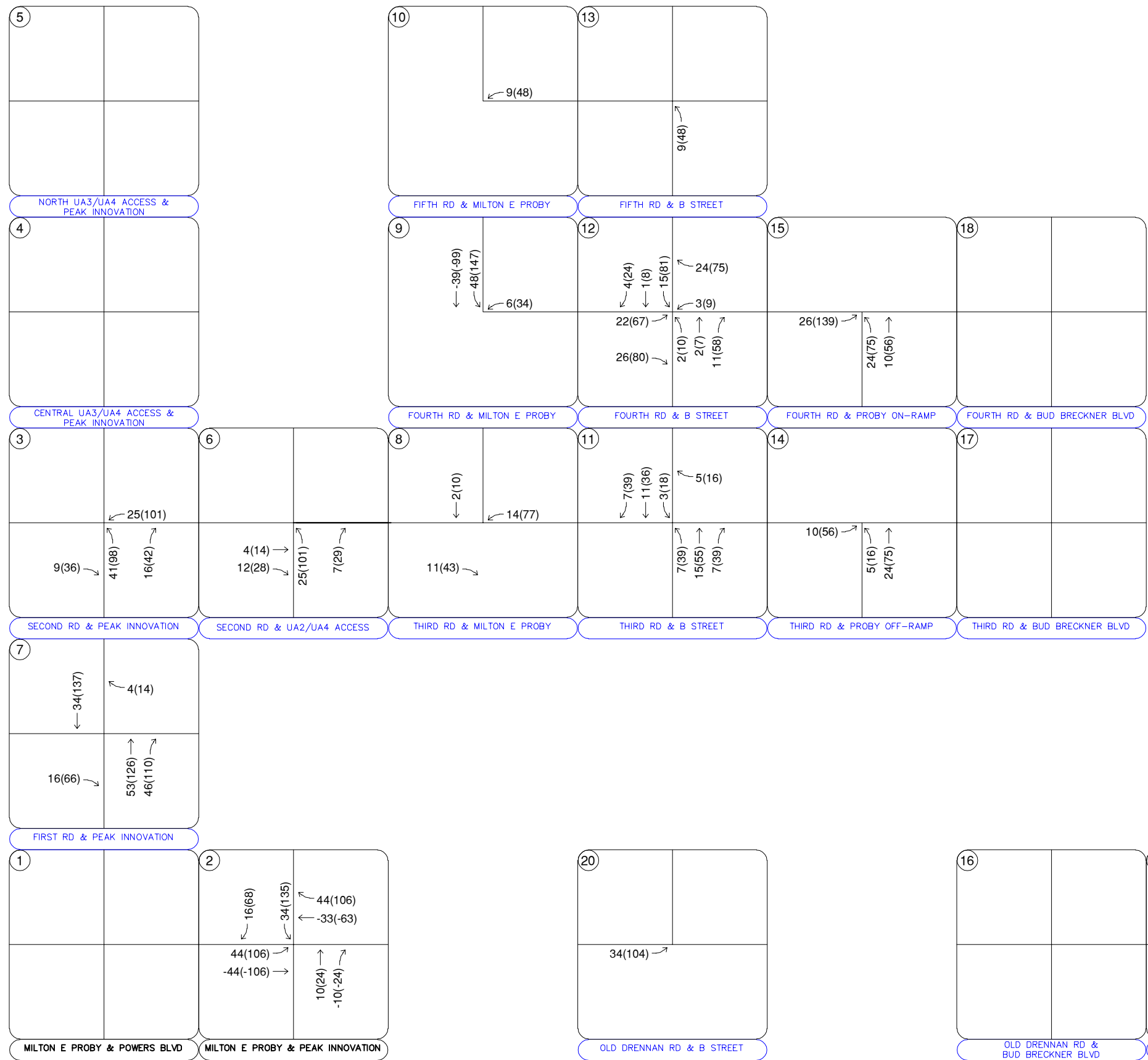
FIGURE 7



PEAK INNOVATION PARK – PROBY NORTH
 COLORADO SPRINGS, COLORADO
 TOTAL PROJECT NON PASS-BY TRAFFIC ASSIGNMENT

FIGURE 10





LEGEND

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

PEAK INNOVATION PARK – PROBY NORTH
 COLORADO SPRINGS, COLORADO
 TOTAL PROJECT PASS-BY TRAFFIC ASSIGNMENT



Master Traffic Impact Study

Peak Innovation Park Colorado Springs, Colorado

Prepared for:

Colorado Springs Airport

UFCS Airport, LLC

Kimley»Horn



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

Peak Innovation Park

Colorado Springs, Colorado

Prepared for
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May 2020

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Table 1 – Peak Innovation Park 2022 Phase I Buildout Trip Generation

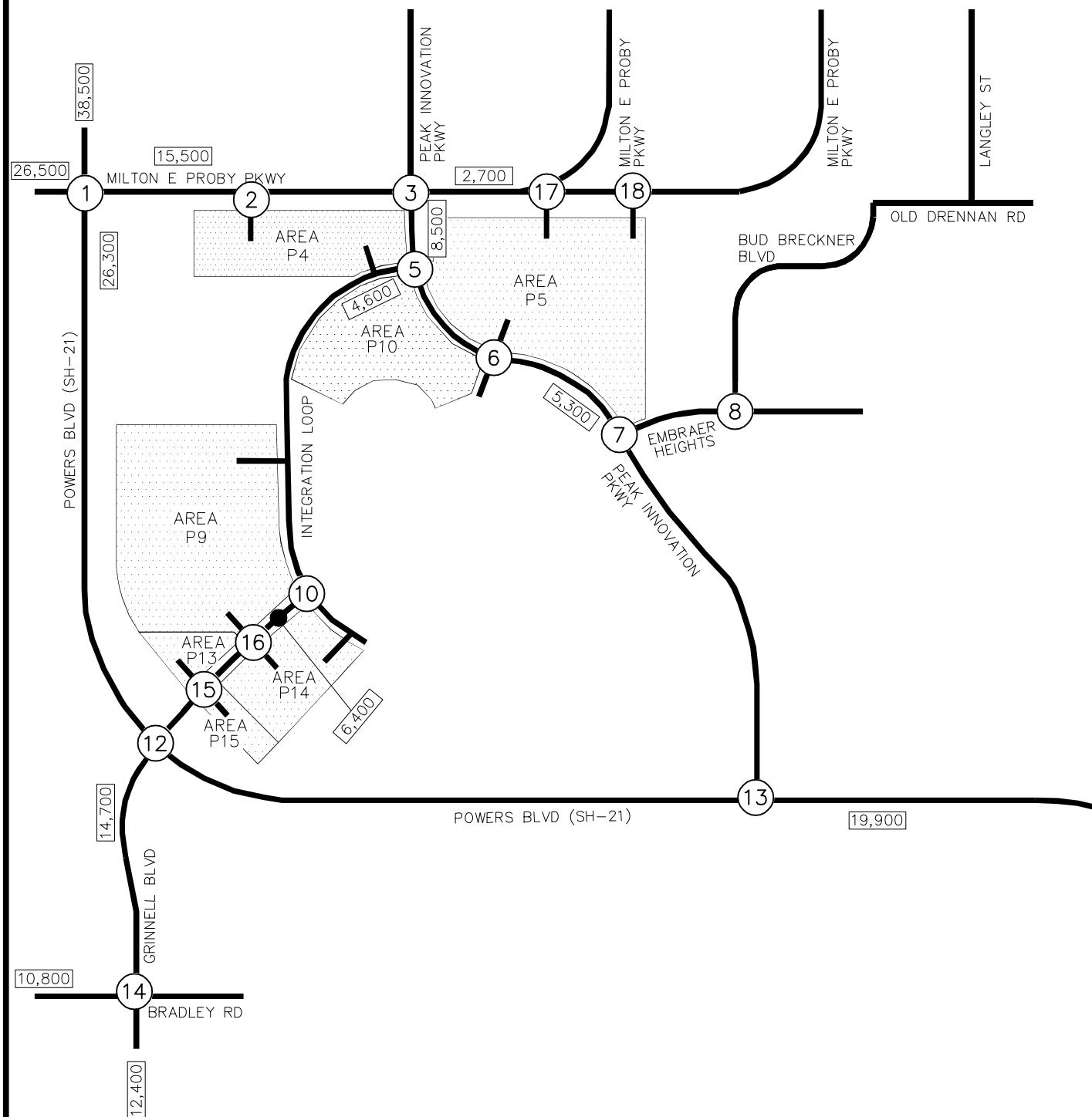
Zone	Land Use	Quantity	Units	Weekday Vehicle Trips						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
P-4	Business Park (ITE 770)	40,000	SF	498	10	6	16	8	9	17
	Fast Food Restaurant w/ Drive Thru (ITE 934)	10,000	SF	4,710	205	197	402	170	157	327
	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
	<i>P-4 Total</i>			<i>7,672</i>	<i>291</i>	<i>277</i>	<i>568</i>	<i>264</i>	<i>248</i>	<i>512</i>
P-5	Hotel (ITE 310)	240	Rooms	2,006	67	46	113	73	71	144
	Business Park (ITE 770)	390,000	SF	4,852	95	61	156	75	89	164
	<i>P-5 Total</i>			<i>6,858</i>	<i>162</i>	<i>107</i>	<i>269</i>	<i>148</i>	<i>160</i>	<i>308</i>
P-9	Project Rodeo (Client Data)			3,956	644	519	1,163	312	238	550
P-10	Office Park (ITE 750)	300,000	SF	3,322	384	48	432	22	299	321
P-13	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
P-14	Project Jungle (Client Data)			904	222	168	390	171	62	233
P-15	Fast Food Restaurant w/ Drive Thru (ITE 934)	5,000	SF	2,356	103	98	201	85	78	163
Total Site Generated Trips				27,532	1,882	1,291	3,173	1,088	1,167	2,255

Table 2 – Peak Innovation Park 2030 Phase I and Phase II Trip Generation

Zone	Land Use	Quantity	Units	Weekday Vehicle Trips						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
P-1	Business Park (ITE 770)	72,000	SF	896	18	11	29	14	16	30
P-2	Business Park (ITE 770)	452,000	SF	5,624	110	71	181	87	103	190
P-3	Business Park (ITE 770)	468,000	SF	5,822	114	73	187	91	106	197
P-4	Business Park (ITE 770)	40,000	SF	498	10	6	16	8	9	17
	Fast Food Restaurant w/ Drive Thru (ITE 934)	10,000	SF	4,710	205	197	402	170	157	327
	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
	<i>P-4 Total</i>			7,672	291	277	568	264	248	512
P-5	Hotel (ITE 310)	240	Rooms	2,006	67	46	113	73	71	144
	Business Park (ITE 770)	390,000	SF	4,852	95	61	156	75	89	164
	<i>P-5 Total</i>			6,858	162	107	269	148	160	308
P-6	Office Park (ITE 750)	106,000	SF	1,174	136	17	153	8	105	113
P-7	Office Park (ITE 750)	120,000	SF	1,330	154	19	173	9	119	128
P-8	Office Park (ITE 750)	36,000	SF	400	46	6	52	3	36	39
P-9	Project Rodeo (Client Data)			3,956	644	519	1,163	312	238	550
P-10	Office Park (ITE 750)	620,000	SF	6,864	795	98	893	46	617	663
P-11	Office Park (ITE 750)	150,000	SF	1,662	192	24	216	11	150	161
P-12	Industrial Park (ITE 130)	162,000	SF	546	53	12	65	14	51	65
P-13	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
P-14	Project Jungle (Client Data)			2,410	222	168	390	171	62	233
P-15	Fast Food Restaurant w/ Drive Thru (ITE 934)	5,000	SF	2,356	103	98	201	85	78	163
P-16	Industrial Park (ITE 130)	308,000	SF	1,038	100	23	123	26	98	124
P-17	Office Park (ITE 750)	76,000	SF	842	97	12	109	6	75	81
P-18	Industrial Park (ITE 130)	252,000	SF	850	82	19	101	21	80	101
Total Site Generated Trips				55,368	3,430	1,650	5,080	1,419	2,452	3,871

Table 3 – Peak Innovation Park 2045 Full Buildout Trip Generation

Zone	Land Use	Quantity	Units	Weekday Vehicle Trips						
				Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
P-1	Business Park (ITE 770)	180,000	SF	2,240	44	28	72	35	41	76
P-2	Business Park (ITE 770)	1,130,000	SF	14,058	276	176	452	217	258	475
P-3	Business Park (ITE 770)	1,170,000	SF	14,556	285	183	468	226	265	491
P-4	Business Park (ITE 770)	40,000	SF	498	10	6	16	8	9	17
	Fast Food Restaurant w/ Drive Thru (ITE 934)	10,000	SF	4,710	205	197	402	170	157	327
	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
	P-4 Total			7,672	291	277	568	264	248	512
P-5	Hotel (ITE 310)	240	Rooms	2,006	67	46	113	73	71	144
	Business Park (ITE 770)	690,000	SF	8,584	168	108	276	133	157	290
	P-5 Total			10,590	235	154	389	206	228	434
P-6	Office Park (ITE 750)	265,000	SF	2,934	340	42	382	20	264	284
P-7	Office Park (ITE 750)	300,000	SF	3,322	384	48	432	22	299	321
P-8	Office Park (ITE 750)	90,000	SF	998	116	14	130	7	89	96
P-9	Project Rodeo (Client Data)			3,956	644	519	1,163	312	238	550
P-10	Office Park (ITE 750)	1,550,000	SF	17,160	1,986	246	2,232	116	1,543	1,659
P-11	Office Park (ITE 750)	375,000	SF	4,152	481	59	540	28	373	401
P-12	Industrial Park (ITE 130)	405,000	SF	1,366	131	31	162	34	128	162
P-13	Gas Station w/ Convenience Market (ITE 945)	12	Fueling Positions	2,464	76	74	150	86	82	168
P-14	Project Jungle (Client Data)			2,410	222	168	390	171	62	233
P-15	Fast Food Restaurant w/ Drive Thru (ITE 934)	5,000	SF	2,356	103	98	201	85	78	163
P-16	Industrial Park (ITE 130)	770,000	SF	2,596	249	59	308	65	243	308
P-17	Office Park (ITE 750)	190,000	SF	2,104	244	30	274	14	189	203
P-18	Industrial Park (ITE 130)	630,000	SF	2,124	204	48	252	53	199	252
Total Site Generated Trips				97,058	6,311	2,254	8,565	1,961	4,827	6,788



MILTON E PROBY PKWY / POWERS BLVD (SH-21)	MILTON E PROBY PKWY / RIRO ACCESS	MILTON E PROBY PKWY / PEAK INNOVATION PKWY
1 <div> <div>714(535)</div> <div>799(1122)</div> <div>620(298)</div> <div>280(500)</div> <div>259(408)</div> <div>4(9)</div> </div>	2 <div> <div>603(976)</div> </div>	3 <div> <div>6(18)</div> <div>0(2)</div> <div>1(0)</div> <div>222(323)</div> <div>9(13)</div> </div>
<div> <div>621(690)</div> <div>565(273)</div> <div>435(471)</div> <div>546(265)</div> <div>1257(705)</div> <div>71(59)</div> </div>	<div> <div>1100(425)</div> <div>233(211)</div> <div>14(12)</div> </div>	<div> <div>47(4)</div> <div>326(223)</div> <div>741(210)</div> <div>361(623)</div> <div>3(0)</div> <div>20(3)</div> </div>

PEAK INNOVATION PKWY / ACCESS	PEAK INNOVATION PKWY / EMBRAER HEIGHTS	EMBRAER HEIGHTS / BUD BRECKNER BLVD
6 <div> <div>ACCESS</div> <div>11(16)</div> <div>21(32)</div> <div>32(30)</div> <div>84(244)</div> <div>96(6)</div> </div>	7 <div> <div>68(60)</div> <div>100(179)</div> <div>217(6)</div> <div>13(145)</div> <div>0(36)</div> </div>	8 <div> <div>8(206)</div> <div>1(0)</div> <div>5(1)</div> </div>
<div> <div>16(15)</div> <div>352(138)</div> <div>288(17)</div> <div>36(224)</div> <div>12(75)</div> <div>ACCESS</div> </div>	<div> <div>11(54)</div> <div>4(6)</div> <div>14(4)</div> <div>189(81)</div> <div>60(1)</div> </div>	<div> <div>288(10)</div> <div>7(1)</div> </div>

PEAK INNOVATION PKWY / INTEGRATION LOOP
5 <div> <div>176(95)</div> <div>550(108)</div> <div>24(22)</div> <div>21(32)</div> <div>16(24)</div> <div>5(8)</div> </div>
<div> <div>271(200)</div> <div>24(22)</div> <div>100(40)</div> <div>36(71)</div> <div>92(394)</div> <div>8(7)</div> </div>

GRINNELL BLVD / INTEGRATION LOOP
10 <div> <div>359(259)</div> <div>80(60)</div> <div>442(219)</div> <div>183(141)</div> <div>39(16)</div> <div>60(80)</div> </div>
<div> <div>INTEGRATION LOOP</div> </div>

POWERS BLVD (SH-21) / GRINNELL BLVD	PEAK INNOVATION PKWY / POWERS BLVD (SH-21)	BRADLEY RD / GRINNELL BLVD	GRINNELL BLVD / SOUTH ACCESS
12 <div> <div>GRINNELL BLVD</div> <div>398(212)</div> <div>251(211)</div> <div>173(92)</div> <div>209(130)</div> <div>877(524)</div> <div>119(174)</div> </div>	13 <div> <div>POWERS BLVD</div> <div>8(81)</div> <div>99(192)</div> <div>222(71)</div> <div>1224(826)</div> </div>	14 <div> <div>BRADLEY RD</div> <div>307(284)</div> <div>371(513)</div> <div>5(7)</div> <div>10(5)</div> <div>184(59)</div> <div>24(21)</div> </div>	15 <div> <div>GRINNELL BLVD</div> <div>59(66)</div> <div>15(16)</div> <div>15(17)</div> <div>627(359)</div> </div>
<div> <div>450(297)</div> <div>510(747)</div> <div>276(515)</div> <div>608(302)</div> <div>320(181)</div> <div>145(82)</div> </div>	<div> <div>38(11)</div> <div>818(898)</div> </div>	<div> <div>341(253)</div> <div>50(142)</div> <div>109(211)</div> <div>184(131)</div> <div>537(339)</div> <div>15(26)</div> </div>	<div> <div>61(69)</div> <div>772(422)</div> <div>147(119)</div> <div>132(90)</div> <div>ACCESS</div> </div>

GRINNELL BLVD / NORTH ACCESS	MILTON E PROBY WEST RIRO ACCESS	MILTON E PROBY EAST RIRO ACCESS
16 <div> <div>ACCESS</div> <div>182(83)</div> <div>26(12)</div> <div>32(16)</div> <div>346(238)</div> </div>	17 <div> <div>304(189)</div> <div>41(37)</div> <div>16(24)</div> </div>	18 <div> <div>304(198)</div> <div>16(15)</div> <div>16(24)</div> </div>
<div> <div>193(94)</div> <div>579(328)</div> <div>101(37)</div> <div>ACCESS</div> </div>		

LEGEND

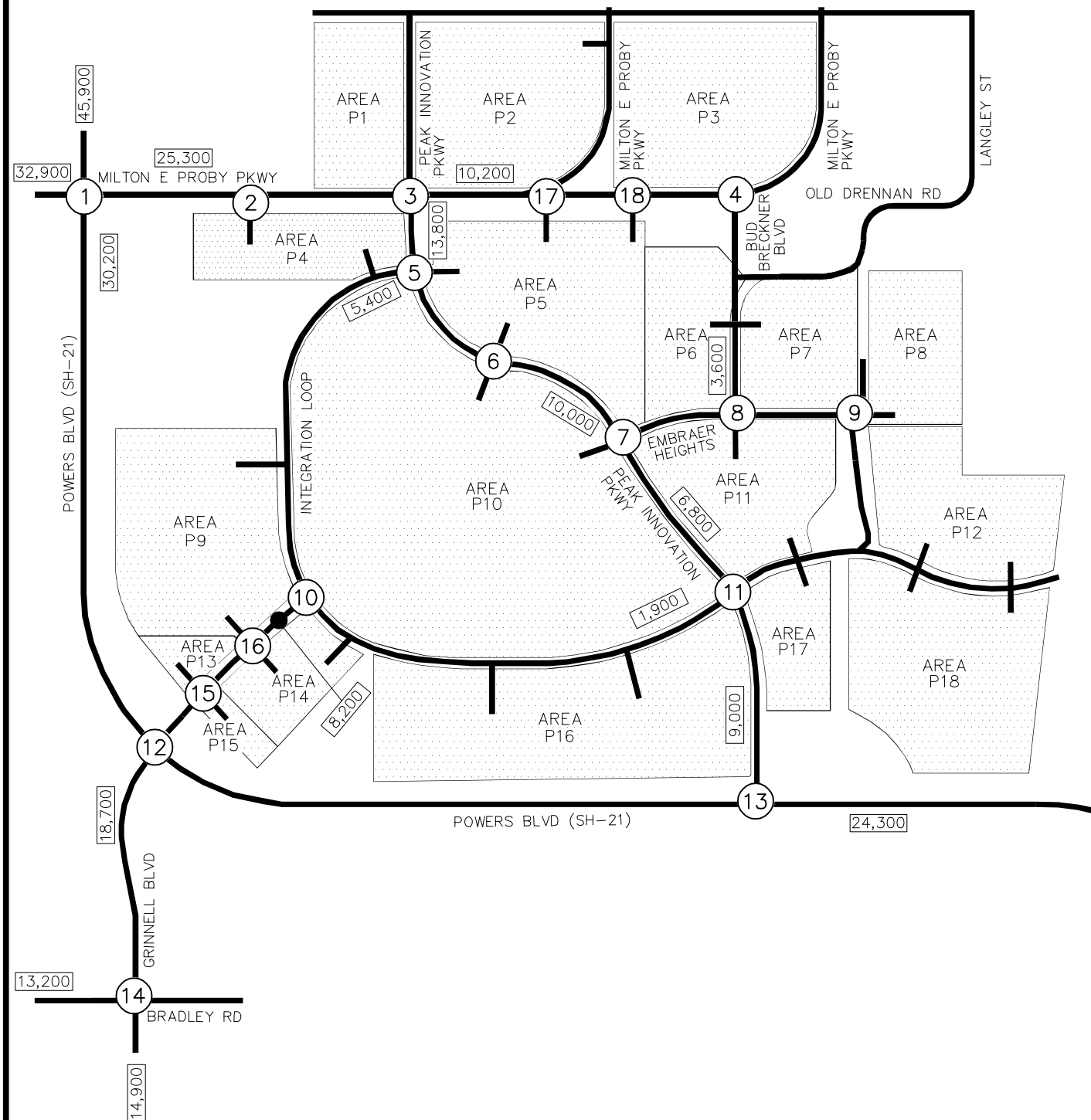
(X) Study Area Key Intersection

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

[XX,X00] Estimated Daily Traffic Volume

PEAK INNOVATION PARK
PHASE I 2022 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 12

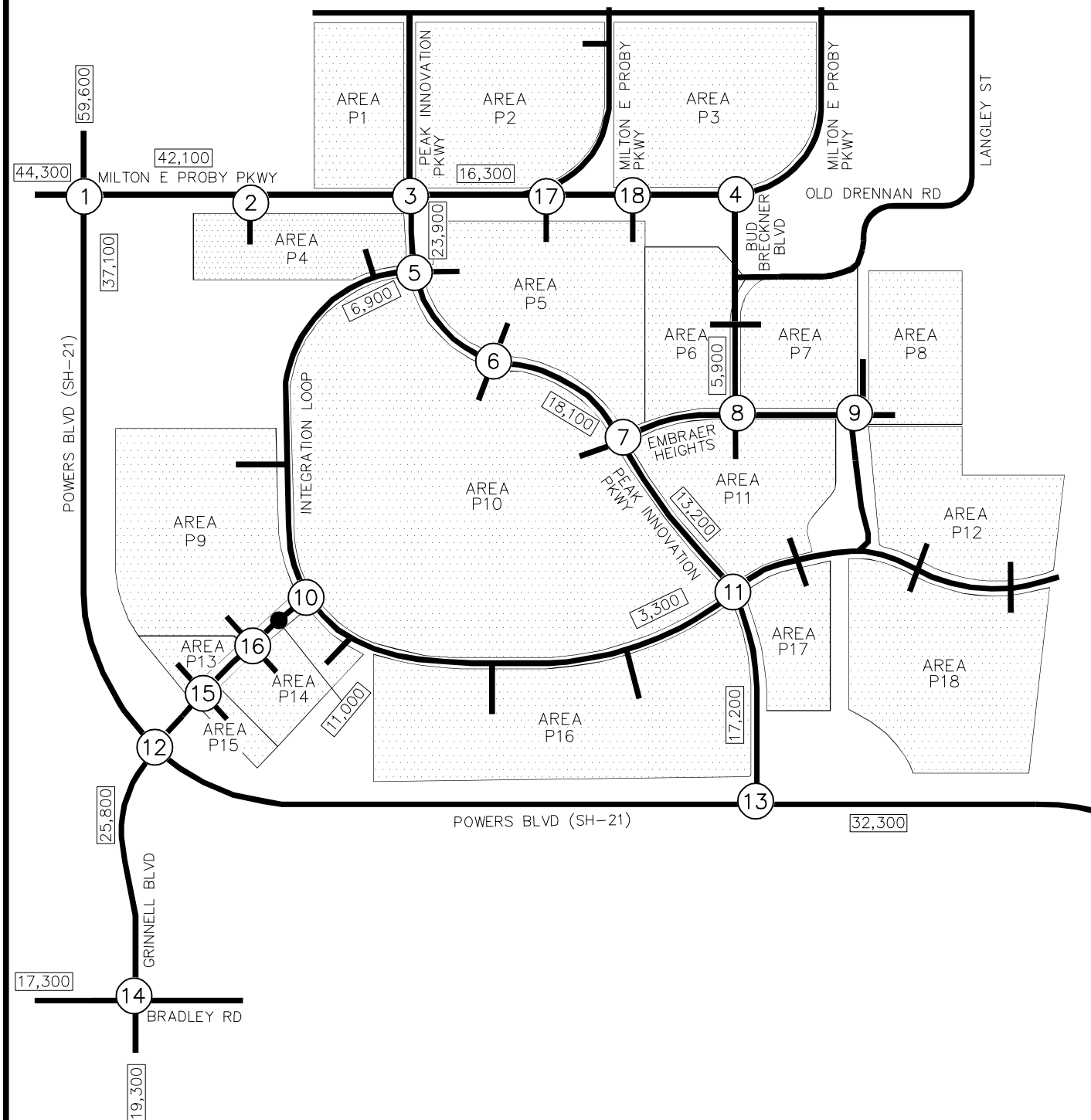


MILTON E PROBY PKWY / POWERS BLVD (SH-21)		MILTON E PROBY PKWY / RIRO ACCESS		MILTON E PROBY PKWY / PEAK INNOVATION PKWY		MILTON E PROBY PKWY / BUD BRECKNER BLVD		PEAK INNOVATION PKWY / INTEGRATION LOOP			
1		2		3		4		5			
773(579) 894(1212) 1038(409) 387(839) 365(739) 38(69)		856(1726)		73(115) 13(20) 10(15) 6(5) 333(592) 25(37)				176(95) 1042(197) 35(31) 31(46) 23(34) 8(11)			
673(747) 971(379) 505(509) 587(331) 1357(807) 125(67)		1997(683) 218(198) 14(12)		154(85) 642(343) 1215(267) 451(1019) 16(10) 44(21)		472(348) 178(14) 21(121)		285(213) 35(31) 148(32) 59(133) 195(792) 12(10)			
PEAK INNOVATION PKWY / ACCESS		PEAK INNOVATION PKWY / EMBRAER HEIGHTS		EMBRAER HEIGHTS / BUD BRECKNER BLVD		EMBRAER HEIGHTS / ACCESS		GRINNELL BLVD / INTEGRATION LOOP			
6		7		8		9		10			
ACCESS 15(23) 5(10) 35(52) 60(51) 197(617) 80(5)		273(77) 212(225) 328(16) 28(232) 5(10) 11(103)		18(277) 39(3) 38(6) 6(31) 11(25) 5(5)		5(5) 5(10) 6(2) 2(6) 11(54) 1(6)		348(305) 100(80) 483(217) 290(163) GRINNELL BLVD INTEGRATION LOOP 115(129) 80(100)			
24(21) 764(197) 398(24) 50(309) 5(10) 10(62) PEAK INNOVATION PARKWAY ACCESS		37(213) 5(10) 19(100) 136(11) 278(234) 147(7)		381(15) 38(6) 77(5) 10(60) 5(30) 5(5)		2(2) 64(9) 5(5) 2(2) 5(10) 7(1)					
PEAK INNOVATION PKWY / INTEGRATION LOOP		POWERS BLVD (SH-21) / GRINNELL BLVD		PEAK INNOVATION PKWY / POWERS BLVD (SH-21)		BRADLEY RD / GRINNELL BLVD		GRINNELL BLVD / SOUTH ACCESS			
11		12		13		14		15			
15(4) 151(416) 78(11) 13(67) 6(28) 30(152)		GRINNELL BLVD 407(246) 275(310) 121(66) POWERS BLVD 145(90) 945(609) 148(275)		39(176) 228(471) 603(201) 1214(819)		358(422) 427(669) 6(6) 11(6) 200(64) 26(22)		ACCESS 56(62) 19(21) 19(22) 618(475) 5(4)			
4(15) 33(4) 89(85) 98(51) 545(164) 179(24)		485(307) 616(820) 333(617) POWERS BLVD 722(365) 440(202) 263(102) GRINNELL BLVD		212(36) 810(934)		501(303) 55(154) 118(229) 200(142) 714(396) 17(28)		57(65) 872(419) 142(115) GRINNELL BLVD 127(86) 13(7) ACCESS			
GRINNELL BLVD / NORTH ACCESS		MILTON E PROBY WEST RIRO ACCESS		MILTON E PROBY EAST RIRO ACCESS		LEGEND X Study Area Key Intersection XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes XX,X00 Estimated Daily Traffic Volume					
16		17		18							
ACCESS 182(83) 52(24) 64(31) 401(612) 193(94) 989(364) GRINNELL BLVD 84(31) 8(3) ACCESS		1070(470) 59(52) 23(34)		1069(483) 24(21) 23(34)							

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

PEAK INNOVATION PARK
PHASE II 2030 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 13



MILTON E PROBY PKWY / POWERS BLVD (SH-21)		MILTON E PROBY PKWY / RIRO ACCESS		MILTON E PROBY PKWY / PEAK INNOVATION PKWY		MILTON E PROBY PKWY / BUD BRECKNER BLVD		PEAK INNOVATION PKWY / INTEGRATION LOOP	
1		2		3		4		5	
898(672) 1061(1394) 1820(566)		552(1463) 526(1348) 88(158)		171(261) 31(48) 10(15)		11(15) 489(977) 49(70)		176(95) 2126(343) 35(31)	
781(868) 1730(526) 622(581)		3651(1047) 218(198)		316(207) 1091(502) 2257(352)		694(513) 443(34)		285(213) 35(31) 326(42)	
666(436) 1560(990) 225(146)		14(12)		588(1842) 36(25) 82(49)		51(301)		81(271) 390(1658) 12(10)	
PEAK INNOVATION PKWY / ACCESS		PEAK INNOVATION PKWY / EMBRAER HEIGHTS		EMBRAER HEIGHTS / BUD BRECKNER BLVD		EMBRAER HEIGHTS / ACCESS		GRINNELL BLVD / INTEGRATION LOOP	
6		7		8		9		10	
ACCESS 15(23) 10(15) 41(61)		582(104) 419(416) 505(29)		31(392) 96(6) 92(13)		5(5) 10(15) 13(3)		370(443) 120(100)	
24(21) 1432(321) 993(58)		76(453) 10(15) 42(239)		534(23) 83(12) 192(11)		2(2) 158(21) 5(5)		661(227) 413(188)	
123(772) 10(15) 25(154)		316(22) 506(430) 280(14)		24(149) 12(75) 5(5)		2(2) 10(15) 17(1)		141(243) 100(120)	
PEAK INNOVATION PARKWAY ACCESS								GRINNELL BLVD	
PEAK INNOVATION PKWY / INTEGRATION LOOP		POWERS BLVD (SH-21) / GRINNELL BLVD		PEAK INNOVATION PKWY / POWERS BLVD (SH-21)		BRADLEY RD / GRINNELL BLVD		GRINNELL BLVD / SOUTH ACCESS	
11		12		13		14		15	
37(10) 254(830) 195(26)		GRINNELL BLVD 419(297) 311(511) 121(66)		82(411) 342(919)		444(670) 524(957) 6(8)		ACCESS 56(62) 19(21)	
32(167) 14(68) 74(379)		POWERS BLVD 145(90) 1110(780) 193(450)		1155(302) 1384(935)		13(6) 232(74) 30(26)		GRINNELL BLVD 19(22) 666(727) 5(4)	
9(36) 81(9) 101(136)		537(320) 800(966) 430(794)		494(70) 921(1074)		795(377) 63(179) 137(266)		57(65) 1174(454) 142(115)	
150(64) 1067(248) 446(60)		921(471) 689(223) 468(131)				232(164) 1042(485) 19(32)		GRINNELL BLVD 127(86) 13(7)	
		POWERS BLVD GRINNELL BLVD						ACCESS	
GRINNELL BLVD / NORTH ACCESS		MILTON E PROBY WEST RIRO ACCESS		MILTON E PROBY EAST RIRO ACCESS		LEGEND X Study Area Key Intersection XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes XX,X00 Estimated Daily Traffic Volume			
16		17		18					
ACCESS 182(83) 52(24)									
193(94) 989(364)		1121(500) 59(52)		1120(513) 24(21)					
84(31) 8(3)		23(34)		23(34)					
GRINNELL BLVD ACCESS									

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

PEAK INNOVATION PARK
FULL BUILDOUT 2045 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 14



Traffic Impact Study

Crossroads-Meadowbrook & Reagan Ranch Colorado Springs, Colorado

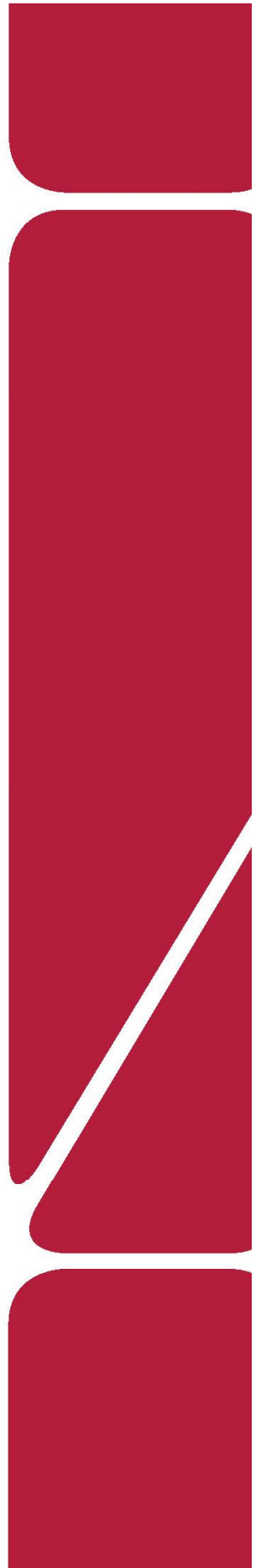
PCD File No. CR201 & SP207

Prepared for:

Pikes Peak Investments LLC

c/o The Equity Group

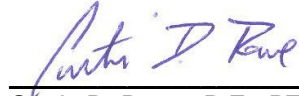
Kimley»Horn



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.



Curtis D. Rowe, P.E., PTOE, PE #36355

February 11, 2022

Date

Developer's Statement

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

Ms. Kelly Nelson
Pikes Peak Investments LLC
c/o The Equity Group
90 South Cascade Avenue, Suite 1500
Colorado Springs, Colorado 80903

Date

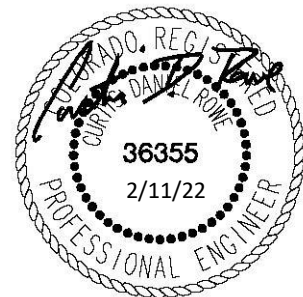
Crossroads-Meadowbrook-Reagan Ranch

PCD File No. CR201 & SP207

Colorado Springs, Colorado
El Paso County, Colorado

Prepared for
Pikes Peak Investments LLC
c/o The Equity Group
90 South Cascade Avenue
Suite 1500
Colorado Springs, Colorado 80903

Prepared by
Kimley-Horn and Associates, Inc.
Curtis D. Rowe, P.E., PTOE
4582 South Ulster Street
Suite 1500
Denver, Colorado 80237
(303) 228-2300



February 2022

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

information provided in the ITE *Trip Generation Manual, 10th Edition – Volume 1: User's Guide and Handbook*, 2017. **Table 1** provides the estimated trip generation for Phase 1 of the project. The trip generation calculations are included in **Appendix C**.

