

Traffic Impact Analysis



Austin Ridge Logistics Center

Courthouse Road
Stafford County, Virginia

Prepared for:

NorthPoint Development, LLC

Prepared: March 1st, 2022

Traffic Impact Analysis

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Executive Summary

This report summarizes the findings of the Traffic Impact Analysis (TIA) completed by Bowman for the proposed Austin Ridge Logistics Center located in Stafford County, Virginia. The purpose of this analysis is to determine the potential impact (if any) to the existing traffic operations of the surrounding roadway network caused by the proposed development.

Description of Proposed Development

The proposed development is to be located to the west of Interstate 95 and to the South of Courthouse Road in Stafford County, Virginia. The proposed site will consist of a 1,979,000 S.F. High-Cube Transload and Short-Term Storage Warehouse Facility.

Scope of Work

The TIA scope of work for the proposed development was coordinated at a Pre-Scoping meeting with officials from the Virginia Department of Transportation (VDOT) and Stafford County on January 12, 2021. The purpose of this meeting was to discuss and agree upon major components of the study, including analyzing the following study intersections:

- Courthouse Road and Mine Road (Signalized)
- Courthouse Road and Austin Ridge Drive (Signalized)
- Courthouse Road and I-95 Southbound Interchange (Signalized)
- Courthouse Road and I-95 Northbound Interchange (Signalized)
- Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road (Signalized)

It was agreed by both VDOT and Stafford County that a background growth rate factor of 2.0% per year will be used in the study.

For the purposes of this study, it is anticipated that the proposed development will be constructed and fully operational by the end of the year 2024. Therefore, the following scenarios were evaluated as part of this study:

- Existing Conditions (2022)
- Future Conditions (2024) without the proposed development (No Build)
- Future Conditions (2024) with the proposed development (Build)

Programmed Improvements

It is Bowman's understanding that the Courthouse Road/Hospital Center Boulevard/Wyche Road intersection is expected to be improved as part of a separate development. The northbound approach is to be widened from two (2) exclusive left turn lanes to three (3) exclusive left turn

lanes. Additionally, the existing westbound through/right turn lane will be converted to a through lane, and an additional exclusive westbound right turn lane will be constructed.

Trip Generation

Trip generation for the proposed development was calculated based on the calculations and formulae contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*.

The proposed development is expected to generate 158 trips (122 in and 36 out) during the morning peak hour, 198 trips (55 in and 143 out) during the evening peak hour, and 2,771 trips (1,385 in and 1,386 out) during an average weekday.

Capacity Analysis Results

To evaluate the traffic operations with the proposed development in place, capacity analyses were completed at the five (5) study intersections included in this report. The purpose for this analysis was to compare the results of the No Build and Build Conditions to identify areas impacted by the proposed development.

The results of the capacity analysis indicate that the proposed development is not projected to adversely impact the following intersections:

- Courthouse Road and Mine Road
- Courthouse Road and I-95 Southbound Interchange
- Courthouse Road and I-95 Northbound Interchange
- Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road

The results of the capacity analysis also indicate that mitigation improvements are required at the following intersection:

- Courthouse Road and Austin Ridge Drive

The westbound left turn movement at this intersection is projected to degrade from No Build to Build Conditions due to the development's additional westbound left turning traffic added to the intersection. Therefore, the following improvement is proposed to mitigate the impact of this additional traffic:

- Construction of one (1) additional westbound left turn lane with 150 feet of storage.

The results of the capacity analysis with the proposed additional westbound left turn lane in place indicate that the proposed improvement is projected to return the operations of the intersection to levels similar to No Build Conditions.

Conclusion

The results of the analysis contained in this report indicate that with the addition of one (1) westbound left turn lane at the intersection of Courthouse Road and Austin Ridge Drive, the addition of the site traffic associated with the proposed development is not expected to adversely impact the operations of the existing roadway network.

Introduction

This report summarizes the findings of the Traffic Impact Analysis (TIA) completed by Bowman for the proposed Austin Ridge Logistics Center located in Stafford County, Virginia.

The purpose of this analysis is to determine the potential impact (if any) to the existing traffic operations of the surrounding roadway network caused by the proposed development.

Background Information

The proposed development is to be located to the west of Interstate 95 and to the south of Courthouse Road in Stafford, Virginia. **Figure 1** depicts the site location.



Figure 1. Site Location

The Applicant is proposing to develop the site with a 1,979,000 S.F. High-Cube Transload and Short-Term Storage Warehouse Facility. The conceptual plan for the proposed site is depicted on **Figure 2** and in **Appendix A**.

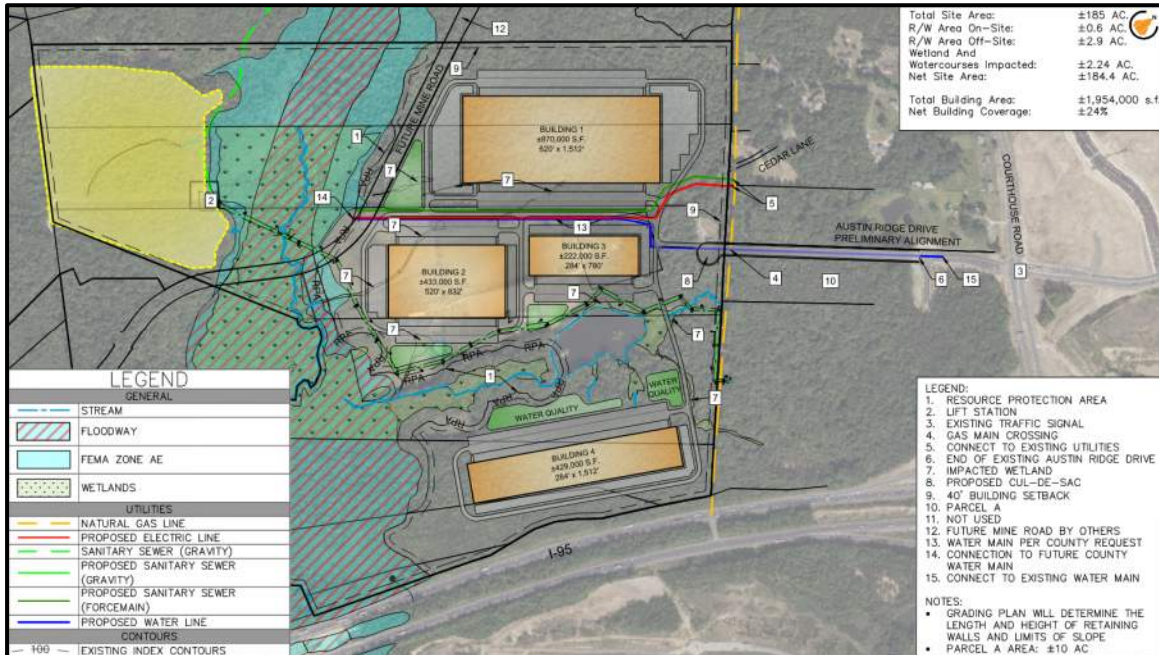


Figure 2. Conceptual Plan

As shown in **Figure 2**, the proposed development will utilize Austin Ridge Drive as the main access driveway.

Scope of Work

The traffic impact analysis scope of work for the proposed development was coordinated at a Pre-Scoping meeting with officials from the Virginia Department of Transportation (VDOT) and Stafford County on January 12, 2022. During the Pre-Scoping meeting, items such as intersections to be analyzed, arrival/departure trip distribution, traffic growth factors, traffic count data, and site access were discussed. Some of the items discussed and agreed upon by all parties are listed below:

Study Periods

- Existing Conditions (2022)
- Future Conditions (2024) without the proposed development (No Build)
- Future Conditions (2024) with the proposed development (Build)

Intersections to be Analyzed

- Courthouse Road and Mine Road (Signalized)
- Courthouse Road and Austin Ridge Drive (Signalized)
- Courthouse Road and I-95 Southbound Interchange (Signalized)
- Courthouse Road and I-95 Northbound Interchange (Signalized)
- Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road (Signalized)

Trip Generation

- Average weekday traffic projections for the proposed development were calculated based on Land Use 154 from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition.

Approved Background Developments

- VDOT and Stafford County had noted the following developments in the area, which have been approved and are to be included in the year 2024 background traffic volumes:
 - Austin Ridge Commercial – assume 75% build out
 - Embrey Mill – assume 25% build out
 - South Campus – assume 25% build out
 - Stafford Commons – assume 100% build out
 - Stafford Hospital – assume 25% build out
 - Westgate Center – assume 50% build out
 - Project Mover – assume 100% build out
 - Merritt Property – assume 100% build out
 - Courthouse West Restaurant – assume 100% build out

Arrival/Departure Distribution

- The arrival/departure distribution is as follows:
 - 5% (Trucks forbidden) to/from the North on Austin Ridge Drive
 - 15% to/from the West on Courthouse Road
 - 35% to/from the North on I-95.
 - 35% to/from the South on I-95
 - 10% to/from the East on Courthouse Road/Hospital Center Blvd

Programmed Improvements

- It is Bowman's understanding that the Courthouse Road/Hospital Center Boulevard/Wyche Road intersection is expected to be improved as part of a separate development. The northbound approach is to be widened from two (2) exclusive left turn lanes to three (3) exclusive left turn lanes. Additionally, the existing westbound through/right turn lane will be converted to a through lane, and an additional exclusive westbound right turn lane will be constructed.

This work is expected to be completed by the year 2024, and therefore, the proposed improvements will be included with both the No Build and Build capacity analyses for the year 2024.

Growth Rate

- It was agreed by VDOT and Stafford County that a background growth rate factor of 2.0% per year will be used in the study.

Traffic Data

- Turning movement counts at the study intersections were provided by VDOT. These counts were previously collected during the years 2020 and 2021, and were collected during the morning (7:00 AM – 9:00 AM) and evening (4:00 PM – 6:00 PM) peak periods.

The 2020 and 2021 counts supplied by VDOT will be grown to year 2022 levels using the aforementioned 2.0% annual growth rate.

The approved VDOT Pre-Scope of Work Meeting Form is included in **Appendix B**.

Existing Roadway Network

Austin Ridge Drive within the identified study area is a four-lane divided roadway with auxiliary turning lanes, listed as a Major Collector on VDOT's 2014 Functional Classification Map. It has a north-south alignment with a posted speed limit of 40 mph.

Courthouse Road within the identified study area is a four-lane divided roadway with auxiliary turning lanes to the west of Austin Ridge Drive, and a six-lane divided roadway with auxiliary turning lanes to the east of Austin Ridge Drive. It is listed as a Major Collector on VDOT's 2014 Functional Classification Map, and it has an east-west alignment with a posted speed limit of 40 mph.

Mine Road within the identified study area is a four-lane divided roadway with auxiliary turning lanes, listed as a Local Roadway on VDOT's 2014 Functional Classification Map. It has a north-south alignment with a posted speed limit of 40 mph.

Hospital Center Blvd. within the identified study area is a six-lane divided roadway with auxiliary turning lanes, listed as a Major Collector on VDOT's 2014 Functional Classification Map. It has an east-west alignment with a posted speed limit of 40 mph.

Existing Intersection Configuration

Intersection of Courthouse Road and Mine Road

This intersection is currently a four-legged signalized intersection where Courthouse Road has an east-west alignment and Mine Road has a north-south alignment as shown on **Figure 3**.



Figure 3. Aerial of Courthouse Road and Mine Road Intersection

The eastbound approach consists of one left turn lane, one through lane, and one through/right turn lane. The westbound approach consists of one left turn lane, two through lanes and one right turn lane. The northbound approach consists of one shared left/through/right lane. The southbound approach consists of two left turn lanes, one shared through/right lane and two right turn lanes.

Intersection of Courthouse Road and Austin Ridge Drive

This intersection is currently a four-legged signalized intersection where Courthouse Road has an east-west alignment, and Austin Ridge Drive has a north-south alignment as shown in **Figure 4**.



Figure 4. Aerial of Courthouse Road and Austin Ridge Drive Intersection

The eastbound approach consists of one left turn lane, one through lane, and one through/right turn lane. The westbound approach consists of one left turn lane, two through lanes, and one right turn lane. The northbound approach consists of one left turn lane, one shared left turn/through lane, one shared through/right turn lane, and one right turn lane. The southbound approach consists of two left turn lanes, one shared left turn/through lane, and one right turn lane.

Intersection of Courthouse Road and I-95 Southbound Interchange

This location is the western half of a diverging diamond interchange, which includes signalized intersections where Courthouse Road has an east-west alignment, and the I-95 Southbound On/Off Ramps Lane have a north-south alignment as shown in **Figure 5**.



Figure 5. Aerial of Courthouse Road and I-95 Southbound Interchange

The eastbound approach consists of three through lanes and one channelized right turn lane. The westbound approach consists of three through lanes and one channelized left turn lane. The I-95 southbound off ramp approach consists of two left turn lanes and one right turn lane.

Intersection of Courthouse Road and I-95 Northbound Interchange

This location is the eastern half of a diverging diamond interchange, which includes signalized intersections where Courthouse Road has an east-west alignment, and the I-95 Northbound On/Off Ramps Lane have a north-south alignment as shown in **Figure 6**.



Figure 6. Aerial of Courthouse Road and I-95 Northbound Interchange

The eastbound approach consists of three through lanes and one channelized left turn lane. The westbound approach consists of three through lanes and one channelized right turn lane. The I-95 northbound off ramp approach consists of two left turn lanes and one right turn lane.

Intersection of Courthouse Road/Hospital Center Blvd. and Wyche Road/Courthouse Road

This intersection is currently a four-legged signalized intersection where Courthouse Road/Hospital Center Blvd. has an east-west alignment, and Wyche Road/Courthouse Road has a north-south alignment as shown in **Figure 7**.



Figure 7. Aerial of Courthouse Road/Hospital Center Blvd. and Wyche Road/Courthouse Road

The eastbound approach consists of two left turn lanes, three through lanes, and one right turn lane. The westbound approach consists of one left turn lane, two through lanes, and one shared through/right turn lane. The northbound approach consists of two left turn lanes, one through lane and one right turn lane. The southbound approach consists of one left turn lane, one through lane and two right turn lanes.

Under year 2024 conditions with Wyche Road widening in place, the northbound approach will consist of three left turn lanes, one through lane and one right turn lane. The westbound approach will consist of one left turn lane, three through lanes, and one right turn lane.

Data Collection

Turning Movement Counts

Turning movement counts at the study intersections were provided by VDOT. These counts were previously collected during the years 2020 and 2021, and were collected during the morning (7:00 AM – 9:00 AM) and evening (4:00 PM – 6:00 PM) peak periods.

VDOT did not have recent turning movement count data at the Courthouse Road/Mine Road intersection, and therefore, the peak hour traffic volumes at this intersection were extracted from the draft Stafford Springs Traffic Impact Analysis; prepared by Green Light Solutions and dated November 1, 2021.

Copies of the turning movement counts provided by VDOT and the peak hour counts extracted from the draft Stafford Springs TIA are included in **Appendix C**.

Programmed Improvements

As previously mentioned, it is Bowman's understanding that the Courthouse Road/Hospital Center Boulevard/Wyche Road intersection is expected to be improved as part of a separate development. The northbound approach is to be widened from two (2) exclusive left turn lanes to three (3) exclusive left turn lanes. Additionally, the existing westbound through/right turn lane will be converted to a through lane, and an additional exclusive westbound right turn lane will be constructed.

This work is expected to be completed by the year 2024, and therefore, the proposed improvements will be included with both the No Build and Build capacity analyses for the year 2024.

Nearby Approved Developments

VDOT and Stafford County had noted there are several developments in the surrounding study area which have been approved and are to be included in the year 2024 background traffic volumes. VDOT and Stafford County provided the approved development traffic data and outlined that the following development construction levels should be assumed for the year 2024:

- Austin Ridge Commercial – assume 75% build out
- Embrey Mill – assume 25% build out
- South Campus – assume 25% build out
- Stafford Commons – assume 100% build out
- Stafford Hospital – assume 25% build out
- Westgate Center – assume 50% build out
- Project Mover – assume 100% build out
- Merritt Property – assume 100% build out
- Courthouse West Restaurant – assume 100% build out

Traffic Forecast and Background Traffic

For the purposes of this analysis, it is anticipated that the proposed development will be constructed and fully operational by the end of the year 2024. The following scenarios were evaluated as part of this study.

- Existing Conditions (2022)
- Future Conditions (2024) without the proposed development (No Build)
- Future Conditions (2024) with the proposed development (Build)

As previously mentioned, it was agreed with both VDOT and Stafford County at the Pre-Scoping meeting that a background growth rate factor of 2.0% per year would be applied to the traffic counts to grow the existing volumes to Future Conditions.

Turning movement counts provided by VDOT and extracted from the draft Stafford Springs TIA were previously collected in 2020 and 2021 and are included in **Appendix C**. The 2020 and 2021 peak hour traffic volumes are depicted on **Exhibit 1** in **Appendix D**.

The growth rate factor was applied to the 2020 and 2021 traffic counts to develop the 2022 Existing Peak Hour Traffic Volumes, which are depicted on **Exhibit 2** in **Appendix D**.

The growth rate factor was then applied to project the 2022 Existing Peak Hour Traffic Volumes two (2) years to develop the 2024 Background Traffic Volumes, which are depicted on **Exhibit 3** in **Appendix D**.

The peak hour background trips from the approved developments outlined earlier in this report are depicted on **Exhibit 4** in **Appendix D**. The background development traffic information used to develop these background trips is included in **Appendix E** to this report.

These background trips were then added to the 2024 Background Traffic Volumes to create the 2024 No Build Traffic Volumes, which are depicted on **Exhibit 5** in **Appendix D**.

Proposed Development

The Applicant is proposing to develop the site with a 1,979,000 S.F. High-Cube Transload and Short-term Storage Warehouse facility.

The proposed development is expected to utilize the fourth leg of the intersection of Austin Ridge Drive and Courthouse Road as the main access point to the site. The site driveway is depicted on the Conceptual Plan in **Appendix A**.

Trip Generation and Trip Distribution

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition was used to determine the number of trips generated by the proposed land use. **Table 1** outlines the projected morning and evening peak hour trip generation for the proposed development.

Table 1. Site Trip Generation

Development ⁽¹⁾	Land Use	Size	Units	Weekday AM Peak Hour			Weekday PM Peak Hour			Average Weekday		
				In	Out	Total	In	Out	Total	In	Out	Total
High-Cube Transload and Short-term Storage Warehouse	154	1,979,000	Sq. Ft.	122	36	158	55	143	198	1385	1386	2,771
Total				122	36	158	55	143	198	1385	1386	2771

(1) Based on the Institute of Transportation Engineers Trip Generation Manual, 11th Edition

As shown in **Table 1**, the proposed development is expected to generate 158 trips (122 in and 36 out) during the morning peak hour, 198 trips (55 in and 143 out) during the evening peak hour, and 2,771 trips (1,385 in and 1,386 out) during an average weekday.

The expected trip distribution for the proposed site was developed in conjunction with VDOT and Stafford County officials. This expected trip distribution is depicted on **Exhibit 6** in **Appendix D**.

The projected traffic volumes for the proposed site were then distributed to the roadway system in accordance with the agreed upon trip distribution. The site trips projected for the proposed development are depicted on **Exhibit 7** in **Appendix D**.

The site trips were added to the 2024 No Build Traffic Volumes to create the 2024 Build Traffic Volumes, which are depicted on **Exhibit 8** in **Appendix D**.

Capacity Analysis

The study intersections were analyzed for each scenario following the Highway Capacity Manual (HCM 6th Edition) methodologies using the computer software package Synchro 10 with SimTraffic. The analysis uses capacity, Level of Service (LOS) and control delay as the criteria for the performance of the intersections.

The analysis models were developed per the standards and requirements included in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) – Version 2.0.

Capacity, as defined by the HCM, is a measure of the maximum number of vehicles in an hour that can travel through an intersection or section of roadway under typical conditions. Level of Service (LOS) is a marker of the driving conditions and perception of drivers while traveling during the given time period. LOS ranges from LOS "A" which represents free-flow conditions, to LOS "F" which represents breakdown conditions. **Table 2** shows the LOS for intersections as defined by the HCM.

Table 2. HCM Level of Service Criteria

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

The reported queues, or linear distance of delayed vehicles, for the intersection in this study are the maximum queues reported by SimTraffic after 10 runs of 60 minutes each with a 15-minute

seeding time. They are reported to ensure that the storage lengths of lanes at the intersections are of adequate length and that queued vehicles will not interfere with free flow vehicles or adjacent intersections.

Capacity analyses were completed for the following scenarios for the morning and evening peak hours:

- Existing Conditions (2022)
- Future Conditions (2024) without the proposed development (No Build)
- Future Conditions (2024) with the proposed development (Build)

Capacity Analysis of Existing Conditions (Year 2022)

A capacity analysis under the Existing Year 2022 Conditions was conducted for the study intersections previously described in this report. The Existing Conditions capacity analysis results are included in **Appendix F**.

Intersection of Courthouse Road and Mine Road

Based on the results of the capacity analysis under Existing Conditions, the intersection of Courthouse Road and Mine Road currently operates at an acceptable overall level of service "B" during the morning peak hour and an acceptable overall level of service "C" during the evening peak hour.

During the morning peak hour, the mainline (Courthouse Road) turning movements and approaches all currently operate at a LOS A, and the southbound turning movements and approaches all operate at a LOS D.

During the evening peak hour, the mainline (Courthouse Road) turning movements and approaches all currently operate at a LOS B or better, and the southbound turning movements and approaches all operate at a LOS E.

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 3**.

Table 3. 2022 Existing Conditions Capacity Analysis – Courthouse Road and Mine Road

INTERSECTION				AM Peak Hour			PM Peak Hour		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #1: Courthouse Road and Mine Road (2022 Existing Conditions)	Approach	Movement	Storage (ft)						
	EB	L	335	6.7	A	94	7.8	A	110
		T	+1,000	4.1	A	104	5.1	A	98
		R	+1,000	0.0	A	98	0.0	A	72
		Approach	--	4.7	A	--	5.8	A	--
	WB	L	170	0.0	A	0	0.0	A	0
		T	800	8.7	A	178	10.1	B	149
		R	760	5.1	A	66	4.2	A	92
		Approach	--	7.7	A	--	8.4	A	--
	NB	Approach	100	0.0	A	0	0.0	A	0
	SB	L	530	53.6	D	144	63.8	E	224
		T	800	0.0	A	94	0.0	A	137
		R	450	49.7	D	30	60.0	E	72
		Approach	--	51.3	D	--	61.8	E	--
	OVERALL			15.8	B	--	27.0	C	--

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and Austin Ridge Drive

Based on the results of the capacity analysis under Existing Conditions, the intersection of Courthouse Road and Austin Ridge Drive currently operates at an acceptable overall level of service "B" during both the morning and evening peak hours.

During the morning peak hour, the westbound left turn movement currently operates at a LOS F and the southbound left turn and through movements currently operate at a LOS E. The southbound right turn movement and approach currently operate at a LOS D, and all other movements and approaches currently operate at a LOS A.

During the evening peak hour, the southbound turning movements and approaches currently operate at a LOS E, and all other turning movements and approaches currently operate at a LOS A.

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 4**.

Table 4. 2022 Existing Conditions Capacity Analysis – Courthouse Road and Austin Ridge Drive

INTERSECTION				AM Peak Hour			PM Peak Hour		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #2: Courthouse Road and Austin Ridge Drive (2022 Existing Conditions)	EB	L	390	6.4	A	36	6.6	A	25
		T	+1,000	8.1	A	119	4.7	A	92
		R	+1,000	0.0	A	131	0.0	A	104
		Approach	--	8.0	A	--	4.7	A	--
	WB	L	260	155.7	F	11	0.0	A	0
		T	800	8.4	A	217	8.5	A	253
		R	800	5.0	A	93	3.9	A	96
		Approach	--	7.4	A	--	7.1	A	--
	NB	L	205	0.0	A	0	0.0	A	0
		T	500	0.0	A	0	0.0	A	0
		R	225	0.0	A	0	0.0	A	0
		Approach	--	0.0	A	--	0.0	A	--
	SB	L	330 / 920	55.1	E	152	67.6	E	234
		T	920	55.1	E	172	67.6	E	220
		R	360	48.1	D	29	59.5	E	20
		Approach	--	54.8	D	--	67.4	E	--
	OVERALL			16.8	B	--	19.4	B	--

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and I-95 Southbound Interchange

Based on the results of the capacity analysis under Existing Conditions, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Southbound Interchange currently operate at acceptable levels of service "C" or better during both the morning and evening peak hours.

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 5**.

Table 5. 2022 Existing Conditions Capacity Analysis – Courthouse Road and I-95 SB Interchange

INTERSECTION				AM Peak Hour			PM Peak Hour		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #3: Courthouse Road and I-95 Southbound Interchange (2022 Existing Conditions)	EB	Approach	975	15.9	B	198	22.6	C	263
	WB	Approach	725	16.6	B	162	15.6	B	203
	SB	L	1,500	20.0	B	152	28.0	C	318
		R	950	18.8	B	126	23.2	C	198

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and I-95 Northbound Interchange

Based on the results of the capacity analysis under Existing Conditions, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Northbound Interchange currently operate at acceptable levels of service "C" or better during both the morning and evening peak hours.

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 6**.

Table 6. 2022 Existing Conditions Capacity Analysis – Courthouse Road and I-95 NB Interchange

INTERSECTION				AM Peak Hour			PM Peak Hour		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #4: Courthouse Road and I-95 Northbound Interchange (2022 Existing Conditions)	Approach	Movement	Storage (ft)						
	EB	Approach	725	12.3	B	230	20.0	B	353
	WB	Approach	1,000	20.2	C	314	27.6	C	260
	NB	L	+1,000	19.0	B	139	22.3	C	189
		R	+1,000	22.2	C	262	27.8	C	223

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road

Based on the results of the capacity analysis under Existing Conditions, the intersection of Courthouse Road/Hospital Center Boulevard/Wyche Road currently operates at an acceptable overall level of service "D" during the morning peak hour and an acceptable overall level of service "C" during the evening peak hour.

During the morning peak hour, the eastbound left turn movement currently operates at a LOS F, and the eastbound approach, northbound turning movements and approach, southbound right turn, and southbound approach currently operate at a LOS E. All other turning movements and approaches currently operate at a LOS D or better.

During the evening peak hour, the northbound right turn movement currently operates at a LOS F, and the eastbound left turn movement, northbound left turn movement, northbound through movement, and northbound approach currently operate at a LOS E. All other turning movements and approaches currently operate at a LOS D or better.

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 7**.

Table 7. 2022 Existing Conditions Capacity Analysis – Courthouse Road/Hospital Center Boulevard/Wyche Road

INTERSECTION				AM Peak Hour			PM Peak Hour		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #5: Courthouse Rd/ Hospital Center Blvd and Wyche Rd/Courthouse Rd (2022 Existing Conditions)	Approach	Movement	Storage (ft)						
	EB	L	285	154.7	F	280	79.0	E	221
		T	825	11.6	B	427	17.8	B	165
		R	260	11.2	B	45	14.2	B	19
		Approach	--	60.1	E	--	31.3	C	--
	WB	L	230	12.8	B	47	19.8	B	34
		T	+1,000	15.7	B	213	23.4	C	220
		R	225	16.0	B	172	23.7	C	170
		Approach	--	15.7	B	--	23.4	C	--
	NB	L	395	59.8	E	87	76.7	E	123
		T	700	58.9	E	40	74.2	E	50
		R	275	67.9	E	42	86.0	F	59
		Approach	--	61.6	E	--	78.5	E	--
	SB	L	250	43.4	D	22	46.1	D	37
		T	525	49.3	D	20	51.8	D	39
		R	425	59.3	E	208	49.0	D	244
		Approach	--	58.8	E	--	48.9	D	--
	OVERALL			46.8	D	--	34.6	C	--

*Extracted from SimTraffic simulation software

Capacity Analysis Comparison – No Build vs. Build Conditions (Year 2024)

Capacity analyses were conducted for the No Build and Build Conditions for the proposed year 2024. The primary purpose for this approach was to compare the results in order to identify areas impacted by the proposed development. The capacity analysis results are included in **Appendices G and H**.

As previously mentioned, the Courthouse Road/Hospital Center Boulevard/Wyche Road intersection is expected to be improved as part of a separate development. These improvements (the construction of an additional northbound left turn lane and an additional westbound right turn lane) were included in the year 2024 capacity analyses for both No Build and Build Conditions.

Intersection of Courthouse Road and Mine Road

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the intersection of Courthouse Road and Mine Road is projected to operate at an acceptable overall level of service "B" during both the No Build and Build Conditions, with no increase in delay.

There are no projected changes to levels of service from No Build to Build Conditions.

The southbound left turn movement is projected to operate at a LOS E during both the No Build and Build Conditions. However, there is no projected increase to delay for this movement under Build Conditions.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions, with minimal increases in delay (0.1 seconds maximum).

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 8**.

Table 8. 2024 AM Peak Hour Capacity Analysis – Courthouse Road and Mine Road

INTERSECTION				AM Peak (No Build)			AM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #1: Courthouse Road and Mine Road (2024 No Build vs. 2024 Build Conditions)	EB	L	335	7.7	A	118	7.7	A	111
		T	+1,000	4.9	A	148	5.0	A	151
		R	+1,000	0.0	A	138	0.0	A	144
		Approach	--	5.3	A	--	5.4	A	--
	WB	L	170	0.0	A	0	0.0	A	0
		T	800	10.1	B	285	10.2	B	298
		R	760	5.9	A	138	5.9	A	150
		Approach	--	8.9	A	--	8.9	A	--
	NB	Approach	100	0.0	A	0	0.0	A	0
	SB	L	530	57.5	E	197	57.5	E	197
		T	800	0.0	A	97	0.0	A	108
		R	450	49.2	D	51	49.2	D	45
		Approach	--	53.4	D	--	53.4	D	--
	OVERALL			15.2	B	--	15.1	B	--

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the evening peak hour, the intersection of Courthouse Road and Mine Road is projected to operate at an acceptable overall level of service "C" during both the No Build and Build Conditions, with no increase in delay.

There are no projected changes to levels of service from No Build to Build Conditions.

The southbound left turn movement and southbound approach are projected to operate at a LOS E during both the No Build and Build Conditions. However, there are no projected increases to delay for these movements under Build Conditions.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions, with minimal increases in delay (0.2 seconds maximum).

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 9**.

Table 9. 2024 PM Peak Hour Capacity Analysis – Courthouse Road and Mine Road

INTERSECTION				PM Peak (No Build)			PM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #1: Courthouse Road and Mine Road 2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	L	335	14.0	B	187	14.3	B	184
		T	+1,000	9.0	A	174	9.0	A	191
		R	+1,000	0.0	A	167	0.0	A	185
		Approach	--	9.8	A	--	9.9	A	--
	WB	L	170	0.0	A	0	0.0	A	0
		T	800	17.3	B	136	17.4	B	122
		R	760	5.1	A	98	5.0	A	102
		Approach	--	13.9	B	--	14.1	B	--
	NB	Approach	100	0.0	A	0	0.0	A	0
	SB	L	530	65.4	E	387	65.4	E	355
		T	800	0.0	A	192	0.0	A	190
		R	450	50.4	D	158	50.4	D	163
		Approach	--	59.8	E	--	59.8	E	--
	OVERALL			26.3	C	--	26.2	C	--

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and Austin Ridge Drive

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the intersection of Courthouse Road and Austin Ridge Drive is projected to operate at an acceptable overall level of service "D" during the No Build Conditions, and an overall level of service "E" during the Build Conditions, with an increase in overall delay of 18.4 seconds.

The westbound left turn movement is projected to operate at a LOS F during both the No Build and Build Conditions, with an increase in delay of 174.3 seconds. The westbound approach is projected to degrade from a LOS C during the No Build Conditions to a LOS E during the Build Conditions, with an increase in delay of 36.7 seconds.

There are no other projected changes to levels of service from No Build to Build Conditions.

The northbound left turn movement, northbound through movement, southbound left turn movement, southbound through movement, and southbound approach are all projected to operate at a LOS E during both the No Build and Build Conditions, with minimal increases in delay (0.4 seconds maximum).

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions, with minimal increases in delay (2.2 seconds maximum).

The westbound left turn queue is projected to exceed the available storage for the auxiliary lanes during both the No Build and Build Conditions and spill back into the adjacent through lane. All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes.

The westbound left turn movement degradation at this intersection indicates that additional mitigation for the westbound left turn lane is required under Build Conditions to return the operations of the intersection to levels similar to No Build Conditions. The capacity analysis results are summarized in **Table 10**.

Table 10. 2024 AM Peak Hour Capacity Analysis – Courthouse Road and Austin Ridge Drive

INTERSECTION				AM Peak (No Build)			AM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #2: Courthouse Road and Austin Ridge Drive (2024 No Build vs. 2024 Build Conditions)	EB	L	390	15.1	B	183	15.5	B	249
		T	+1,000	38.5	D	422	40.6	D	615
		R	+1,000	38.2	D	427	40.4	D	632
		Approach	--	37.9	D	--	40.1	D	--
	WB	L	260	107.8	F	259	282.1	F	260
		T	800	20.4	C	395	20.9	C	430
		R	800	13.7	B	232	14.1	B	219
		Approach	--	29.8	C	--	66.5	E	--
	NB	L	205	56.4	E	8	56.0	E	10
		T	500	57.4	E	58	57.6	E	85
		R	225	42.1	D	30	42.0	D	30
		Approach	--	46.0	D	--	46.0	D	--
	SB	L	330 / 920	63.9	E	354	64.3	E	378
		T	920	63.9	E	293	64.3	E	308
		R	360	45.4	D	43	45.3	D	46
		Approach	--	63.4	E	--	63.7	E	--
	OVERALL			38.3	D	--	56.7	E	--

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the evening peak hour, the intersection of Courthouse Road and Austin Ridge Drive is projected to operate at an acceptable overall level of service "D" during both the No Build and Build Conditions, with an increase in overall delay of 8.6 seconds.

The westbound left turn movement is projected to operate at a LOS F during both the No Build and Build Conditions, with an increase in delay of 95.8 seconds. The westbound approach is projected to degrade from a LOS C during the No Build Conditions to a LOS D during the Build Conditions, with an increase in delay of 12.5 seconds.

There are no other projected changes to levels of service from No Build to Build Conditions.

The northbound turning movements and approach, southbound left turn movement, southbound through movement, and southbound approach are all projected to operate at a LOS E during both the No Build and Build Conditions, with no projected increases in delay.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions.

The westbound left turn queue and the southbound left turn queue are projected to exceed the available storage for the auxiliary lanes during both the No Build and Build Conditions, and spill back into the adjacent through lanes. Additionally, the eastbound through queue, eastbound right turn queue, and southbound through queue are projected to exceed the available storage during the Build Conditions, although these queues do not appear to be related to site traffic and instead appear to be related to traffic not being able to clear the intersection.

All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes.

The westbound left turn movement degradation at this intersection indicates that additional mitigation for the westbound left turn lane is required under Build Conditions to return the operations of the intersection to levels similar to No Build Conditions. The capacity analysis results are summarized in **Table 11**.

Table 11. 2024 PM Peak Hour Capacity Analysis – Courthouse Road and Austin Ridge Drive

INTERSECTION				PM Peak (No Build)			PM Peak (Build)		
				Conditions			Conditions		
Intersection #2: Courthouse Road and Austin Ridge Drive (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)	DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
	EB	L	390	29.4	C	177	33.2	C	280
		T	+1,000	41.1	D	804	50.7	D	1,311
		R	+1,000	40.9	D	811	50.4	D	1,311
		Approach	--	40.9	D	--	50.4	D	--
	WB	L	260	101.0	F	260	196.8	F	260
		T	800	38.9	D	435	46.4	D	438
		R	800	16.1	B	181	19.4	B	178
		Approach	--	34.1	C	--	46.6	D	--
	NB	L	205	65.7	E	48	61.9	E	60
		T	500	67.5	E	166	64.1	E	240
		R	225	62.1	E	139	60.4	E	212
		Approach	--	63.4	E	--	61.2	E	--
	SB	L	330 / 920	62.8	E	1,047	62.8	E	1,379
		T	920	62.8	E	887	62.8	E	1,218
		R	360	48.0	D	260	48.0	D	324
		Approach	--	62.6	E	--	62.6	E	--
	OVERALL			43.4	D	--	52.0	D	--

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and I-95 Southbound Interchange

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Southbound Interchange are projected to operate at acceptable levels of service “D” or better during both the No Build and Build Conditions.

There are no projected changes to levels of service from No Build to Build Conditions, and there are minimal projected increases in delay (2.4 seconds maximum).

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 12**.

Table 12. 2024 AM Peak Hour Capacity Analysis – Courthouse Road and I-95 SB Interchange

INTERSECTION				AM Peak (No Build)			AM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #3: Courthouse Road and I-95 Southbound Interchange (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	Approach	975	42.0	D	681	42.7	D	735
	WB	Approach	725	16.1	B	535	16.9	B	546
	SB	L	1,500	17.3	B	253	17.3	B	303
		R	950	31.8	C	300	34.2	C	360

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the evening peak hour, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Southbound Interchange are projected to operate at acceptable levels of service “D” or better during both the No Build and Build Conditions.

