AECOM

US 85 / Maxwell St Conceptual Design

Traffic Analysis

Colorado Department of Transportation - Region 2

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Quality information

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1. Introduction

This Traffic Analysis Study is supplemental to the conceptual design for intersection improvements at US 85 and Maxwell Street, in Colorado Springs, Colorado. This study will analyze the traffic operations at the US 85 and Maxwell Street intersection for existing year 2021 and horizon year 2045. This document presents current traffic volumes and estimated horizon year traffic demand in 2045. Based on analysis results of horizon year conditions, this study discusses mitigation measures to ensure acceptable level of service and quantifies the impact of mitigation measures on traffic operations.

2. Study Area

The study area for this traffic analysis consists of a single intersection located in Colorado Springs, Colorado in Colorado Department of Transportation (CDOT) Region 2. The study intersection is pictured on **Figure 1**, which also shows existing intersection lane configuration, traffic control, and posted speed limits as of 2021. The intersection is two-way stop-controlled on Maxwell Street with US 85 being free-flow. Roadways that form this intersection are briefly described below.

US 85

US 85 is a two lane, undivided roadway classified as a Minor Arterial with a CDOT access control classification of Non-Rural Principal Highway (NR-A) within the project area. The posted speed limit is 45 mph. Both legs of US 85 have a shared left turn-thru lane and a dedicated right turn lane.

Maxwell Street

The south leg of the intersection is a two lane, undivided roadway that provides access to the residential neighborhood between US 85 and S. Academy Boulevard. Maxwell Street does not provide direct access to South Academy Boulevard. The posted speed limit is 25 mph.

The north leg of the intersection is a local road that provides access to the Stratmoor Valley Trailhead parking lot and to industrial buildings then dead ends.

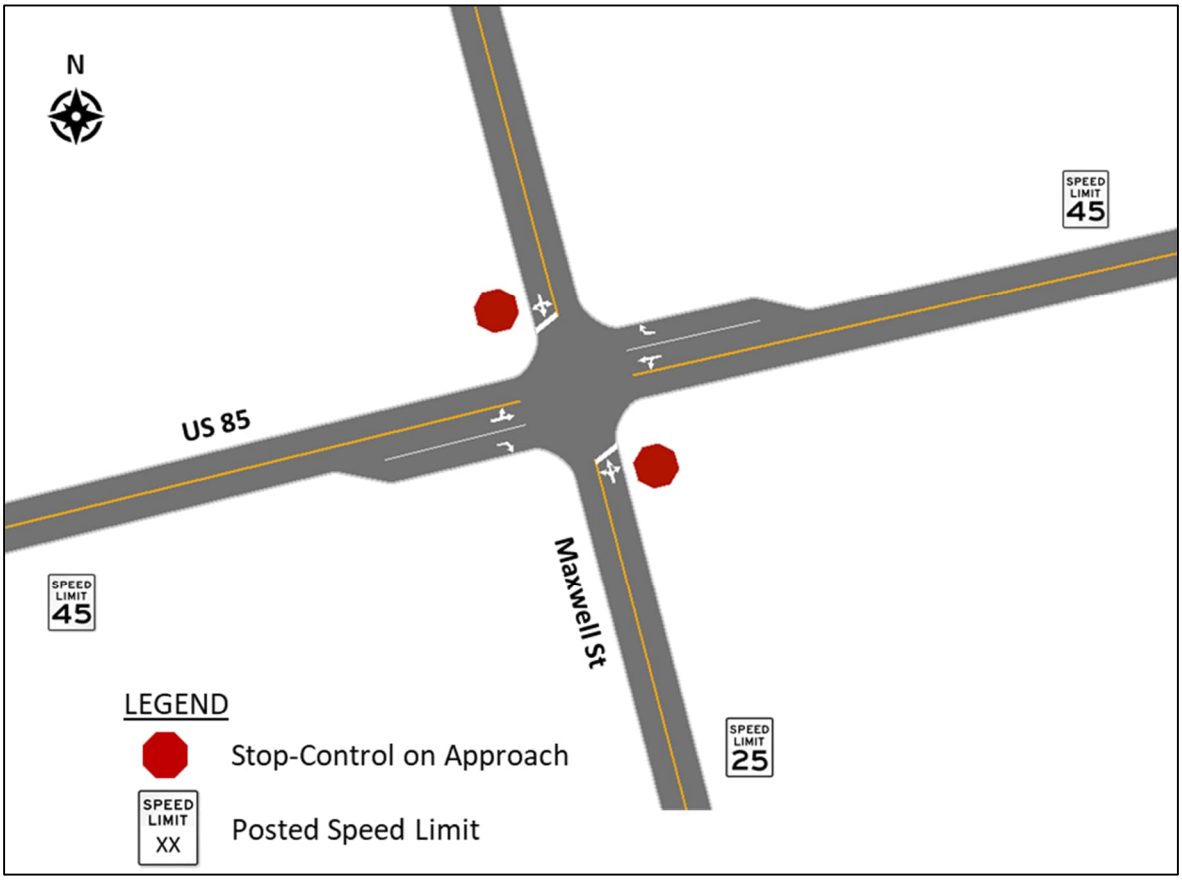


Figure 1. Study Intersection Conditions in 2021

3. Existing Traffic Conditions

3.1 2021 Traffic Counts

Turning movement counts were collected from 6:00 a.m. to 6:00 p.m. on Tuesday, November 16, 2021, by All Traffic Data Services at the intersection of US 85 and Maxwell Street. There was no inclement weather when the data was collected, and schools were in session. Traffic counts were collected 20 months into the COVID-19 pandemic. Vehicle travel patterns and number of vehicles traveling in November 2021 may be different than those pre-COVID-19. However, it is assumed that it will be many years before travel patterns return to pre-pandemic conditions, if ever, so the traffic data is considered representative of a typical weekday. Peak hours were determined by summing traffic volumes for four consecutive 15-minute periods for all movements at the intersection, and then selecting the largest one-hour sum of vehicles during the morning and evening hours. The a.m. peak hour was found to be 7:15 to 8:15 a.m. and the p.m. peak hour was found to be 3:30 to 4:30 p.m. 2021 existing conditions traffic counts for these peak hours are pictured on **Figure 2**. Traffic count data is included in **Appendix A.**

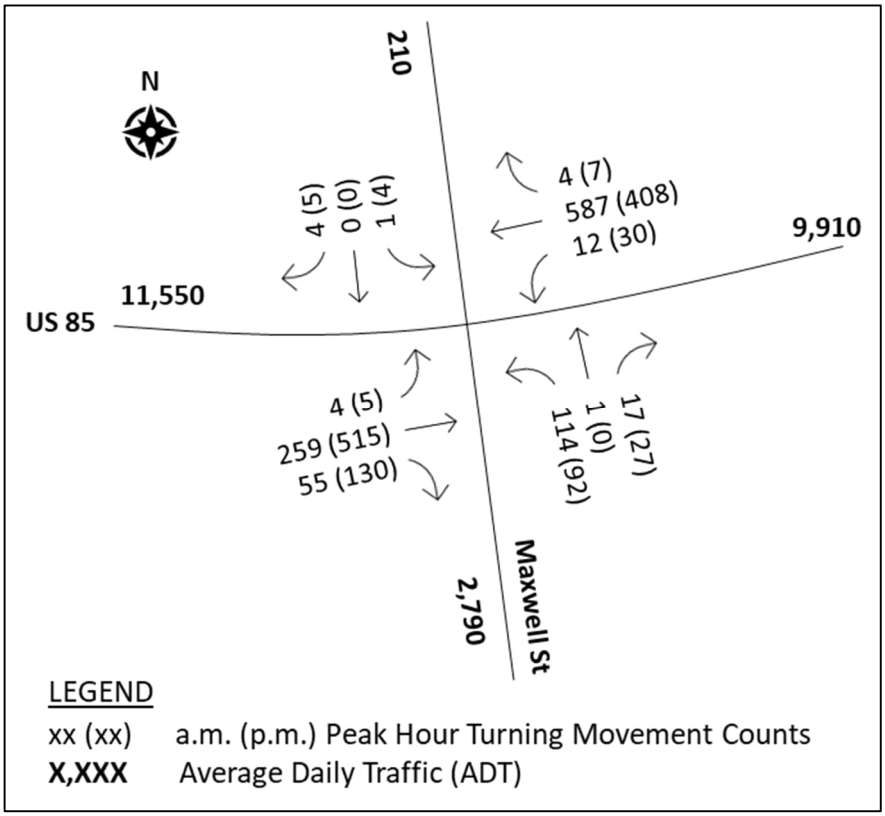


Figure 2. 2021 Existing Traffic Volumes

Heavy vehicle percentages were calculated from the turning movement counts and are the following:

- Northbound Maxwell Street – 4.2%
- Southbound Maxwell Street – 0.0%
- Eastbound US 85 – 0.3%
- Westbound US 85 – 1.1%

Data from the CDOT Online Transportation Information System (OTIS) online platform shows that the truck percentage on US 85 is 1.8% at Station ID 103648 which is located just west of the US 85 and Maxwell Street intersection.

3.2 Crash Data Summary

CDOT provided five years of crash data from July 2015 to June 2020 at the intersection of US 85 and Maxwell Street. There was a total of thirteen (13) crashes reported at the intersection. These crashes are summarized below. The full crash data records are included in **Appendix B.**

Summary of crashes by year

- 2015 (July to December): 2 crashes
- 2016: 2 crashes
- 2017: 0 crashes
- 2018: 4 crashes
- 2019: 2 crashes

- 2020 (January to June): 3 crashes

Summary of severity of crash

- Property Damage Only (PDO): 6 crashes (46%)
- Injury: 7 crashes (54%), 9 people injured
- Fatal: 0 crashes (0%)

Summary of type of crash

- Broadside: 8 crashes (60%)
- Sideswipe, Same Direction: 1 crash (8%)
- Approach: 1 crash (8%)
- Rear-End: 1 crash (8%)
- Guardrail: 1 crash (8%)
- Bicycle: 1 crash (8%)

Summary of weather conditions

- Dry: 11 crashes (84%)
- Icy: 1 crash (8%)
- Snowy: 1 crash (8%)

Summary of lighting conditions

- Daylight: 10 crashes (77%)
- Dark-Unlighted: 2 crashes (15%)
- Dark-Lighted: 1 crash (8%)

Three (3) crashes involved a vehicle turning right from eastbound US 85 onto south Maxwell Street and crashing into a vehicle stopped at the intersection. Six (6) crashes involved conflicts with a vehicle on Maxwell Street either trying to go straight through the intersection or turning left onto US 85. One (1) crash involved a bicycle on Maxwell Street trying to cross US 85.

4. 2045 Traffic Conditions

4.1 2045 Forecast Traffic Volumes

2045 traffic volumes were calculated by applying an annual growth rate to the 2021 existing traffic counts. CDOT Online Transportation Information System (OTIS) online platform shows that the 20-year growth factor on US 85 is 1.58 at Station ID 103648 which is located just west of the US 85 and Maxwell Street intersection. This growth factor calculates to an annual growth rate of 2.3%. This growth rate on US 85 makes sense today because as I-25 is reaching capacity, vehicles are starting to look for alternative routes including US 85. However, a growth of 2.3% every year for the next 24 years is unlikely. It is assumed based on roadway characteristics that US 85 has a capacity of 1000 vehicles per hour per lane. US 85 may see the 2.3% growth for the next few years, but as US 85 reaches capacity, the growth rate

will decrease. Also, it is assumed that improvements to I-25 will occur within 24 years which will increase the capacity on the freeway. Because of these factors, a 2.0% annual growth rate was applied to represent an average growth over the 24-year analysis period.

The north leg provides access to a Stratmoor Valley Trailhead parking lot and a built-out industrial area. Maxwell Street dead-ends and does not connect to any other roadways to the north. The south leg of Maxwell Street provides access to an established residential area. The residential area is built-out with minimal space for additional development. Maxwell Street ends just north of Academy Boulevard and does not provide direct access. However, Coventry Drive does provide the only access to the neighborhood from Academy Boulevard at the south via a right-out/right-in only T-intersection and intersects with Maxwell Street approximately 1000 feet north. Maxwell Street does not provide a convenient pass-thru route. For these reasons, it is unlikely that Maxwell Street will see much growth. Instead, an annual growth rate of 0.5% was applied for all movements to and from Maxwell Street. The annual growth rate of 2.0% was applied to thru traffic on US 85 only. Forecast 2045 peak hour traffic volumes are pictured on **Figure 3.**

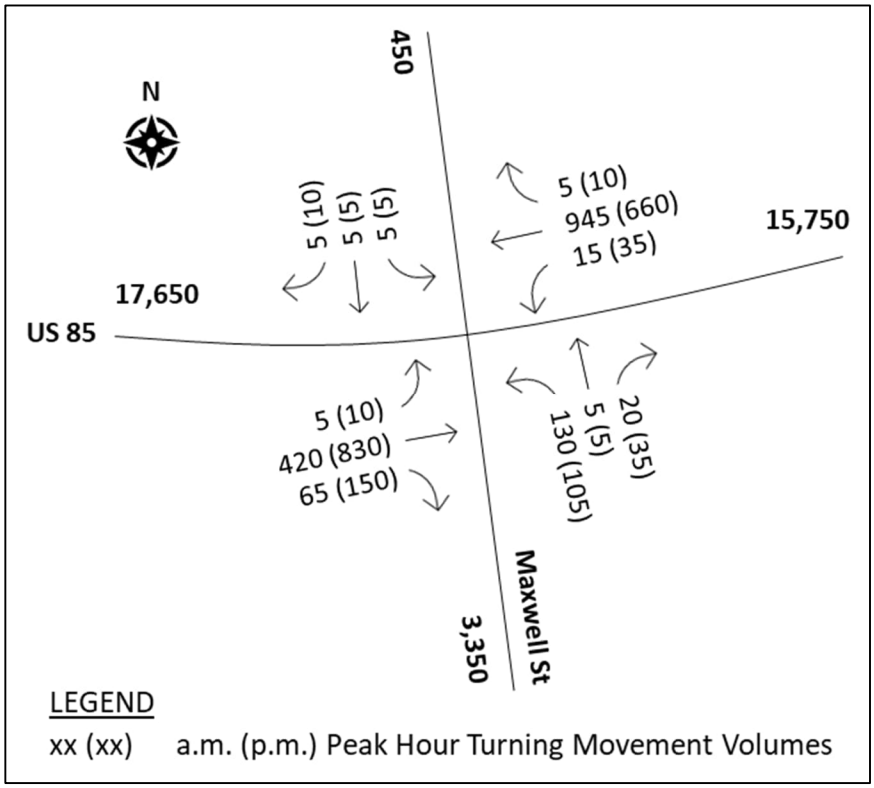


Figure 3. 2045 Forecast Traffic Volumes

5. Traffic Operational Analysis

5.1 Analysis Methodology

Traffic operations for stop-control and signal-control at the study intersection were analyzed using Synchro 11, which implements methodologies of the *Highway Capacity Manual 6th Edition* published in 2016 by the Transportation Research Board. Synchro determines vehicle delay by movement, approach, and for the intersection overall to determine level of service based on roadway geometric data, volume data, type of traffic control, and signal timing parameters if an intersection is signalized.