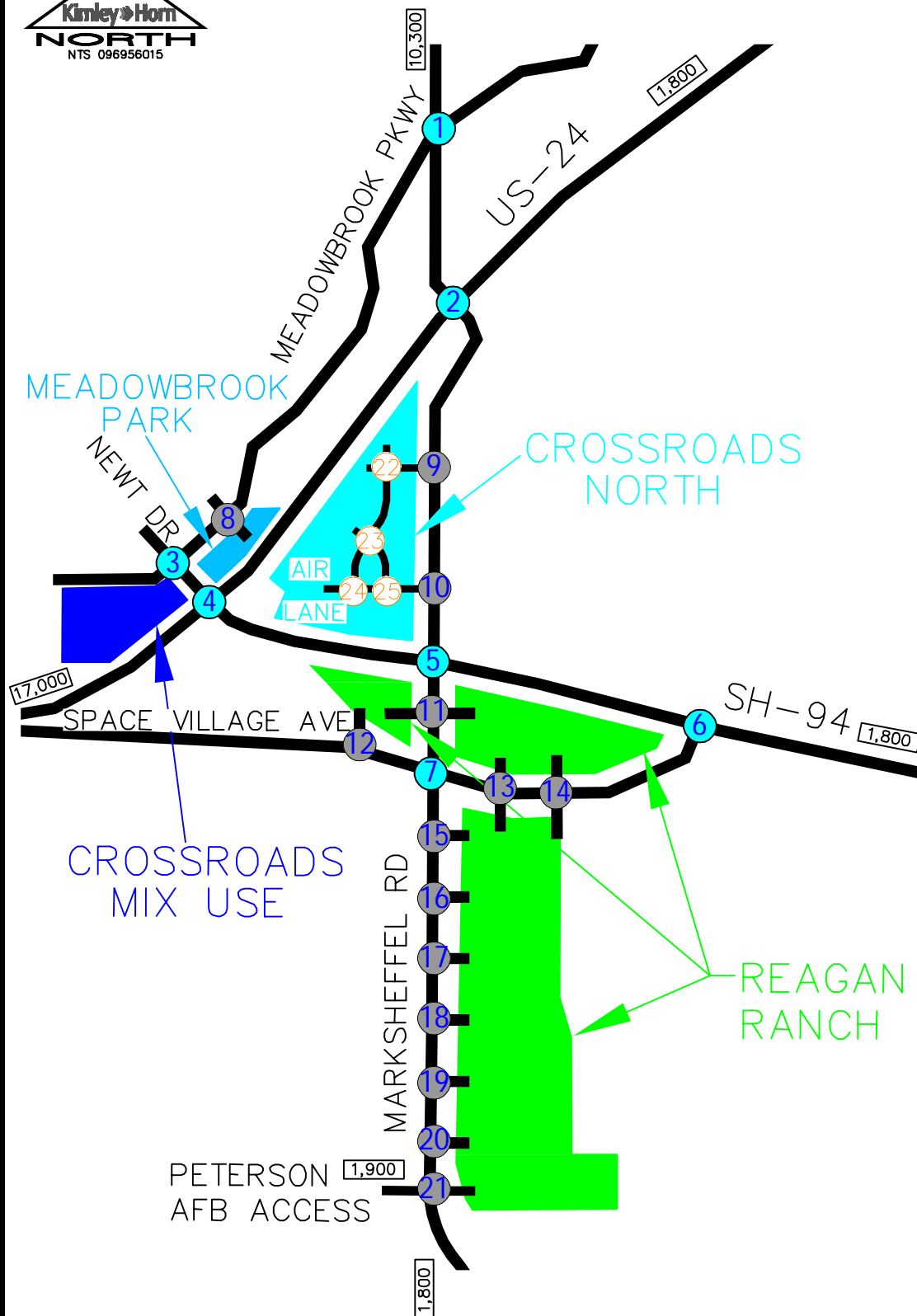
Table 1 – Phase 1 Project Traffic Generation

Use	Quantity	Daily	Weekday Vehicle Trips					
			AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Crossroads North								
Public Park (ITE 411)	20 Acres	16	0	0	0	1	1	2
Tire Superstore (ITE 849)	7,000 SF	144	6	3	9	7	8	15
Home Improvement Superstore (ITE 862)	127,000 SF	3,904	113	86	199	145	151	296
Furniture Store (ITE 890)	114,000 SF	720	21	9	30	28	31	59
Sit Down Restaurant (ITE 932)	11,000 SF	1,234	60	49	109	66	41	107
Fast-Food Restaurant (ITE 934)	2,500 SF	1,178	51	49	100	43	39	82
Gas Station Super Convenience (ITE 960)	6,000 SF	5,026	249	250	499	208	208	416
Total Crossroads North Trips		12,222	500	446	946	498	479	977
Crossroads North Trips after Internal Capture		11,246	490	437	927	458	441	899
Meadowbrook Park								
Single Family Housing (ITE 210)	67 Units	720	13	39	52	43	26	69
Meadowbrook Park Total Trips		720	13	39	52	43	26	69
Crossroads Mix Use								
Mid-Rise Multifamily Housing (ITE 221)	300 Units	1,634	26	74	100	77	50	127
Shopping Center (ITE 820)	10,000 SF	1,256	97	60	157	48	51	99
Sit Down Restaurant (ITE 932)	4,000 SF	450	22	18	40	24	15	39
Fast Food Restaurant (ITE 934)	11,000 SF	5,182	225	217	442	187	172	359
Coffee Shop (ITE 937)	2,500 SF	2,050	113	109	222	55	55	110
Total Crossroads Mix Use Trips		10,572	483	478	961	391	343	734
Crossroads Mix Use Trips after Internal Capture		9,726	474	468	942	359	316	675
Reagan Ranch Northwest Area								
Industrial Park (ITE 130)	220,000 SF	742	71	17	88	18	70	88
Reagan Ranch Northwest Area Total Trips		742	71	17	88	18	70	88
Reagan Ranch Northeast Area								
Single Family Housing (ITE 210)	125 Units	1,276	22	72	94	79	47	126
Shopping Center (ITE 820)	30,000 SF	2,652	104	63	167	107	116	223
Total Reagan Ranch Northeast Area Trips		3,928	126	135	261	186	163	349
Reagan Ranch NE Area Trips after Internal Capture		3,614	124	132	256	171	150	321
Reagan Ranch Southeast Area								
Single Family Housing (ITE 210)	255 Units	2,460	45	141	186	156	94	250
Mid-Rise Multifamily Housing (ITE 221)	360 Units	1,962	31	89	120	93	59	152
Shopping Center (ITE 820)	70,000 SF	4,718	116	71	187	200	217	417
Total Reagan Ranch Southeast Area Trips		9,140	192	301	493	449	370	819
Reagan Ranch SE Area Trips after Internal Capture		8,410	188	295	483	413	340	753
Total Site Generated Trips		37,324	1,385	1,416	2,801	1,585	1,451	3,036
Total Site External Trips after Internal Capture		34,458	1,360	1,389	2,748	1,462	1,343	2,806

With full project buildout by 2040, the three development areas are expected to generate approximately 58,582 daily weekday external vehicle trips with 3,481 of these trips occurring during the morning peak hour and 5,121 trips occurring during the afternoon peak hour. **Table 2** provides the estimated trip generation for full buildout of the project.

Table 2 – Full Buildout Project Traffic Generation




Use	Quantity	Daily	Weekday Vehicle Trips					
			AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Crossroads North								
Public Park (ITE 411)	20 Acres	16	0	0	0	1	1	2
Movie Theatre (ITE 444)	52,000 SF	4,062	5	6	11	302	19	321
Tire Superstore (ITE 849)	7,000 SF	144	6	3	9	7	8	15
Home Improvement Superstore (ITE 862)	127,000 SF	3,904	113	86	199	145	151	296
Furniture Store (ITE 890)	114,000 SF	720	21	9	30	28	31	59
Sit Down Restaurant (ITE 932)	11,000 SF	1,234	60	49	109	66	41	107
Fast-Food Restaurant (ITE 934)	5,000 SF	2,356	103	98	201	85	78	163
Gas Station Super Convenience (ITE 960)	6,000 SF	5,026	249	250	499	208	208	416
Total Crossroads North Trips		17,462	557	501	1,058	842	537	1,379
Crossroads North Trips after Internal Capture		16,066	546	491	1,037	775	494	1,269
Meadowbrook Park								
Single Family Housing (ITE 210)	67 Units	720	13	39	52	43	26	69
Meadowbrook Park Total Trips		720	13	39	52	43	26	69
Crossroads Mix Use								
Mid-Rise Multifamily Housing (ITE 221)	300 Units	1,634	26	74	100	77	50	127
Shopping Center (ITE 820)	10,000 SF	1,256	97	60	157	48	51	99
Pharmacy (ITE 881)	14,000 SF	1,528	29	25	54	72	72	144
Sit Down Restaurant (ITE 932)	8,000 SF	898	44	36	80	48	30	78
Fast Food Restaurant (ITE 934)	11,000 SF	5,182	225	217	442	187	172	359
Coffee Shop (ITE 937)	2,500 SF	2,050	113	109	222	55	55	110
Total Crossroads Mix Use Trips		12,548	534	521	1,055	487	430	917
Crossroads Mix Use Trips after Internal Capture		11,544	523	511	1,034	448	396	844
Reagan Ranch Northwest Area								
Industrial Park (ITE 130)	365,000 SF	1,232	118	28	146	31	115	146
Reagan Ranch Northwest Area Total Trips		1,232	118	28	146	31	115	146
Reagan Ranch Northeast Area								
Single Family Housing (ITE 210)	200 Units	1,968	37	110	147	125	73	198
Shopping Center (ITE 820)	175,000 SF	8,796	148	91	239	395	427	822
Total Reagan Ranch Northeast Area Trips		10,764	185	201	386	520	500	1,020
Reagan Ranch NE Area Trips after Internal Capture		9,904	181	197	378	478	460	938
Reagan Ranch Southeast Area								
Single Family Housing (ITE 210)	393 Units	3,662	71	213	284	238	140	378
Mid-Rise Multifamily Housing (ITE 221)	360 Units	1,962	31	89	120	93	59	152
Office (ITE 710)	100,000 SF	1,062	103	17	120	18	96	114
Shopping Center (ITE 820)	350,000 SF	14,092	203	124	327	659	714	1,373
Total Reagan Ranch Southeast Area Trips		20,778	408	443	851	1,008	1,009	2,017
Reagan Ranch SE Area Trips after Internal Capture		19,116	400	434	834	928	928	1,856
Total Site Generated Trips		63,504	1,815	1,733	3,548	2,931	2,617	5,548
Total Site External Trips after Internal Capture		58,582	1,781	1,700	3,481	2,703	2,419	5,121



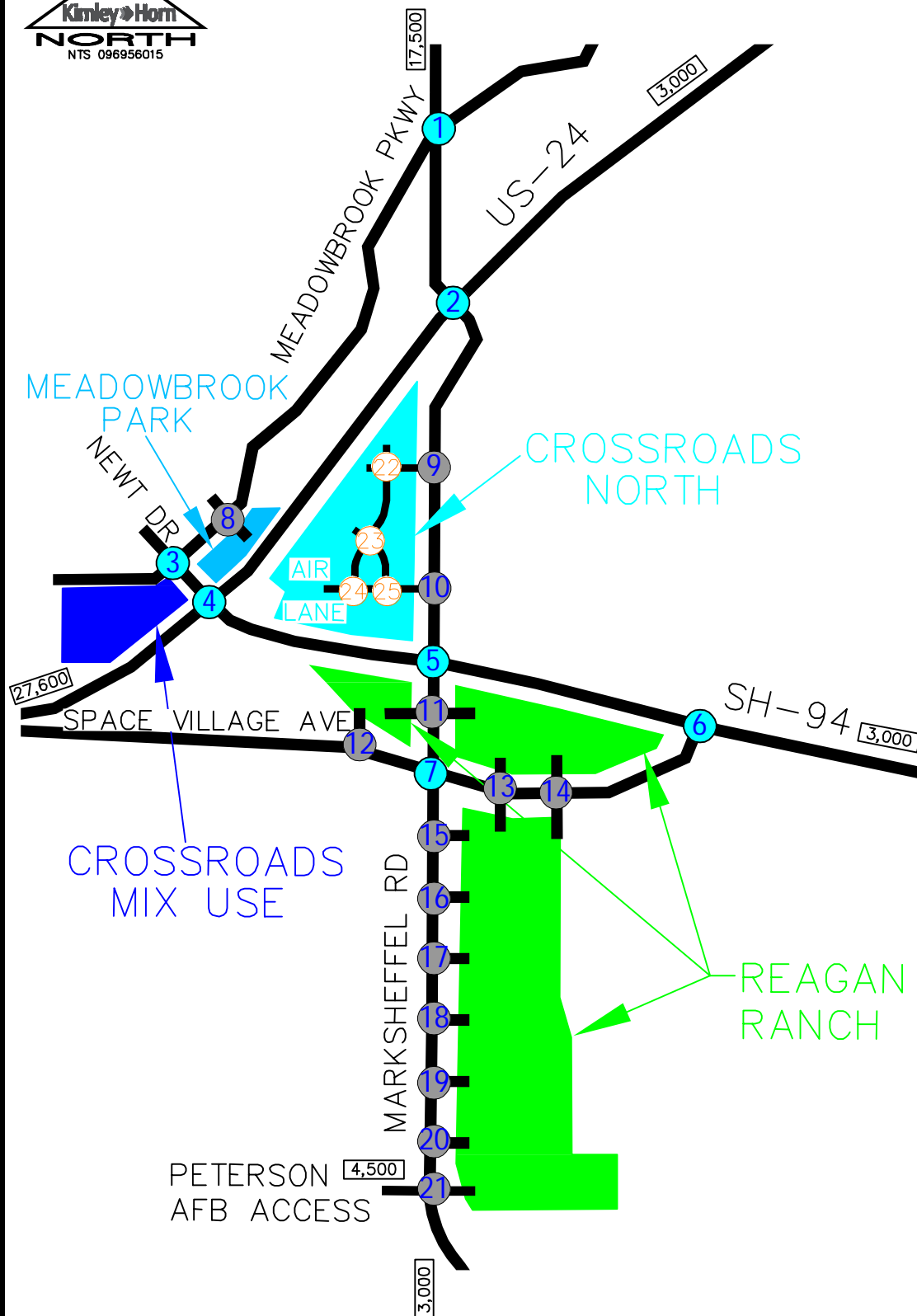
<div>1</div> <div><div>146(121) ← 261(318)</div><div>152(103) →</div><div>264(300) →</div></div> <div>MEADOWBROOK PWY/MARKSHEFFEL RD</div>	<div>2</div> <div><div>MARKSHEFFEL</div><div>← 261(318)</div><div>← 25(20) ← 44(54)</div><div>25(17) → 123(115) →</div><div>264(300) → 45(50) →</div></div> <div>US-24</div> <div>MARKSHEFFEL RD</div>	<div>3</div> <div><div>MEADOWBROOK</div><div>← 142(108) ← 27(18)</div><div>9(30)</div><div>332(251)</div><div>140(95) → 328(221) →</div></div> <div>NEWT DR</div> <div>MEADOWBROOK PKWY</div>	<div>4</div> <div><div>US-24</div><div>← 25(20)</div><div>25(17) → 51(35) → 278(188) →</div><div>48(40) → 342(360) →</div><div>268(221) → 123(115) → 222(280) →</div></div> <div>SH-94/US-24</div> <div>SH-94</div>	<div>5</div> <div><div>← 240(243) ← 155(230) ← 23(26)</div><div>29(25) ← 25(20)</div><div>147(137) → 25(17) → 100(160) →</div><div>127(137) → 176(217) → 3(5) →</div></div> <div>SH-94/MARKSHEFFEL RD</div> <div>SH-94</div>	<div>6</div> <div><div>← 50(43) ← 19(31)</div><div>50(44) → 1(4) →</div><div>4(2) → 20(23) →</div></div> <div>SH-94/SPACE VILLAGE AVENUE</div>
<div>7</div> <div><div>← 168(312) ← 58(83)</div><div>34(23) ← 58(63) ← 32(42)</div><div>27(45) → 26(55) → 9(22) →</div><div>29(21) → 257(277) → 13(24) →</div></div> <div>SPACE VILLAGE AVE/MARKSHEFFEL RD</div>	<div>8</div> <div><div>MEADOWBROOK</div><div>← 208(253) ← 4(13)</div><div>12(8) ← 27(18)</div><div>243(214) → 9(30) →</div><div>ACCESS</div></div> <div>MEADOWBROOK PARKWAY ACCESS</div>	<div>9</div> <div><div>← 196(183) ← 232(303)</div><div>87(88) → 87(88) →</div><div>49(46) → 221(262) →</div></div> <div>MARKSHEFFEL RD NORTH ACCESS</div>	<div>10</div> <div><div>← 98(92) ← 221(299)</div><div>66(66) → 197(198) →</div><div>147(137) → 204(242) →</div></div> <div>MARKSHEFFEL RD/AIR LANE ACCESS</div>	<div>11</div> <div><div>← 32(8) ← 223(381)</div><div>31(55)</div><div>3(14) →</div><div>276(305) → 41(40) →</div></div> <div>MARKSHEFFEL ROAD RIRO ACCESS</div>	<div>12</div> <div><div>← 7(28) ← 7(28)</div><div>18(5) ← 69(79)</div><div>21(5) → 56(93) →</div></div> <div>SPACE VILLAGE AVE FULL ACCESS</div>
<div>13</div> <div><div>← 31(55) ← 2(2)</div><div>5(5) ← 80(57) ← 2(4)</div><div>57(54) → 33(87) → 9(21) →</div><div>15(17) → 3(3) →</div></div> <div>SPACE VILLAGE AVE W FULL ACCESS</div>	<div>14</div> <div><div>← 64(37) ← 7(4)</div><div>2(7) ← 17(23) ← 2(4)</div><div>19(65) → 13(18) → 4(8) →</div><div>6(7) → 3(3) →</div></div> <div>SPACE VILLAGE AVE E FULL ACCESS</div>	<div>15</div> <div><div>← 209(376)</div><div>18(20)</div><div>281(302) → 2(4) →</div></div> <div>MARKSHEFFEL ROAD RIRO ACCESS</div>	<div>16</div> <div><div>← 178(306) ← 32(70)</div><div>30(34)</div><div>253(272) → 6(7) →</div></div> <div>MARKSHEFFEL ROAD 3/4 ACCESS</div>	<div>17</div> <div><div>← 178(306)</div><div>38(44)</div><div>219(236) → 6(12) →</div></div> <div>MARKSHEFFEL ROAD RIRO ACCESS</div>	<div>18</div> <div><div>← 142(228) ← 36(78)</div><div>27(31) ← 27(31)</div><div>197(218) → 6(12) →</div></div> <div>MARKSHEFFEL ROAD FULL ACCESS</div>
<div>19</div> <div><div>← 169(259)</div><div>18(20)</div><div>186(210) → 6(12) →</div></div> <div>MARKSHEFFEL ROAD RIRO ACCESS</div>	<div>20</div> <div><div>← 133(180) ← 36(78)</div><div>35(41)</div><div>156(182) → 4(8) →</div></div> <div>MARKSHEFFEL ROAD 3/4 ACCESS</div>	<div>21</div> <div><div>← 44(57) ← 61(57) ← 30(66)</div><div>44(51) ← 24(27) ← 9(10)</div><div>48(70) → 9(21) →</div><div>68(70) → 2(4) →</div></div> <div>MARKSHEFFEL RD FULL ACCESS</div>	<div>22</div> <div><div>← 2(2) ← 2(2) ← 44(44)</div><div>49(46) ← 49(46) ← 147(137)</div><div>2(2) → 44(44) → 2(2) →</div><div>2(2) → 2(2) → 87(88) →</div></div> <div>CROSSROADS NORTH INT #22</div>	<div>23</div> <div><div>← 49(46) ← 69(67) ← 25(23)</div><div>22(22) ← 5(5) ← 2(2)</div><div>22(22) → 4(4) → 44(44) →</div><div>25(23) → 47(45) → 2(2) →</div></div> <div>CROSSROADS NORTH INT #23</div>	<div>24</div> <div><div>← 2(2) ← 109(110)</div><div>98(92) ← 49(46)</div><div>2(2) → 44(44) →</div></div> <div>AIR LANE WEST INTERSECTION</div>
<div>25</div> <div><div>← 2(2) ← 109(110)</div><div>98(92) ← 147(137)</div><div>2(2) → 153(154) →</div></div> <div>AIR LANE EAST INTERSECTION</div>	<div>LEGEND</div> <div><div>ⓘ</div>Existing Key Intersection</div> <div><div>ⓧ</div>Proposed Access Intersection</div> <div><div>ⓧ</div>Proposed Internal Intersection</div> <div>XXX(XXX)Weekday AM(PM) Peak Hour Traffic Volumes</div> <div>XX,X00Estimated Daily Traffic Volume</div>				

FIGURE 9

LEGEND

-  Existing Key Intersection
-  Proposed Access Intersection
-  Proposed Internal Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

CROSSROADS-MEADOWBROOK & REAGAN RANCH
COLORADO SPRINGS, CO
2026 PROJECT TRAFFIC ASSIGNMENT



CROSSROADS-MEADOWBROOK & REAGAN RANCH
COLORADO SPRINGS, CO
2040 PROJECT TRAFFIC ASSIGNMENT

<p>1</p> <p>161(147) 374(664)</p> <p>165(127) → 344(599) →</p> <p>MEADOWBROOK PKWY/MARKSHEFFEL RD</p>	<p>2</p> <p>MARKSHEFFEL 374(664)</p> <p>27(24) 62(111)</p> <p>28(21) → 137(194) →</p> <p>US-24/MARKSHEFFEL ROAD</p>	<p>3</p> <p>MEADOWBROOK 157(134) 27(18)</p> <p>9(30) 366(314)</p> <p>153(119) → 358(277) →</p> <p>NEWT DR/MEADOWBROOK PKWY</p>	<p>4</p> <p>US-24 27(24)</p> <p>53(49) 420(596)</p> <p>28(21) → 55(43) → 302(232) →</p> <p>SH-94/US-24</p>	<p>5</p> <p>SH-94 270(272) 268(524)</p> <p>32(42) 27(24)</p> <p>164(233) → 28(21) → 179(350) →</p> <p>SH-94/MARKSHEFFEL RD</p>	<p>6</p> <p>54(63) 35(72)</p> <p>57(66) → 2(5) → 5(3) → 28(55) →</p> <p>SH-94/SPACE VILLAGE AVENUE</p>
<p>7</p> <p>310(652) 89(231)</p> <p>52(40) 87(186) 52(120)</p> <p>39(115) → 47(118) → 21(48) →</p> <p>SPACE VILLAGE AVE/MARKSHEFFEL RD</p>	<p>8</p> <p>MEADOWBROOK 297(459) 4(13)</p> <p>12(8) 27(18)</p> <p>305(444) → 9(30) →</p> <p>MEADOWBROOK PARKWAY ACCESS</p>	<p>9</p> <p>218(310) 353(659)</p> <p>98(99) → 98(99) →</p> <p>55(78) → 305(600) →</p> <p>MARKSHEFFEL RD NORTH ACCESS</p>	<p>10</p> <p>109(155) 342(603)</p> <p>74(74) → 221(222) →</p> <p>164(233) → 286(604) →</p> <p>MARKSHEFFEL RD/AIR LANE ACCESS</p>	<p>11</p> <p>53(14) 393(859)</p> <p>45(203)</p> <p>6(23) → 389(727) → 58(150) →</p> <p>MARKSHEFFEL ROAD RIRO ACCESS</p>	<p>12</p> <p>11(46) 11(46)</p> <p>30(8) 102(231)</p> <p>35(9) → 95(237) →</p> <p>SPACE VILLAGE AVE FULL ACCESS</p>
<p>13</p> <p>45(203) 2(2)</p> <p>7(19) 124(97) 4(9)</p> <p>80(206) → 54(148) → 20(46) →</p> <p>SPACE VILLAGE AVE W FULL ACCESS</p>	<p>14</p> <p>97(48) 11(5)</p> <p>4(11) 29(58) 4(9)</p> <p>32(95) → 18(43) → 8(19) →</p> <p>SPACE VILLAGE AVE E FULL ACCESS</p>	<p>15</p> <p>383(820)</p> <p>26(56)</p> <p>396(768) → 4(9) →</p> <p>MARKSHEFFEL ROAD RIRO ACCESS</p>	<p>16</p> <p>315(662) 68(158)</p> <p>43(93)</p> <p>357(684) → 9(19) →</p> <p>MARKSHEFFEL ROAD 3/4 ACCESS</p>	<p>17</p> <p>315(662)</p> <p>56(121)</p> <p>308(583) → 12(28) →</p> <p>MARKSHEFFEL ROAD RIRO ACCESS</p>	<p>18</p> <p>239(486) 76(176)</p> <p>39(84) 39(84)</p> <p>281(527) → 12(28) →</p> <p>MARKSHEFFEL ROAD FULL ACCESS</p>
<p>19</p> <p>278(570)</p> <p>26(56)</p> <p>267(500) → 12(28) →</p> <p>MARKSHEFFEL ROAD RIRO ACCESS</p>	<p>20</p> <p>202(393) 76(176)</p> <p>52(111)</p> <p>227(415) → 8(19) →</p> <p>MARKSHEFFEL ROAD 3/4 ACCESS</p>	<p>21</p> <p>63(151) 72(94) 64(148)</p> <p>65(139) 35(74) 13(28)</p> <p>85(170) → 20(46) →</p> <p>MARKSHEFFEL RD FULL ACCESS</p>	<p>22</p> <p>2(2) 2(2) 49(49)</p> <p>55(78) 55(78) 164(233)</p> <p>2(2) → 2(2) → 98(99) →</p> <p>CROSSROADS NORTH INT #22</p>	<p>23</p> <p>55(78) 76(88) 27(39)</p> <p>25(25) 5(8) 2(2)</p> <p>27(39) → 52(64) → 2(2) →</p> <p>CROSSROADS NORTH INT #23</p>	<p>24</p> <p>2(2) 123(124)</p> <p>109(155) 55(78)</p> <p>2(2) → 49(49) →</p> <p>AIR LANE WEST INTERSECTION</p>
<p>25</p> <p>2(2) 123(124)</p> <p>109(155) 164(233)</p> <p>2(2) → 172(173) →</p> <p>AIR LANE EAST INTERSECTION</p>	<p>LEGEND</p> <p>⊗ Existing Key Intersection</p> <p>⊗ Proposed Access Intersection</p> <p>⊗ Proposed Internal Intersection</p> <p>XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes</p> <p>XX,X00 Estimated Daily Traffic Volume</p>				

FIGURE 10

Villages at Waterview North

Preliminary Plan

Traffic Impact and Access Analysis

Prepared for:
CPR Entitlements, LLC
31 N Tejon St #500,
Colorado Springs, CO 80903

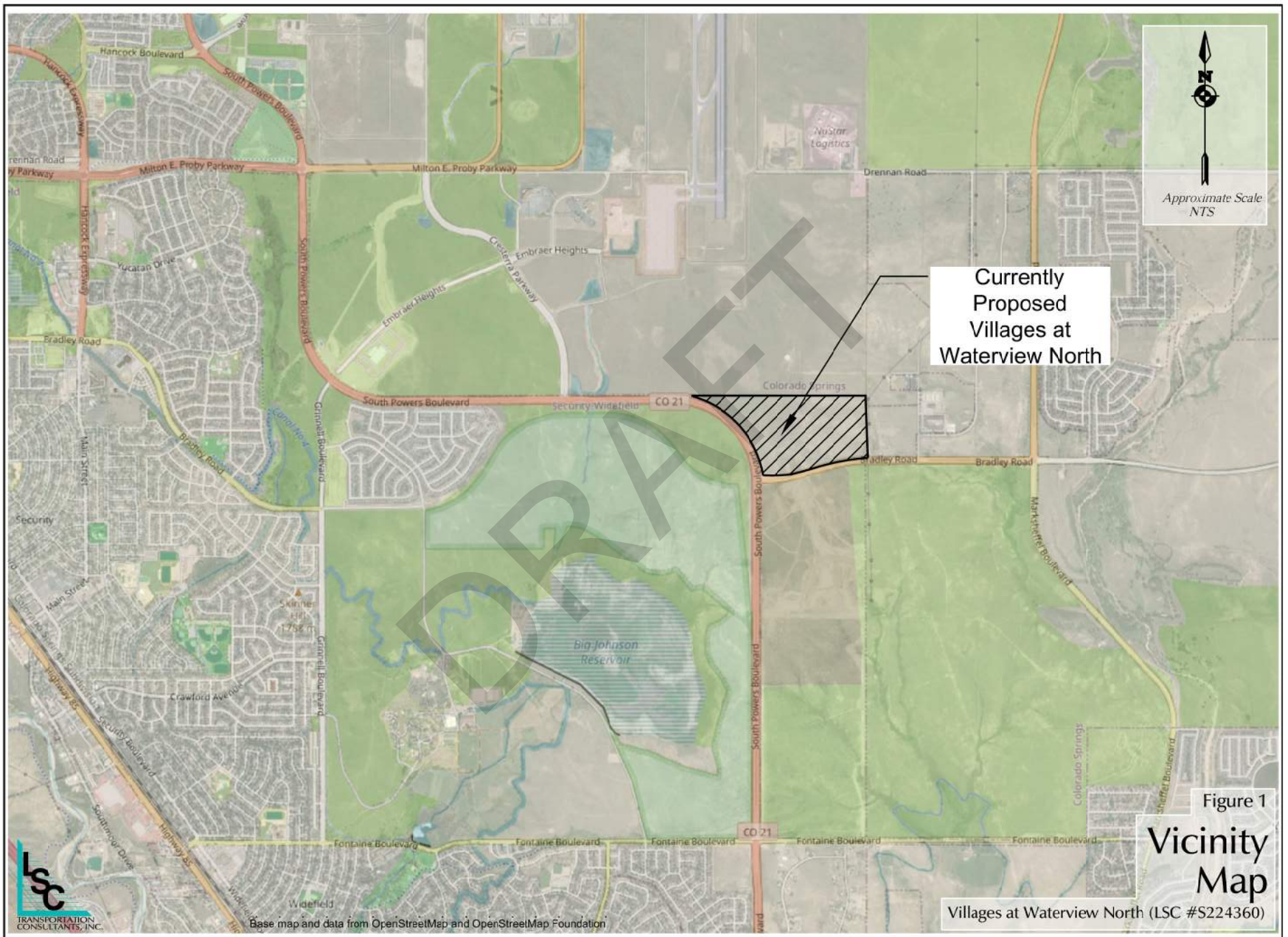
Contact: Mr. P. A. Koscielski, Manager

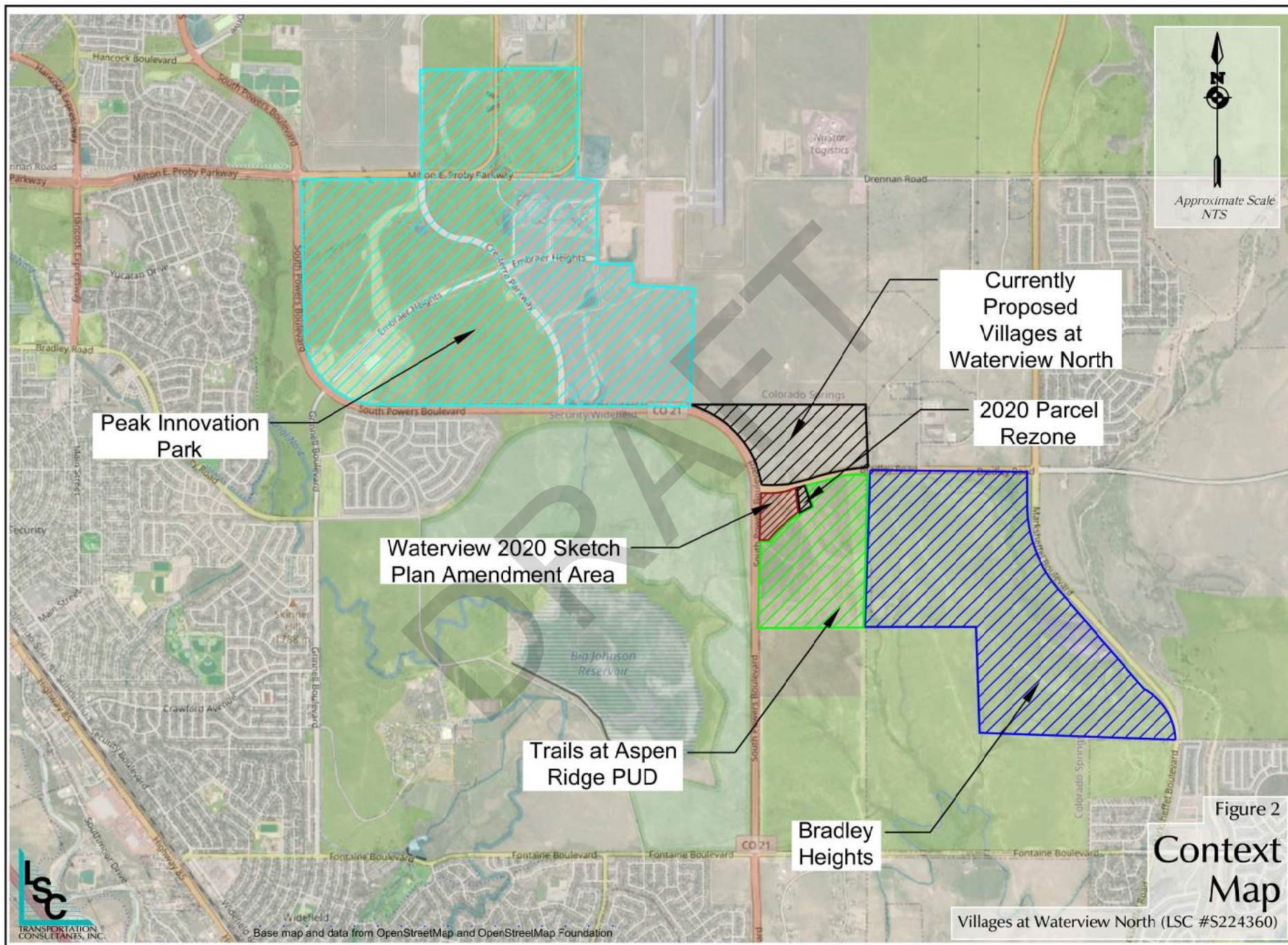
OCTOBER 27, 2022

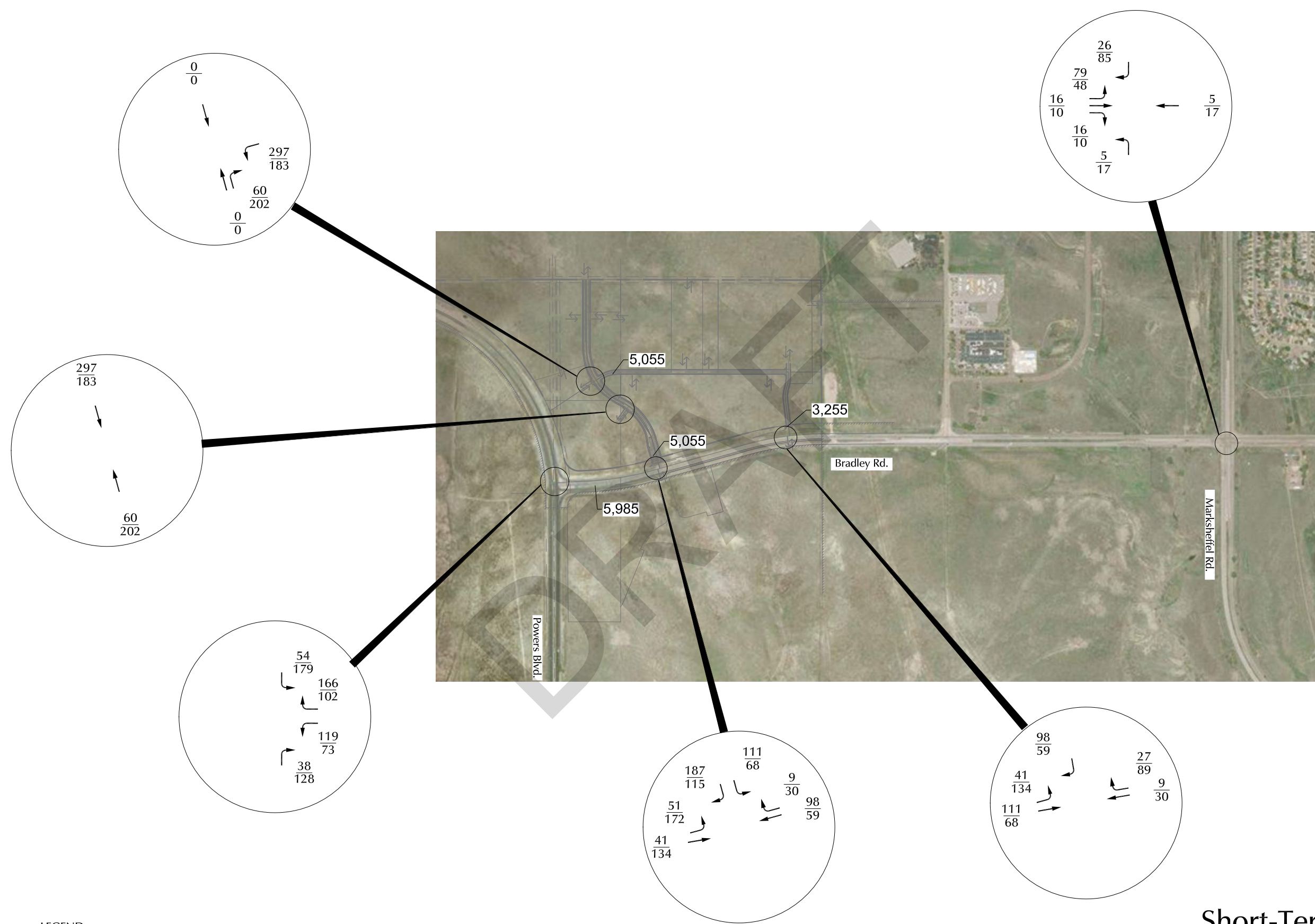
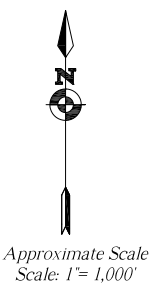
LSC Transportation Consultants
Prepared by: Kirstin D. Ferrin, P.E.
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #S224360









LEGEND:

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

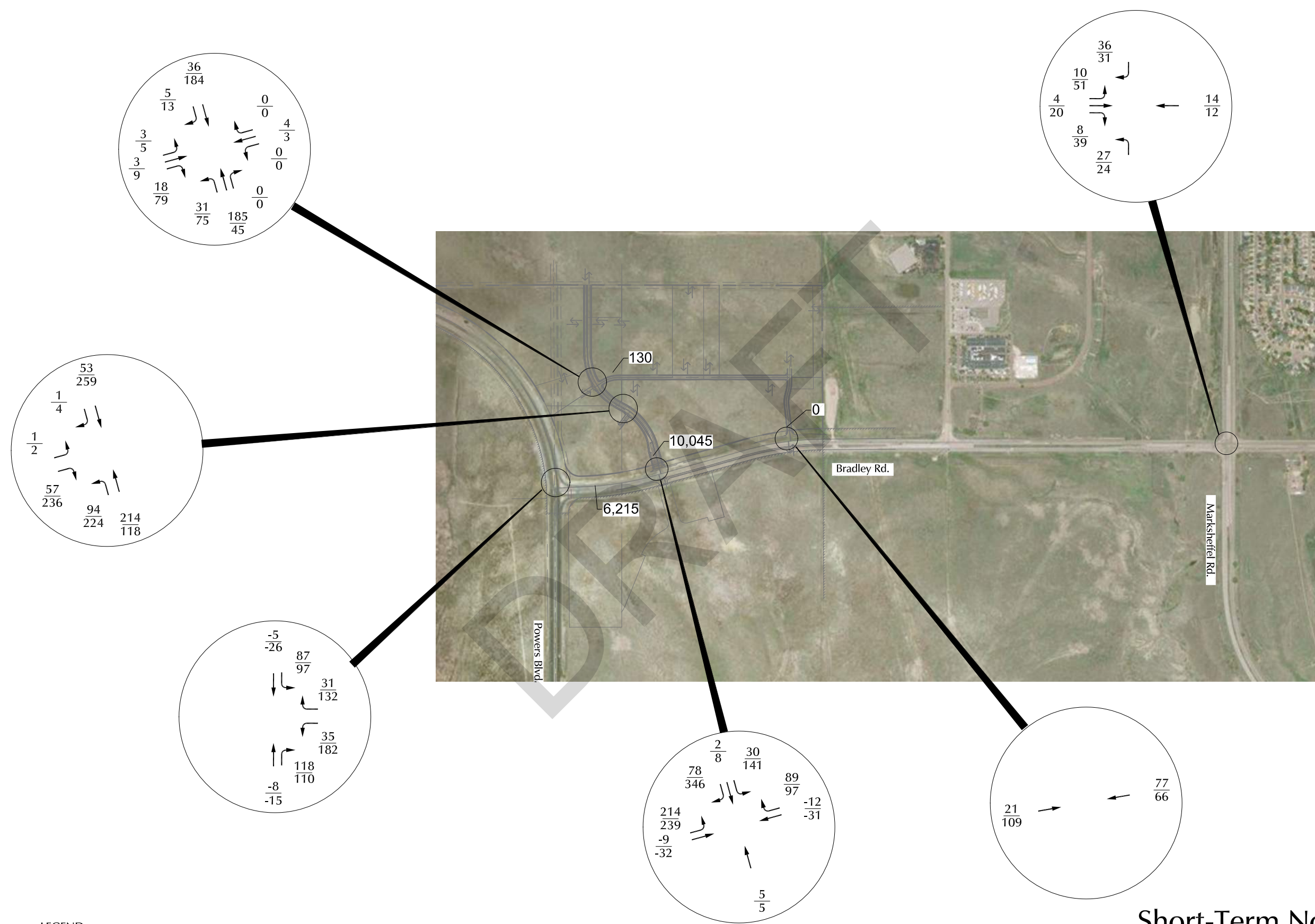
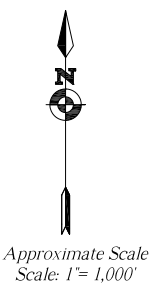
X,XXX= Average Daily Traffic (vehicles per day)



Figure 10

Short-Term Residential Site- Generated Traffic

Villages at Waterview North (LSC #S224360)