There are no projected changes to levels of service from No Build to Build Conditions, and there are minimal projected increases in delay (1.0 seconds maximum).

The eastbound queue is projected to exceed the available storage during both the No Build and Build Conditions, with an increase in queue length of only 2 feet. All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 13**.

Table 13. 2024 PM Peak Hour Capacity Analysis – Courthouse Road and I-95 SB Interchange

INTERSECTION				PM Peak (No Build)			PM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #3: Courthouse Road and I-95 Southbound Interchange (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	Approach	975	38.7	D	1,238	36.6	D	1,240
	WB	Approach	725	30.0	C	562	31.0	C	567
	SB	L	1,500	37.8	D	639	37.8	D	620
		R	950	26.3	C	422	26.9	C	464

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road and I-95 Northbound Interchange

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Northbound Interchange are projected to operate at acceptable levels of service “C” or better during both the No Build and Build Conditions.

There are no projected changes to levels of service from No Build to Build Conditions, and there are minimal projected increases in delay (0.7 seconds maximum).

The queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 14**.

Table 14. 2024 AM Peak Hour Capacity Analysis – Courthouse Road and I-95 NB Interchange

INTERSECTION				AM Peak (No Build)			AM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #4: Courthouse Road and I-95 Northbound Interchange (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	Approach	725	23.5	C	467	23.8	C	522
	WB	Approach	1,000	15.0	B	521	15.2	B	662
	NB	L	+1,000	28.1	C	420	28.8	C	457
		R	+1,000	25.9	C	429	25.9	C	410

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the evening peak hour, the turning movements and approaches at the intersection of Courthouse Road and the I-95 Northbound Interchange are projected to operate at acceptable levels of service “D” or better during both the No Build and Build Conditions.

There are no projected changes to levels of service from No Build to Build Conditions, and there are minimal projected increases in delay (0.2 seconds maximum).

The westbound queue is projected to exceed the available storage during both the No Build and Build Conditions, but there is no projected increase to this queue length under Build Conditions. All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 15**.

Table 15. 2024 PM Peak Hour Capacity Analysis – Courthouse Road and I-95 NB Interchange

INTERSECTION				PM Peak (No Build)			PM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #4: Courthouse Road and I-95 Northbound Interchange (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	Approach	725	22.7	C	630	22.6	C	628
	WB	Approach	1,000	34.5	C	1,203	34.5	C	1,125
	NB	L	+1,000	22.1	C	562	22.3	C	591
		R	+1,000	43.8	D	514	43.8	D	517

*Extracted from SimTraffic simulation software

Intersection of Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the intersection of Courthouse Road/Hospital Center Boulevard/Wyche Road is projected to operate at an acceptable overall level of service "D" during both the No Build and Build Conditions, with no change in overall delay.

There are no projected changes to levels of service from No Build to Build Conditions.

The eastbound left turn movement is projected to operate at a LOS E during both the No Build and Build Conditions. However, there is no projected increase to delay for this movement under Build Conditions.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions, with minimal increases in delay (0.2 seconds maximum).

The eastbound left turn queue, eastbound right turn queue, and westbound left turn queue are all projected to exceed the available storage for the auxiliary lanes during both the No Build and Build Conditions and spill back into the adjacent through lane. These queues are pre-existing and are not expected to significantly increase from No Build to Build Conditions.

All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 16**.

Table 16. 2024 AM Peak Hour Capacity Analysis – Courthouse Road/Hospital Center Boulevard/Wyche Road

INTERSECTION				AM Peak (No Build)			AM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
<u>Intersection #5:</u> Courthouse Rd/ Hospital Center Blvd and Wyche Rd/Courthouse Rd (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	L	285	67.3	E	284	67.3	E	284
		T	825	27.2	C	373	27.3	C	392
		R	260	26.2	C	260	26.2	C	260
	WB	Approach	--	38.2	D	--	38.2	D	--
		L	230	29.9	C	229	29.9	C	229
		T	+1,000	40.3	D	460	40.5	D	477
		R	225	34.2	C	214	34.2	C	202
	NB	Approach	--	39.1	D	--	39.3	D	--
		L	395	52.9	D	324	52.9	D	313
		T	700	35.2	D	122	35.2	D	54
		R	275	33.0	C	86	33.0	C	67
	SB	Approach	--	50.3	D	--	50.3	D	--
		L	250	39.1	D	92	39.1	D	80
		T	525	42.2	D	42	42.2	D	59
		R	425	35.7	D	245	35.7	D	247
	OVERALL			39.7	D	--	39.8	D	--

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the intersection of Courthouse Road/Hospital Center Boulevard/Wyche Road is projected to operate at an acceptable overall level of service "D" during both the No Build and Build Conditions, with no change in overall delay.

There are no projected changes to levels of service from No Build to Build Conditions.

The eastbound left turn movement, northbound left turn movement, northbound approach, and the southbound turning movements and approach are projected to operate at a LOS E during both the No Build and Build Conditions. However, there is no projected increase to delay for these movements under Build Conditions.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Build Conditions, with minimal increases in delay (0.2 seconds maximum).

The eastbound left turn queue, westbound left turn queue, and northbound left turn queue are all projected to exceed the available storage for the auxiliary lanes during both the No Build and Build Conditions and spill back into the adjacent through lane. These queues are pre-existing and are not expected to significantly increase from No Build to Build Conditions.

All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes. The capacity analysis results are summarized in **Table 17**.

Table 17. 2024 PM Peak Hour Capacity Analysis – Courthouse Road/Hospital Center Boulevard/Wyche Road

INTERSECTION				PM Peak (No Build)			PM Peak (Build)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #5: Courthouse Rd/ Hospital Center Blvd and Wyche Rd/Courthouse Rd (2024 No Build vs. 2024 Build Conditions)	Approach	Movement	Storage (ft)						
	EB	L	285	74.6	E	283	74.6	E	283
		T	825	27.5	C	386	27.6	C	392
		R	260	19.1	B	237	19.1	B	250
	WB	Approach	--	35.8	D	--	35.9	D	--
		L	230	29.0	C	230	29.2	C	230
		T	+1,000	36.3	D	885	36.4	D	993
		R	225	28.6	C	200	28.6	C	215
	NB	Approach	--	35.5	D	--	35.6	D	--
		L	395	64.8	E	391	64.8	E	394
		T	700	50.0	D	537	50.0	D	579
		R	275	47.8	D	88	47.8	D	85
	SB	Approach	--	63.1	E	--	63.1	E	--
		L	250	64.7	E	126	64.7	E	126
		T	525	65.2	E	341	65.2	E	354
		R	425	73.8	E	379	73.8	E	380
	Approach	--	72.6	E	--	72.6	E	--	
OVERALL			43.9	D	--	43.9	D	--	

*Extracted from SimTraffic simulation software

Capacity Analysis Comparison – No Build vs. Mitigated Conditions (Year 2024)

As previously mentioned, the westbound left turn movement degradation at the Courthouse Road and Austin Ridge Drive intersection indicates that additional mitigation for the westbound left turn lane is required under Build Conditions to return the operations of the intersection to levels similar to No Build Conditions. Therefore, the following improvement is proposed to mitigate the impact of this additional traffic:

- Construction of one (1) additional westbound left turn lane with 150 feet of storage

The results of the capacity analysis at this intersection with the additional westbound left turn lane in place were compared to the results under No Build Conditions in order to identify if this improvement will return the operations of the intersection to levels similar to No Build Conditions.

The capacity analysis results are included in **Appendix I**.

Intersection of Courthouse Road and Austin Ridge Drive

Morning Peak Hour

Based on the results of the capacity analysis during the morning peak hour, the intersection of Courthouse Road and Austin Ridge Drive is projected to operate at an acceptable overall level of service "D" during both the No Build and Mitigated Conditions, with a *decrease* in overall delay of 0.8 seconds.

There are no projected changes to levels of service from No Build Conditions to Mitigated Conditions.

The westbound left turn movement is projected to operate at a LOS F during both the No Build and Mitigated Conditions, but this delay is projected to *decrease* by 24.8 seconds under Mitigated Conditions.

The northbound left turn movement, northbound through movement, southbound left turn movement, southbound through movement, and southbound approach are all projected to operate at a LOS E during both the No Build and Mitigated Conditions, with no projected increases in delay

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Mitigated Conditions, with minimal increases in delay (2.5 seconds maximum).

The westbound left turn queue, which was projected to exceed the available storage under No Build Conditions, is *not* projected to exceed the available storage under Mitigated Conditions. All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes.

The results of the capacity analysis at this intersection indicate that the additional westbound left turn lane should sufficiently achieve similar levels of service and queue lengths as No Build Conditions. The capacity analysis results are summarized in **Table 18**.

Table 18. 2024 AM Mitigated Peak Hour Capacity Analysis – Courthouse Road and Austin Ridge Drive

INTERSECTION				AM Peak (No Build)			AM Peak (Mitigated)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #2: Courthouse Road and Austin Ridge Drive (2024 No Build vs. 2024 Mitigated Conditions)	Approach	Movement	Storage (ft)						
	EB	L	390	15.1	B	82	15.7	B	156
		T	+1,000	38.5	D	439	36.2	D	478
		R	+1,000	38.2	D	475	36.0	D	491
		Approach	--	37.9	D	--	35.7	D	--
	WB	L	260	107.8	F	259	83.0	F	226
		T	800	20.4	C	391	21.2	C	394
		R	800	13.7	B	197	14.1	B	188
		Approach	--	29.8	C	--	30.4	C	--
	NB	L	205	56.4	E	39	55.9	E	19
		T	500	57.4	E	58	57.4	E	85
		R	225	42.1	D	34	44.6	D	33
		Approach	--	46.0	D	--	47.8	D	--
	SB	L	330 / 920	63.9	E	312	61.5	E	303
		T	920	63.9	E	309	61.5	E	299
		R	360	45.4	D	44	45.1	D	44
		Approach	--	63.4	E	--	60.9	E	--
	OVERALL				38.3	D	--	37.5	D

*Extracted from SimTraffic simulation software

Evening Peak Hour

Based on the results of the capacity analysis during the evening peak hour, the intersection of Courthouse Road and Austin Ridge Drive is projected to operate at an acceptable overall level of service "D" during both the No Build and Mitigated Conditions, with an increase in overall delay of 5.1 seconds.

There are no projected changes to levels of service from No Build to Mitigated Conditions.

The westbound left turn movement is projected to operate at a LOS F during both the No Build and Mitigated Conditions, but this delay is projected to *decrease* by 12.8 seconds under Mitigated Conditions.

The northbound turning movements and approach, southbound left turn movement, southbound through movement, and southbound approach are all projected to operate at a LOS E during both the No Build and Mitigated Conditions, with a maximum increase in delay of 4.2 seconds.

All other turning movements and approaches are projected to operate at a LOS D or better during both the No Build and Mitigated Conditions, with a maximum increase in delay of 4.5 seconds.

The westbound left turn queue, which was projected to exceed the available storage under No Build Conditions, is *not* projected to exceed the available storage under Mitigated Conditions.

The southbound left turn queue is projected to exceed the available storage under both No Build and Mitigated Conditions, with an increase in queue length of 30 feet under Mitigated Conditions. All other queue results from SimTraffic do not appear to exceed the available storage for the auxiliary lanes.

The results of the capacity analysis at this intersection indicate that the additional westbound left turn lane should sufficiently achieve similar levels of service and queue lengths as No Build Conditions. The capacity analysis results are summarized in **Table 19**.

Table 19. 2024 PM Mitigated Peak Hour Capacity Analysis – Courthouse Road and Austin Ridge Drive

INTERSECTION				PM Peak (No Build)			PM Peak (Mitigated)		
				Conditions			Conditions		
				DELAY (S)	LOS	Maximum Queue (ft)*	DELAY (S)	LOS	Maximum Queue (ft)*
Intersection #2: Courthouse Road and Austin Ridge Drive (2024 No Build vs. 2024 Mitigated Conditions)	Approach	Movement	Storage (ft)						
	EB	L	390	29.4	C	177	32.4	C	178
		T	+1,000	41.1	D	804	45.6	D	734
		R	+1,000	40.9	D	811	45.3	D	758
		Approach	--	40.9	D	--	45.4	D	--
	WB	L	260	101.0	F	260	88.2	F	220
		T	800	38.9	D	435	44.5	D	345
		R	800	16.1	B	181	19.4	B	147
		Approach	--	34.1	C	--	39.4	D	--
	NB	L	205	65.7	E	48	61.9	E	52
		T	500	67.5	E	166	64.1	E	219
		R	225	62.1	E	139	63.8	E	191
		Approach	--	63.4	E	--	63.7	E	--
	SB	L	330 / 920	62.8	E	1,047	67.0	E	1,077
		T	920	62.8	E	887	67.0	E	889
		R	360	48.0	D	260	48.8	D	326
		Approach	--	62.6	E	--	66.7	E	--
OVERALL				43.4	D	--	48.5	D	--

*Extracted from SimTraffic simulation software

Summary

The Applicant is proposing to develop the site with a 1,979,000 S.F. High-Cube Transload and Short-Term Storage Warehouse Facility.

The proposed development is expected to generate 158 trips (122 in and 36 out) during the morning peak hour, 198 trips (55 in and 143 out) during the evening peak hour, and 2,771 trips (1,385 in and 1,386 out) during an average weekday.

To evaluate the traffic operations with the proposed development in place, capacity analyses were completed at the five (5) study intersections included in this report. The results of the analysis indicate that the proposed development is not expected to adversely impact the following four (4) intersections:

- Courthouse Road and Mine Road
- Courthouse Road and I-95 Southbound Interchange
- Courthouse Road and I-95 Northbound Interchange
- Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road

The results of the capacity analysis also indicate that mitigation improvements are required at the following intersection:

- Courthouse Road and Austin Ridge Drive

The westbound left turn movement at this intersection is projected to degrade from No Build to Build Conditions due to the development's additional westbound left turning traffic added to the intersection. Therefore, the following improvement is proposed to mitigate the impact of this additional traffic:

- Construction of one (1) additional westbound left turn lane with 150 feet of storage

The results of the capacity analysis with the proposed additional westbound left turn lane in place indicate that the proposed improvement is projected to return the operations of the intersection to levels similar to No Build Conditions.

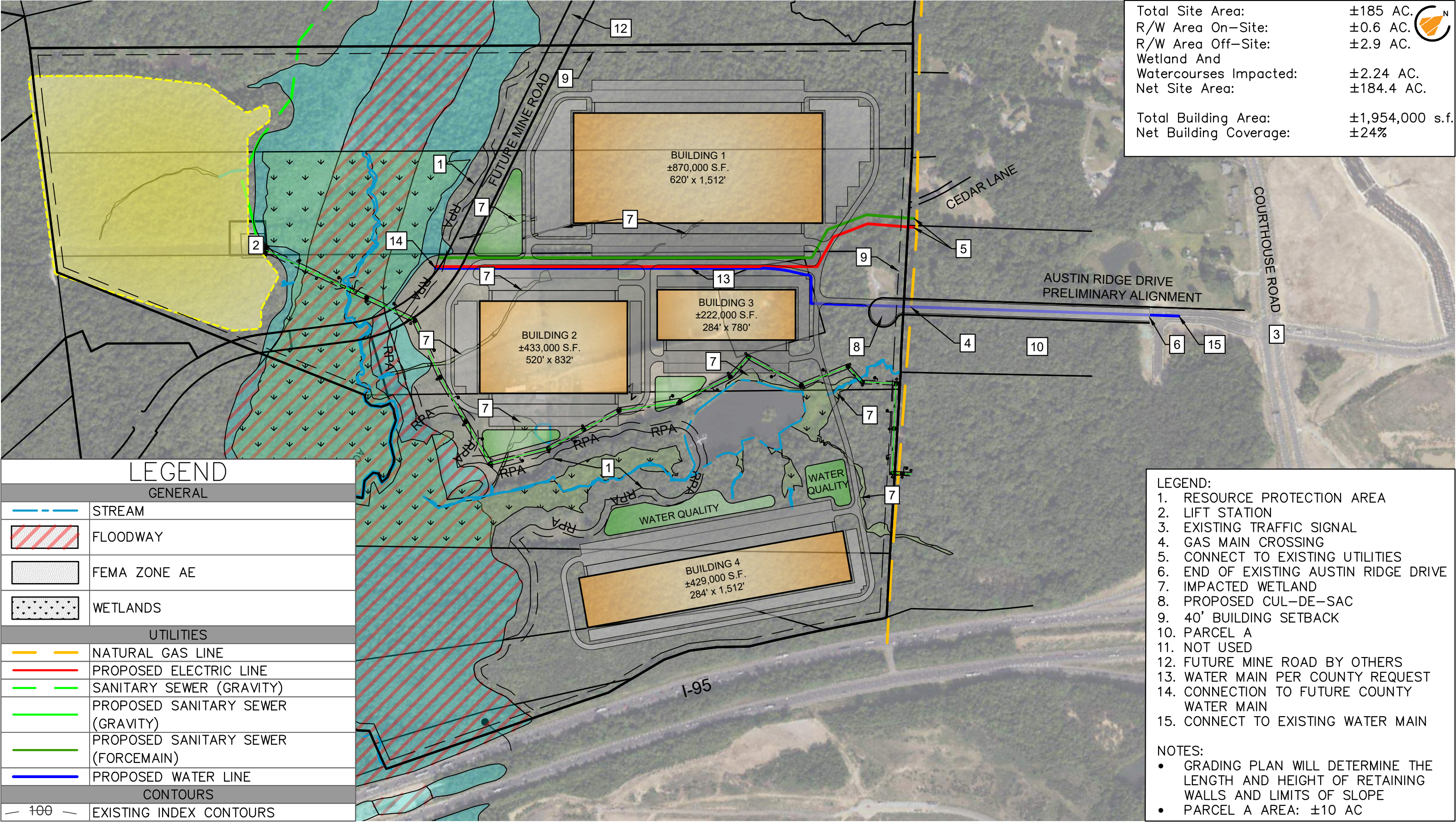
Conclusion

The results of the analysis contained in this report indicate that with the addition of one (1) westbound left turn lane at the intersection of Courthouse Road and Austin Ridge Drive, the addition of the site traffic associated with the proposed development is not expected to adversely impact the operations of the existing roadway network.

Appendix A

Conceptual Plan

D:\SITEPOINT DROPBOX\01 PROJECTS\INDUSTRIAL\3813 AUSTIN RIDGE (STAFFORD COUNTY, VA)\05 MASTER PLANS\PLANS\CONCEPT SITE PLAN B5.DWG JIM KRAATZ



Appendix B

Approved VDOT Pre-Scope of Work Meeting Form

PRE-SCOPE OF WORK MEETING FORM

Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information

Consultant Name: Bowman Consulting Group - Michael J. Young, P.E.
Tele: 804-616-3240
E-mail: myoung@bowman.com

Developer/Owner Name: NorthPoint Development, LLC - Mr. Ryan Marshall
Tele: rmarshall@northpointkc.com
E-mail:

Project Information

Project Name: Austin Ridge Logistics Center Locality/County: Stafford County

Project Location: (Attach regional and site specific location map) The proposed development is located along Interstate Route I-95 between Courthouse Road & Ramoth Church Road, Stafford County, VA (See Figure 1).

Submission Type Comp Plan ☐ Rezoning ☒ Site Plan ☐ Subd Plat ☐

Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary) This project consists of the development of approximately 1,979,000 million square feet of High-Cube Transload and Short-term Storage Warehouse facility. Access to the development is expected to be provided via one full-access driveway, which is the currently vacant fourth leg of the intersection of Austin Ridge Drive and Courthouse Road.

Proposed Use(s): (Check all that apply; attach additional pages as necessary) Residential ☐ Commercial ☐ Mixed Use ☐ Other ☒

Residential Uses(s)

Number of Units: _____
ITE LU Code(s): _____

Commercial Use(s)

ITE LU Code(s): _____

Square Ft or Other Variable: _____

Other Use(s)

ITE LU Code(s): 154 _____

Independent Variable(s): SF _____

Total Peak Hour Trip Projection: Less than 100 ☐ 100 – 499 ☒ 500 – 999 ☐ 1,000 or more ☐

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Impact Analysis Assumptions				
Study Period	Existing Year: 2022		Build-out Year: 2024	
Study Area Boundaries (Attach map)	North: Courthouse Road		South: Site Boundary	
	East: Interstate 95		West: Site Boundary	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	The Study will include nearby studies such as the Burns TIA, project mover, Courthouse West and Merrit Property. The County and VDOT will provide information pertinent to those developments.			
Consistency With Comprehensive Plan (Land use, transportation plan)	Yes			
Available Traffic Data (Historical, forecasts)	Traffic Data from Virginia Roads (ADTs). VDOT will provide the synchro model along courthouse that includes signal timings and traffic counts.			
Trip Distribution See Figure 2 (Attach sketch)	Road Name: Courthouse Road East:10%		Road Name: Courthouse Road West: 15%	
	Road Name:		Road Name: I-95 (35% North and 35% South)	
Annual Vehicle Trip Growth Rate:	2%	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT	
		Peak Hour of the Generator		
Study Intersections and/or Road Segments (Attach additional sheets as necessary) See Figure 1.	1. Courthouse Road and Mine Road		6. Courthouse Road and I-95 NB off Ramp	
	2. Courthouse Road and Austin Ridge Drive		7. Courthouse Road/Hospital Center Blvd. and Wyche Road/Courthouse Road	
	3. Courthouse Road and I-95 SB off Ramp		8.	
	4. Courthouse Road and Western Signal Diverging Diamond		9.	
	5. Courthouse Road and Eastern Signal Diverging Diamond		10.	
Trip Adjustment Factors	Internal allowance: ☐ Yes ☒ No Reduction: _____% trips		Pass-by allowance: ☐ Yes ☒ No Reduction: _____% trips	
Software Methodology	☒ Synchro ☒ HCS (v.2000/+) ☐ aaSIDRA ☐ CORSIM ☒ Other <u>SimTraffic</u>			
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Potential traffic signal timing changes at the intersection of Courthouse Road and Austin Ridge Drive/Site Driveway. See Figure 1 for all signalized intersections in the study area.			

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Improvement(s) Assumed or to be Considered	The proposed improvement (by others) at the Wyche Road/Courthouse intersection will be included for the future No-Build condition. The improvement is going to widened Wyche Road from a dual left turn to a triple left turn; this improvement was recommended as part of the approved traffic studies in the area.		
Background Traffic Studies Considered	The Burns TIA, the project Mover TIA, Courthouse West and Merrit Property.		
Plan Submission	☐ Master Development Plan (MDP) ☐ Preliminary/Sketch Plan	☒ Generalized Development Plan (GDP) ☐ Other Plan type (Final Site, Subd. Plan)	
Additional Issues to be Addressed	☒ Queuing analysis ☐ Merge analysis ☐ TDM Measures	☒ Actuation/Coordination ☐ Bike/Ped Accommodations ☐ Other _____	☐ Weaving analysis ☒ Intersection(s)

NOTES on ASSUMPTIONS: _____

01/28/2022

SIGNED: _____

DATE: 01/28/2022


 Carlos G. Garcia, PE
 Applicant or Consultant

PRINT NAME: Carlos G. Garcia, PE
 Applicant or Consultant

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

SCOPE OF WORK MEETING CONCLUSIONS**ADDITIONS TO THE VDOT REQUIRED ELEMENTS, CHANGES TO THE
METHODOLOGY OR STANDARD ASSUMPTIONS, AND SIGNATURE PAGE**

Any additions to the VDOT Required Elements or changes to the Methodology or Standard Assumptions due to special circumstances that are approved by VDOT:

Since there is a truck traffic restriction on Austin Ridge Road, truck traffic will not be forecasted along Austin Ridge.

The project mover TIA has the most recent background traffic volume projections.

The proposed 7,000 S.F Courthouse West Restaurant adjacent to the site will be included in the TIA along with the recently approved Merritt property that includes a 396,775 S. F. Flex Industrial use.

The applicant will contact VDOT and the locality prior to the preparation of the traffic impact analysis study in the event there are any substantial changes in the existing conditions that will affect the scope of the study.

AGREED: 
Applicant or Consultant

DATE: 01/28/2022

PRINT NAME: Carlos G. Garcia, PE
Applicant or Consultant

SIGNED: _____
VDOT Representative

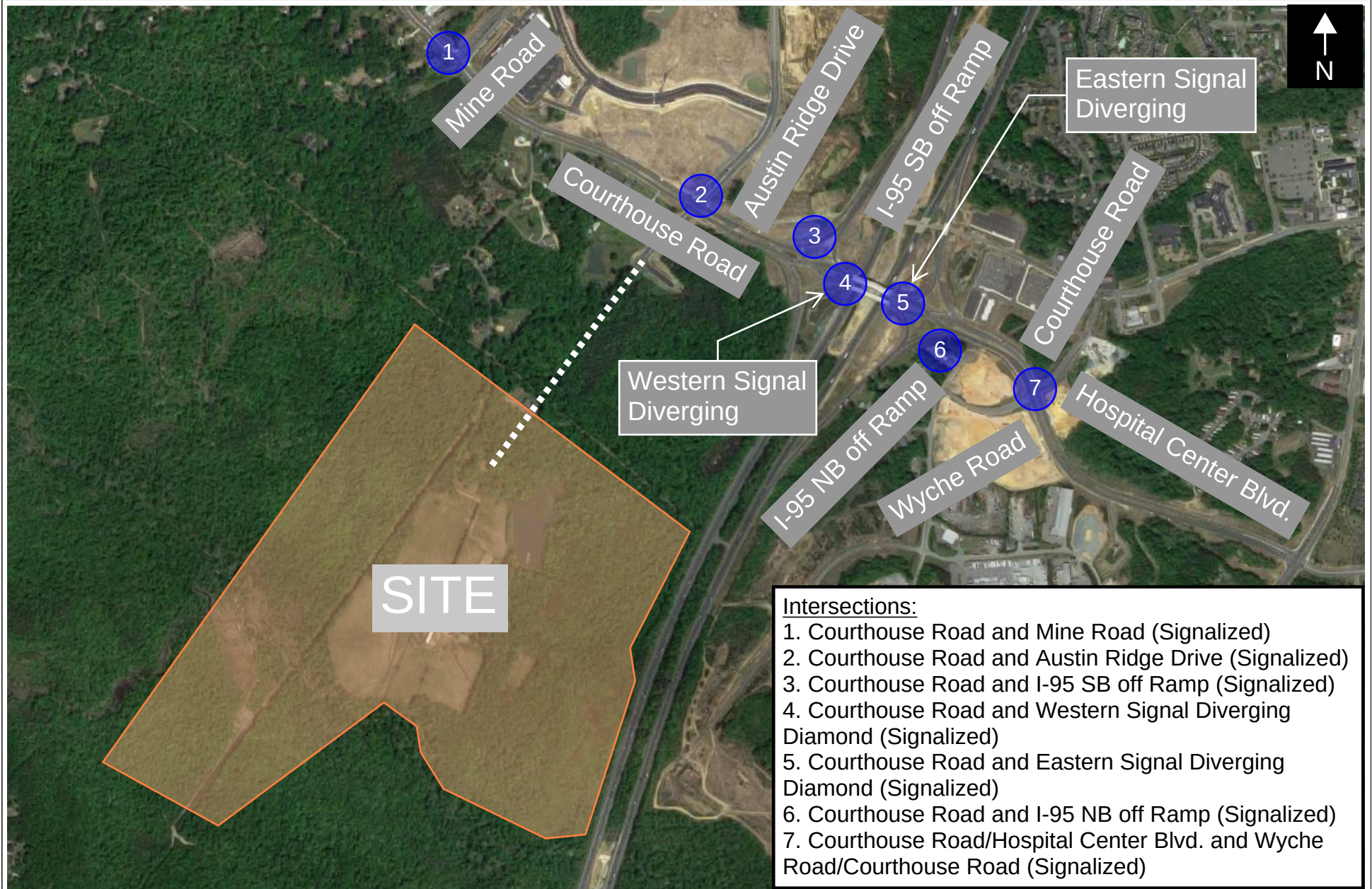
DATE: _____

PRINT NAME: _____
VDOT Representative

SIGNED: _____
Local Government Representative

DATE: _____

PRINT NAME: _____
Local Government Representative



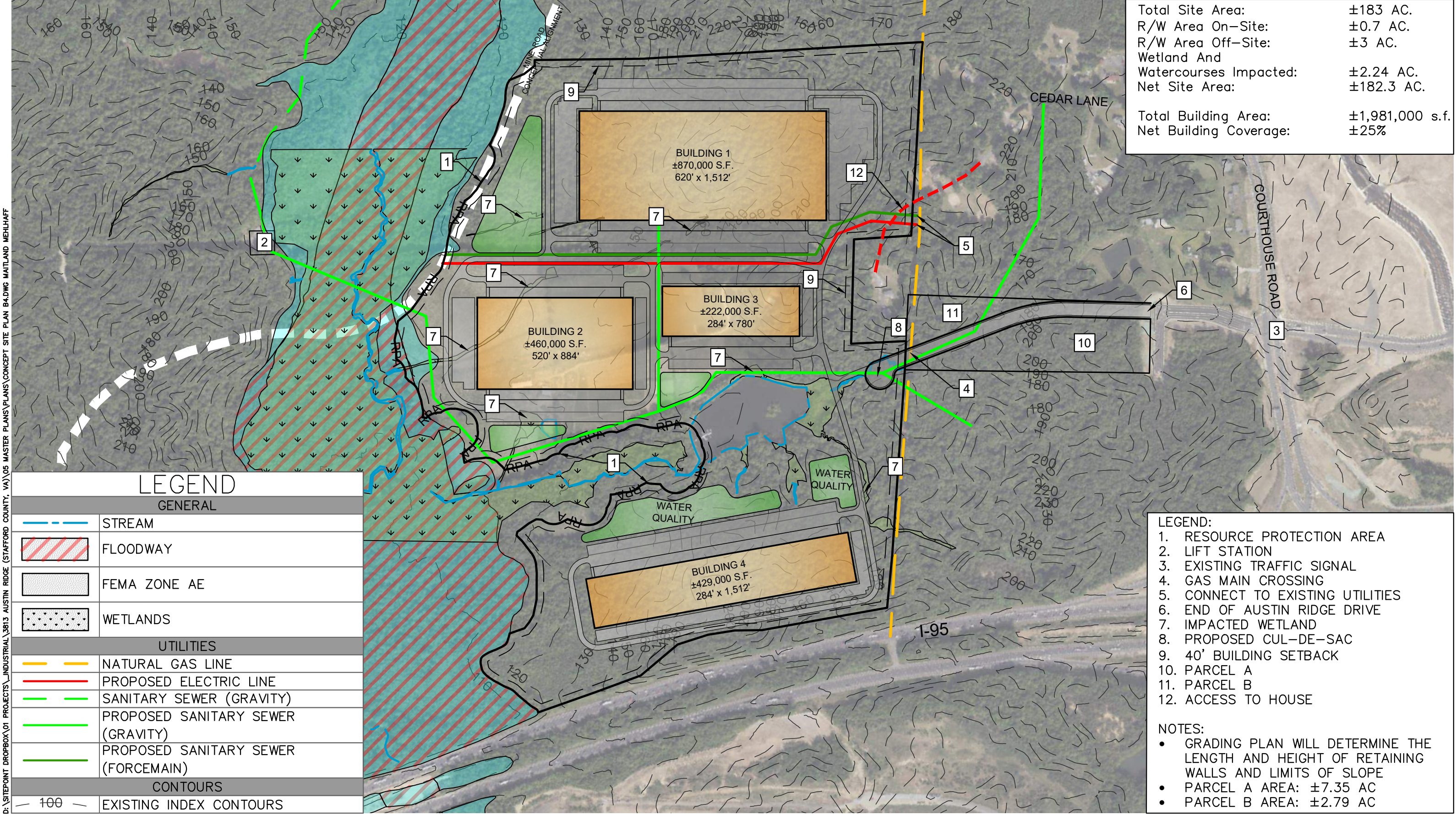


Trip Generation (Per ITE Trip Generation Manual - 11th Edition)⁽¹⁾

Development ⁽¹⁾	Land Use	Size	Units	Weekday AM Peak Hour			Weekday PM Peak Hour			Average Weekday		
				In	Out	Total	In	Out	Total	In	Out	Total
High-Cube Transload and Short-term Storage Warehouse	154	1,979,000	Sq. Ft.	122	36	158	55	143	198	1385	1386	2,771
Total				122	36	158	55	143	198	1385	1386	2771

(1) Based on the Institute of Transportation Engineers Trip Generation Manual, 11th Edition

AUSTIN RIDGE LOGISTICS CENTER (STAFFORD COUNTY, VA)CONCEPT SITE PLAN B4



Appendix C

Turning Movement Counts



Green Light Solutions, Inc.