Traffic operations for the roundabout concept were analyzed using Sidra Intersection 9.0 Plus software (Sidra) which also implements methodologies of the *Highway Capacity Manual 6th Edition.*

Additionally, a signal warrant analysis was also conducted using Highway Capacity Software 7 (HCS7) developed by McTrans Center at the University of Florida to check if signal warrants are met at the intersection.

Level of service (LOS) is categorized by letter grades ranging from A to F. LOS A represents the best traffic conditions with minimal congestion and vehicle delay, and LOS F represents the worst traffic conditions with potentially extreme congestion and typically high vehicle delay. Criteria for assigning LOS differ based on whether an intersection is signalized or unsignalized as shown in **Table 1**. For the purposes of analysis, the threshold for acceptable LOS is D or better on each approach representing under-saturated conditions.

Table 1. Level of Service Criteria

Level of Service	Unsignalized Delay (s/veh)	Signalized Delay (s/veh)
A	≤ 10	≤ 10
B	>10 − 15	>10 − 20
C	>15 − 25	>20 − 35
D	>25 − 35	>35 − 55
E	>35 − 50	>55 − 80
F	>50	>80

Source: Highway Capacity Manual 6th Edition, 2016, Transportation Research Board

To analyze traffic operations at US 85 and Maxwell Street intersection, the following assumptions were made:

1. Peak hour factors (PHFs) were calculated from the 2021 traffic counts and applied to both existing and future year conditions.
2. Heavy vehicle percentages were assumed to be the following for both existing and future year conditions (Synchro does not allow decimal inputs):
    a. Northbound Maxwell Street – 4% (4.2% calculated from 2021 traffic counts, rounded down)
    b. Southbound Maxwell Street – 1% (0% calculated from 2021 traffic counts, adjusted to 1%)
    c. Eastbound US 85 – 2% (1.8% taken from OTIS, rounded up)
    d. Westbound US 85 – 2% (1.8% taken from OTIS, rounded up)
3. Cycle lengths were set at 90 seconds for each scenario analyzed that includes traffic signalization.
4. Synchro created optimized splits based on turning movement volumes for each peak hour for each scenario analyzed that includes traffic signalization.
5. Signal controllers are actuated-uncoordinated with 3 seconds yellow time and 2 seconds all-red time.
6. All other software values not explicitly mentioned remain at default values.

5.2 2021 Existing Conditions Analysis

Analysis of existing conditions was done using 2021 traffic volumes pictured on **Figure 2** using the intersection lane geometry and traffic control pictured on **Figure 1**. For 2021 existing conditions, LOS, and vehicle delay are summarized in **Table 2**. Synchro reports for 2021 existing conditions are included in **Appendix C**.

In 2021 with stop-control on the northbound and southbound approaches only, the US 85 and Maxwell Street intersection operates overall at LOS A during both the a.m. and p.m. peak hours. However, the northbound and southbound approaches operate at LOS F and LOS C during both the a.m. and p.m. peak hours, respectively.

Table 2. 2021 Existing Conditions Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	A	9.0	A	7.2
Northbound MAXWELL ST	F	65.7	F	68.5
Southbound MAXWELL ST	C	17.8	C	22.2
Eastbound US 85	A	9.1	A	8.5
Westbound US 85	A	8.1	A	9.3

5.3 Traffic Signal Warrant Analysis

Given that the US 85 and Maxwell Street intersection northbound approach operates poorly under existing conditions with LOS F, the intersection was evaluated on whether it meets warrant criteria for traffic signal control. Traffic signal control warrant methodologies described in the *Manual on Uniform Traffic Control Devices, 2012 Revision* (MUTCD), Chapter 4C were used to evaluate the intersection. HCS7 Warrants Version 7.1 software was also used to verify the results. The software also uses the methods described in Chapter 4C of the MUTCD.

Warrants 1 and 2, which are applicable to the intersection, were met under 2021 existing conditions. All warrants and the check process are described below. The HCS7 Warrant output reports are included in **Appendix D**.

Warrant 1, “Eight-Hour Vehicular Volume”

This signal warrant addresses situations where large intersecting traffic volumes occur at intersections or high major street traffic volume causes high delay to minor street traffic. Because 85th percentile speed exceeds 40 mph on US 85 (the major street), lower volume thresholds are used to check this signal warrant. Eleven hourly volumes satisfy criteria for Condition B-Interruption of Continuous Traffic for 2021 conditions and, therefore, Warrant 1 is met for 2021 existing conditions. (Refer to MUTCD Section 4C.02 for additional details about this warrant.)

Warrant 2, “Four-Hour Vehicular Volume”

This signal warrant addresses situations where the volume of intersecting traffic at intersections is the main reason to consider a traffic signal. Because 85th percentile speed exceeds 40 mph on US 85 (the major street), lower volume thresholds shown on MUTCD Figure 4C-2 are used to check this warrant instead of

MUTCD Figure 4C-1. **Figure 4** show 2021 volumes plotted against the threshold for Warrant 2. Eight hourly volumes plot above the threshold for one lane approaches on the major street and one lane approach on the minor street and, therefore, Warrant 2 is met for 2021 existing conditions. (Refer to MUTCD Section 4C.03 for additional details about this warrant.)

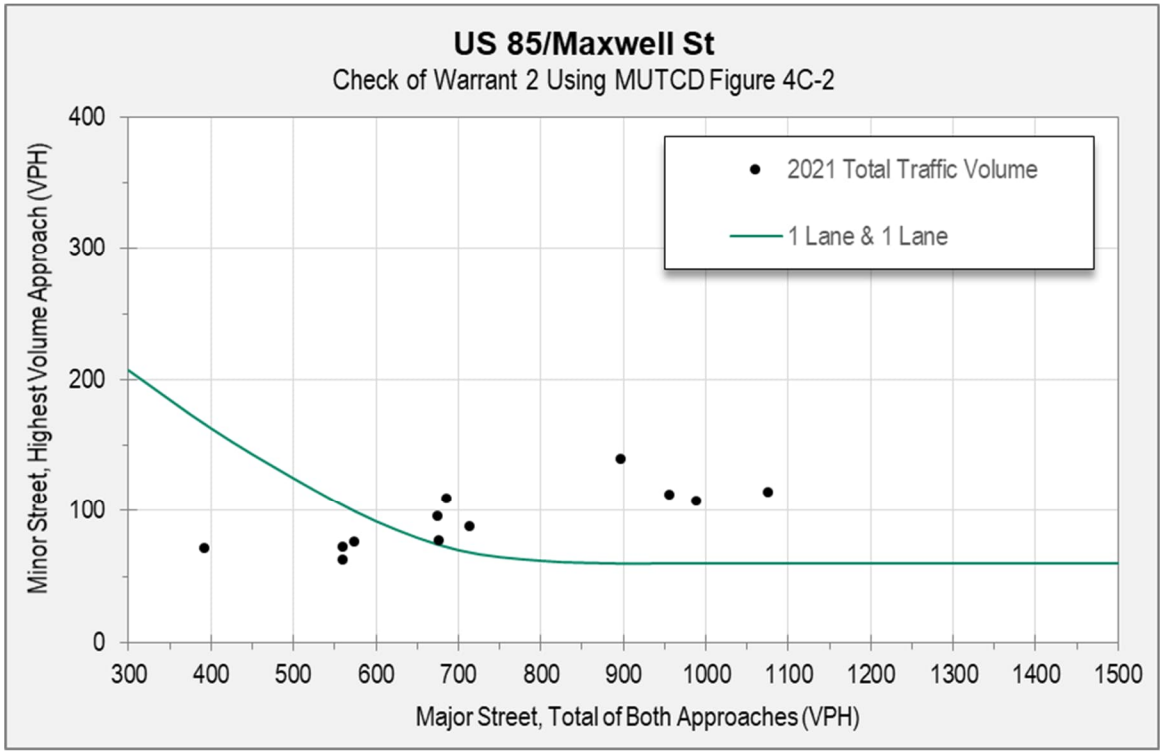


Figure 4. Check of Signal Warrant 2 for 2021 Existing US 85 & Maxwell St Conditions

Warrant 3, “Peak Hour”

This signal warrant addresses the condition where minor-street traffic experiences high delay trying to cross or access the major street and when large fluctuations in traffic volume occur over a short time. The MUTCD states that this signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. The intersection does not serve any of these facilities, therefore Warrant 3 does not apply even though HCS7 software states that the intersection meets criteria. (Refer to MUTCD Section 4C.04 for additional details about this warrant.)

Warrant 4, “Pedestrian Volume”

This signal warrant addresses the condition where high major street traffic volume causes pedestrians to experience high delay crossing the major street. Pedestrians and bicyclists were observed at the intersection but not enough to meet criteria and warrant signalization at the intersection. (Refer to MUTCD Section 4C.05 for additional details about this warrant.)

Warrant 5, “School Crossing”

This signal warrant addresses the condition where safety of school children crossing the major street is of concern. There are no schools in the immediate vicinity which would utilize the intersection of US 85 and Maxwell Street, so this warrant is not considered to be applicable. (Refer to MUTCD Section 4C.06 for additional details about this warrant.)

Warrant 6, “Coordinated Signal System”

This signal warrant addresses situations where traffic signals may be needed to maintain proper platooning of vehicles within a coordinated signal system. The US 85 and Maxwell Street intersection is not part of a coordinated signalized corridor, so this warrant is not applicable. (Refer to MUTCD Section 4C.07 for additional details about this warrant.)

Warrant 7, “Crash Experience”

This signal warrant addresses a situation where crashes are severe and/or occur frequently and a traffic signal may be able to reduce both frequency and severity of crashes. Crash data indicates that approximately half the reported crashes occurred between cross traffic (north/south vehicle crashes with an east/west vehicle). Signalization of the intersection may have prevented these crashes by providing north/south vehicles a gap in opposing traffic to safely make their desired movements. However, the reported crash data fails to meet all criteria required of this warrant. (Refer to MUTCD Section 4C.08 for additional details about this warrant.)

Warrant 8, “Roadway Network”

This signal warrant addresses the condition where traffic flow is not well organized on a road network, and it is desirable to encourage concentration of traffic flow at the intersection of two major routes. Maxwell Road is not considered a major roadway, so this warrant is not applicable. (Refer to MUTCD Section 4C.09 for additional details about this warrant.)

Warrant 9, “Intersection Near Grade Crossing”

This signal warrant addresses situations where an at-grade rail crossing exists on or near an intersection approach that is controlled by a stop or yield sign. There is no railroad crossing in the vicinity of the US 85 and Maxwell Street intersection, so this warrant is not applicable. (Refer to MUTCD Section 4C.10 for additional details about this warrant.)

5.4 2045 No-Build Traffic Conditions Analysis

Analysis of unmitigated 2045 traffic conditions was done using 2045 forecast traffic volumes pictured on **Figure 3** assuming existing conditions lane geometry and two-way stop-control remain in place at the intersection of US 85 and Maxwell Street. This represents a “No-Build” horizon year scenario in which no intersection improvements are implemented. This is a baseline to compare mitigation options against. 2045 No-Build traffic conditions LOS and vehicle delay are summarized in **Table 3**. Synchro reports for 2045 No-Build traffic conditions are included in **Appendix E**.

Overall, the intersection is forecast to operate at LOS E and LOS F for 2045 a.m. and p.m. peak hours, respectively. The northbound movement is forecast to experience significant delay in both peak hours. The southbound movement is forecast to operate at LOS E and F in the a.m. and p.m. peak hours, respectively.

Table 3. 2045 No-Build Conditions Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	F	111.6	F	124.2
Northbound MAXWELL ST	F	>300	F	>300
Southbound MAXWELL ST	F	108.1	F	165.3
Eastbound Left-Thru US 85	B	10.9	A	9.8
Eastbound Right US 85	A	0.0	A	0.0
Westbound Left-Thru US 85	A	8.7	B	11.0
Westbound Right US 85	A	0.0	A	0.0

5.5 Mitigation for 2045 Traffic Conditions

5.5.1 2045 Mitigation Analysis: Traffic Signal with Minimal Roadway Improvements

2045 Mitigation Analysis: Traffic Signal with Minimal Roadway Improvements changes the intersection control to traffic signal control while trying to maintain the intersection within the existing pavement footprint. The lane configurations on the US 85 approaches were modified to provide a dedicated left turn lane and a shared thru-right lane for both eastbound and westbound approaches. It is undesirable to have a shared left-thru lane at signalized intersections with large opposing volumes as operations deteriorate for the thru movements if the lane is blocked by a vehicle waiting to turn left. The northbound approach provides a dedicated left turn lane and a shared thru-right turn lane. The width of the existing pavement on the south leg should allow for the additional left turn lane without needing to widen the leg. The southbound approach remains the same as existing with one shared left-thru-right turn lane. Even though the goal of this scenario is to provide an alternative that can be constructed within the existing pavement footprint, this configuration may require some widening of both legs of US 85 to provide adequate left turn lane lengths that meet CDOT design standards.

The signal timing includes a protected+permissive phase for each the eastbound and westbound left turn movements. Since the roadway alignment is on a curve, sight distance should be evaluated if this configuration continues to design. If further evaluation determines that the sight distance is inadequate, then the eastbound and westbound movements should have a left turn protected only phase which will modify forecast traffic operations.

The intersection lane configuration is depicted in **Figure 5.** 2045 Traffic Signal conditions LOS and vehicle delay are summarized in **Table 4**. Synchro reports for 2045 Traffic Signal conditions are included in **Appendix F**.

The intersection is forecast to operate at LOS C overall for both the a.m. and p.m. peak hours. All movements are forecast to operate at LOS D or better.