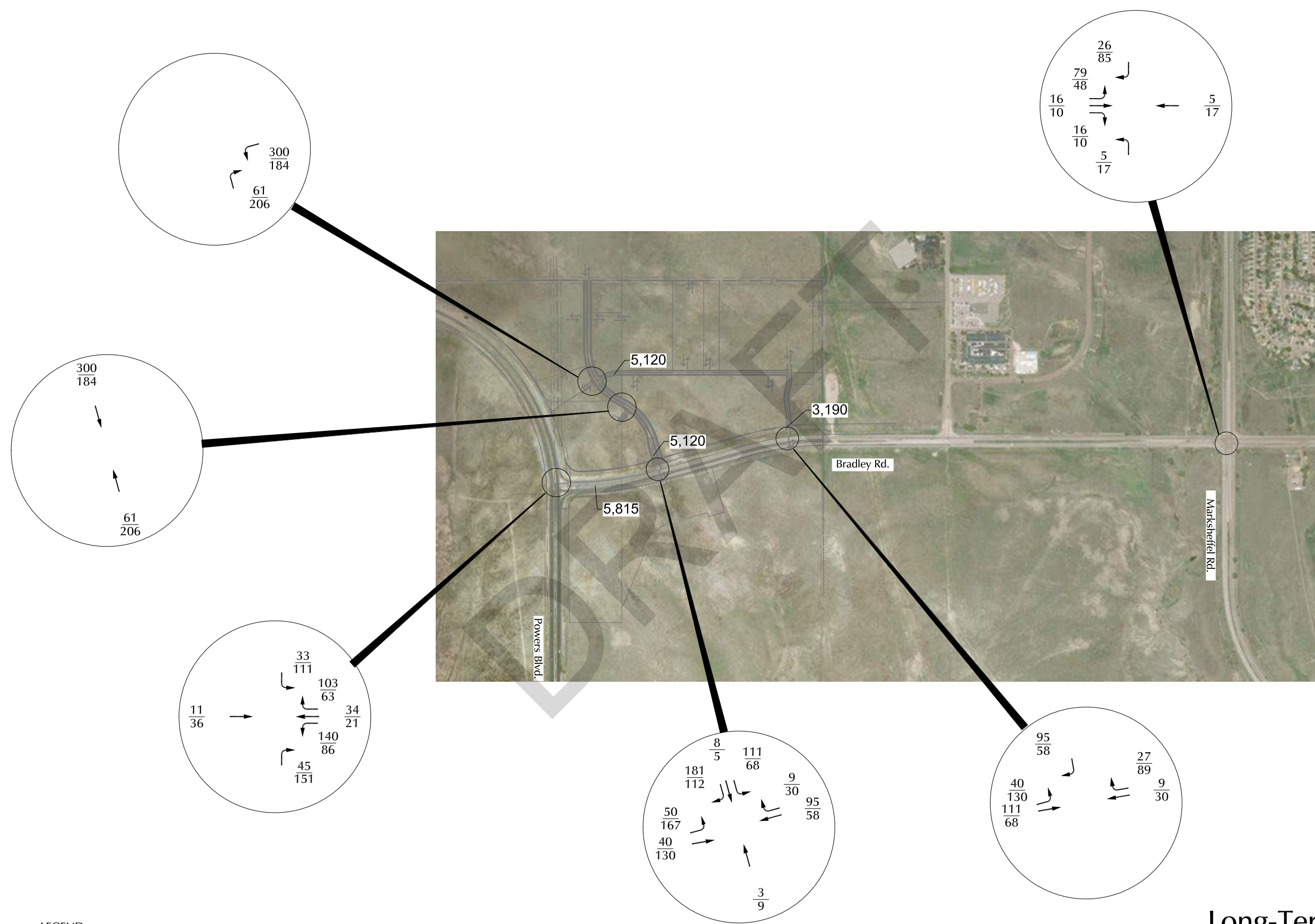
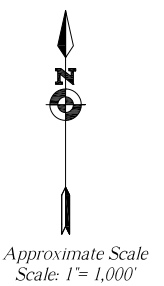


LEGEND:

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX= Average Daily Traffic (vehicles per day)



Figure 11
**Short-Term Non-Residential
 Site- Generated Traffic**
 Villages at Waterview North (LSC #S224360)



LEGEND:

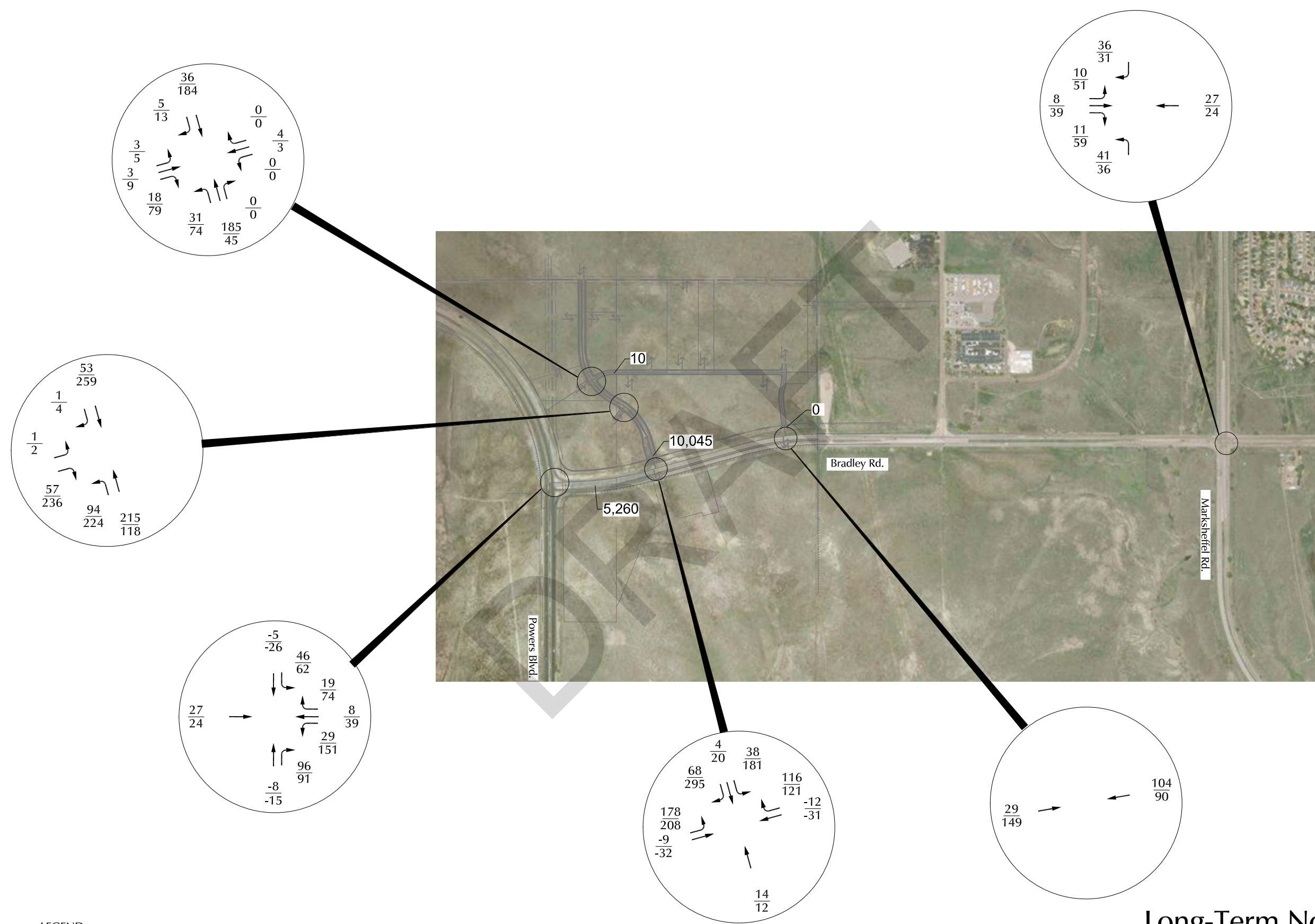
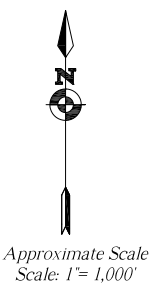
$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX= Average Daily Traffic (vehicles per day)



Figure 12

Long-Term Residential Site- Generated Traffic

Villages at Waterview North (LSC #S224360)



LEGEND:

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX= Average Daily Traffic (vehicles per day)



Figure 13
**Long-Term Non-Residential
 Site- Generated Traffic**
 Villages at Waterview North (LSC #S224360)

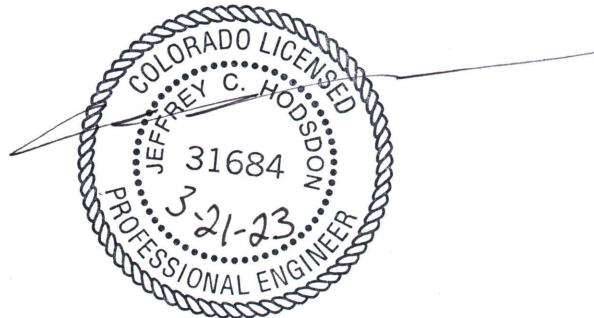


LSC TRANSPORTATION CONSULTANTS, INC.
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Website: <http://www.lsctrans.com>

Waterview East Commercial Traffic Impact and Access Analysis PUDSP-22-009 (LSC #S214970) March 21, 2023

Traffic Engineer's Statement

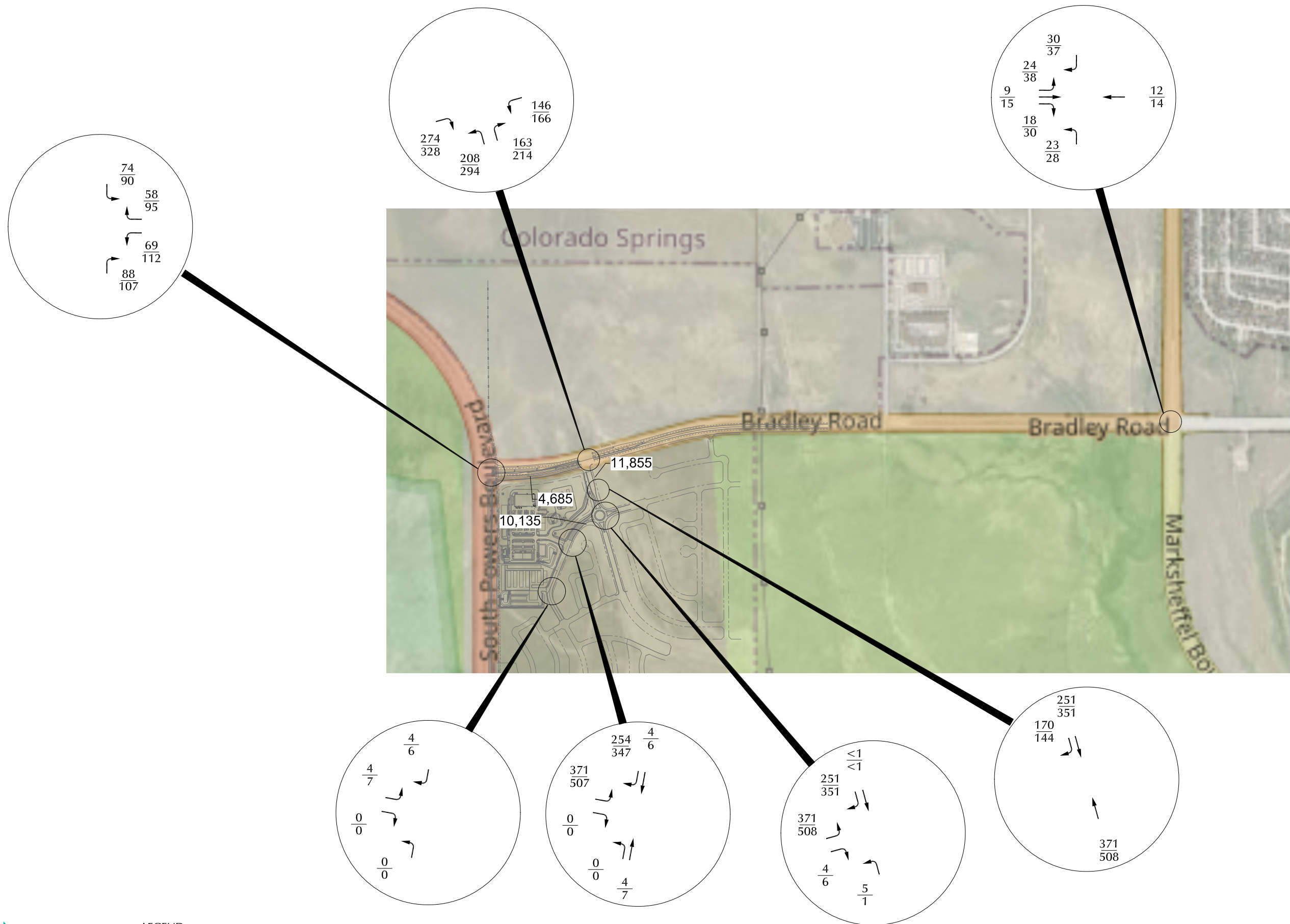
This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement

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

Date



LEGEND:

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

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

Short-Term Total, External Site-Generated Traffic

Figure 12b

Waterview East Commercial (LSC# S214970)

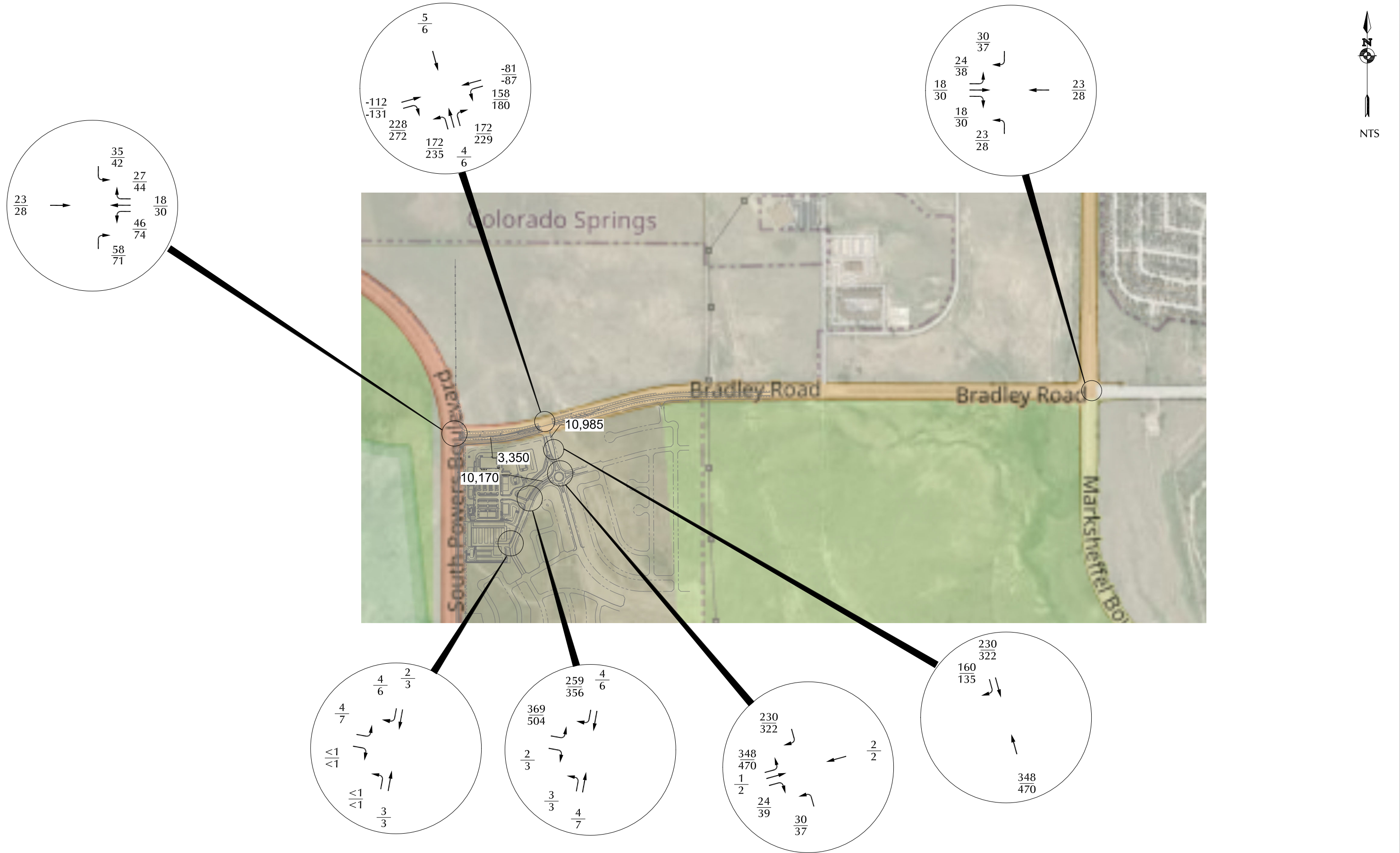
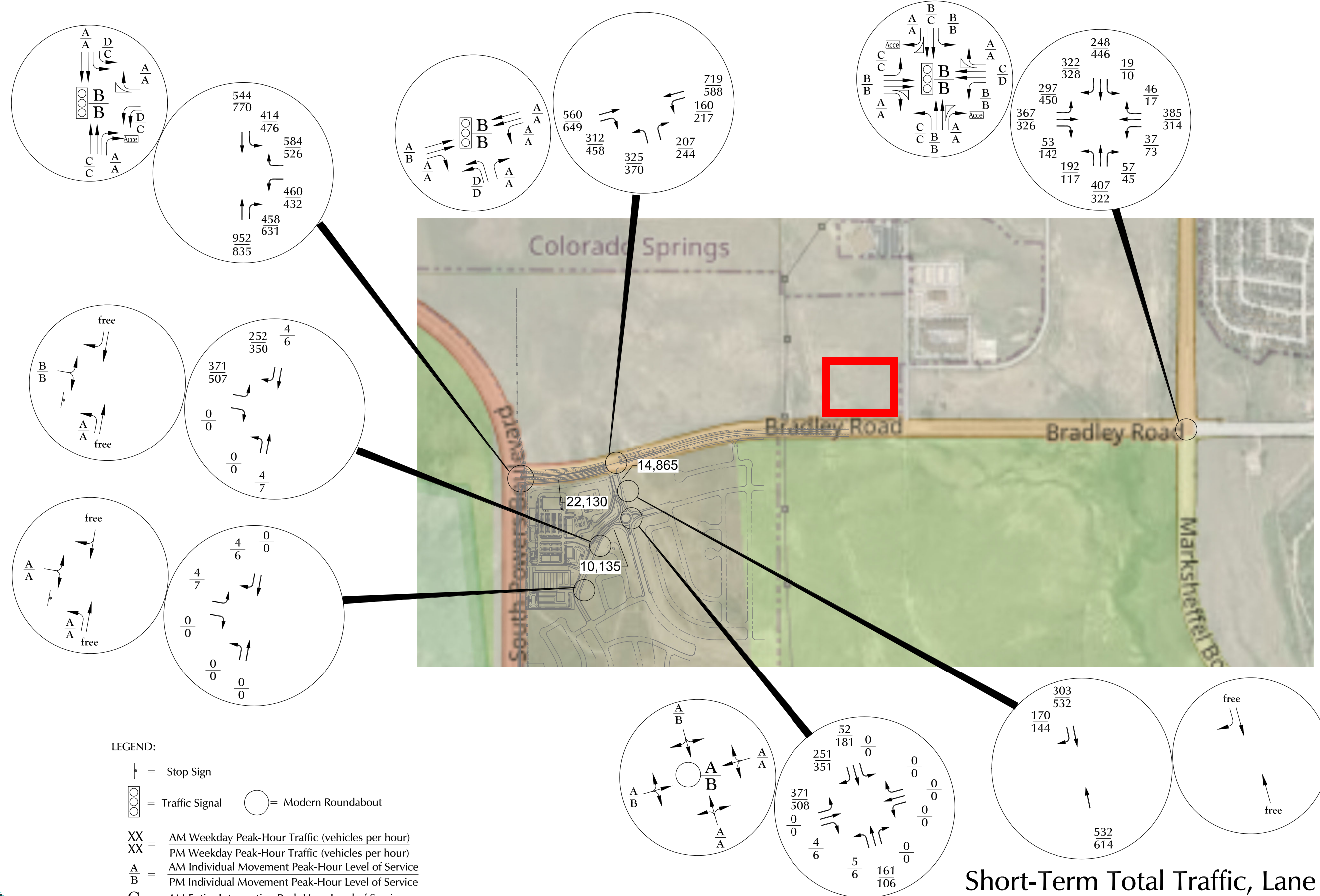


Figure 13b
Long-Term Total, External Site-Generated Traffic
 Waterview East Commercial (LSC# S214970)



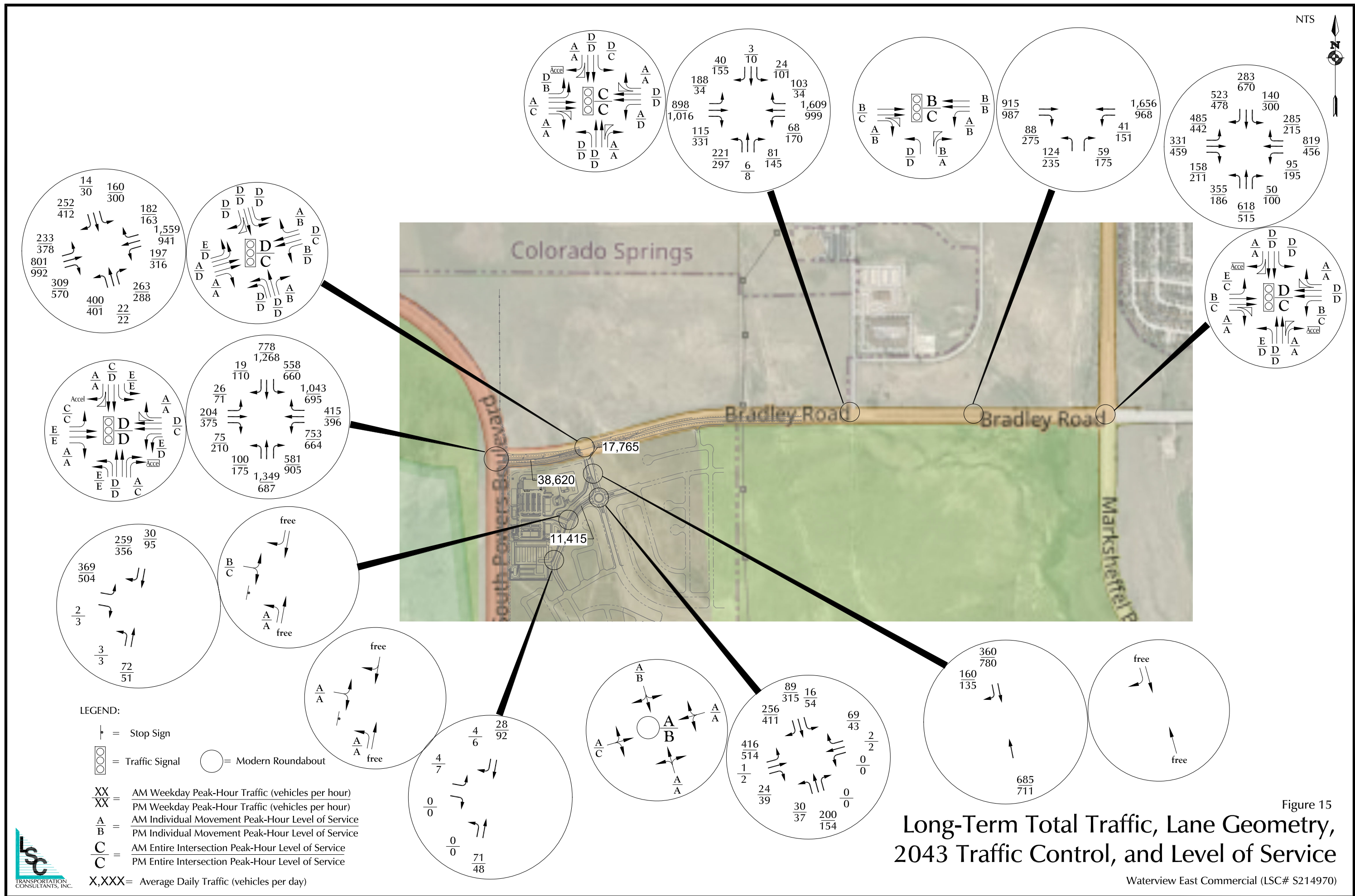
LEGEND:

= Stop Sign
 = Traffic Signal = Modern Roundabout

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 $\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service
 $\frac{C}{C}$ = PM Entire Intersection Peak-Hour Level of Service
 X,XXX = Average Daily Traffic (vehicles per day)

Figure 14
Short-Term Total Traffic, Lane Geometry, Traffic Control, and Level of Service
 Waterview East Commercial (LSC# S214970)







APPENDIX C

Trip Generation Worksheets

Project Colorado Centre Addition No. 3 Annexation (Phase I)
 Subject Trip Generation for General Light Industrial
 Designed by MAG Date January 05, 2024 Job No. 096951003
 Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Fitted Curve Equations

Land Use Code - General Light Industrial (110)

Independent Variable - 1000 Square Feet Gross Floor Feet (X)

Gross Floor Area = 84,750

X = 84.8

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (100 Series Page 32)

Average Weekday	Directional Distribution:	88% ent.	12% exit.
$T = 0.68(X) + 3.81$	T = 61	Average Vehicle Trip Ends	
$T = 0.68 * 85 + 3.81$	54 entering	7 exiting	
	54 + 7 = 61		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (100 Series Page 33)

Average Weekday	Directional Distribution:	14% ent.	86% exit.
$\ln(T) = 0.72 \ln(X) + 0.38$	T = 36	Average Vehicle Trip Ends	
$\ln(T) = 0.72 * \ln(85) + 0.38$	4 entering	31 exiting	
	4 + 32 = 36		

Weekday (100 Series Page 31)

Daily Weekday	Directional Distribution:	50% entering, 50% exiting
$T = 3.76(X) + 50.47$	T = 370	Average Vehicle Trip Ends
$(T) = 3.76 * 84.75 + 50.47$	185 entering	185 exiting
	185 + 185 = 370	

Project Colorado Centre Addition No. 3 Annexation (Full Buildout)
 Subject Trip Generation for General Light Industrial
 Designed by MAG Date January 05, 2024 Job No. 096951003
 Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Fitted Curve Equations

Land Use Code - General Light Industrial (110)

Independent Variable - 1000 Square Feet Gross Floor Feet (X)

Gross Floor Area = 234,750

X = 234.8

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (100 Series Page 32)

Average Weekday Directional Distribution: 88% ent. 12% exit.
 $T = 0.68(X) + 3.81$ T = 163 Average Vehicle Trip Ends
 $T = 0.68 * 235 + 3.81$ 143 entering 20 exiting

$$143 + 20 = 163$$

(*) TRIP END WAS CHANGED BY 1 TO SATISFY THE TOTAL

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (100 Series Page 33)

Average Weekday Directional Distribution: 14% ent. 86% exit.
 $\ln(T) = 0.72 \ln(X) + 0.38$ T = 74 Average Vehicle Trip Ends
 $\ln(T) = 0.72 * \ln(235) + 0.38$ 9 entering 64 exiting

$$9 + 65 = 74$$

(*) TRIP END WAS CHANGED BY 1 TO SATISFY THE TOTAL

Weekday (100 Series Page 31)

Daily Weekday Directional Distribution: 50% entering, 50% exiting
 $T = 3.76(X) + 50.47$ T = 934 Average Vehicle Trip Ends
 $(T) = 3.76 * 234.75 + 50.47$ 467 entering 467 exiting

$$467 + 467 = 934$$

Project Colorado Centre Addition No. 3 Annexation
 Subject Trip Generation for General Office Building
 Designed by MAG Date January 05, 2024 Job No. 096951003
 Checked by _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Fitted Curve Equations

Land Use Code - General Office Building (710)

Independent Variable - 1000 Square Feet (X)

SF = 80,000

X = 80.000

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (700 Series Page 710)

Ln(T) = 0.86 Ln(X) + 1.16	Directional Distribution:	88% ent.	12% exit.
Ln(T) = 0.86 * Ln (80.0) + 1.16	T = 138	Average Vehicle Trip Ends	
	121 entering	17 exiting	
	121 + 17 = 138		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (700 Series Page 711)

Ln(T) = 0.83 Ln(X) + 1.29	Directional Distribution:	17% ent.	83% exit.
Ln(T) = 0.83 * Ln (80.0) + 1.29	T = 138	Average Vehicle Trip Ends	
	23 entering	115 exiting	
	23 + 115 = 138		

Weekday (700 Series Page 709)

Ln(T) = 0.87 Ln(X) + 3.05	Directional Distribution:	50% ent.	50% exit.
Ln(T) = 0.87 * Ln (80.0) + 3.05	T = 956	Average Vehicle Trip Ends	
	478 entering	478 exiting	
	478 + 478 = 956		

Project Colorado Centre Addition No. 3 Annexation
Subject Trip Generation for Strip Retail Plaza (<40k)
Designed by MAG Date January 05, 2024 Job No. 096951003
Checked by Date Sheet No. of

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Strip Retail Plaza (<40k) (822)

Independent Variable - 1000 Square Feet Gross Leasable Area (X)

Gross Leasable Area = 50,000 Square Feet

X = 50.000

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (800 Series Page 230)

Average Weekday	Directional Distribution:	60% ent.	40% exit.
T = 2.36 * (X)	T = 118	Average Vehicle Trip Ends	
T = 2.36 * 50	71 entering	47	exiting
	71 + 47 = 118		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (800 Series page 231)

Average Weekday	Directional Distribution:	50% ent.	50% exit.
T = 6.59 * (X)	T = 330	Average Vehicle Trip Ends	
T = 6.59 * 50	165 entering	165	exiting
	165 + 165 = 330		

Weekday (800 Series page 229)

Average Weekday	Directional Distribution:	50% entering, 50% exiting	
T = 54.45 * (X)	T = 2722	Average Vehicle Trip Ends	
T = 54.45 * 50	1361 entering	1361	exiting
	1361 + 1361 = 2722		

Project Colorado Centre Addition No. 3 Annexation
 Subject Trip Generation for Fast Casual Restaurant
 Designed by MAG Date January 05, 2024 Job No. 096951003
 Checked by Date Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rates

Land Use Code - Fast Casual Restaurant (930)

Independent Variable - 1000 Square Feet (X)

SF = 4,300

X = 4.300

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (900 Series Page 640)

(Note: Small Sample Size < 5)

(T) = 1.43 (X)		Directional Distribution:	50% ent.	50% exit.
(T) = 1.43 * (4.3)		T = 6	Average Vehicle Trip Ends	
		3 entering	3 exiting	
		3 + 3 = 6		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (900 Series Page 641)

(T) = 12.55 (X)		Directional Distribution:	55% ent.	45% exit.
(T) = 12.55 * (4.3)		T = 54	Average Vehicle Trip Ends	
		30 entering	24 exiting	
		30 + 24 = 54		

Weekday (900 Series Page 639)

(Note: Small Sample Size < 5)

(T) = 97.14 (X)		Directional Distribution:	50% ent.	50% exit.
(T) = 97.14 * (4.3)		T = 418	Average Vehicle Trip Ends	
		209 entering	209 exiting	
		209 + 209 = 418		

Project Colorado Centre Addition No. 3 Annexation
Subject Trip Generation for Gasoline/Service Station with Convenience Market
Designed by MAG Date January 05, 2024 Job No. 096951003
Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Convenience Store/Gas Station - GFA (5.5-10K) (945)

Independent Variable - Vehicle Fueling Positions (X)

Vehicle Fueling Positions= 10 Positions

X = 10

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 881)

Average Weekday

T = 31.60 (X)

T = 31.60 * 10

Directional Distribution: 50% ent. 50% exit.

T = 316 Average Vehicle Trip Ends

158 entering 158 exiting

158 + 158 = 316

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Page 882)

Average Weekday

T = 26.90 (X)

T = 26.90 * 10.000

Directional Distribution: 50% ent. 50% exit.

T = 269 Average Vehicle Trip Ends

134 entering 135 exiting

134 + 135 = 269

Weekday (Page 872)

Average Weekday

T = 345.75 (X)

T = 345.75 * 10.000

Directional Distribution: 50% entering, 50% exiting

T = 3458 Average Vehicle Trip Ends

1729 entering 1729 exiting

1729 + 1729 = 3458

Project Colorado Centre Addition No. 3 Annexation

Subject Trip Generation for Truck Stop

Designed by MAG

Date January 05, 2024

Job No. 096951003

Checked by _____

Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Truck Stop (950)

Independent Variable - Vehicle Fueling Positions (X)

Vehicle Fueling Positions= 4 Positions

X = 4

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 942)

Average Weekday

T = 13.97 (X)

T = 13.97 * 4

Directional Distribution: 49% ent. 51% exit.

T = 56 Average Vehicle Trip Ends

27 entering 29 exiting

27 + 29 = 56

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Page 943)

Average Weekday

T = 15.42 (X)

T = 15.42 * 4

Directional Distribution: 53% ent. 47% exit.

T = 62 Average Vehicle Trip Ends

33 entering 29 exiting

33 + 29 = 62

Weekday (Page 941)

Average Weekday

T = 224.0 (X)

T = 224.0 * 4

Directional Distribution: 50% entering, 50% exiting

T = 896 Average Vehicle Trip Ends

448 entering 448 exiting

448 + 448 = 896

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Colorado Centre Annexation (Full Buildout)			Organization:	Kimley-Horn and Associates, Inc.
Project Location:				Performed By:	
Scenario Description:				Date:	
Analysis Year:				Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office		315	1,000 Sq Ft	301	264	37
Retail		64	1,000 Sq Ft	490	256	234
Restaurant		4	1,000 Sq Ft	6	3	3
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		-	Dwelling Unit(s)	0	0	0
Hotel		-	Room(s)	0	0	0
All Other Land Uses ²		-	0	0	0	0
				797	523	274

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses ²	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		10	1	0	0	0
Retail	11		1	0	0	0
Restaurant	1	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	797	523	274
Internal Capture Percentage	6%	5%	9%
External Vehicle-Trips ⁵	749	499	250
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	5%	30%
Retail	4%	5%
Restaurant	67%	33%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Colorado Centre Annexation (Full Buildout)
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	264	264	1.00	37	37
Retail	1.00	256	256	1.00	234	234
Restaurant	1.00	3	3	1.00	3	3
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		10	23	0	0	0
Retail	68		30	0	33	0
Restaurant	1	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		82	1	0	0	0
Retail	11		2	0	0	0
Restaurant	37	20		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	8	44	1	0		0
Hotel	8	10	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	12	252	264	252	0	0
Retail	10	246	256	246	0	0
Restaurant	2	1	3	1	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	11	26	37	26	0	0
Retail	12	222	234	222	0	0
Restaurant	1	2	3	2	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool				
Project Name:	-1C AM -1C3:E3		Organization:	Kimley-Horn and Associates, Inc.
Project Location:			Performed By:	
Scenario Description:			Date:	
Analysis Year:			Checked By:	
Analysis Period:	PM Street Peak Hour		Date:	

Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office		315	1,000 Sq Ft	212	32	180
Retail		64	1,000 Sq Ft	660	333	327
Restaurant		4	1,000 Sq Ft	54	30	24
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		-	Dwelling Unit(s)	0	0	0
Hotel		-	Room(s)	0	0	0
All Other Land Uses ²		-	0	0	0	0
				926	395	531

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses ²	1.00	0%	0%	1.00	0%	0%

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		27	1	0	0	0
Retail	7		9	0	0	0
Restaurant	1	10		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

	Total	Entering	Exiting
All Person-Trips	926	395	531
Internal Capture Percentage	12%	14%	10%
External Vehicle-Trips ⁵	816	340	476
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Land Use	Entering Trips	Exiting Trips
Office	25%	16%
Retail	11%	5%
Restaurant	33%	46%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	-1C AM -11C3:E3
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	32	32	1.00	180.4268786	180
Retail	1.00	333	333	1.00	327	327
Restaurant	1.00	30	30	1.00	24	24
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		36	7	0	4	0
Retail	7		95	13	85	16
Restaurant	1	10		2	4	2
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		27	1	0	0	0
Retail	10		9	0	0	0
Restaurant	10	167		0	0	0
Cinema/Entertainment	2	13	1		0	0
Residential	18	33	4	0		0
Hotel	0	7	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	8	24	32	24	0	0
Retail	37	296	333	296	0	0
Restaurant	10	20	30	20	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	28	152	180	152	0	0
Retail	16	311	327	311	0	0
Restaurant	11	13	24	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.