(804) 356-4282

estrohhacker@glstraffic.com

Project: GW

Counter: Erich Strohhacker

Weather: Clear

File Name : craram

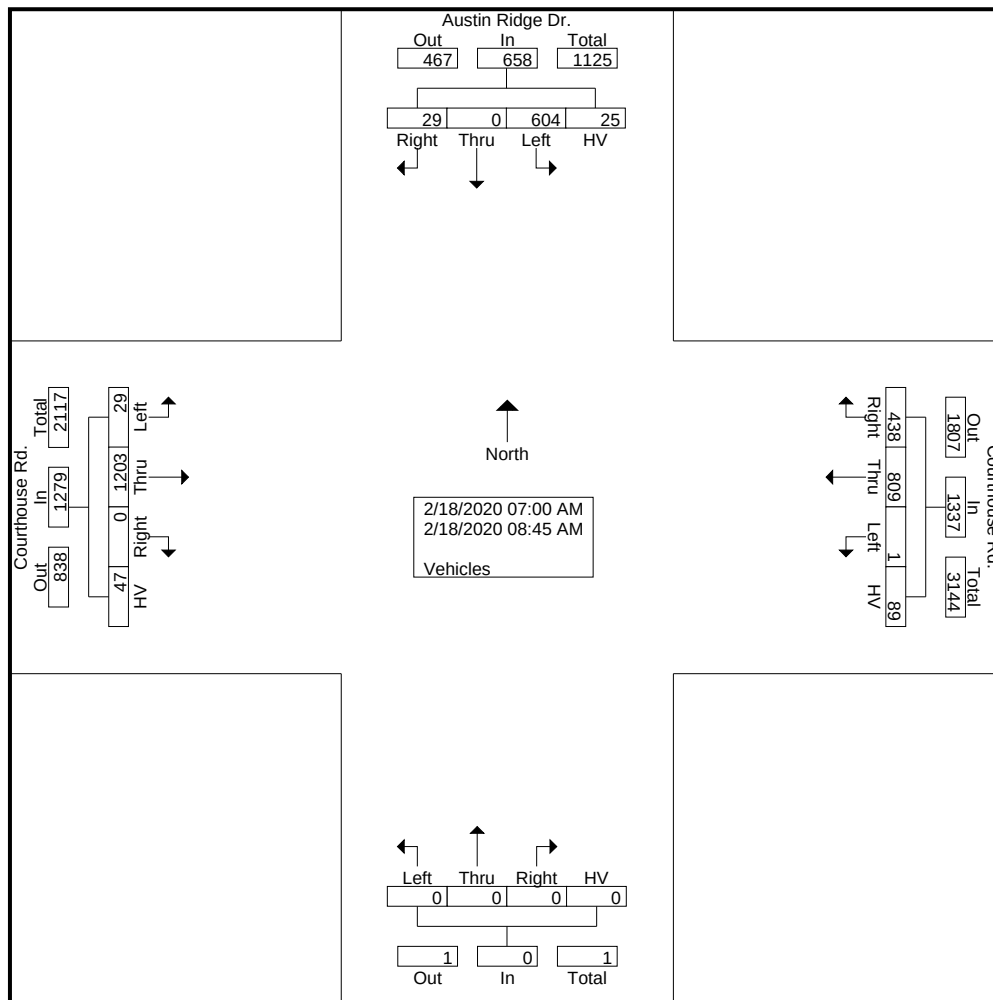
Site Code : 00002222

Start Date : 2/18/2020

Page No : 1

Groups Printed- Vehicles

	Austin Ridge Dr. From North					Courthouse Rd. From East					From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
07:00 AM	7	0	85	2	94	54	113	0	7	174	0	0	0	0	0	0	139	1	3	143	411
07:15 AM	7	0	70	1	78	48	140	1	8	197	0	0	0	0	0	0	141	2	1	144	419
07:30 AM	6	0	96	7	109	65	112	0	12	189	0	0	0	0	0	0	186	7	6	199	497
07:45 AM	2	0	78	3	83	58	101	0	13	172	0	0	0	0	0	0	163	3	6	172	427
Total	22	0	329	13	364	225	466	1	40	732	0	0	0	0	0	0	629	13	16	658	1754
08:00 AM	1	0	68	0	69	62	97	0	9	168	0	0	0	0	0	0	151	6	6	163	400
08:15 AM	0	0	60	2	62	51	94	0	18	163	0	0	0	0	0	0	147	3	10	160	385
08:30 AM	5	0	81	4	90	42	69	0	9	120	0	0	0	0	0	0	139	6	8	153	363
08:45 AM	1	0	66	6	73	58	83	0	13	154	0	0	0	0	0	0	137	1	7	145	372
Total	7	0	275	12	294	213	343	0	49	605	0	0	0	0	0	0	574	16	31	621	1520
Grand Total	29	0	604	25	658	438	809	1	89	1337	0	0	0	0	0	0	1203	29	47	1279	3274
Apprch %	4.4	0	91.8	3.8		32.8	60.5	0.1	6.7		0	0	0	0	0	0	94.1	2.3	3.7		
Total %	0.9	0	18.4	0.8	20.1	13.4	24.7	0	2.7	40.8	0	0	0	0	0	0	36.7	0.9	1.4	39.1	





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Project: GW

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Weather: Clear

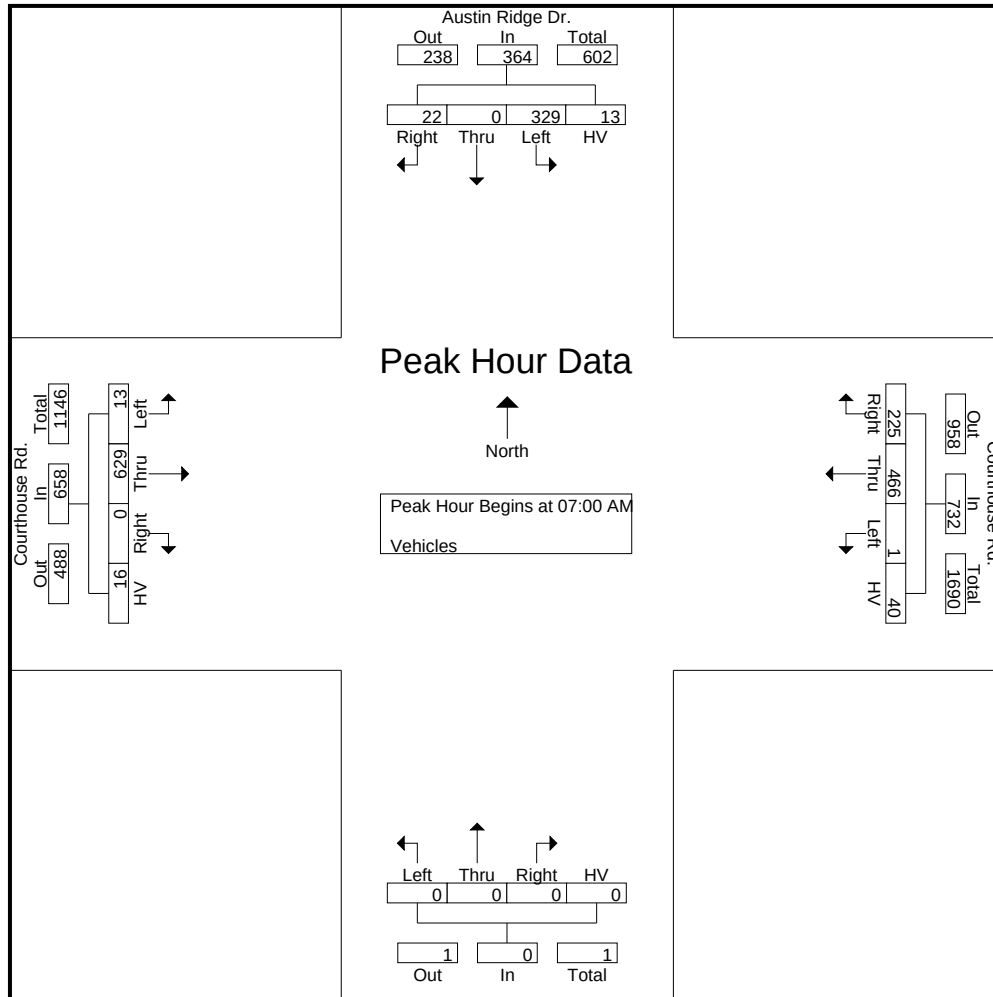
File Name : craram

Site Code : 00002222

Start Date : 2/18/2020

Page No : 2

	Austin Ridge Dr. From North					Courthouse Rd. From East					From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	7																				
07:15 AM	7	0	70	1	78	48	140	1	8	197	0	0	0	0	0	0	141	2	1	144	419
07:30 AM	6	0	96	7	109	65	112	0	12	189	0	0	0	0	0	0	186	7	6	199	497
07:45 AM	2	0	78	3	83	58	101	0	13	172	0	0	0	0	0	0	163	3	6	172	427
Total Volume	22	0	329	13	364	225	466	1	40	732	0	0	0	0	0	0	629	13	16	658	1754
% App. Total	6	0	90.4	3.6		30.7	63.7	0.1	5.5		0	0	0	0		0	95.6	2	2.4		
PHF	.786	.000	.857	.464	.835	.865	.832	.250	.769	.929	.000	.000	.000	.000	.000	.000	.845	.464	.667	.827	.882





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Project: GW

Counter: Erich Strohhacker

Weather: Clear

File Name : crarpm

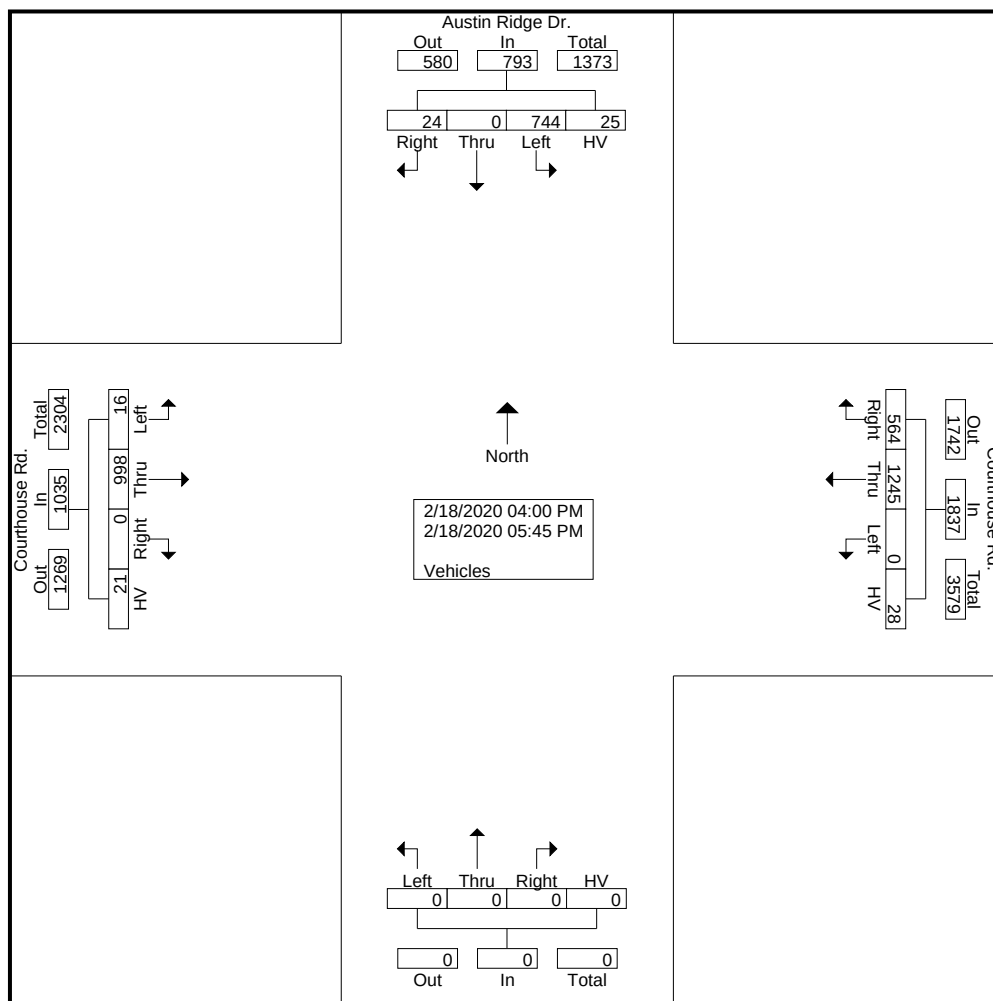
Site Code : 00002222

Start Date : 2/18/2020

Page No : 1

Groups Printed- Vehicles

	Austin Ridge Dr. From North					Courthouse Rd. From East					From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
04:00 PM	4	0	107	7	118	66	115	0	7	188	0	0	0	0	0	0	145	2	4	151	457
04:15 PM	3	0	97	3	103	59	136	0	4	199	0	0	0	0	0	0	128	2	2	132	434
04:30 PM	3	0	84	4	91	69	159	0	3	231	0	0	0	0	0	0	145	1	3	149	471
04:45 PM	2	0	91	1	94	85	180	0	2	267	0	0	0	0	0	0	126	0	2	128	489
Total	12	0	379	15	406	279	590	0	16	885	0	0	0	0	0	0	544	5	11	560	1851
05:00 PM	5	0	99	3	107	67	153	0	5	225	0	0	0	0	0	0	109	2	1	112	444
05:15 PM	2	0	99	2	103	79	165	0	1	245	0	0	0	0	0	0	114	5	1	120	468
05:30 PM	4	0	82	3	89	77	156	0	4	237	0	0	0	0	0	0	135	4	5	144	470
05:45 PM	1	0	85	2	88	62	181	0	2	245	0	0	0	0	0	0	96	0	3	99	432
Total	12	0	365	10	387	285	655	0	12	952	0	0	0	0	0	0	454	11	10	475	1814
Grand Total	24	0	744	25	793	564	1245	0	28	1837	0	0	0	0	0	0	998	16	21	1035	3665
Apprch %	3	0	93.8	3.2		30.7	67.8	0	1.5		0	0	0	0	0	0	96.4	1.5	2		
Total %	0.7	0	20.3	0.7	21.6	15.4	34	0	0.8	50.1	0	0	0	0	0	0	27.2	0.4	0.6	28.2	





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estrohhacker@glstraffic.com

Project: GW

Counter: Erich Strohhacker

Weather: Clear

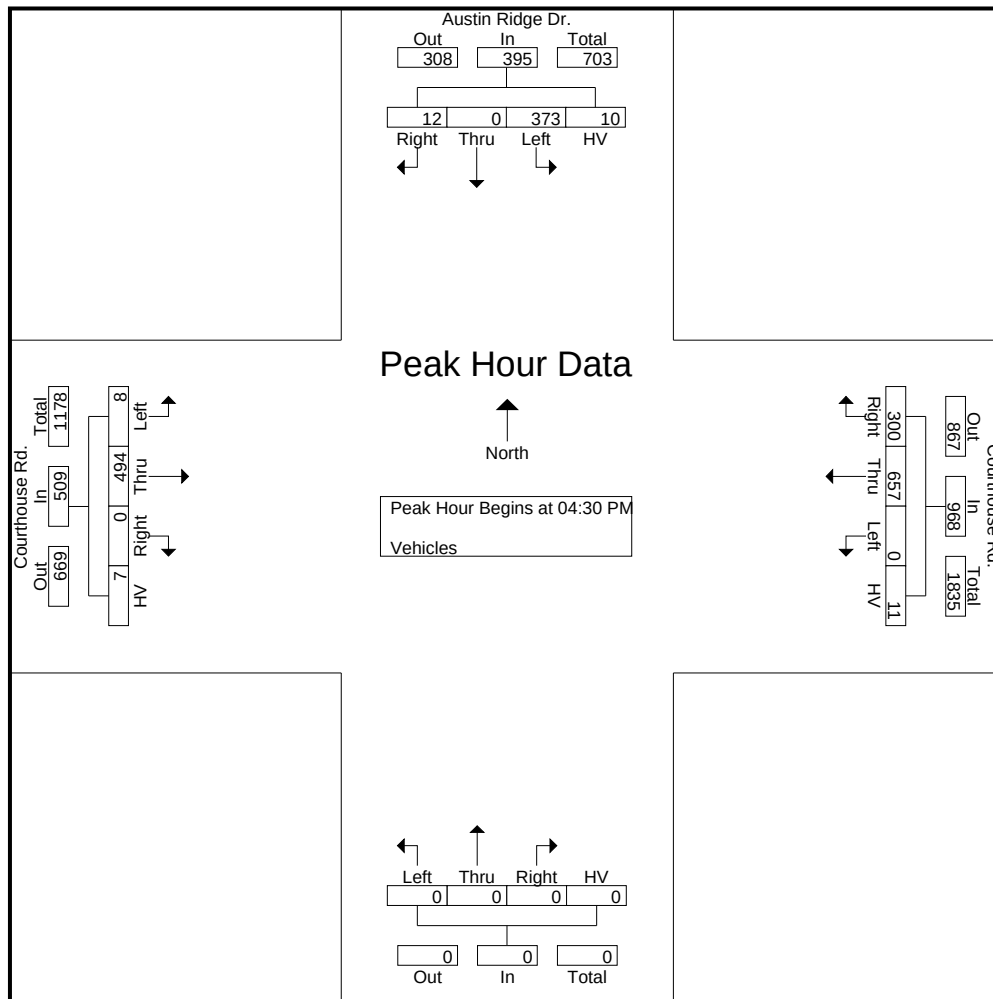
File Name : crarpm

Site Code : 00002222

Start Date : 2/18/2020

Page No : 2

	Austin Ridge Dr. From North					Courthouse Rd. From East					From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	3	0	84	4												145	1	3	149		471
04:45 PM	2	0	91	1	94	85	180			267	0	0	0	0	0	0	126	0	2	128	489
05:00 PM	5		99		107	67	153	0	5	225	0	0	0	0	0	0	109	2	1	112	444
05:15 PM	2	0	99	2	103	79	165	0	1	245	0	0	0	0	0	0	114	5			
Total Volume	12	0	373	10	395	300	657	0	11	968	0	0	0	0	0	0	494	8	7	509	1872
% App. Total	3	0	94.4	2.5		31	67.9	0	1.1		0	0	0	0		0	97.1	1.6	1.4		
PHF	.600	.000	.942	.625	.923	.882	.913	.000	.550	.906	.000	.000	.000	.000	.000	.000	.852	.400	.583	.854	.957





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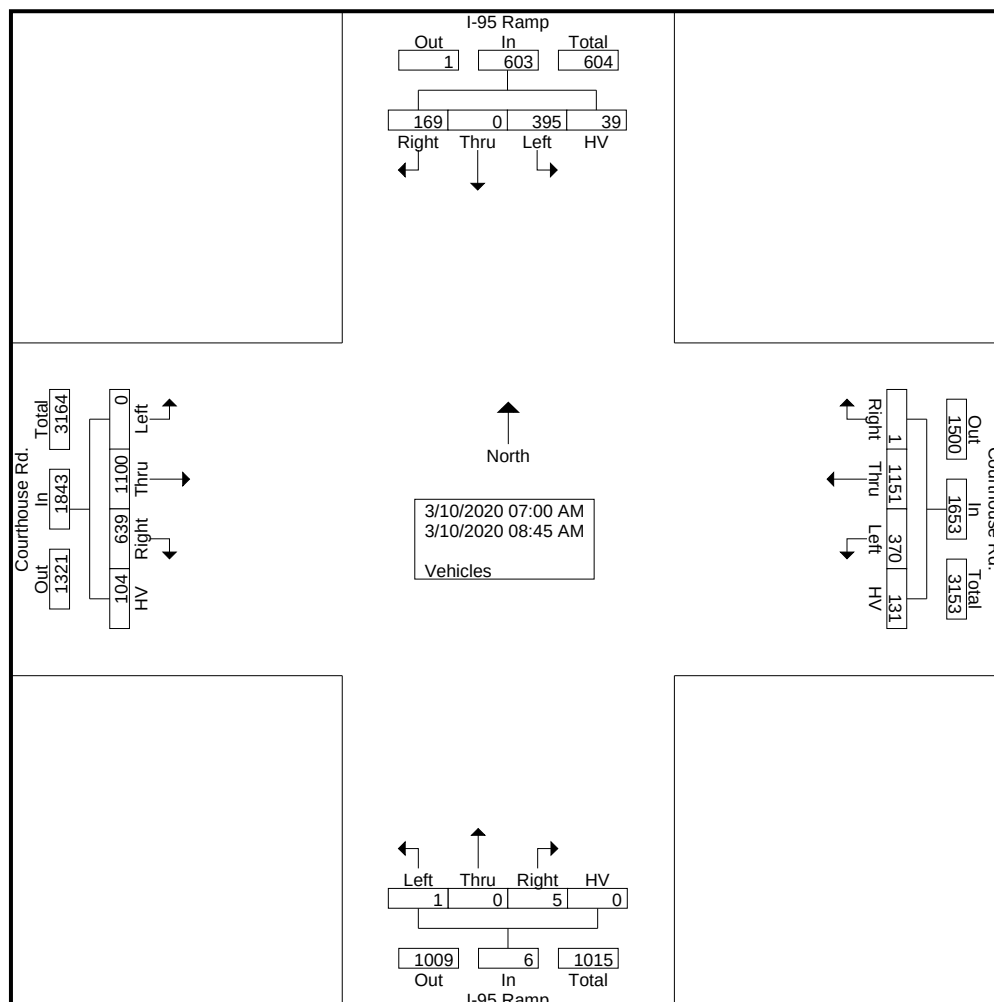
estrohhacker@glstraff.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 1 am
Site Code : 00002828
Start Date : 3/10/2020
Page No : 1

Groups Printed- Vehicles

	I-95 Ramp From North					Courthouse Rd. From East					I-95 Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
07:00 AM	23	0	47	0	70	0	153	44	12	209	0	0	0	0	0	64	131	0	7	202	481
07:15 AM	24	0	63	5	92	0	186	42	10	238	0	0	0	0	0	72	154	0	10	236	566
07:30 AM	23	0	38	8	69	0	182	68	18	268	0	0	0	0	0	108	146	0	6	260	597
07:45 AM	10	0	44	2	56	0	124	62	15	201	0	0	0	0	0	107	178	0	12	297	554
Total	80	0	192	15	287	0	645	216	55	916	0	0	0	0	0	351	609	0	35	995	2198
08:00 AM	24	0	55	7	86	0	136	24	11	171	0	0	0	0	0	62	108	0	15	185	442
08:15 AM	25	0	40	4	69	0	124	43	24	191	5	0	1	0	6	89	140	0	12	241	507
08:30 AM	23	0	60	6	89	1	108	50	14	173	0	0	0	0	0	68	120	0	20	208	470
08:45 AM	17	0	48	7	72	0	138	37	27	202	0	0	0	0	0	69	123	0	22	214	488
Total	89	0	203	24	316	1	506	154	76	737	5	0	1	0	6	288	491	0	69	848	1907
Grand Total	169	0	395	39	603	1	1151	370	131	1653	5	0	1	0	6	639	1100	0	104	1843	4105
Apprch %	28	0	65.5	6.5		0.1	69.6	22.4	7.9		83.3	0	16.7	0		34.7	59.7	0	5.6		
Total %	4.1	0	9.6	1	14.7	0	28	9	3.2	40.3	0.1	0	0	0	0.1	15.6	26.8	0	2.5	44.9	





Green Light Solutions, Inc.

(804) 356-4282

estrohhacker@glstraffic.com

Project: GW Village

Counter: Erich Strohhacker

Weather: Clear

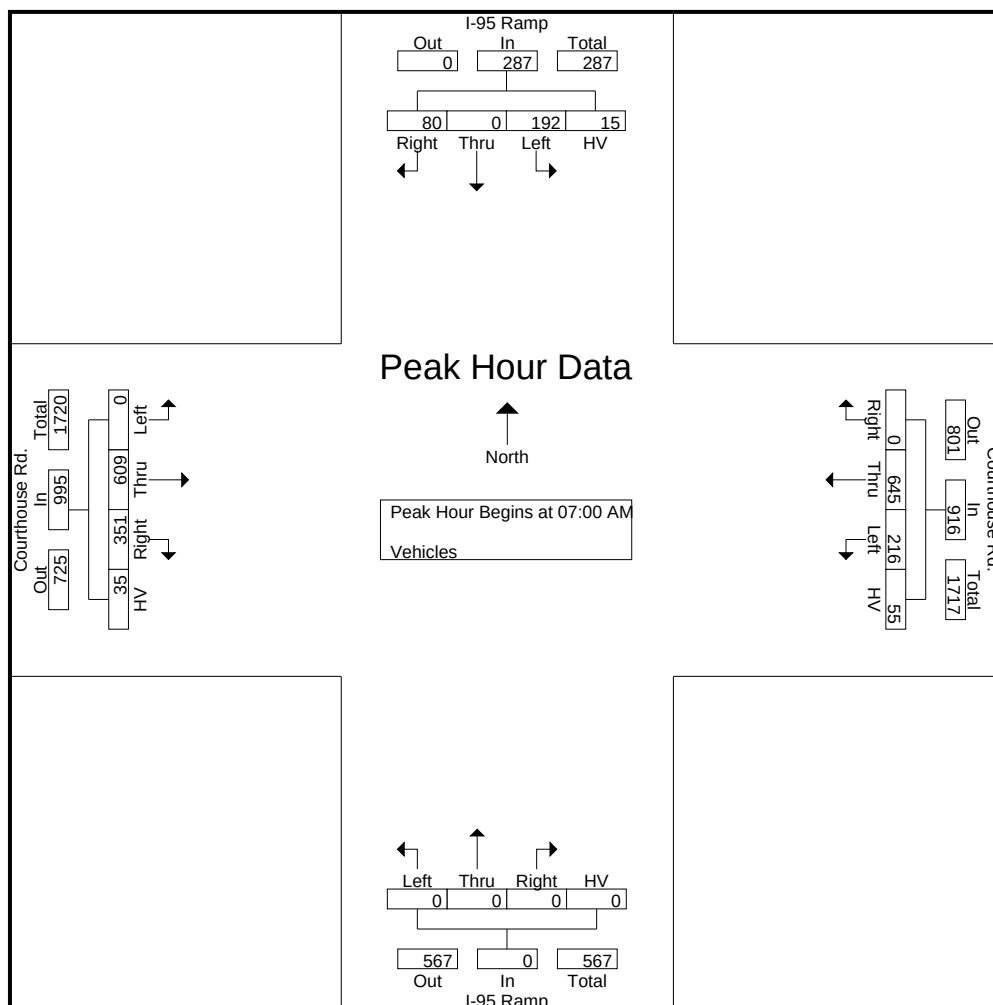
File Name : count 1 am

Site Code : 00002828

Start Date : 3/10/2020

Page No : 2

	I-95 Ramp From North					Courthouse Rd. From East					I-95 Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	23	0	47	0	70	0	153	44	12	209	0	0	0	0	0	64	131	0	7	202	481
07:15 AM	24	0	63	0	92	0	186	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	23	0	38	8	69	0	182	68	18	268	0	0	0	0	0	108	146	0	6	260	597
07:45 AM	10	0	44	2	56	0	124	62	15	201	0	0	0	0	0	107	178	0	12	297	554
Total Volume	80	0	192	15	287	0	645	216	55	916	0	0	0	0	0	351	609	0	35	995	2198
% App. Total	27.9	0	66.9	5.2		0	70.4	23.6	6		0	0	0	0		35.3	61.2	0	3.5		
PHF	.833	.000	.762	.469	.780	.000	.867	.794	.764	.854	.000	.000	.000	.000	.000	.813	.855	.000	.729	.838	.920





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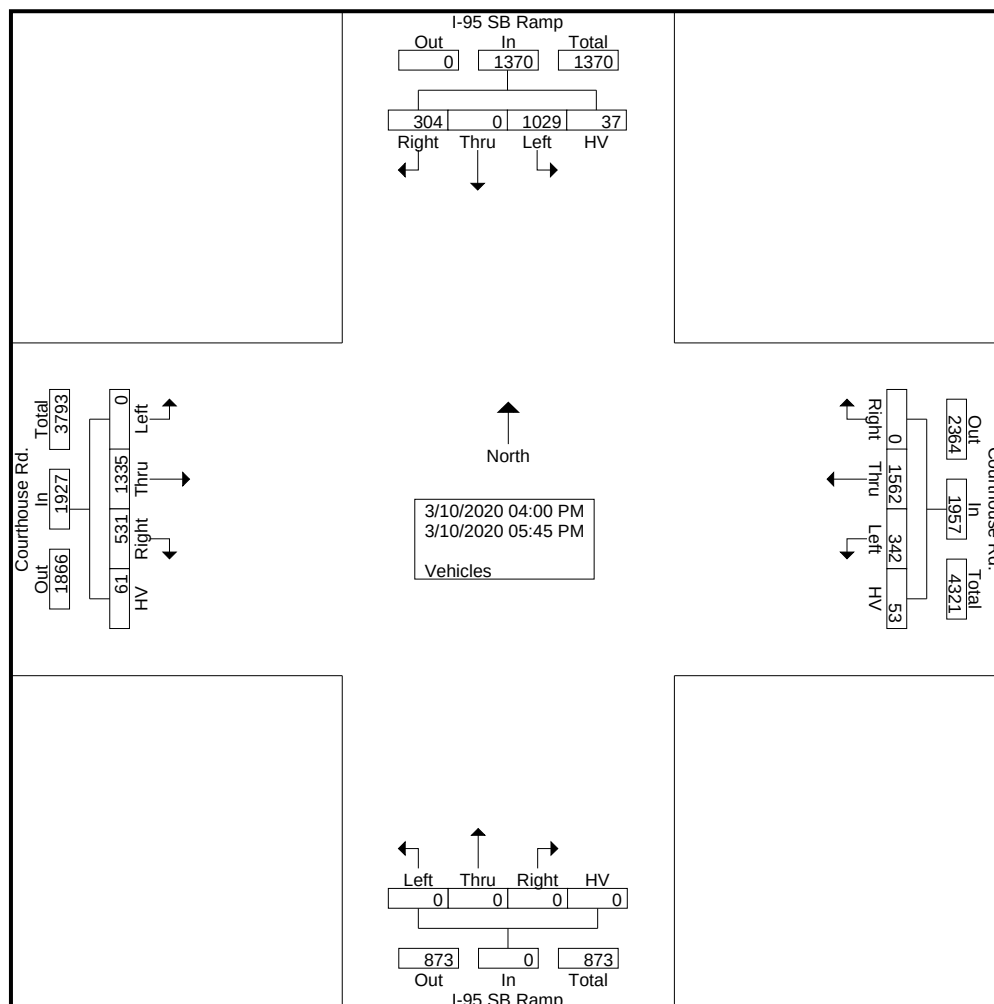
estrohacker@glstraff.com

Project: GW Village
Counter: Erich Strohacker
Weather: Clear

File Name : count 1 pm
Site Code : 00002828
Start Date : 3/10/2020
Page No : 1

Groups Printed- Vehicles

	I-95 SB Ramp From North					Courthouse Rd. From East					I-95 SB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
04:00 PM	21	0	110	6	137	0	156	59	11	226	0	0	0	0	0	87	151	0	17	255	618
04:15 PM	19	0	109	5	133	0	171	54	5	230	0	0	0	0	0	90	177	0	11	278	641
04:30 PM	29	0	130	5	164	0	195	57	5	257	0	0	0	0	0	86	157	0	8	251	672
04:45 PM	39	0	127	3	169	0	219	47	6	272	0	0	0	0	0	69	185	0	3	257	698
Total	108	0	476	19	603	0	741	217	27	985	0	0	0	0	0	332	670	0	39	1041	2629
05:00 PM	43	0	140	4	187	0	195	28	5	228	0	0	0	0	0	63	188	0	13	264	679
05:15 PM	48	0	134	2	184	0	208	35	11	254	0	0	0	0	0	46	159	0	2	207	645
05:30 PM	38	0	133	10	181	0	229	26	4	259	0	0	0	0	0	51	155	0	4	210	650
05:45 PM	67	0	146	2	215	0	189	36	6	231	0	0	0	0	0	39	163	0	3	205	651
Total	196	0	553	18	767	0	821	125	26	972	0	0	0	0	0	199	665	0	22	886	2625
Grand Total	304	0	1029	37	1370	0	1562	342	53	1957	0	0	0	0	0	531	1335	0	61	1927	5254
Apprch %	22.2	0	75.1	2.7		0	79.8	17.5	2.7		0	0	0	0	0	27.6	69.3	0	3.2		
Total %	5.8	0	19.6	0.7	26.1	0	29.7	6.5	1	37.2	0	0	0	0	0	10.1	25.4	0	1.2	36.7	





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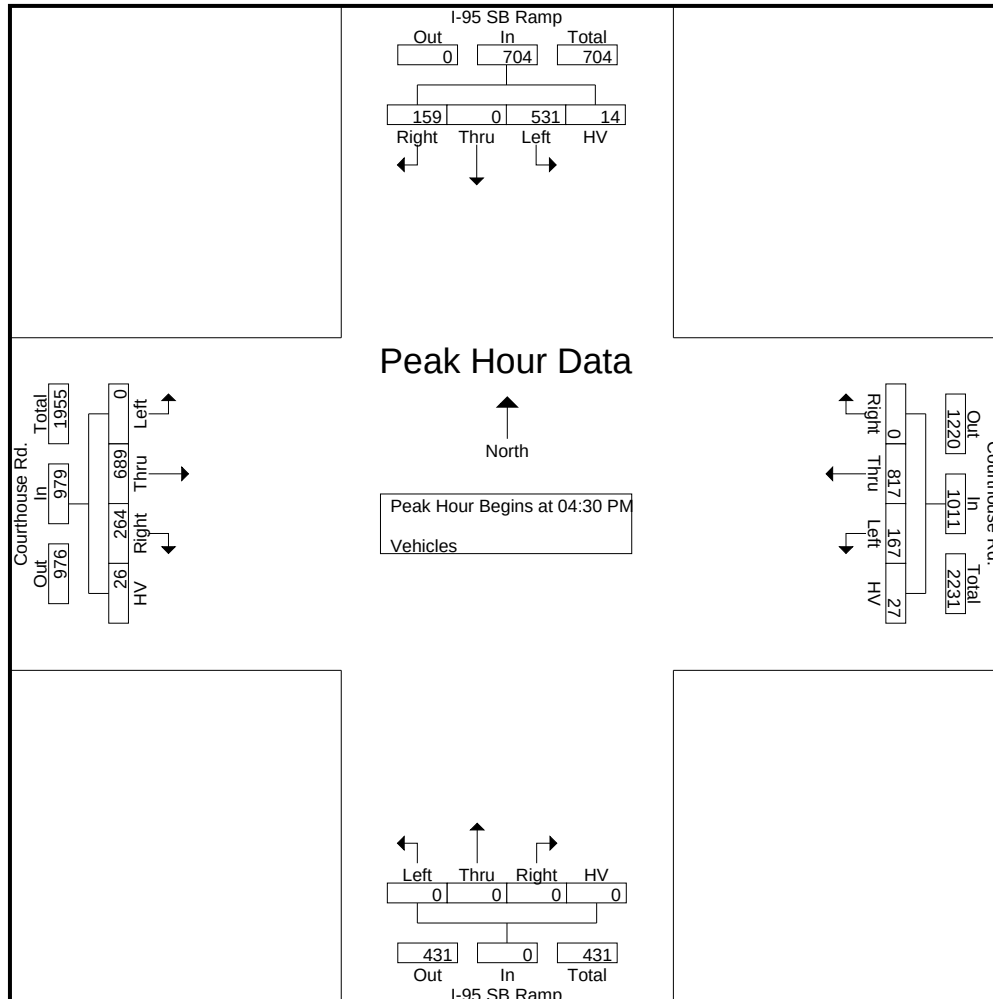
(804) 356-4282

estrohhacker@glstraffic.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 1 pm
Site Code : 00002828
Start Date : 3/10/2020
Page No : 2

	I-95 SB Ramp From North					Courthouse Rd. From East					I-95 SB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	29	0	130	5				57								86					
04:45 PM	39	0	127	3	169	0	219	47	6	272	0	0	0	0	0	69	185	0	3	257	698
05:00 PM	43	0	140		187	0	195	28	5	228	0	0	0	0	0	63	188	0	13	264	679
05:15 PM	48								11	254	0	0	0	0	0	46	159	0	2	207	645
Total Volume	159	0	531	14	704	0	817	167	27	1011	0	0	0	0	0	264	689	0	26	979	2694
% App. Total	22.6	0	75.4	2		0	80.8	16.5	2.7		0	0	0	0		27	70.4	0	2.7		
PHF	.828	.000	.948	.700	.941	.000	.933	.732	.614	.929	.000	.000	.000	.000	.000	.767	.916	.000	.500	.927	.965





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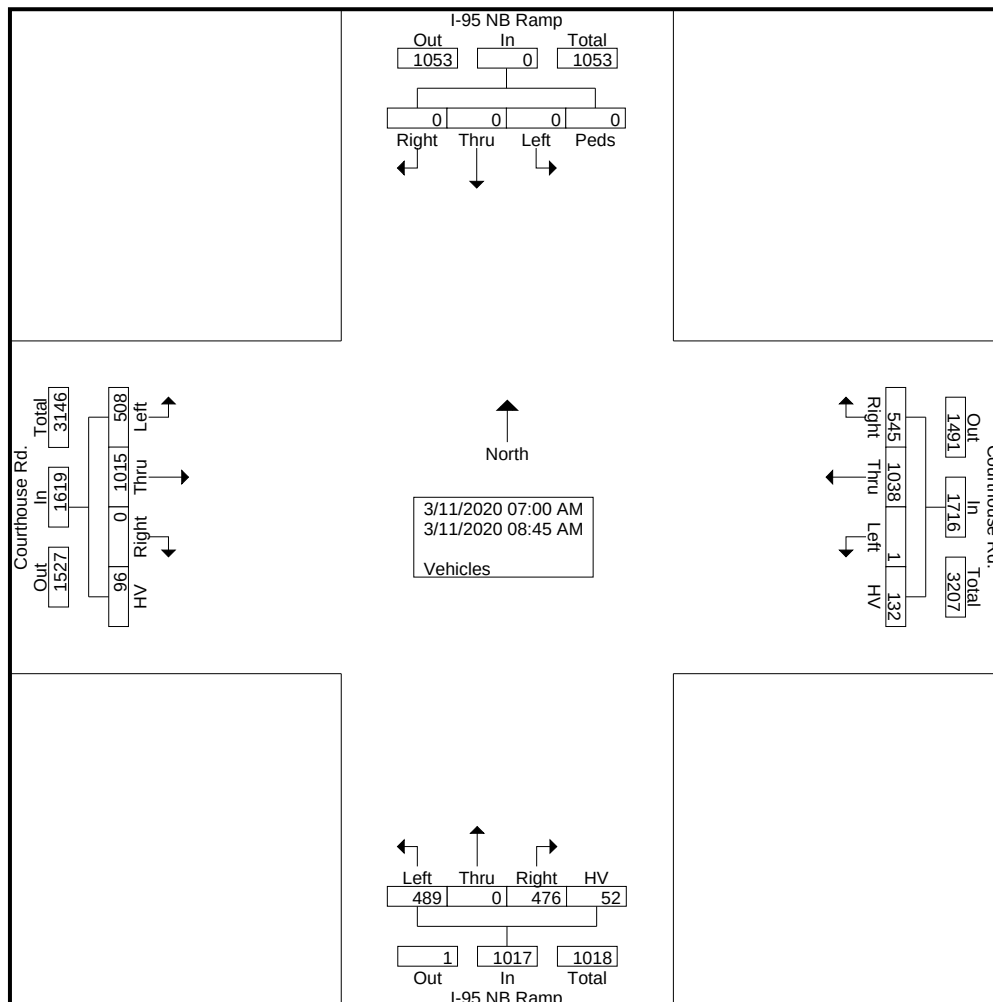
estrohhacker@glstraffic.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 2 am
Site Code : 00002929
Start Date : 3/11/2020
Page No : 1

Groups Printed- Vehicles

	I-95 NB Ramp From North					Courthouse Rd. From East					I-95 NB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
07:00 AM	0	0	0	0	0	62	113	0	8	183	55	0	77	1	133	0	103	75	7	185	501
07:15 AM	0	0	0	0	0	91	147	0	13	251	66	0	100	8	174	0	129	66	6	201	626
07:30 AM	0	0	0	0	0	68	146	0	15	229	58	0	64	1	123	0	116	82	10	208	560
07:45 AM	0	0	0	0	0	68	125	0	15	208	76	0	55	7	138	0	173	63	9	245	591
Total	0	0	0	0	0	289	531	0	51	871	255	0	296	17	568	0	521	286	32	839	2278
08:00 AM	0	0	0	0	0	83	131	0	16	230	63	0	57	8	128	0	95	71	15	181	539
08:15 AM	0	0	0	0	0	75	116	1	20	212	55	0	54	11	120	0	131	52	13	196	528
08:30 AM	0	0	0	0	0	57	118	0	25	200	60	0	41	9	110	0	141	56	16	213	523
08:45 AM	0	0	0	0	0	41	142	0	20	203	43	0	41	7	91	0	127	43	20	190	484
Total	0	0	0	0	0	256	507	1	81	845	221	0	193	35	449	0	494	222	64	780	2074
Grand Total	0	0	0	0	0	545	1038	1	132	1716	476	0	489	52	1017	0	1015	508	96	1619	4352
Apprch %	0	0	0	0	0	31.8	60.5	0.1	7.7		46.8	0	48.1	5.1		0	62.7	31.4	5.9		
Total %	0	0	0	0	0	12.5	23.9	0	3	39.4	10.9	0	11.2	1.2	23.4	0	23.3	11.7	2.2	37.2	