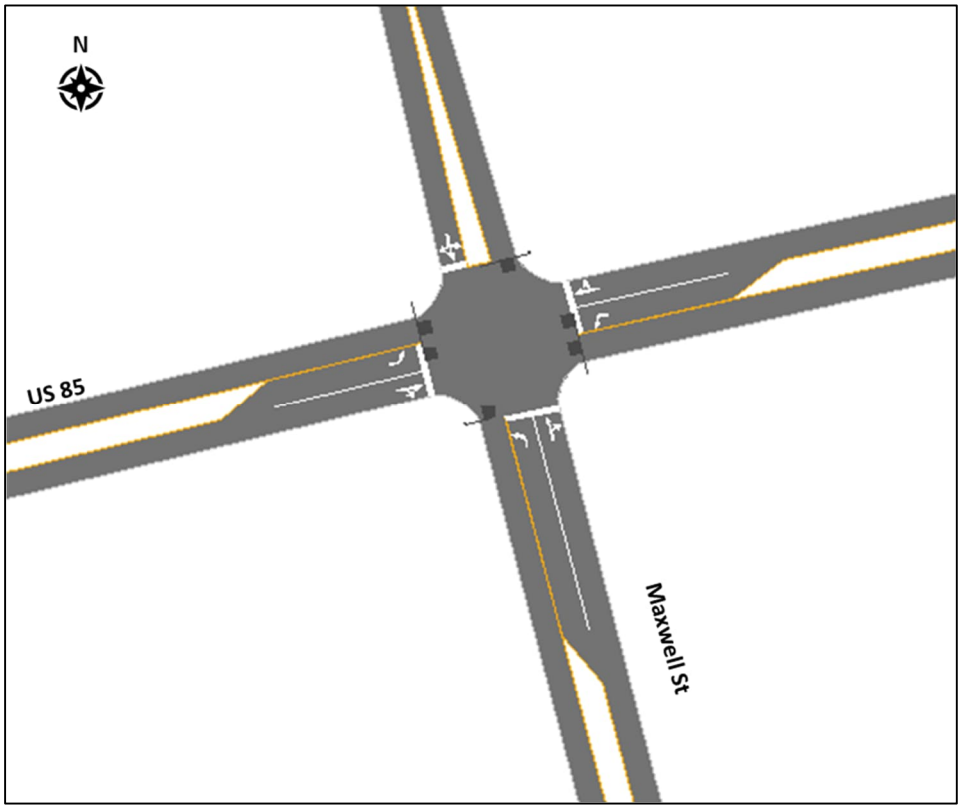


Figure 5. 2045 Traffic Signal with Minimal Roadway Improvements Intersection Configuration

Table 4. 2045 Traffic Signal with Minimal Roadway Improvements Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	C	33.2	C	34.6
Northbound Left MAXWELL ST	C	33.4	C	32.2
Northbound Thru-Right MAXWELL ST	C	28.5	C	30.1
Southbound MAXWELL ST	C	28.0	C	30.1
Eastbound Left US 85	C	22.2	B	11.8
Eastbound Thru-Right US 85	B	10.9	D	51.0
Westbound Left US 85	A	8.0	C	22.7
Westbound Thru-Right US 85	D	45.3	B	16.1

5.5.2 2045 Mitigation Analysis: Traffic Signal with Roadway Improvements

2045 Mitigation Analysis: Traffic Signal with Roadway Improvements changes the intersection control to traffic signal control and includes additional dedicated turn lanes. The lane configurations on the US 85 approaches were modified to provide a dedicated left turn lane, thru lane and right turn lane for the eastbound approach and a dedicated left turn lane with a shared thru-right lane for the westbound approach. The northbound approach provides a dedicated left turn lane and a shared thru-right turn lane. The width of the existing pavement on the south leg should allow for the additional left turn lane without needing to widen the leg. The southbound approach remains the same as existing with one shared left-thru-right turn lane. Widening of the west leg of the intersection would be required to add the additional left turn lane. The east leg may require widening to provide an adequate left turn lane length that meets CDOT design standards

The signal timing includes a protected+permissive phase for each the eastbound and westbound left turn movements. Since the roadway alignment is on a curve, sight distance should be evaluated if this configuration continues to design. If further evaluation determines that the sight distance is inadequate, then the eastbound and westbound movements should have a left turn protected only phase which will modify forecast traffic operations.

The intersection lane configuration is depicted in **Figure 6.** 2045 Traffic Signal with Roadway Improvements conditions LOS and vehicle delay are summarized in **Table 5**. Synchro reports for 2045 Traffic Signal with Roadway Improvements conditions are included in **Appendix F**.

The intersection is forecast to operate at LOS C overall for the a.m. and p.m. peak hours. All movements are forecast to operate at LOS D or better.

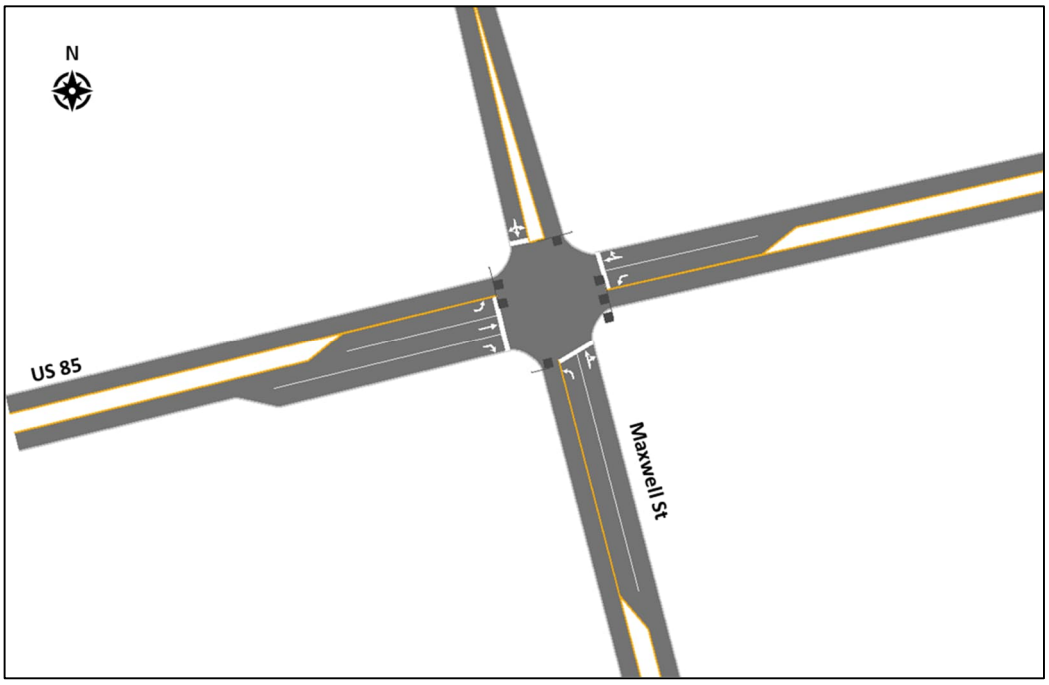


Figure 6. 2045 Traffic Signal with Roadway Improvements Intersection Configuration

Table 5. 2045 Traffic Signal Conditions with Roadway Improvements Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	C	32.8	C	20.8
Northbound Left MAXWELL ST	C	33.4	C	26.7
Northbound Thru-Right MAXWELL ST	C	28.5	C	25.1
Southbound MAXWELL ST	C	28.0	C	25.1
Eastbound Left US 85	C	22.2	B	13.2
Eastbound Thru US 85	B	10.0	C	24.1
Eastbound Right US 85	A	7.6	A	9.4
Westbound Left US 85	A	7.4	B	15.7
Westbound Thru-Right US 85	D	45.3	B	18.7

Table 6 shows a comparison of the forecast operations between the two signalized options analyzed. Providing the additional right turn lane eastbound US 85 improves the overall intersection operations and operations for the eastbound movement during the p.m. peak hour. Operations during the a.m. peak hour for all movements are similar for both options.

Table 6. Traffic Signal Level of Service and Delay Comparison

A.M. Peak				
Approach	Min Road Improvements		Road Improvements	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	C	33.2	C	32.8
Northbound MAXWELL ST	C	32.3	C	32.3
Southbound MAXWELL ST	C	28.0	C	28.0
Eastbound US 85	B	11.1	A	9.9
Westbound US 85	D	44.5	D	44.5

P.M. Peak				
Approach	Min Road Improvements		Road Improvements	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	C	34.6	C	20.8
Northbound MAXWELL ST	C	31.5	C	26.2
Southbound MAXWELL ST	C	30.1	C	25.1
Eastbound US 85	D	50.4	C	21.5
Westbound US 85	B	16.4	B	18.6

5.5.3 2045 Mitigation Analysis: Roundabout

2045 Mitigation Analysis: Roundabout changes the intersection to a roundabout with single lane approaches for all legs. The intersection lane configuration is depicted in **Figure 7.** 2045 Roundabout conditions LOS and vehicle delay are summarized in **Table 7**. Sidra reports for 2045 Roundabout conditions are included in **Appendix F**.

The roundabout is forecast to operate at LOS E and LOS C for the a.m. and p.m. peak hours, respectively. In the a.m. peak hour, all approaches are forecast to operate at LOS A or B except the westbound movement which is forecast at LOS F. This is due to the large northbound left turn movement hindering the westbound movement from entering the roundabout. In the p.m. peak hour, all approaches are forecast to operate at LOS C or better.

Figure 7. 2045 Roundabout Intersection Configuration

Table 7. 2045 Roundabout Conditions Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	E	38.3	C	19.7
Northbound MAXWELL ST	A	7.7	B	12.7
Southbound MAXWELL ST	B	11.4	A	9.6
Eastbound US 85	A	7.4	C	23.6
Westbound US 85	F	60.1	C	17.0

To get the roundabout to operate at acceptable LOS in the a.m. peak hour (LOS A overall and for all movements), the east leg would need to be a two-lane approach with a two-lane exit on the west leg. This would require widening US 85 beyond the intersection. The two lanes exiting the roundabout on the west leg would then have to merge back into one lane to match existing US 85. This option will require additional ROW beyond the intersection and widening of the bridge to the west over I-25. Additionally, merging traffic on a curve is not ideal.

5.5.4 2045 Mitigation Analysis: Restriping using the Existing Pavement

2045 Mitigation Analysis: Restriping using the Existing Pavement reconfigures the intersection lanes without the need for widening the existing roadways. Eastbound US 85 and southbound Maxwell Street remains the same lane configuration as existing. Westbound US 85 would get reconfigured from a shared left turn-thru lane with a right turn lane to a left turn lane with a shared thru-right turn lane. The existing pavement width on the south leg should allow for northbound Maxwell Street to get restriped to provide a left turn lane and a shared thru-right turn lane. The intersection would remain two-way stop-controlled on Maxwell Street with US 85 being free-flow.

The intersection lane configuration is depicted in **Figure 8.** 2045 Restriping conditions LOS and vehicle delay are summarized in **Table 8**. Synchro reports for 2045 Restriping conditions are included in **Appendix F**.

The intersection is forecast to operate overall at LOS F for both the a.m. and p.m. peak hours. The new lane configuration fails to improve the operations for the northbound left turn movement and the southbound movement as they are reporting LOS F for both a.m. and p.m. peak hours.

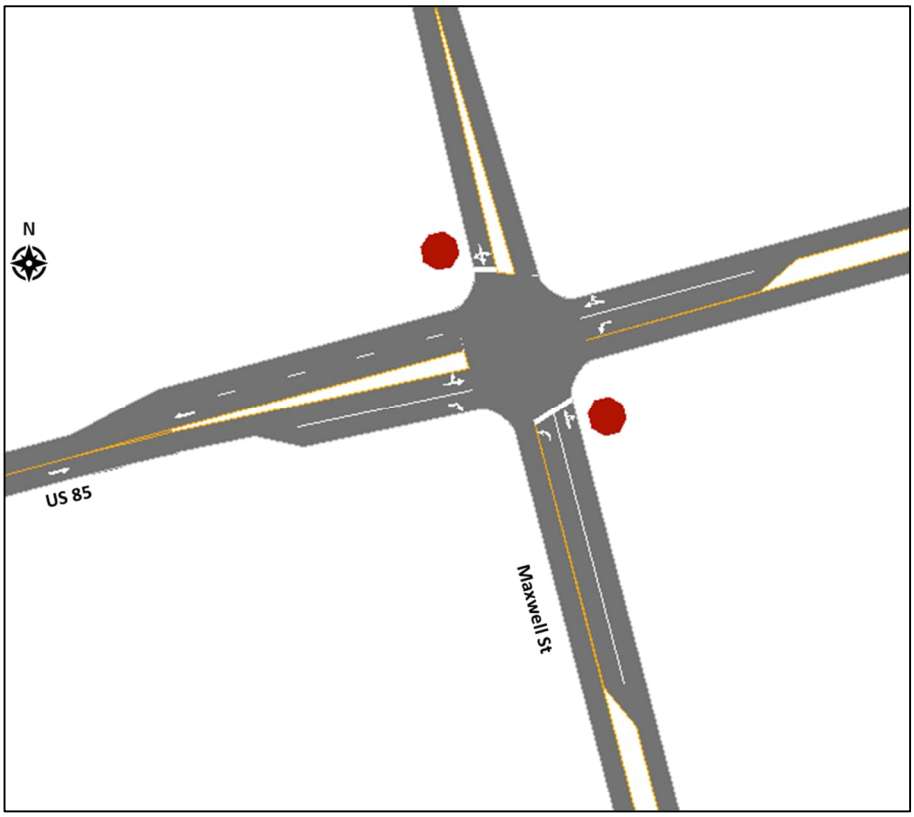


Figure 8. 2045 Restriping Intersection Configuration

Table 8. 2045 Restriping Conditions Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	F	72.7	F	76.8
Northbound Left MAXWELL ST	F	>300	F	>300
Northbound Thru-Right MAXWELL ST	D	33.4	D	25.3
Southbound MAXWELL ST	F	103.1	F	156.7
Eastbound Left-Thru US 85	B	10.9	A	9.8
Eastbound Right US 85	A	0.0	A	0.0
Westbound Left US 85	A	8.7	B	11.0
Westbound Thru-Right US 85	A	0.0	A	0.0

5.5.5 2045 Mitigation Analysis: Right-in/ Right-out

2045 Mitigation Analysis: Right-in/ Right-out reconfigures both the north and south leg of the intersection to be right-out movements only. Median islands will need to be constructed to fully restrict the movements. The left turn movement is restricted from westbound US 85 while maintaining the thru and right turn lanes. Left turning vehicles will have to access the residential area from the south at Coventry Drive via Academy Boulevard. Eastbound US 85 remains as existing with a shared left-thru lane and a right turn lane. Due to the existing roadway network, there is not a convenient alternative route to access the north property if traveling south on US 85 if the left turn movement is restricted. It is recommended that the left turn movement remain since the projected traffic volumes making this left turn from US 85 are low (5 a.m. and 10 p.m. peak hour vehicles) and because vehicles would have to travel an additional 4.5 miles to access the property if the left turn is restricted.