APPENDIX D

Intersection Analysis Worksheets

Timings

1: Powers Blvd (SH-21) & Bradley Rd

Existing AM

01/08/2024

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↖	↕↕
Traffic Volume (vph)	314	526	558	300	360	228
Future Volume (vph)	314	526	558	300	360	228
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	30.0		45.0		45.0	90.0
Total Split (%)	25.0%		37.5%		37.5%	75.0%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	Max		C-Max		None	C-Max
Act Effect Green (s)	22.5	120.0	54.1	120.0	82.5	82.5
Actuated g/C Ratio	0.19	1.00	0.45	1.00	0.69	0.69
v/c Ratio	0.58	0.40	0.44	0.24	0.74	0.11
Control Delay	50.0	2.3	25.1	0.4	17.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	2.3	25.1	0.4	17.7	6.5
LOS	D	A	C	A	B	A
Approach Delay	20.1		16.5			13.3
Approach LOS	C		B			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 39 (33%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 17.0

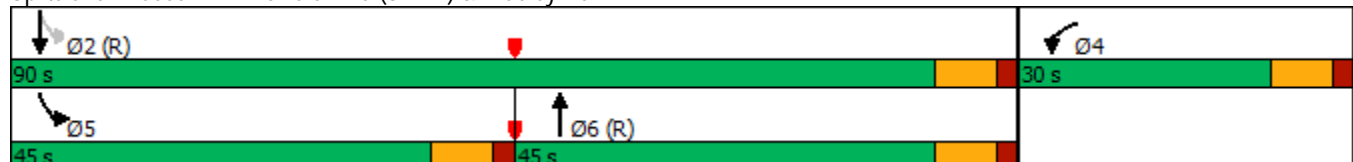
Intersection LOS: B

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15













Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



HCM 6th Signalized Intersection Summary

1: Powers Blvd (SH-21) & Bradley Rd

Existing AM
01/08/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	314	526	558	300	360	228
Future Volume (veh/h)	314	526	558	300	360	228
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	1826	1826	1856	1856	1781	1781
Adj Flow Rate, veh/h	365	0	698	0	404	256
Peak Hour Factor	0.86	0.86	0.80	0.80	0.89	0.89
Percent Heavy Veh, %	5	5	3	3	8	8
Cap, veh/h	633		1716		551	2327
Arrive On Green	0.19	0.00	0.49	0.00	0.14	0.69
Sat Flow, veh/h	3374	1547	3618	1572	1697	3474
Grp Volume(v), veh/h	365	0	698	0	404	256
Grp Sat Flow(s),veh/h/ln	1687	1547	1763	1572	1697	1692
Q Serve(g_s), s	11.8	0.0	15.2	0.0	13.4	3.1
Cycle Q Clear(g_c), s	11.8	0.0	15.2	0.0	13.4	3.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	633		1716		551	2327
V/C Ratio(X)	0.58		0.41		0.73	0.11
Avail Cap(c_a), veh/h	633		1716		847	2327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	0.0	19.7	0.0	13.0	6.3
Incr Delay (d2), s/veh	3.8	0.0	0.7	0.0	1.9	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	5.3	0.0	5.9	0.0	4.5	0.9
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	48.2	5.0	20.4	10.0	14.9	6.4
LnGrp LOS	D	A	C	A	B	A
Approach Vol, veh/h	977		1073			660
Approach Delay, s/veh	21.1		16.8			11.6
Approach LOS	C		B			B
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	90.0		30.0		24.1	65.9
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	82.5		22.5		37.5	37.5
Max Q Clear Time (g_c+I1), s	5.1		13.8		15.4	17.2
Green Ext Time (p_c), s	1.5		0.9		1.1	4.0
Intersection Summary						
HCM 6th Ctrl Delay			17.1			
HCM 6th LOS			B			

Notes

Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

Existing PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↖	↕↕
Traffic Volume (vph)	311	390	309	421	368	551
Future Volume (vph)	311	390	309	421	368	551
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	27.5		27.5		12.5	25.5
Total Split (s)	35.0		38.0		47.0	85.0
Total Split (%)	29.2%		31.7%		39.2%	70.8%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max		None	C-Max
Act Effect Green (s)	16.8	120.0	66.1	120.0	88.2	88.2
Actuated g/C Ratio	0.14	1.00	0.55	1.00	0.74	0.74
v/c Ratio	0.69	0.26	0.17	0.29	0.48	0.22
Control Delay	72.8	1.4	14.8	0.5	8.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.8	1.4	14.8	0.5	8.0	5.5
LOS	E	A	B	A	A	A
Approach Delay	33.0		6.6			6.5
Approach LOS	C		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 14.5

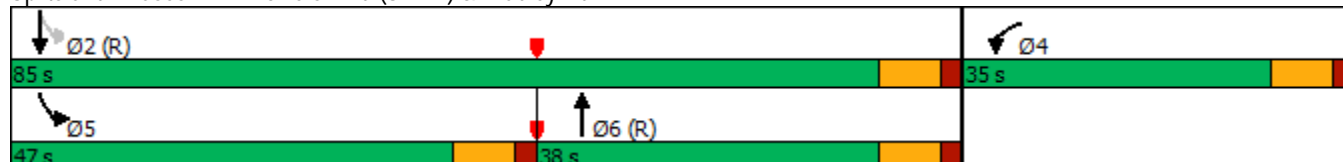
Intersection LOS: B

Intersection Capacity Utilization 56.6%

ICU Level of Service B

Analysis Period (min) 15
















Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



HCM 6th Signalized Intersection Summary

1: Powers Blvd (SH-21) & Bradley Rd

Existing PM
01/08/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	311	390	309	421	368	551
Future Volume (veh/h)	311	390	309	421	368	551
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	1856	1856	1826	1826	1856	1856
Adj Flow Rate, veh/h	327	0	325	0	376	562
Peak Hour Factor	0.95	0.95	0.95	0.95	0.98	0.98
Percent Heavy Veh, %	3	3	5	5	3	3
Cap, veh/h	404		2051		817	2669
Arrive On Green	0.12	0.00	0.59	0.00	0.10	0.76
Sat Flow, veh/h	3428	1572	3561	1547	1767	3618
Grp Volume(v), veh/h	327	0	325	0	376	562
Grp Sat Flow(s),veh/h/ln	1714	1572	1735	1547	1767	1763
Q Serve(g_s), s	11.2	0.0	5.1	0.0	9.4	5.5
Cycle Q Clear(g_c), s	11.2	0.0	5.1	0.0	9.4	5.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	404		2051		817	2669
V/C Ratio(X)	0.81		0.16		0.46	0.21
Avail Cap(c_a), veh/h	786		2051		1216	2669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	0.0	11.1	0.0	6.7	4.2
Incr Delay (d2), s/veh	3.9	0.0	0.2	0.0	0.4	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	5.0	0.0	1.8	0.0	2.8	1.4
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	55.5	5.0	11.2	10.0	7.1	4.4
LnGrp LOS	E	A	B	A	A	A
Approach Vol, veh/h	738		768			938
Approach Delay, s/veh	27.4		10.5			5.5
Approach LOS	C		B			A
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	98.4		21.6		19.9	78.4
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	77.5		27.5		39.5	30.5
Max Q Clear Time (g_c+I1), s	7.5		13.2		11.4	7.1
Green Ext Time (p_c), s	3.5		1.0		1.1	1.7
Intersection Summary						
HCM 6th Ctrl Delay			13.7			
HCM 6th LOS			B			

Notes












Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2025 Background AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	391	629	627	330	396	242
Future Volume (vph)	391	629	627	330	396	242
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	31.0		45.0		44.0	89.0
Total Split (%)	25.8%		37.5%		36.7%	74.2%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	Max		C-Max		None	C-Max
Act Effect Green (s)	23.5	120.0	47.5	120.0	81.5	81.5
Actuated g/C Ratio	0.20	1.00	0.40	1.00	0.68	0.68
v/c Ratio	0.70	0.48	0.56	0.26	0.82	0.12
Control Delay	39.7	3.7	31.8	0.4	27.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	3.7	31.8	0.4	27.9	6.9
LOS	D	A	C	A	C	A
Approach Delay	17.5		21.0			19.9
Approach LOS	B		C			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 59 (49%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.4

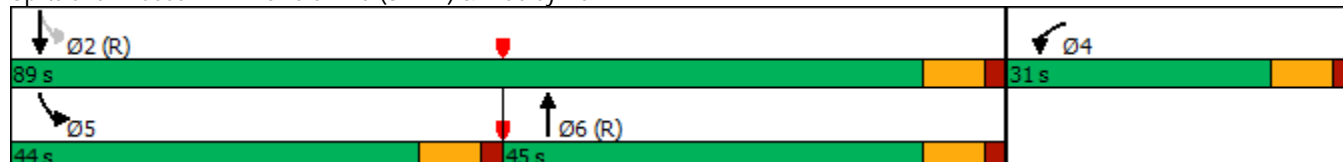
Intersection LOS: B

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd


















HCM 6th Signalized Intersection Summary

1: Powers Blvd (SH-21) & Bradley Rd

2025 Background AM

01/08/2024

												
Movement	WBL	WBR	NBT	NBR	SBL	SBT						
Lane Configurations	 		 			 						
Traffic Volume (veh/h)	391	629	627	330	396	242						
Future Volume (veh/h)	391	629	627	330	396	242						
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	1826	1826	1856	1856	1781	1781						
Adj Flow Rate, veh/h	455	0	784	0	445	272						
Peak Hour Factor	0.86	0.86	0.80	0.80	0.89	0.89						
Percent Heavy Veh, %	5	5	3	3	8	8						
Cap, veh/h	661		1619		527	2299						
Arrive On Green	0.20	0.00	0.46	0.00	0.16	0.68						
Sat Flow, veh/h	3374	1547	3618	1572	1697	3474						
Grp Volume(v), veh/h	455	0	784	0	445	272						
Grp Sat Flow(s),veh/h/ln	1687	1547	1763	1572	1697	1692						
Q Serve(g_s), s	15.0	0.0	18.6	0.0	15.6	3.4						
Cycle Q Clear(g_c), s	15.0	0.0	18.6	0.0	15.6	3.4						
Prop In Lane	1.00	1.00		1.00	1.00							
Lane Grp Cap(c), veh/h	661		1619		527	2299						
V/C Ratio(X)	0.69		0.48		0.84	0.12						
Avail Cap(c_a), veh/h	661		1619		776	2299						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00						
Uniform Delay (d), s/veh	44.9	0.0	22.6	0.0	16.3	6.7						
Incr Delay (d2), s/veh	5.8	0.0	1.0	0.0	5.7	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	6.8	0.0	7.3	0.0	5.8	1.0						
Unsig. Movement Delay, s/veh		5.00		10.00								
LnGrp Delay(d),s/veh	50.6	5.0	23.6	10.0	22.0	6.8						
LnGrp LOS	D	A	C	A	C	A						
Approach Vol, veh/h	1186		1196			717						
Approach Delay, s/veh	22.5		18.9			16.2						
Approach LOS	C		B			B						
Timer - Assigned Phs	2		4		5	6						
Phs Duration (G+Y+Rc), s	89.0		31.0		26.4	62.6						
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5						
Max Green Setting (Gmax), s	81.5		23.5		36.5	37.5						
Max Q Clear Time (g_c+I1), s	5.4		17.0		17.6	20.6						
Green Ext Time (p_c), s	1.6		1.0		1.2	4.3						
Intersection Summary												
HCM 6th Ctrl Delay			19.7									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.												

Timings

2025 Background PM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕
Traffic Volume (vph)	369	447	323	510	474	612
Future Volume (vph)	369	447	323	510	474	612
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	34.0		33.0		53.0	86.0
Total Split (%)	28.3%		27.5%		44.2%	71.7%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max		None	C-Max
Act Effect Green (s)	18.9	120.0	59.5	120.0	86.1	86.1
Actuated g/C Ratio	0.16	1.00	0.50	1.00	0.72	0.72
v/c Ratio	0.72	0.30	0.20	0.35	0.62	0.25
Control Delay	38.8	1.7	19.1	0.6	10.9	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	1.7	19.1	0.6	10.9	6.4
LOS	D	A	B	A	B	A
Approach Delay	18.5		7.8			8.4
Approach LOS	B		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 11.2

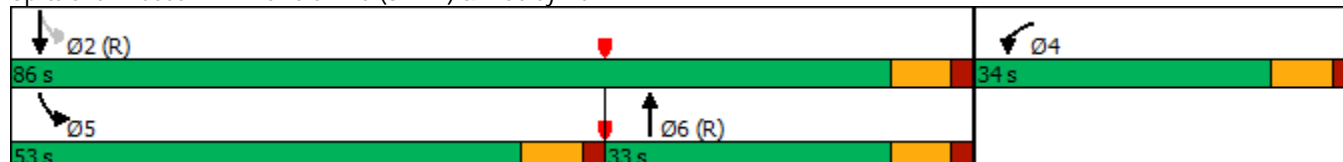
Intersection LOS: B

Intersection Capacity Utilization 64.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

2025 Background PM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	369	447	323	510	474	612
Future Volume (veh/h)	369	447	323	510	474	612
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	1856	1856	1826	1826	1856	1856
Adj Flow Rate, veh/h	388	0	340	0	484	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.98	0.98
Percent Heavy Veh, %	3	3	5	5	3	3
Cap, veh/h	466		1846		812	2605
Arrive On Green	0.14	0.00	0.53	0.00	0.14	0.74
Sat Flow, veh/h	3428	1572	3561	1547	1767	3618
Grp Volume(v), veh/h	388	0	340	0	484	624
Grp Sat Flow(s),veh/h/ln	1714	1572	1735	1547	1767	1763
Q Serve(g_s), s	13.2	0.0	6.1	0.0	13.9	6.7
Cycle Q Clear(g_c), s	13.2	0.0	6.1	0.0	13.9	6.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	466		1846		812	2605
V/C Ratio(X)	0.83		0.18		0.60	0.24
Avail Cap(c_a), veh/h	757		1846		1227	2605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	0.0	14.6	0.0	8.3	5.0
Incr Delay (d2), s/veh	4.3	0.0	0.2	0.0	0.7	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	5.9	0.0	2.2	0.0	4.3	1.9
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	54.8	5.0	14.8	10.0	9.0	5.2
LnGrp LOS	D	A	B	A	A	A
Approach Vol, veh/h	859		877			1108
Approach Delay, s/veh	27.5		11.9			6.8
Approach LOS	C		B			A
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	96.2		23.8		24.8	71.3
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	78.5		26.5		45.5	25.5
Max Q Clear Time (g_c+l1), s	8.7		15.2		15.9	8.1
Green Ext Time (p_c), s	4.0		1.1		1.4	1.7
Intersection Summary						
HCM 6th Ctrl Delay			14.6			
HCM 6th LOS			B			

Notes

Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

1: Powers Blvd (SH-21) & Bradley Rd

2025 Total AM

01/08/2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱	↰↱	↰↱	↰↱	↰↱	↰↱
Traffic Volume (vph)	393	631	627	344	415	242
Future Volume (vph)	393	631	627	344	415	242
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	30.0		45.0		45.0	90.0
Total Split (%)	25.0%		37.5%		37.5%	75.0%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	Max		C-Max		None	C-Max
Act Effect Green (s)	22.5	120.0	47.2	120.0	82.5	82.5
Actuated g/C Ratio	0.19	1.00	0.39	1.00	0.69	0.69
v/c Ratio	0.73	0.48	0.57	0.27	0.83	0.12
Control Delay	43.0	3.1	32.1	0.4	29.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	3.1	32.1	0.4	29.5	6.5
LOS	D	A	C	A	C	A
Approach Delay	18.4		20.9			21.0
Approach LOS	B		C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 59 (49%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.0

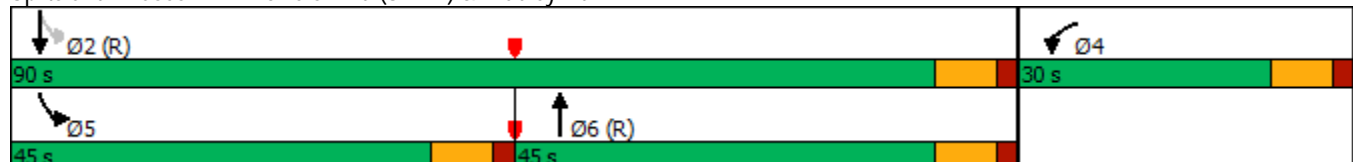
Intersection LOS: B

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

2025 Total AM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	393	631	627	344	415	242
Future Volume (veh/h)	393	631	627	344	415	242
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	1826	1826	1856	1856	1781	1781
Adj Flow Rate, veh/h	457	0	784	0	466	272
Peak Hour Factor	0.86	0.86	0.80	0.80	0.89	0.89
Percent Heavy Veh, %	5	5	3	3	8	8
Cap, veh/h	633		1628		539	2327
Arrive On Green	0.19	0.00	0.46	0.00	0.16	0.69
Sat Flow, veh/h	3374	1547	3618	1572	1697	3474
Grp Volume(v), veh/h	457	0	784	0	466	272
Grp Sat Flow(s),veh/h/ln	1687	1547	1763	1572	1697	1692
Q Serve(g_s), s	15.3	0.0	18.5	0.0	16.3	3.3
Cycle Q Clear(g_c), s	15.3	0.0	18.5	0.0	16.3	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	633		1628		539	2327
V/C Ratio(X)	0.72		0.48		0.86	0.12
Avail Cap(c_a), veh/h	633		1628		792	2327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	0.0	22.4	0.0	16.3	6.4
Incr Delay (d2), s/veh	7.0	0.0	1.0	0.0	6.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.3	0.0	11.7	0.0	10.1	1.8
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	52.8	5.0	23.4	10.0	23.1	6.5
LnGrp LOS	D	A	C	A	C	A
Approach Vol, veh/h	1191		1214			738
Approach Delay, s/veh	23.4		18.6			17.0
Approach LOS	C		B			B
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	90.0		30.0		27.1	62.9
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	82.5		22.5		37.5	37.5
Max Q Clear Time (g_c+I1), s	5.3		17.3		18.3	20.5
Green Ext Time (p_c), s	1.6		0.8		1.3	4.3
Intersection Summary						
HCM 6th Ctrl Delay			20.0			
HCM 6th LOS			C			

Notes













Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2025 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	458	323	511	475	612
Future Volume (vph)	377	458	323	511	475	612
Turn Type	Prot	Free	NA	Free	pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free	2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	34.0		33.0		53.0	86.0
Total Split (%)	28.3%		27.5%		44.2%	71.7%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max		None	C-Max
Act Effect Green (s)	19.2	120.0	59.0	120.0	85.8	85.8
Actuated g/C Ratio	0.16	1.00	0.49	1.00	0.72	0.72
v/c Ratio	0.73	0.31	0.20	0.35	0.62	0.25
Control Delay	39.2	1.7	19.4	0.6	11.1	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	1.7	19.4	0.6	11.1	6.6
LOS	D	A	B	A	B	A
Approach Delay	18.6		7.9			8.6
Approach LOS	B		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.4

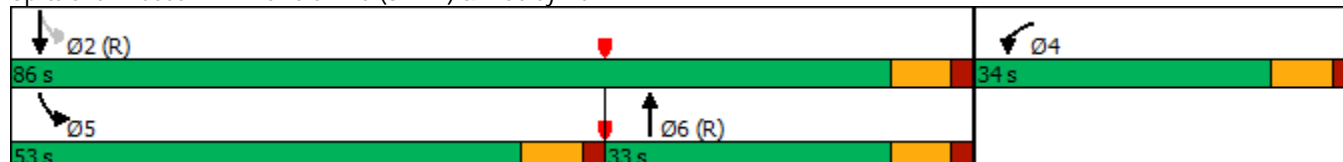
Intersection LOS: B

Intersection Capacity Utilization 64.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

2025 Total PM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	377	458	323	511	475	612
Future Volume (veh/h)	377	458	323	511	475	612
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	1856	1856	1826	1826	1856	1856
Adj Flow Rate, veh/h	397	0	340	0	485	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.98	0.98
Percent Heavy Veh, %	3	3	5	5	3	3
Cap, veh/h	475		1832		810	2596
Arrive On Green	0.14	0.00	0.53	0.00	0.15	0.74
Sat Flow, veh/h	3428	1572	3561	1547	1767	3618
Grp Volume(v), veh/h	397	0	340	0	485	624
Grp Sat Flow(s),veh/h/ln	1714	1572	1735	1547	1767	1763
Q Serve(g_s), s	13.5	0.0	6.2	0.0	14.0	6.8
Cycle Q Clear(g_c), s	13.5	0.0	6.2	0.0	14.0	6.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	475		1832		810	2596
V/C Ratio(X)	0.84		0.19		0.60	0.24
Avail Cap(c_a), veh/h	757		1832		1222	2596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	0.0	14.8	0.0	8.4	5.1
Incr Delay (d2), s/veh	4.6	0.0	0.2	0.0	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	0.0	4.1	0.0	7.8	3.4
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	54.9	5.0	15.0	10.0	9.2	5.3
LnGrp LOS	D	A	B	A	A	A
Approach Vol, veh/h	879		878			1109
Approach Delay, s/veh	27.6		12.0			7.0
Approach LOS	C		B			A
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	95.9		24.1		25.0	70.9
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	78.5		26.5		45.5	25.5
Max Q Clear Time (g_c+l1), s	8.8		15.5		16.0	8.2
Green Ext Time (p_c), s	4.0		1.1		1.5	1.7
Intersection Summary						
HCM 6th Ctrl Delay			14.8			
HCM 6th LOS			B			

Notes

Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2030 Background AM

01/08/2024

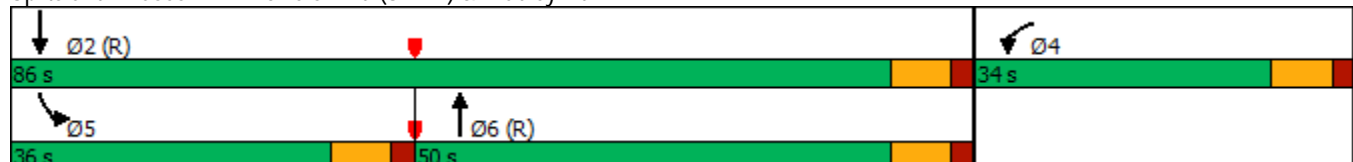
1: Powers Blvd (SH-21) & Bradley Rd

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔↔	↕↕
Traffic Volume (vph)	673	1086	1080	658	699	394
Future Volume (vph)	673	1086	1080	658	699	394
Turn Type	Prot	Free	NA	Free	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free		
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	34.0		50.0		36.0	86.0
Total Split (%)	28.3%		41.7%		30.0%	71.7%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	Max		C-Max		None	C-Max
Act Effect Green (s)	26.5	120.0	42.5	120.0	28.5	78.5
Actuated g/C Ratio	0.22	1.00	0.35	1.00	0.24	0.65
v/c Ratio	0.99	0.77	0.95	0.46	0.99	0.20
Control Delay	60.8	15.9	53.5	1.0	75.6	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	15.9	53.5	1.0	75.6	8.5
LOS	E	B	D	A	E	A
Approach Delay	33.1		33.6			51.4
Approach LOS	C		C			D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 37.7
Intersection Capacity Utilization 87.7%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service E

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

1: Powers Blvd (SH-21) & Bradley Rd

2030 Background AM

01/08/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	673	1086	1080	658	699	394
Future Volume (veh/h)	673	1086	1080	658	699	394
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	1826	1826	1856	1856	1781	1781
Adj Flow Rate, veh/h	732	0	1174	0	760	428
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	3	3	8	8
Cap, veh/h	745		1249		782	2214
Arrive On Green	0.22	0.00	0.35	0.00	0.24	0.65
Sat Flow, veh/h	3374	1547	3618	1572	3291	3474
Grp Volume(v), veh/h	732	0	1174	0	760	428
Grp Sat Flow(s),veh/h/ln	1687	1547	1763	1572	1646	1692
Q Serve(g_s), s	25.9	0.0	38.7	0.0	27.5	6.0
Cycle Q Clear(g_c), s	25.9	0.0	38.7	0.0	27.5	6.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	745		1249		782	2214
V/C Ratio(X)	0.98		0.94		0.97	0.19
Avail Cap(c_a), veh/h	745		1249		782	2214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	0.0	37.5	0.0	45.4	8.2
Incr Delay (d2), s/veh	20.2	0.0	14.7	0.0	25.4	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	12.9	0.0	18.0	0.0	13.3	1.9
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	66.7	5.0	52.2	10.0	70.8	8.4
LnGrp LOS	E	A	D	A	E	A
Approach Vol, veh/h	1912		1889			1188
Approach Delay, s/veh	28.6		36.2			48.3
Approach LOS	C		D			D
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	86.0		34.0		36.0	50.0
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	78.5		26.5		28.5	42.5
Max Q Clear Time (g_c+I1), s	8.0		27.9		29.5	40.7
Green Ext Time (p_c), s	2.6		0.0		0.0	1.2
Intersection Summary						
HCM 6th Ctrl Delay			36.2			
HCM 6th LOS			D			

Notes












Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2030 Background PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	861	898	510	947	1007	901
Future Volume (vph)	861	898	510	947	1007	901
Turn Type	Prot	Free	NA	Free	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free		
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	42.0		30.0		48.0	78.0
Total Split (%)	35.0%		25.0%		40.0%	65.0%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max		None	C-Max
Act Effect Green (s)	34.4	120.0	22.8	120.0	40.2	70.6
Actuated g/C Ratio	0.29	1.00	0.19	1.00	0.34	0.59
v/c Ratio	0.96	0.62	0.85	0.67	0.96	0.48
Control Delay	78.1	6.4	60.3	2.3	58.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	6.4	60.3	2.3	58.3	15.1
LOS	E	A	E	A	E	B
Approach Delay	41.5		22.6			37.9
Approach LOS	D		C			D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 53 (44%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 34.8

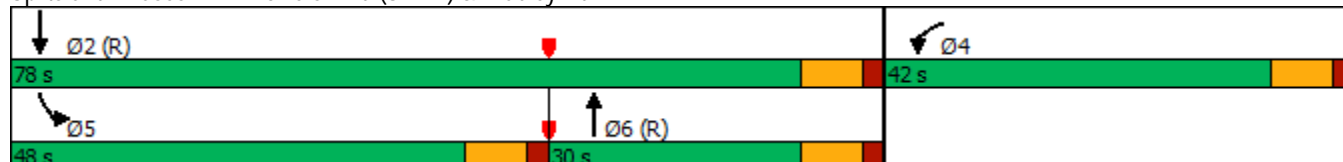
Intersection LOS: C

Intersection Capacity Utilization 86.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

1: Powers Blvd (SH-21) & Bradley Rd

2030 Background PM

01/08/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	861	898	510	947	1007	901
Future Volume (veh/h)	861	898	510	947	1007	901
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	1856	1856	1826	1826	1856	1856
Adj Flow Rate, veh/h	936	0	554	0	1095	979
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	5	5	3	3
Cap, veh/h	981		669		1144	2076
Arrive On Green	0.29	0.00	0.19	0.00	0.33	0.59
Sat Flow, veh/h	3428	1572	3561	1547	3428	3618
Grp Volume(v), veh/h	936	0	554	0	1095	979
Grp Sat Flow(s),veh/h/ln	1714	1572	1735	1547	1714	1763
Q Serve(g_s), s	32.2	0.0	18.4	0.0	37.5	19.0
Cycle Q Clear(g_c), s	32.2	0.0	18.4	0.0	37.5	19.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	981		669		1144	2076
V/C Ratio(X)	0.95		0.83		0.96	0.47
Avail Cap(c_a), veh/h	986		669		1157	2076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	0.0	46.5	0.0	39.1	14.0
Incr Delay (d2), s/veh	16.9	0.0	11.3	0.0	17.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.8	0.0	8.6	0.0	17.4	6.8
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	58.9	5.0	57.8	10.0	56.3	14.8
LnGrp LOS	E	A	E	A	E	B
Approach Vol, veh/h	1912		1583			2074
Approach Delay, s/veh	31.4		26.7			36.7
Approach LOS	C		C			D
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	78.2		41.8		47.5	30.6
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	70.5		34.5		40.5	22.5
Max Q Clear Time (g_c+l1), s	21.0		34.2		39.5	20.4
Green Ext Time (p_c), s	7.2		0.2		0.5	0.7
Intersection Summary						
HCM 6th Ctrl Delay			32.0			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2030 Total AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

	↖	↗	↑	↘	↙	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↗	↑↑	↘	↙↙	↑↑
Traffic Volume (vph)	736	1174	1080	783	874	394
Future Volume (vph)	736	1174	1080	783	874	394
Turn Type	Prot	Free	NA	Free	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free		
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	34.4		45.5		40.1	85.6
Total Split (%)	28.7%		37.9%		33.4%	71.3%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	Max		C-Max		None	C-Max
Act Effect Green (s)	26.9	120.0	38.0	120.0	32.6	78.1
Actuated g/C Ratio	0.22	1.00	0.32	1.00	0.27	0.65
v/c Ratio	1.07	0.83	1.06	0.54	1.08	0.20
Control Delay	85.3	18.7	83.8	1.4	95.8	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	18.7	83.8	1.4	95.8	8.7
LOS	F	B	F	A	F	A
Approach Delay	44.3		49.1			68.7
Approach LOS	D		D			E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23 (19%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 52.3

Intersection LOS: D

Intersection Capacity Utilization 94.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



















HCM 6th Signalized Intersection Summary

2030 Total AM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Traffic Volume (veh/h)	736	1174	1080	783	874	394
Future Volume (veh/h)	736	1174	1080	783	874	394
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
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1826	1826	1856	1856	1781	1781
Adj Flow Rate, veh/h	800	0	1174	0	950	428
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	3	3	8	8
Cap, veh/h	756		1116		894	2203
Arrive On Green	0.22	0.00	0.32	0.00	0.27	0.65
Sat Flow, veh/h	3374	1547	3618	1572	3291	3474
Grp Volume(v), veh/h	800	0	1174	0	950	428
Grp Sat Flow(s),veh/h/ln	1687	1547	1763	1572	1646	1692
Q Serve(g_s), s	26.9	0.0	38.0	0.0	32.6	6.1
Cycle Q Clear(g_c), s	26.9	0.0	38.0	0.0	32.6	6.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	756		1116		894	2203
V/C Ratio(X)	1.06		1.05		1.06	0.19
Avail Cap(c_a), veh/h	756		1116		894	2203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	0.0	41.0	0.0	43.7	8.4
Incr Delay (d2), s/veh	49.1	0.0	41.6	0.0	48.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	23.7	0.0	30.4	0.0	26.4	3.5
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	95.7	5.0	82.6	10.0	91.8	8.6
LnGrp LOS	F	A	F	A	F	A
Approach Vol, veh/h	2076		2025			1378
Approach Delay, s/veh	39.9		52.1			66.0
Approach LOS	D		D			E
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	85.6		34.4		40.1	45.5
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	78.1		26.9		32.6	38.0
Max Q Clear Time (g_c+I1), s	8.1		28.9		34.6	40.0
Green Ext Time (p_c), s	2.6		0.0		0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			51.0			
HCM 6th LOS			D			

Notes












Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2030 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	980	1065	510	1032	1126	901
Future Volume (vph)	980	1065	510	1032	1126	901
Turn Type	Prot	Free	NA	Free	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		Free		Free		
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.5		25.5		12.5	25.5
Total Split (s)	43.0		28.0		49.0	77.0
Total Split (%)	35.8%		23.3%		40.8%	64.2%
Yellow Time (s)	5.5		5.5		5.5	5.5
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	7.5		7.5		7.5	7.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max		None	C-Max
Act Effect Green (s)	35.5	120.0	20.5	120.0	41.5	69.5
Actuated g/C Ratio	0.30	1.00	0.17	1.00	0.35	0.58
v/c Ratio	1.06	0.74	0.94	0.73	1.04	0.48
Control Delay	75.0	9.2	75.1	3.1	76.4	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.0	9.2	75.1	3.1	76.4	15.7
LOS	E	A	E	A	E	B
Approach Delay	40.7		26.9			49.4
Approach LOS	D		C			D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 9 (8%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 40.1

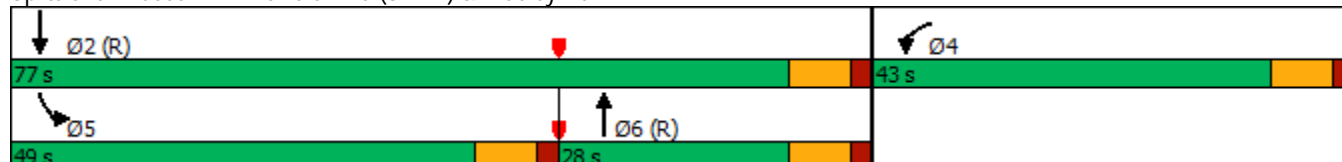
Intersection LOS: D

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd















HCM 6th Signalized Intersection Summary

2030 Total PM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	980	1065	510	1032	1126	901
Future Volume (veh/h)	980	1065	510	1032	1126	901
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	1856	1856	1826	1826	1856	1856
Adj Flow Rate, veh/h	1065	0	554	0	1224	979
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	5	5	3	3
Cap, veh/h	1014		593		1186	2042
Arrive On Green	0.30	0.00	0.17	0.00	0.35	0.58
Sat Flow, veh/h	3428	1572	3561	1547	3428	3618
Grp Volume(v), veh/h	1065	0	554	0	1224	979
Grp Sat Flow(s),veh/h/ln	1714	1572	1735	1547	1714	1763
Q Serve(g_s), s	35.5	0.0	18.9	0.0	41.5	19.4
Cycle Q Clear(g_c), s	35.5	0.0	18.9	0.0	41.5	19.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1014		593		1186	2042
V/C Ratio(X)	1.05		0.93		1.03	0.48
Avail Cap(c_a), veh/h	1014		593		1186	2042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	0.0	49.1	0.0	39.3	14.7
Incr Delay (d2), s/veh	42.3	0.0	24.0	0.0	34.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	29.2	0.0	14.9	0.0	30.2	11.4
Unsig. Movement Delay, s/veh		5.00		10.00		
LnGrp Delay(d),s/veh	84.6	5.0	73.1	10.0	74.1	15.5
LnGrp LOS	F	A	E	A	F	B
Approach Vol, veh/h	2223		1676			2203
Approach Delay, s/veh	43.1		30.8			48.1
Approach LOS	D		C			D
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	77.0		43.0		49.0	28.0
Change Period (Y+Rc), s	7.5		7.5		7.5	7.5
Max Green Setting (Gmax), s	69.5		35.5		41.5	20.5
Max Q Clear Time (g_c+I1), s	21.4		37.5		43.5	20.9
Green Ext Time (p_c), s	7.2		0.0		0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			41.5			
HCM 6th LOS			D			

Notes

























Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2045 Background AM

01/08/2024

1: Powers Blvd (SH-21) & Bradley Rd

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	182	109	722	145	1327	40	2237	897	784	722	25
Future Volume (vph)	35	182	109	722	145	1327	40	2237	897	784	722	25
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8			Free	6		Free			2
Detector Phase	3	8	8	7	4		1	6		5	2	2
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)	12.5	25.5	25.5	12.5	25.5		12.5	25.5		12.5	25.5	25.5
Total Split (s)	12.6	25.5	25.5	31.0	43.9		12.6	59.5		34.0	80.9	80.9
Total Split (%)	8.4%	17.0%	17.0%	20.7%	29.3%		8.4%	39.7%		22.7%	53.9%	53.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5	5.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5		7.5	7.5		7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	18.9	13.8	13.8	23.5	34.7	150.0	58.3	52.0	150.0	30.7	79.0	79.0
Actuated g/C Ratio	0.13	0.09	0.09	0.16	0.23	1.00	0.39	0.35	1.00	0.20	0.53	0.53
v/c Ratio	0.22	0.61	0.32	1.50	0.19	0.94	0.15	1.39	0.62	1.29	0.31	0.03
Control Delay	42.0	73.2	2.2	277.9	47.4	13.4	17.5	218.1	1.9	186.1	21.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	73.2	2.2	277.9	47.4	13.4	17.5	218.1	1.9	186.1	21.4	0.0
LOS	D	E	A	F	D	B	B	F	A	F	C	A
Approach Delay		46.2			102.7			154.5			105.3	
Approach LOS		D			F			F			F	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.50

Intersection Signal Delay: 123.5

Intersection LOS: F

Intersection Capacity Utilization 116.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



HCM 6th Signalized Intersection Summary

2045 Background AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	182	109	722	145	1327	40	2237	897	784	722	25
Future Volume (veh/h)	35	182	109	722	145	1327	40	2237	897	784	722	25
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	1826	1870	1826	1870	1856	1856	1781	1781	1870
Adj Flow Rate, veh/h	38	198	118	785	158	0	43	2432	0	852	785	27
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	5	2	5	2	3	3	8	8	2
Cap, veh/h	207	324	144	529	786		356	1903		581	2551	831
Arrive On Green	0.03	0.09	0.09	0.16	0.22	0.00	0.03	0.38	0.00	0.18	0.52	0.52
Sat Flow, veh/h	1781	3554	1585	3374	3554	1547	1781	5066	1572	3291	4863	1585
Grp Volume(v), veh/h	38	198	118	785	158	0	43	2432	0	852	785	27
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1687	1777	1547	1781	1689	1572	1646	1621	1585
Q Serve(g_s), s	2.9	8.0	11.0	23.5	5.4	0.0	2.2	56.3	0.0	26.5	13.7	1.2
Cycle Q Clear(g_c), s	2.9	8.0	11.0	23.5	5.4	0.0	2.2	56.3	0.0	26.5	13.7	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	324	144	529	786		356	1903		581	2551	831
V/C Ratio(X)	0.18	0.61	0.82	1.49	0.20		0.12	1.28		1.47	0.31	0.03
Avail Cap(c_a), veh/h	220	426	190	529	862		367	1903		581	2551	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	65.6	66.9	63.2	47.6	0.0	27.4	46.8	0.0	61.8	20.2	17.3
Incr Delay (d2), s/veh	0.4	1.9	18.4	228.3	0.1	0.0	0.1	129.4	0.0	218.7	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.8	5.2	26.9	2.5	0.0	0.9	45.2	0.0	28.4	5.0	0.5
Unsig. Movement Delay, s/veh						5.00			10.00			
LnGrp Delay(d),s/veh	60.1	67.5	85.4	291.6	47.7	5.0	27.5	176.3	10.0	280.4	20.5	17.3
LnGrp LOS	E	E	F	F	D	A	C	F	A	F	C	B
Approach Vol, veh/h		354			2385			3450			1664	
Approach Delay, s/veh		72.7			102.2			127.4			153.6	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	86.2	11.5	40.7	34.0	63.8	31.0	21.2				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	73.4	5.1	36.4	26.5	52.0	23.5	18.0				
Max Q Clear Time (g_c+I1), s	4.2	15.7	4.9	7.4	28.5	58.3	25.5	13.0				
Green Ext Time (p_c), s	0.0	5.5	0.0	1.0	0.0	0.0	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay 122.8

HCM 6th LOS F

Notes

























Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2045 Background PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	142	94	990	291	896	55	874	1036	1133	1862	35
Future Volume (vph)	25	142	94	990	291	896	55	874	1036	1133	1862	35
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8			Free	6		Free			2
Detector Phase	3	8	8	7	4		1	6		5	2	2
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)	12.5	25.5	25.5	25.5	25.5		12.5	25.5		12.5	25.5	25.5
Total Split (s)	12.6	25.5	25.5	45.0	57.9		12.5	33.5		46.0	67.0	67.0
Total Split (%)	8.4%	17.0%	17.0%	30.0%	38.6%		8.3%	22.3%		30.7%	44.7%	44.7%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5	5.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5		7.5	7.5		7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	17.0	11.9	11.9	37.5	49.3	150.0	33.6	26.0	150.0	44.6	65.8	65.8
Actuated g/C Ratio	0.11	0.08	0.08	0.25	0.33	1.00	0.22	0.17	1.00	0.30	0.44	0.44
v/c Ratio	0.19	0.55	0.29	1.27	0.27	0.62	0.41	1.11	0.73	1.22	0.92	0.05
Control Delay	37.1	73.7	2.0	174.1	38.6	1.9	35.3	120.9	3.1	151.5	47.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	73.7	2.0	174.1	38.6	1.9	35.3	120.9	3.1	151.5	47.9	0.1
LOS	D	E	A	F	D	A	D	F	A	F	D	A
Approach Delay		44.4			85.1			56.4			86.1	
Approach LOS		D			F			E			F	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.27

Intersection Signal Delay: 76.5

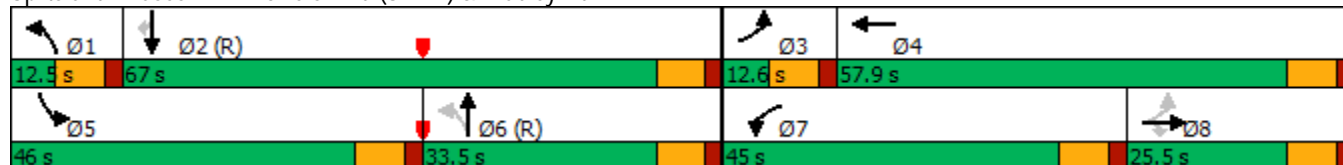
Intersection LOS: E

Intersection Capacity Utilization 106.6%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



























HCM 6th Signalized Intersection Summary

2045 Background PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	142	94	990	291	896	55	874	1036	1133	1862	35
Future Volume (veh/h)	25	142	94	990	291	896	55	874	1036	1133	1862	35
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	1856	1870	1856	1870	1826	1826	1856	1856	1870
Adj Flow Rate, veh/h	27	154	102	1076	316	0	60	950	0	1232	2024	38
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	3	2	3	2	5	5	3	3	2
Cap, veh/h	174	287	128	857	1096		120	1059		880	2208	691
Arrive On Green	0.02	0.08	0.08	0.25	0.31	0.00	0.03	0.21	0.00	0.26	0.44	0.44
Sat Flow, veh/h	1781	3554	1585	3428	3554	1572	1781	4985	1547	3428	5066	1585
Grp Volume(v), veh/h	27	154	102	1076	316	0	60	950	0	1232	2024	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1714	1777	1572	1781	1662	1547	1714	1689	1585
Q Serve(g_s), s	2.1	6.2	9.5	37.5	10.1	0.0	3.9	27.8	0.0	38.5	56.3	2.1
Cycle Q Clear(g_c), s	2.1	6.2	9.5	37.5	10.1	0.0	3.9	27.8	0.0	38.5	56.3	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	287	128	857	1096		120	1059		880	2208	691
V/C Ratio(X)	0.16	0.54	0.80	1.26	0.29		0.50	0.90		1.40	0.92	0.06
Avail Cap(c_a), veh/h	195	426	190	857	1194		120	1059		880	2208	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.2	66.2	67.7	56.3	39.4	0.0	46.6	57.5	0.0	55.8	39.8	24.5
Incr Delay (d2), s/veh	0.4	1.6	13.1	124.5	0.1	0.0	3.3	11.8	0.0	186.9	7.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	4.3	31.0	4.5	0.0	1.8	12.4	0.0	38.8	23.5	0.8
Unsig. Movement Delay, s/veh						2.00	10.00					
LnGrp Delay(d),s/veh	61.6	67.8	80.8	180.7	39.5	2.0	49.9	69.2	10.0	242.7	47.2	24.6
LnGrp LOS	E	E	F	F	D	A	D	E	A	F	D	C
Approach Vol, veh/h	283			2366			2136			3294		
Approach Delay, s/veh	71.9			88.3			37.5			120.1		
Approach LOS	E			F			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	72.9	10.9	53.7	46.0	39.4	45.0	19.6				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.0	59.5	5.1	50.4	38.5	26.0	37.5	18.0				
Max Q Clear Time (g_c+I1), s	5.9	58.3	4.1	12.1	40.5	29.8	39.5	11.5				
Green Ext Time (p_c), s	0.0	1.1	0.0	2.2	0.0	0.0	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay 87.2

HCM 6th LOS F

Notes

























Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2045 Total AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	182	109	785	145	1415	40	2237	1022	959	722	25
Future Volume (vph)	35	182	109	785	145	1415	40	2237	1022	959	722	25
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8			Free	6		Free			2
Detector Phase	3	8	8	7	4		1	6		5	2	2
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)	12.5	25.5	25.5	12.5	25.5		12.5	25.5		12.5	25.5	25.5
Total Split (s)	12.6	25.5	25.5	31.0	43.9		12.6	56.5		37.0	80.9	80.9
Total Split (%)	8.4%	17.0%	17.0%	20.7%	29.3%		8.4%	37.7%		24.7%	53.9%	53.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5	5.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5		7.5	7.5		7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	18.9	13.8	13.8	23.5	34.7	150.0	55.3	49.0	150.0	33.7	79.0	79.0
Actuated g/C Ratio	0.13	0.09	0.09	0.16	0.23	1.00	0.37	0.33	1.00	0.22	0.53	0.53
v/c Ratio	0.22	0.61	0.32	1.63	0.19	1.00	0.15	1.48	0.71	1.43	0.31	0.03
Control Delay	42.0	73.2	2.2	335.6	64.0	41.4	18.3	254.8	2.7	243.4	21.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	73.2	2.2	335.6	64.0	41.4	18.3	254.8	2.7	243.4	21.4	0.0
LOS	D	E	A	F	E	D	B	F	A	F	C	A
Approach Delay		46.2			141.3			173.9			145.9	
Approach LOS		D			F			F			F	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.63

Intersection Signal Delay: 152.3

Intersection LOS: F

Intersection Capacity Utilization 123.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



























HCM 6th Signalized Intersection Summary

2045 Total AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	182	109	785	145	1415	40	2237	1022	959	722	25
Future Volume (veh/h)	35	182	109	785	145	1415	40	2237	1022	959	722	25
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	1826	1870	1826	1870	1856	1856	1781	1781	1870
Adj Flow Rate, veh/h	38	198	118	853	158	0	43	2432	0	1042	785	27
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	5	2	5	2	3	3	8	8	2
Cap, veh/h	207	324	144	529	786		343	1801		647	2551	831
Arrive On Green	0.03	0.09	0.09	0.16	0.22	0.00	0.03	0.36	0.00	0.20	0.52	0.52
Sat Flow, veh/h	1781	3554	1585	3374	3554	1547	1781	5066	1572	3291	4863	1585
Grp Volume(v), veh/h	38	198	118	853	158	0	43	2432	0	1042	785	27
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1687	1777	1547	1781	1689	1572	1646	1621	1585
Q Serve(g_s), s	2.9	8.0	11.0	23.5	5.4	0.0	2.3	53.3	0.0	29.5	13.7	1.2
Cycle Q Clear(g_c), s	2.9	8.0	11.0	23.5	5.4	0.0	2.3	53.3	0.0	29.5	13.7	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	324	144	529	786		343	1801		647	2551	831
V/C Ratio(X)	0.18	0.61	0.82	1.61	0.20		0.13	1.35		1.61	0.31	0.03
Avail Cap(c_a), veh/h	220	426	190	529	862		354	1801		647	2551	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	65.6	66.9	63.2	47.6	0.0	29.2	48.3	0.0	60.2	20.2	17.3
Incr Delay (d2), s/veh	0.4	1.9	18.4	284.9	0.1	0.0	0.2	161.4	0.0	281.5	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.8	5.2	31.0	2.5	0.0	1.0	48.2	0.0	37.2	5.0	0.5
Unsig. Movement Delay, s/veh						10.00			10.00			
LnGrp Delay(d),s/veh	60.1	67.5	85.4	348.2	47.7	10.0	29.4	209.7	10.0	341.8	20.5	17.3
LnGrp LOS	E	E	F	F	D	A	C	F	A	F	C	B
Approach Vol, veh/h		354			2549			3586			1854	
Approach Delay, s/veh		72.7			125.5			145.7			201.0	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	86.2	11.5	40.7	37.0	60.8	31.0	21.2				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	73.4	5.1	36.4	29.5	49.0	23.5	18.0				
Max Q Clear Time (g_c+I1), s	4.3	15.7	4.9	7.4	31.5	55.3	25.5	13.0				
Green Ext Time (p_c), s	0.0	5.5	0.0	1.0	0.0	0.0	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay 148.7

HCM 6th LOS F

Notes

























Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.