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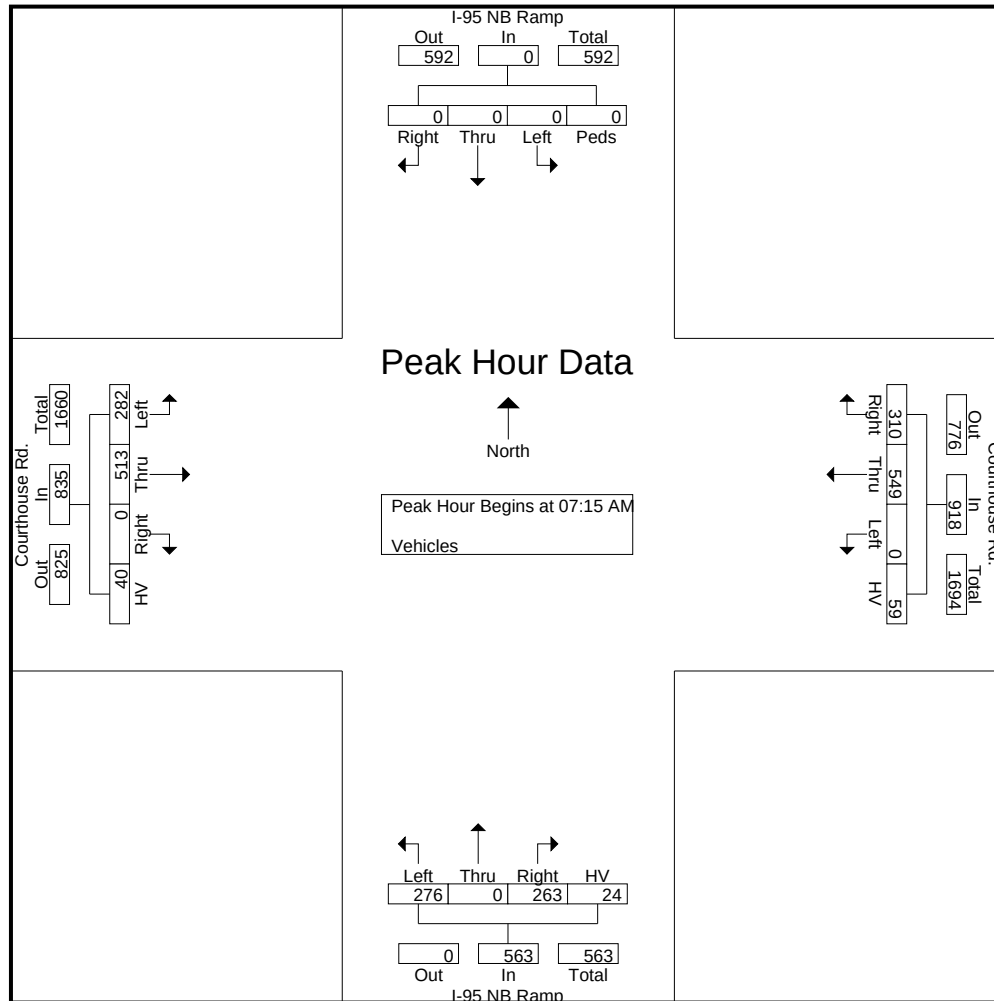
(804) 356-4282

estrohhacker@glstraffic.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 2 am
Site Code : 00002929
Start Date : 3/11/2020
Page No : 2

	I-95 NB Ramp From North					Courthouse Rd. From East					I-95 NB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	91	147			251	66	0	100	8	174	0	129	66	6	201	626
07:30 AM	0	0	0	0	0	68	146	0	15	229	58	0	64	1	123	0	116	82			
07:45 AM	0	0	0	0	0	68	125	0	15	208	76	0	55	7	138	0	173	63	9	245	591
08:00 AM	0	0	0	0	0	83	131	0	16	230	63	0	57	8	128	0	95	71	15		
Total Volume	0	0	0	0	0	310	549	0	59	918	263	0	276	24	563	0	513	282	40	835	2316
% App. Total	0	0	0	0	0	33.8	59.8	0	6.4		46.7	0	49	4.3		0	61.4	33.8	4.8		
PHF	.000	.000	.000	.000	.000	.852	.934	.000	.922	.914	.865	.000	.690	.750	.809	.000	.741	.860	.667	.852	.925





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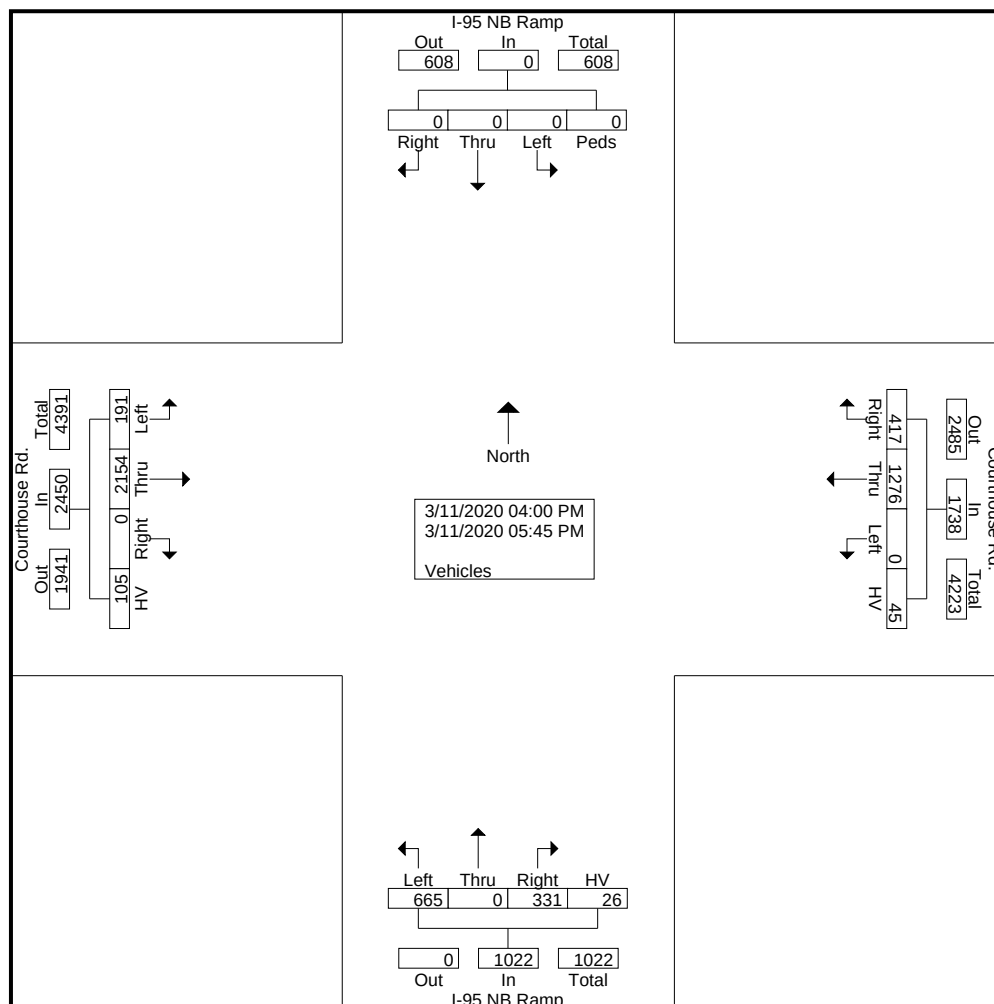
estrohhacker@glstraffic.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 2 pm
Site Code : 00002929
Start Date : 3/11/2020
Page No : 1

Groups Printed- Vehicles

	I-95 NB Ramp From North					Courthouse Rd. From East					I-95 NB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
04:00 PM	0	0	0	0	0	56	161	0	13	230	33	0	68	5	106	0	221	28	28	277	613
04:15 PM	0	0	0	0	0	51	201	0	12	264	38	0	89	4	131	0	251	13	15	279	674
04:30 PM	0	0	0	0	0	58	184	0	8	250	34	0	73	2	109	0	271	19	12	302	661
04:45 PM	0	0	0	0	0	52	203	0	6	261	38	0	68	2	108	0	260	32	10	302	671
Total	0	0	0	0	0	217	749	0	39	1005	143	0	298	13	454	0	1003	92	65	1160	2619
05:00 PM	0	0	0	0	0	58	118	0	1	177	49	0	77	5	131	0	300	29	10	339	647
05:15 PM	0	0	0	0	0	53	154	0	4	211	59	0	94	4	157	0	246	23	9	278	646
05:30 PM	0	0	0	0	0	53	134	0	0	187	28	0	103	2	133	0	368	28	11	407	727
05:45 PM	0	0	0	0	0	36	121	0	1	158	52	0	93	2	147	0	237	19	10	266	571
Total	0	0	0	0	0	200	527	0	6	733	188	0	367	13	568	0	1151	99	40	1290	2591
Grand Total	0	0	0	0	0	417	1276	0	45	1738	331	0	665	26	1022	0	2154	191	105	2450	5210
Apprch %	0	0	0	0	0	24	73.4	0	2.6		32.4	0	65.1	2.5		0	87.9	7.8	4.3		
Total %	0	0	0	0	0	8	24.5	0	0.9	33.4	6.4	0	12.8	0.5	19.6	0	41.3	3.7	2	47	





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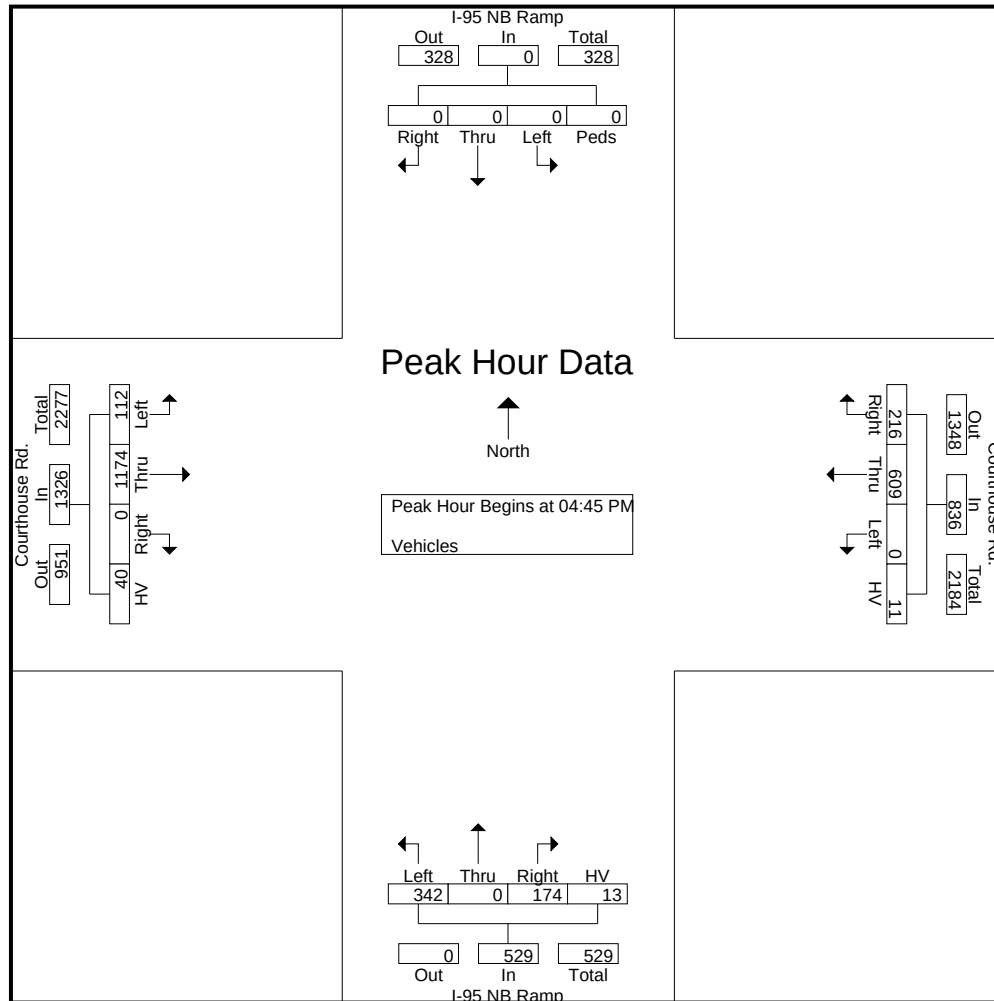
(804) 356-4282

estrohhacker@glstraffic.com

Project: GW Village
Counter: Erich Strohhacker
Weather: Clear

File Name : count 2 pm
Site Code : 00002929
Start Date : 3/11/2020
Page No : 2

	I-95 NB Ramp From North					Courthouse Rd. From East					I-95 NB Ramp From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	52	203		6	261	38	0	68	2	108	0	260	32			
05:00 PM	0	0	0	0	0	58	118	0	1	177	49	0	77	5	131	0	300	29	10	339	647
05:15 PM	0	0	0	0	0	53	154	0	4	211	59	0	94	4	157	0	246	23	9	278	646
05:30 PM	0	0	0	0	0	53	134	0	0	187	28	0	103	2	133	0	368	28	11	407	727
Total Volume	0	0	0	0	0	216	609	0	11	836	174	0	342	13	529	0	1174	112	40	1326	2691
% App. Total	0	0	0	0	0	25.8	72.8	0	1.3		32.9	0	64.7	2.5		0	88.5	8.4	3		
PHF	.000	.000	.000	.000	.000	.931	.750	.000	.458	.801	.737	.000	.830	.650	.842	.000	.798	.875	.909	.814	.925





Project: Accokeek
Counter: Erich Strohhacker
Weather: Clear

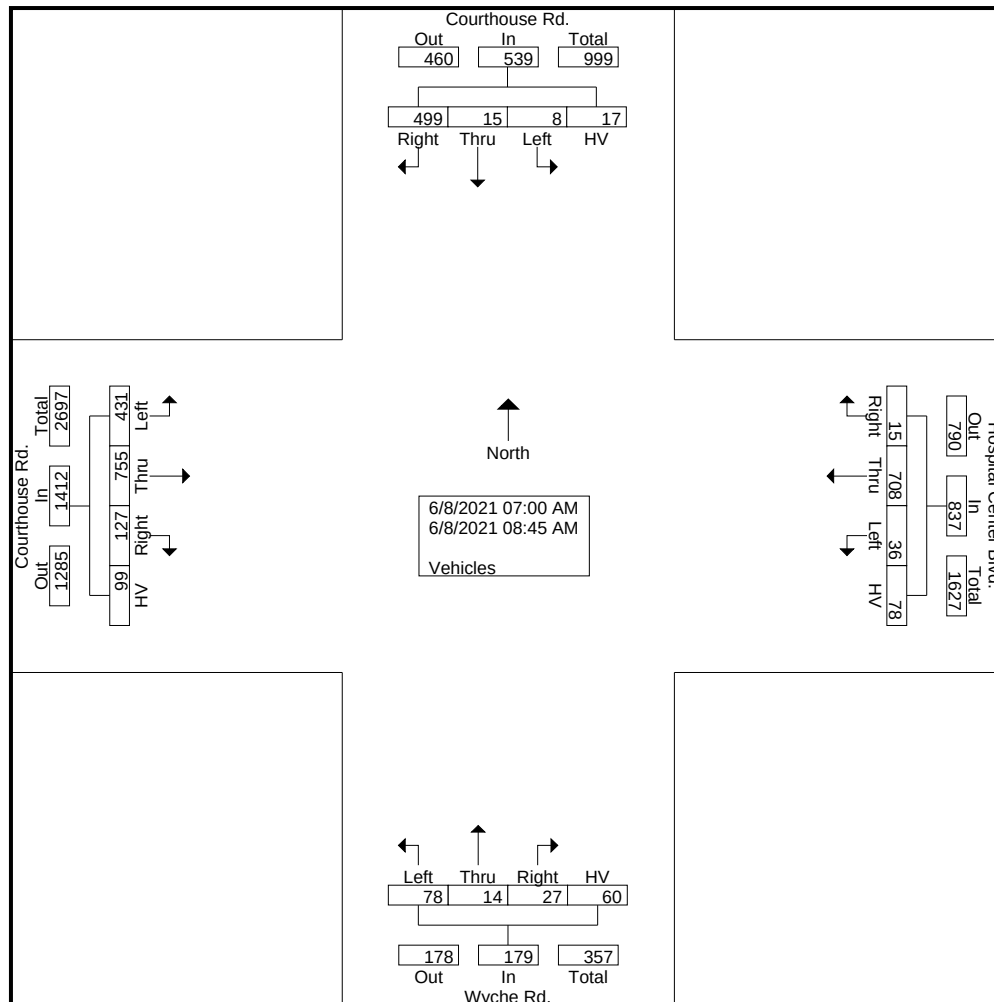
Green Light Solutions, Inc.

(804) 356-4282
estrohhacker@glstraffic.com

File Name : crhcbam
Site Code : 00001212
Start Date : 6/8/2021
Page No : 1

Groups Printed- Vehicles

	Courthouse Rd. From North					Hospital Center Blvd. From East					Wyche Rd. From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
07:00 AM	52	2	2	0	56	0	85	4	4	93	6	1	7	7	21	22	87	39	12	160	330
07:15 AM	59	1	1	1	62	0	92	3	10	105	5	0	15	14	34	18	82	47	13	160	361
07:30 AM	71	2	1	0	74	4	98	5	10	117	5	2	6	6	19	16	88	51	16	171	381
07:45 AM	74	3	3	7	87	2	104	5	8	119	4	1	8	7	20	18	105	80	7	210	436
Total	256	8	7	8	279	6	379	17	32	434	20	4	36	34	94	74	362	217	48	701	1508
08:00 AM	52	1	0	0	53	3	74	4	9	90	5	4	10	8	27	16	115	58	15	204	374
08:15 AM	59	2	0	3	64	3	87	7	15	112	0	3	9	5	17	10	71	60	5	146	339
08:30 AM	77	3	1	4	85	2	76	5	11	94	0	1	12	6	19	13	98	45	17	173	371
08:45 AM	55	1	0	2	58	1	92	3	11	107	2	2	11	7	22	14	109	51	14	188	375
Total	243	7	1	9	260	9	329	19	46	403	7	10	42	26	85	53	393	214	51	711	1459
Grand Total	499	15	8	17	539	15	708	36	78	837	27	14	78	60	179	127	755	431	99	1412	2967
Apprch %	92.6	2.8	1.5	3.2		1.8	84.6	4.3	9.3		15.1	7.8	43.6	33.5		9	53.5	30.5	7		
Total %	16.8	0.5	0.3	0.6	18.2	0.5	23.9	1.2	2.6	28.2	0.9	0.5	2.6	2	6	4.3	25.4	14.5	3.3	47.6	





Green Light Solutions, Inc.

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Project: Accokeek

Counter: Erich Strohhacker

Weather: Clear

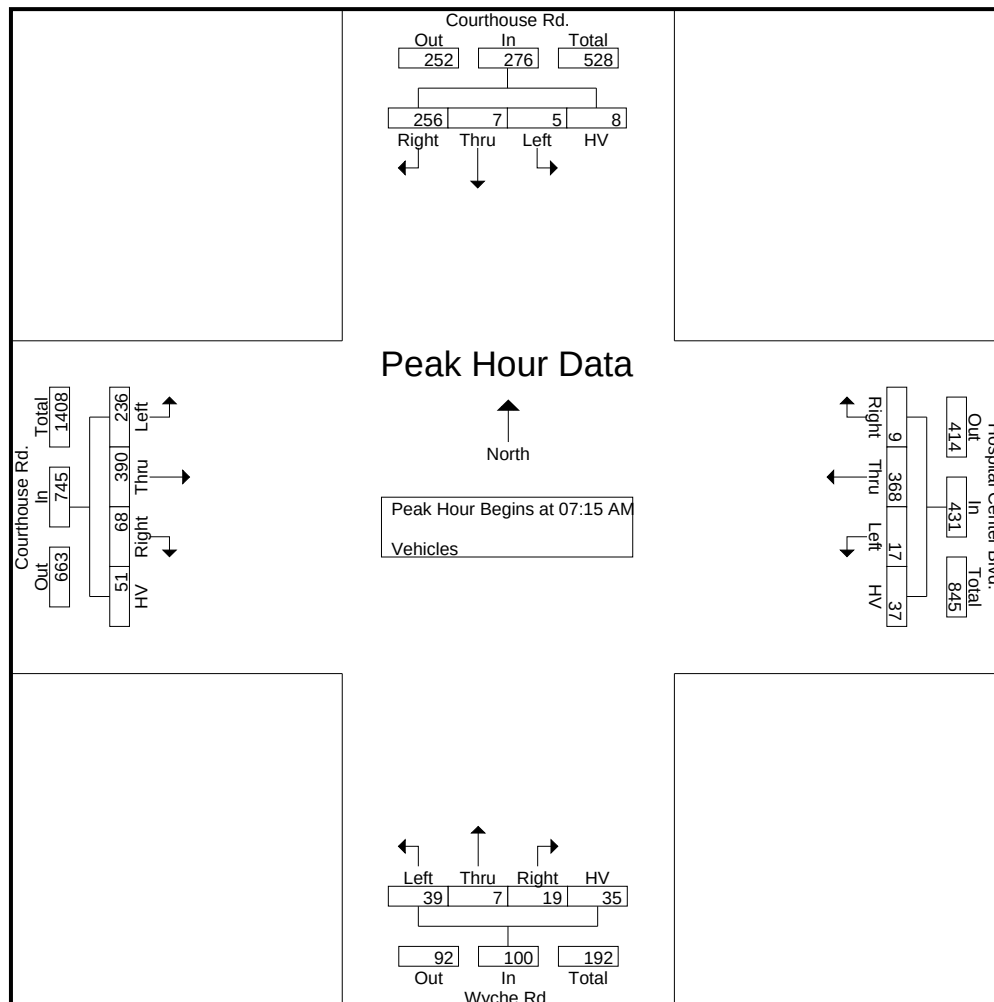
File Name : crhcbam

Site Code : 00001212

Start Date : 6/8/2021

Page No : 2

	Courthouse Rd. From North					Hospital Center Blvd. From East					Wyche Rd. From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	59	1	1	1	62	0	92	3	10	105	5		15	14	34	18					
07:30 AM	71	2	1	0	74	4	98	5	10	117	5	2	6	6	19	16	88	51	16	171	381
07:45 AM	74	3	3	7	87	2	104	5	8	119	4	1	8	7	20	18	105	80	7	210	436
08:00 AM	52	1	0	0	53	3	74	4	9	90	5	4					115	58	15	204	374
Total Volume	256	7	5	8	276	9	368	17	37	431	19	7	39	35	100	68	390	236	51	745	1552
% App. Total	92.8	2.5	1.8	2.9		2.1	85.4	3.9	8.6		19	7	39	35		9.1	52.3	31.7	6.8		
PHF	.865	.583	.417	.286	.793	.563	.885	.850	.925	.905	.950	.438	.650	.625	.735	.944	.848	.738	.797	.887	.890





Green Light Solutions, Inc.

(804) 356-4282

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Project: Accokeek

Counter: Erich Strohhacker

Weather: Clear

File Name : crhcbpm

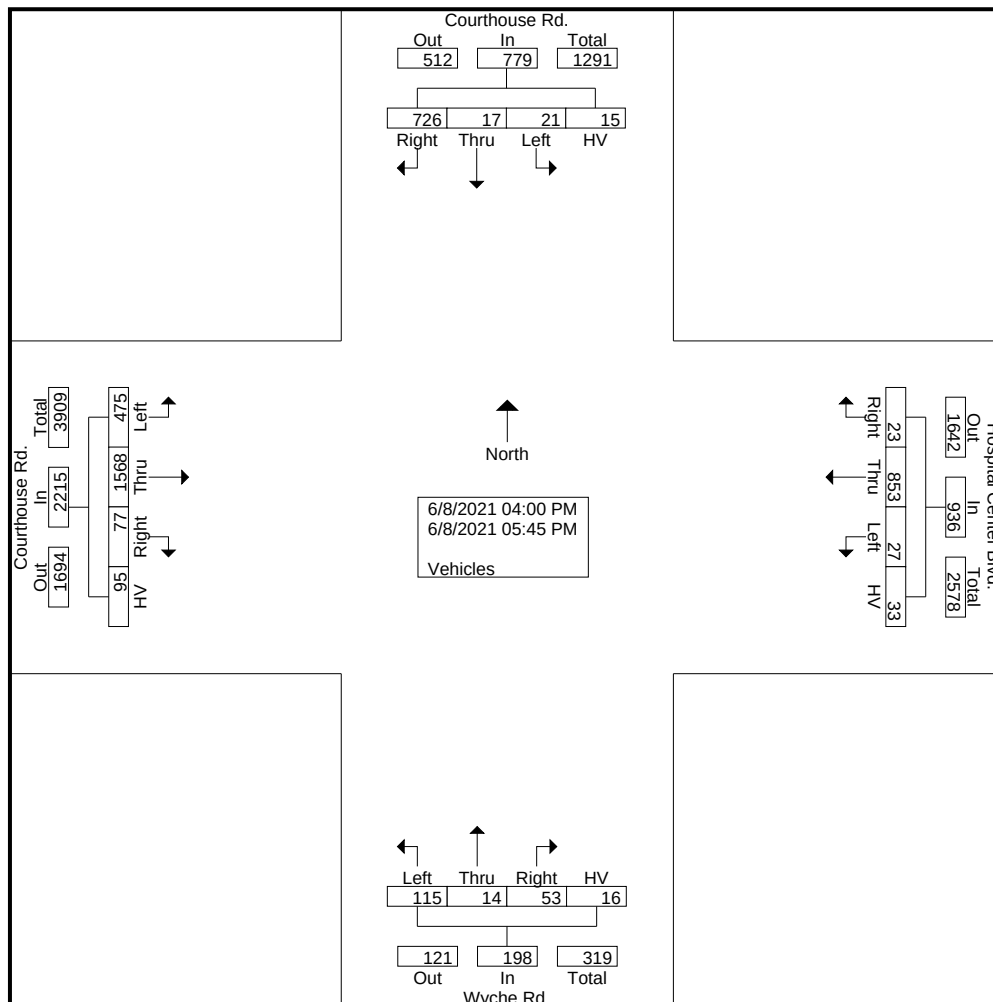
Site Code : 00001212

Start Date : 6/8/2021

Page No : 1

Groups Printed- Vehicles

	Courthouse Rd. From North					Hospital Center Blvd. From East					Wyche Rd. From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
04:00 PM	100	2	4	1	107	3	103	3	7	116	7	0	13	3	23	11	169	46	13	239	485
04:15 PM	126	4	3	0	133	2	111	6	2	121	13	1	22	4	40	15	175	58	15	263	557
04:30 PM	105	2	2	1	110	3	130	2	3	138	5	5	15	4	29	9	205	57	13	284	561
04:45 PM	98	2	4	3	107	4	125	6	12	147	5	1	16	0	22	5	170	64	8	247	523
Total	429	10	13	5	457	12	469	17	24	522	30	7	66	11	114	40	719	225	49	1033	2126
05:00 PM	96	5	7	6	114	3	122	3	6	134	8	5	23	1	37	7	239	71	8	325	610
05:15 PM	76	0	0	0	76	4	101	1	1	107	5	0	12	1	18	9	263	68	13	353	554
05:30 PM	60	2	1	3	66	2	70	3	2	77	6	0	7	2	15	14	205	57	18	294	452
05:45 PM	65	0	0	1	66	2	91	3	0	96	4	2	7	1	14	7	142	54	7	210	386
Total	297	7	8	10	322	11	384	10	9	414	23	7	49	5	84	37	849	250	46	1182	2002
Grand Total	726	17	21	15	779	23	853	27	33	936	53	14	115	16	198	77	1568	475	95	2215	4128
Apprch %	93.2	2.2	2.7	1.9		2.5	91.1	2.9	3.5		26.8	7.1	58.1	8.1		3.5	70.8	21.4	4.3		
Total %	17.6	0.4	0.5	0.4	18.9	0.6	20.7	0.7	0.8	22.7	1.3	0.3	2.8	0.4	4.8	1.9	38	11.5	2.3	53.7	





Green Light Solutions, Inc.

(804) 356-4282

estrohhacker@glstraffic.com

Project: Accokeek

Counter: Erich Strohhacker

Weather: Clear

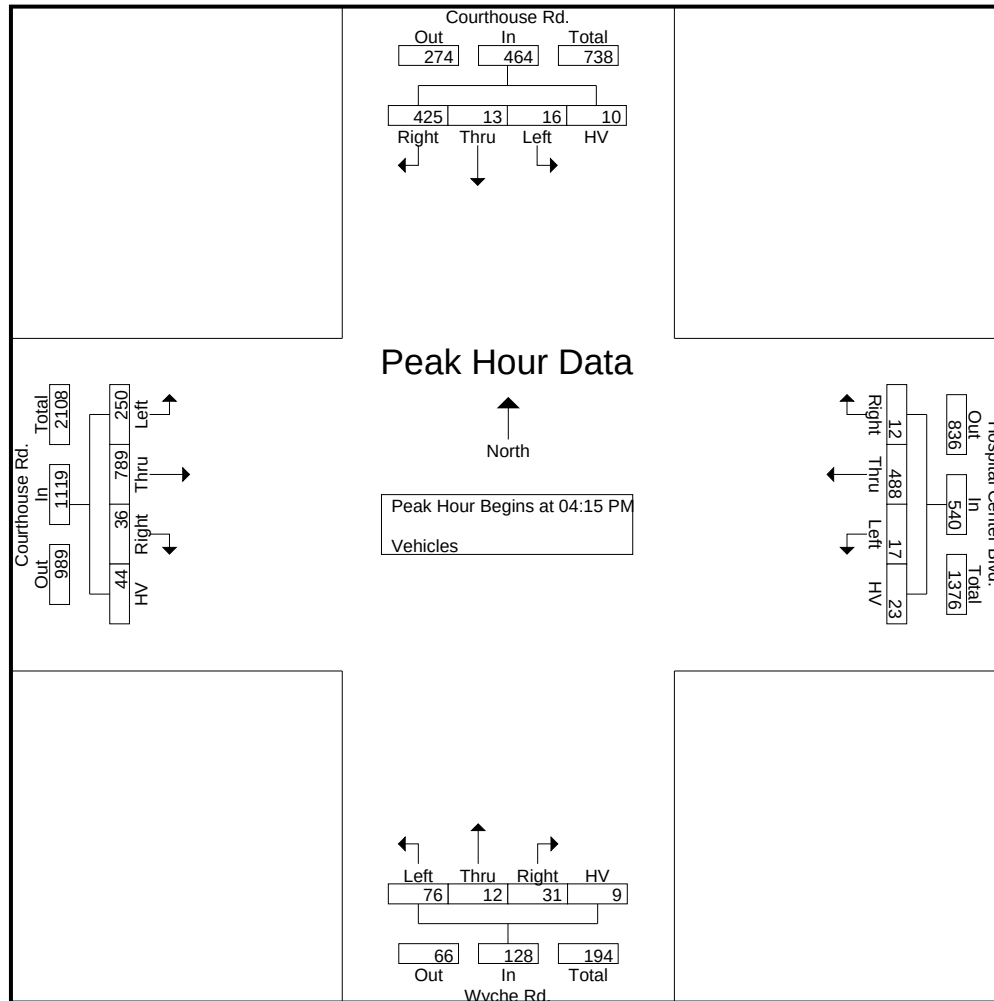
File Name : crhcbpm

Site Code : 00001212

Start Date : 6/8/2021

Page No : 2

	Courthouse Rd. From North					Hospital Center Blvd. From East					Wyche Rd. From South					Courthouse Rd. From West					
Start Time	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Right	Thru	Left	HV	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	126				133	2	111	6			13			4	40	15			15		
04:30 PM	105	2	2	1	110	3	130	2	3	138	5	5	15	4	29	9	205	57	13	284	561
04:45 PM	98	2	4	3	107	4	125	6	12	147	5	1	16	0	22	5	170	64	8	247	523
05:00 PM	96	5	7	6									23	1	37	7	239	71		325	610
Total Volume	425	13	16	10	464	12	488	17	23	540	31	12	76	9	128	36	789	250	44	1119	2251
% App. Total	91.6	2.8	3.4	2.2		2.2	90.4	3.1	4.3		24.2	9.4	59.4	7		3.2	70.5	22.3	3.9		
PHF	.843	.650	.571	.417	.872	.750	.938	.708	.479	.918	.596	.600	.826	.563	.800	.600	.825	.880	.733	.861	.923



Chapter 527

Traffic Impact Analysis

Stafford Springs

Stafford County

November 1, 2021

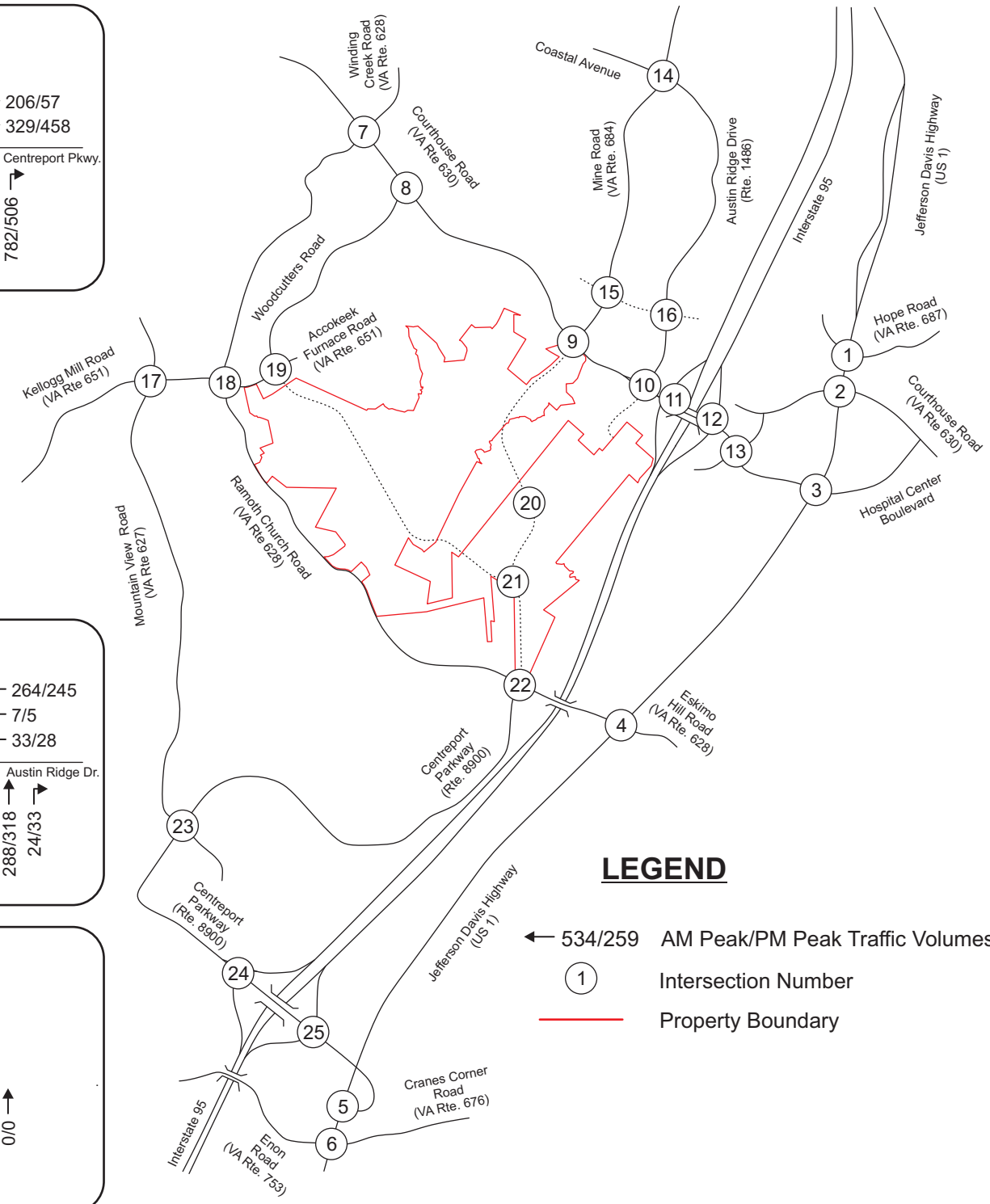
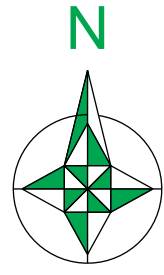
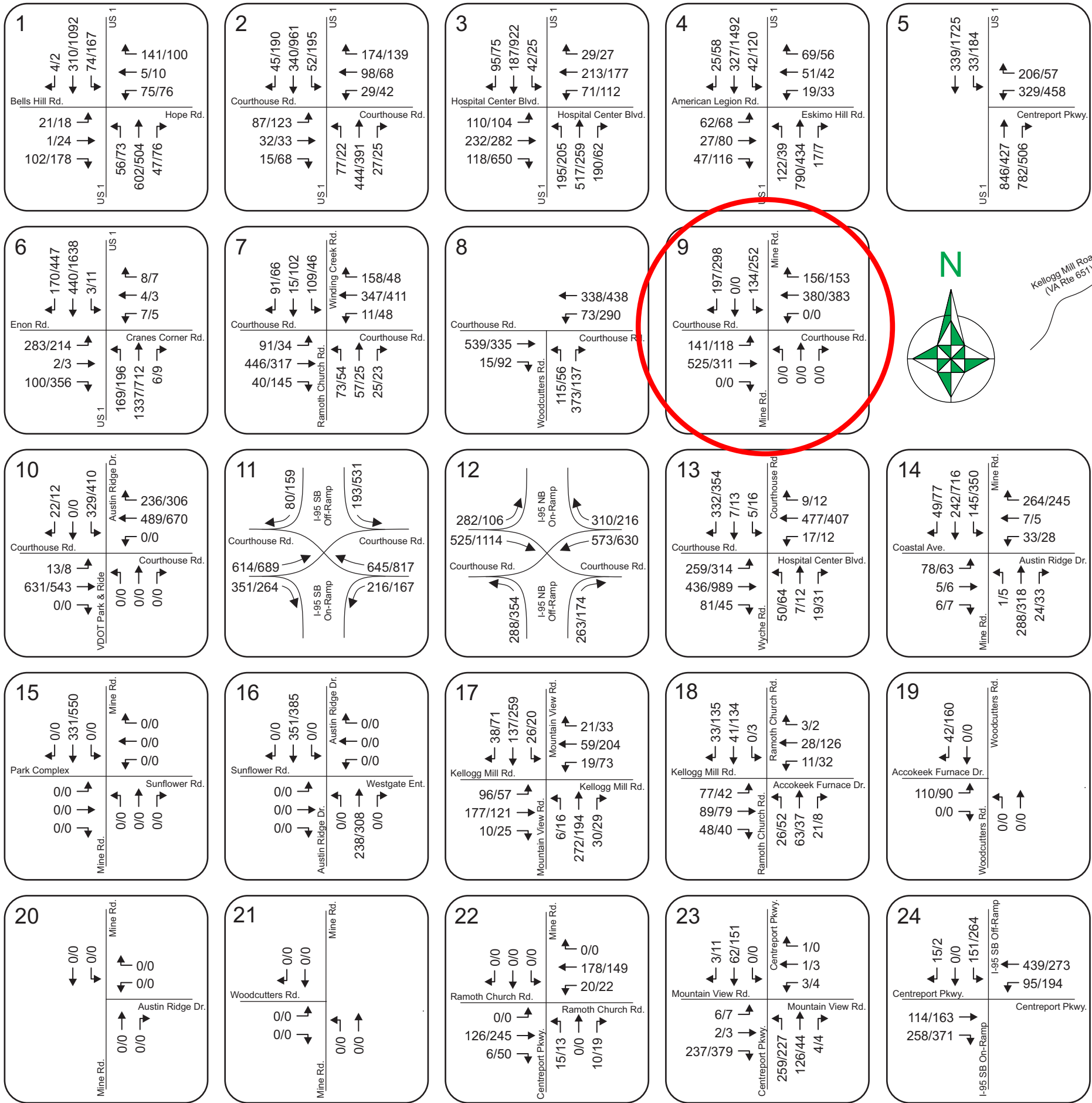
Prepared for:

D.R. Horton

Prepared by:



GLS Project #20101



Stafford Springs

Existing (2021) Peak Hour Traffic Conditions

FIGURE 7

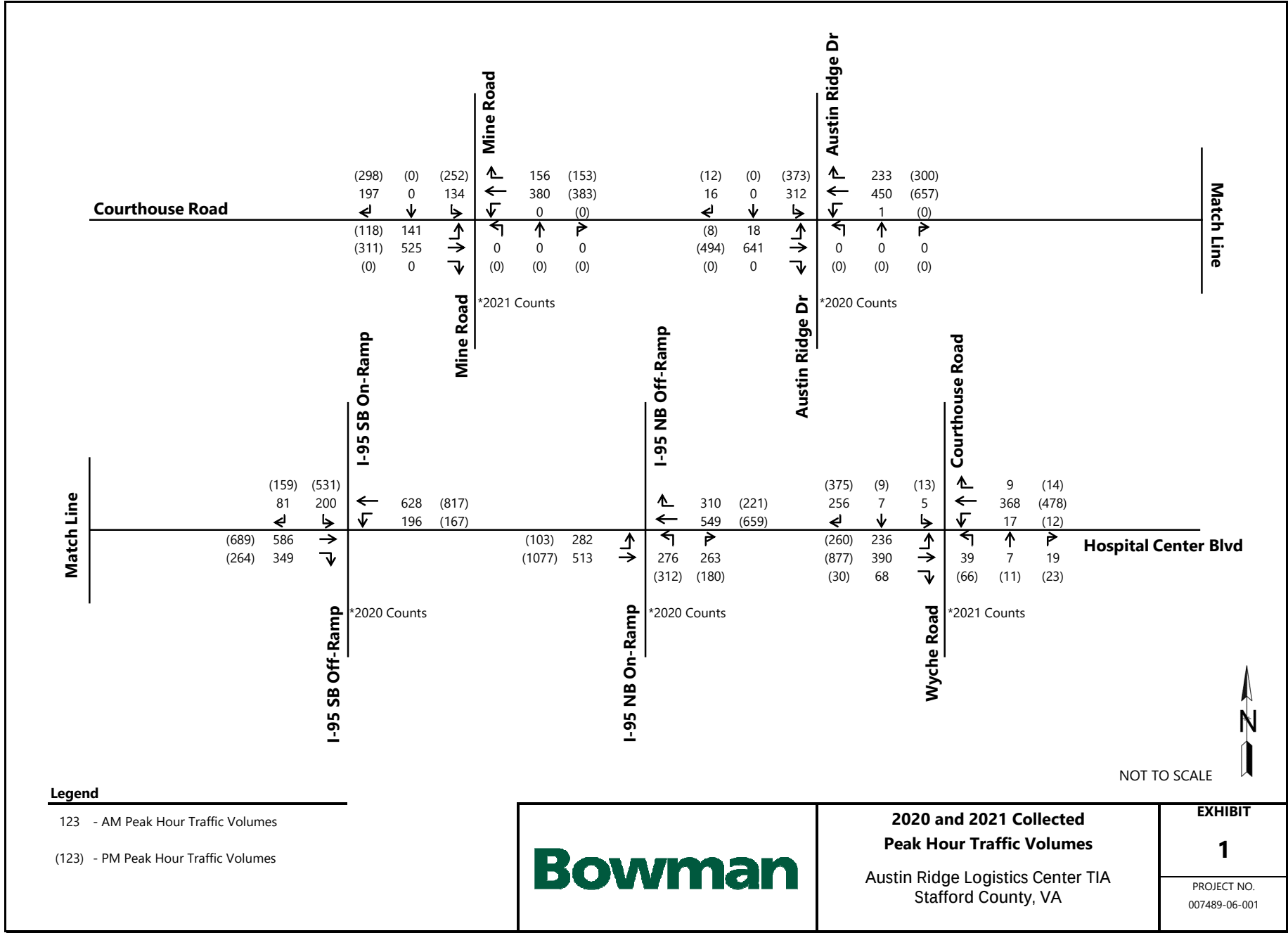
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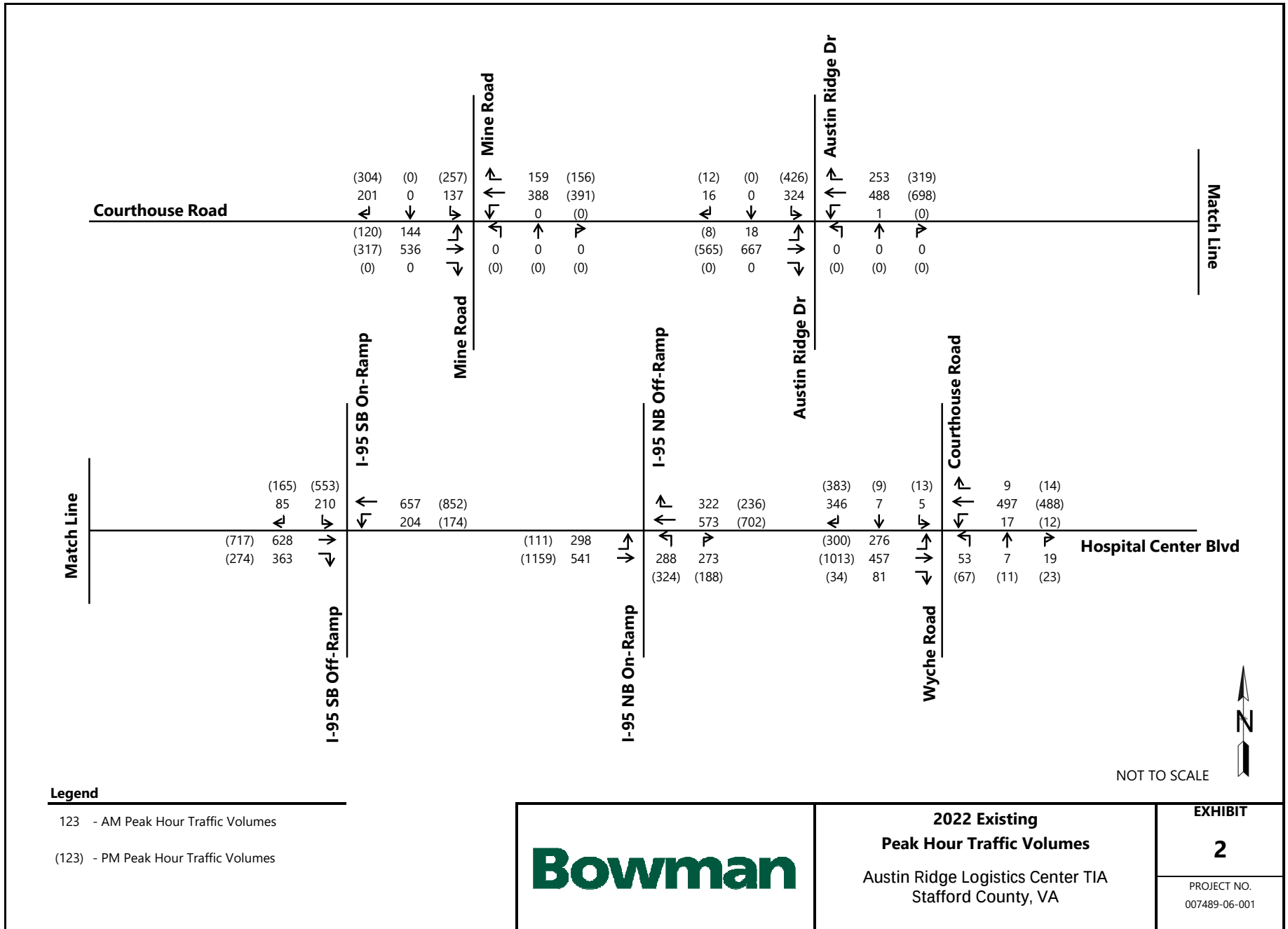
11/21

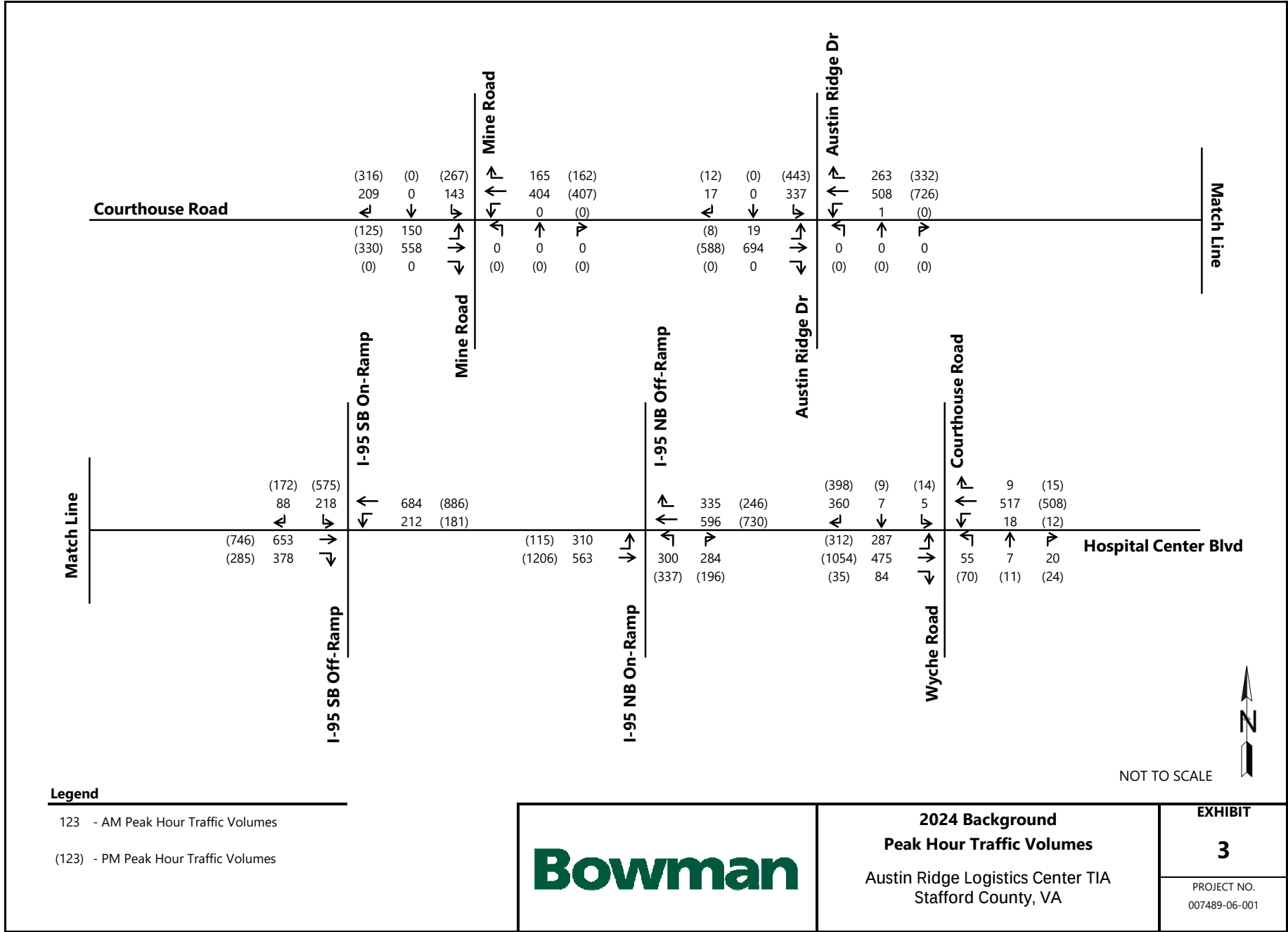
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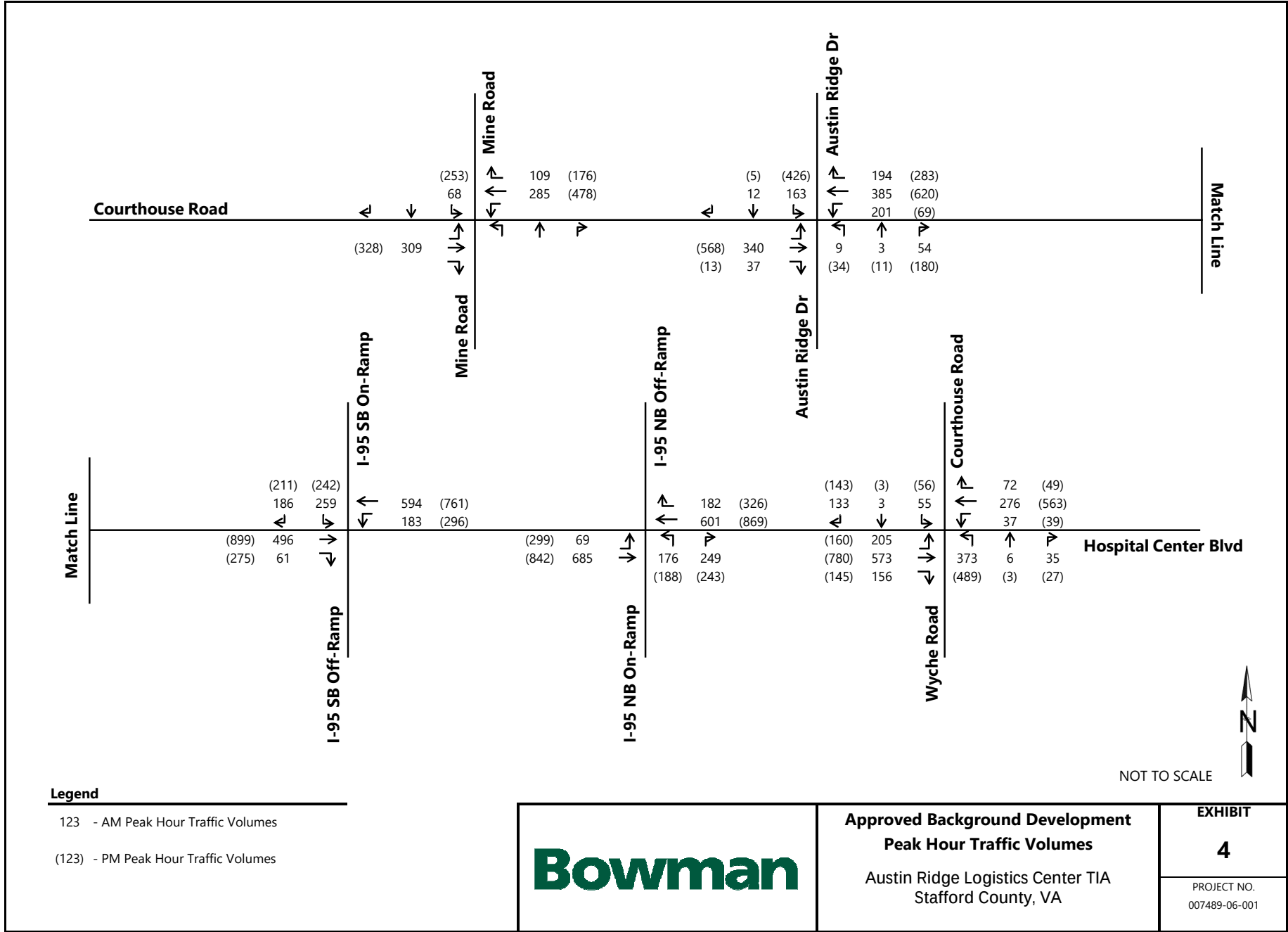
Appendix D

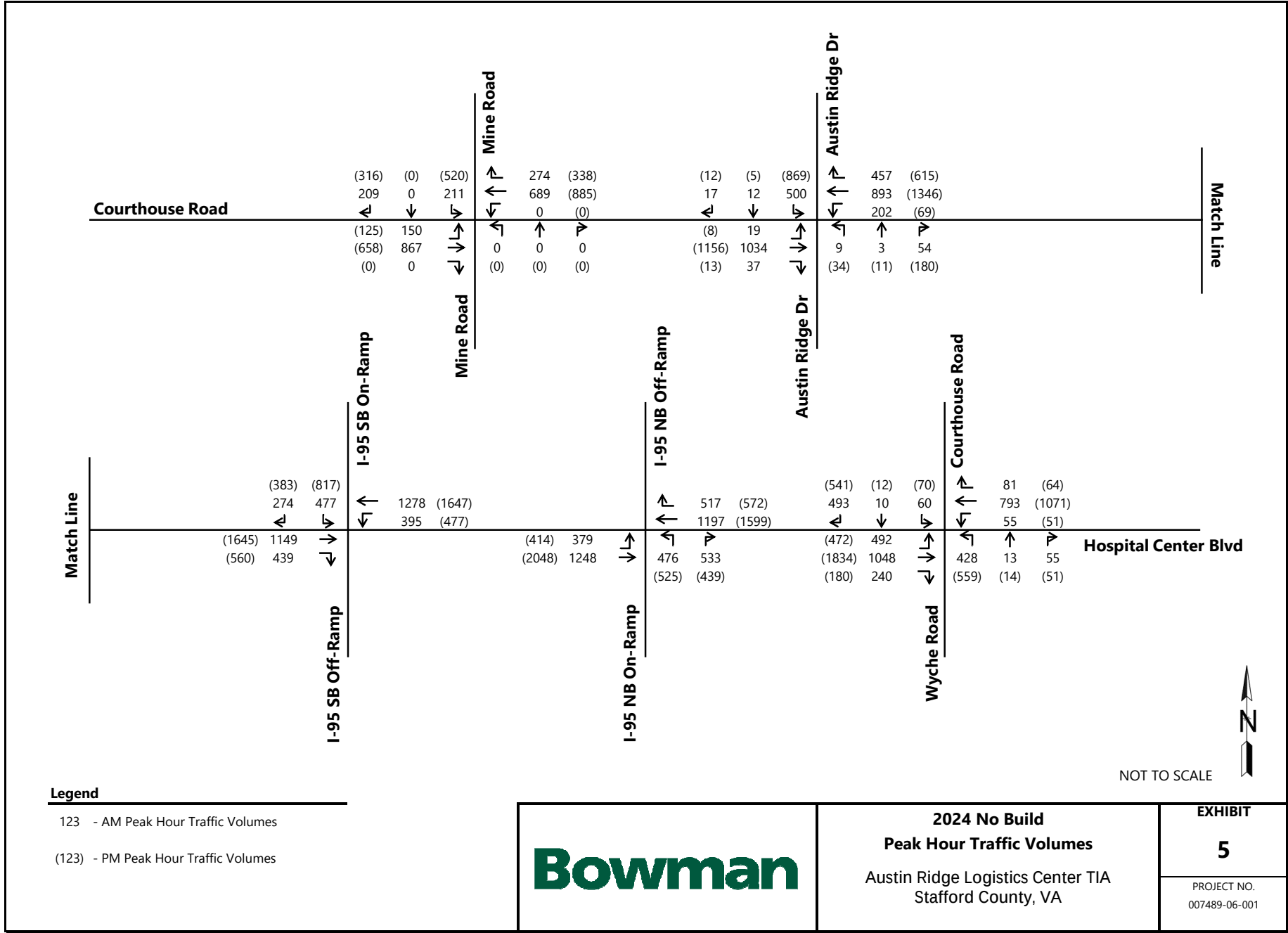
Traffic Volume and Traffic Distribution Exhibits

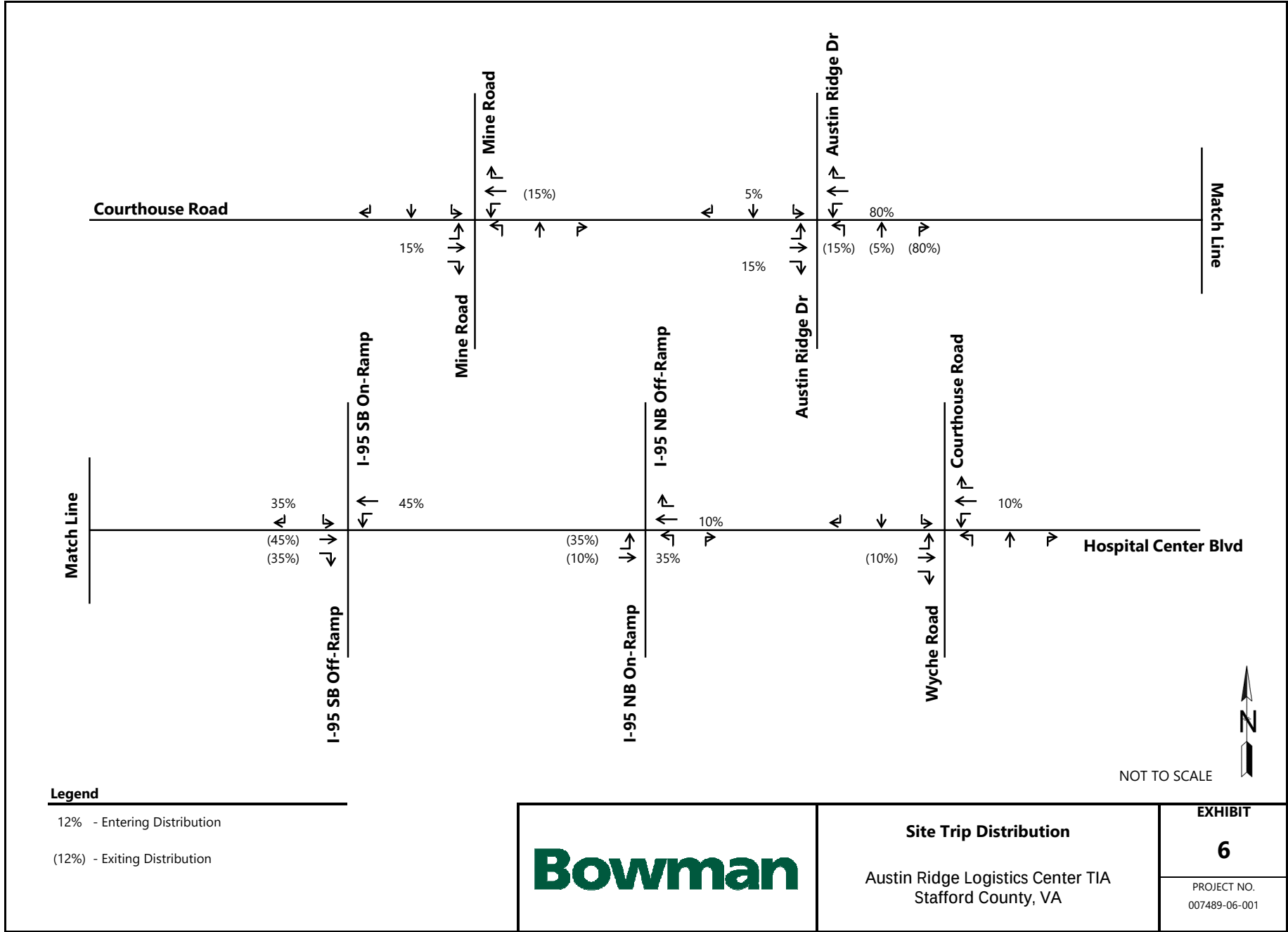


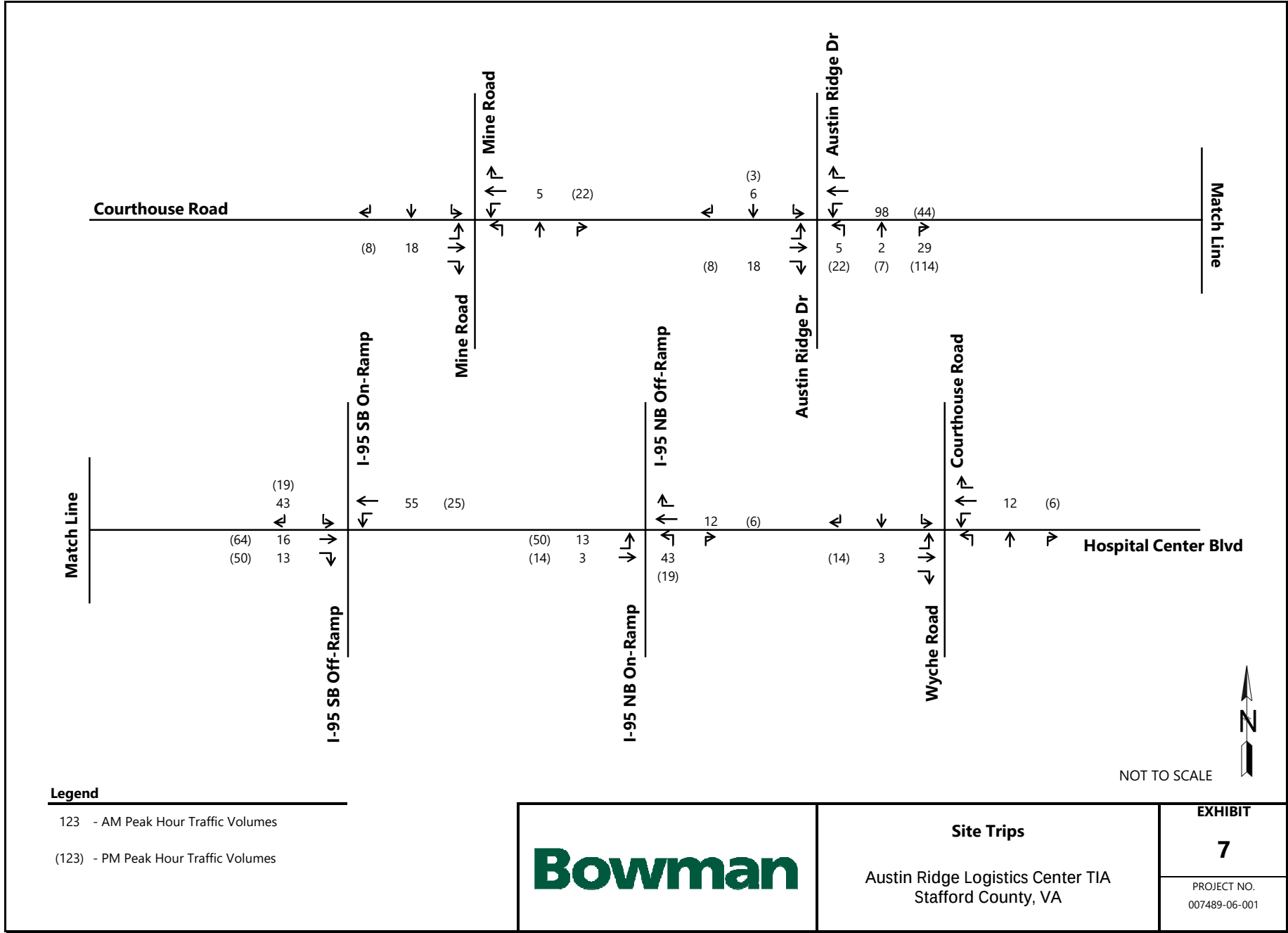


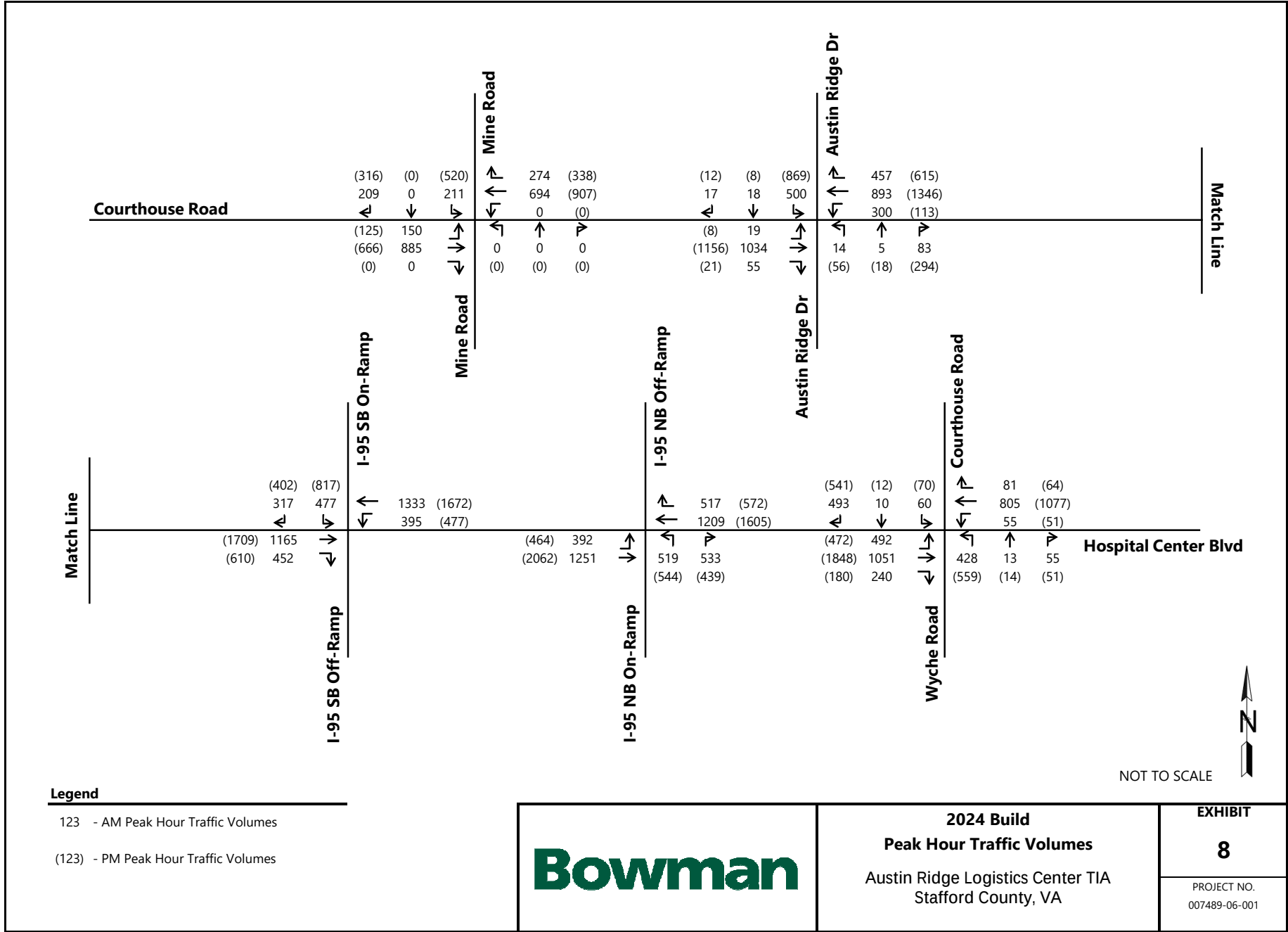












Appendix E

Background Development Information

February 24, 2021

Mr. Brian Geouge, AICP
Stafford County Planning & Zoning
1300 Courthouse Road
Stafford, Virginia 22554
Phone: (540) 658-8668

Reference: **Project Mover** – Traffic Impact Analysis (TIA)
Stafford County, Virginia

Dear Mr. Geouge,

DHL is proposing to build a 533,000 square foot (s.f.) distribution center at the end of Bradburn Place in the southeast quadrant of the I-95 at Courthouse Road interchange. The development plan includes one new driveway on Wyche Road across from Frosty Lane. If approved, the center is expected to be operational by the end of 2021.

Ramey Kemp & Associates, Inc. (RKA) has performed this TIA based on our TIA scope meeting with you and VDOT on January 21. Figure 1 shows the site location and study intersections, and Figure 2 shows the preliminary site plan.

The original TIA was submitted on February 5 and VDOT provided review comments in a letter dated February 11. Following are those comments and a response to each:

1. The applicant optimized the signal timings more than VDOT would implement in the field. Courthouse Road is a coordinated corridor and the through traffic on Courthouse / Hospital has priority. The applicant's optimization took 18 seconds of green away from EB traffic and 13 from WB traffic and redistributed that to Wyche and Courthouse (north). The optimization should be limited to 5 seconds or so.
 - The no-build and build scenarios have been revised to limit the reallocation of green time from Phases 2 and 6 to the side street phases to just 5 seconds as requested, and the updated level-of-service (LOS) results are in Table 3.
2. The analysis shows that the traffic generated by the proposed project has minimal impact on the intersection with the optimized condition and should have a similar impact when the optimization is backed off to favor Courthouse / Hospital through traffic.
 - Agreed – the proposed distribution center trips are projected to increase the total approach volume at this intersection by just 2% during the AM and PM peak hours.

3. The total NB left turn volume is 541 in the PM peak hour. There are dual left turn lanes for this movement presently and we typically like to limit left turns to about 150 per lane. A triple left turn movement (with one lane shared with the through traffic) would be beneficial.
 - Figure 5 shows that the 2026 no-build condition includes 359 northbound left-turns in the AM peak hour, and 455 northbound left-turns in the PM peak hour with all of the approved development traffic. Therefore, the no-build traffic volumes would justify triple left-turn lanes if one left-turn lane is needed for every 150 vehicles.
4. The applicant should rerun that analysis to provide a more realistic result based on shifting more green time back to Route 630 traffic. If necessary to achieve good operations exiting Wyche, the analysis should be run with 3 NB left turn lanes.
 - The no-build and build scenarios have been revised to limit the reallocation of green time from Phases 2 and 6 to the side street phases to just 5 seconds. The build conditions were also analyzed with a shared through-left lane on northbound Wyche Road to create triple lefts. This restriping would require the signal phasing to change from eight-phase to split phase, and as shown in Table 3, the overall operation and delay for the intersection would not change significantly.

Existing Roadway Conditions

Courthouse Road (Route 630) is a six-lane Major Collector with an average daily traffic (ADT) volume of approximately 18,500 vehicles per day (vpd), and a posted speed limit of 40 miles per hour (mph) in the vicinity of Wyche Road.

Wyche Road is a two-lane local roadway with a current ADT volume of approximately 1,600 vpd and a posted speed limit of 35 mph.

Figure 3 shows the existing lane configurations.