The intersection lane configuration is depicted in **Figure 9.** 2045 Right-in/ Right-out conditions LOS and vehicle delay are summarized in **Table 9**. Synchro reports for 2045 Right-in/ Right-out conditions are included in **Appendix F**.

With the restriction of the left turn movements at the intersection, traffic will be forced to reroute through other intersections in the area. This may cause operations at these intersections to deteriorate. The anticipated routes vehicles will travel once left turn movements are restricted is depicted in **Figure 10**.

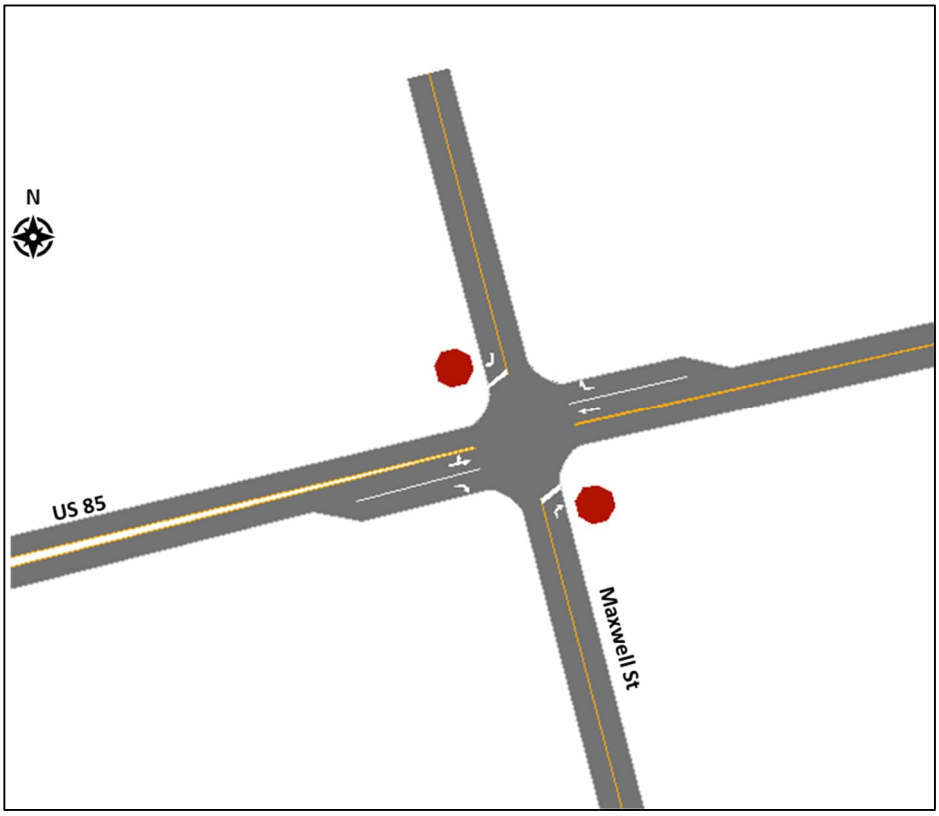


Figure 9. 2045 Right-in/ Right-out Intersection Configuration

Table 9. 2045 Right-in/ Right-out Conditions Level of Service and Delay

Approach	A.M. Peak		P.M. Peak	
	Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
Overall	A	0.7	A	1.2
Northbound Right MAXWELL ST	B	11.6	C	18.0
Southbound Right MAXWELL ST	C	21.3	C	17.9
Eastbound Left-Thru US 85	B	11.0	A	9.8
Eastbound Right US 85	A	0.0	A	0.0
Westbound Thru US 85	A	0.0	A	0.0
Westbound Right US 85	A	0.0	A	0.0

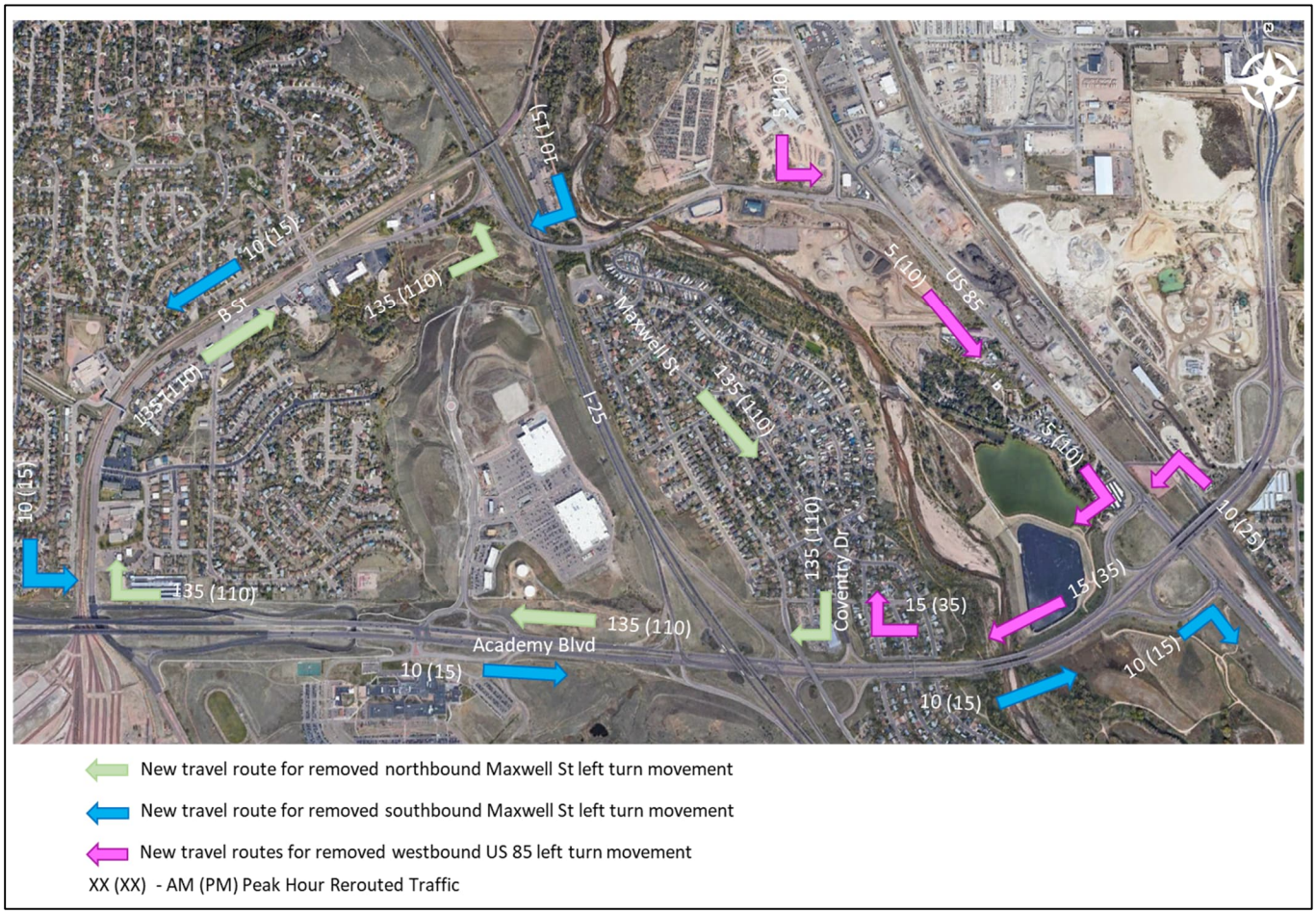


Figure 10. Projected Rerouted Travel for Right-in/ Right-out Intersection Configuration

The intersection is forecast to operate overall at LOS A for both the a.m. and p.m. peak hours with all movements forecast to operate at LOS C or better.

With the rerouting of traffic that will happen with restricting left turn movements, the intersections of US 85/Academy Boulevard, I-25 ramps/Academy Boulevard, Academy Boulevard/Venetucci Boulevard, Academy Boulevard/ B Street, and US 85/B Street as well as the weaving movement between Coventry Drive and I-25 Northbound On-ramp will all see an increase in traffic. The intersections and the weaving movement should be further evaluated to determine the projected effects on traffic operations as a result of the rerouted traffic.

6. Summary

Table 10 summarizes the 2045 forecasted levels of service for each intersection configuration discussed in this report. Both the No-Build and Restriping options, which maintains the two-way stop-control at the intersection, is forecast to operate at LOS F overall and for both northbound and southbound approaches. The Roundabout option is forecast to operate during the a.m. peak hour at LOS E overall and LOS F in the westbound direction on US 85. Both Traffic Signal options and the Right-in/ Right-out options are forecast to operate at acceptable LOS overall and for each approach during both a.m. and p.m. peak hours.

Table 10. Traffic Operations Comparison of 2045 Intersection Options

	No- Build		Traffic Signal with Minimal Road Improvements		Traffic Signal with Road Improvements		Roundabout		Restriping		Right-in/ Right- out	
	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS
Overall	F	F	C	C	C	C	E	C	F	F	A	A
Northbound MAXWELL ST	F	F	C	C	C	C	A	B	F	F	B	C
Southbound MAXWELL ST	F	F	C	C	C	C	B	A	F	F	C	C
Eastbound US 85	A	A	B	D	A	C	A	C	A	A	A	A
Westbound US 85	A	A	D	B	D	B	F	C	A	A	A	A

Appendix A – 2021 Existing Conditions Traffic Counts

All Traffic Data Services

1 MAXWELL ST & US85 AM
Tuesday, November 16, 2021

Peak Hour
03:30 PM - 04:30 PM
Peak 15-Minutes
03:45 PM - 04:00 PM

Traffic Counts - All Vehicles

	US85					US85					MAXWELL ST					MAXWELL ST						
	Eastbound					Westbound					Northbound					Southbound						Rolling
Time	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	Total	Hour
6:00 AM	0	0	16	1	0	0	1	58	0	0	0	10	0	5	0	0	0	0	0	0	91	470
6:15 AM	0	0	27	3	0	0	1	59	1	0	0	11	0	3	0	0	2	0	0	0	107	573
6:30 AM	0	1	28	2	0	0	2	64	1	0	0	11	0	7	0	0	1	0	0	0	117	738
6:45 AM	0	2	39	3	0	0	1	79	3	0	0	20	0	5	0	0	2	0	1	0	155	897
7:00 AM	0	0	53	5	0	0	2	96	1	0	0	22	0	15	0	0	0	0	0	0	194	1,039
7:15 AM	0	0	52	12	0	0	2	175	1	0	0	25	0	5	0	0	0	0	0	0	272	1,058
7:30 AM	0	1	57	14	0	0	2	161	0	0	0	35	0	4	0	0	1	0	1	0	276	1,011
7:45 AM	0	1	75	12	0	0	3	170	1	0	0	32	0	2	0	0	0	0	1	0	297	928
8:00 AM	0	2	75	17	0	0	5	81	2	0	0	22	1	6	0	0	0	0	2	0	213	809
8:15 AM	0	1	55	18	0	0	4	111	2	0	0	25	1	6	0	0	0	0	2	0	225	750
8:30 AM	0	6	45	15	0	0	2	89	2	0	0	20	0	7	0	0	2	2	3	0	193	699
8:45 AM	0	3	46	7	0	0	5	92	1	0	0	17	0	5	0	0	0	0	2	0	178	653
9:00 AM	0	1	37	11	0	0	6	72	4	0	0	17	0	3	0	0	1	2	0	0	154	644
9:15 AM	0	0	53	13	0	0	2	80	3	0	0	14	0	5	0	0	1	0	3	0	174	632
9:30 AM	1	0	58	13	0	0	1	58	2	0	0	10	0	2	0	0	1	0	1	0	147	621
9:45 AM	0	1	48	10	0	0	1	83	1	0	0	18	0	4	0	0	1	0	2	0	169	613
10:00 AM	0	1	59	6	0	0	3	53	3	0	0	10	0	6	0	0	1	0	0	0	142	626
10:15 AM	0	0	50	8	0	0	3	77	0	0	0	21	1	3	0	0	0	0	0	0	163	656
10:30 AM	0	1	51	8	0	0	3	65	1	0	0	8	0	2	0	0	0	0	0	0	139	664
10:45 AM	1	2	61	15	0	0	1	85	2	0	0	10	0	2	0	0	1	0	2	0	182	677
11:00 AM	0	2	69	15	0	0	1	58	1	0	0	18	0	6	0	0	1	0	1	0	172	655
11:15 AM	0	0	66	9	0	0	2	69	0	0	0	16	1	5	0	0	1	0	2	0	171	673
11:30 AM	0	2	50	11	0	0	7	69	0	0	0	9	0	4	0	0	0	0	0	0	152	701
11:45 AM	1	1	55	19	0	0	3	63	0	0	0	14	0	4	0	0	0	0	0	0	160	743
12:00 PM	0	3	75	16	0	0	4	64	2	0	0	15	0	5	0	0	3	0	3	0	190	789
12:15 PM	0	3	66	22	0	0	3	79	2	0	0	16	1	2	0	0	2	0	3	0	199	784
12:30 PM	0	2	56	16	0	0	3	84	2	0	0	24	0	4	0	0	1	0	2	0	194	772
12:45 PM	0	1	68	15	0	0	11	77	0	0	0	23	0	6	0	0	4	0	1	0	206	778
1:00 PM	0	5	66	16	0	0	3	67	1	0	0	18	1	5	0	0	0	0	3	0	185	766
1:15 PM	0	3	63	19	0	0	5	76	2	0	0	15	0	2	0	0	1	0	1	0	187	757
1:30 PM	0	2	85	23	0	0	4	61	2	0	0	12	0	6	0	0	3	0	2	0	200	762
1:45 PM	0	1	80	18	0	0	3	69	2	0	0	14	2	3	0	0	1	0	1	0	194	761
2:00 PM	0	4	64	16	0	0	5	65	0	0	0	17	1	0	0	0	1	0	3	0	176	817
2:15 PM	0	1	75	18	0	0	3	72	2	0	0	15	2	0	0	0	1	1	2	0	192	869
2:30 PM	0	1	72	28	0	0	5	67	2	0	0	16	3	2	0	0	1	0	2	0	199	927
2:45 PM	0	1	97	19	0	0	5	88	4	0	0	29	0	3	0	0	1	0	3	0	250	1,032
3:00 PM	0	1	83	19	0	0	8	91	1	0	0	21	0	3	0	0	0	1	0	0	228	1,104
3:15 PM	0	2	86	27	0	0	6	103	1	0	0	19	0	5	0	0	0	0	1	0	250	1,169
3:30 PM	0	2	137	31	0	0	9	88	2	0	0	25	0	4	0	0	1	0	5	0	304	1,223
3:45 PM	0	1	112	35	0	0	9	132	2	0	0	24	0	7	0	0	0	0	0	0	322	1,214
4:00 PM	0	1	124	25	0	0	8	101	3	0	0	21	0	10	0	0	0	0	0	0	293	1,199
4:15 PM	0	1	142	39	0	0	4	87	0	0	0	22	0	6	0	0	3	0	0	0	304	1,195