Timings

2045 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	142	94	1109	291	1063	55	874	1121	1252	1862	35
Future Volume (vph)	25	142	94	1109	291	1063	55	874	1121	1252	1862	35
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8			Free	6		Free			2
Detector Phase	3	8	8	7	4		1	6		5	2	2
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)	12.5	25.5	25.5	25.5	25.5		12.5	25.5		12.5	25.5	25.5
Total Split (s)	12.6	25.5	25.5	46.0	58.9		12.5	32.5		46.0	66.0	66.0
Total Split (%)	8.4%	17.0%	17.0%	30.7%	39.3%		8.3%	21.7%		30.7%	44.0%	44.0%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5	5.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5		7.5	7.5		7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	17.0	11.9	11.9	38.5	50.3	150.0	32.6	25.0	150.0	44.6	64.7	64.7
Actuated g/C Ratio	0.11	0.08	0.08	0.26	0.34	1.00	0.22	0.17	1.00	0.30	0.43	0.43
v/c Ratio	0.19	0.55	0.29	1.38	0.27	0.74	0.41	1.15	0.79	1.35	0.93	0.05
Control Delay	36.7	73.7	2.0	220.2	37.8	3.1	35.6	136.8	4.3	202.8	49.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	73.7	2.0	220.2	37.8	3.1	35.6	136.8	4.3	202.8	49.9	0.1
LOS	D	E	A	F	D	A	D	F	A	F	D	A
Approach Delay		44.4			105.0			61.6			110.1	
Approach LOS		D			F			E			F	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 93.8

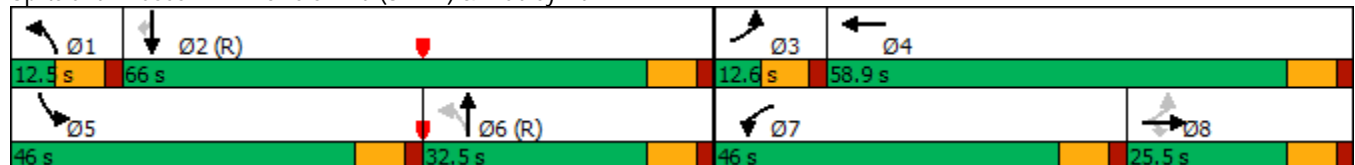
Intersection LOS: F

Intersection Capacity Utilization 113.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Powers Blvd (SH-21) & Bradley Rd



























HCM 6th Signalized Intersection Summary

2045 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	142	94	1109	291	1063	55	874	1121	1252	1862	35
Future Volume (veh/h)	25	142	94	1109	291	1063	55	874	1121	1252	1862	35
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	1856	1870	1856	1870	1826	1826	1856	1856	1870
Adj Flow Rate, veh/h	27	154	102	1205	316	0	60	950	0	1361	2024	38
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	3	2	3	2	5	5	3	3	2
Cap, veh/h	174	287	128	880	1119		117	1026		880	2174	680
Arrive On Green	0.02	0.08	0.08	0.26	0.31	0.00	0.03	0.21	0.00	0.26	0.43	0.43
Sat Flow, veh/h	1781	3554	1585	3428	3554	1572	1781	4985	1547	3428	5066	1585
Grp Volume(v), veh/h	27	154	102	1205	316	0	60	950	0	1361	2024	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1714	1777	1572	1781	1662	1547	1714	1689	1585
Q Serve(g_s), s	2.1	6.2	9.5	38.5	10.0	0.0	4.0	28.0	0.0	38.5	57.0	2.1
Cycle Q Clear(g_c), s	2.1	6.2	9.5	38.5	10.0	0.0	4.0	28.0	0.0	38.5	57.0	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	287	128	880	1119		117	1026		880	2174	680
V/C Ratio(X)	0.16	0.54	0.80	1.37	0.28		0.51	0.93		1.55	0.93	0.06
Avail Cap(c_a), veh/h	195	426	190	880	1218		117	1026		880	2174	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.2	66.2	67.7	55.8	38.6	0.0	47.5	58.4	0.0	55.8	40.7	25.0
Incr Delay (d2), s/veh	0.4	1.6	13.1	173.5	0.1	0.0	3.7	15.1	0.0	251.7	8.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	4.3	37.8	4.5	0.0	1.8	12.8	0.0	46.7	24.0	0.8
Unsig. Movement Delay, s/veh	10.00						10.00					
LnGrp Delay(d),s/veh	61.6	67.8	80.8	229.3	38.8	10.0	51.2	73.5	10.0	307.4	49.4	25.2
LnGrp LOS	E	E	F	F	D	A	D	E	A	F	D	C
Approach Vol, veh/h	283				2676				2228			
Approach Delay, s/veh	71.9				112.1				38.2			
Approach LOS	E				F				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	71.9	10.9	54.7	46.0	38.4	46.0	19.6				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.0	58.5	5.1	51.4	38.5	25.0	38.5	18.0				
Max Q Clear Time (g_c+I1), s	6.0	59.0	4.1	12.0	40.5	30.0	40.5	11.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay 107.4







HCM 6th LOS F

Notes

Unsignalized Delay for [NBR, WBR] is included in calculations of the approach delay and intersection delay.







HCM 6th TWSC
2: Bradley Rd & Foreign Trade Zone Blvd

Existing AM
07/11/2023

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	65	553	790	36	7	19
Future Vol, veh/h	65	553	790	36	7	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	575	-	-	550	0	300
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	87	87	65	65
Heavy Vehicles, %	6	6	4	4	58	58
Mvmt Flow	68	576	908	41	11	29
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	949	0	-	0	1332	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	424	-
Critical Hdwy	4.22	-	-	-	7.96	-
Critical Hdwy Stg 1	-	-	-	-	6.96	-
Critical Hdwy Stg 2	-	-	-	-	6.96	-
Follow-up Hdwy	2.26	-	-	-	4.08	-
Pot Cap-1 Maneuver	1040	-	-	-	216	0
Stage 1	-	-	-	-	597	0
Stage 2	-	-	-	-	490	0
Platoon blocked, %	1	-	-	-	1	
Mov Cap-1 Maneuver	1040	-	-	-	202	-
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	490	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		14.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1040	-	-	-	392	-
HCM Lane V/C Ratio	0.065	-	-	-	0.027	-
HCM Control Delay (s)	8.7	-	-	-	14.4	0
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	-

HCM 6th TWSC
2: Bradley Rd & Foreign Trade Zone Blvd

Existing PM
07/11/2023

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	746	595	11	30	82
Future Vol, veh/h	42	746	595	11	30	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	575	-	-	550	0	300
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	92	92	90	90
Heavy Vehicles, %	7	7	5	5	2	2
Mvmt Flow	48	848	647	12	33	91
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	659	0	-	0	1167	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	4.24	-	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.27	-	-	-	3.52	-
Pot Cap-1 Maneuver	*1231	-	-	-	*317	0
Stage 1	-	-	-	-	*794	0
Stage 2	-	-	-	-	*561	0
Platoon blocked, %	1	-	-	-	1	-
Mov Cap-1 Maneuver	*1231	-	-	-	*304	-
Mov Cap-2 Maneuver	-	-	-	-	*492	-
Stage 1	-	-	-	-	*763	-
Stage 2	-	-	-	-	*561	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		12.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	* 1231	-	-	-	492	-
HCM Lane V/C Ratio	0.039	-	-	-	0.068	-
HCM Control Delay (s)	8	-	-	-	12.8	0
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘	↰	↗	↘	↰	↗	↘	↰	↗	↘
Traffic Vol, veh/h	66	608	10	4	928	37	40	1	10	7	0	19
Future Vol, veh/h	66	608	10	4	928	37	40	1	10	7	0	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	-	-	Free
Storage Length	575	-	435	435	-	550	150	-	0	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	87	87	92	92	92	65	92	65
Heavy Vehicles, %	6	6	2	2	4	4	2	2	2	58	2	58
Mvmt Flow	69	633	11	4	1067	43	43	1	11	11	0	29
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1110	0	0	644	0	0	1313	1889	317	1530	1857	-
Stage 1	-	-	-	-	-	-	771	771	-	1075	1075	-
Stage 2	-	-	-	-	-	-	542	1118	-	455	782	-
Critical Hdwy	4.22	-	-	4.14	-	-	7.54	6.54	6.94	8.66	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	7.66	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	7.66	5.54	-
Follow-up Hdwy	2.26	-	-	2.22	-	-	3.52	4.02	3.32	4.08	4.02	-
Pot Cap-1 Maneuver	943	-	-	937	-	-	*334	104	679	138	112	0
Stage 1	-	-	-	-	-	-	*359	408	-	522	551	0
Stage 2	-	-	-	-	-	-	*670	516	-	429	403	0
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	-
Mov Cap-1 Maneuver	943	-	-	937	-	-	*314	96	679	128	103	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	*316	288	-	309	305	-
Stage 1	-	-	-	-	-	-	*333	378	-	484	548	-
Stage 2	-	-	-	-	-	-	*667	514	-	390	374	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0			16.7			17.1		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	316	288	679	943	-	-	937	-	-	309	-	-
HCM Lane V/C Ratio	0.138	0.004	0.016	0.073	-	-	0.005	-	-	0.035	-	-
HCM Control Delay (s)	18.2	17.5	10.4	9.1	-	-	8.9	-	-	17.1	0	0
HCM Lane LOS	C	C	B	A	-	-	A	-	-	C	A	A
HCM 95th %tile Q(veh)	0.5	0	0	0.2	-	-	0	-	-	0.1	-	-
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘	↰	↗	↘	↰	↗	↘	↰	↗	↘
Traffic Vol, veh/h	43	897	29	20	682	11	29	1	8	31	2	84
Future Vol, veh/h	43	897	29	20	682	11	29	1	8	31	2	84
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	-	-	Free
Storage Length	575	-	435	435	-	550	150	-	0	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	92	92	92	92	92	90	92	90
Heavy Vehicles, %	7	7	2	2	5	5	2	2	2	2	2	2
Mvmt Flow	49	1019	32	22	741	12	32	1	9	34	2	93
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	753	0	0	1051	0	0	1533	1914	510	1393	1934	-
Stage 1	-	-	-	-	-	-	1117	1117	-	785	785	-
Stage 2	-	-	-	-	-	-	416	797	-	608	1149	-
Critical Hdwy	4.24	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.27	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	1179	-	-	658	-	-	*136	84	509	187	81	0
Stage 1	-	-	-	-	-	-	*221	281	-	714	637	0
Stage 2	-	-	-	-	-	-	*768	628	-	450	271	0
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	-
Mov Cap-1 Maneuver	1179	-	-	658	-	-	*128	78	509	172	75	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	*200	237	-	354	216	-
Stage 1	-	-	-	-	-	-	*212	269	-	684	616	-
Stage 2	-	-	-	-	-	-	*740	607	-	422	260	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.3			23.2			16.6		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	200	237	509	1179	-	-	658	-	-	354	216	-
HCM Lane V/C Ratio	0.158	0.005	0.017	0.041	-	-	0.033	-	-	0.097	0.01	-
HCM Control Delay (s)	26.3	20.3	12.2	8.2	-	-	10.7	-	-	16.3	21.8	0
HCM Lane LOS	D	C	B	A	-	-	B	-	-	C	C	A
HCM 95th %tile Q(veh)	0.5	0	0.1	0.1	-	-	0.1	-	-	0.3	0	-
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												













HCM 6th TWSC
2: Bradley Rd & Foreign Trade Zone Blvd

2025 Total AM
01/05/2024

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘	↰	↗	↘	↰	↗	↘	↰	↗	↘
Traffic Vol, veh/h	98	608	10	4	928	57	40	1	10	10	0	23
Future Vol, veh/h	98	608	10	4	928	57	40	1	10	10	0	23
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	-	-	Free
Storage Length	575	-	435	435	-	550	150	-	0	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	87	87	92	92	92	92	92	92
Heavy Vehicles, %	6	6	2	2	4	4	2	2	2	58	2	58
Mvmt Flow	102	633	11	4	1067	66	43	1	11	11	0	25
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1133	0	0	644	0	0	1379	1978	317	1596	1923	-
Stage 1	-	-	-	-	-	-	837	837	-	1075	1075	-
Stage 2	-	-	-	-	-	-	542	1141	-	521	848	-
Critical Hdwy	4.22	-	-	4.14	-	-	7.54	6.54	6.94	8.66	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	7.66	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	7.66	5.54	-
Follow-up Hdwy	2.26	-	-	2.22	-	-	3.52	4.02	3.32	4.08	4.02	-
Pot Cap-1 Maneuver	915	-	-	937	-	-	*284	86	679	114	96	0
Stage 1	-	-	-	-	-	-	*327	380	-	522	551	0
Stage 2	-	-	-	-	-	-	*670	498	-	386	376	0
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	-
Mov Cap-1 Maneuver	915	-	-	937	-	-	*259	76	679	102	85	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	*276	253	-	272	277	-
Stage 1	-	-	-	-	-	-	*291	338	-	464	548	-
Stage 2	-	-	-	-	-	-	*667	496	-	336	334	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0			18.5			18.8		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	276	253	679	915	-	-	937	-	-	272	-	-
HCM Lane V/C Ratio	0.158	0.004	0.016	0.112	-	-	0.005	-	-	0.04	-	-
HCM Control Delay (s)	20.5	19.3	10.4	9.4	-	-	8.9	-	-	18.8	0	0
HCM Lane LOS	C	C	B	A	-	-	A	-	-	C	A	A
HCM 95th %tile Q(veh)	0.6	0	0	0.4	-	-	0	-	-	0.1	-	-
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
2: Bradley Rd & Foreign Trade Zone Blvd

2025 Total PM
01/05/2024

























Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	897	29	20	682	12	29	1	8	43	2	103
Future Vol, veh/h	45	897	29	20	682	12	29	1	8	43	2	103
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	-	-	Free
Storage Length	575	-	435	435	-	550	150	-	0	300	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	92	92	92	92	92	92	92	90	92	90
Heavy Vehicles, %	7	7	2	2	5	5	2	2	2	2	2	2
Mvmt Flow	51	1019	32	22	741	13	32	1	9	48	2	114
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	754	0	0	1051	0	0	1537	1919	510	1397	1938	-
Stage 1	-	-	-	-	-	-	1121	1121	-	785	785	-
Stage 2	-	-	-	-	-	-	416	798	-	612	1153	-
Critical Hdwy	4.24	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.27	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	1178	-	-	658	-	-	*135	84	509	185	81	0
Stage 1	-	-	-	-	-	-	*220	280	-	714	637	0
Stage 2	-	-	-	-	-	-	*768	627	-	447	270	0
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	-
Mov Cap-1 Maneuver	1178	-	-	658	-	-	*127	77	509	171	74	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	*199	236	-	351	214	-
Stage 1	-	-	-	-	-	-	*211	268	-	683	616	-
Stage 2	-	-	-	-	-	-	*740	606	-	419	258	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.3			23.3			17.1		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	199	236	509	1178	-	-	658	-	-	351	214	-
HCM Lane V/C Ratio	0.158	0.005	0.017	0.043	-	-	0.033	-	-	0.136	0.01	-
HCM Control Delay (s)	26.5	20.3	12.2	8.2	-	-	10.7	-	-	16.9	22	0
HCM Lane LOS	D	C	B	A	-	-	B	-	-	C	C	A
HCM 95th %tile Q(veh)	0.6	0	0.1	0.1	-	-	0.1	-	-	0.5	0	-
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Background AM

07/12/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	861	22	11	1275	43	99	3	21	8	1	36
Future Volume (vph)	112	861	22	11	1275	43	99	3	21	8	1	36
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	
Total Split (s)	14.0	65.5	65.5	9.5	61.0	61.0	11.4	22.5	22.5	22.5	33.6	
Total Split (%)	11.7%	54.6%	54.6%	7.9%	50.8%	50.8%	9.5%	18.8%	18.8%	18.8%	28.0%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	
Act Effect Green (s)	70.5	66.7	66.7	62.3	57.3	57.3	24.9	18.0	18.0	40.5	29.1	120.0
Actuated g/C Ratio	0.59	0.56	0.56	0.52	0.48	0.48	0.21	0.15	0.15	0.34	0.24	1.00
v/c Ratio	0.66	0.49	0.03	0.04	0.84	0.06	0.35	0.01	0.07	0.03	0.00	0.04
Control Delay	39.4	10.9	0.0	6.9	34.9	1.7	33.5	43.7	0.3	27.0	34.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	10.9	0.0	6.9	34.9	1.7	33.5	43.7	0.3	27.0	34.0	0.1
LOS	D	B	A	A	C	A	C	D	A	C	C	A
Approach Delay		13.8			33.6			28.1			5.7	
Approach LOS		B			C			C			A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 37.5 (31%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 24.9

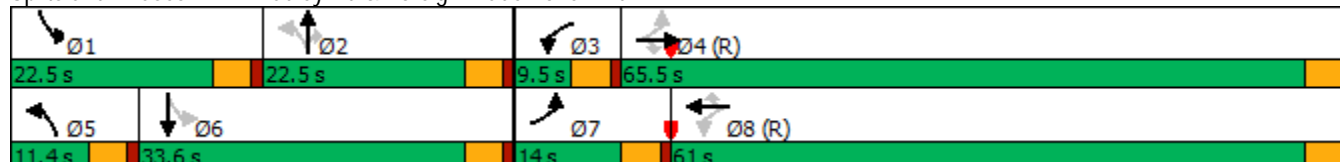
Intersection LOS: C

Intersection Capacity Utilization 64.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd



























HCM 6th Signalized Intersection Summary

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Background AM

07/12/2023

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	861	22	11	1275	43	99	3	21	8	1	36
Future Volume (veh/h)	112	861	22	11	1275	43	99	3	21	8	1	36
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	1811	1811	1870	1870	1841	1841	1870	1870	1870	1040	1870	1040
Adj Flow Rate, veh/h	122	936	24	12	1386	47	108	3	23	9	1	0
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, %	6	6	2	2	4	4	2	2	2	58	2	58
Cap, veh/h	326	1845	850	302	1750	781	375	281	238	323	454	
Arrive On Green	0.05	0.54	0.54	0.03	1.00	1.00	0.06	0.15	0.15	0.15	0.24	0.00
Sat Flow, veh/h	1725	3441	1585	1781	3497	1560	1781	1870	1585	991	1870	882
Grp Volume(v), veh/h	122	936	24	12	1386	47	108	3	23	9	1	0
Grp Sat Flow(s),veh/h/ln	1725	1721	1585	1781	1749	1560	1781	1870	1585	991	1870	882
Q Serve(g_s), s	4.0	20.8	0.9	0.4	0.0	0.0	6.1	0.2	1.5	0.8	0.0	0.0
Cycle Q Clear(g_c), s	4.0	20.8	0.9	0.4	0.0	0.0	6.1	0.2	1.5	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	1845	850	302	1750	781	375	281	238	323	454	
V/C Ratio(X)	0.37	0.51	0.03	0.04	0.79	0.06	0.29	0.01	0.10	0.03	0.00	
Avail Cap(c_a), veh/h	377	1845	850	351	1750	781	375	281	238	323	454	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	0.73	0.73	0.73	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.2	17.7	13.1	15.2	0.0	0.0	40.1	43.4	44.0	28.3	34.4	0.0
Incr Delay (d2), s/veh	0.5	0.7	0.0	0.0	2.8	0.1	0.4	0.1	0.8	0.2	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	1.6	8.3	0.3	0.2	0.7	0.0	2.7	0.1	0.6	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	18.4	13.1	15.2	2.8	0.1	40.5	43.5	44.8	28.5	34.5	0.0
LnGrp LOS	B	B	B	B	A	A	D	D	D	C	C	
Approach Vol, veh/h	1082			1445			134			10		
Approach Delay, s/veh	17.7			2.8			41.3			29.1		
Approach LOS	B			A			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.5	22.5	6.1	68.9	11.4	33.6	10.5	64.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.0	18.0	5.0	61.0	6.9	29.1	9.5	56.5				
Max Q Clear Time (g_c+I1), s	2.8	3.5	2.4	22.8	8.1	2.0	6.0	2.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	8.4	0.0	0.0	0.1	16.5				
Intersection Summary												
HCM 6th Ctrl Delay	10.8											
HCM 6th LOS	B											

Timings

2030 Background PM

2: Bradley Rd & Foreign Trade Zone Blvd

07/12/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	1284	70	43	873	14	68	2	15	37	4	163
Future Volume (vph)	99	1284	70	43	873	14	68	2	15	37	4	163
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	
Total Split (s)	13.6	65.0	65.0	10.0	61.4	61.4	10.3	22.5	22.5	22.5	34.7	
Total Split (%)	11.3%	54.2%	54.2%	8.3%	51.2%	51.2%	8.6%	18.8%	18.8%	18.8%	28.9%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	
Act Effect Green (s)	69.5	62.5	62.5	63.2	57.7	57.7	23.8	18.0	18.0	40.5	32.3	120.0
Actuated g/C Ratio	0.58	0.52	0.52	0.53	0.48	0.48	0.20	0.15	0.15	0.34	0.27	1.00
v/c Ratio	0.38	0.79	0.09	0.31	0.57	0.02	0.25	0.01	0.05	0.08	0.01	0.11
Control Delay	19.1	39.6	2.4	13.8	20.0	0.0	31.6	43.5	0.3	27.6	33.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	39.6	2.4	13.8	20.0	0.0	31.6	43.5	0.3	27.6	33.8	0.1
LOS	B	D	A	B	C	A	C	D	A	C	C	A
Approach Delay		36.4			19.4			26.4			5.7	
Approach LOS		D			B			C			A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 37.3 (31%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.9









Intersection LOS: C

Intersection Capacity Utilization 61.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd

























			
Ø1	Ø2	Ø3	Ø4 (R)
22.5 s	22.5 s	10 s	65 s
			
Ø5	Ø6	Ø7	Ø8 (R)
10.3 s	34.7 s	13.6 s	61.4 s

HCM 6th Signalized Intersection Summary

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Background PM

07/12/2023

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	1284	70	43	873	14	68	2	15	37	4	163
Future Volume (veh/h)	99	1284	70	43	873	14	68	2	15	37	4	163
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	1796	1796	1870	1870	1826	1826	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	1396	76	47	949	15	74	2	16	40	4	0
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, %	7	7	2	2	5	5	2	2	2	2	2	2
Cap, veh/h	421	1765	820	184	1748	779	356	281	238	535	473	
Arrive On Green	0.05	0.52	0.52	0.07	1.00	1.00	0.05	0.15	0.15	0.15	0.25	0.00
Sat Flow, veh/h	1711	3413	1585	1781	3469	1547	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	108	1396	76	47	949	15	74	2	16	40	4	0
Grp Sat Flow(s),veh/h/ln	1711	1706	1585	1781	1735	1547	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.6	40.1	2.9	1.5	0.0	0.0	4.2	0.1	1.0	1.9	0.2	0.0
Cycle Q Clear(g_c), s	3.6	40.1	2.9	1.5	0.0	0.0	4.2	0.1	1.0	1.9	0.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	1765	820	184	1748	779	356	281	238	535	473	
V/C Ratio(X)	0.26	0.79	0.09	0.25	0.54	0.02	0.21	0.01	0.07	0.07	0.01	
Avail Cap(c_a), veh/h	472	1765	820	207	1748	779	358	281	238	535	473	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.0	23.7	14.7	19.6	0.0	0.0	40.4	43.4	43.8	28.7	33.6	0.0
Incr Delay (d2), s/veh	0.2	1.9	0.1	0.5	0.9	0.0	0.3	0.0	0.5	0.3	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	1.4	16.1	1.1	0.6	0.2	0.0	1.9	0.1	0.4	0.9	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	25.6	14.8	20.1	0.9	0.0	40.6	43.4	44.3	29.0	33.6	0.0
LnGrp LOS	B	C	B	C	A	A	D	D	D	C	C	
Approach Vol, veh/h		1580			1011			92			44	
Approach Delay, s/veh		24.2			1.8			41.3			29.4	
Approach LOS		C			A			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.5	22.5	8.5	66.5	10.2	34.8	10.1	64.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.0	18.0	5.5	60.5	5.8	30.2	9.1	56.9				
Max Q Clear Time (g_c+I1), s	3.9	3.0	3.5	42.1	6.2	2.2	5.6	2.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	10.5	0.0	0.0	0.1	8.9				
Intersection Summary												
HCM 6th Ctrl Delay			16.6									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Total AM

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	411	861	22	11	1350	153	99	3	21	101	1	86
Future Volume (vph)	411	861	22	11	1350	153	99	3	21	101	1	86
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	30.0	77.6	77.6	9.5	57.1	57.1	9.8	22.5	22.5	10.4	23.1	
Total Split (%)	25.0%	64.7%	64.7%	7.9%	47.6%	47.6%	8.2%	18.8%	18.8%	8.7%	19.3%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	82.6	78.8	78.8	57.6	52.6	52.6	23.3	18.0	18.0	24.5	18.6	120.0
Actuated g/C Ratio	0.69	0.66	0.66	0.48	0.44	0.44	0.19	0.15	0.15	0.20	0.16	1.00
v/c Ratio	1.06	0.42	0.02	0.04	0.96	0.21	0.37	0.01	0.07	0.57	0.00	0.09
Control Delay	85.3	5.4	0.0	7.9	39.4	3.6	42.9	43.7	0.3	53.8	43.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	5.4	0.0	7.9	39.4	3.6	42.9	43.7	0.3	53.8	43.0	0.2
LOS	F	A	A	A	D	A	D	D	A	D	D	A
Approach Delay		30.7			35.6			35.6			29.3	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 91 (76%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 33.2

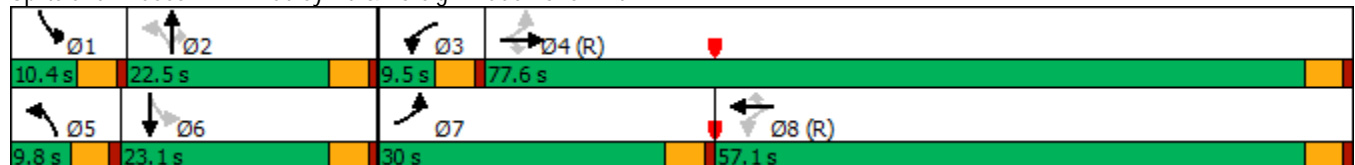
Intersection LOS: C

Intersection Capacity Utilization 83.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd



























HCM 6th Signalized Intersection Summary

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Total AM

01/08/2024

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	411	861	22	11	1350	153	99	3	21	101	1	86
Future Volume (veh/h)	411	861	22	11	1350	153	99	3	21	101	1	86
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	1811	1811	1870	1870	1841	1841	1870	1870	1870	1040	1870	1040
Adj Flow Rate, veh/h	447	936	24	12	1467	166	108	3	23	110	1	0
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, %	6	6	2	2	4	4	2	2	2	58	2	58
Cap, veh/h	461	2192	1010	347	1533	684	351	281	238	223	290	
Arrive On Green	0.21	0.64	0.64	0.03	0.88	0.88	0.04	0.15	0.15	0.05	0.16	0.00
Sat Flow, veh/h	1725	3441	1585	1781	3497	1560	1781	1870	1585	991	1870	882
Grp Volume(v), veh/h	447	936	24	12	1467	166	108	3	23	110	1	0
Grp Sat Flow(s),veh/h/ln	1725	1721	1585	1781	1749	1560	1781	1870	1585	991	1870	882
Q Serve(g_s), s	24.1	16.3	0.7	0.4	38.5	2.0	5.3	0.2	1.5	5.9	0.1	0.0
Cycle Q Clear(g_c), s	24.1	16.3	0.7	0.4	38.5	2.0	5.3	0.2	1.5	5.9	0.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	2192	1010	347	1533	684	351	281	238	223	290	
V/C Ratio(X)	0.97	0.43	0.02	0.03	0.96	0.24	0.31	0.01	0.10	0.49	0.00	
Avail Cap(c_a), veh/h	461	2192	1010	396	1533	684	351	281	238	223	290	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.1	10.9	8.0	17.9	6.5	4.3	41.5	43.4	44.0	43.8	42.9	0.0
Incr Delay (d2), s/veh	33.8	0.6	0.0	0.0	11.9	0.6	0.5	0.1	0.8	1.7	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(95%),veh/ln	24.1	10.2	0.4	0.3	8.6	1.3	5.0	0.1	1.2	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.9	11.5	8.1	17.9	18.5	4.9	42.0	43.5	44.8	45.5	42.9	0.0
LnGrp LOS	E	B	A	B	B	A	D	D	D	D	D	
Approach Vol, veh/h	1407			1645			134			111		
Approach Delay, s/veh	29.7			17.1			42.5			45.4		
Approach LOS	C			B			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	22.5	6.1	81.0	9.8	23.1	30.0	57.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.9	18.0	5.0	73.1	5.3	18.6	25.5	52.6				
Max Q Clear Time (g_c+I1), s	7.9	3.5	2.4	18.3	7.3	2.1	26.1	40.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	8.8	0.0	0.0	0.0	8.3				
Intersection Summary												
HCM 6th Ctrl Delay	24.4											
HCM 6th LOS	C											

Timings

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Total PM

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	1284	70	43	924	89	68	2	15	213	4	258
Future Volume (vph)	303	1284	70	43	924	89	68	2	15	213	4	258
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	31.0	68.6	68.6	9.9	47.5	47.5	10.3	22.5	22.5	19.0	31.2	
Total Split (%)	25.8%	57.2%	57.2%	8.3%	39.6%	39.6%	8.6%	18.8%	18.8%	15.8%	26.0%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	74.0	66.1	66.1	53.0	47.6	47.6	24.3	18.5	18.5	37.0	28.8	120.0
Actuated g/C Ratio	0.62	0.55	0.55	0.44	0.40	0.40	0.20	0.15	0.15	0.31	0.24	1.00
v/c Ratio	0.83	0.75	0.08	0.27	0.74	0.14	0.25	0.01	0.04	0.55	0.01	0.18
Control Delay	47.9	10.6	0.1	13.7	25.6	0.5	33.6	43.5	0.2	38.7	36.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	10.6	0.1	13.7	25.6	0.5	33.6	43.5	0.2	38.7	36.5	0.2
LOS	D	B	A	B	C	A	C	D	A	D	D	A
Approach Delay		16.9			23.0			28.0			17.8	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 19.3









Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd

























			
Ø1	Ø2	Ø3	Ø4 (R)
19 s	22.5 s	9.9 s	68.6 s
			
Ø5	Ø6	Ø7	Ø8 (R)
10.3 s	31.2 s	31 s	47.5 s

HCM 6th Signalized Intersection Summary

2: Bradley Rd & Foreign Trade Zone Blvd

2030 Total PM

01/08/2024

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	303	1284	70	43	924	89	68	2	15	213	4	258
Future Volume (veh/h)	303	1284	70	43	924	89	68	2	15	213	4	258
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	1796	1796	1870	1870	1826	1826	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	329	1396	76	47	1004	97	74	2	16	232	4	0
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, %	7	7	2	2	5	5	2	2	2	2	2	2
Cap, veh/h	463	1864	866	202	1593	711	356	281	238	483	418	
Arrive On Green	0.12	0.55	0.55	0.07	0.92	0.92	0.05	0.15	0.15	0.12	0.22	0.00
Sat Flow, veh/h	1711	3413	1585	1781	3469	1547	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	329	1396	76	47	1004	97	74	2	16	232	4	0
Grp Sat Flow(s),veh/h/ln	1711	1706	1585	1781	1735	1547	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.5	37.7	2.7	1.6	6.7	0.7	4.2	0.1	1.0	12.8	0.2	0.0
Cycle Q Clear(g_c), s	11.5	37.7	2.7	1.6	6.7	0.7	4.2	0.1	1.0	12.8	0.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	463	1864	866	202	1593	711	356	281	238	483	418	
V/C Ratio(X)	0.71	0.75	0.09	0.23	0.63	0.14	0.21	0.01	0.07	0.48	0.01	
Avail Cap(c_a), veh/h	636	1864	866	224	1593	711	358	281	238	483	418	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.1	20.9	13.0	18.8	2.9	2.7	40.4	43.4	43.8	35.0	36.2	0.0
Incr Delay (d2), s/veh	2.3	2.8	0.2	0.5	1.5	0.3	0.3	0.0	0.5	0.7	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(95%),veh/ln	8.1	21.6	1.8	1.2	2.7	0.5	3.4	0.1	0.8	9.6	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	23.7	13.2	19.2	4.4	3.0	40.6	43.4	44.3	35.8	36.3	0.0
LnGrp LOS	B	C	B	B	A	A	D	D	D	D	D	
Approach Vol, veh/h	1801		1148				92				236	
Approach Delay, s/veh	21.7		4.9				41.3				35.8	
Approach LOS	C		A				D				D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	22.5	8.5	70.0	10.2	31.3	18.9	59.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	14.5	18.0	5.4	64.1	5.8	26.7	26.5	43.0				
Max Q Clear Time (g_c+l1), s	14.8	3.0	3.6	39.7	6.2	2.2	13.5	8.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	12.4	0.0	0.0	0.8	9.4				
Intersection Summary												
HCM 6th Ctrl Delay			17.4									
HCM 6th LOS			B									
Notes												

Timings

2045 Background AM

2: Bradley Rd & Foreign Trade Zone Blvd

07/12/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	1020	28	11	1684	67	125	8	21	15	6	102
Future Volume (vph)	290	1020	28	11	1684	67	125	8	21	15	6	102
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	17.0	78.4	78.4	9.5	70.9	70.9	9.6	22.6	22.6	9.5	22.5	
Total Split (%)	14.2%	65.3%	65.3%	7.9%	59.1%	59.1%	8.0%	18.8%	18.8%	7.9%	18.8%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	12.5	79.6	79.6	71.4	66.4	66.4	25.8	23.8	23.8	23.0	18.0	120.0
Actuated g/C Ratio	0.10	0.66	0.66	0.60	0.55	0.55	0.22	0.20	0.20	0.19	0.15	1.00
v/c Ratio	0.92	0.49	0.03	0.04	0.95	0.08	0.48	0.02	0.05	0.09	0.03	0.11
Control Delay	64.4	19.7	2.9	2.4	26.2	0.2	46.5	42.6	0.2	37.7	44.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	19.7	2.9	2.4	26.2	0.2	46.5	42.6	0.2	37.7	44.0	0.2
LOS	E	B	A	A	C	A	D	D	A	D	D	A
Approach Delay		29.1			25.1			40.0			7.0	
Approach LOS		C			C			D			A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 26.7