Projected Traffic Volumes

The intersection of Courthouse Road at Hospital Center Drive / Wyche Road has not been counted since it opened to traffic in 2020. Due to the Covid-19 pandemic, this analysis is based on the projected 2022 and 2026 AM and PM peak hour traffic volumes in the Burns Property TIA prepared by Vettra Company in June 2019.

Figure 4 shows the projected 2022 AM and PM peak hour traffic volumes from Figure 5 of that TIA. This is the baseline of analysis for this TIA.

Figure 5 shows the projected 2026 AM and PM peak hour traffic volumes from Figure 10a of the Burns Property TIA. The Burns Property TIA assumed an annual growth rate of 2.0%, and included the trip potential of six other approved developments:

- Austin Ridge Commercial – assumed 75% built-out in 2026
- Embrey Mill – assumed 25% built-out in 2026
- South Campus – assumed 25% built-out in 2026
- Stafford Commons – assumed 100% built-out in 2026
- Stafford Hospital – assumed 25% built-out in 2026
- Westgate Center – assumed 50% built-out in 2026

The volumes in Figure 5 also include full build-out of the Burns Property.

Trip Generation

Table 1 shows the trip potential of the proposed distribution center based on site-specific information provided by the applicant.

Table 1
Trip Generation – Weekday

Vehicle Type	Average Daily Traffic		AM Peak Hour (vph)		PM Peak Hour (vph)	
	Enter	Exit	Enter	Exit	Enter	Exit
Tractor Trailers	45	45	0	0	0	0
Delivery Vans	102	102	14	0	0	60
Automobiles	637	637	20	47	22	10
Total	784	784	34	47	22	70

At the request of you and VDOT, the trip potential of the adjacent property between the site and Wyche Road was included in this TIA. The applicant does not own that property, and does not know what might be developed. Table 2 shows the trip potential of the adjacent parcel based on the current zoning and trip rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual – 10th Edition*.

Table 2
ITE Trip Generation – Adjacent Property – Weekday – 10th Edition

Land Use (ITE Land Use Code)	Size	Average Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
General Light Industrial (110)	15,000 s.f.	58	58	10	1	1	9
General Office Space (710)	15,000 s.f.	73	73	15	2	3	14
Total		131	131	25	3	4	23

Site Traffic Distribution

The distribution of site traffic was estimated based on a review of the existing traffic volumes, the adjacent roadway network, and engineering judgement. Based on discussion with you and VDOT, the delivery van trips were distributed as follows:

- 75% to / from the north on I-95
- 25% to / from the south on I-95

The passenger car trips and the adjacent property trips were distributed as follows:

- 30% to / from the north on I-95
- 30% to / from the south on I-95
- 20% to / from the west on Courthouse Road
- 15% to / from the east on Hospital Center Boulevard
- 5% to / from the north on Courthouse Road

Figure 6 shows the site trip distribution for delivery vans, Figure 7 shows the site trip distribution for passenger cars, and Figure 8 shows the trip distribution for the adjacent property. Figures 9 and Figure 10 show the site trip assignment for delivery vans and passenger cars, respectively. Figure 11 shows the trip assignment for the adjacent property. Figure 12 shows the total site trip assignment for the distribution center. Figure 13 shows the projected 2026 build-out peak hour traffic volumes with the distribution center. Figure 14 shows the projected 2026 build-out peak hour traffic volumes with the distribution center and the adjacent property trips.

Traffic Capacity Analysis

Traffic capacity analysis for the study intersection was performed using Synchro 10, which is a comprehensive software package that allows the user to model signalized and unsignalized intersections to determine levels-of-service based on the thresholds specified in the Highway Capacity Manual (HCM) 6th Edition.

Table 3 summarizes the capacity analysis results for the signalized intersection of Courthouse Road at Hospital Center Boulevard / Wyche Road, and the Synchro outputs are enclosed for reference.

Table 3
Level-of-Service Summary for Courthouse Road at Hospital Center Boulevard / Wyche Road

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Existing (2022) Traffic Conditions	EBL	E	61.8	77	B (19.4 sec)	F	88.4	143	C (22.1 sec)
	EBT	A	5.3	28		A	6.1	64	
	EBR	A	4.4	8		A	5.0	5	
	WBL	D	53.5	53		F	93.0	14	
	WBT/R	B	13.0	224		A	8.2	41	
	NBL	E	57.3	23		E	70.7	35	
	NBT	D	54.5	36		E	60.1	47	
	NBR	D	45.9	0		E	58.0	0	
	SBL	D	54.7	34		E	75.7	46	
	SBT	D	47.9	91		E	64.1	23	
	SBR	D	38.7	98		D	48.4	138	
No-Build (2026) Traffic Conditions	EBL	F	85.3	235	E (65.8 sec)	E	55.7	216	F (92.7 sec)
	EBT	B	11.6	108		C	27.3	669	
	EBR	B	10.9	56		B	13.4	109	
	WBL	D	50.3	115		F	110.3	88	
	WBT/R	C	23.1	308		C	21.4	416	
	NBL	F	454.5	328		F	637.7	506	
	NBT	D	50.6	42		E	64.0	54	
	NBR	D	39.5	0		E	56.2	0	
	SBL	D	51.2	120		E	67.3	143	
	SBT	D	44.9	103		E	57.0	29	
	SBR	D	36.4	177		D	38.5	226	
No-Build (2026) Traffic Conditions <i>Adjusted Signal Timings</i>	EBL	E	75.2	210	C (33.1 sec)	E	55.6	216	D (38.0 sec)
	EBT	B	15.5	140		C	29.5	683	
	EBR	B	14.8	1		B	14.9	114	
	WBL	D	47.5	110		F	110.2	88	
	WBT/R	C	27.0	343		C	23.1	423	
	NBL	E	63.5	221		E	78.0	327	
	NBT	D	48.6	42		E	60.1	52	
	NBR	D	37.3	0		D	52.8	0	
	SBL	D	50.4	112		E	65.6	143	
	SBT	D	50.2	110		E	65.6	32	
	SBR	D	39.6	189		D	46.4	253	

Table 3
Level-of-Service Summary for Courthouse Road at Hospital Center Boulevard / Wyche Road

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Build (2026) Traffic Conditions <i>Adjusted Signal Timings</i>	EBL	E	75.0	210	C (33.1 sec)	E	55.9	217	D (39.9 sec)
	EBT	B	14.7	140		C	29.5	683	
	EBR	B	14.4	84		B	15.4	132	
	WBL	D	47.8	113		F	113.1	102	
	WBT/R	C	25.4	343		C	23.1	424	
	NBL	E	66.3	245		F	88.6	394	
	NBT	D	43.2	44		E	59.7	53	
	NBR	C	32.7	9		D	52.4	0	
	SBL	E	65.5	108		E	65.4	136	
	SBT	D	53.4	110		E	66.5	34	
	SBR	D	41.2	190		D	47.1	253	
Build (2026) Traffic Conditions <i>Adjusted Signal Timings and Restriping of Northbound Wyche Road</i>	EBL	E	72.4	210	C (32.9 sec)	E	57.3	217	D (38.8 sec)
	EBT	B	14.1	140		C	27.1	683	
	EBR	B	13.8	84		B	14.1	132	
	WBL	D	48.7	113		F	107.7	102	
	WBT/R	C	24.4	343		C	20.9	424	
	NBL	E	56.1	170		E	75.0	267	
	NBL/T	E	62.2	212		E	82.9	329	
	NBR	D	35.4	0		D	48.7	0	
	SBL	E	64.8	132		F	102.8	172	
	SBT	E	63.0	121		E	71.2	34	
	SBR	D	54.2	125		E	59.1	173	
Build (2026) Traffic Conditions <i>Adjusted Signal Timings and With Adjacent Parcel Trips</i>	EBL	E	69.1	190	C (34.3 sec)	E	55.9	217	D (42.5 sec)
	EBT	B	16.4	147		C	29.6	683	
	EBR	B	16.2	96		B	15.5	134	
	WBL	D	48.6	116		F	114.7	105	
	WBT/R	C	28.2	361		C	23.1	423	
	NBL	E	72.3	260		F	108.8	426	
	NBT	D	48.7	44		E	60.2	55	
	NBR	D	37.2	3		D	52.8	0	
	SBL	D	50.8	112		E	65.5	143	
	SBT	D	50.7	111		E	66.5	34	
	SBR	D	39.0	187		D	47.0	253	

Capacity analysis indicates that the intersection currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour. Under no-build 2026 conditions, the intersection is expected to operate at LOS E during the AM peak hour and LOS F during the PM peak hour with all of the approved development traffic described earlier.

The Burns Property TIA recommended modifying the traffic signal timing for the 2026 conditions, which would improve the operation to LOS C during the AM peak hour and LOS D during the PM peak hour.

Under build 2026 conditions with the distribution center trips, the intersection is expected to continue to operate at LOS C during the AM peak hour and LOS D during the PM peak hour.

Note that the proposed distribution center is projected to increase the total approach volume at this intersection by just 2% during the AM and PM peak hours.

If the northbound through lane on Wyche Road is restriped as a shared left-through lane, and the signal phasing is changed to split phase, the intersection would be expected to continue to operate at LOS C during the AM peak hour and LOS D during the PM peak hour with negligible improvement in the overall delay.

Under build 2026 conditions with the distribution center trips and the adjacent property trips, the intersection is expected to continue to operate at LOS C during the AM peak hour and LOS D during the PM peak hour.

Recommendations

The trip generation potential of the proposed distribution center does not warrant any geometric improvements at the intersection of Courthouse Road at Hospital Center Drive / Wyche Road. If the traffic signal timing is modified to reallocate 5 seconds from Phases 2 and 6 to the side street phases, then this intersection is projected to operate at LOS C during the AM peak hour and LOS D during the PM peak hour at build-out of the site.

We appreciate your attention to this matter. Please contact me at (804) 217-8560 if you have any questions about this report.

Sincerely yours,
Ramey Kemp & Associates, Inc.

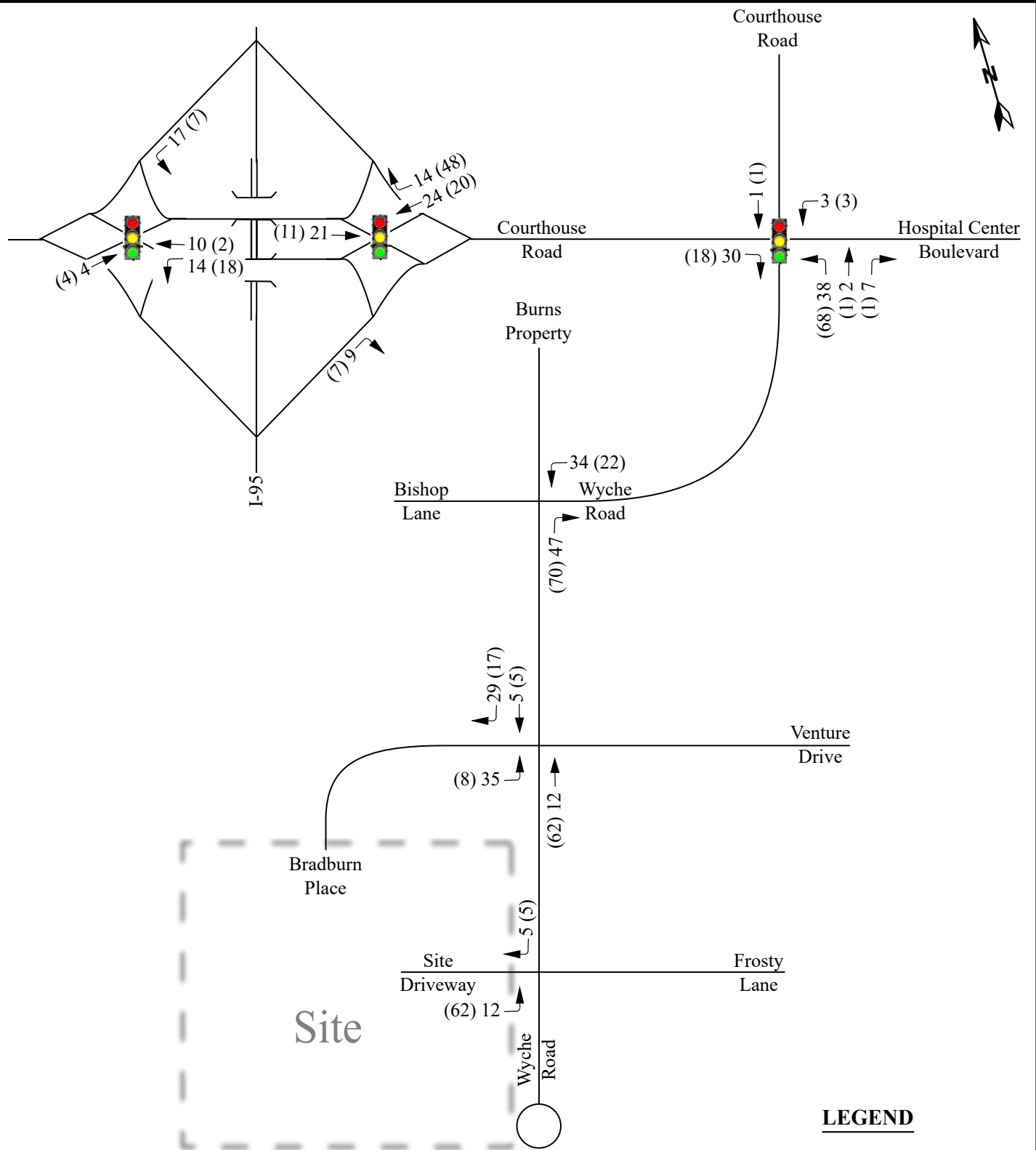


Carl Hultgren, P.E., PTOE
State Traffic Engineering Lead

Enclosures: Figures, Synchro output

Copy to: Ms. Carolyn Oster, P.E., VDOT
Mr. Peter Hedrich, P.E., PTOE, VDOT
Mr. Stephen Hess, DHL Supply Chain
Mr. Charlie Payne, Hirschler
Mr. Ryan Foroughi, P.E., Bagby, Foroughi and Goodpasture, PLLC





LEGEND

X (Y) AM (PM) Peak Hour

Moving forward.



RAMEY KEMP ASSOCIATES

Project Mover
Stafford County, Virginia

Total Site Trips

Scale: Not to Scale

Figure 12

Appendix F

Existing (2022) Capacity Analysis

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2022 Existing AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	536	0	0	388	159	0	0	0	137	0	201
Future Volume (vph)	144	536	0	0	388	159	0	0	0	137	0	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	15.0	61.5		13.0	59.5	23.0	22.5	22.5		23.0	23.0	15.0
Total Split (%)	12.5%	51.3%		10.8%	49.6%	19.2%	18.8%	18.8%		19.2%	19.2%	12.5%
Maximum Green (s)	6.0	52.5		4.0	50.5	14.0	13.5	13.5		14.0	14.0	6.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	82.1	91.1		73.8	93.6					10.9	10.9	28.2
Actuated g/C Ratio	0.68	0.76		0.62	0.78					0.09	0.09	0.24
v/c Ratio	0.22	0.21		0.19	0.13					0.48	0.18	0.15
Control Delay	5.3	4.5		19.2	0.2					56.7	0.7	0.5
Queue Delay	0.0	0.0		0.0	0.0					0.0	0.0	0.0
Total Delay	5.3	4.5		19.2	0.2					56.7	0.7	0.5
LOS	A	A		B	A					E	A	A
Approach Delay		4.7			13.6						23.4	
Approach LOS		A			B						C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												

Lanes, Volumes, Timings

1: Driveway/Mine Road & Courthouse Road

2022 Existing AM
02/17/2022

Offset: 80 (67%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
13 s	61.5 s	23 s	22.5 s
 Ø5	 Ø6 (R)		
15 s	59.5 s		

HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2022 Existing AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	536	0	0	388	159	0	0	0	137	0	201
Future Volume (veh/h)	144	536	0	0	388	159	0	0	0	137	0	201
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	157	583	0	0	422	173	0	0	0	149	0	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	657	2830	0	686	2384	1205	0	2	0	304	0	414
Arrive On Green	0.05	0.76	0.00	0.00	0.64	0.64	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	157	583	0	0	422	173	0	0	0	149	0	218
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	3.4	5.3	0.0	0.0	5.5	3.8	0.0	0.0	0.0	4.8	0.0	7.7
Cycle Q Clear(g_c), s	3.4	5.3	0.0	0.0	5.5	3.8	0.0	0.0	0.0	4.8	0.0	7.7
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	657	2830	0	686	2384	1205	0	2	0	304	0	414
V/C Ratio(X)	0.24	0.21	0.00	0.00	0.18	0.14	0.00	0.00	0.00	0.49	0.00	0.53
Avail Cap(c_a), veh/h	665	2830	0	746	2384	1205	0	210	0	414	0	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.98	0.98	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.5	4.0	0.0	0.0	8.6	4.9	0.0	0.0	0.0	52.4	0.0	48.7
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	1.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.5	0.0	0.0	2.0	1.7	0.0	0.0	0.0	2.2	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	4.1	0.0	0.0	8.7	5.1	0.0	0.0	0.0	53.6	0.0	49.7
LnGrp LOS	A	A	A	A	A	A	A	A	A	D	A	D
Approach Vol, veh/h	740			595			0			367		
Approach Delay, s/veh	4.7			7.7			0.0			51.3		
Approach LOS	A			A						D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	100.7		19.3	14.4	86.3		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	52.5		14.0	6.0	50.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	7.3		9.7	5.4	7.5		0.0				
Green Ext Time (p_c), s	0.0	4.0		0.6	0.0	3.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay 15.8
HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2022 Existing AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	667	0	1	488	253	0	0	0	324	0	16
Future Volume (vph)	18	667	0	1	488	253	0	0	0	324	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							0%		0%	33%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split		Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	25.0	14.0	14.0	14.0
Total Split (s)	14.0	53.0		14.0	53.0	28.0	25.0	25.0	25.0	28.0	28.0	14.0
Total Split (%)	11.7%	44.2%		11.7%	44.2%	23.3%	20.8%	20.8%	20.8%	23.3%	23.3%	11.7%
Maximum Green (s)	5.0	44.0		5.0	44.0	19.0	16.0	16.0	16.0	19.0	19.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.5	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.5	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	81.5	83.9		5.6	77.7	105.4				15.1	15.1	30.1
Actuated g/C Ratio	0.68	0.70		0.05	0.65	0.88				0.13	0.13	0.25
v/c Ratio	0.03	0.31		0.01	0.26	0.21				0.61	0.60	0.04
Control Delay	6.3	8.4		41.0	20.5	0.5				55.8	61.4	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0				0.0	0.0	0.0
Total Delay	6.3	8.4		41.0	20.5	0.5				55.8	61.4	0.1
LOS	A	A		D	C	A				E	E	A
Approach Delay		8.3			13.7						55.0	
Approach LOS		A			B						D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2022 Existing AM
02/17/2022

Actuated Cycle Length: 120

Offset: 117 (98%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 19.5

Intersection LOS: B

Intersection Capacity Utilization 39.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2022 Existing AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	667	0	1	488	253	0	0	0	324	0	16
Future Volume (veh/h)	18	667	0	1	488	253	0	0	0	324	0	16
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	1850	1850	1850	1758	1758	1758	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	20	758	0	1	555	288	0	0	0	368	0	18
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	6	6	6	0	0	0	3	3	3
Cap, veh/h	481	2398	0	2	2216	1124	1	3	1	504	0	183
Arrive On Green	0.02	0.68	0.00	0.00	0.66	0.66	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	1762	3607	0	1674	3340	1490	1669	3506	1485	5525	0	1639
Grp Volume(v), veh/h	20	758	0	1	555	288	0	0	0	368	0	18
Grp Sat Flow(s),veh/h/ln	1762	1757	0	1674	1670	1490	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.4	10.5	0.0	0.1	8.0	7.1	0.0	0.0	0.0	7.8	0.0	1.2
Cycle Q Clear(g_c), s	0.4	10.5	0.0	0.1	8.0	7.1	0.0	0.0	0.0	7.8	0.0	1.2
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	481	2398	0	2	2216	1124	1	3	1	504	0	183
V/C Ratio(X)	0.04	0.32	0.00	0.44	0.25	0.26	0.00	0.00	0.00	0.73	0.00	0.10
Avail Cap(c_a), veh/h	518	2398	0	70	2216	1124	223	467	198	875	0	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.3	7.7	0.0	59.9	8.1	4.5	0.0	0.0	0.0	53.1	0.0	47.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	95.8	0.3	0.6	0.0	0.0	0.0	2.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.6	0.0	0.1	2.7	3.0	0.0	0.0	0.0	3.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	8.1	0.0	155.7	8.4	5.0	0.0	0.0	0.0	55.1	0.0	48.1
LnGrp LOS	A	A	A	F	A	A	A	A	A	E	A	D
Approach Vol, veh/h	778			844			0			386		
Approach Delay, s/veh	8.0			7.4			0.0			54.8		
Approach LOS	A			A						D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	90.9		20.0	11.4	88.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	5.0	44.0		19.0	5.0	44.0		16.0				
Max Q Clear Time (g_c+I1), s	2.1	12.5		9.8	2.4	10.0		0.0				
Green Ext Time (p_c), s	0.0	21.2		1.2	0.0	11.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
3: Courthouse Road

2022 Existing AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	628	0	0	0	0	0	0	0	0	657	0
Future Volume (vph)	0	628	0	0	0	0	0	0	0	0	657	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		59.0									61.0	
Total Split (%)		49.2%									50.8%	
Maximum Green (s)		52.0									54.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		54.1									51.9	
Actuated g/C Ratio		0.45									0.43	
v/c Ratio		0.32									0.35	
Control Delay		16.4									16.8	
Queue Delay		0.0									0.0	
Total Delay		16.4									16.8	
LOS		B									B	
Approach Delay		16.4									16.8	
Approach LOS		B									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.38												
Intersection Signal Delay: 16.6	Intersection LOS: B											

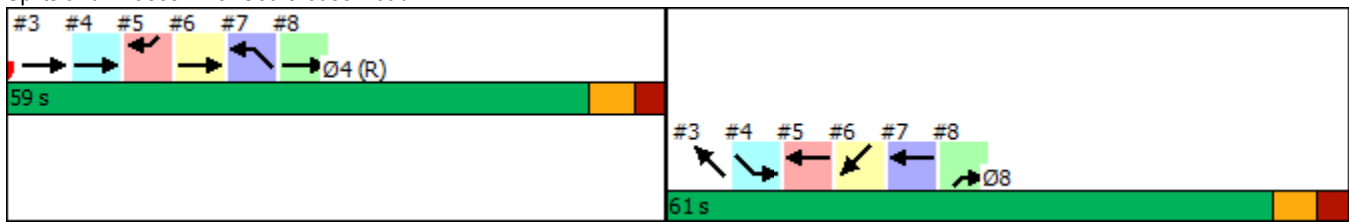
Lanes, Volumes, Timings
3: Courthouse Road

2022 Existing AM
02/17/2022

Intersection Capacity Utilization 36.5%
Analysis Period (min) 15

ICU Level of Service A

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

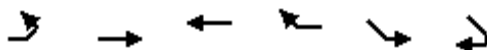
3: Courthouse Road

2022 Existing AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	628	0	0	0	0	0	0	0	0	657	0
Future Volume (vph)	0	628	0	0	0	0	0	0	0	0	657	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4866									4848	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4866									4848	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	698	0	0	0	0	0	0	0	0	730	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	698	0	0	0	0	0	0	0	0	730	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		54.1									51.9	
Effective Green, g (s)		54.1									51.9	
Actuated g/C Ratio		0.45									0.43	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2193									2096	
v/s Ratio Prot		c0.14									c0.15	
v/s Ratio Perm												
v/c Ratio		0.32									0.35	
Uniform Delay, d1		21.1									22.8	
Progression Factor		0.74									0.73	
Incremental Delay, d2		0.4									0.1	
Delay (s)		15.9									16.6	
Level of Service		B									B	
Approach Delay (s)		15.9			0.0			0.0			16.6	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		16.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.33										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		36.5%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	628	0	0	210	0
Future Volume (vph)	0	628	0	0	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		59.0			61.0	
Total Split (%)		49.2%			50.8%	
Maximum Green (s)		52.0			54.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		C-Max			None	
Act Effct Green (s)		54.1			51.9	
Actuated g/C Ratio		0.45			0.43	
v/c Ratio		0.32			0.15	
Control Delay		2.4			2.0	
Queue Delay		0.1			0.0	
Total Delay		2.5			2.0	
LOS		A			A	
Approach Delay		2.5			2.0	
Approach LOS		A			A	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.38						
Intersection Signal Delay: 2.4	Intersection LOS: A					

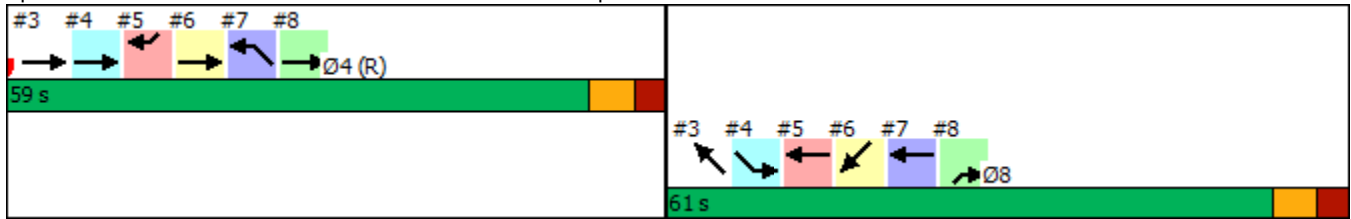
Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022

Intersection Capacity Utilization 29.8%
Analysis Period (min) 15

ICU Level of Service A

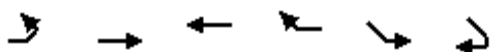
Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022

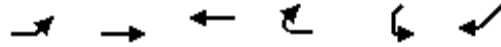


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	628	0	0	210	0
Future Volume (vph)	0	628	0	0	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4866			3242	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4866			3242	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	698	0	0	233	0
RTOR Reduction (vph)	0	0	0	0	132	0
Lane Group Flow (vph)	0	698	0	0	101	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		54.1			51.9	
Effective Green, g (s)		54.1			51.9	
Actuated g/C Ratio		0.45			0.43	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		2193			1402	
v/s Ratio Prot		c0.14			c0.03	
v/s Ratio Perm						
v/c Ratio		0.32			0.07	
Uniform Delay, d1		21.1			19.9	
Progression Factor		0.09			1.00	
Incremental Delay, d2		0.4			0.0	
Delay (s)		2.3			20.0	
Level of Service		A			B	
Approach Delay (s)		2.3	0.0		20.0	
Approach LOS		A	A		B	
Intersection Summary						
HCM 2000 Control Delay		6.7		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.20				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		29.8%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	657	0	0	85
Future Volume (vph)	0	0	657	0	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			61.0			59.0
Total Split (%)			50.8%			49.2%
Maximum Green (s)			54.0			52.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			None			C-Max
Act Effct Green (s)			51.9			54.1
Actuated g/C Ratio			0.43			0.45
v/c Ratio			0.34			0.12
Control Delay			2.6			1.8
Queue Delay			0.2			0.0
Total Delay			2.7			1.8
LOS			A			A
Approach Delay			2.7		1.8	
Approach LOS			A		A	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.38						
Intersection Signal Delay: 2.6	Intersection LOS: A					

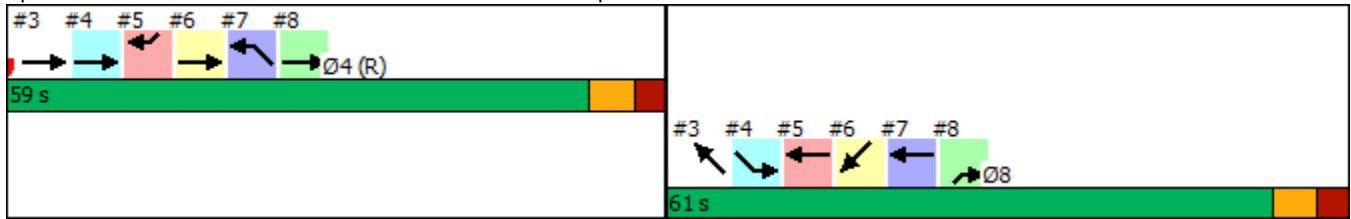
Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022

Intersection Capacity Utilization 36.5%
Analysis Period (min) 15

ICU Level of Service A

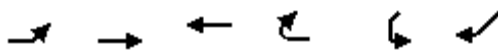
Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing AM
02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↗
Traffic Volume (vph)	0	0	657	0	0	85
Future Volume (vph)	0	0	657	0	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			4920			1522
Flt Permitted			1.00			1.00
Satd. Flow (perm)			4920			1522
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	730	0	0	94
RTOR Reduction (vph)	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	730	0	0	42
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			51.9			54.1
Effective Green, g (s)			51.9			54.1
Actuated g/C Ratio			0.43			0.45
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2127			686
v/s Ratio Prot			c0.15			c0.03
v/s Ratio Perm						
v/c Ratio			0.34			0.06
Uniform Delay, d1			22.7			18.6
Progression Factor			0.09			1.00
Incremental Delay, d2			0.1			0.2
Delay (s)			2.2			18.8
Level of Service			A			B
Approach Delay (s)		0.0	2.2		18.8	
Approach LOS		A	A		B	
Intersection Summary						
HCM 2000 Control Delay			4.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.20			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			36.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

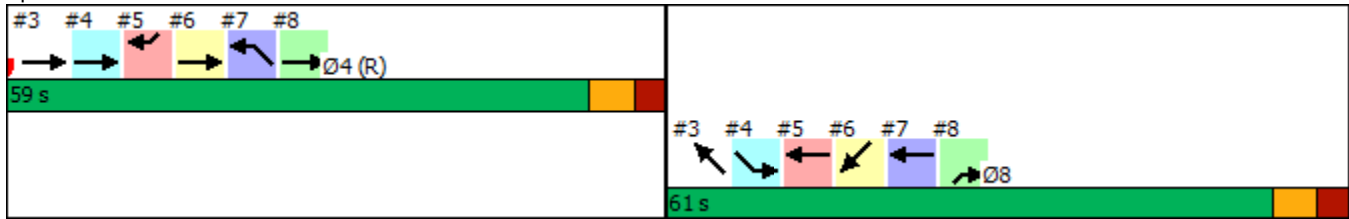
2022 Existing AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	541	0	0	0	0	0	0	0	0	573	0
Future Volume (vph)	0	541	0	0	0	0	0	0	0	0	573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		238			207			236			128	
Travel Time (s)		4.1			3.5			4.0			2.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		59.0									61.0	
Total Split (%)		49.2%									50.8%	
Maximum Green (s)		52.0									54.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		54.1									51.9	
Actuated g/C Ratio		0.45									0.43	
v/c Ratio		0.26									0.30	
Control Delay		12.7									20.2	
Queue Delay		0.0									0.0	
Total Delay		12.7									20.2	
LOS		B									C	
Approach Delay		12.7									20.2	
Approach LOS		B									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.38												
Intersection Signal Delay: 16.5	Intersection LOS: B											

Intersection Capacity Utilization 33.2%
Analysis Period (min) 15

ICU Level of Service A

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

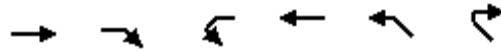
6: Courthouse Road & Rt.630 East

2022 Existing AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	541	0	0	0	0	0	0	0	0	573	0
Future Volume (vph)	0	541	0	0	0	0	0	0	0	0	573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4940									4872	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4940									4872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	588	0	0	0	0	0	0	0	0	623	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	588	0	0	0	0	0	0	0	0	623	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		54.1									51.9	
Effective Green, g (s)		54.1									51.9	
Actuated g/C Ratio		0.45									0.43	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2227									2107	
v/s Ratio Prot		c0.12									c0.13	
v/s Ratio Perm												
v/c Ratio		0.26									0.30	
Uniform Delay, d1		20.5									22.2	
Progression Factor		0.59									0.91	
Incremental Delay, d2		0.3									0.1	
Delay (s)		12.3									20.2	
Level of Service		B									C	
Approach Delay (s)		12.3			0.0			0.0			20.2	
Approach LOS		B			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		16.4			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		33.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2022 Existing AM
02/17/2022



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	573	288	0
Future Volume (vph)	0	0	0	573	288	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	478			236	215	
Travel Time (s)	8.1			4.0	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				61.0	59.0	
Total Split (%)				50.8%	49.2%	
Maximum Green (s)				54.0	52.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				None	C-Max	
Act Effct Green (s)				51.9	54.1	
Actuated g/C Ratio				0.43	0.45	
v/c Ratio				0.30	0.18	
Control Delay				3.8	1.7	
Queue Delay				0.2	0.0	
Total Delay				3.9	1.7	
LOS				A	A	
Approach Delay				3.9	1.7	
Approach LOS				A	A	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.38						
Intersection Signal Delay: 3.2	Intersection LOS: A					

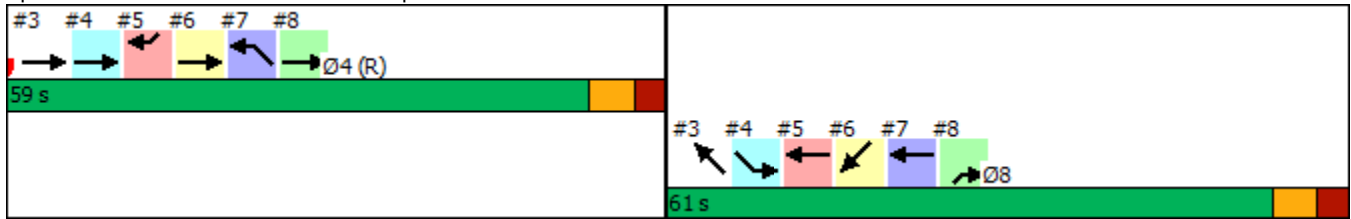
Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2022 Existing AM
02/17/2022

Intersection Capacity Utilization 31.0%
Analysis Period (min) 15

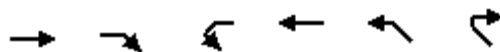
ICU Level of Service A

Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis
7: I-95 NB Off-Ramp & Courthouse Road

2022 Existing AM
02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	573	288	0
Future Volume (vph)	0	0	0	573	288	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				4872	3367	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				4872	3367	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	623	313	0
RTOR Reduction (vph)	0	0	0	0	172	0
Lane Group Flow (vph)	0	0	0	623	141	0
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				51.9	54.1	
Effective Green, g (s)				51.9	54.1	
Actuated g/C Ratio				0.43	0.45	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2107	1517	
v/s Ratio Prot				c0.13	c0.04	
v/s Ratio Perm						
v/c Ratio				0.30	0.09	
Uniform Delay, d1				22.2	18.9	
Progression Factor				0.16	1.00	
Incremental Delay, d2				0.1	0.1	
Delay (s)				3.5	19.0	
Level of Service				A	B	
Approach Delay (s)	0.0			3.5	19.0	
Approach LOS	A			A	B	

Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

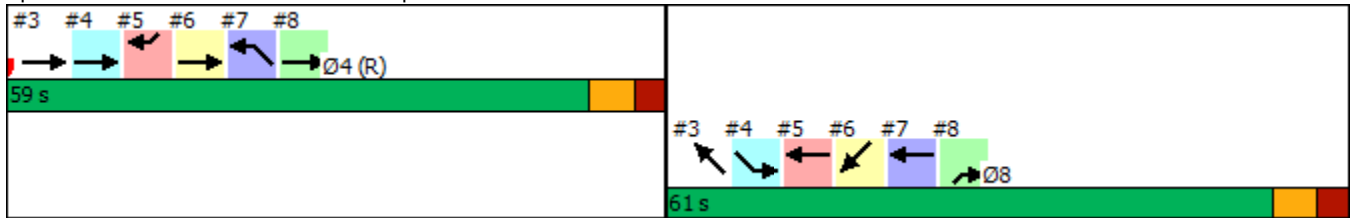
Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

2022 Existing AM
02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	541	0	0	0	0	273
Future Volume (vph)	541	0	0	0	0	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	207			262	427	
Travel Time (s)	4.0			4.5	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	59.0					61.0
Total Split (%)	49.2%					50.8%
Maximum Green (s)	52.0					54.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	C-Max					None
Act Effct Green (s)	54.1					51.9
Actuated g/C Ratio	0.45					0.43
v/c Ratio	0.26					0.38
Control Delay	2.8					9.4
Queue Delay	0.2					0.0
Total Delay	2.9					9.4
LOS	A					A
Approach Delay	2.9				9.4	
Approach LOS	A				A	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.38						
Intersection Signal Delay: 5.1				Intersection LOS: A		
Intersection Capacity Utilization 39.0%				ICU Level of Service A		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