4:30 PM	0	0	123	34	0	0	10	104	1	0	0	17	0	3	0	0	1	0	2	0	295	1,178
4:45 PM	1	0	121	24	0	0	12	110	0	0	0	28	0	8	0	0	1	0	2	0	307	1,166
5:00 PM	0	0	125	29	0	0	12	86	0	0	0	30	0	4	0	0	1	0	2	0	289	1,073
5:15 PM	0	0	120	37	0	0	6	90	3	0	0	27	0	3	0	0	1	0	0	0	287	0
5:30 PM	0	2	115	42	0	0	9	89	0	0	0	22	0	3	0	0	1	0	0	0	283	0
5:45 PM	0	0	77	30	0	0	4	78	1	0	0	20	0	4	0	0	0	0	0	0	214	0

Peak Rolling Hour Flow Rates

	Eastbound					Westbound					Northbound					Southbound					
Vehicle Type	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	Total
Articulated Trucks	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Lights	0	5	515	128	0	0	30	403	7	0	0	88	0	26	0	0	4	0	5	0	1,211
Mediums	0	0	0	2	0	0	0	3	0	0	0	4	0	1	0	0	0	0	0	0	10
Total	0	5	515	130	0	0	30	408	7	0	0	92	0	27	0	0	4	0	5	0	1,223
Bicycles on Crosswalk			0					0					0					0			0
Heavy Vehicle Percentage			0.3%					1.1%					4.2%					0.0%			1.0%
Heavy Vehicle Percentage	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	4.3%	0.0%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Peak Hour Factor (PHF)			0.89					0.86					0.90					0.79			0.95
Peak Hour Factor (PHF)	0.25	0.50	0.91	0.82	0.00	0.00	0.83	0.86	0.63	0.00	0.00	0.81	0.67	0.53	0.00	0.00	0.63	0.50	0.83	0.00	0.95

Traffic Counts by Vehicle Type

	Eastbound					Westbound					Northbound					Southbound					
Time	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	U-Turn	Left	Thru	Right	RTOR	Total
Articulated Trucks																					
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	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	0	0	0
7:30 AM	0	0	0	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	0	0	0
8:00 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	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	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
9:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
10:30 AM	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

	12:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	12:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	1:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	3:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	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	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	5:00 PM	0	0	0	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	0	0	0
	5:30 PM	0	0	0	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	0	0	0
Lights																						
	6:00 AM	0	0	15	1	0	0	1	58	0	0	0	10	0	5	0	0	0	0	0	0	90
	6:15 AM	0	0	27	3	0	0	1	55	1	0	0	11	0	3	0	0	2	0	0	0	103
	6:30 AM	0	1	28	2	0	0	2	63	1	0	0	10	0	6	0	0	1	0	0	0	114
	6:45 AM	0	2	39	3	0	0	0	79	3	0	0	20	0	4	0	0	2	0	1	0	153
	7:00 AM	0	0	51	5	0	0	2	96	1	0	0	22	0	15	0	0	0	0	0	0	192
	7:15 AM	0	0	52	10	0	0	2	174	1	0	0	25	0	5	0	0	0	0	0	0	269
	7:30 AM	0	1	57	13	0	0	2	157	0	0	0	32	0	4	0	0	1	0	1	0	268
	7:45 AM	0	1	68	11	0	0	3	169	1	0	0	30	0	2	0	0	0	0	1	0	286
	8:00 AM	0	2	73	16	0	0	5	79	2	0	0	22	0	6	0	0	0	0	1	0	206
	8:15 AM	0	1	53	18	0	0	4	109	2	0	0	24	1	5	0	0	0	0	2	0	219
	8:30 AM	0	6	44	15	0	0	2	88	2	0	0	20	0	7	0	0	2	2	3	0	191
	8:45 AM	0	3	45	6	0	0	5	91	1	0	0	17	0	5	0	0	0	0	2	0	175
	9:00 AM	0	1	35	11	0	0	6	69	3	0	0	17	0	2	0	0	1	1	0	0	146
	9:15 AM	0	0	52	13	0	0	2	77	3	0	0	14	0	5	0	0	1	0	3	0	170
	9:30 AM	1	0	57	13	0	0	1	58	2	0	0	10	0	2	0	0	1	0	1	0	146
	9:45 AM	0	1	48	10	0	0	1	83	1	0	0	18	0	4	0	0	1	0	2	0	169
	10:00 AM	0	1	59	6	0	0	3	53	3	0	0	10	0	6	0	0	1	0	0	0	142
	10:15 AM	0	0	48	8	0	0	3	75	0	0	0	21	1	3	0	0	0	0	0	0	159
	10:30 AM	0	1	49	8	0	0	3	63	1	0	0	8	0	2	0	0	0	0	0	0	135
	10:45 AM	1	2	61	15	0	0	1	85	2	0	0	10	0	2	0	0	1	0	2	0	182
	11:00 AM	0	2	67	15	0	0	1	56	1	0	0	18	0	6	0	0	1	0	1	0	168
	11:15 AM	0	0	65	9	0	0	2	69	0	0	0	16	1	5	0	0	1	0	2	0	170
	11:30 AM	0	2	49	11	0	0	7	69	0	0	0	9	0	4	0	0	0	0	0	0	151
	11:45 AM	1	1	55	19	0	0	3	63	0	0	0	14	0	4	0	0	0	0	0	0	160
	12:00 PM	0	3	75	16	0	0	4	64	2	0	0	15	0	5	0	0	3	0	3	0	190
	12:15 PM	0	3	64	22	0	0	3	79	2	0	0	16	1	2	0	0	2	0	3	0	197
	12:30 PM	0	2	54	16	0	0	3	82	2	0	0	24	0	4	0	0	1	0	2	0	190
	12:45 PM	0	1	66	14	0	0	10	77	0	0	0	23	0	6	0	0	4	0	1	0	202
	1:00 PM	0	5	66	16	0	0	3	66	1	0	0	17	1	5	0	0	0	0	3	0	183
	1:15 PM	0	3	62	19	0	0	5	76	2	0	0	15	0	2	0	0	1	0	1	0	186
	1:30 PM	0	2	85	22	0	0	4	60	2	0	0	12	0	6	0	0	3	0	2	0	198
	1:45 PM	0	1	79	18	0	0	3	69	2	0	0	14	2	3	0	0	1	0	1	0	193
	2:00 PM	0	4	64	16	0	0	5	63	0	0	0	17	1	0	0	0	1	0	3	0	174

2:15 PM	0	1	74	18	0	0	3	66	2	0	0	15	2	0	0	0	1	1	2	0	185
2:30 PM	0	1	71	28	0	0	5	67	2	0	0	15	3	2	0	0	1	0	2	0	197
2:45 PM	0	1	97	19	0	0	5	87	4	0	0	29	0	3	0	0	1	0	3	0	249
3:00 PM	0	1	83	18	0	0	8	90	1	0	0	21	0	3	0	0	0	1	0	0	226
3:15 PM	0	2	84	24	0	0	6	102	1	0	0	19	0	3	0	0	0	0	1	0	242
3:30 PM	0	2	137	31	0	0	9	86	2	0	0	22	0	4	0	0	1	0	5	0	299
3:45 PM	0	1	112	33	0	0	9	131	2	0	0	23	0	6	0	0	0	0	0	0	317
4:00 PM	0	1	124	25	0	0	8	100	3	0	0	21	0	10	0	0	0	0	0	0	292
4:15 PM	0	1	142	39	0	0	4	86	0	0	0	22	0	6	0	0	3	0	0	0	303
4:30 PM	0	0	123	33	0	0	10	102	1	0	0	16	0	3	0	0	1	0	2	0	291
4:45 PM	1	0	118	24	0	0	12	109	0	0	0	28	0	8	0	0	1	0	2	0	303
5:00 PM	0	0	125	28	0	0	12	86	0	0	0	29	0	4	0	0	1	0	2	0	287
5:15 PM	0	0	120	37	0	0	6	90	3	0	0	27	0	3	0	0	1	0	0	0	287
5:30 PM	0	2	114	42	0	0	9	88	0	0	0	22	0	3	0	0	1	0	0	0	281
5:45 PM	0	0	77	30	0	0	4	78	1	0	0	20	0	4	0	0	0	0	0	0	214
Mediums																					
6:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	3
6:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
7:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	0	0	1	0	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	8
7:45 AM	0	0	7	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	11
8:00 AM	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	5
8:15 AM	0	0	2	0	0	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	6
8:30 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	2	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	6
9:15 AM	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
9:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2:15 PM	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
2:30 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	3	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	6
3:30 PM	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	4
3:45 PM	0	0	0	2	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	5

4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	4
4:45 PM	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0

Bicycles on Crosswalk

	Eastbound			Westbound			Northbound			Southbound		
Time	CCW	CW	Total	CCW	CW	Total	CCW	CW	Total	CCW	CW	Total
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	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
7:30 AM	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
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1
8:15 AM	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
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	1	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	0	1	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	1	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	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
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0

4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	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
5:30 PM	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

Pedestrians

	Eastbound			Westbound			Northbound			Southbound		
Time	CCW	CW	Total	CCW	CW	Total	CCW	CW	Total	CCW	CW	Total
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	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
7:30 AM	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
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	1	0	1	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	1	0	1	0	0	0	0	0	0
11:45 AM	0	1	1	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	2	0	2	2	0	2	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	1	0	0	0
4:45 PM	1	0	1	0	0	0	0	0	0	0	0	0
5:00 PM	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

5:30 PM	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

Appendix B – Crash Data from 2015 to 2020

Colorado Department of Transportation
DiExSys™ Roadway Safety Systems
Detailed Summary of Crashes Report

01/05/2022

Job #: 20220105111457

Location: 85 A **Begin:** 136.71 **End:** 136.91 **From:** 06/30/2015 **To:** 06/30/2020

Severity

PDO:	6	
INJ:	7	9 :Injured
FAT:	0	0 :Killed
Total:	**13**	

Number of Vehicles

One Vehicle:	1
Two Vehicles:	12
Three or More:	0
Unknown:	0
Total:	**13**

Location

On Road:	12
Off Road Left:	0
Off Road Right:	1
Off Road at Tee:	0
Off in Median:	0
Unknown:	0
Total:	**13**

Lighting Conditions

Daylight:	10
Dawn or Dusk:	0
Dark - Lighted:	1
Dark - Unlighted:	2
Unknown:	0
Total:	**13**

Weather Conditions

None:	11
Rain:	0
Snow/Sleet/Hail:	2
Fog:	0
Dust:	0
Wind:	0
Unknown:	0
Total:	**13**

Crash Rates

PDO:	0.80 *	* MVMT
INJ:	0.93 *	** 100 MVMT
FAT:	0.00 **	**Total:** 1.74 *

Crash Type

Overturning:	0	Bridge Abutment:	0
Other Non Collision:	0	Column/Pier:	0
Pedestrians:	0	Culvert/Headwall:	0
Broadside:	8	Embankment:	0
Head On:	0	Curb:	0
Rear End:	1	Delineator Post:	0
Sideswipe (Same):	1	Fence:	0
Sideswipe (Opposite):	0	Tree:	0
Approach Turn:	1	Large Boulders or Rocks:	0
Overtaking Turn:	0	Barricade:	0
Parked Motor Vehicle:	0	Wall/Building:	0
Railway Vehicle:	0	Crash Cushion:	0
Bicycle:	1	Mailbox:	0
Motorized Bicycle:	0	Other Fixed Object:	0
Domestic Animal:	0	Total Fixed Objects:	1
Wild Animal:	0	Rocks in Roadway:	0
Light/Utility Pole:	0	Vehicle Cargo/Debris:	0
Traffic Signal Pole:	0	Road Maintenance Equipment:	0
Sign:	0	Involving Other Object:	0
Bridge Rail:	0	Total Other Objects:	0
Guard Rail:	1	Unknown:	0
Cable Rail:	0	**Total:**	**13**
Concrete Barrier:	0		

Mainline/Ramps/Frontage Roads

Mainline:	13
Crossroad (A):	0

Frontage/Ramp Intersections

M:	0	N:	0	O:	0	P:	0

Ramps

B:	0	F:	0	J:	0
C:	0	G:	0	K:	0
D:	0	H:	0	T:	0
E:	0	I:	0	Z:	0

Left Frontage Rd (L):	0
Rt Frontage Rd (R):	0
HOV Lanes (V):	0
Unknown:	0
Total:	**13**

Road Description

At Intersection:	10
At Driveway Access:	0
Intersection Related:	3
Non Intersection:	0
In Alley:	0
Roundabout:	0
Ramp:	0
Parking Lot:	0
Unknown:	0
Total:	**13**

Road Conditions

Dry:	11
Wet:	0
Muddy:	0
Snowy:	1
Icy:	1
Slushy:	0
Foreign Material:	0
With Road Treatment:	0
Dry w/Icy Road Treatment:	0
Wet w/Icy Road Treatment:	0
Snowy w/Icy Road Treatment:	0
Icy w/Icy Road Treatment:	0
Slushy w/Icy Road Treatment:	0
Unknown:	0
Total:	**13**

ADT: 21,800 **Length:** 0.18

User: whittlefpk on

Colorado Department of Transportation
DiExSys™ Roadway Safety Systems
Detailed Summary of Crashes Report

Job #: 20220105111457

Location: 85 A **Begin:** 136.71 **End:** 136.91 **From:** 06/30/2015 **To:** 06/30/2020

Vehicle Type	Veh 1	Veh 2	Veh 3
Passenger Car/Van:	9	6	0
Passenger Car/Van w/Trl:	0	0	0
Pickup Truck/Utility Van:	3	2	0
Pickup Truck/Utility Van w/Trl:	0	0	0
SUV:	1	3	0
SUV w/Trl:	0	0	0
Truck 10k lbs or Less:	0	0	0
Trucks > 10k lbs/Bus > 15 People:	0	0	0
School Bus < 15 People:	0	0	0
Non School Bus < 15 People:	0	0	0
Motorhome:	0	0	0
Motorcycle:	0	0	0
Bicycle:	0	1	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	**13**	**12**	**0**