Intersection LOS: C

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15





























Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd

					
9.5 s	22.6 s	9.5 s	78.4 s		
					
9.6 s	22.5 s	17 s	70.9 s		

HCM 6th Signalized Intersection Summary 2: Bradley Rd & Foreign Trade Zone Blvd

2045 Background AM

07/12/2023

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 						 	
Traffic Volume (veh/h)	290	1020	28	11	1684	67	125	8	21	15	6	102
Future Volume (veh/h)	290	1020	28	11	1684	67	125	8	21	15	6	102
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			
Adj Sat Flow, veh/h/ln	1811	1811	1870	1870	1841	1841	1870	1870	1870	1040	1870	1040
Adj Flow Rate, veh/h	315	1109	30	12	1830	0	136	9	23	16	7	0
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, %	6	6	2	2	4	4	2	2	2	58	2	58
Cap, veh/h	349	2215	1020	326	1935		342	328	278	192	281	
Arrive On Green	0.10	0.64	0.64	0.01	0.55	0.00	0.04	0.18	0.18	0.02	0.15	0.00
Sat Flow, veh/h	3346	3441	1585	1781	3497	1560	1781	1870	1585	991	1870	882
Grp Volume(v), veh/h	315	1109	30	12	1830	0	136	9	23	16	7	0
Grp Sat Flow(s),veh/h/ln	1673	1721	1585	1781	1749	1560	1781	1870	1585	991	1870	882
Q Serve(g_s), s	11.2	20.3	0.8	0.4	58.8	0.0	5.1	0.5	1.5	1.6	0.4	0.0
Cycle Q Clear(g_c), s	11.2	20.3	0.8	0.4	58.8	0.0	5.1	0.5	1.5	1.6	0.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	349	2215	1020	326	1935		342	328	278	192	281	
V/C Ratio(X)	0.90	0.50	0.03	0.04	0.95		0.40	0.03	0.08	0.08	0.02	
Avail Cap(c_a), veh/h	349	2215	1020	375	1935		342	328	278	216	281	
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	0.65	0.65	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.2	11.2	7.8	11.7	25.1	0.0	42.3	41.0	41.4	42.3	43.5	0.0
Incr Delay (d2), s/veh	25.8	0.8	0.1	0.0	7.9	0.0	0.7	0.2	0.6	0.2	0.2	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	5.9	7.6	0.3	0.1	25.2	0.0	3.6	0.2	0.6	0.4	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.0	12.0	7.8	11.7	33.0	0.0	43.1	41.2	42.0	42.5	43.7	0.0
LnGrp LOS	E	B	A	B	C		D	D	D	D	D	
Approach Vol, veh/h	1454				1842				168			
Approach Delay, s/veh	26.5				32.9				42.8			
Approach LOS	C				C				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	25.5	6.1	81.8	9.6	22.5	17.0	70.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.1	5.0	73.9	5.1	18.0	12.5	66.4				
Max Q Clear Time (g_c+I1), s	3.6	3.5	2.4	22.3	7.1	2.4	13.2	60.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	11.3	0.0	0.0	0.0	4.8				
Intersection Summary												
HCM 6th Ctrl Delay	30.8											
HCM 6th LOS	C											

Timings

2045 Background PM

2: Bradley Rd & Foreign Trade Zone Blvd

07/12/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	1514	86	44	1019	22	75	7	15	62	9	481
Future Volume (vph)	324	1514	86	44	1019	22	75	7	15	62	9	481
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	24.6	76.7	76.7	10.4	62.5	62.5	10.4	22.8	22.8	10.1	22.5	
Total Split (%)	20.5%	63.9%	63.9%	8.7%	52.1%	52.1%	8.7%	19.0%	19.0%	8.4%	18.8%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	17.5	74.3	74.3	66.4	60.6	60.6	25.0	20.3	20.3	24.6	20.1	120.0
Actuated g/C Ratio	0.15	0.62	0.62	0.55	0.50	0.50	0.21	0.17	0.17	0.20	0.17	1.00
v/c Ratio	0.74	0.79	0.09	0.29	0.64	0.03	0.27	0.03	0.04	0.22	0.03	0.33
Control Delay	63.4	15.8	0.4	13.8	10.9	0.0	39.8	43.7	0.2	38.9	44.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	15.8	0.4	13.8	10.9	0.0	39.8	43.7	0.2	38.9	44.1	0.6
LOS	E	B	A	B	B	A	D	D	A	D	D	A
Approach Delay		23.1			10.8			34.1			5.6	
Approach LOS		C			B			C			A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 4:EBT and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 17.1

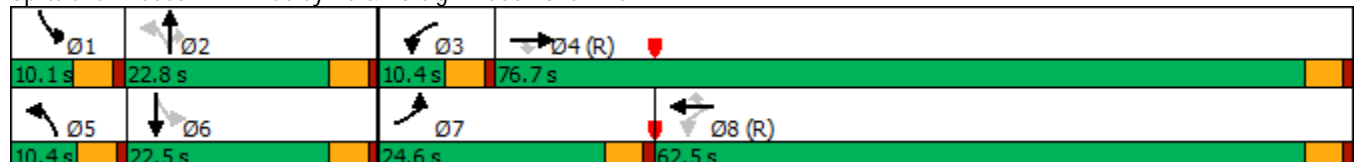
Intersection LOS: B

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd



HCM 6th Signalized Intersection Summary 2: Bradley Rd & Foreign Trade Zone Blvd

2045 Background PM

07/12/2023

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	1514	86	44	1019	22	75	7	15	62	9	481
Future Volume (veh/h)	324	1514	86	44	1019	22	75	7	15	62	9	481
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	1796	1796	1870	1870	1826	1826	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	352	1646	93	48	1108	0	82	8	16	67	10	0
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, %	7	7	2	2	5	5	2	2	2	2	2	2
Cap, veh/h	417	2108	979	192	1822		352	292	247	345	281	
Arrive On Green	0.13	0.62	0.62	0.03	0.53	0.00	0.05	0.16	0.16	0.04	0.15	0.00
Sat Flow, veh/h	3319	3413	1585	1781	3469	1547	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	352	1646	93	48	1108	0	82	8	16	67	10	0
Grp Sat Flow(s),veh/h/ln	1659	1706	1585	1781	1735	1547	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.4	42.8	2.9	1.5	26.7	0.0	4.6	0.4	1.0	3.8	0.5	0.0
Cycle Q Clear(g_c), s	12.4	42.8	2.9	1.5	26.7	0.0	4.6	0.4	1.0	3.8	0.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	2108	979	192	1822		352	292	247	345	281	
V/C Ratio(X)	0.84	0.78	0.10	0.25	0.61		0.23	0.03	0.06	0.19	0.04	
Avail Cap(c_a), veh/h	556	2108	979	220	1822		352	292	247	351	281	
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	0.76	0.76	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.3	16.9	9.3	17.1	19.9	0.0	40.3	42.9	43.2	40.6	43.6	0.0
Incr Delay (d2), s/veh	8.8	3.0	0.2	0.5	1.2	0.0	0.3	0.2	0.5	0.3	0.2	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	5.7	16.5	1.0	0.6	10.8	0.0	2.1	0.2	0.4	1.7	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	19.9	9.5	17.6	21.0	0.0	40.7	43.1	43.7	40.9	43.8	0.0
LnGrp LOS	E	B	A	B	C		D	D	D	D	D	
Approach Vol, veh/h	2091			1156			106			77		
Approach Delay, s/veh	26.2			20.9			41.3			41.3		
Approach LOS	C			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	23.2	8.5	78.6	10.4	22.5	19.6	67.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.6	18.3	5.9	72.2	5.9	18.0	20.1	58.0				
Max Q Clear Time (g_c+I1), s	5.8	3.0	3.5	44.8	6.6	2.5	14.4	28.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	16.3	0.0	0.0	0.6	9.7				
Intersection Summary												
HCM 6th Ctrl Delay	25.2											
HCM 6th LOS	C											

Timings

2045 Total AM

2: Bradley Rd & Foreign Trade Zone Blvd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	589	1020	28	11	1759	177	125	8	21	108	6	152
Future Volume (vph)	589	1020	28	11	1759	177	125	8	21	108	6	152
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	33.0	108.0	108.0	9.5	84.5	84.5	9.6	22.5	22.5	10.0	22.9	
Total Split (%)	22.0%	72.0%	72.0%	6.3%	56.3%	56.3%	6.4%	15.0%	15.0%	6.7%	15.3%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	28.5	109.2	109.2	85.0	80.0	80.0	23.1	18.0	18.0	23.9	18.4	150.0
Actuated g/C Ratio	0.19	0.73	0.73	0.57	0.53	0.53	0.15	0.12	0.12	0.16	0.12	1.00
v/c Ratio	1.02	0.45	0.03	0.04	1.03	0.21	0.60	0.04	0.08	0.78	0.03	0.16
Control Delay	81.3	3.8	0.0	7.6	64.4	2.7	68.3	59.1	0.6	91.0	58.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	3.8	0.0	7.6	64.4	2.7	68.3	59.1	0.6	91.0	58.5	0.3
LOS	F	A	A	A	E	A	E	E	A	F	E	A
Approach Delay		31.6			58.5			58.5			38.5	
Approach LOS		C			E			E			D	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 46.2







Intersection LOS: D

Intersection Capacity Utilization 90.3%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd

					
Ø1	Ø2	Ø3	Ø4 (R)	Ø5	Ø6
10 s	22.5 s	9.5 s	108 s	9.6 s	22.9 s
				33 s	84.5 s

HCM 6th Signalized Intersection Summary 2: Bradley Rd & Foreign Trade Zone Blvd

2045 Total AM
01/08/2024

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	589	1020	28	11	1759	177	125	8	21	108	6	152
Future Volume (veh/h)	589	1020	28	11	1759	177	125	8	21	108	6	152
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	1811	1811	1870	1870	1841	1841	1870	1870	1870	1040	1870	1040
Adj Flow Rate, veh/h	640	1109	30	12	1912	0	136	9	23	117	7	0
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, %	6	6	2	2	4	4	2	2	2	58	2	58
Cap, veh/h	636	2444	1126	342	1865		277	224	190	173	229	
Arrive On Green	0.19	0.71	0.71	0.01	0.53	0.00	0.03	0.12	0.12	0.04	0.12	0.00
Sat Flow, veh/h	3346	3441	1585	1781	3497	1560	1781	1870	1585	991	1870	882
Grp Volume(v), veh/h	640	1109	30	12	1912	0	136	9	23	117	7	0
Grp Sat Flow(s),veh/h/ln	1673	1721	1585	1781	1749	1560	1781	1870	1585	991	1870	882
Q Serve(g_s), s	28.5	20.7	0.8	0.5	80.0	0.0	5.1	0.6	1.9	5.5	0.5	0.0
Cycle Q Clear(g_c), s	28.5	20.7	0.8	0.5	80.0	0.0	5.1	0.6	1.9	5.5	0.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	636	2444	1126	342	1865		277	224	190	173	229	
V/C Ratio(X)	1.01	0.45	0.03	0.04	1.03		0.49	0.04	0.12	0.68	0.03	
Avail Cap(c_a), veh/h	636	2444	1126	378	1865		277	224	190	173	229	
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	0.60	0.60	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.8	9.3	6.4	15.5	35.0	0.0	58.5	58.4	58.9	62.0	57.9	0.0
Incr Delay (d2), s/veh	37.3	0.6	0.0	0.0	22.9	0.0	1.4	0.3	1.3	10.0	0.2	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	15.4	7.7	0.3	0.2	39.0	0.0	2.4	0.3	0.9	3.4	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.1	9.9	6.5	15.6	57.9	0.0	59.9	58.7	60.2	72.1	58.2	0.0
LnGrp LOS	F	A	A	B	F		E	E	E	E	E	
Approach Vol, veh/h		1779			1924			168			124	
Approach Delay, s/veh		41.6			57.7			59.8			71.3	
Approach LOS		D			E			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	22.5	6.5	111.0	9.6	22.9	33.0	84.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	18.0	5.0	103.5	5.1	18.4	28.5	80.0				
Max Q Clear Time (g_c+I1), s	7.5	3.9	2.5	22.7	7.1	2.5	30.5	82.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	11.6	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			51.0									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2: Bradley Rd & Foreign Trade Zone Blvd

2045 Total PM

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	528	1514	86	44	1070	97	75	7	15	238	9	576
Future Volume (vph)	528	1514	86	44	1070	97	75	7	15	238	9	576
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		Free
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	
Total Split (s)	29.4	72.0	72.0	9.5	52.1	52.1	10.5	22.5	22.5	16.0	28.0	
Total Split (%)	24.5%	60.0%	60.0%	7.9%	43.4%	43.4%	8.8%	18.8%	18.8%	13.3%	23.3%	
Yellow Time (s)	3.5	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	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	
Act Effect Green (s)	23.9	69.4	69.4	53.6	48.6	48.6	24.0	18.0	18.0	34.0	25.6	120.0
Actuated g/C Ratio	0.20	0.58	0.58	0.45	0.40	0.40	0.20	0.15	0.15	0.28	0.21	1.00
v/c Ratio	0.88	0.84	0.10	0.35	0.84	0.14	0.28	0.03	0.04	0.68	0.03	0.40
Control Delay	62.7	26.6	0.8	20.8	27.2	1.4	36.1	44.0	0.2	46.7	39.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	26.6	0.8	20.8	27.2	1.4	36.1	44.0	0.2	46.7	39.4	0.7
LOS	E	C	A	C	C	A	D	D	A	D	D	A
Approach Delay		34.5			24.9			31.3			14.5	
Approach LOS		C			C			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 4:EBT and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 27.8

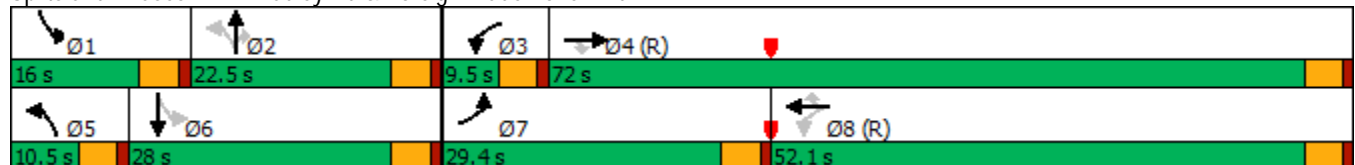
Intersection LOS: C

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Bradley Rd & Foreign Trade Zone Blvd






























HCM 6th Signalized Intersection Summary

2: Bradley Rd & Foreign Trade Zone Blvd

2045 Total PM

01/08/2024

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 							
Traffic Volume (veh/h)	528	1514	86	44	1070	97	75	7	15	238	9	576
Future Volume (veh/h)	528	1514	86	44	1070	97	75	7	15	238	9	576
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	1796	1796	1870	1870	1826	1826	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	574	1646	93	48	1163	0	82	8	16	259	10	0
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, %	7	7	2	2	5	5	2	2	2	2	2	2
Cap, veh/h	635	1948	905	167	1433		360	281	238	434	366	
Arrive On Green	0.19	0.57	0.57	0.03	0.41	0.00	0.05	0.15	0.15	0.10	0.20	0.00
Sat Flow, veh/h	3319	3413	1585	1781	3469	1547	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	574	1646	93	48	1163	0	82	8	16	259	10	0
Grp Sat Flow(s),veh/h/ln	1659	1706	1585	1781	1735	1547	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	20.3	48.0	3.2	1.8	35.5	0.0	4.6	0.4	1.0	11.5	0.5	0.0
Cycle Q Clear(g_c), s	20.3	48.0	3.2	1.8	35.5	0.0	4.6	0.4	1.0	11.5	0.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	635	1948	905	167	1433		360	281	238	434	366	
V/C Ratio(X)	0.90	0.84	0.10	0.29	0.81		0.23	0.03	0.07	0.60	0.03	
Avail Cap(c_a), veh/h	689	1948	905	182	1433		360	281	238	434	366	
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	0.72	0.72	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.5	21.3	11.7	23.1	31.1	0.0	40.3	43.5	43.8	38.8	39.0	0.0
Incr Delay (d2), s/veh	14.8	4.7	0.2	0.7	3.7	0.0	0.3	0.2	0.5	2.2	0.1	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	9.7	19.4	1.2	0.8	15.3	0.0	2.1	0.2	0.4	1.4	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	26.0	12.0	23.8	34.8	0.0	40.6	43.7	44.3	41.1	39.1	0.0
LnGrp LOS	E	C	B	C	C		D	D	D	D	D	
Approach Vol, veh/h	2313			1211			106			269		
Approach Delay, s/veh	34.5			34.4			41.4			41.0		
Approach LOS	C			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	22.5	8.5	73.0	10.5	28.0	27.4	54.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.5	18.0	5.0	67.5	6.0	23.5	24.9	47.6				
Max Q Clear Time (g_c+l1), s	13.5	3.0	3.8	50.0	6.6	2.5	22.3	37.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	12.0	0.0	0.0	0.6	5.7				
Intersection Summary												
HCM 6th Ctrl Delay	35.1											
HCM 6th LOS	D											

Timings

3: Marksheffel Rd & Bradley Rd

Existing AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	280	54	45	347	33	209	697	121	30	223	273
Future Volume (vph)	237	280	54	45	347	33	209	697	121	30	223	273
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	30.0	46.0		13.0	29.0		23.0	48.0		13.0	38.0	
Total Split (%)	25.0%	38.3%		10.8%	24.2%		19.2%	40.0%		10.8%	31.7%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	46.5	36.1	120.0	24.1	18.6	120.0	58.5	50.3	120.0	43.0	37.0	120.0
Actuated g/C Ratio	0.39	0.30	1.00	0.20	0.16	1.00	0.49	0.42	1.00	0.36	0.31	1.00
v/c Ratio	0.67	0.30	0.04	0.22	0.75	0.02	0.45	0.55	0.09	0.14	0.24	0.21
Control Delay	30.2	29.3	0.0	26.2	57.5	0.0	22.4	30.3	0.1	20.7	33.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	29.3	0.0	26.2	57.5	0.0	22.4	30.3	0.1	20.7	33.7	0.3
LOS	C	C	A	C	E	A	C	C	A	C	C	A
Approach Delay		26.9			49.8			25.1			15.6	
Approach LOS		C			D			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 27.6

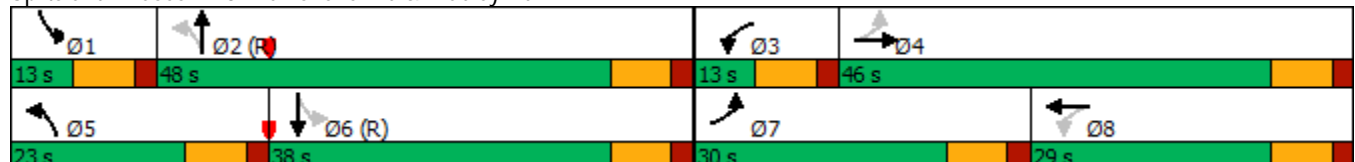
Intersection LOS: C

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

Existing AM
01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	280	54	45	347	33	209	697	121	30	223	273
Future Volume (veh/h)	237	280	54	45	347	33	209	697	121	30	223	273
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	266	315	0	52	403	0	243	810	0	35	262	0
Peak Hour Factor	0.89	0.89	0.89	0.86	0.86	0.86	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	341	874		267	488		589	1553		290	1277	
Arrive On Green	0.14	0.25	0.00	0.03	0.14	0.00	0.10	0.44	0.00	0.03	0.37	0.00
Sat Flow, veh/h	1753	3497	1560	1753	3497	1560	1781	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	266	315	0	52	403	0	243	810	0	35	262	0
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1560	1781	1777	1585	1753	1749	1560
Q Serve(g_s), s	15.0	8.9	0.0	3.0	13.4	0.0	9.8	19.9	0.0	1.5	6.2	0.0
Cycle Q Clear(g_c), s	15.0	8.9	0.0	3.0	13.4	0.0	9.8	19.9	0.0	1.5	6.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	874		267	488		589	1553		290	1277	
V/C Ratio(X)	0.78	0.36		0.19	0.83		0.41	0.52		0.12	0.21	
Avail Cap(c_a), veh/h	415	1122		287	627		641	1553		320	1277	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.9	37.1	0.0	42.2	50.2	0.0	19.0	24.6	0.0	23.1	26.1	0.0
Incr Delay (d2), s/veh	7.6	0.3	0.0	0.4	7.0	0.0	0.5	1.3	0.0	0.2	0.4	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	7.1	3.9	0.0	1.3	6.3	0.0	4.1	8.6	0.0	0.6	2.7	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	43.5	37.4	5.0	42.5	57.3	5.0	19.4	25.9	10.0	23.2	26.5	10.0
LnGrp LOS	D	D	A	D	E	A	B	C	A	C	C	A
Approach Vol, veh/h		642			493			1194			618	
Approach Delay, s/veh		36.8			51.7			22.7			17.7	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	59.9	11.6	37.5	19.6	51.3	24.9	24.3				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.5	40.5	5.5	38.5	15.5	30.5	22.5	21.5				
Max Q Clear Time (g_c+I1), s	3.5	21.9	5.0	10.9	11.8	8.2	17.0	15.4				
Green Ext Time (p_c), s	0.0	5.5	0.0	2.1	0.2	1.6	0.4	1.3				

Intersection Summary

HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

Existing PM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	283	109	108	296	28	69	382	42	17	520	238
Future Volume (vph)	385	283	109	108	296	28	69	382	42	17	520	238
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	42.0	51.0		17.0	26.0		14.0	39.4		12.6	38.0	
Total Split (%)	35.0%	42.5%		14.2%	21.7%		11.7%	32.8%		10.5%	31.7%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	54.5	37.9	120.0	24.8	15.8	120.0	48.1	45.4	120.0	43.1	38.6	120.0
Actuated g/C Ratio	0.45	0.32	1.00	0.21	0.13	1.00	0.40	0.38	1.00	0.36	0.32	1.00
v/c Ratio	0.76	0.28	0.08	0.43	0.69	0.02	0.26	0.32	0.03	0.05	0.50	0.16
Control Delay	30.2	28.3	0.1	27.6	57.9	0.0	25.9	30.1	0.0	24.1	37.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	28.3	0.1	27.6	57.9	0.0	25.9	30.1	0.0	24.1	37.2	0.2
LOS	C	C	A	C	E	A	C	C	A	C	D	A
Approach Delay		25.3			46.6			27.0			25.6	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 29.4

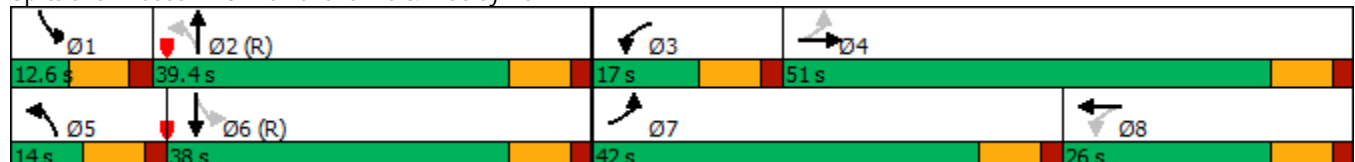
Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

Existing PM
01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	283	109	108	296	28	69	382	42	17	520	238
Future Volume (veh/h)	385	283	109	108	296	28	69	382	42	17	520	238
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	428	314	0	117	322	0	74	411	0	18	565	0
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	491	951		310	402		332	1338		392	1308	
Arrive On Green	0.23	0.27	0.00	0.07	0.11	0.00	0.04	0.39	0.00	0.02	0.37	0.00
Sat Flow, veh/h	1767	3526	1572	1781	3554	1585	1725	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	428	314	0	117	322	0	74	411	0	18	565	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1781	1777	1585	1725	1721	1535	1781	1777	1585
Q Serve(g_s), s	24.6	8.6	0.0	6.9	10.6	0.0	3.2	9.9	0.0	0.8	14.3	0.0
Cycle Q Clear(g_c), s	24.6	8.6	0.0	6.9	10.6	0.0	3.2	9.9	0.0	0.8	14.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	491	951		310	402		332	1338		392	1308	
V/C Ratio(X)	0.87	0.33		0.38	0.80		0.22	0.31		0.05	0.43	
Avail Cap(c_a), veh/h	594	1278		322	548		357	1338		434	1308	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.5	35.1	0.0	42.6	51.9	0.0	22.9	25.4	0.0	23.0	28.5	0.0
Incr Delay (d2), s/veh	11.7	0.2	0.0	0.8	6.0	0.0	0.3	0.6	0.0	0.0	1.0	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	12.0	3.7	0.0	3.1	5.1	0.0	1.3	4.2	0.0	0.3	6.3	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	45.1	35.3	5.0	43.3	57.9	5.0	23.3	26.0	10.0	23.1	29.5	10.0
LnGrp LOS	D	D	A	D	E	A	C	C	A	C	C	A
Approach Vol, veh/h		863			469			530			842	
Approach Delay, s/veh		35.9			50.9			24.3			23.4	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	54.2	16.2	39.9	12.3	51.7	35.0	21.1				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	31.9	9.5	43.5	6.5	30.5	34.5	18.5				
Max Q Clear Time (g_c+I1), s	2.8	11.9	8.9	10.6	5.2	16.3	26.6	12.6				
Green Ext Time (p_c), s	0.0	2.6	0.0	2.2	0.0	3.3	0.9	1.0				

Intersection Summary

HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2025 Background AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	323	58	96	460	34	217	714	136	31	227	287
Future Volume (vph)	257	323	58	96	460	34	217	714	136	31	227	287
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	29.0	46.3		14.7	32.0		23.2	46.4		12.6	35.8	
Total Split (%)	24.2%	38.6%		12.3%	26.7%		19.3%	38.7%		10.5%	29.8%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	50.0	35.3	120.0	29.7	22.5	120.0	55.0	47.4	120.0	38.6	33.2	120.0
Actuated g/C Ratio	0.42	0.29	1.00	0.25	0.19	1.00	0.46	0.40	1.00	0.32	0.28	1.00
v/c Ratio	0.78	0.36	0.04	0.39	0.82	0.03	0.49	0.59	0.10	0.16	0.28	0.22
Control Delay	40.8	27.8	0.1	27.6	57.9	0.0	25.3	33.0	0.1	23.0	36.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	27.8	0.1	27.6	57.9	0.0	25.3	33.0	0.1	23.0	36.7	0.3
LOS	D	C	A	C	E	A	C	C	A	C	D	A
Approach Delay		30.5			49.6			27.3			16.7	
Approach LOS		C			D			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 30.6

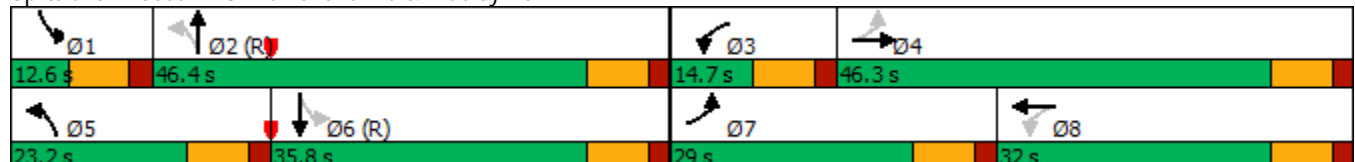
Intersection LOS: C

Intersection Capacity Utilization 75.9%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2025 Background AM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	323	58	96	460	34	217	714	136	31	227	287
Future Volume (veh/h)	257	323	58	96	460	34	217	714	136	31	227	287
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	289	363	0	112	535	0	252	830	0	36	267	0
Peak Hour Factor	0.89	0.89	0.89	0.86	0.86	0.86	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	346	932		343	621		542	1401		247	1094	
Arrive On Green	0.15	0.27	0.00	0.06	0.18	0.00	0.11	0.39	0.00	0.03	0.31	0.00
Sat Flow, veh/h	1753	3497	1560	1753	3497	1560	1781	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	289	363	0	112	535	0	252	830	0	36	267	0
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1560	1781	1777	1585	1753	1749	1560
Q Serve(g_s), s	15.6	10.2	0.0	6.2	17.8	0.0	11.1	22.1	0.0	1.7	6.8	0.0
Cycle Q Clear(g_c), s	15.6	10.2	0.0	6.2	17.8	0.0	11.1	22.1	0.0	1.7	6.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	346	932		343	621		542	1401		247	1094	
V/C Ratio(X)	0.84	0.39		0.33	0.86		0.47	0.59		0.15	0.24	
Avail Cap(c_a), veh/h	399	1131		343	714		578	1401		271	1094	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.1	36.0	0.0	37.3	47.9	0.0	22.3	28.7	0.0	27.2	30.7	0.0
Incr Delay (d2), s/veh	12.8	0.3	0.0	0.5	9.5	0.0	0.6	1.8	0.0	0.3	0.5	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	7.8	4.4	0.0	2.7	8.6	0.0	4.7	9.7	0.0	0.7	3.0	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	45.9	36.3	5.0	37.8	57.4	5.0	22.9	30.6	10.0	27.5	31.2	10.0
LnGrp LOS	D	D	A	D	E	A	C	C	A	C	C	A
Approach Vol, veh/h	717			687			1240			641		
Approach Delay, s/veh	37.3			51.2			26.4			19.8		
Approach LOS	D			D			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	54.8	14.7	39.5	20.8	45.0	25.4	28.8				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	38.9	7.2	38.8	15.7	28.3	21.5	24.5				
Max Q Clear Time (g_c+I1), s	3.7	24.1	8.2	12.2	13.1	8.8	17.6	19.8				
Green Ext Time (p_c), s	0.0	5.1	0.0	2.5	0.2	1.6	0.3	1.5				

Intersection Summary

HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2025 Background PM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	405	406	115	143	372	29	74	401	88	17	530	260
Future Volume (vph)	405	406	115	143	372	29	74	401	88	17	530	260
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	43.0	50.3		19.7	27.0		14.0	37.4		12.6	36.0	
Total Split (%)	35.8%	41.9%		16.4%	22.5%		11.7%	31.2%		10.5%	30.0%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	56.9	38.2	120.0	29.0	17.8	120.0	45.6	43.0	120.0	40.6	36.1	120.0
Actuated g/C Ratio	0.47	0.32	1.00	0.24	0.15	1.00	0.38	0.36	1.00	0.34	0.30	1.00
v/c Ratio	0.81	0.40	0.08	0.52	0.77	0.02	0.30	0.35	0.06	0.05	0.54	0.18
Control Delay	34.6	29.5	0.1	27.9	59.6	0.0	28.5	32.1	0.1	25.6	39.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	29.5	0.1	27.9	59.6	0.0	28.5	32.1	0.1	25.6	39.8	0.2
LOS	C	C	A	C	E	A	C	C	A	C	D	A
Approach Delay		28.1			48.0			26.6			26.7	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 31.2

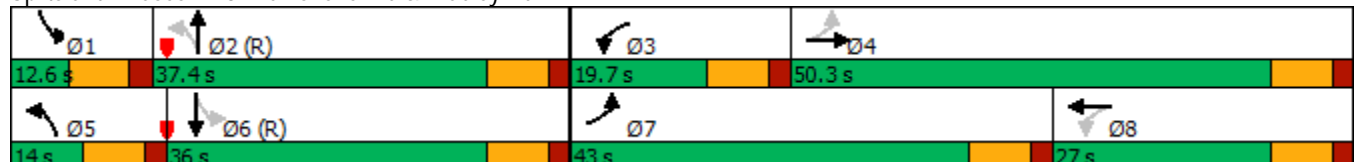
Intersection LOS: C

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2025 Background PM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	406	115	143	372	29	74	401	88	17	530	260
Future Volume (veh/h)	405	406	115	143	372	29	74	401	88	17	530	260
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	450	451	0	155	404	0	80	431	0	18	576	0
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	499	987		348	482		304	1242		351	1195	
Arrive On Green	0.23	0.28	0.00	0.09	0.14	0.00	0.04	0.36	0.00	0.02	0.34	0.00
Sat Flow, veh/h	1767	3526	1572	1781	3554	1585	1725	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	450	451	0	155	404	0	80	431	0	18	576	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1781	1777	1585	1725	1721	1535	1781	1777	1585
Q Serve(g_s), s	25.1	12.7	0.0	8.9	13.3	0.0	3.6	11.0	0.0	0.8	15.4	0.0
Cycle Q Clear(g_c), s	25.1	12.7	0.0	8.9	13.3	0.0	3.6	11.0	0.0	0.8	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	499	987		348	482		304	1242		351	1195	
V/C Ratio(X)	0.90	0.46		0.44	0.84		0.26	0.35		0.05	0.48	
Avail Cap(c_a), veh/h	607	1257		369	577		322	1242		394	1195	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.6	35.7	0.0	39.4	50.6	0.0	25.3	28.0	0.0	25.5	31.6	0.0
Incr Delay (d2), s/veh	14.9	0.3	0.0	0.9	9.1	0.0	0.5	0.8	0.0	0.1	1.4	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	12.6	5.5	0.0	4.0	6.5	0.0	1.5	4.7	0.0	0.3	6.8	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	46.4	36.0	5.0	40.3	59.6	5.0	25.8	28.8	10.0	25.6	33.0	10.0
LnGrp LOS	D	D	A	D	E	A	C	C	A	C	C	A
Approach Vol, veh/h	1029			591			606			877		
Approach Delay, s/veh	36.7			51.6			25.4			25.4		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	50.8	18.3	41.1	12.7	47.8	35.6	23.8				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	29.9	12.2	42.8	6.5	28.5	35.5	19.5				
Max Q Clear Time (g_c+I1), s	2.8	13.0	10.9	14.7	5.6	17.4	27.1	15.3				
Green Ext Time (p_c), s	0.0	2.6	0.1	3.2	0.0	2.9	1.0	1.0				

Intersection Summary

HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2025 Total AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	258	323	59	96	463	34	223	714	136	31	227	298
Future Volume (vph)	258	323	59	96	463	34	223	714	136	31	227	298
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	29.0	46.4		14.6	32.0		23.6	46.4		12.6	35.4	
Total Split (%)	24.2%	38.7%		12.2%	26.7%		19.7%	38.7%		10.5%	29.5%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	50.3	35.7	120.0	29.9	22.8	120.0	54.7	47.1	120.0	37.9	32.5	120.0
Actuated g/C Ratio	0.42	0.30	1.00	0.25	0.19	1.00	0.46	0.39	1.00	0.32	0.27	1.00
v/c Ratio	0.78	0.35	0.04	0.39	0.82	0.03	0.51	0.60	0.10	0.17	0.28	0.23
Control Delay	39.9	27.2	0.1	27.5	57.4	0.0	25.7	33.2	0.1	23.2	37.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	27.2	0.1	27.5	57.4	0.0	25.7	33.2	0.1	23.2	37.2	0.3
LOS	D	C	A	C	E	A	C	C	A	C	D	A
Approach Delay		29.8			49.2			27.5			16.6	
Approach LOS		C			D			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 30.4

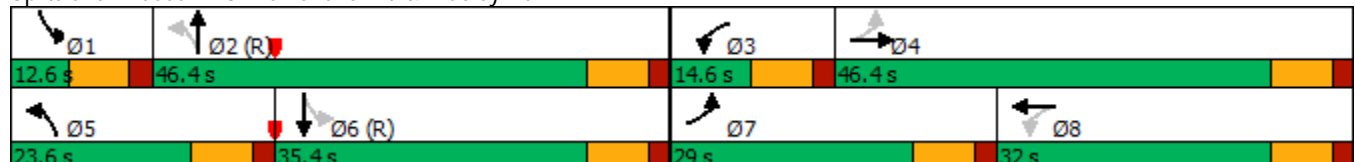
Intersection LOS: C

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



























HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

2025 Total AM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	258	323	59	96	463	34	223	714	136	31	227	298
Future Volume (veh/h)	258	323	59	96	463	34	223	714	136	31	227	298
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	290	363	0	112	538	0	259	830	0	36	267	0
Peak Hour Factor	0.89	0.89	0.89	0.86	0.86	0.86	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	346	939		342	623		542	1398		247	1079	
Arrive On Green	0.15	0.27	0.00	0.06	0.18	0.00	0.11	0.39	0.00	0.03	0.31	0.00
Sat Flow, veh/h	1753	3497	1560	1753	3497	1560	1781	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	290	363	0	112	538	0	259	830	0	36	267	0
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1560	1781	1777	1585	1753	1749	1560
Q Serve(g_s), s	15.6	10.2	0.0	6.2	17.9	0.0	11.5	22.2	0.0	1.7	6.9	0.0
Cycle Q Clear(g_c), s	15.6	10.2	0.0	6.2	17.9	0.0	11.5	22.2	0.0	1.7	6.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	346	939		342	623		542	1398		247	1079	
V/C Ratio(X)	0.84	0.39		0.33	0.86		0.48	0.59		0.15	0.25	
Avail Cap(c_a), veh/h	399	1134		342	714		579	1398		270	1079	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.0	35.8	0.0	37.3	47.9	0.0	22.5	28.8	0.0	27.5	31.1	0.0
Incr Delay (d2), s/veh	13.0	0.3	0.0	0.6	9.7	0.0	0.7	1.9	0.0	0.3	0.5	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(95%),veh/ln	12.4	7.8	0.0	4.9	13.4	0.0	8.5	14.9	0.0	1.3	5.4	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	46.0	36.1	5.0	37.8	57.6	5.0	23.2	30.7	10.0	27.8	31.6	10.0
LnGrp LOS	D	D	A	D	E	A	C	C	A	C	C	A
Approach Vol, veh/h	719			690			1247			654		
Approach Delay, s/veh	37.2			51.3			26.5			19.8		
Approach LOS	D			D			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	54.7	14.6	39.7	21.2	44.5	25.4	28.9				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	38.9	7.1	38.9	16.1	27.9	21.5	24.5				
Max Q Clear Time (g_c+I1), s	3.7	24.2	8.2	12.2	13.5	8.9	17.6	19.9				
Green Ext Time (p_c), s	0.0	5.1	0.0	2.5	0.2	1.6	0.3	1.5				

Intersection Summary

HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2025 Total PM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	411	408	119	143	372	29	74	401	88	17	530	261
Future Volume (vph)	411	408	119	143	372	29	74	401	88	17	530	261
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	43.0	50.3		19.7	27.0		13.2	37.4		12.6	36.8	
Total Split (%)	35.8%	41.9%		16.4%	22.5%		11.0%	31.2%		10.5%	30.7%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	57.2	38.6	120.0	29.0	17.8	120.0	45.0	42.7	120.0	40.8	36.4	120.0
Actuated g/C Ratio	0.48	0.32	1.00	0.24	0.15	1.00	0.38	0.36	1.00	0.34	0.30	1.00
v/c Ratio	0.82	0.40	0.08	0.52	0.77	0.02	0.31	0.36	0.06	0.05	0.54	0.18
Control Delay	34.8	29.2	0.1	27.8	59.6	0.0	29.1	32.3	0.1	25.6	39.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	29.2	0.1	27.8	59.6	0.0	29.1	32.3	0.1	25.6	39.3	0.2
LOS	C	C	A	C	E	A	C	C	A	C	D	A
Approach Delay		28.0			48.0			26.8			26.4	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 31.1

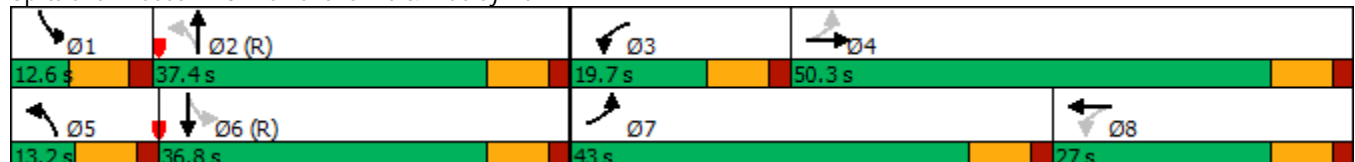
Intersection LOS: C

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



























HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

2025 Total PM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	411	408	119	143	372	29	74	401	88	17	530	261
Future Volume (veh/h)	411	408	119	143	372	29	74	401	88	17	530	261
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	457	453	0	155	404	0	80	431	0	18	576	0
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	504	998		348	482		301	1231		348	1183	
Arrive On Green	0.24	0.28	0.00	0.09	0.14	0.00	0.04	0.36	0.00	0.02	0.33	0.00
Sat Flow, veh/h	1767	3526	1572	1781	3554	1585	1725	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	457	453	0	155	404	0	80	431	0	18	576	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1781	1777	1585	1725	1721	1535	1781	1777	1585
Q Serve(g_s), s	25.5	12.7	0.0	8.9	13.3	0.0	3.6	11.0	0.0	0.8	15.5	0.0
Cycle Q Clear(g_c), s	25.5	12.7	0.0	8.9	13.3	0.0	3.6	11.0	0.0	0.8	15.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	504	998		348	482		301	1231		348	1183	
V/C Ratio(X)	0.91	0.45		0.45	0.84		0.27	0.35		0.05	0.49	
Avail Cap(c_a), veh/h	607	1257		368	577		307	1231		390	1183	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.4	35.4	0.0	39.4	50.6	0.0	25.6	28.3	0.0	25.8	31.9	0.0
Incr Delay (d2), s/veh	15.5	0.3	0.0	0.9	9.1	0.0	0.5	0.8	0.0	0.1	1.4	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(95%),veh/ln	18.8	9.4	0.0	7.1	10.7	0.0	2.8	8.2	0.0	0.6	11.2	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	46.9	35.7	5.0	40.3	59.6	5.0	26.0	29.1	10.0	25.8	33.3	10.0
LnGrp LOS	D	D	A	D	E	A	C	C	A	C	C	A
Approach Vol, veh/h	1042				591			606			878	
Approach Delay, s/veh	36.7				51.6			25.7			25.6	
Approach LOS	D				D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	50.4	18.3	41.5	12.7	47.4	36.0	23.8				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	29.9	12.2	42.8	5.7	29.3	35.5	19.5				
Max Q Clear Time (g_c+I1), s	2.8	13.0	10.9	14.7	5.6	17.5	27.5	15.3				
Green Ext Time (p_c), s	0.0	2.6	0.1	3.2	0.0	3.0	1.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			34.3									
HCM 6th LOS			C									