8: I-95 NB Off-Ramp & Courthouse Road

2022 Existing AM
02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	541	0	0	0	0	273
Future Volume (vph)	541	0	0	0	0	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1580
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1580
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	588	0	0	0	0	297
RTOR Reduction (vph)	0	0	0	0	0	104
Lane Group Flow (vph)	588	0	0	0	0	193
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	54.1					51.9
Effective Green, g (s)	54.1					51.9
Actuated g/C Ratio	0.45					0.43
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2227					683
v/s Ratio Prot	c0.12					c0.12
v/s Ratio Perm						
v/c Ratio	0.26					0.28
Uniform Delay, d1	20.5					22.0
Progression Factor	0.12					1.00
Incremental Delay, d2	0.3					0.2
Delay (s)	2.7					22.2
Level of Service	A					C
Approach Delay (s)	2.7			0.0	22.2	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			9.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			39.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	457	81	17	497	9	53	7	19	5	7	346
Future Volume (vph)	276	457	81	17	497	9	53	7	19	5	7	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		1	2		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	7%	7%	7%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0		13.8	48.2	48.2	14.8	14.1	12.8
Total Split (s)	17.0	52.0	52.0	17.0	52.0		36.0	29.0	29.0	22.0	15.0	17.0
Total Split (%)	14.2%	43.3%	43.3%	14.2%	43.3%		30.0%	24.2%	24.2%	18.3%	12.5%	14.2%
Maximum Green (s)	9.2	45.9	45.9	9.8	46.8		27.2	21.8	21.8	13.2	5.9	9.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2		4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0		4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2		8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	Max	Max	None
Walk Time (s)							8.0	8.0				
Flash Dont Walk (s)							33.0	33.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	9.2	57.2	57.2	51.0	46.8		7.7	15.3	15.3	39.7	28.3	46.6
Actuated g/C Ratio	0.08	0.48	0.48	0.42	0.39		0.06	0.13	0.13	0.33	0.24	0.39
v/c Ratio	1.22	0.22	0.10	0.05	0.31		0.28	0.04	0.06	0.01	0.02	0.36
Control Delay	183.3	12.9	0.2	15.1	25.8		56.5	40.9	0.3	25.6	38.9	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	183.3	12.9	0.2	15.1	25.8		56.5	40.9	0.3	25.6	38.9	28.5
LOS	F	B	A	B	C		E	D	A	C	D	C
Approach Delay		69.4			25.5			41.8			28.6	
Approach LOS		E			C			D			C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

Lanes, Volumes, Timings

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing AM
02/17/2022

Actuated Cycle Length: 120

Offset: 79 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 47.0

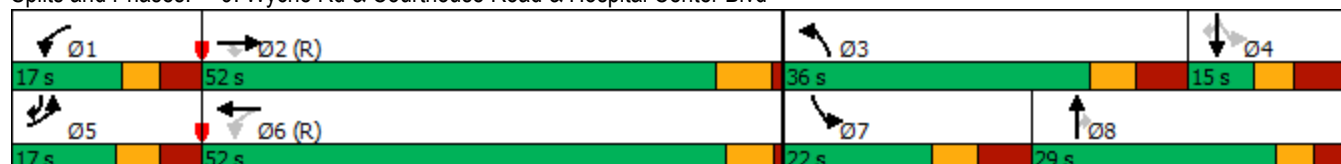
Intersection LOS: D

Intersection Capacity Utilization 42.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	457	81	17	497	9	53	7	19	5	7	346
Future Volume (veh/h)	276	457	81	17	497	9	53	7	19	5	7	346
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	1913	1913	1913	1767	1767	1767	1834	1834	1834	1876	1876	1876
Adj Flow Rate, veh/h	310	513	91	19	558	10	60	8	21	6	8	389
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	7	7	7	9	9	9	7	7	7	0	0	0
Cap, veh/h	271	3053	948	495	2549	46	122	47	40	286	187	494
Arrive On Green	0.08	0.58	0.58	0.02	0.52	0.52	0.04	0.03	0.03	0.11	0.10	0.10
Sat Flow, veh/h	3534	5222	1621	1682	4879	87	3389	1834	1554	1787	1876	2799
Grp Volume(v), veh/h	310	513	91	19	367	201	60	8	21	6	8	389
Grp Sat Flow(s),veh/h/ln	1767	1741	1621	1682	1608	1751	1695	1834	1554	1787	1876	1399
Q Serve(g_s), s	9.2	5.4	3.0	0.6	7.4	7.4	2.1	0.5	1.6	0.3	0.5	12.0
Cycle Q Clear(g_c), s	9.2	5.4	3.0	0.6	7.4	7.4	2.1	0.5	1.6	0.3	0.5	12.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	3053	948	495	1680	915	122	47	40	286	187	494
V/C Ratio(X)	1.14	0.17	0.10	0.04	0.22	0.22	0.49	0.17	0.52	0.02	0.04	0.79
Avail Cap(c_a), veh/h	271	3053	948	600	1680	915	768	333	282	286	187	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	11.5	11.0	12.7	15.4	15.5	56.8	57.2	57.7	43.3	48.8	47.3
Incr Delay (d2), s/veh	99.3	0.1	0.2	0.0	0.3	0.6	3.0	1.7	10.2	0.1	0.4	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	2.0	1.1	0.2	2.7	3.0	0.9	0.3	0.7	0.2	0.2	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	154.7	11.6	11.2	12.8	15.7	16.0	59.8	58.9	67.9	43.4	49.3	59.3
LnGrp LOS	F	B	B	B	B	B	E	E	E	D	D	E
Approach Vol, veh/h	914				587				89			
Approach Delay, s/veh	60.1				15.7				61.6			
Approach LOS	E				B				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	76.3	13.1	21.1	17.0	68.8	22.0	12.2				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 9.8	* 46	* 27	* 5.9	* 9.2	* 47	* 13	* 22				
Max Q Clear Time (g_c+I1), s	2.6	7.4	4.1	14.0	11.2	9.4	2.3	3.6				
Green Ext Time (p_c), s	0.0	7.9	0.2	0.0	0.0	7.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 46.8
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	3709	3567	3616	3653	3561	3611	3711
Vehs Exited	3711	3542	3643	3647	3547	3626	3718
Starting Vehs	167	145	165	146	130	162	155
Ending Vehs	165	170	138	152	144	147	148
Travel Distance (mi)	3375	3195	3289	3266	3196	3268	3369
Travel Time (hr)	166.0	155.4	155.2	155.9	154.0	159.0	169.6
Total Delay (hr)	65.9	60.3	57.4	58.3	59.1	62.0	69.6
Total Stops	4300	4144	4075	4194	3996	4138	4324
Fuel Used (gal)	131.6	123.3	125.8	125.6	123.6	126.6	131.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	3623	3660	3624	3635
Vehs Exited	3607	3688	3602	3630
Starting Vehs	153	174	135	155
Ending Vehs	169	146	157	153
Travel Distance (mi)	3273	3329	3282	3284
Travel Time (hr)	153.1	169.6	153.0	159.1
Total Delay (hr)	56.2	70.8	55.6	61.5
Total Stops	4066	4270	4205	4173
Fuel Used (gal)	125.7	130.7	126.5	127.0

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	873	847	839	895	885	885	919
Vehs Exited	895	849	865	904	860	909	900
Starting Vehs	167	145	165	146	130	162	155
Ending Vehs	145	143	139	137	155	138	174
Travel Distance (mi)	809	750	762	812	770	800	820
Travel Time (hr)	38.4	34.2	37.2	38.2	34.4	39.1	39.4
Total Delay (hr)	14.5	11.8	14.5	14.0	11.4	15.2	15.0
Total Stops	993	904	939	1032	934	1036	1033
Fuel Used (gal)	31.5	28.2	29.6	31.3	29.4	31.1	31.5

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	880	901	860	874
Vehs Exited	878	908	865	883
Starting Vehs	153	174	135	155
Ending Vehs	155	167	130	145
Travel Distance (mi)	786	797	791	790
Travel Time (hr)	36.1	39.9	35.1	37.2
Total Delay (hr)	12.8	15.9	11.8	13.7
Total Stops	964	1026	945	979
Fuel Used (gal)	30.1	31.6	29.8	30.4

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1024	957	975	943	942	1028	1002
Vehs Exited	974	914	943	904	910	977	979
Starting Vehs	145	143	139	137	155	138	174
Ending Vehs	195	186	171	176	187	189	197
Travel Distance (mi)	922	858	886	824	868	923	914
Travel Time (hr)	44.6	42.0	42.1	39.4	42.5	45.1	47.7
Total Delay (hr)	17.3	16.5	15.8	14.7	16.9	17.7	20.5
Total Stops	1209	1126	1143	1068	1113	1208	1222
Fuel Used (gal)	35.5	33.1	33.8	31.6	33.4	35.6	35.7

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	948	970	984	975
Vehs Exited	953	926	916	939
Starting Vehs	155	167	130	145
Ending Vehs	150	211	198	184
Travel Distance (mi)	862	889	874	882
Travel Time (hr)	41.9	47.1	41.8	43.4
Total Delay (hr)	16.3	20.7	15.8	17.2
Total Stops	1105	1211	1191	1161
Fuel Used (gal)	33.6	35.2	33.9	34.1

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	870	875	885	884	848	843	890
Vehs Exited	922	892	910	937	901	870	927
Starting Vehs	195	186	171	176	187	189	197
Ending Vehs	143	169	146	123	134	162	160
Travel Distance (mi)	836	800	820	811	786	775	827
Travel Time (hr)	42.1	39.9	38.4	39.1	40.2	37.8	43.6
Total Delay (hr)	17.4	16.2	13.9	14.8	17.0	15.0	19.0
Total Stops	1047	1066	1007	995	992	949	1040
Fuel Used (gal)	32.9	31.3	31.2	31.2	31.1	30.3	32.5

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	868	889	866	869
Vehs Exited	875	940	924	908
Starting Vehs	150	211	198	184
Ending Vehs	143	160	140	146
Travel Distance (mi)	787	824	803	807
Travel Time (hr)	36.0	43.7	38.0	39.9
Total Delay (hr)	12.7	19.4	14.2	16.0
Total Stops	913	1003	991	1000
Fuel Used (gal)	30.0	32.6	31.3	31.4

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	942	888	917	931	886	855	900
Vehs Exited	920	887	925	902	876	870	912
Starting Vehs	143	169	146	123	134	162	160
Ending Vehs	165	170	138	152	144	147	148
Travel Distance (mi)	808	787	820	818	771	769	809
Travel Time (hr)	40.9	39.2	37.5	39.3	36.8	37.0	38.9
Total Delay (hr)	16.8	15.8	13.3	14.8	13.8	14.2	15.0
Total Stops	1051	1048	986	1099	957	945	1029
Fuel Used (gal)	31.7	30.7	31.2	31.5	29.7	29.7	31.2

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	927	900	914	907
Vehs Exited	901	914	897	899
Starting Vehs	143	160	140	146
Ending Vehs	169	146	157	153
Travel Distance (mi)	839	818	814	805
Travel Time (hr)	39.2	38.9	38.0	38.6
Total Delay (hr)	14.5	14.7	13.8	14.7
Total Stops	1084	1030	1078	1028
Fuel Used (gal)	32.0	31.4	31.5	31.1

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	94	104	98	156	178	66	100	144	94	30
Average Queue (ft)	42	44	33	36	49	23	33	67	36	7
95th Queue (ft)	77	91	79	101	119	55	79	123	71	22
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)				0						
Queuing Penalty (veh)				0						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	LT	R
Maximum Queue (ft)	36	119	131	11	201	217	93	134	152	172	29
Average Queue (ft)	7	43	51	0	86	112	39	64	70	75	6
95th Queue (ft)	26	97	106	6	165	184	83	117	126	138	21
Link Distance (ft)		2357	2357		367	367	367		1421	1421	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	390			260				330			360
Storage Blk Time (%)					0						
Queuing Penalty (veh)					0						

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	198	103	89	111	107	103
Average Queue (ft)	118	41	25	51	63	66
95th Queue (ft)	191	87	68	103	107	111
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	21	1	1	10	21	16
Queuing Penalty (veh)	45	3	2	23	47	35
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	66	39	37	152	132
Average Queue (ft)	21	5	3	78	48
95th Queue (ft)	58	24	20	137	106
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	9	1	1	0	0
Queuing Penalty (veh)	20	2	1	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	43	38	39	126
Average Queue (ft)	3	8	5	47
95th Queue (ft)	22	30	24	104
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	131	116	101	180	180	149
Average Queue (ft)	93	70	44	137	110	70
95th Queue (ft)	131	116	89	186	172	128
Link Distance (ft)	36	36	36	34	34	34
Upstream Blk Time (%)	40	35	26	43	41	33
Queuing Penalty (veh)	72	63	48	83	79	63
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	51	41	29	133	139
Average Queue (ft)	11	7	4	56	69
95th Queue (ft)	38	29	20	107	121
Link Distance (ft)	38	38	38	154	154
Upstream Blk Time (%)	3	1	0	0	0
Queuing Penalty (veh)	6	2	1	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	50	46	40	260
Average Queue (ft)	11	9	5	132
95th Queue (ft)	36	33	25	222
Link Distance (ft)	77	77	77	255
Upstream Blk Time (%)	0	0	0	0
Queuing Penalty (veh)	0	0	0	1
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	B34	B34	WB	WB	WB	WB
Directions Served	L	L	T	T	T	R	T	T	L	T	T	TR
Maximum Queue (ft)	276	280	367	267	110	45	60	36	47	213	184	172
Average Queue (ft)	210	216	117	56	60	9	11	2	10	114	68	78
95th Queue (ft)	318	318	377	167	103	27	85	33	34	183	150	149
Link Distance (ft)			396	396	396		200	200		1487	1487	
Upstream Blk Time (%)			7	0			1	0				
Queuing Penalty (veh)			18	0			2	0				
Storage Bay Dist (ft)	285	285				260			230			225
Storage Blk Time (%)	1	10	8							0	0	
Queuing Penalty (veh)	2	15	22							0	0	

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	T	R	L	T	R	R
Maximum Queue (ft)	53	87	40	42	22	20	208	197
Average Queue (ft)	14	36	7	10	2	3	105	76
95th Queue (ft)	40	75	26	32	11	16	178	152
Link Distance (ft)			455			776		
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	395	395		275	250		425	425
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB
Directions Served	T	T	T
Maximum Queue (ft)	99	46	15
Average Queue (ft)	22	5	1
95th Queue (ft)	70	27	9
Link Distance (ft)	408	408	408
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	3		
Queuing Penalty (veh)	9		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB
Directions Served	T	T	T
Maximum Queue (ft)	34	55	59
Average Queue (ft)	2	4	8
95th Queue (ft)	14	28	35
Link Distance (ft)	413	413	413
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB
Directions Served	R
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	1325
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	134	48	13	69
Average Queue (ft)	24	4	1	18
95th Queue (ft)	83	26	10	63
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			0	0

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

20

19

Average Queue (ft)

0

1

95th Queue (ft)

8

9

Link Distance (ft)

184

190

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB
Directions Served	T	TR
Maximum Queue (ft)	84	2
Average Queue (ft)	7	0
95th Queue (ft)	43	3
Link Distance (ft)	506	506
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 27: Rt 630 & Courthouse Road

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

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	NE
Directions Served	R
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	3
Link Distance (ft)	217
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 663

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2022 Existing PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	317	0	0	391	156	0	0	0	257	0	304
Future Volume (vph)	120	317	0	0	391	156	0	0	0	257	0	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	22.0	72.5		13.0	63.5	42.0	22.5	22.5		42.0	42.0	22.0
Total Split (%)	14.7%	48.3%		8.7%	42.3%	28.0%	15.0%	15.0%		28.0%	28.0%	14.7%
Maximum Green (s)	13.0	63.5		4.0	54.5	33.0	13.5	13.5		33.0	33.0	13.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	104.3	113.3			95.8	123.4				18.7	18.7	36.2
Actuated g/C Ratio	0.70	0.76			0.64	0.82				0.12	0.12	0.24
v/c Ratio	0.19	0.13			0.19	0.13				0.66	0.29	0.25
Control Delay	6.3	5.4			4.5	2.6				69.7	1.3	0.9
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	6.3	5.4			4.5	2.6				69.7	1.3	0.9
LOS	A	A			A	A				E	A	A
Approach Delay		5.7			3.9						32.5	
Approach LOS		A			A						C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												

Lanes, Volumes, Timings

1: Driveway/Mine Road & Courthouse Road

2022 Existing PM
02/17/2022

Offset: 50 (33%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 14.8

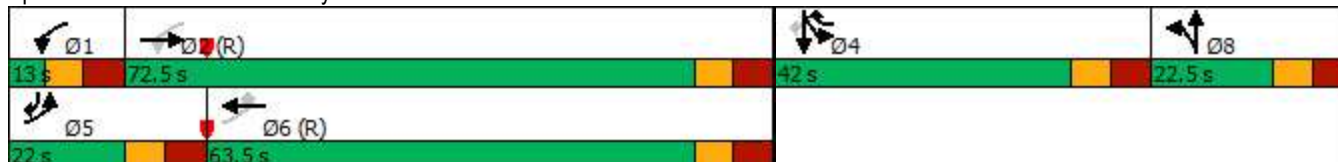
Intersection LOS: B

Intersection Capacity Utilization 47.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road



HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2022 Existing PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	317	0	0	391	156	0	0	0	257	0	304
Future Volume (veh/h)	120	317	0	0	391	156	0	0	0	257	0	304
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	133	345	0	0	425	170	0	0	0	279	0	330
Peak Hour Factor	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	643	2796	0	837	2433	1292	0	1	0	444	0	514
Arrive On Green	0.04	0.76	0.00	0.00	0.66	0.66	0.00	0.00	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	133	345	0	0	425	170	0	0	0	279	0	330
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	3.5	3.8	0.0	0.0	6.7	3.7	0.0	0.0	0.0	11.2	0.0	14.6
Cycle Q Clear(g_c), s	3.5	3.8	0.0	0.0	6.7	3.7	0.0	0.0	0.0	11.2	0.0	14.6
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	643	2796	0	837	2433	1292	0	1	0	444	0	514
V/C Ratio(X)	0.21	0.12	0.00	0.00	0.17	0.13	0.00	0.00	0.00	0.63	0.00	0.64
Avail Cap(c_a), veh/h	734	2796	0	885	2433	1292	0	168	0	781	0	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.96	0.96	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.7	5.0	0.0	0.0	10.0	4.0	0.0	0.0	0.0	62.3	0.0	58.7
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.0	1.5	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.3	0.0	0.0	2.6	2.1	0.0	0.0	0.0	5.1	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	5.1	0.0	0.0	10.1	4.2	0.0	0.0	0.0	63.8	0.0	60.0
LnGrp LOS	A	A	A	A	B	A	A	A	A	E	A	E
Approach Vol, veh/h	478				595				0			
Approach Delay, s/veh	5.8				8.4				0.0			
Approach LOS	A				A				E			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	122.3		27.7	14.7	107.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	63.5		33.0	13.0	54.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	5.8		16.6	5.5	8.7		0.0				
Green Ext Time (p_c), s	0.0	2.2		2.1	0.2	3.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	27.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2022 Existing PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	565	0	0	698	319	0	0	0	426	0	12
Future Volume (vph)	8	565	0	0	698	319	0	0	0	426	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							0%		0%	33%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split		Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	25.0	14.0	14.0	14.0
Total Split (s)	16.0	69.0		14.0	67.0	42.0	25.0	25.0	25.0	42.0	42.0	16.0
Total Split (%)	10.7%	46.0%		9.3%	44.7%	28.0%	16.7%	16.7%	16.7%	28.0%	28.0%	10.7%
Maximum Green (s)	7.0	60.0		5.0	58.0	33.0	16.0	16.0	16.0	33.0	33.0	7.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.5	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.5	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	105.8	111.2			102.3	135.6				20.8	20.8	35.6
Actuated g/C Ratio	0.71	0.74			0.68	0.90				0.14	0.14	0.24
v/c Ratio	0.02	0.22			0.30	0.23				0.67	0.66	0.03
Control Delay	3.8	3.5			15.2	0.5				68.3	74.8	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	3.8	3.5			15.2	0.5				68.3	74.8	0.1
LOS	A	A			B	A				E	E	A
Approach Delay		3.5			10.6						68.4	
Approach LOS		A			B						E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2022 Existing PM
02/17/2022

Actuated Cycle Length: 150

Offset: 149 (99%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 21.1

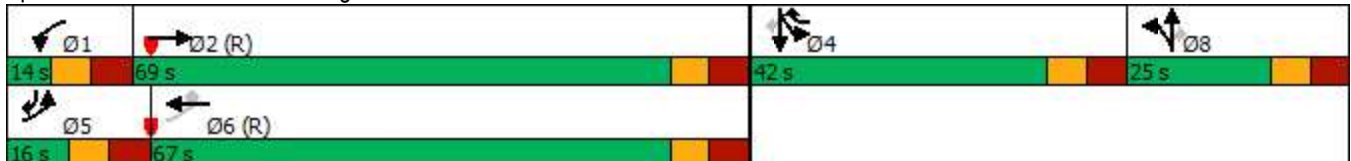
Intersection LOS: C

Intersection Capacity Utilization 42.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2022 Existing PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	565	0	0	698	319	0	0	0	426	0	12
Future Volume (veh/h)	8	565	0	0	698	319	0	0	0	426	0	12
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	1879	1879	1879	1832	1832	1832	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	8	589	0	0	727	332	0	0	0	444	0	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	401	2769	0	1	2458	1259	1	2	1	578	0	187
Arrive On Green	0.01	0.78	0.00	0.00	0.71	0.71	0.00	0.00	0.00	0.10	0.00	0.10
Sat Flow, veh/h	1790	3665	0	1745	3481	1553	1669	3506	1485	5525	0	1639
Grp Volume(v), veh/h	8	589	0	0	727	332	0	0	0	444	0	12
Grp Sat Flow(s),veh/h/ln	1790	1785	0	1745	1741	1553	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.2	6.7	0.0	0.0	11.6	7.7	0.0	0.0	0.0	11.7	0.0	1.0
Cycle Q Clear(g_c), s	0.2	6.7	0.0	0.0	11.6	7.7	0.0	0.0	0.0	11.7	0.0	1.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	2769	0	1	2458	1259	1	2	1	578	0	187
V/C Ratio(X)	0.02	0.21	0.00	0.00	0.30	0.26	0.00	0.00	0.00	0.77	0.00	0.06
Avail Cap(c_a), veh/h	468	2769	0	58	2458	1259	178	374	158	1215	0	376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.6	4.5	0.0	0.0	8.2	3.4	0.0	0.0	0.0	65.4	0.0	59.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.3	0.5	0.0	0.0	0.0	2.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.2	0.0	0.0	4.2	3.9	0.0	0.0	0.0	5.6	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	4.7	0.0	0.0	8.5	3.9	0.0	0.0	0.0	67.6	0.0	59.5
LnGrp LOS	A	A	A	A	A	A	A	A	A	E	A	E
Approach Vol, veh/h	597			1059			0			456		
Approach Delay, s/veh	4.7			7.1			0.0			67.4		
Approach LOS	A			A						E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	125.3		24.7	10.4	114.9		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	5.0	60.0		33.0	7.0	58.0		16.0				
Max Q Clear Time (g_c+I1), s	0.0	8.7		13.7	2.2	13.6		0.0				
Green Ext Time (p_c), s	0.0	22.4		1.9	0.0	18.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 19.4
HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
3: Courthouse Road

2022 Existing PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	717	0	0	0	0	0	0	0	0	852	0
Future Volume (vph)	0	717	0	0	0	0	0	0	0	0	852	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		78.0									72.0	
Total Split (%)		52.0%									48.0%	
Maximum Green (s)		71.0									65.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		71.0									65.0	
Actuated g/C Ratio		0.47									0.43	
v/c Ratio		0.32									0.41	
Control Delay		22.7									15.7	
Queue Delay		0.0									0.0	
Total Delay		22.7									15.7	
LOS		C									B	
Approach Delay		22.7									15.7	
Approach LOS		C									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.51												
Intersection Signal Delay: 18.9	Intersection LOS: B											

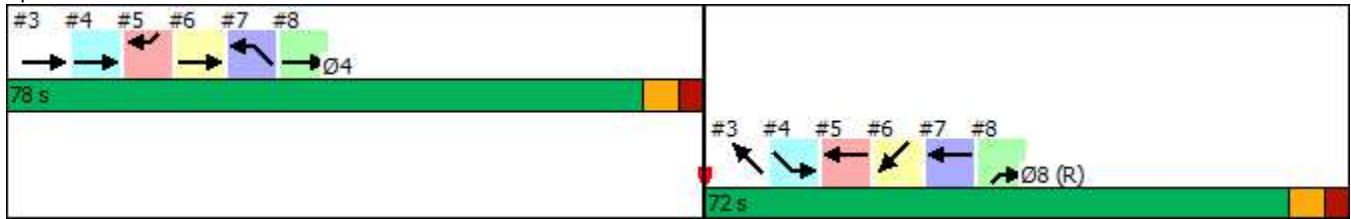
Lanes, Volumes, Timings
3: Courthouse Road

2022 Existing PM
02/17/2022

Intersection Capacity Utilization 42.0%
Analysis Period (min) 15

ICU Level of Service A

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

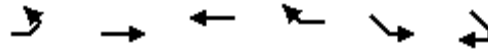
3: Courthouse Road

2022 Existing PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	717	0	0	0	0	0	0	0	0	852	0
Future Volume (vph)	0	717	0	0	0	0	0	0	0	0	852	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4960									5036	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4960									5036	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	747	0	0	0	0	0	0	0	0	888	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	747	0	0	0	0	0	0	0	0	888	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		71.0									65.0	
Effective Green, g (s)		71.0									65.0	
Actuated g/C Ratio		0.47									0.43	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2347									2182	
v/s Ratio Prot		c0.15									c0.18	
v/s Ratio Perm												
v/c Ratio		0.32									0.41	
Uniform Delay, d1		24.5									29.2	
Progression Factor		0.91									0.52	
Incremental Delay, d2		0.3									0.6	
Delay (s)		22.6									15.6	
Level of Service		C									B	
Approach Delay (s)		22.6			0.0			0.0			15.6	
Approach LOS		C			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		18.8			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.36										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		42.0%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	717	0	0	553	0
Future Volume (vph)	0	717	0	0	553	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		78.0			72.0	
Total Split (%)		52.0%			48.0%	
Maximum Green (s)		71.0			65.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		Max			C-Max	
Act Effct Green (s)		71.0			65.0	
Actuated g/C Ratio		0.47			0.43	
v/c Ratio		0.32			0.35	
Control Delay		0.9			15.2	
Queue Delay		0.2			0.0	
Total Delay		1.1			15.2	
LOS		A			B	
Approach Delay		1.1			15.2	
Approach LOS		A			B	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.51						
Intersection Signal Delay: 7.3	Intersection LOS: A					

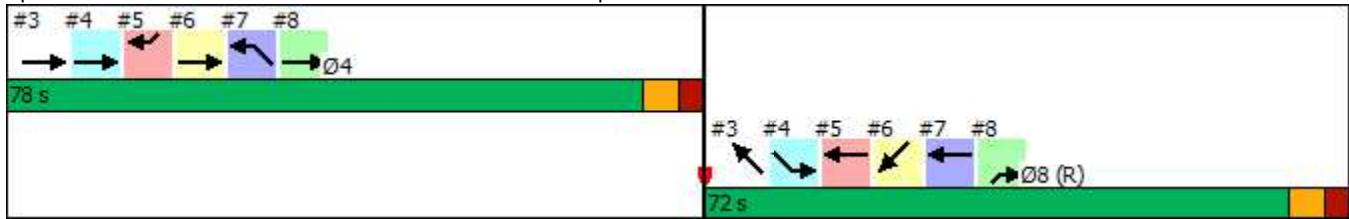
Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022

Intersection Capacity Utilization 41.3%
Analysis Period (min) 15

ICU Level of Service A

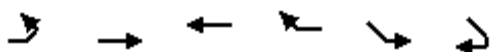
Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022

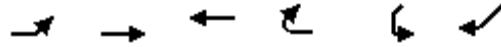


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	717	0	0	553	0
Future Volume (vph)	0	717	0	0	553	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4960			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4960			3433	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	747	0	0	576	0
RTOR Reduction (vph)	0	0	0	0	150	0
Lane Group Flow (vph)	0	747	0	0	426	0
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		71.0			65.0	
Effective Green, g (s)		71.0			65.0	
Actuated g/C Ratio		0.47			0.43	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		2347			1487	
v/s Ratio Prot		c0.15			c0.12	
v/s Ratio Perm						
v/c Ratio		0.32			0.29	
Uniform Delay, d1		24.5			27.5	
Progression Factor		0.02			1.00	
Incremental Delay, d2		0.3			0.5	
Delay (s)		0.9			28.0	
Level of Service		A			C	
Approach Delay (s)		0.9	0.0		28.0	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		12.7		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.30				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		41.3%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	852	0	0	165
Future Volume (vph)	0	0	852	0	0	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			72.0			78.0
Total Split (%)			48.0%			52.0%
Maximum Green (s)			65.0			71.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			C-Max			Max
Act Effect Green (s)			65.0			71.0
Actuated g/C Ratio			0.43			0.47
v/c Ratio			0.40			0.22
Control Delay			1.8			14.0
Queue Delay			0.1			0.0
Total Delay			1.9			14.0
LOS			A			B
Approach Delay			1.9		14.0	
Approach LOS			A		B	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.51						
Intersection Signal Delay: 3.8	Intersection LOS: A					

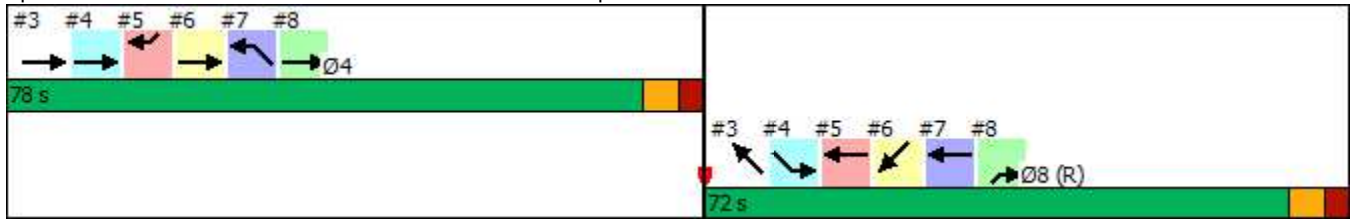
Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022

Intersection Capacity Utilization 42.0%
Analysis Period (min) 15

ICU Level of Service A

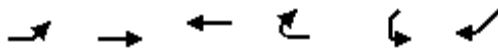
Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2022 Existing PM
02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	852	0	0	165
Future Volume (vph)	0	0	852	0	0	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			5111			1611
Flt Permitted			1.00			1.00
Satd. Flow (perm)			5111			1611
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	888	0	0	172
RTOR Reduction (vph)	0	0	0	0	0	37
Lane Group Flow (vph)	0	0	888	0	0	135
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			65.0			71.0
Effective Green, g (s)			65.0			71.0
Actuated g/C Ratio			0.43			0.47
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2214			762
v/s Ratio Prot			c0.17			c0.08
v/s Ratio Perm						
v/c Ratio			0.40			0.18
Uniform Delay, d1			29.1			22.7
Progression Factor			0.04			1.00
Incremental Delay, d2			0.5			0.5
Delay (s)			1.8			23.2
Level of Service			A			C
Approach Delay (s)		0.0	1.8		23.2	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			5.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.28			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			42.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

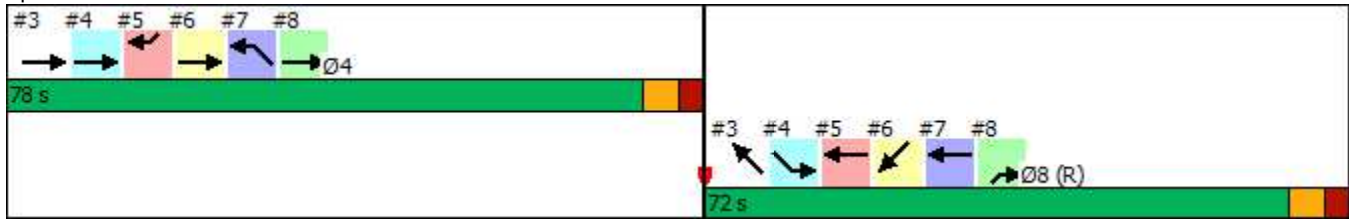
2022 Existing PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1159	0	0	0	0	0	0	0	0	702	0
Future Volume (vph)	0	1159	0	0	0	0	0	0	0	0	702	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		238			207			236			128	
Travel Time (s)		4.1			3.5			4.0			2.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		78.0									72.0	
Total Split (%)		52.0%									48.0%	
Maximum Green (s)		71.0									65.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		71.0									65.0	
Actuated g/C Ratio		0.47									0.43	
v/c Ratio		0.50									0.32	
Control Delay		20.1									27.7	
Queue Delay		0.0									0.0	
Total Delay		20.1									27.7	
LOS		C									C	
Approach Delay		20.1									27.7	
Approach LOS		C									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.51												
Intersection Signal Delay: 23.0	Intersection LOS: C											

Intersection Capacity Utilization 47.6%
Analysis Period (min) 15

ICU Level of Service A

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

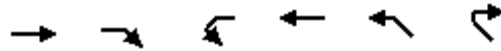
6: Courthouse Road & Rt.630 East

2022 Existing PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1159	0	0	0	0	0	0	0	0	702	0
Future Volume (vph)	0	1159	0	0	0	0	0	0	0	0	702	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5036									5111	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5036									5111	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1183	0	0	0	0	0	0	0	0	716	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1183	0	0	0	0	0	0	0	0	716	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		71.0									65.0	
Effective Green, g (s)		71.0									65.0	
Actuated g/C Ratio		0.47									0.43	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2383									2214	
v/s Ratio Prot		c0.23									c0.14	
v/s Ratio Perm												
v/c Ratio		0.50									0.32	
Uniform Delay, d1		27.2									28.0	
Progression Factor		0.71									0.97	
Incremental Delay, d2		0.7									0.4	
Delay (s)		20.0									27.6	
Level of Service		C									C	
Approach Delay (s)		20.0			0.0			0.0			27.6	
Approach LOS		C			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		22.9										
HCM 2000 Volume to Capacity ratio		0.41										
Actuated Cycle Length (s)		150.0									14.0	
Intersection Capacity Utilization		47.6%									A	
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2022 Existing PM
02/17/2022



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	702	324	0
Future Volume (vph)	0	0	0	702	324	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	478			236	215	
Travel Time (s)	8.1			4.0	4.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				72.0	78.0	
Total Split (%)				48.0%	52.0%	
Maximum Green (s)				65.0	71.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				C-Max	Max	
Act Effct Green (s)				65.0	71.0	
Actuated g/C Ratio				0.43	0.47	
v/c Ratio				0.32	0.19	
Control Delay				0.9	6.7	
Queue Delay				0.2	0.0	
Total Delay				1.0	6.7	
LOS				A	A	
Approach Delay				1.0	6.7	
Approach LOS				A	A	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.51						
Intersection Signal Delay: 2.8	Intersection LOS: A					

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

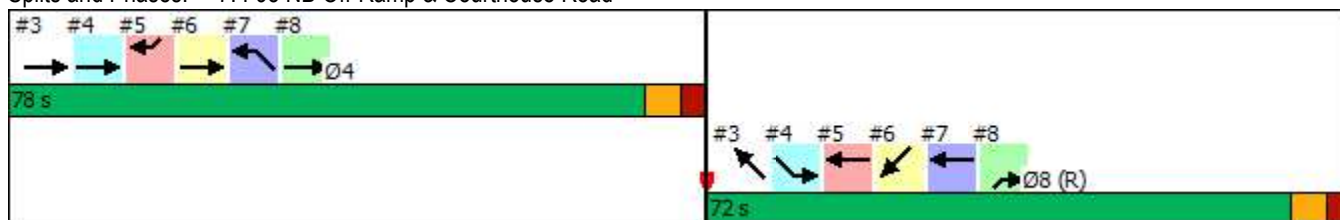
2022 Existing PM
02/17/2022

Intersection Capacity Utilization 34.5%

ICU Level of Service A

Analysis Period (min) 15

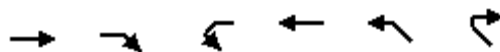
Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

7: I-95 NB Off-Ramp & Courthouse Road

2022 Existing PM
02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	702	324	0
Future Volume (vph)	0	0	0	702	324	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				5111	3400	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				5111	3400	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	716	331	0
RTOR Reduction (vph)	0	0	0	0	125	0
Lane Group Flow (vph)	0	0	0	716	206	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				65.0	71.0	
Effective Green, g (s)				65.0	71.0	
Actuated g/C Ratio				0.43	0.47	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2214	1609	
v/s Ratio Prot				c0.14	c0.06	
v/s Ratio Perm						
v/c Ratio				0.32	0.13	
Uniform Delay, d1				28.0	22.1	
Progression Factor				0.02	1.00	
Incremental Delay, d2				0.4	0.2	
Delay (s)				0.9	22.3	
Level of Service				A	C	
Approach Delay (s)	0.0			0.9	22.3	
Approach LOS	A			A	C	