Vehicle Movement	Veh 1	Veh 2	Veh 3
Going Straight:	3	5	0
Slowing:	0	1	0
Stopped in Traffic:	0	4	0
Making Right Turn:	3	0	0
Making Left Turn:	5	1	0
Making U-Turn:	0	0	0
Passing:	1	0	0
Backing:	1	0	0
Enter/Leave Parked Position:	0	0	0
Starting in Traffic:	0	0	0
Parked:	0	0	0
Changing Lanes:	0	0	0
Avoiding Object/Veh in Road:	0	1	0
Weaving:	0	0	0
Wrong Way:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	**13**	**12**	**0**

Contributing Factor	Veh 1	Veh 2	Veh 3
No Apparent Contributing Factor:	5	10	0
Asleep at the Wheel:	0	0	0
Illness:	0	0	0
Distracted by Passenger:	0	0	0
Driver Inexperience:	2	0	0
Driver Fatigue:	1	0	0
Driver Preoccupied:	1	0	0
Driver Unfamilar with Area:	1	0	0
Driver Emotionally Upset:	0	0	0
Evading Law Enforcement Officier:	0	0	0
Physical Disability:	0	0	0
Unknown:	3	2	0
Total:	**13**	**12**	**0**

Direction	Veh 1	Veh 2	Veh 3
North:	5	7	0
Northeast:	0	0	0
East:	5	2	0
Southeast:	0	0	0
South:	2	3	0
Southwest:	0	0	0
West:	1	0	0
Northwest:	0	0	0
Unknown:	0	0	0
Total:	**13**	**12**	**0**

Condition of Driver	Veh 1	Veh 2	Veh 3
No Impairment Suspected:	13	12	0
Alcohol Involved:	0	0	0
RX, Medication, or Drugs Involved:	0	0	0
Illegal Drugs Involved:	0	0	0
Alcohol and Drugs Involved:	0	0	0
Driver/Pedestrian not Observed:	0	0	0
Unknown:	0	0	0
Total:	**13**	**12**	**0**

ADT: 21,800 **Length:** 0.18

rte	sec	mp	date	time	severity	location	road_desc	vehicles	contour	condition	lighting	weather	limit1	limit2	ramp	acctype	dir_1	vehicle_1	driver_1	factor_1	speed_1	veh_move_1	dir_2	vehicle_2	driver_2	factor_2	speed_2	veh_move_2	loc_01	link	loc_02	city	county
85	A	136.8	3/29/2018	1800	PDO	ON	INTERSECTION RELATED	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	45	45	N	SIDESWIPE (SAME DIRECTION)	S	PICKUP TRUCK/UTILITY VAN	NO IMPAIRMENT SUSPECTED	UNKNOWN	45	PASSING	S	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	40	SLOWING	HWY 85	04224FN	MM 136		EL PASO
85	A	136.9	5/27/2016	1740	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	45	45	N	APPROACH TURN	S	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	DRIVER UNFAMILIAR WITH AREA	25	MAKING LEFT TURN	N	SUV	NO IMPAIRMENT SUSPECTED	UNKNOWN	45	GOING STRAIGHT	HWY 85	AT	MAXWELL DR		EL PASO
85	A	136.9	2/10/2018	1530	PDO	ON	AT INTERSECTION	2	CURVE ON-GRADE	ICY	DAYLIGHT	SNOW/SLEET/HAIL	45	25	N	BROADSIDE	E	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	UNKNOWN	5	MAKING RIGHT TURN	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	0	STOPPED IN TRAFFIC	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	7/1/2018	1850	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	35	45	N	BROADSIDE	E	PICKUP TRUCK/UTILITY VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	20	GOING STRAIGHT	S	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	45	GOING STRAIGHT	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	9/12/2018	800	INJ	ON	AT INTERSECTION	2	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	30	35	N	BROADSIDE	W	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	DRIVER INEXPERIENCE	5	MAKING LEFT TURN	N	PICKUP TRUCK/UTILITY VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	5	MAKING LEFT TURN	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	8/4/2019	740	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	25	45	N	BROADSIDE	E	SUV	NO IMPAIRMENT SUSPECTED	DRIVER FATIGUE	25	GOING STRAIGHT	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	45	GOING STRAIGHT	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	2/26/2020	635	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	45	25	N	BROADSIDE	E	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	UNKNOWN	25	MAKING RIGHT TURN	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	0	STOPPED IN TRAFFIC	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	3/1/2020	1930	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	45	35	N	BROADSIDE	E	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	DRIVER INEXPERIENCE	20	MAKING RIGHT TURN	N	PICKUP TRUCK/UTILITY VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	0	STOPPED IN TRAFFIC	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	6/25/2020	1840	INJ	ON	AT INTERSECTION	2	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	45	45	N	BROADSIDE	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	10	GOING STRAIGHT	E	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	45	GOING STRAIGHT	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	6/2/2018	650	INJ	ON	AT INTERSECTION	2	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	45	45	N	BICYCLE	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	5	MAKING LEFT TURN	S	BICYCLE	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	30	AVOIDING OBJECT/ VEHICLE IN ROAD	HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	7/26/2019	1900	PDO	OFF RIGHT	INTERSECTION RELATED	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	50	UK	N	GUARD RAIL	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	20	MAKING LEFT TURN			NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR			HWY 85	AT	MAXWELL ST		EL PASO
85	A	136.9	12/24/2015	2048	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	NONE	45	45	N	BROADSIDE	N	PASSENGER CAR/VAN	NO IMPAIRMENT SUSPECTED	DRIVER PREOCCUPIED	15	MAKING LEFT TURN	E	SUV	NO IMPAIRMENT SUSPECTED	UNKNOWN	45	GOING STRAIGHT	HWY 85/87	AT	MAXWELL ST		EL PASO
85	A	136.9	11/12/2015	1707	PDO	ON	INTERSECTION RELATED	2	STRAIGHT ON-GRADE	DRY	DARK-UNLIGHTED	NONE	25	25	N	REAR-END	N	PICKUP TRUCK/UTILITY VAN	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	5	BACKING	N	SUV	NO IMPAIRMENT SUSPECTED	NO APPARENT CONTRIBUTING FACTOR	0	STOPPED IN TRAFFIC	MAXWELL ST	00020FS	HWY 85		EL PASO

Appendix C – 2021 Existing Conditions Synchro Output Reports

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	259	55	12	587	4	114	1	17	1	0	4
Future Vol, veh/h	4	259	55	12	587	4	114	1	17	1	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	86	81	60	84	50	81	25	71	25	63	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	301	68	20	699	8	141	4	24	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	707	0	0	369	0	0	1064	1064	301	1104	1124	699
Stage 1	-	-	-	-	-	-	317	317	-	739	739	-
Stage 2	-	-	-	-	-	-	747	747	-	365	385	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	891	-	-	1190	-	-	201	223	739	188	205	440
Stage 1	-	-	-	-	-	-	694	654	-	409	424	-
Stage 2	-	-	-	-	-	-	405	420	-	654	611	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	891	-	-	1190	-	-	192	214	739	174	197	440
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	214	-	174	197	-
Stage 1	-	-	-	-	-	-	686	647	-	405	412	-
Stage 2	-	-	-	-	-	-	387	408	-	622	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	64.2	17.9
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	215	891	-	-	1190	-	-	291
HCM Lane V/C Ratio	0.785	0.009	-	-	0.017	-	-	0.041
HCM Control Delay (s)	64.2	9.1	0	-	8.1	0	-	17.9
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	5.6	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	515	130	30	408	7	92	0	27	4	0	5
Future Vol, veh/h	5	515	130	30	408	7	92	0	27	4	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	91	83	83	77	58	92	92	68	33	38	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	566	157	36	530	12	100	0	40	12	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	542	0	0	723	0	0	1200	1196	566	1283	1341	530
Stage 1	-	-	-	-	-	-	582	582	-	602	602	-
Stage 2	-	-	-	-	-	-	618	614	-	681	739	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1027	-	-	879	-	-	162	186	524	142	152	549
Stage 1	-	-	-	-	-	-	499	499	-	486	489	-
Stage 2	-	-	-	-	-	-	477	483	-	440	424	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1027	-	-	879	-	-	148	173	524	124	141	549
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	173	-	124	141	-
Stage 1	-	-	-	-	-	-	493	493	-	480	460	-
Stage 2	-	-	-	-	-	-	433	455	-	401	418	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	66.7	22.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	1027	-	-	879	-	-	239
HCM Lane V/C Ratio	0.751	0.008	-	-	0.041	-	-	0.134
HCM Control Delay (s)	66.7	8.5	0	-	9.3	0	-	22.4
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	4.9	0	-	-	0.1	-	-	0.5

Appendix D – HCS7 Warrant Output Reports

Warrants Summary

Information			
Analyst	AECOM	Intersection	US 85/ Maxwell St
Agency/Co	CDOT	Jurisdiction	
Date Performed	2022	Units	U.S. Customary
Project ID	US 85/Maxwell St	Time Period Analyzed	Existing
East/West Street	US 85	North/South Street	Maxwell St
File Name	2021 US85 Maxwell Warrants.xhy	Major Street	East-West

Project Description *US 85/Maxwell St*

General				Roadway Network	
Major Street Speed (mph)	45	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	1150	☐	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	2

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	1	0	1	1	0	1	0	0	1	0
Lane usage		LT	R		LT	R		LTR			LTR	
Vehicle Volume Averages (vph)	5	288	70	17	341	5	75	1	17	3	0	5
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☑
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☑
1 (56%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☑
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 3: Peak Hour	☑
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 4: Pedestrian Volume	☐
4 A. Four Hour Volumes --or--	☐
4 B. One-Hour Volumes	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☐
6. Degree of Platooning (Predominant direction or both directions)	☐
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐

7 C. (56%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑
Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐
Warrant 9: Grade Crossing	☐
9 A. Grade Crossing within 140 ft --and--	☐
9 B. Peak-Hour Vehicular Volumes	☐

Warrants Volume

Information

Analyst	AECOM	Intersection	US 85/ Maxwell St
Agency/Co	CDOT	Jurisdiction	
Date Performed	2022	Units	U.S. Customary
Project ID	US 85/Maxwell St	Time Period Analyzed	Existing
East/West Street	US 85	North/South Street	Maxwell St
File Name	2021 US85 Maxwell Warrants.xhy	Major Street	East-West

Project Description *US 85/Maxwell St*

Warrant 1

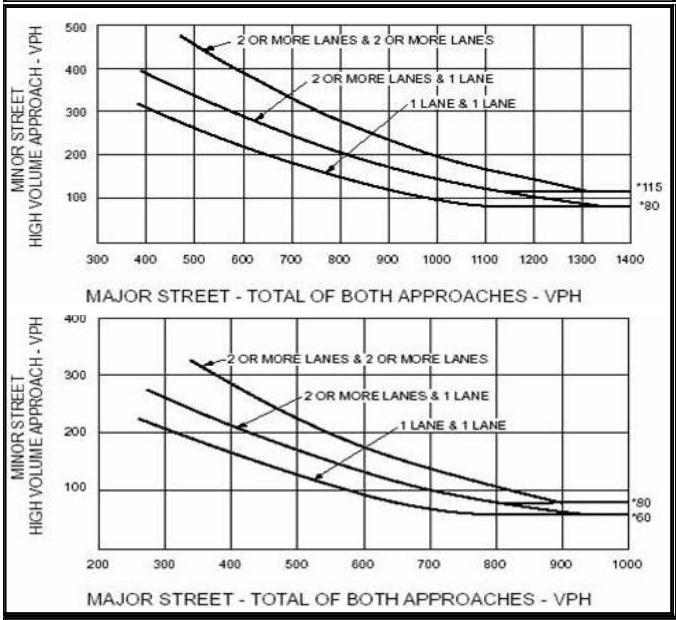
Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

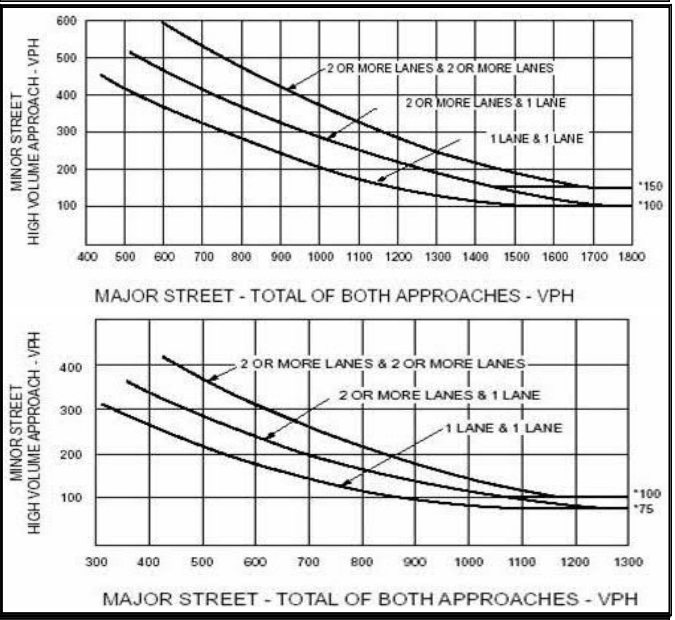
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 2+ **Minor Street Lanes** 1 **Speed** 45 **Population** 10000+

Hours	Major Volume	Minor Volume	Total Volume	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)
06-07	392	72	470	No	No	No	No	No	No	No
07-08	896	140	1039	Yes	Yes	Yes	Yes	Yes	No	Yes
08-09	686	110	809	Yes	Yes	Yes	Yes	Yes	No	No
09-10	559	73	644	No	No	No	Yes	No	No	No
10-11	559	63	626	No	No	No	Yes	No	No	No
11-12	573	77	655	No	No	No	Yes	No	No	No
12-13	674	96	789	No	Yes	Yes	Yes	No	No	No
13-14	676	78	766	No	No	Yes	Yes	No	No	No
14-15	714	88	817	No	Yes	Yes	Yes	No	No	No
15-16	988	108	1104	Yes	Yes	Yes	Yes	Yes	No	No
16-17	1075	115	1199	Yes	Yes	Yes	Yes	Yes	No	Yes
17-18	955	113	1073	Yes	Yes	Yes	Yes	Yes	No	No
Totals	8747	1133	9991	5	7	8	11	5	0	2