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2030 Background AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	379	114	97	557	54	318	768	141	37	248	436
Future Volume (vph)	414	379	114	97	557	54	318	768	141	37	248	436
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	29.0	48.6		14.4	34.0		28.0	44.5		12.5	29.0	
Total Split (%)	24.2%	40.5%		12.0%	28.3%		23.3%	37.1%		10.4%	24.2%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	19.8	37.8	120.0	31.8	24.9	120.0	52.8	42.5	120.0	31.9	26.5	120.0
Actuated g/C Ratio	0.16	0.32	1.00	0.26	0.21	1.00	0.44	0.35	1.00	0.27	0.22	1.00
v/c Ratio	0.81	0.38	0.08	0.36	0.84	0.04	0.67	0.67	0.10	0.21	0.35	0.31
Control Delay	57.9	59.7	0.1	25.4	56.9	0.0	32.0	37.7	0.1	25.9	42.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	59.7	0.1	25.4	56.9	0.0	32.0	37.7	0.1	25.9	42.9	0.5
LOS	E	E	A	C	E	A	C	D	A	C	D	A
Approach Delay		51.4			48.3			31.9			16.4	
Approach LOS		D			D			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 37.0

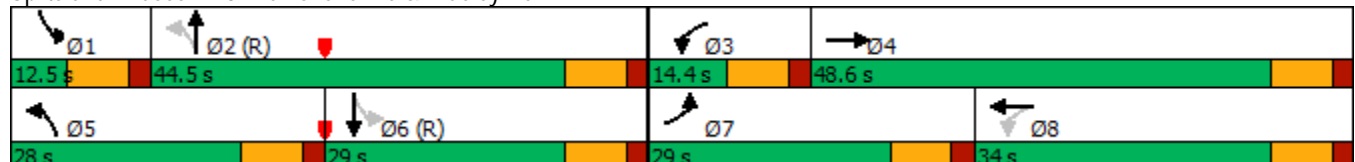
Intersection LOS: D

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



























HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

2030 Background AM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	414	379	114	97	557	54	318	768	141	37	248	436
Future Volume (veh/h)	414	379	114	97	557	54	318	768	141	37	248	436
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	450	412	0	105	605	0	346	835	0	40	270	0
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, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	516	1021		350	692		541	1315		228	846	
Arrive On Green	0.15	0.29	0.00	0.06	0.20	0.00	0.16	0.37	0.00	0.03	0.24	0.00
Sat Flow, veh/h	3401	3497	1560	1753	3497	1560	1781	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	450	412	0	105	605	0	346	835	0	40	270	0
Grp Sat Flow(s),veh/h/ln	1700	1749	1560	1753	1749	1560	1781	1777	1585	1753	1749	1560
Q Serve(g_s), s	15.5	11.3	0.0	5.7	20.1	0.0	16.9	23.2	0.0	2.0	7.6	0.0
Cycle Q Clear(g_c), s	15.5	11.3	0.0	5.7	20.1	0.0	16.9	23.2	0.0	2.0	7.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	516	1021		350	692		541	1315		228	846	
V/C Ratio(X)	0.87	0.40		0.30	0.87		0.64	0.64		0.18	0.32	
Avail Cap(c_a), veh/h	609	1198		350	772		562	1315		247	846	
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)	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.8	34.1	0.0	35.4	46.7	0.0	25.8	31.1	0.0	32.8	37.4	0.0
Incr Delay (d2), s/veh	10.4	0.2	0.0	0.5	10.2	0.0	2.3	2.3	0.0	0.4	1.0	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	7.3	4.9	0.0	2.5	9.7	0.0	7.4	10.3	0.0	0.9	3.4	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	60.2	34.3	5.0	35.9	56.9	5.0	28.2	33.5	10.0	33.1	38.4	10.0
LnGrp LOS	E	C	A	D	E	A	C	C	A	C	D	A
Approach Vol, veh/h	986			769			1334			784		
Approach Delay, s/veh	42.4			50.0			29.4			21.0		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	51.9	14.4	42.5	26.6	36.5	25.7	31.2				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.0	37.0	6.9	41.1	20.5	21.5	21.5	26.5				
Max Q Clear Time (g_c+I1), s	4.0	25.2	7.7	13.3	18.9	9.6	17.5	22.1				
Green Ext Time (p_c), s	0.0	4.5	0.0	2.9	0.2	1.3	0.7	1.6				

Intersection Summary

HCM 6th Ctrl Delay 35.1

HCM 6th LOS D

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

2030 Background PM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	596	496	224	147	451	45	166	440	89	45	592	466
Future Volume (vph)	596	496	224	147	451	45	166	440	89	45	592	466
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	35.0	43.0		20.0	28.0		19.0	44.4		12.6	38.0	
Total Split (%)	29.2%	35.8%		16.7%	23.3%		15.8%	37.0%		10.5%	31.7%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	26.1	34.5	120.0	30.9	19.7	120.0	50.6	41.4	120.0	38.7	33.3	120.0
Actuated g/C Ratio	0.22	0.29	1.00	0.26	0.16	1.00	0.42	0.34	1.00	0.32	0.28	1.00
v/c Ratio	0.88	0.53	0.15	0.53	0.85	0.03	0.64	0.41	0.06	0.15	0.66	0.32
Control Delay	57.1	65.1	0.1	29.3	63.0	0.0	34.0	32.7	0.1	23.2	42.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	65.1	0.1	29.3	63.0	0.0	34.0	32.7	0.1	23.2	42.9	0.5
LOS	E	E	A	C	E	A	C	C	A	C	D	A
Approach Delay		50.4			50.8			28.9			24.2	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 38.8

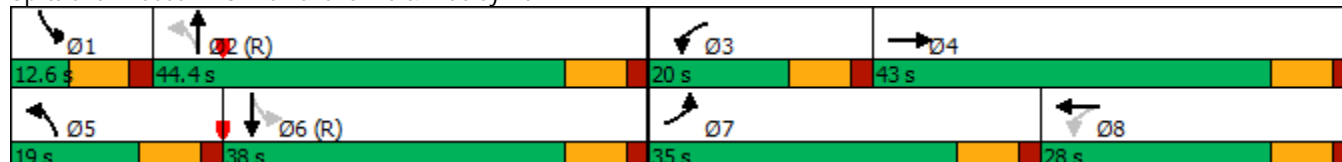
Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2030 Background PM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	596	496	224	147	451	45	166	440	89	45	592	466
Future Volume (veh/h)	596	496	224	147	451	45	166	440	89	45	592	466
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	648	539	0	160	490	0	180	478	0	49	643	0
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, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	707	962		358	560		321	1214		347	1062	
Arrive On Green	0.34	0.46	0.00	0.09	0.16	0.00	0.09	0.35	0.00	0.03	0.30	0.00
Sat Flow, veh/h	3428	3526	1572	1781	3554	1585	1725	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	648	539	0	160	490	0	180	478	0	49	643	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1781	1777	1585	1725	1721	1535	1781	1777	1585
Q Serve(g_s), s	21.7	13.4	0.0	8.9	16.2	0.0	8.5	12.5	0.0	2.3	18.6	0.0
Cycle Q Clear(g_c), s	21.7	13.4	0.0	8.9	16.2	0.0	8.5	12.5	0.0	2.3	18.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	707	962		358	560		321	1214		347	1062	
V/C Ratio(X)	0.92	0.56		0.45	0.88		0.56	0.39		0.14	0.61	
Avail Cap(c_a), veh/h	786	1043		382	607		335	1214		363	1062	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.4	27.4	0.0	37.2	49.4	0.0	26.7	29.2	0.0	27.7	36.0	0.0
Incr Delay (d2), s/veh	9.0	0.3	0.0	0.9	12.8	0.0	2.0	1.0	0.0	0.2	2.6	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	8.9	4.9	0.0	4.0	8.2	0.0	3.6	5.3	0.0	1.0	8.4	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	47.4	27.7	5.0	38.1	62.2	5.0	28.6	30.1	10.0	27.8	38.6	10.0
LnGrp LOS	D	C	A	D	E	A	C	C	A	C	D	A
Approach Vol, veh/h	1430			699			755			1199		
Approach Delay, s/veh	32.8			52.7			27.2			26.1		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	49.8	18.4	40.2	18.0	43.4	32.2	26.4				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	36.9	12.5	35.5	11.5	30.5	27.5	20.5				
Max Q Clear Time (g_c+I1), s	4.3	14.5	10.9	15.4	10.5	20.6	23.7	18.2				
Green Ext Time (p_c), s	0.0	3.2	0.1	3.6	0.1	3.1	1.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2030 Total AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	464	392	144	97	582	54	378	768	141	37	248	536
Future Volume (vph)	464	392	144	97	582	54	378	768	141	37	248	536
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	29.2	48.2		14.4	33.4		30.0	44.9		12.5	27.4	
Total Split (%)	24.3%	40.2%		12.0%	27.8%		25.0%	37.4%		10.4%	22.8%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	20.9	38.9	120.0	31.9	25.0	120.0	51.7	41.5	120.0	27.7	22.5	120.0
Actuated g/C Ratio	0.17	0.32	1.00	0.27	0.21	1.00	0.43	0.35	1.00	0.23	0.19	1.00
v/c Ratio	0.86	0.38	0.10	0.36	0.88	0.04	0.80	0.68	0.10	0.21	0.42	0.38
Control Delay	41.2	26.4	0.1	25.4	60.2	0.0	39.3	38.4	0.1	26.7	46.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	26.4	0.1	25.4	60.2	0.0	39.3	38.4	0.1	26.7	46.3	0.7
LOS	D	C	A	C	E	A	D	D	A	C	D	A
Approach Delay		29.5			51.2			34.5			15.7	
Approach LOS		C			D			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 32.4

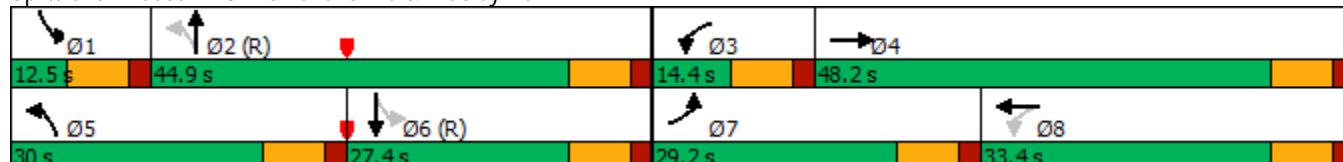
Intersection LOS: C

Intersection Capacity Utilization 82.1%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2030 Total AM
01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	464	392	144	97	582	54	378	768	141	37	248	536
Future Volume (veh/h)	464	392	144	97	582	54	378	768	141	37	248	536
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	504	426	0	105	633	0	411	835	0	40	270	0
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, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	570	1093		349	708		533	1242		211	674	
Arrive On Green	0.06	0.10	0.00	0.06	0.20	0.00	0.19	0.35	0.00	0.03	0.19	0.00
Sat Flow, veh/h	3401	3497	1560	1753	3497	1560	1781	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	504	426	0	105	633	0	411	835	0	40	270	0
Grp Sat Flow(s),veh/h/ln	1700	1749	1560	1753	1749	1560	1781	1777	1585	1753	1749	1560
Q Serve(g_s), s	17.7	13.7	0.0	5.7	21.2	0.0	21.7	24.0	0.0	2.2	8.1	0.0
Cycle Q Clear(g_c), s	17.7	13.7	0.0	5.7	21.2	0.0	21.7	24.0	0.0	2.2	8.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	1093		349	708		533	1242		211	674	
V/C Ratio(X)	0.88	0.39		0.30	0.89		0.77	0.67		0.19	0.40	
Avail Cap(c_a), veh/h	615	1186		349	755		533	1242		230	674	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.5	43.1	0.0	35.0	46.6	0.0	29.1	33.2	0.0	37.2	42.4	0.0
Incr Delay (d2), s/veh	12.7	0.2	0.0	0.5	12.7	0.0	6.9	2.9	0.0	0.4	1.8	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(95%),veh/ln	13.8	10.4	0.0	4.5	15.7	0.0	15.4	16.1	0.0	1.7	6.6	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	68.2	43.3	5.0	35.4	59.3	5.0	35.9	36.1	10.0	37.6	44.2	10.0
LnGrp LOS	E	D	A	D	E	A	D	D	A	D	D	A
Approach Vol, veh/h	1087			797			1399			893		
Approach Delay, s/veh	49.3			52.2			33.2			21.6		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	49.4	14.4	45.0	30.0	30.6	27.6	31.8				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.0	37.4	6.9	40.7	22.5	19.9	21.7	25.9				
Max Q Clear Time (g_c+I1), s	4.2	26.0	7.7	15.7	23.7	10.1	19.7	23.2				
Green Ext Time (p_c), s	0.0	4.4	0.0	2.9	0.0	1.1	0.4	1.1				

Intersection Summary

HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2030 Total PM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	691	520	281	147	468	45	207	440	89	45	592	534
Future Volume (vph)	691	520	281	147	468	45	207	440	89	45	592	534
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	37.0	44.8		20.2	28.0		20.0	42.4		12.6	35.0	
Total Split (%)	30.8%	37.3%		16.8%	23.3%		16.7%	35.3%		10.5%	29.2%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	28.8	37.6	120.0	31.1	19.9	120.0	48.7	38.7	120.0	34.0	28.8	120.0
Actuated g/C Ratio	0.24	0.31	1.00	0.26	0.17	1.00	0.41	0.32	1.00	0.28	0.24	1.00
v/c Ratio	0.92	0.52	0.19	0.53	0.87	0.03	0.84	0.44	0.06	0.17	0.76	0.37
Control Delay	50.5	49.0	0.2	28.5	64.7	0.0	52.7	34.9	0.1	25.1	49.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	49.0	0.2	28.5	64.7	0.0	52.7	34.9	0.1	25.1	49.4	0.7
LOS	D	D	A	C	E	A	D	C	A	C	D	A
Approach Delay		40.5			52.3			35.7			26.2	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 37.4

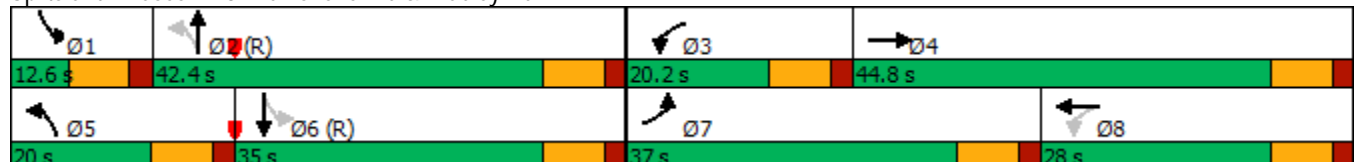
Intersection LOS: D

Intersection Capacity Utilization 85.5%

ICU Level of Service E






























Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2030 Total PM
01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Traffic Volume (veh/h)	691	520	281	147	468	45	207	440	89	45	592	534
Future Volume (veh/h)	691	520	281	147	468	45	207	440	89	45	592	534
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	751	565	0	160	509	0	225	478	0	49	643	0
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, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	817	1091		355	574		300	1089		309	874	
Arrive On Green	0.08	0.10	0.00	0.09	0.16	0.00	0.10	0.32	0.00	0.03	0.25	0.00
Sat Flow, veh/h	3428	3526	1572	1781	3554	1585	1725	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	751	565	0	160	509	0	225	478	0	49	643	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1781	1777	1585	1725	1721	1535	1781	1777	1585
Q Serve(g_s), s	26.1	18.2	0.0	8.9	16.8	0.0	11.4	13.2	0.0	2.4	20.0	0.0
Cycle Q Clear(g_c), s	26.1	18.2	0.0	8.9	16.8	0.0	11.4	13.2	0.0	2.4	20.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	817	1091		355	574		300	1089		309	874	
V/C Ratio(X)	0.92	0.52		0.45	0.89		0.75	0.44		0.16	0.74	
Avail Cap(c_a), veh/h	843	1096		382	607		300	1089		325	874	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	45.4	0.0	36.9	49.2	0.0	30.5	32.6	0.0	32.1	41.7	0.0
Incr Delay (d2), s/veh	10.2	0.3	0.0	0.9	14.3	0.0	10.0	1.3	0.0	0.2	5.5	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(95%),veh/ln	17.9	12.5	0.0	7.1	13.4	0.0	9.4	9.6	0.0	2.0	14.4	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	64.3	45.7	5.0	37.8	63.5	5.0	40.6	33.8	10.0	32.4	47.2	10.0
LnGrp LOS	E	D	A	D	E	A	D	C	A	C	D	A
Approach Vol, veh/h	1621			718			800			1272		
Approach Delay, s/veh	46.6			53.8			32.8			29.6		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	45.5	18.4	44.6	20.0	37.0	36.1	26.9				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.1	34.9	12.7	37.3	12.5	27.5	29.5	20.5				
Max Q Clear Time (g_c+I1), s	4.4	15.2	10.9	20.2	13.4	22.0	28.1	18.8				
Green Ext Time (p_c), s	0.0	3.1	0.1	3.5	0.0	2.0	0.5	0.6				

Intersection Summary

HCM 6th Ctrl Delay 40.4
HCM 6th LOS D

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2045 Background AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	464	452	145	102	746	123	454	936	154	57	299	544
Future Volume (vph)	464	452	145	102	746	123	454	936	154	57	299	544
Turn Type	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free			Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.0	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	26.0	48.4		14.6	37.0		28.2	44.5		12.5	28.8	
Total Split (%)	21.7%	40.3%		12.2%	30.8%		23.5%	37.1%		10.4%	24.0%	
Yellow Time (s)	5.0	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	19.0	40.9	120.0	36.6	29.5	120.0	20.0	39.5	120.0	27.0	22.0	120.0
Actuated g/C Ratio	0.16	0.34	1.00	0.30	0.25	1.00	0.17	0.33	1.00	0.22	0.18	1.00
v/c Ratio	0.95	0.41	0.10	0.35	0.95	0.09	0.86	0.87	0.11	0.47	0.51	0.38
Control Delay	97.4	24.1	0.1	24.0	65.8	0.1	64.3	48.2	0.1	36.3	47.7	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.4	24.1	0.1	24.0	65.8	0.1	64.3	48.2	0.1	36.3	47.7	0.7
LOS	F	C	A	C	E	A	E	D	A	D	D	A
Approach Delay		52.9			53.1			48.2			18.6	
Approach LOS		D			D			D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 44.4

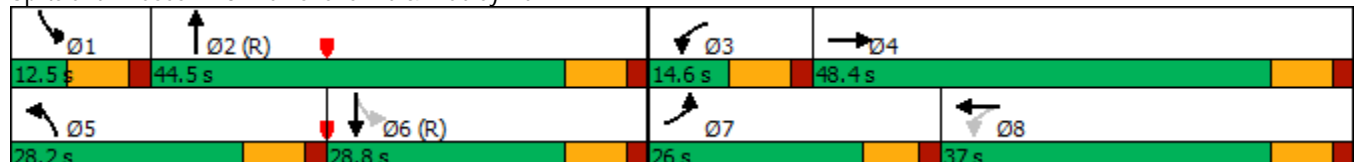
Intersection LOS: D

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



























HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

2045 Background AM

01/10/2024

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	464	452	145	102	746	123	454	936	154	57	299	544
Future Volume (veh/h)	464	452	145	102	746	123	454	936	154	57	299	544
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	504	491	0	111	811	0	493	1017	0	62	325	0
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, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	538	1190		382	858		553	1106		148	667	
Arrive On Green	0.26	0.57	0.00	0.06	0.25	0.00	0.16	0.31	0.00	0.04	0.19	0.00
Sat Flow, veh/h	3401	3497	1560	1753	3497	1560	3456	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	504	491	0	111	811	0	493	1017	0	62	325	0
Grp Sat Flow(s),veh/h/ln	1700	1749	1560	1753	1749	1560	1728	1777	1585	1753	1749	1560
Q Serve(g_s), s	17.4	9.5	0.0	5.6	27.3	0.0	16.8	33.1	0.0	3.4	9.9	0.0
Cycle Q Clear(g_c), s	17.4	9.5	0.0	5.6	27.3	0.0	16.8	33.1	0.0	3.4	9.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	538	1190		382	858		553	1106		148	667	
V/C Ratio(X)	0.94	0.41		0.29	0.95		0.89	0.92		0.42	0.49	
Avail Cap(c_a), veh/h	538	1192		382	860		596	1106		152	667	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.5	19.1	0.0	31.0	44.5	0.0	49.4	39.9	0.0	38.5	43.3	0.0
Incr Delay (d2), s/veh	22.0	0.2	0.0	0.4	18.8	0.0	15.0	13.5	0.0	1.9	2.5	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	8.2	3.4	0.0	2.4	14.0	0.0	8.4	16.4	0.0	1.5	4.6	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	65.5	19.3	5.0	31.4	63.3	5.0	64.4	53.4	10.0	40.4	45.9	10.0
LnGrp LOS	E	B	A	C	E	A	E	D	A	D	D	A
Approach Vol, veh/h	1153				1056		1677				978	
Approach Delay, s/veh	37.6				52.5		52.3				23.8	
Approach LOS	D				D		D				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	44.9	14.6	48.3	26.7	30.4	26.0	36.9				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.0	7.5				
Max Green Setting (Gmax), s	5.0	37.0	7.1	40.9	20.7	21.3	19.0	29.5				
Max Q Clear Time (g_c+I1), s	5.4	35.1	7.6	11.5	18.8	11.9	19.4	29.3				
Green Ext Time (p_c), s	0.0	1.2	0.0	3.6	0.4	1.4	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			43.1									
HCM 6th LOS			D									

Timings

2045 Background PM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	662	631	276	159	521	104	176	565	94	151	793	487
Future Volume (vph)	662	631	276	159	521	104	176	565	94	151	793	487
Turn Type	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free			Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	35.0	46.4		17.6	29.0		14.0	38.5		17.5	42.0	
Total Split (%)	29.2%	38.7%		14.7%	24.2%		11.7%	32.1%		14.6%	35.0%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	27.1	38.5	120.0	31.0	21.2	120.0	7.2	32.0	120.0	44.2	34.5	120.0
Actuated g/C Ratio	0.23	0.32	1.00	0.26	0.18	1.00	0.06	0.27	1.00	0.37	0.29	1.00
v/c Ratio	0.94	0.61	0.19	0.63	0.91	0.07	0.96	0.68	0.07	0.60	0.85	0.33
Control Delay	62.7	22.5	0.2	34.0	68.0	0.1	112.1	44.0	0.1	33.5	49.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	22.5	0.2	34.0	68.0	0.1	112.1	44.0	0.1	33.5	49.4	0.6
LOS	E	C	A	C	E	A	F	D	A	C	D	A
Approach Delay		35.5			52.1			53.4			31.1	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 40.2

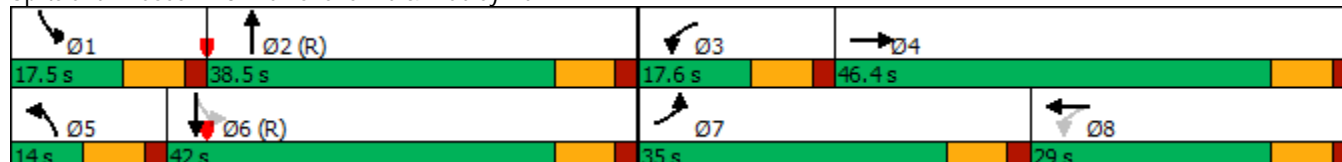
Intersection LOS: D

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2045 Background PM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	662	631	276	159	521	104	176	565	94	151	793	487
Future Volume (veh/h)	662	631	276	159	521	104	176	565	94	151	793	487
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	720	686	0	173	566	0	191	614	0	164	862	0
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, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	768	1111		333	623		181	923		295	1053	
Arrive On Green	0.30	0.42	0.00	0.08	0.18	0.00	0.05	0.27	0.00	0.08	0.30	0.00
Sat Flow, veh/h	3428	3526	1572	1781	3554	1585	3346	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	720	686	0	173	566	0	191	614	0	164	862	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1781	1777	1585	1673	1721	1535	1781	1777	1585
Q Serve(g_s), s	24.5	18.3	0.0	9.6	18.7	0.0	6.5	19.1	0.0	7.9	27.0	0.0
Cycle Q Clear(g_c), s	24.5	18.3	0.0	9.6	18.7	0.0	6.5	19.1	0.0	7.9	27.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	768	1111		333	623		181	923		295	1053	
V/C Ratio(X)	0.94	0.62		0.52	0.91		1.05	0.66		0.56	0.82	
Avail Cap(c_a), veh/h	786	1143		333	637		181	923		297	1053	
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.3	29.2	0.0	36.4	48.5	0.0	56.8	39.1	0.0	29.8	39.2	0.0
Incr Delay (d2), s/veh	12.0	0.5	0.0	1.4	16.8	0.0	81.8	3.8	0.0	2.3	7.1	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	11.1	7.3	0.0	4.3	9.7	0.0	4.8	8.5	0.0	3.6	12.7	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	53.3	29.7	5.0	37.9	65.3	5.0	138.5	42.9	10.0	32.0	46.3	10.0
LnGrp LOS	D	C	A	D	E	A	F	D	A	C	D	A
Approach Vol, veh/h	1706			852			907			1555		
Approach Delay, s/veh	35.3			51.7			59.3			32.4		
Approach LOS	D			D			E			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.4	39.7	17.6	45.3	14.0	43.1	34.4	28.5				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	10.0	31.0	10.1	38.9	6.5	34.5	27.5	21.5				
Max Q Clear Time (g_c+I1), s	9.9	21.1	11.6	20.3	8.5	29.0	26.5	20.7				
Green Ext Time (p_c), s	0.0	2.9	0.0	4.6	0.0	2.7	0.3	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	41.5											
HCM 6th LOS	D											

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2045 Total AM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	465	175	102	771	123	514	936	154	57	299	644
Future Volume (vph)	514	465	175	102	771	123	514	936	154	57	299	644
Turn Type	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free			Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	28.0	49.4		14.6	36.0		28.0	43.5		12.5	28.0	
Total Split (%)	23.3%	41.2%		12.2%	30.0%		23.3%	36.3%		10.4%	23.3%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	20.5	42.0	120.0	35.5	28.5	120.0	20.5	38.5	120.0	25.5	20.5	120.0
Actuated g/C Ratio	0.17	0.35	1.00	0.30	0.24	1.00	0.17	0.32	1.00	0.21	0.17	1.00
v/c Ratio	0.97	0.42	0.12	0.37	1.02	0.09	0.95	0.90	0.11	0.47	0.55	0.45
Control Delay	81.0	31.0	0.2	24.1	81.1	0.1	77.0	51.0	0.1	36.9	49.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	31.0	0.2	24.1	81.1	0.1	77.0	51.0	0.1	36.9	49.5	0.9
LOS	F	C	A	C	F	A	E	D	A	D	D	A
Approach Delay		48.6			65.2			54.5			17.5	
Approach LOS		D			E			D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 47.5

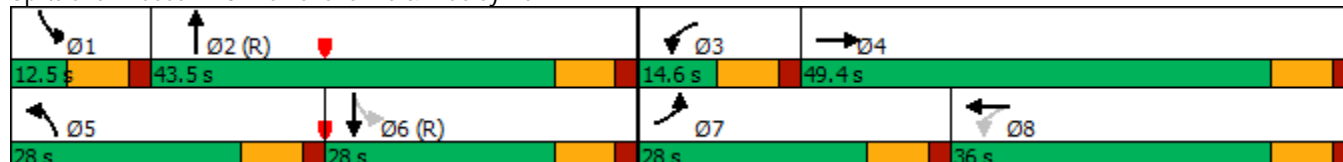
Intersection LOS: D

Intersection Capacity Utilization 91.0%

ICU Level of Service F

























Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



HCM 6th Signalized Intersection Summary 3: Marksheffel Rd & Bradley Rd

2045 Total AM
01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	514	465	175	102	771	123	514	936	154	57	299	644
Future Volume (veh/h)	514	465	175	102	771	123	514	936	154	57	299	644
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	1841	1841	1841	1841	1841	1841	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	559	505	0	111	838	0	559	1017	0	62	325	0
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, %	4	4	4	4	4	4	2	2	2	4	4	4
Cap, veh/h	581	1221		373	831		590	1073		142	597	
Arrive On Green	0.17	0.35	0.00	0.06	0.24	0.00	0.17	0.30	0.00	0.04	0.17	0.00
Sat Flow, veh/h	3401	3497	1560	1753	3497	1560	3456	3554	1585	1753	3497	1560
Grp Volume(v), veh/h	559	505	0	111	838	0	559	1017	0	62	325	0
Grp Sat Flow(s),veh/h/ln	1700	1749	1560	1753	1749	1560	1728	1777	1585	1753	1749	1560
Q Serve(g_s), s	19.6	13.2	0.0	5.7	28.5	0.0	19.2	33.6	0.0	3.5	10.2	0.0
Cycle Q Clear(g_c), s	19.6	13.2	0.0	5.7	28.5	0.0	19.2	33.6	0.0	3.5	10.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	581	1221		373	831		590	1073		142	597	
V/C Ratio(X)	0.96	0.41		0.30	1.01		0.95	0.95		0.44	0.54	
Avail Cap(c_a), veh/h	581	1221		373	831		590	1073		145	597	
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)	0.88	0.88	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.4	29.7	0.0	31.7	45.7	0.0	49.2	41.0	0.0	40.3	45.5	0.0
Incr Delay (d2), s/veh	25.9	0.2	0.0	0.4	33.4	0.0	24.6	17.5	0.0	2.1	3.5	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	10.4	5.6	0.0	2.5	16.1	0.0	10.3	17.1	0.0	1.6	4.7	0.0
Unsig. Movement Delay, s/veh			5.00			5.00			10.00			10.00
LnGrp Delay(d),s/veh	75.2	29.9	5.0	32.1	79.2	5.0	73.8	58.5	10.0	42.4	49.0	10.0
LnGrp LOS	E	C	A	C	F	A	E	E	A	D	D	A
Approach Vol, veh/h	1254			1083			1743			1087		
Approach Delay, s/veh	46.3			65.2			58.8			23.5		
Approach LOS	D			E			E			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	43.7	14.6	49.4	28.0	28.0	28.0	36.0				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	5.0	36.0	7.1	41.9	20.5	20.5	20.5	28.5				
Max Q Clear Time (g_c+I1), s	5.5	35.6	7.7	15.2	21.2	12.2	21.6	30.5				
Green Ext Time (p_c), s	0.0	0.3	0.0	3.6	0.0	1.3	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 49.7
HCM 6th LOS D

Notes

























Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

Timings

3: Marksheffel Rd & Bradley Rd

2045 Total PM

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	757	655	333	159	538	104	217	565	94	151	793	555
Future Volume (vph)	757	655	333	159	538	104	217	565	94	151	793	555
Turn Type	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		Free			Free	6		Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	12.5	25.5		12.5	25.5		12.5	25.5		12.5	25.5	
Total Split (s)	37.0	42.9		22.1	28.0		16.6	38.8		16.2	38.4	
Total Split (%)	30.8%	35.8%		18.4%	23.3%		13.8%	32.3%		13.5%	32.0%	
Yellow Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.5	7.5		7.5	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	29.5	38.1	120.0	32.4	20.5	120.0	9.1	31.3	120.0	39.6	30.9	120.0
Actuated g/C Ratio	0.25	0.32	1.00	0.27	0.17	1.00	0.08	0.26	1.00	0.33	0.26	1.00
v/c Ratio	0.99	0.64	0.23	0.58	0.97	0.07	0.94	0.69	0.07	0.65	0.95	0.38
Control Delay	63.2	24.8	0.2	29.8	79.3	0.1	99.6	44.8	0.1	38.5	63.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	24.8	0.2	29.8	79.3	0.1	99.6	44.8	0.1	38.5	63.4	0.7
LOS	E	C	A	C	E	A	F	D	A	D	E	A
Approach Delay		36.8			59.2			53.6			37.7	
Approach LOS		D			E			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 43.7

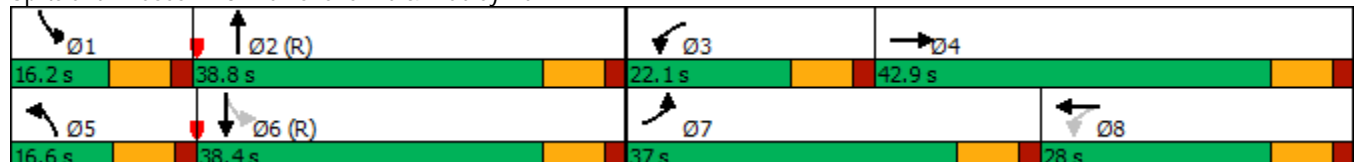
Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Marksheffel Rd & Bradley Rd



























HCM 6th Signalized Intersection Summary

3: Marksheffel Rd & Bradley Rd

2045 Total PM

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	757	655	333	159	538	104	217	565	94	151	793	555
Future Volume (veh/h)	757	655	333	159	538	104	217	565	94	151	793	555
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	1856	1856	1856	1870	1870	1870	1811	1811	1811	1870	1870	1870
Adj Flow Rate, veh/h	823	712	0	173	585	0	236	614	0	164	862	0
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, %	3	3	3	2	2	2	6	6	6	2	2	2
Cap, veh/h	843	1130		341	607		254	898		270	915	
Arrive On Green	0.25	0.32	0.00	0.10	0.17	0.00	0.08	0.26	0.00	0.07	0.26	0.00
Sat Flow, veh/h	3428	3526	1572	1781	3554	1585	3346	3441	1535	1781	3554	1585
Grp Volume(v), veh/h	823	712	0	173	585	0	236	614	0	164	862	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1781	1777	1585	1673	1721	1535	1781	1777	1585
Q Serve(g_s), s	28.6	20.6	0.0	9.5	19.6	0.0	8.4	19.3	0.0	8.2	28.5	0.0
Cycle Q Clear(g_c), s	28.6	20.6	0.0	9.5	19.6	0.0	8.4	19.3	0.0	8.2	28.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	843	1130		341	607		254	898		270	915	
V/C Ratio(X)	0.98	0.63		0.51	0.96		0.93	0.68		0.61	0.94	
Avail Cap(c_a), veh/h	843	1130		386	607		254	898		270	915	
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)	0.47	0.47	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.9	34.7	0.0	35.7	49.4	0.0	55.1	39.9	0.0	31.5	43.7	0.0
Incr Delay (d2), s/veh	16.0	0.5	0.0	1.2	27.6	0.0	38.0	4.2	0.0	3.9	18.6	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	13.9	8.9	0.0	4.2	11.0	0.0	4.9	8.7	0.0	3.8	14.8	0.0
Unsig. Movement Delay, s/veh	5.00			5.00			10.00			10.00		
LnGrp Delay(d),s/veh	60.9	35.3	5.0	36.9	77.0	5.0	93.2	44.1	10.0	35.4	62.3	10.0
LnGrp LOS	E	D	A	D	E	A	F	D	A	D	E	A
Approach Vol, veh/h	1897			871			952			1629		
Approach Delay, s/veh	40.6			59.7			52.6			40.2		
Approach LOS	D			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.2	38.8	19.1	45.9	16.6	38.4	37.0	28.0				
Change Period (Y+Rc), s	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Max Green Setting (Gmax), s	8.7	31.3	14.6	35.4	9.1	30.9	29.5	20.5				
Max Q Clear Time (g_c+l1), s	10.2	21.3	11.5	22.6	10.4	30.5	30.6	21.6				
Green Ext Time (p_c), s	0.0	3.0	0.1	4.0	0.0	0.2	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 45.7

HCM 6th LOS D

Notes




Unsignalized Delay for [NBR, EBR, WBR, SBR] is included in calculations of the approach delay and intersection delay.