HCS7™ Warrants Version 7.1 Generated: 1/5/2022 3:19 PM

Appendix E – 2045 No-Build Traffic Conditions Synchro Output Reports

Intersection	
Int Delay, s/veh	111.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	420	65	15	945	5	130	5	20	5	5	5
Future Vol, veh/h	5	420	65	15	945	5	130	5	20	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	86	81	60	84	50	81	25	71	25	63	50
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	10	488	80	25	1125	10	160	20	28	20	8	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1135	0	0	568	0	0	1697	1693	488	1747	1763	1125
Stage 1	-	-	-	-	-	-	508	508	-	1175	1175	-
Stage 2	-	-	-	-	-	-	1189	1185	-	572	588	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.14	6.54	6.24	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.536	4.036	3.336	3.509	4.009	3.309
Pot Cap-1 Maneuver	616	-	-	1004	-	-	~ 72	92	576	68	85	251
Stage 1	-	-	-	-	-	-	544	535	-	235	267	-
Stage 2	-	-	-	-	-	-	227	260	-	507	498	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	616	-	-	1004	-	-	~ 59	84	576	49	77	251
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 59	84	-	49	77	-
Stage 1	-	-	-	-	-	-	531	522	-	229	249	-
Stage 2	-	-	-	-	-	-	197	242	-	453	486	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	$ 1040.2	108.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	69	616	-	-	1004	-	-	69
HCM Lane V/C Ratio	3.024	0.016	-	-	0.025	-	-	0.55
HCM Control Delay (s)	$ 1040.2	10.9	0	-	8.7	0	-	108.1
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	21.2	0	-	-	0.1	-	-	2.3

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

Intersection	
Int Delay, s/veh	124.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	830	150	35	660	10	105	5	35	5	5	10
Future Vol, veh/h	10	830	150	35	660	10	105	5	35	5	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	91	83	83	77	58	92	96	68	33	38	25
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	16	912	181	42	857	17	114	5	51	15	13	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	874	0	0	1093	0	0	1920	1902	912	2004	2066	857
Stage 1	-	-	-	-	-	-	944	944	-	941	941	-
Stage 2	-	-	-	-	-	-	976	958	-	1063	1125	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.14	6.54	6.24	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.536	4.036	3.336	3.509	4.009	3.309
Pot Cap-1 Maneuver	772	-	-	638	-	-	~ 50	68	329	45	55	358
Stage 1	-	-	-	-	-	-	312	338	-	317	343	-
Stage 2	-	-	-	-	-	-	300	333	-	271	281	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	772	-	-	638	-	-	~ 30	56	329	31	45	358
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	56	-	31	45	-
Stage 1	-	-	-	-	-	-	295	319	-	299	299	-
Stage 2	-	-	-	-	-	-	222	290	-	212	265	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	$ 1576.4	165.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	42	772	-	-	638	-	-	77
HCM Lane V/C Ratio	4.067	0.021	-	-	0.066	-	-	0.887
HCM Control Delay (s)	$ 1576.4	9.8	0	-	11	0	-	165.3
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	19.4	0.1	-	-	0.2	-	-	4.5

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

Appendix F – 2045 Mitigation Synchro & Sidra Output Reports

2045 Traffic Signal with Minimal Roadway Improvements Synchro Output Reports

2045 Traffic Signal with Roadway Improvements Synchro Output Reports

2045 Roundabout Sidra Output Reports

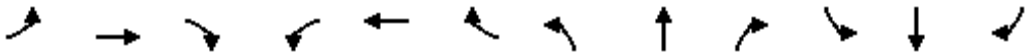
2045 Restriping with Existing Pavement Conditions Synchro Output Reports

2045 Right-in/Right-out Synchro Output Reports

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	None	Max	None	None
Maximum Split (s)	23	10	57	23	10	57
Maximum Split (%)	25.6%	11.1%	63.3%	25.6%	11.1%	63.3%
Minimum Split (s)	23	10	23	23	10	23
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	23	33	0	23	33
End Time (s)	23	33	0	23	33	0
Yield/Force Off (s)	18	28	85	18	28	85
Yield/Force Off 170(s)	7	28	74	7	28	74
Local Start Time (s)	0	23	33	0	23	33
Local Yield (s)	18	28	85	18	28	85
Local Yield 170(s)	7	28	74	7	28	74

Intersection Summary	
Cycle Length	90
Control Type	Semi Act-Uncoord
Natural Cycle	90

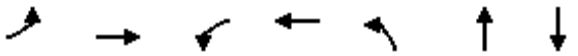
Splits and Phases: 3: Maxwell St & US 85



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	420	65	15	945	5	130	5	20	5	5	5
Future Volume (veh/h)	5	420	65	15	945	5	130	5	20	5	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1841	1841	1841	1885	1885	1885
Adj Flow Rate, veh/h	10	488	80	25	1125	10	160	20	28	20	8	10
Peak Hour Factor	0.50	0.86	0.81	0.60	0.84	0.50	0.81	0.25	0.71	0.25	0.63	0.50
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	1	1	1
Cap, veh/h	106	925	152	472	1118	10	380	145	203	212	87	84
Arrive On Green	0.01	0.59	0.59	0.03	0.60	0.60	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1567	257	1781	1851	16	1373	694	972	707	415	401
Grp Volume(v), veh/h	10	0	568	25	0	1135	160	0	48	38	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1824	1781	0	1867	1373	0	1666	1523	0	0
Q Serve(g_s), s	0.2	0.0	15.9	0.5	0.0	52.0	6.3	0.0	2.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	15.9	0.5	0.0	52.0	8.3	0.0	2.0	2.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.01	1.00		0.58	0.53		0.26
Lane Grp Cap(c), veh/h	106	0	1077	472	0	1128	380	0	348	382	0	0
V/C Ratio(X)	0.09	0.00	0.53	0.05	0.00	1.01	0.42	0.00	0.14	0.10	0.00	0.00
Avail Cap(c_a), veh/h	187	0	1102	529	0	1128	380	0	348	382	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	10.5	7.9	0.0	17.0	30.0	0.0	27.7	27.5	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	28.2	3.4	0.0	0.8	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	5.3	0.1	0.0	25.7	3.3	0.0	0.9	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	10.9	8.0	0.0	45.3	33.4	0.0	28.5	28.0	0.0	0.0
LnGrp LOS	C	A	B	A	A	F	C	A	C	C	A	A
Approach Vol, veh/h		578			1160			208			38	
Approach Delay, s/veh		11.1			44.5			32.3			28.0	
Approach LOS		B			D			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	7.2	55.8		23.0	6.1	57.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	52.0		18.0	5.0	52.0				
Max Q Clear Time (g_c+I1), s		10.3	2.5	17.9		4.0	2.2	54.0				
Green Ext Time (p_c), s		0.4	0.0	3.7		0.1	0.0	0.0				

Intersection Summary	
HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	10	568	25	1135	160	48	38
v/c Ratio	0.05	0.51	0.05	0.96	0.55	0.12	0.11
Control Delay	5.4	11.6	5.0	34.5	37.2	16.2	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	11.6	5.0	34.5	37.2	16.2	22.5
Queue Length 50th (ft)	2	122	4	446	71	8	11
Queue Length 95th (ft)	3	247	7	#853	132	1	26
Internal Link Dist (ft)		270		257		282	126
Turn Bay Length (ft)	70		70		100		
Base Capacity (vph)	191	1165	485	1183	293	388	353
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.49	0.05	0.96	0.55	0.12	0.11

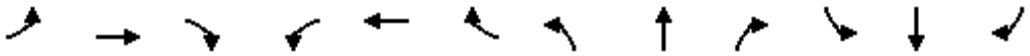
Intersection Summary

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

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	None	Max	None	None
Maximum Split (s)	23	10	57	23	10	57
Maximum Split (%)	25.6%	11.1%	63.3%	25.6%	11.1%	63.3%
Minimum Split (s)	23	10	23	23	10	23
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	23	33	0	23	33
End Time (s)	23	33	0	23	33	0
Yield/Force Off (s)	18	28	85	18	28	85
Yield/Force Off 170(s)	7	28	74	7	28	74
Local Start Time (s)	0	23	33	0	23	33
Local Yield (s)	18	28	85	18	28	85
Local Yield 170(s)	7	28	74	7	28	74

Intersection Summary	
Cycle Length	90
Control Type	Semi Act-Uncoord
Natural Cycle	90

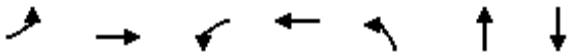
Splits and Phases: 3: Maxwell St & US 85



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	830	150	35	660	10	105	5	35	5	5	10
Future Volume (veh/h)	10	830	150	35	660	10	105	5	35	5	5	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1841	1841	1841	1885	1885	1885
Adj Flow Rate, veh/h	16	912	181	42	857	17	114	5	51	15	13	40
Peak Hour Factor	0.63	0.91	0.83	0.83	0.77	0.58	0.92	0.96	0.68	0.33	0.38	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	1	1	1
Cap, veh/h	280	893	177	147	1110	22	367	29	294	96	90	195
Arrive On Green	0.02	0.59	0.59	0.04	0.61	0.61	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1781	1515	301	1781	1828	36	1330	141	1440	227	443	956
Grp Volume(v), veh/h	16	0	1093	42	0	874	114	0	56	68	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1816	1781	0	1864	1330	0	1581	1625	0	0
Q Serve(g_s), s	0.3	0.0	52.0	0.8	0.0	30.6	2.7	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	52.0	0.8	0.0	30.6	5.6	0.0	2.6	2.9	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.02	1.00		0.91	0.22		0.59
Lane Grp Cap(c), veh/h	280	0	1071	147	0	1132	367	0	323	381	0	0
V/C Ratio(X)	0.06	0.00	1.02	0.29	0.00	0.77	0.31	0.00	0.17	0.18	0.00	0.00
Avail Cap(c_a), veh/h	348	0	1071	183	0	1132	367	0	323	381	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.7	0.0	18.1	21.6	0.0	12.8	30.0	0.0	29.0	29.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	32.9	1.1	0.0	3.3	2.2	0.0	1.2	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	26.8	0.5	0.0	11.0	2.3	0.0	1.1	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	0.0	51.0	22.7	0.0	16.1	32.2	0.0	30.1	30.1	0.0	0.0
LnGrp LOS	B	A	F	C	A	B	C	A	C	C	A	A
Approach Vol, veh/h		1109			916			170			68	
Approach Delay, s/veh		50.4			16.4			31.5			30.1	
Approach LOS		D			B			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.2	57.0		23.0	6.6	58.6				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	52.0		18.0	5.0	52.0				
Max Q Clear Time (g_c+I1), s		7.6	2.8	54.0		4.9	2.3	32.6				
Green Ext Time (p_c), s		0.4	0.0	0.0		0.2	0.0	5.9				

Intersection Summary												
HCM 6th Ctrl Delay			34.6									
HCM 6th LOS			C									



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	16	1093	42	874	114	56	68
v/c Ratio	0.05	0.99	0.23	0.72	0.38	0.15	0.18
Control Delay	4.9	43.1	7.7	15.2	34.8	11.5	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	43.1	7.7	15.2	34.8	11.5	17.0
Queue Length 50th (ft)	3	~671	7	252	57	2	13
Queue Length 95th (ft)	6	#915	15	396	108	34	9
Internal Link Dist (ft)		270		257		282	126
Turn Bay Length (ft)	70		70		100		
Base Capacity (vph)	299	1109	182	1209	300	371	373
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.99	0.23	0.72	0.38	0.15	0.18

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.

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	None	Max	None	None
Maximum Split (s)	23	10	57	23	10	57
Maximum Split (%)	25.6%	11.1%	63.3%	25.6%	11.1%	63.3%
Minimum Split (s)	23	10	23	23	10	23
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	23	33	0	23	33
End Time (s)	23	33	0	23	33	0
Yield/Force Off (s)	18	28	85	18	28	85
Yield/Force Off 170(s)	7	28	74	7	28	74
Local Start Time (s)	0	23	33	0	23	33
Local Yield (s)	18	28	85	18	28	85
Local Yield 170(s)	7	28	74	7	28	74

Intersection Summary	
Cycle Length	90
Control Type	Semi Act-Uncoord
Natural Cycle	90

Splits and Phases: 3: Maxwell St & US 85

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	420	65	15	945	5	130	5	20	5	5	5
Future Volume (veh/h)	5	420	65	15	945	5	130	5	20	5	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1841	1841	1841	1885	1885	1885
Adj Flow Rate, veh/h	10	488	80	25	1125	10	160	20	28	20	8	10
Peak Hour Factor	0.50	0.86	0.81	0.60	0.84	0.50	0.81	0.25	0.71	0.25	0.63	0.50
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	1	1	1
Cap, veh/h	106	1104	936	506	1118	10	380	145	203	212	87	84
Arrive On Green	0.01	0.59	0.59	0.03	0.60	0.60	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1870	1585	1781	1851	16	1373	694	972	707	415	401
Grp Volume(v), veh/h	10	488	80	25	0	1135	160	0	48	38	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1867	1373	0	1666	1523	0	0
Q Serve(g_s), s	0.2	12.4	1.9	0.5	0.0	52.0	6.3	0.0	2.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	12.4	1.9	0.5	0.0	52.0	8.3	0.0	2.0	2.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.58	0.53		0.26
Lane Grp Cap(c), veh/h	106	1104	936	506	0	1128	380	0	348	382	0	0
V/C Ratio(X)	0.09	0.44	0.09	0.05	0.00	1.01	0.42	0.00	0.14	0.10	0.00	0.00
Avail Cap(c_a), veh/h	187	1130	958	563	0	1128	380	0	348	382	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.8	9.8	7.6	7.3	0.0	17.0	30.0	0.0	27.7	27.5	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.0	0.0	0.0	28.2	3.4	0.0	0.8	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.2	0.5	0.1	0.0	25.7	3.3	0.0	0.9	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	10.0	7.6	7.4	0.0	45.3	33.4	0.0	28.5	28.0	0.0	0.0
LnGrp LOS	C	B	A	A	A	F	C	A	C	C	A	A
Approach Vol, veh/h		578			1160			208			38	
Approach Delay, s/veh		9.9			44.5			32.3			28.0	
Approach LOS		A			D			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	7.2	55.8		23.0	6.1	57.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	52.0		18.0	5.0	52.0				
Max Q Clear Time (g_c+I1), s		10.3	2.5	14.4		4.0	2.2	54.0				
Green Ext Time (p_c), s		0.4	0.0	3.3		0.1	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			32.8									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	10	488	80	25	1135	160	48	38
v/c Ratio	0.05	0.43	0.08	0.05	0.96	0.55	0.12	0.11
Control Delay	5.4	10.7	2.2	5.0	34.5	37.2	16.2	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	10.7	2.2	5.0	34.5	37.2	16.2	22.5
Queue Length 50th (ft)	2	101	0	4	446	71	8	11
Queue Length 95th (ft)	3	205	13	7	#853	132	1	26
Internal Link Dist (ft)		270			257		282	126
Turn Bay Length (ft)	100		150	100		150		
Base Capacity (vph)	191	1183	1036	546	1183	293	388	353
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.41	0.08	0.05	0.96	0.55	0.12	0.11