HCM 6th TWSC
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Existing AM
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Intersection

Int Delay, s/veh 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	5	55	20	3	19
Future Vol, veh/h	3	5	55	20	3	19
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	78	78	69	69
Heavy Vehicles, %	25	25	4	4	68	68
Mvmt Flow	4	7	71	26	4	28

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	120	84	0
Stage 1	84	-	-
Stage 2	36	-	-
Critical Hdwy	6.65	6.45	-
Critical Hdwy Stg 1	5.65	-	-
Critical Hdwy Stg 2	5.65	-	-
Follow-up Hdwy	3.725	3.525	-
Pot Cap-1 Maneuver	823	915	-
Stage 1	884	-	-
Stage 2	930	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	821	915	-
Mov Cap-2 Maneuver	821	-	-
Stage 1	884	-	-
Stage 2	927	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.1
HCM LOS	A		




Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	877	1169
HCM Lane V/C Ratio	-	-	0.014	0.004
HCM Control Delay (s)	-	-	9.2	8.1
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

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Existing PM
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Intersection

Int Delay, s/veh 3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	1	8	9	5	25
Future Vol, veh/h	26	1	8	9	5	25
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	61	61	47	47	68	68
Heavy Vehicles, %	2	2	41	41	10	10
Mvmt Flow	43	2	17	19	7	37

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	78	27	0
Stage 1	27	-	-
Stage 2	51	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	925	1048	-
Stage 1	996	-	-
Stage 2	971	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	920	1048	-
Mov Cap-2 Maneuver	920	-	-
Stage 1	996	-	-
Stage 2	966	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	924	1525
HCM Lane V/C Ratio	-	-	0.048	0.005
HCM Control Delay (s)	-	-	9.1	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0




HCM 6th TWSC
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Intersection

Int Delay, s/veh 0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	5	84	20	3	23
Future Vol, veh/h	3	5	84	20	3	23
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	78	78	69	69
Heavy Vehicles, %	25	25	4	4	68	68
Mvmt Flow	4	7	108	26	4	33

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	162	121	0
Stage 1	121	-	-
Stage 2	41	-	-
Critical Hdwy	6.65	6.45	-
Critical Hdwy Stg 1	5.65	-	-
Critical Hdwy Stg 2	5.65	-	-
Follow-up Hdwy	3.725	3.525	-
Pot Cap-1 Maneuver	778	872	-
Stage 1	850	-	-
Stage 2	926	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	775	872	-
Mov Cap-2 Maneuver	775	-	-
Stage 1	850	-	-
Stage 2	922	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	833	1129
HCM Lane V/C Ratio	-	-	0.014	0.004
HCM Control Delay (s)	-	-	9.4	8.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




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Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	1	46	9	5	91
Future Vol, veh/h	26	1	46	9	5	91
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	61	61	47	47	68	68
Heavy Vehicles, %	2	2	41	41	10	10
Mvmt Flow	43	2	98	19	7	134

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	256	108	0
Stage 1	108	-	-
Stage 2	148	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	733	946	-
Stage 1	916	-	-
Stage 2	880	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	729	946	-
Mov Cap-2 Maneuver	729	-	-
Stage 1	916	-	-
Stage 2	876	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	735	1423
HCM Lane V/C Ratio	-	-	0.06	0.005
HCM Control Delay (s)	-	-	10.2	7.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

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2025 Total AM
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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	1	1	4	3	1	5	32	104	20	3	26	1
Future Vol, veh/h	1	1	4	3	1	5	32	104	20	3	26	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	67	92	67	92	78	78	69	69	92
Heavy Vehicles, %	2	2	2	25	2	25	2	4	4	68	68	2
Mvmt Flow	1	1	4	4	1	7	35	133	26	4	38	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	267	276	39	265	263	146	39	0	0	159	0	0
Stage 1	47	47	-	216	216	-	-	-	-	-	-	-
Stage 2	220	229	-	49	47	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.45	4.12	-	-	4.78	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.525	2.218	-	-	2.812	-	-
Pot Cap-1 Maneuver	686	632	1033	643	642	844	1571	-	-	1102	-	-
Stage 1	967	856	-	737	724	-	-	-	-	-	-	-
Stage 2	782	715	-	909	856	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	665	616	1033	627	625	844	1571	-	-	1102	-	-
Mov Cap-2 Maneuver	665	616	-	627	625	-	-	-	-	-	-	-
Stage 1	946	853	-	721	708	-	-	-	-	-	-	-
Stage 2	757	699	-	901	853	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.2		10		1.3		0.8					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1571	-	-	857	735	1102	-	-				
HCM Lane V/C Ratio	0.022	-	-	0.008	0.018	0.004	-	-				
HCM Control Delay (s)	7.3	-	-	9.2	10	8.3	-	-				
HCM Lane LOS	A	-	-	A	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0	0.1	0	-	-				

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Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵		↵	↵	
Traffic Vol, veh/h	1	1	19	26	0	1	2	47	9	5	103	1
Future Vol, veh/h	1	1	19	26	0	1	2	47	9	5	103	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	61	92	61	92	47	47	68	68	92
Heavy Vehicles, %	2	2	2	2	2	2	2	41	41	10	10	2
Mvmt Flow	1	1	21	43	0	2	2	100	19	7	151	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	281	289	152	291	280	110	152	0	0	119	0	0
Stage 1	166	166	-	114	114	-	-	-	-	-	-	-
Stage 2	115	123	-	177	166	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.2	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.29	-	-
Pot Cap-1 Maneuver	671	621	894	661	628	943	1429	-	-	1421	-	-
Stage 1	836	761	-	891	801	-	-	-	-	-	-	-
Stage 2	890	794	-	825	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	666	617	894	642	624	943	1429	-	-	1421	-	-
Mov Cap-2 Maneuver	666	617	-	642	624	-	-	-	-	-	-	-
Stage 1	835	757	-	890	800	-	-	-	-	-	-	-
Stage 2	887	793	-	801	757	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.3		10.9		0.1		0.3					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1429	-	-	862	650	1421	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.026	0.068	0.005	-	-				
HCM Control Delay (s)	7.5	-	-	9.3	10.9	7.5	-	-				
HCM Lane LOS	A	-	-	A	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				




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Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	5	137	21	3	42
Future Vol, veh/h	3	5	137	21	3	42
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	25	25	4	4	68	68
Mvmt Flow	3	5	149	23	3	46

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	213	161	0
Stage 1	161	-	-
Stage 2	52	-	-
Critical Hdwy	6.65	6.45	-
Critical Hdwy Stg 1	5.65	-	-
Critical Hdwy Stg 2	5.65	-	-
Follow-up Hdwy	3.725	3.525	-
Pot Cap-1 Maneuver	727	827	-
Stage 1	815	-	-
Stage 2	915	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	725	827	-
Mov Cap-2 Maneuver	725	-	-
Stage 1	815	-	-
Stage 2	912	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	786	1089
HCM Lane V/C Ratio	-	-	0.011	0.003
HCM Control Delay (s)	-	-	9.6	8.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




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Intersection

Int Delay, s/veh 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	1	106	9	5	177
Future Vol, veh/h	27	1	106	9	5	177
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	41	41	10	10
Mvmt Flow	29	1	115	10	5	192

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	322	120	0
Stage 1	120	-	-
Stage 2	202	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	672	931	-
Stage 1	905	-	-
Stage 2	832	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	669	931	-
Mov Cap-2 Maneuver	669	-	-
Stage 1	905	-	-
Stage 2	829	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	1413
HCM Lane V/C Ratio	-	-	0.045	0.004
HCM Control Delay (s)	-	-	10.6	7.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

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Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	3	68	3	5	5	334	212	21	3	80	10
Future Vol, veh/h	5	3	68	3	5	5	334	212	21	3	80	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	25	2	25	2	4	4	68	68	2
Mvmt Flow	5	3	74	3	5	5	363	230	23	3	87	11







Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1072	1078	93	1105	1072	242	98	0	0	253	0	0
Stage 1	99	99	-	968	968	-	-	-	-	-	-	-
Stage 2	973	979	-	137	104	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.45	4.12	-	-	4.78	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.525	2.218	-	-	2.812	-	-
Pot Cap-1 Maneuver	198	219	964	170	220	743	1495	-	-	1008	-	-
Stage 1	907	813	-	277	332	-	-	-	-	-	-	-
Stage 2	303	328	-	814	809	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	156	165	964	126	166	743	1495	-	-	1008	-	-
Mov Cap-2 Maneuver	195	216	-	173	211	-	-	-	-	-	-	-
Stage 1	687	811	-	210	251	-	-	-	-	-	-	-
Stage 2	223	248	-	746	807	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.9		19		4.8		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1495	-	-	690	272	1008	-
HCM Lane V/C Ratio	0.243	-	-	0.12	0.052	0.003	-
HCM Control Delay (s)	8.2	-	-	10.9	19	8.6	-
HCM Lane LOS	A	-	-	B	C	A	-
HCM 95th %tile Q(veh)	1	-	-	0.4	0.2	0	-

HCM 6th TWSC
4: Foreign Trade Zone Blvd & Aerospace Blvd

2030 Total PM
01/10/2024

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	129	27	3	1	228	157	9	5	248	7
Future Vol, veh/h	10	5	129	27	3	1	228	157	9	5	248	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	41	41	10	10	2
Mvmt Flow	11	5	140	29	3	1	248	171	10	5	270	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	958	961	274	1029	960	176	278	0	0	181	0	0
Stage 1	284	284	-	672	672	-	-	-	-	-	-	-
Stage 2	674	677	-	357	288	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.2	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.29	-	-
Pot Cap-1 Maneuver	237	256	765	212	257	867	1285	-	-	1347	-	-
Stage 1	723	676	-	445	454	-	-	-	-	-	-	-
Stage 2	444	452	-	661	674	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	206	765	145	207	867	1285	-	-	1347	-	-
Mov Cap-2 Maneuver	281	294	-	210	273	-	-	-	-	-	-	-
Stage 1	583	673	-	359	366	-	-	-	-	-	-	-
Stage 2	355	365	-	533	671	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.3		24.3		4.9		0.1					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1285	-	-	651	220	1347	-	-				
HCM Lane V/C Ratio	0.193	-	-	0.24	0.153	0.004	-	-				
HCM Control Delay (s)	8.5	-	-	12.3	24.3	7.7	-	-				
HCM Lane LOS	A	-	-	B	C	A	-	-				
HCM 95th %tile Q(veh)	0.7	-	-	0.9	0.5	0	-	-				





HCM 6th TWSC
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Background AM

07/12/2023

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	6	242	23	3	88
Future Vol, veh/h	3	6	242	23	3	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	25	25	4	4	68	68
Mvmt Flow	3	7	263	25	3	96

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	378	276	0
Stage 1	276	-	-
Stage 2	102	-	-
Critical Hdwy	6.65	6.45	-
Critical Hdwy Stg 1	5.65	-	-
Critical Hdwy Stg 2	5.65	-	-
Follow-up Hdwy	3.725	3.525	-
Pot Cap-1 Maneuver	581	711	-
Stage 1	720	-	-
Stage 2	868	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	579	711	-
Mov Cap-2 Maneuver	615	-	-
Stage 1	720	-	-
Stage 2	865	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	975
HCM Lane V/C Ratio	-	-	0.014	0.003
HCM Control Delay (s)	-	-	10.4	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0





HCM 6th TWSC
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Background PM

07/12/2023

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	1	286	10	6	417
Future Vol, veh/h	30	1	286	10	6	417
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	41	41	10	10
Mvmt Flow	33	1	311	11	7	453

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	784	317	0
Stage 1	317	-	-
Stage 2	467	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	362	724	-
Stage 1	738	-	-
Stage 2	631	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	360	724	-
Mov Cap-2 Maneuver	471	-	-
Stage 1	738	-	-
Stage 2	627	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	476	1194
HCM Lane V/C Ratio	-	-	0.071	0.005
HCM Control Delay (s)	-	-	13.1	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

HCM 6th Roundabout
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Total AM - Roundabout at #4

01/08/2024

Intersection				
Intersection Delay, s/veh	8.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	82	15	733	151
Demand Flow Rate, veh/h	83	18	755	246
Vehicles Circulating, veh/h	239	734	13	379
Vehicles Exiting, veh/h	386	34	309	373
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	7.0	8.8	9.8
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	83	18	755	246
Cap Entry Lane, veh/h	1081	653	1362	937
Entry HV Adj Factor	0.987	0.828	0.971	0.613
Flow Entry, veh/h	82	15	733	151
Cap Entry, veh/h	1068	540	1322	575
V/C Ratio	0.077	0.028	0.554	0.262
Control Delay, s/veh	4.0	7.0	8.8	9.8
LOS	A	A	A	A
95th %tile Queue, veh	0	0	4	1

HCM 6th Roundabout
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Total PM - Roundabout at #4

01/08/2024

Intersection				
Intersection Delay, s/veh	10.8			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	156	37	625	545
Demand Flow Rate, veh/h	159	38	785	599
Vehicles Circulating, veh/h	625	780	24	290
Vehicles Exiting, veh/h	264	29	760	528
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.5	6.6	10.9	12.0
Approach LOS	A	A	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	159	38	785	599
Cap Entry Lane, veh/h	729	623	1346	1027
Entry HV Adj Factor	0.981	0.972	0.796	0.910
Flow Entry, veh/h	156	37	625	545
Cap Entry, veh/h	715	605	1072	934
V/C Ratio	0.218	0.061	0.583	0.584
Control Delay, s/veh	7.5	6.6	10.9	12.0
LOS	A	A	B	B
95th %tile Queue, veh	1	0	4	4

HCM 6th TWSC
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Total AM
01/10/2024

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	5	3	68	3	5	6	334	317	23	3	126	10
Future Vol, veh/h	5	3	68	3	5	6	334	317	23	3	126	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	25	2	25	2	4	4	68	68	2
Mvmt Flow	5	3	74	3	5	7	363	345	25	3	137	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1239	1245	143	1271	1238	358	148	0	0	370	0	0
Stage 1	149	149	-	1084	1084	-	-	-	-	-	-	-
Stage 2	1090	1096	-	187	154	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.45	4.12	-	-	4.78	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.525	2.218	-	-	2.812	-	-
Pot Cap-1 Maneuver	152	174	905	130	176	637	1434	-	-	902	-	-
Stage 1	854	774	-	238	293	-	-	-	-	-	-	-
Stage 2	261	289	-	764	770	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	118	130	905	95	131	637	1434	-	-	902	-	-
Mov Cap-2 Maneuver	162	186	-	143	180	-	-	-	-	-	-	-
Stage 1	638	772	-	178	219	-	-	-	-	-	-	-
Stage 2	188	216	-	696	768	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.7		20.9		4.1		0.2					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1434	-	-	622	241	902	-	-				
HCM Lane V/C Ratio	0.253	-	-	0.133	0.063	0.004	-	-				
HCM Control Delay (s)	8.4	-	-	11.7	20.9	9	-	-				
HCM Lane LOS	A	-	-	B	C	A	-	-				
HCM 95th %tile Q(veh)	1	-	-	0.5	0.2	0	-	-				

HCM 6th TWSC
4: Foreign Trade Zone Blvd & Aerospace Blvd

2045 Total PM
01/10/2024

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	5	129	30	3	1	228	337	10	6	488	7
Future Vol, veh/h	10	5	129	30	3	1	228	337	10	6	488	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	41	41	10	10	2
Mvmt Flow	11	5	140	33	3	1	248	366	11	7	530	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1418	1421	534	1489	1420	372	538	0	0	377	0	0
Stage 1	548	548	-	868	868	-	-	-	-	-	-	-
Stage 2	870	873	-	621	552	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.2	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.29	-	-
Pot Cap-1 Maneuver	114	136	546	102	136	674	1030	-	-	1139	-	-
Stage 1	521	517	-	347	370	-	-	-	-	-	-	-
Stage 2	346	368	-	475	515	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	103	546	60	103	674	1030	-	-	1139	-	-
Mov Cap-2 Maneuver	179	203	-	85	171	-	-	-	-	-	-	-
Stage 1	395	514	-	263	281	-	-	-	-	-	-	-
Stage 2	259	279	-	347	512	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17		69.3		3.8		0.1	
HCM LOS	C		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1030	-	-	455	91	1139	-
HCM Lane V/C Ratio	0.241	-	-	0.344	0.406	0.006	-
HCM Control Delay (s)	9.6	-	-	17	69.3	8.2	-
HCM Lane LOS	A	-	-	C	F	A	-
HCM 95th %tile Q(veh)	0.9	-	-	1.5	1.6	0	-

HCM 6th TWSC
5: Foreign Trade Zone Blvd & RIRO Access

2030 Total AM
01/08/2024

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	38	0	567	150	2
Future Vol, veh/h	0	38	0	567	150	2
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	-	-	-	-
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	0	41	0	616	163	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	164	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	881	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	881	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 881		-	-		
HCM Lane V/C Ratio	- 0.047		-	-		
HCM Control Delay (s)	- 9.3		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

HCM 6th TWSC
5: Foreign Trade Zone Blvd & RIRO Access

2030 Total PM
01/08/2024

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	71	0	394	404	2
Future Vol, veh/h	0	71	0	394	404	2
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	-	-	-	-
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	0	77	0	428	439	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	440	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	617	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	617	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 617		-	-		
HCM Lane V/C Ratio	- 0.125		-	-		
HCM Control Delay (s)	- 11.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.4		-	-		

HCM 6th TWSC
5: Foreign Trade Zone Blvd & RIRO Access

2045 Total AM
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Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	38	0	774	228	2
Future Vol, veh/h	0	38	0	774	228	2
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	-	-	-	-
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	0	41	0	841	248	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	249	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	790	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	790	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 790		-	-		
HCM Lane V/C Ratio	- 0.052		-	-		
HCM Control Delay (s)	- 9.8		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

HCM 6th TWSC
5: Foreign Trade Zone Blvd & RIRO Access

2045 Total PM
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Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	71	0	632	752	2
Future Vol, veh/h	0	71	0	632	752	2
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	-	-	-	-
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	0	77	0	687	817	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	818	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	376	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	376	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 376		-	-		
HCM Lane V/C Ratio	- 0.205		-	-		
HCM Control Delay (s)	- 17		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.8		-	-		

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1294	1460	75	0	100
Future Vol, veh/h	0	1294	1460	75	0	100
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	-	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	0	1407	1587	82	0	109
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	794
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	*476
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*476
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		14.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	476		
HCM Lane V/C Ratio	-	-	-	0.228		
HCM Control Delay (s)	-	-	-	14.8		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.9		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon





Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1657	1199	51	0	190
Future Vol, veh/h	0	1657	1199	51	0	190
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	-	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	0	1801	1303	55	0	207
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	652
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	*580
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*580
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		14.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	580		
HCM Lane V/C Ratio	-	-	-	0.356		
HCM Control Delay (s)	-	-	-	14.6		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	1.6		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1637	1961	75	0	100
Future Vol, veh/h	0	1637	1961	75	0	100
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	-	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	0	1779	2132	82	0	109
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1066
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	*243
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*243
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		31.3		
HCM LOS				D		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	243		
HCM Lane V/C Ratio	-	-	-	0.447		
HCM Control Delay (s)	-	-	-	31.3		
HCM Lane LOS	-	-	-	D		
HCM 95th %tile Q(veh)	-	-	-	2.2		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	2128	1670	51	0	190
Future Vol, veh/h	0	2128	1670	51	0	190
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	-	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	0	2313	1815	55	0	207
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	908
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	*372
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*372
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		26.1		
HCM LOS	D					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	372		
HCM Lane V/C Ratio	-	-	-	0.555		
HCM Control Delay (s)	-	-	-	26.1		
HCM Lane LOS	-	-	-	D		
HCM 95th %tile Q(veh)	-	-	-	3.2		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon





HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

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Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	20	89	26	1
Future Vol, veh/h	1	3	20	89	26	1
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	-	150	-	-	-
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	1	3	22	97	28	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	170	29	29	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	141	-	-	-	-	-
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	820	1046	1584	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	809	1046	1584	-	-	-
Mov Cap-2 Maneuver	809	-	-	-	-	-
Stage 1	980	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	1.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1584	-	975	-	-	
HCM Lane V/C Ratio	0.014	-	0.004	-	-	
HCM Control Delay (s)	7.3	-	8.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	






HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

2025 Total PM
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Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	12	1	47	96	1
Future Vol, veh/h	1	12	1	47	96	1
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	-	150	-	-	-
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	1	13	1	51	104	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	158	105	105	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	53	-	-	-	-	-
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	833	949	1486	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	832	949	1486	-	-	-
Mov Cap-2 Maneuver	832	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1486	-	939	-	-	
HCM Lane V/C Ratio	0.001	-	0.015	-	-	
HCM Control Delay (s)	7.4	-	8.9	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	





HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

2030 Total AM
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Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	38	75	147	55	1
Future Vol, veh/h	1	38	75	147	55	1
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	-	150	-	-	-
Veh in Median Storage, #	1	-	-	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	1	41	82	160	60	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	385	61	61	0	-	0
Stage 1	61	-	-	-	-	-
Stage 2	324	-	-	-	-	-
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	618	1004	1542	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	585	1004	1542	-	-	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	2.5		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1542	-	989	-	-	
HCM Lane V/C Ratio	0.053	-	0.043	-	-	
HCM Control Delay (s)	7.5	-	8.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	





HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

2030 Total PM
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Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	71	51	117	189	1
Future Vol, veh/h	1	71	51	117	189	1
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	-	150	-	-	-
Veh in Median Storage, #	1	-	-	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	1	77	55	127	205	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	443	206	206	0	-	0
Stage 1	206	-	-	-	-	-
Stage 2	237	-	-	-	-	-
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	572	835	1365	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	549	835	1365	-	-	-
Mov Cap-2 Maneuver	615	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	2.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1365	-	831	-	-	
HCM Lane V/C Ratio	0.041	-	0.094	-	-	
HCM Control Delay (s)	7.7	-	9.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	






HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

2045 Total AM
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Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	38	75	253	101	1
Future Vol, veh/h	1	38	75	253	101	1
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	-	150	-	-	-
Veh in Median Storage, #	1	-	-	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	1	41	82	275	110	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	550	111	111	0	-	0
Stage 1	111	-	-	-	-	-
Stage 2	439	-	-	-	-	-
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	496	942	1479	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	469	942	1479	-	-	-
Mov Cap-2 Maneuver	541	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.1	1.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1479	-	924	-	-	
HCM Lane V/C Ratio	0.055	-	0.046	-	-	
HCM Control Delay (s)	7.6	-	9.1	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	

HCM 6th TWSC
7: Foreign Trade Zone Blvd & North Full Access

2045 Total PM
01/10/2024

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	71	51	297	430	1
Future Vol, veh/h	1	71	51	297	430	1
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	-	150	-	-	-
Veh in Median Storage, #	1	-	-	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	1	77	55	323	467	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	901	468	468	0	-	0
Stage 1	468	-	-	-	-	-
Stage 2	433	-	-	-	-	-
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	309	595	1094	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	294	595	1094	-	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12	1.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1094	-	592	-	-	
HCM Lane V/C Ratio	0.051	-	0.132	-	-	
HCM Control Delay (s)	8.5	-	12	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-	

APPENDIX E

Queue Analysis Worksheets

Queues

2025 Total AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	457	734	784	430	466	272
v/c Ratio	0.73	0.48	0.57	0.27	0.83	0.12
Control Delay	43.0	3.1	32.1	0.4	29.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	3.1	32.1	0.4	29.5	6.5
Queue Length 50th (ft)	176	90	250	0	188	34
Queue Length 95th (ft)	219	95	303	0	300	48
Internal Link Dist (ft)	2885		1324			2880
Turn Bay Length (ft)	500			500	500	
Base Capacity (vph)	625	1538	1377	1568	663	2298
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	0.73	0.48	0.57	0.27	0.70	0.12
Intersection Summary						

Queues

2025 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	397	482	340	538	485	624
v/c Ratio	0.73	0.31	0.20	0.35	0.62	0.25
Control Delay	39.2	1.7	19.4	0.6	11.1	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	1.7	19.4	0.6	11.1	6.6
Queue Length 50th (ft)	151	21	74	0	132	78
Queue Length 95th (ft)	151	0	131	0	217	117
Internal Link Dist (ft)	2885		1324			2880
Turn Bay Length (ft)	500			500	500	
Base Capacity (vph)	750	1568	1689	1538	965	2504
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	0.53	0.31	0.20	0.35	0.50	0.25
Intersection Summary						

Queues

2030 Total AM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	800	1276	1174	851	950	428
v/c Ratio	1.07	0.83	1.06	0.54	1.08	0.20
Control Delay	85.3	18.7	83.8	1.4	95.8	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	18.7	83.8	1.4	95.8	8.7
Queue Length 50th (ft)	~345	446	~525	0	~423	64
Queue Length 95th (ft)	m#402	m504	#661	0	#552	86
Internal Link Dist (ft)	2796		1324			2880
Turn Bay Length (ft)	500			500	500	
Base Capacity (vph)	747	1538	1109	1568	880	2175
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	1.07	0.83	1.06	0.54	1.08	0.20

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 Total PM

1: Powers Blvd (SH-21) & Bradley Rd

01/08/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1065	1158	554	1122	1224	979
v/c Ratio	1.06	0.74	0.94	0.73	1.04	0.48
Control Delay	75.0	9.2	75.1	3.1	76.4	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.0	9.2	75.1	3.1	76.4	15.7
Queue Length 50th (ft)	~471	493	225	0	~528	221
Queue Length 95th (ft)	#594	406	#335	0	#662	273
Internal Link Dist (ft)	2796		1324			2880
Turn Bay Length (ft)	500			500	500	
Base Capacity (vph)	1005	1568	587	1538	1175	2029
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	1.06	0.74	0.94	0.73	1.04	0.48

Intersection Summary













- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2030 Total AM

2: Bradley Rd & Foreign Trade Zone Blvd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	447	936	24	12	1467	166	108	3	23	110	1	93
v/c Ratio	1.06	0.42	0.02	0.04	0.96	0.21	0.37	0.01	0.07	0.57	0.00	0.09
Control Delay	85.3	5.4	0.0	7.9	39.4	3.6	42.9	43.7	0.3	53.8	43.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	5.4	0.0	7.9	39.4	3.6	42.9	43.7	0.3	53.8	43.0	0.2
Queue Length 50th (ft)	~315	58	0	3	332	7	68	2	0	72	1	0
Queue Length 95th (ft)	m#385	m90	m0	m5	#727	m22	121	11	0	130	6	0
Internal Link Dist (ft)	896				2685				375		219	
Turn Bay Length (ft)	575			435	435			550	150			150
Base Capacity (vph)	421	2236	1072	322	1521	773	289	279	353	192	288	1022
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.42	0.02	0.04	0.96	0.21	0.37	0.01	0.07	0.57	0.00	0.09

Intersection Summary













- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2030 Total PM

2: Bradley Rd & Foreign Trade Zone Blvd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	329	1396	76	47	1004	97	74	2	16	232	4	280
v/c Ratio	0.83	0.75	0.08	0.27	0.74	0.14	0.25	0.01	0.04	0.55	0.01	0.18
Control Delay	47.9	10.6	0.1	13.7	25.6	0.5	33.6	43.5	0.2	38.7	36.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	10.6	0.1	13.7	25.6	0.5	33.6	43.5	0.2	38.7	36.5	0.2
Queue Length 50th (ft)	150	152	0	12	213	0	41	1	0	143	2	0
Queue Length 95th (ft)	m173	m158	m0	m21	258	m2	79	9	0	219	12	0
Internal Link Dist (ft)	896				2685				375			
Turn Bay Length (ft)	575		435	435		550	150		150	300		300
Base Capacity (vph)	454	1858	932	171	1362	716	302	287	393	428	446	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.75	0.08	0.27	0.74	0.14	0.25	0.01	0.04	0.54	0.01	0.18

Intersection Summary

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

Queues

2045 Total AM

2: Bradley Rd & Foreign Trade Zone Blvd

01/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	640	1109	30	12	1912	192	136	9	23	117	7	165
v/c Ratio	1.02	0.45	0.03	0.04	1.03	0.21	0.60	0.04	0.08	0.78	0.03	0.16
Control Delay	81.3	3.8	0.0	7.6	64.4	2.7	68.3	59.1	0.6	91.0	58.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	3.8	0.0	7.6	64.4	2.7	68.3	59.1	0.6	91.0	58.5	0.3
Queue Length 50th (ft)	~345	71	0	3	~1053	0	119	8	0	105	6	0
Queue Length 95th (ft)	m326	m85	m0	8	#1187	39	189	27	0	#217	22	0
Internal Link Dist (ft)		896			2685			375			219	
Turn Bay Length (ft)	575		435	435		550	150		150	300		300
Base Capacity (vph)	627	2479	1173	314	1851	917	228	223	285	150	228	1022
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.45	0.03	0.04	1.03	0.21	0.60	0.04	0.08	0.78	0.03	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.













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

Queues

2045 Total PM

2: Bradley Rd & Foreign Trade Zone Blvd

01/08/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	574	1646	93	48	1163	105	82	8	16	259	10	626
v/c Ratio	0.88	0.84	0.10	0.35	0.84	0.14	0.28	0.03	0.04	0.68	0.03	0.40
Control Delay	62.7	26.6	0.8	20.8	27.2	1.4	36.1	44.0	0.2	46.7	39.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	26.6	0.8	20.8	27.2	1.4	36.1	44.0	0.2	46.7	39.4	0.7
Queue Length 50th (ft)	222	547	0	12	238	2	48	5	0	169	6	0
Queue Length 95th (ft)	#308	664	9	m24	277	m6	90	20	0	255	22	0
Internal Link Dist (ft)	896				2685				375			
Turn Bay Length (ft)	575		435	435		550	150		150	300		300
Base Capacity (vph)	679	1950	972	136	1392	728	298	279	387	382	397	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.84	0.10	0.35	0.84	0.14	0.28	0.03	0.04	0.68	0.03	0.40

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

2025 Total AM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	290	363	66	112	538	40	259	830	158	36	267	351
v/c Ratio	0.78	0.35	0.04	0.39	0.82	0.03	0.51	0.60	0.10	0.17	0.28	0.23
Control Delay	39.9	27.2	0.1	27.5	57.4	0.0	25.7	33.2	0.1	23.2	37.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	27.2	0.1	27.5	57.4	0.0	25.7	33.2	0.1	23.2	37.2	0.3
Queue Length 50th (ft)	107	93	0	50	208	0	132	297	0	16	91	0
Queue Length 95th (ft)	202	117	m0	83	257	0	188	350	0	35	123	0
Internal Link Dist (ft)	2685			1274			836			1131		
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	390	1125	1553	288	708	1553	523	1388	1583	218	940	1553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.32	0.04	0.39	0.76	0.03	0.50	0.60	0.10	0.17	0.28	0.23

Intersection Summary













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

Queues

2025 Total PM

3: Marksheffel Rd & Bradley Rd

01/10/2024













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	457	453	132	155	404	32	80	431	95	18	576	284
v/c Ratio	0.82	0.40	0.08	0.52	0.77	0.02	0.31	0.36	0.06	0.05	0.54	0.18
Control Delay	34.8	29.2	0.1	27.8	59.6	0.0	29.1	32.3	0.1	25.6	39.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	29.2	0.1	27.8	59.6	0.0	29.1	32.3	0.1	25.6	39.3	0.2
Queue Length 50th (ft)	183	131	0	63	158	0	41	125	0	9	213	0
Queue Length 95th (ft)	288	152	0	99	213	0	79	204	0	26	276	0
Internal Link Dist (ft)	2685			1274			836			1131		
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	597	1250	1568	315	575	1583	257	1212	1524	348	1074	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.36	0.08	0.49	0.70	0.02	0.31	0.36	0.06	0.05	0.54	0.18
Intersection Summary												

Queues

2030 Total AM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	504	426	157	105	633	59	411	835	153	40	270	583
v/c Ratio	0.86	0.38	0.10	0.36	0.88	0.04	0.80	0.68	0.10	0.21	0.42	0.38
Control Delay	41.2	26.4	0.1	25.4	60.2	0.0	39.3	38.4	0.1	26.7	46.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	26.4	0.1	25.4	60.2	0.0	39.3	38.4	0.1	26.7	46.3	0.7
Queue Length 50th (ft)	176	163	0	46	249	0	238	306	0	18	100	0
Queue Length 95th (ft)	#268	215	0	81	#338	0	#367	383	0	41	145	0
Internal Link Dist (ft)	2685			1274			836			1131		
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	608	1177	1553	291	749	1553	524	1224	1583	187	650	1553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.36	0.10	0.36	0.85	0.04	0.78	0.68	0.10	0.21	0.42	0.38

Intersection Summary













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

Queues

2030 Total PM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	751	565	305	160	509	49	225	478	97	49	643	580
v/c Ratio	0.92	0.52	0.19	0.53	0.87	0.03	0.84	0.44	0.06	0.17	0.76	0.37
Control Delay	50.5	49.0	0.2	28.5	64.7	0.0	52.7	34.9	0.1	25.1	49.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	49.0	0.2	28.5	64.7	0.0	52.7	34.9	0.1	25.1	49.4	0.7
Queue Length 50th (ft)	290	241	0	69	203	0	120	160	0	23	248	0
Queue Length 95th (ft)	#403	299	m0	113	#287	0	#236	213	0	49	318	0
Internal Link Dist (ft)	2685				1274				836			
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	835	1109	1568	323	604	1583	269	1098	1524	290	849	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.51	0.19	0.50	0.84	0.03	0.84	0.44	0.06	0.17	0.76	0.37

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

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	559	505	190	111	838	134	559	1017	167	62	325	700
v/c Ratio	0.97	0.42	0.12	0.37	1.02	0.09	0.95	0.90	0.11	0.47	0.55	0.45
Control Delay	81.0	31.0	0.2	24.1	81.1	0.1	77.0	51.0	0.1	36.9	49.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	31.0	0.2	24.1	81.1	0.1	77.0	51.0	0.1	36.9	49.5	0.9
Queue Length 50th (ft)	224	155	0	47	~352	0	223	406	0	29	122	0
Queue Length 95th (ft)	#338	205	0	83	#489	0	#334	#545	0	59	171	0
Internal Link Dist (ft)	2685			1274			836			1131		
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	575	1213	1553	304	824	1553	586	1135	1583	133	592	1553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.42	0.12	0.37	1.02	0.09	0.95	0.90	0.11	0.47	0.55	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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













Queue shown is maximum after two cycles.

Queues

2045 Total PM

3: Marksheffel Rd & Bradley Rd

01/10/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	823	712	362	173	585	113	236	614	102	164	862	603
v/c Ratio	0.99	0.64	0.23	0.58	0.97	0.07	0.94	0.69	0.07	0.65	0.95	0.38
Control Delay	63.2	24.8	0.2	29.8	79.3	0.1	99.6	44.8	0.1	38.5	63.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	24.8	0.2	29.8	79.3	0.1	99.6	44.8	0.1	38.5	63.4	0.7
Queue Length 50th (ft)	295	210	0	75	239	0	95	226	0	84	346	0
Queue Length 95th (ft)	#456	m277	m0	121	#356	0	#175	292	0	135	#473	0
Internal Link Dist (ft)	2685				1274			836			1131	
Turn Bay Length (ft)	575		350	600		425	725		650	575		550
Base Capacity (vph)	835	1111	1568	336	604	1583	250	889	1524	254	911	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.64	0.23	0.51	0.97	0.07	0.94	0.69	0.07	0.65	0.95	0.38

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.

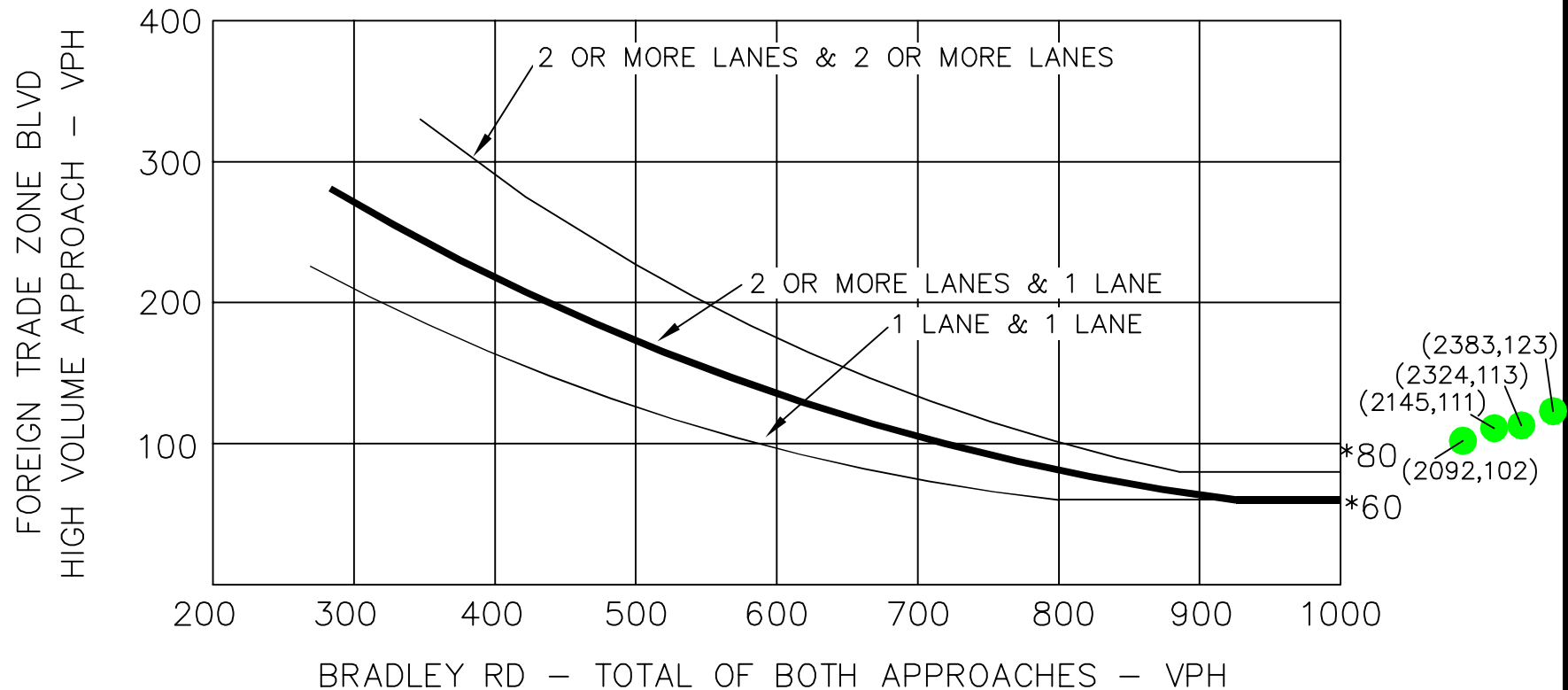


APPENDIX F

Signal Warrant Analysis Worksheets

WARRANT 2 - FOUR HOUR VEHICULAR VOLUME (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)



* NOTE: 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

BRADLEY RD & FOREIGN TRADE (#2)

SIGNAL WARRANT ANALYSIS

FOUR HOUR VOLUME WARRANT

● 2030 BACKGROUND TRAFFIC VOLUME

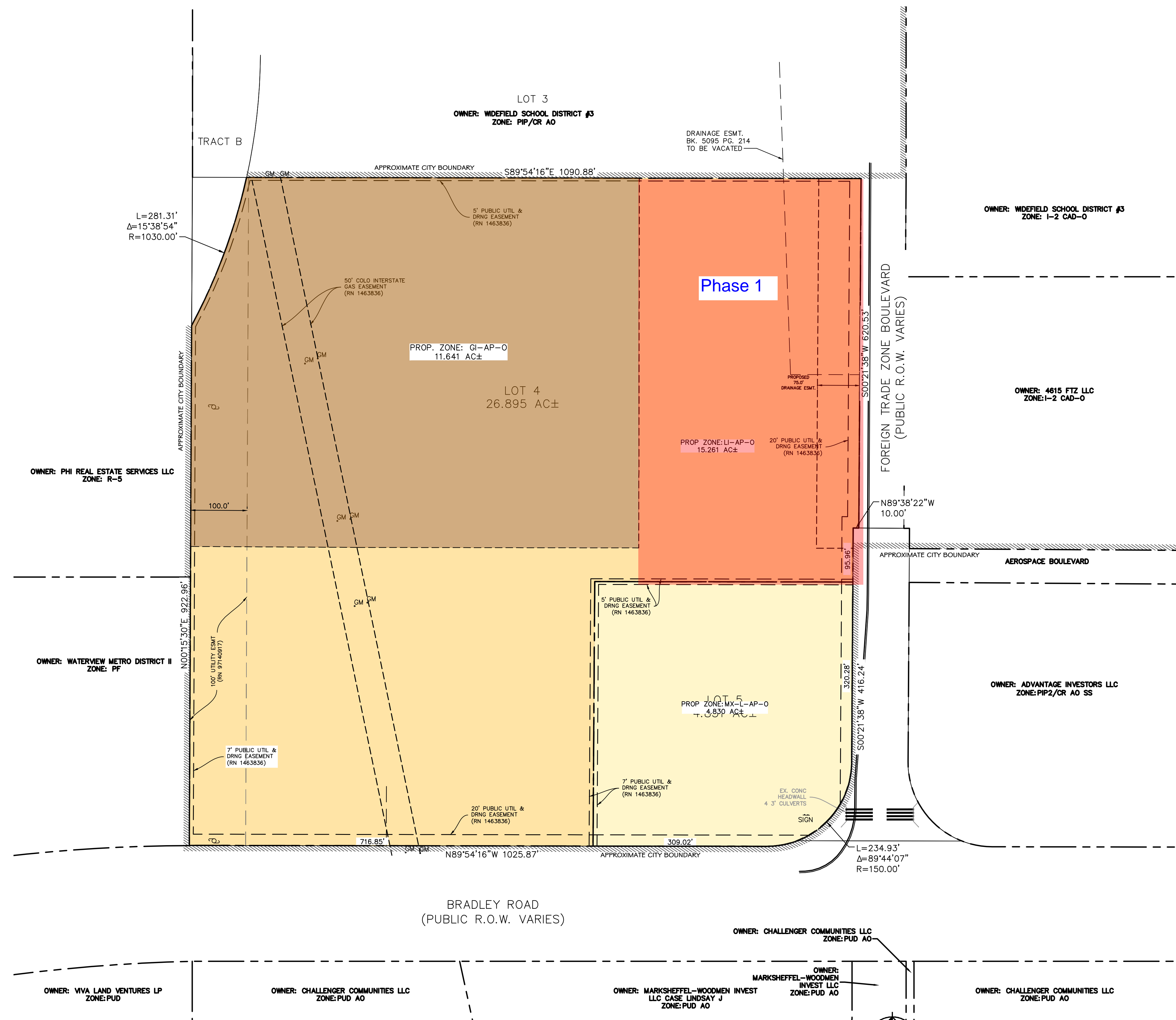
Source: Manual of Uniform Traffic Control Devices 2009



APPENDIX G

Conceptual Site Plan

COLORADO CENTRE ADDITION NO. 3
LOTS 4 & 5 OF COLORADO CENTRE FOREIGN TRADE ZONE AND BUSINESS PARK FILING NO. 1
SITUATED IN THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH
P.M., CITY OF COLORADO SPRINGS, COUNTY OF EL PASO, STATE OF COLORADO



- CITY APPROVAL:



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2 NORTH NEVADA AVENUE, SUITE 300
COLORADO SPRINGS, COLORADO 80903 (719) 453-0180

LAND USE PLAN - REZONE
SHEET 04 OF 04

FOREIGN TRADE ZONE - CITY FILE NO. MAPN-23-0008