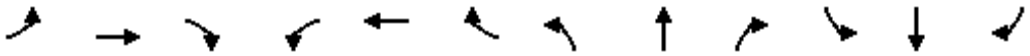
Intersection Summary

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

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	None	Max	None	None
Maximum Split (s)	23	10	57	23	10	57
Maximum Split (%)	25.6%	11.1%	63.3%	25.6%	11.1%	63.3%
Minimum Split (s)	23	10	23	23	10	23
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	23	33	0	23	33
End Time (s)	23	33	0	23	33	0
Yield/Force Off (s)	18	28	85	18	28	85
Yield/Force Off 170(s)	7	28	74	7	28	74
Local Start Time (s)	0	23	33	0	23	33
Local Yield (s)	18	28	85	18	28	85
Local Yield 170(s)	7	28	74	7	28	74

Intersection Summary	
Cycle Length	90
Control Type	Semi Act-Uncoord
Natural Cycle	80

Splits and Phases: 3: Maxwell St & US 85



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	830	150	35	660	10	105	5	35	5	5	10
Future Volume (veh/h)	10	830	150	35	660	10	105	5	35	5	5	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1841	1841	1841	1885	1885	1885
Adj Flow Rate, veh/h	16	912	181	42	857	17	114	5	51	15	13	40
Peak Hour Factor	0.63	0.91	0.83	0.83	0.77	0.58	0.92	0.96	0.68	0.33	0.38	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	1	1	1
Cap, veh/h	235	1013	859	214	1025	20	410	32	330	108	101	219
Arrive On Green	0.02	0.54	0.54	0.04	0.56	0.56	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	1870	1585	1781	1828	36	1330	141	1440	227	443	956
Grp Volume(v), veh/h	16	912	181	42	0	874	114	0	56	68	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1864	1330	0	1581	1625	0	0
Q Serve(g_s), s	0.3	34.3	4.6	0.8	0.0	30.4	2.3	0.0	2.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	34.3	4.6	0.8	0.0	30.4	4.8	0.0	2.2	2.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.91	0.22		0.59
Lane Grp Cap(c), veh/h	235	1013	859	214	0	1046	410	0	362	428	0	0
V/C Ratio(X)	0.07	0.90	0.21	0.20	0.00	0.84	0.28	0.00	0.15	0.16	0.00	0.00
Avail Cap(c_a), veh/h	315	1238	1049	259	0	1234	410	0	362	428	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	16.1	9.3	15.2	0.0	14.2	25.1	0.0	24.2	24.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	8.0	0.1	0.4	0.0	4.5	1.7	0.0	0.9	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	13.7	1.3	0.3	0.0	11.2	1.9	0.0	0.9	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	24.1	9.4	15.7	0.0	18.7	26.7	0.0	25.1	25.1	0.0	0.0
LnGrp LOS	B	C	A	B	A	B	C	A	C	C	A	A
Approach Vol, veh/h		1109			916			170			68	
Approach Delay, s/veh		21.5			18.6			26.2			25.1	
Approach LOS		C			B			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.0	47.5		23.0	6.5	49.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	52.0		18.0	5.0	52.0				
Max Q Clear Time (g_c+I1), s		6.8	2.8	36.3		4.5	2.3	32.4				
Green Ext Time (p_c), s		0.5	0.0	6.3		0.2	0.0	6.0				

Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	16	912	181	42	874	114	56	68
v/c Ratio	0.06	0.89	0.20	0.20	0.79	0.31	0.13	0.16
Control Delay	5.1	28.1	3.5	7.0	18.2	32.3	11.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	28.1	3.5	7.0	18.2	32.3	11.4	16.8
Queue Length 50th (ft)	3	397	11	7	252	55	2	13
Queue Length 95th (ft)	6	#675	33	15	396	108	34	9
Internal Link Dist (ft)		270			257		282	126
Turn Bay Length (ft)	100		150	100		150		
Base Capacity (vph)	251	1329	1167	209	1401	362	428	433
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.69	0.16	0.20	0.62	0.31	0.13	0.16

Intersection Summary

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

MOVEMENT SUMMARY

Site: 101 [2045 AM US 85 and Maxwell St (Site Folder: US 85 and Maxwell St)]

2045 Rounabout Option
Site Category: Future Conditions
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Maxwell St														
3	L2	130	4.0	160	4.0	0.270	7.7	LOS A	1.2	30.5	0.60	0.58	0.60	26.6
8	T1	5	4.0	20	4.0	0.270	7.7	LOS A	1.2	30.5	0.60	0.58	0.60	26.6
18	R2	20	4.0	28	4.0	0.270	7.7	LOS A	1.2	30.5	0.60	0.58	0.60	26.0
Approach		155	4.0	209	4.0	0.270	7.7	LOS A	1.2	30.5	0.60	0.58	0.60	26.5
East: US 85														
1	L2	15	2.0	25	2.0	1.049	60.1	LOS F	80.9	2054.8	1.00	2.01	3.55	19.4
6	T1	945	2.0	1125	2.0	1.049	60.1	LOS F	80.9	2054.8	1.00	2.01	3.55	19.4
16	R2	5	2.0	10	2.0	1.049	60.1	LOS F	80.9	2054.8	1.00	2.01	3.55	19.1
Approach		965	2.0	1160	2.0	1.049	60.1	LOS F	80.9	2054.8	1.00	2.01	3.55	19.4
North: Maxwell St														
7	L2	5	1.0	20	1.0	0.104	11.4	LOS B	0.4	9.1	0.75	0.75	0.75	25.9
4	T1	5	1.0	8	1.0	0.104	11.4	LOS B	0.4	9.1	0.75	0.75	0.75	25.9
14	R2	5	1.0	10	1.0	0.104	11.4	LOS B	0.4	9.1	0.75	0.75	0.75	25.3
Approach		15	1.0	38	1.0	0.104	11.4	LOS B	0.4	9.1	0.75	0.75	0.75	25.7
West: US 85														
5	L2	5	2.0	10	2.0	0.451	7.4	LOS A	3.2	80.6	0.26	0.11	0.26	35.3
2	T1	420	2.0	488	2.0	0.451	7.4	LOS A	3.2	80.6	0.26	0.11	0.26	35.2
12	R2	65	2.0	80	2.0	0.451	7.4	LOS A	3.2	80.6	0.26	0.11	0.26	34.2
Approach		490	2.0	579	2.0	0.451	7.4	LOS A	3.2	80.6	0.26	0.11	0.26	35.1
All Vehicles		1625	2.2	1985	2.2	1.049	38.3	LOS E	80.9	2054.8	0.74	1.28	2.23	23.2

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

MOVEMENT SUMMARY

Site: 101 [2045 PM US 85 and Maxwell St (Site Folder: US 85 and Maxwell St)]

2045 Rounabout Option
Site Category: Future Conditions
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Maxwell St														
3	L2	105	4.0	114	4.0	0.343	12.7	LOS B	1.5	38.3	0.72	0.79	0.88	25.3
8	T1	5	4.0	5	4.0	0.343	12.7	LOS B	1.5	38.3	0.72	0.79	0.88	25.3
18	R2	35	4.0	51	4.0	0.343	12.7	LOS B	1.5	38.3	0.72	0.79	0.88	24.7
Approach		145	4.0	171	4.0	0.343	12.7	LOS B	1.5	38.3	0.72	0.79	0.88	25.1
East: US 85														
1	L2	35	2.0	42	2.0	0.782	17.0	LOS C	14.2	361.8	0.79	0.61	0.95	30.6
6	T1	660	2.0	857	2.0	0.782	17.0	LOS C	14.2	361.8	0.79	0.61	0.95	30.6
16	R2	10	2.0	17	2.0	0.782	17.0	LOS C	14.2	361.8	0.79	0.61	0.95	29.8
Approach		705	2.0	917	2.0	0.782	17.0	LOS C	14.2	361.8	0.79	0.61	0.95	30.6
North: Maxwell St														
7	L2	5	1.0	15	1.0	0.144	9.6	LOS A	0.5	13.5	0.69	0.69	0.69	26.9
4	T1	5	1.0	13	1.0	0.144	9.6	LOS A	0.5	13.5	0.69	0.69	0.69	26.8
14	R2	10	1.0	40	1.0	0.144	9.6	LOS A	0.5	13.5	0.69	0.69	0.69	26.2
Approach		20	1.0	68	1.0	0.144	9.6	LOS A	0.5	13.5	0.69	0.69	0.69	26.5
West: US 85														
5	L2	10	2.0	16	2.0	0.882	23.6	LOS C	18.3	463.8	0.92	0.47	0.92	28.2
2	T1	830	2.0	912	2.0	0.882	23.6	LOS C	18.3	463.8	0.92	0.47	0.92	28.1
12	R2	150	2.0	181	2.0	0.882	23.6	LOS C	18.3	463.8	0.92	0.47	0.92	27.4
Approach		990	2.0	1109	2.0	0.882	23.6	LOS C	18.3	463.8	0.92	0.47	0.92	28.0
All Vehicles		1860	2.1	2264	2.1	0.882	19.7	LOS C	18.3	463.8	0.85	0.56	0.92	28.7

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

Intersection	
Int Delay, s/veh	72.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	420	65	15	945	5	130	5	20	5	5	5
Future Vol, veh/h	5	420	65	15	945	5	130	5	20	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	100	-	-	150	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	86	81	60	84	50	81	25	71	25	63	50
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	10	488	80	25	1125	10	160	20	28	20	8	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1135	0	0	568	0	0	1697	1693	488	1752	1768	1130
Stage 1	-	-	-	-	-	-	508	508	-	1180	1180	-
Stage 2	-	-	-	-	-	-	1189	1185	-	572	588	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.14	6.54	6.24	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.536	4.036	3.336	3.509	4.009	3.309
Pot Cap-1 Maneuver	616	-	-	1004	-	-	~ 72	92	576	67	84	249
Stage 1	-	-	-	-	-	-	544	535	-	233	265	-
Stage 2	-	-	-	-	-	-	227	260	-	507	498	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	616	-	-	1004	-	-	~ 62	88	576	51	80	249
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 62	88	-	51	80	-
Stage 1	-	-	-	-	-	-	531	522	-	227	258	-
Stage 2	-	-	-	-	-	-	206	254	-	453	486	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	$ 671.1	103.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	62	174	616	-	-	1004	-	-	71
HCM Lane V/C Ratio	2.589	0.277	0.016	-	-	0.025	-	-	0.534
HCM Control Delay (s)	$ 862.5	33.4	10.9	0	-	8.7	-	-	103.1
HCM Lane LOS	F	D	B	A	-	A	-	-	F
HCM 95th %tile Q(veh)	16.1	1.1	0	-	-	0.1	-	-	2.2

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

Intersection	
Int Delay, s/veh	76.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	830	150	35	660	10	105	5	35	5	5	10
Future Vol, veh/h	10	830	150	35	660	10	105	5	35	5	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	100	-	-	150	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	91	83	83	77	58	92	96	68	33	38	25
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	16	912	181	42	857	17	114	5	51	15	13	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	874	0	0	1093	0	0	1920	1902	912	2013	2075	866
Stage 1	-	-	-	-	-	-	944	944	-	950	950	-
Stage 2	-	-	-	-	-	-	976	958	-	1063	1125	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.14	6.54	6.24	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.536	4.036	3.336	3.509	4.009	3.309
Pot Cap-1 Maneuver	772	-	-	638	-	-	~ 50	68	329	44	54	354
Stage 1	-	-	-	-	-	-	312	338	-	314	340	-
Stage 2	-	-	-	-	-	-	300	333	-	271	281	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	772	-	-	638	-	-	~ 32	60	329	32	48	354
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 32	60	-	32	48	-
Stage 1	-	-	-	-	-	-	295	319	-	296	318	-
Stage 2	-	-	-	-	-	-	238	311	-	212	265	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	$ 951.8	156.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	32	233	772	-	-	638	-	-	79
HCM Lane V/C Ratio	3.567	0.243	0.021	-	-	0.066	-	-	0.865
HCM Control Delay (s)	$ 1411.9	25.3	9.8	0	-	11	-	-	156.7
HCM Lane LOS	F	D	A	A	-	B	-	-	F
HCM 95th %tile Q(veh)	13.4	0.9	0.1	-	-	0.2	-	-	4.4

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	420	65	0	945	5	0	0	20	0	0	15
Future Vol, veh/h	10	420	65	0	945	5	0	0	20	0	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	86	81	60	84	50	81	25	71	25	63	50
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	20	488	80	0	1125	10	0	0	28	0	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1135	0	0	-	-	0	-	-	488	-	-	1125
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	-	-	-	-	-	6.24	-	-	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	-	-	3.336	-	-	3.309
Pot Cap-1 Maneuver	616	-	-	0	-	-	0	0	576	0	0	251
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	616	-	-	-	-	-	-	-	576	-	-	251
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	11.6	21.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	576	616	-	-	-	-	251
HCM Lane V/C Ratio	0.049	0.032	-	-	-	-	0.12
HCM Control Delay (s)	11.6	11	0	-	-	-	21.3
HCM Lane LOS	B	B	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	830	150	0	660	10	0	0	35	0	0	20
Future Vol, veh/h	15	830	150	0	660	10	0	0	35	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	65	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	91	83	83	77	58	92	92	68	33	38	25
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	1	1	1
Mvmt Flow	24	912	181	0	857	17	0	0	51	0	0	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	874	0	0	-	-	0	-	-	912	-	-	857
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	-	-	-	-	-	6.24	-	-	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	-	-	3.336	-	-	3.309
Pot Cap-1 Maneuver	772	-	-	0	-	-	0	0	329	0	0	358
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	772	-	-	-	-	-	-	-	329	-	-	358
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	18	17.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	329	772	-	-	-	-	358
HCM Lane V/C Ratio	0.156	0.031	-	-	-	-	0.223
HCM Control Delay (s)	18	9.8	0	-	-	-	17.9
HCM Lane LOS	C	A	A	-	-	-	C
HCM 95th %tile Q(veh)	0.5	0.1	-	-	-	-	0.8

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