Intersection Summary

HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

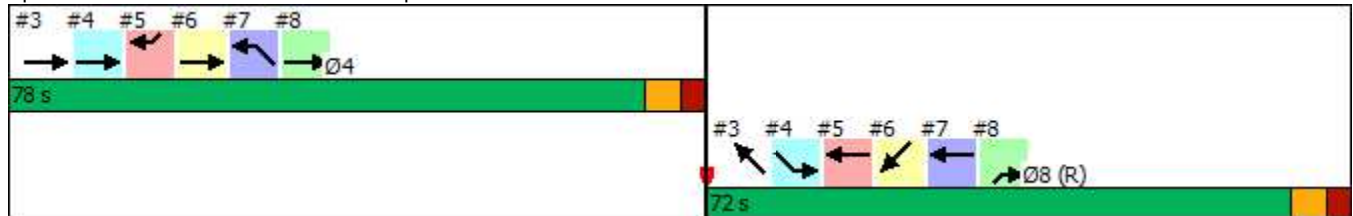
Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

2022 Existing PM
02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1159	0	0	0	0	188
Future Volume (vph)	1159	0	0	0	0	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	207			262	427	
Travel Time (s)	4.0			4.5	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	78.0					72.0
Total Split (%)	52.0%					48.0%
Maximum Green (s)	71.0					65.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	Max					C-Max
Act Effct Green (s)	71.0					65.0
Actuated g/C Ratio	0.47					0.43
v/c Ratio	0.51					0.27
Control Delay	1.9					22.8
Queue Delay	0.0					0.0
Total Delay	1.9					22.8
LOS	A					C
Approach Delay	1.9				22.8	
Approach LOS	A				C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.51						
Intersection Signal Delay: 4.8				Intersection LOS: A		
Intersection Capacity Utilization 47.6%				ICU Level of Service A		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis
8: I-95 NB Off-Ramp & Courthouse Road

2022 Existing PM
02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1159	0	0	0	0	188
Future Volume (vph)	1159	0	0	0	0	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1596
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1596
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1183	0	0	0	0	192
RTOR Reduction (vph)	0	0	0	0	0	22
Lane Group Flow (vph)	1183	0	0	0	0	170
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	71.0					65.0
Effective Green, g (s)	71.0					65.0
Actuated g/C Ratio	0.47					0.43
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2338					691
v/s Ratio Prot	c0.24					c0.11
v/s Ratio Perm						
v/c Ratio	0.51					0.25
Uniform Delay, d1	27.4					27.0
Progression Factor	0.04					1.00
Incremental Delay, d2	0.7					0.9
Delay (s)	1.9					27.8
Level of Service	A					C
Approach Delay (s)	1.9			0.0	27.8	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay		5.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.38				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		47.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	1013	34	12	488	14	67	11	23	13	9	383
Future Volume (vph)	300	1013	34	12	488	14	67	11	23	13	9	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		1	2		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0		13.8	48.2	48.2	14.8	14.1	12.8
Total Split (s)	27.0	73.0	73.0	13.0	59.0		44.0	28.0	28.0	36.0	20.0	27.0
Total Split (%)	18.0%	48.7%	48.7%	8.7%	39.3%		29.3%	18.7%	18.7%	24.0%	13.3%	18.0%
Maximum Green (s)	19.2	66.9	66.9	5.8	53.8		35.2	20.8	20.8	27.2	10.9	19.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2		4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0		4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2		8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	Max	Max	None
Walk Time (s)								8.0	8.0			
Flash Dont Walk (s)								33.0	33.0			
Pedestrian Calls (#/hr)								0	0			
Act Effct Green (s)	18.2	74.7	74.7	58.5	54.8		8.8	14.7	14.7	55.2	37.3	64.6
Actuated g/C Ratio	0.12	0.50	0.50	0.39	0.37		0.06	0.10	0.10	0.37	0.25	0.43
v/c Ratio	0.79	0.44	0.04	0.06	0.30		0.38	0.07	0.08	0.03	0.02	0.35
Control Delay	49.6	19.7	1.3	19.2	34.5		73.0	57.7	0.4	30.5	44.1	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	19.7	1.3	19.2	34.5		73.0	57.7	0.4	30.5	44.1	29.8
LOS	D	B	A	B	C		E	E	A	C	D	C
Approach Delay		25.9			34.1			54.9			30.2	
Approach LOS		C			C			D			C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing PM
02/17/2022

Actuated Cycle Length: 150

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.7

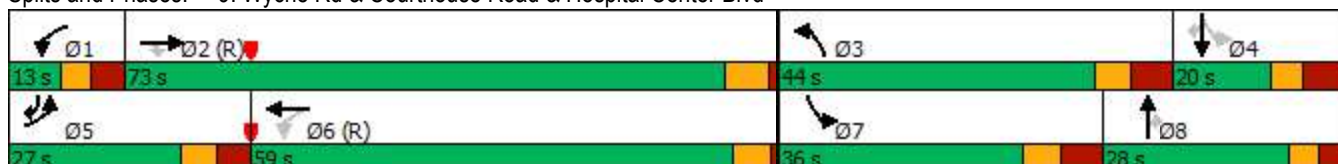
Intersection LOS: C

Intersection Capacity Utilization 49.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2022 Existing PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 				 	 
Traffic Volume (veh/h)	300	1013	34	12	488	14	67	11	23	13	9	383
Future Volume (veh/h)	300	1013	34	12	488	14	67	11	23	13	9	383
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	1958	1958	1958	1841	1841	1841	1849	1849	1849	1832	1832	1832
Adj Flow Rate, veh/h	326	1101	37	13	530	15	73	12	25	14	10	416
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	6	6	6	3	3	3
Cap, veh/h	379	3050	947	296	2389	67	118	48	41	391	317	759
Arrive On Green	0.10	0.57	0.57	0.01	0.48	0.48	0.03	0.03	0.03	0.18	0.17	0.17
Sat Flow, veh/h	3618	5345	1659	1753	5024	142	3417	1849	1567	1745	1832	2732
Grp Volume(v), veh/h	326	1101	37	13	353	192	73	12	25	14	10	416
Grp Sat Flow(s),veh/h/ln	1809	1782	1659	1753	1675	1815	1708	1849	1567	1745	1832	1366
Q Serve(g_s), s	13.3	16.7	1.5	0.6	9.3	9.3	3.2	1.0	2.4	0.9	0.7	19.5
Cycle Q Clear(g_c), s	13.3	16.7	1.5	0.6	9.3	9.3	3.2	1.0	2.4	0.9	0.7	19.5
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	379	3050	947	296	1593	863	118	48	41	391	317	759
V/C Ratio(X)	0.86	0.36	0.04	0.04	0.22	0.22	0.62	0.25	0.61	0.04	0.03	0.55
Avail Cap(c_a), veh/h	463	3050	947	339	1593	863	802	256	217	391	317	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.1	17.4	14.1	19.7	23.0	23.1	71.4	71.6	72.3	45.9	51.6	46.1
Incr Delay (d2), s/veh	12.9	0.3	0.1	0.1	0.3	0.6	5.2	2.6	13.7	0.2	0.2	2.8
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	6.8	6.8	0.6	0.2	3.7	4.1	1.5	0.5	1.1	0.4	0.3	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.0	17.8	14.2	19.8	23.4	23.7	76.7	74.2	86.0	46.1	51.8	49.0
LnGrp LOS	E	B	B	B	C	C	E	E	F	D	D	D
Approach Vol, veh/h	1464		558				110			440		
Approach Delay, s/veh	31.3		23.4				78.5			48.9		
Approach LOS	C		C				E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	91.7	14.0	35.1	23.5	77.4	36.0	13.0				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 5.8	* 67	* 35	* 11	* 19	* 54	* 27	* 21				
Max Q Clear Time (g_c+I1), s	2.6	18.7	5.2	21.5	15.3	11.3	2.9	4.4				
Green Ext Time (p_c), s	0.0	19.7	0.3	0.0	0.4	7.2	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	3891	3845	3870	3907	3926	3823	3915
Vehs Exited	3879	3888	3882	3878	3939	3842	3901
Starting Vehs	198	225	202	162	223	228	181
Ending Vehs	210	182	190	191	210	209	195
Travel Distance (mi)	3814	3782	3805	3829	3847	3772	3805
Travel Time (hr)	191.6	190.0	191.6	191.4	194.3	190.1	192.1
Total Delay (hr)	77.8	77.2	77.8	77.1	79.4	77.6	78.4
Total Stops	5046	4965	4981	4986	5124	4914	5012
Fuel Used (gal)	148.3	147.3	149.2	149.3	151.4	147.7	149.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	3862	3855	3974	3888
Vehs Exited	3889	3845	3976	3894
Starting Vehs	220	178	204	199
Ending Vehs	193	188	202	193
Travel Distance (mi)	3706	3741	3881	3798
Travel Time (hr)	185.4	185.3	195.3	190.7
Total Delay (hr)	74.5	73.6	79.1	77.2
Total Stops	4841	4815	5080	4971
Fuel Used (gal)	144.7	146.1	153.4	148.7

Interval #0 Information Seeding

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	986	944	970	939	939	879	956
Vehs Exited	988	981	986	905	968	920	939
Starting Vehs	198	225	202	162	223	228	181
Ending Vehs	196	188	186	196	194	187	198
Travel Distance (mi)	983	926	976	914	944	909	924
Travel Time (hr)	49.8	46.6	49.1	45.5	47.4	45.2	45.5
Total Delay (hr)	20.5	18.7	20.1	18.4	19.3	18.0	17.9
Total Stops	1291	1222	1287	1195	1254	1149	1174
Fuel Used (gal)	38.3	36.2	38.6	35.8	37.1	35.5	35.7

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	927	960	928	939
Vehs Exited	955	931	932	949
Starting Vehs	220	178	204	199
Ending Vehs	192	207	200	187
Travel Distance (mi)	901	928	931	934
Travel Time (hr)	45.2	46.6	45.6	46.7
Total Delay (hr)	18.3	18.9	17.9	18.8
Total Stops	1167	1234	1171	1218
Fuel Used (gal)	35.2	36.1	36.3	36.5

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1040	1025	980	1057	1058	1083	1072
Vehs Exited	1038	1012	988	1015	1034	1067	1057
Starting Vehs	196	188	186	196	194	187	198
Ending Vehs	198	201	178	238	218	203	213
Travel Distance (mi)	1014	982	952	997	997	1032	1015
Travel Time (hr)	51.6	49.6	47.2	50.9	49.7	53.3	51.6
Total Delay (hr)	21.3	20.4	18.8	21.0	19.8	22.5	21.2
Total Stops	1376	1310	1225	1356	1328	1413	1380
Fuel Used (gal)	39.6	38.5	37.2	38.8	39.0	40.9	39.8

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	996	1027	1108	1046
Vehs Exited	1001	1038	1072	1031
Starting Vehs	192	207	200	187
Ending Vehs	187	196	236	198
Travel Distance (mi)	937	975	1034	993
Travel Time (hr)	46.4	47.9	53.2	50.1
Total Delay (hr)	18.4	18.7	22.1	20.4
Total Stops	1221	1252	1395	1322
Fuel Used (gal)	36.2	37.9	41.2	38.9

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	935	947	977	955	958	929	960
Vehs Exited	937	940	945	1004	984	927	956
Starting Vehs	198	201	178	238	218	203	213
Ending Vehs	196	208	210	189	192	205	217
Travel Distance (mi)	931	938	943	973	965	927	945
Travel Time (hr)	45.7	47.5	48.0	48.2	49.9	47.0	47.5
Total Delay (hr)	18.0	19.6	19.7	19.2	21.0	19.3	19.2
Total Stops	1209	1215	1276	1226	1308	1220	1221
Fuel Used (gal)	36.0	36.9	37.2	38.0	38.6	36.2	37.2

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	972	932	935	949
Vehs Exited	950	924	978	955
Starting Vehs	187	196	236	198
Ending Vehs	209	204	193	197
Travel Distance (mi)	926	913	936	940
Travel Time (hr)	46.9	45.6	48.1	47.4
Total Delay (hr)	19.0	18.2	20.0	19.3
Total Stops	1229	1178	1257	1234
Fuel Used (gal)	36.5	36.1	37.4	37.0

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	930	929	943	956	971	932	927
Vehs Exited	916	955	963	954	953	928	949
Starting Vehs	196	208	210	189	192	205	217
Ending Vehs	210	182	190	191	210	209	195
Travel Distance (mi)	886	935	935	945	942	905	921
Travel Time (hr)	44.5	46.3	47.3	46.7	47.3	44.8	47.5
Total Delay (hr)	18.0	18.5	19.3	18.5	19.2	17.8	20.1
Total Stops	1170	1218	1193	1209	1234	1132	1237
Fuel Used (gal)	34.4	35.7	36.2	36.8	36.8	35.2	36.6

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	967	936	1003	949
Vehs Exited	983	952	994	958
Starting Vehs	209	204	193	197
Ending Vehs	193	188	202	193
Travel Distance (mi)	942	925	981	932
Travel Time (hr)	46.9	45.3	48.4	46.5
Total Delay (hr)	18.7	17.7	19.1	18.7
Total Stops	1224	1151	1257	1200
Fuel Used (gal)	36.8	36.0	38.6	36.3

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	110	98	72	127	149	92	198	224	137	72
Average Queue (ft)	46	34	20	36	55	23	88	136	56	14
95th Queue (ft)	91	78	56	100	132	65	181	200	105	38
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)				0						
Queuing Penalty (veh)				0						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	LT	R
Maximum Queue (ft)	25	92	104	229	253	96	200	234	220	20
Average Queue (ft)	3	29	36	120	147	45	101	137	126	6
95th Queue (ft)	16	68	83	200	225	89	177	205	200	18
Link Distance (ft)		2357	2357	367	367	367		1421	1421	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	390						330			360
Storage Blk Time (%)				0			0	0		
Queuing Penalty (veh)				0			0	0		

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	186	159	133	118	115	110
Average Queue (ft)	122	87	74	71	82	78
95th Queue (ft)	183	142	122	123	122	118
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	23	12	9	21	32	26
Queuing Penalty (veh)	54	28	21	59	91	75
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	34	21	2	244	226
Average Queue (ft)	4	1	0	174	146
95th Queue (ft)	21	10	3	251	215
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	0			7	2
Queuing Penalty (veh)	1			21	6
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	35	37	37	198
Average Queue (ft)	4	5	5	84
95th Queue (ft)	22	23	23	158
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)				0
Queuing Penalty (veh)				1
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	129	128	120	163	162	159
Average Queue (ft)	110	108	102	107	115	83
95th Queue (ft)	119	121	123	162	165	144
Link Distance (ft)	36	36	36	34	34	34
Upstream Blk Time (%)	41	39	36	43	45	39
Queuing Penalty (veh)	158	150	140	101	104	90
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	31	23	25	171	186
Average Queue (ft)	5	2	3	75	92
95th Queue (ft)	22	14	16	138	153
Link Distance (ft)	38	38	38	154	154
Upstream Blk Time (%)	1	0	0	1	1
Queuing Penalty (veh)	2	1	1	1	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	84	72	54	223
Average Queue (ft)	26	9	7	100
95th Queue (ft)	74	42	32	182
Link Distance (ft)	77	77	77	255
Upstream Blk Time (%)	3	1	0	0
Queuing Penalty (veh)	11	2	1	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	R	L	T	T	TR	L	L
Maximum Queue (ft)	218	221	165	135	144	19	34	220	199	170	99	123
Average Queue (ft)	114	133	36	29	43	2	9	136	98	79	21	51
95th Queue (ft)	195	203	113	86	101	10	30	208	187	151	63	103
Link Distance (ft)			396	396	396			1487	1487			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	285	285				260	230			225	395	395
Storage Blk Time (%)	0	0	0					0	0			
Queuing Penalty (veh)	0	1	0					0	0			

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	R	R
Maximum Queue (ft)	50	59	37	39	244	213
Average Queue (ft)	12	13	6	6	135	94
95th Queue (ft)	38	39	24	27	221	182
Link Distance (ft)	455			776		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		275	250		425	425
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB
Directions Served	T	T	T
Maximum Queue (ft)	224	196	165
Average Queue (ft)	123	103	62
95th Queue (ft)	196	179	141
Link Distance (ft)	408	408	408
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	27		
Queuing Penalty (veh)	30		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	7	70	88	92
Average Queue (ft)	0	9	17	18
95th Queue (ft)	7	43	59	62
Link Distance (ft)		413	413	413
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		2		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB
Directions Served	T
Maximum Queue (ft)	3
Average Queue (ft)	0
95th Queue (ft)	3
Link Distance (ft)	1325
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	55	39	22	52
Average Queue (ft)	5	2	1	4
95th Queue (ft)	30	19	14	28
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			0	0

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

SB

SB

Directions Served

T

T

Maximum Queue (ft)

74

26

Average Queue (ft)

6

1

95th Queue (ft)

37

16

Link Distance (ft)

1213

1213

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

8

78

Average Queue (ft)

0

3

95th Queue (ft)

5

47

Link Distance (ft)

184

190

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB
Directions Served	T	TR
Maximum Queue (ft)	38	9
Average Queue (ft)	2	0
95th Queue (ft)	17	7
Link Distance (ft)	506	506
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 27: Rt 630 & Courthouse Road

Movement	SE	SE
Directions Served	T	T
Maximum Queue (ft)	39	41
Average Queue (ft)	1	1
95th Queue (ft)	39	39
Link Distance (ft)	367	367
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	B34	NE	NE	NE
Directions Served	T	R	R	R
Maximum Queue (ft)	42	24	29	12
Average Queue (ft)	2	1	1	0
95th Queue (ft)	43	18	18	11
Link Distance (ft)	396	217	217	217
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1154

Appendix G

No Build (2024) Capacity Analysis

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2024 No Build AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	867	0	0	689	274	0	0	0	211	0	209
Future Volume (vph)	150	867	0	0	689	274	0	0	0	211	0	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	17.0	61.5		13.0	57.5	23.0	22.5	22.5		23.0	23.0	17.0
Total Split (%)	14.2%	51.3%		10.8%	47.9%	19.2%	18.8%	18.8%		19.2%	19.2%	14.2%
Maximum Green (s)	8.0	52.5		4.0	48.5	14.0	13.5	13.5		14.0	14.0	8.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	80.3	89.3			71.7	93.4				12.7	12.7	30.3
Actuated g/C Ratio	0.67	0.74			0.60	0.78				0.11	0.11	0.25
v/c Ratio	0.32	0.35			0.35	0.23				0.63	0.24	0.19
Control Delay	6.7	5.9			23.1	3.4				59.6	1.2	0.7
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	6.7	5.9			23.1	3.4				59.6	1.2	0.7
LOS	A	A			C	A				E	A	A
Approach Delay		6.0			17.5						30.4	
Approach LOS		A			B						C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												

Lanes, Volumes, Timings

1: Driveway/Mine Road & Courthouse Road

2024 No Build AM
02/17/2022

Offset: 80 (67%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 55.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
13 s	61.5 s	23 s	22.5 s
 Ø5	 Ø6 (R)		
17 s	57.5 s		

HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2024 No Build AM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	867	0	0	689	274	0	0	0	211	0	209
Future Volume (veh/h)	150	867	0	0	689	274	0	0	0	211	0	209
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	163	942	0	0	749	298	0	0	0	229	0	227
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	2817	0	483	2364	1201	0	2	0	317	0	432
Arrive On Green	0.05	0.76	0.00	0.00	0.64	0.64	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	163	942	0	0	749	298	0	0	0	229	0	227
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	3.6	9.8	0.0	0.0	11.0	7.2	0.0	0.0	0.0	7.5	0.0	8.0
Cycle Q Clear(g_c), s	3.6	9.8	0.0	0.0	11.0	7.2	0.0	0.0	0.0	7.5	0.0	8.0
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	2817	0	483	2364	1201	0	2	0	317	0	432
V/C Ratio(X)	0.36	0.33	0.00	0.00	0.32	0.25	0.00	0.00	0.00	0.72	0.00	0.53
Avail Cap(c_a), veh/h	491	2817	0	543	2364	1201	0	210	0	414	0	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.87	0.87	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	4.6	0.0	0.0	9.8	5.4	0.0	0.0	0.0	53.2	0.0	48.2
Incr Delay (d2), s/veh	0.5	0.3	0.0	0.0	0.3	0.4	0.0	0.0	0.0	4.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.9	0.0	0.0	4.1	3.2	0.0	0.0	0.0	3.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	4.9	0.0	0.0	10.1	5.9	0.0	0.0	0.0	57.5	0.0	49.2
LnGrp LOS	A	A	A	A	B	A	A	A	A	E	A	D
Approach Vol, veh/h	1105				1047				0			
Approach Delay, s/veh	5.3				8.9				0.0			
Approach LOS	A				A				D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	100.3		19.7	14.7	85.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	52.5		14.0	8.0	48.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	11.8		10.0	5.6	13.0		0.0				
Green Ext Time (p_c), s	0.0	7.3		0.7	0.1	6.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay 15.2

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

2: Austin Ridge Drive & Courthouse Road

2024 No Build AM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1034	37	202	893	457	9	3	54	500	12	17
Future Volume (vph)	19	1034	37	202	893	457	9	3	54	500	12	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	32%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	47.0		25.0	58.0	23.0	25.0	25.0	25.0	23.0	23.0	14.0
Total Split (%)	11.7%	39.2%		20.8%	48.3%	19.2%	20.8%	20.8%	20.8%	19.2%	19.2%	11.7%
Maximum Green (s)	5.0	38.0		16.0	49.0	14.0	16.0	16.0	16.0	14.0	14.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	73.1	46.2		23.3	69.2	95.8	6.3	6.3	32.8	14.0	14.0	23.8
Actuated g/C Ratio	0.61	0.38		0.19	0.58	0.80	0.05	0.05	0.27	0.12	0.12	0.20
v/c Ratio	0.07	0.87		0.68	0.50	0.38	0.11	0.12	0.06	0.98	0.99	0.04
Control Delay	9.2	44.9		53.1	26.1	1.1	56.4	0.9	0.2	95.8	116.2	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	44.9		53.1	26.1	1.1	56.4	0.9	0.2	95.8	116.2	0.1
LOS	A	D		D	C	A	E	A	A	F	F	A
Approach Delay		44.3			22.3			7.6			99.4	
Approach LOS		D			C			A			F	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2024 No Build AM
02/17/2022

Actuated Cycle Length: 120

Offset: 117 (98%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 42.0

Intersection LOS: D

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road

 Ø1				 Ø2 (R)				 Ø4				 Ø8			
25 s				47 s				23 s				25 s			
 Ø5				 Ø6 (R)											
14 s				58 s											

HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 No Build AM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1034	37	202	893	457	9	3	54	500	12	17
Future Volume (veh/h)	19	1034	37	202	893	457	9	3	54	500	12	17
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	1850	1850	1850	1758	1758	1758	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	21	1124	40	220	971	497	7	14	59	552	0	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	6	6	6	0	0	0	3	3	3
Cap, veh/h	215	1428	51	223	1753	954	65	68	511	638	0	224
Arrive On Green	0.02	0.41	0.41	0.13	0.52	0.52	0.04	0.04	0.04	0.12	0.00	0.12
Sat Flow, veh/h	1762	3461	123	1674	3340	1490	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	21	570	594	220	971	497	7	14	59	552	0	18
Grp Sat Flow(s),veh/h/ln	1762	1757	1827	1674	1670	1490	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.7	33.9	33.9	15.7	23.4	21.6	0.5	0.9	2.0	11.8	0.0	1.2
Cycle Q Clear(g_c), s	0.7	33.9	33.9	15.7	23.4	21.6	0.5	0.9	2.0	11.8	0.0	1.2
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	725	754	223	1753	954	65	68	511	638	0	224
V/C Ratio(X)	0.10	0.79	0.79	0.99	0.55	0.52	0.11	0.21	0.12	0.87	0.00	0.08
Avail Cap(c_a), veh/h	251	725	754	223	1753	954	223	234	792	645	0	226
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	30.7	30.7	51.9	19.1	11.7	55.7	55.9	42.0	52.2	0.0	45.2
Incr Delay (d2), s/veh	0.2	7.8	7.5	55.9	1.3	2.0	0.7	1.5	0.1	11.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.3	15.9	9.9	8.9	9.9	0.2	0.4	0.7	6.0	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	38.5	38.2	107.8	20.4	13.7	56.4	57.4	42.1	63.9	0.0	45.4
LnGrp LOS	B	D	D	F	C	B	E	E	D	E	A	D
Approach Vol, veh/h	1185				1688		80				570	
Approach Delay, s/veh	37.9				29.8		46.0				63.4	
Approach LOS	D				C		D				E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	58.5		22.9	11.5	72.0		13.7				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	16.0	38.0		14.0	5.0	49.0		16.0				
Max Q Clear Time (g_c+I1), s	17.7	35.9		13.8	2.7	25.4		4.0				
Green Ext Time (p_c), s	0.0	2.0		0.1	0.0	17.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	38.3											
HCM 6th LOS	D											
Notes												
User approved volume balancing among the lanes for turning movement.												

Lanes, Volumes, Timings
3: Courthouse Road

2024 No Build AM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1149	0	0	0	0	0	0	0	0	1278	0
Future Volume (vph)	0	1149	0	0	0	0	0	0	0	0	1278	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		52.0									68.0	
Total Split (%)		43.3%									56.7%	
Maximum Green (s)		45.0									61.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
v/c Ratio		0.68									0.56	
Control Delay		42.3									16.8	
Queue Delay		0.0									0.0	
Total Delay		42.3									16.8	
LOS		D									B	
Approach Delay		42.3									16.8	
Approach LOS		D									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 28.9	Intersection LOS: C											

Lanes, Volumes, Timings
3: Courthouse Road

2024 No Build AM

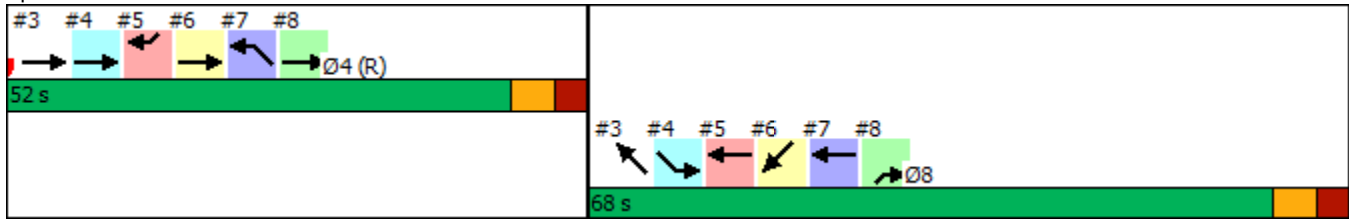
02/17/2022

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

3: Courthouse Road

2024 No Build AM

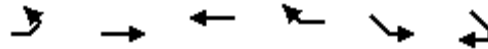
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1149	0	0	0	0	0	0	0	0	1278	0
Future Volume (vph)	0	1149	0	0	0	0	0	0	0	0	1278	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4866									4848	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4866									4848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1249	0	0	0	0	0	0	0	0	1389	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1249	0	0	0	0	0	0	0	0	1389	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		45.0									61.0	
Effective Green, g (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1824									2464	
v/s Ratio Prot		c0.26									c0.29	
v/s Ratio Perm												
v/c Ratio		0.68									0.56	
Uniform Delay, d1		31.5									20.3	
Progression Factor		1.30									0.78	
Incremental Delay, d2		1.1									0.3	
Delay (s)		42.0									16.1	
Level of Service		D									B	
Approach Delay (s)		42.0			0.0			0.0			16.1	
Approach LOS		D			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		28.4			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		58.6%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1149	0	0	477	0
Future Volume (vph)	0	1149	0	0	477	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		52.0			68.0	
Total Split (%)		43.3%			56.7%	
Maximum Green (s)		45.0			61.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		C-Max			None	
Act Effct Green (s)		45.0			61.0	
Actuated g/C Ratio		0.38			0.51	
v/c Ratio		0.68			0.31	
Control Delay		1.7			17.1	
Queue Delay		0.0			0.0	
Total Delay		1.7			17.1	
LOS		A			B	
Approach Delay		1.7			17.1	
Approach LOS		A			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 6.2

Intersection LOS: A

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM

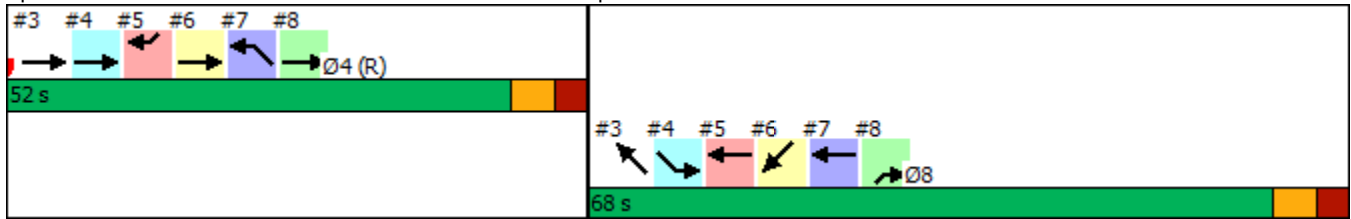
02/17/2022

Intersection Capacity Utilization 47.5%

ICU Level of Service A

Analysis Period (min) 15

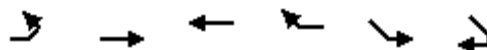
Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM
02/17/2022

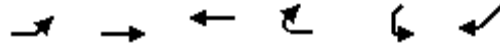


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1149	0	0	477	0
Future Volume (vph)	0	1149	0	0	477	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4866			3242	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4866			3242	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1249	0	0	518	0
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	1249	0	0	507	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		45.0			61.0	
Effective Green, g (s)		45.0			61.0	
Actuated g/C Ratio		0.38			0.51	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1824			1648	
v/s Ratio Prot		c0.26			c0.16	
v/s Ratio Perm						
v/c Ratio		0.68			0.31	
Uniform Delay, d1		31.5			17.2	
Progression Factor		0.01			1.00	
Incremental Delay, d2		1.5			0.1	
Delay (s)		1.7			17.3	
Level of Service		A			B	
Approach Delay (s)		1.7	0.0		17.3	
Approach LOS		A	A		B	
Intersection Summary						
HCM 2000 Control Delay		6.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.47				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		47.5%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1278	0	0	274
Future Volume (vph)	0	0	1278	0	0	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			68.0			52.0
Total Split (%)			56.7%			43.3%
Maximum Green (s)			61.0			45.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			None			C-Max
Act Effect Green (s)			61.0			45.0
Actuated g/C Ratio			0.51			0.38
v/c Ratio			0.56			0.51
Control Delay			2.2			29.8
Queue Delay			0.0			0.0
Total Delay			2.2			29.8
LOS			A			C
Approach Delay			2.2		29.8	
Approach LOS			A		C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 7.1	Intersection LOS: A					

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM

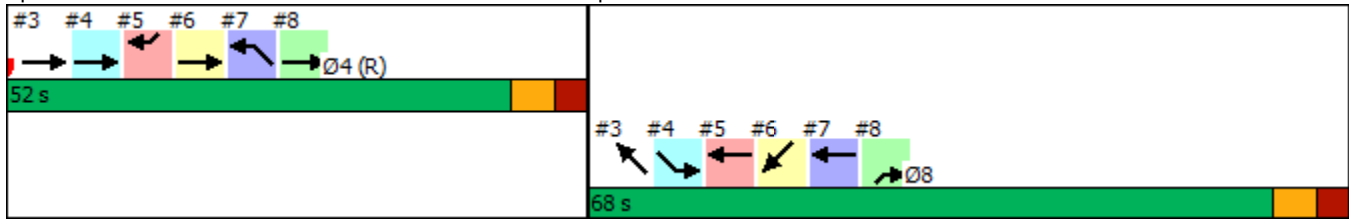
02/17/2022

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build AM

02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↗
Traffic Volume (vph)	0	0	1278	0	0	274
Future Volume (vph)	0	0	1278	0	0	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			4920			1522
Flt Permitted			1.00			1.00
Satd. Flow (perm)			4920			1522
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1389	0	0	298
RTOR Reduction (vph)	0	0	0	0	0	17
Lane Group Flow (vph)	0	0	1389	0	0	281
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			61.0			45.0
Effective Green, g (s)			61.0			45.0
Actuated g/C Ratio			0.51			0.38
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2501			570
v/s Ratio Prot			c0.28			c0.18
v/s Ratio Perm						
v/c Ratio			0.56			0.49
Uniform Delay, d1			20.2			28.8
Progression Factor			0.07			1.00
Incremental Delay, d2			0.2			3.0
Delay (s)			1.7			31.8
Level of Service			A			C
Approach Delay (s)		0.0	1.7		31.8	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			7.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

2024 No Build AM

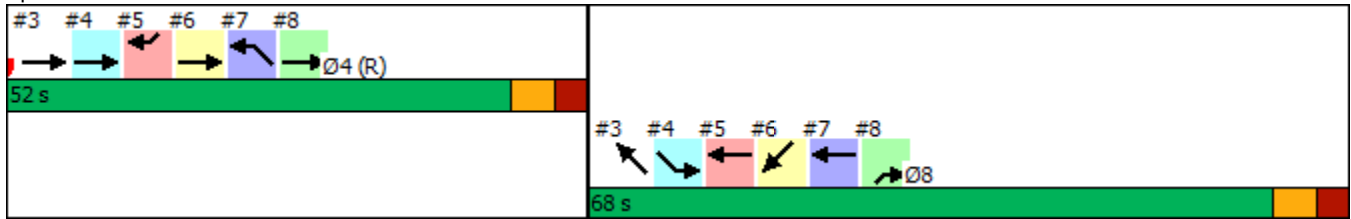
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1248	0	0	0	0	0	0	0	0	1197	0
Future Volume (vph)	0	1248	0	0	0	0	0	0	0	0	1197	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		238			207			236			128	
Travel Time (s)		4.1			3.5			4.0			2.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		52.0									68.0	
Total Split (%)		43.3%									56.7%	
Maximum Green (s)		45.0									61.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
v/c Ratio		0.73									0.53	
Control Delay		23.7									15.6	
Queue Delay		0.0									0.0	
Total Delay		23.7									15.6	
LOS		C									B	
Approach Delay		23.7									15.6	
Approach LOS		C									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 19.7	Intersection LOS: B											

Intersection Capacity Utilization 58.9%
Analysis Period (min) 15

ICU Level of Service B

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

6: Courthouse Road & Rt.630 East

2024 No Build AM

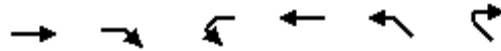
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1248	0	0	0	0	0	0	0	0	1197	0
Future Volume (vph)	0	1248	0	0	0	0	0	0	0	0	1197	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4940									4872	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4940									4872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1357	0	0	0	0	0	0	0	0	1301	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1357	0	0	0	0	0	0	0	0	1301	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		45.0									61.0	
Effective Green, g (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1852									2476	
v/s Ratio Prot		c0.27									c0.27	
v/s Ratio Perm												
v/c Ratio		0.73									0.53	
Uniform Delay, d1		32.3									19.8	
Progression Factor		0.66									0.75	
Incremental Delay, d2		2.3									0.1	
Delay (s)		23.5									15.0	
Level of Service		C									B	
Approach Delay (s)		23.5			0.0			0.0			15.0	
Approach LOS		C			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		19.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		58.9%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 No Build AM

02/17/2022



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1197	476	0
Future Volume (vph)	0	0	0	1197	476	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	478			236	215	
Travel Time (s)	8.1			4.0	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				68.0	52.0	
Total Split (%)				56.7%	43.3%	
Maximum Green (s)				61.0	45.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				None	C-Max	
Act Effct Green (s)				61.0	45.0	
Actuated g/C Ratio				0.51	0.38	
v/c Ratio				0.53	0.40	
Control Delay				1.9	24.8	
Queue Delay				0.0	0.0	
Total Delay				1.9	24.8	
LOS				A	C	
Approach Delay				1.9	24.8	
Approach LOS				A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 8.4	Intersection LOS: A					

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 No Build AM

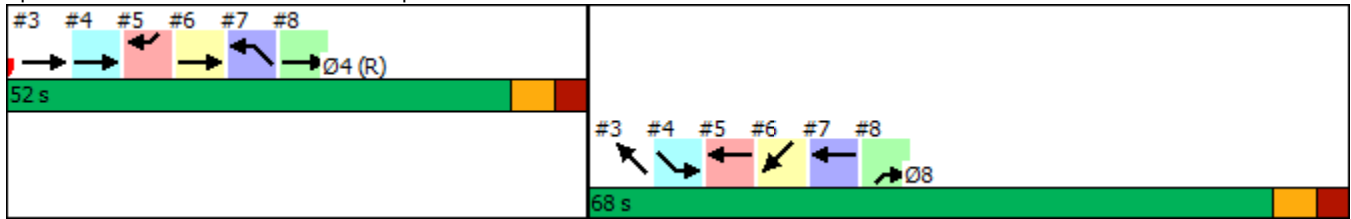
02/17/2022

Intersection Capacity Utilization 48.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road

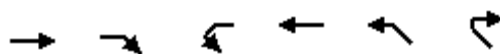


HCM Signalized Intersection Capacity Analysis

7: I-95 NB Off-Ramp & Courthouse Road

2024 No Build AM

02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1197	476	0
Future Volume (vph)	0	0	0	1197	476	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				4872	3367	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				4872	3367	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1301	517	0
RTOR Reduction (vph)	0	0	0	0	42	0
Lane Group Flow (vph)	0	0	0	1301	475	0
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				61.0	45.0	
Effective Green, g (s)				61.0	45.0	
Actuated g/C Ratio				0.51	0.38	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2476	1262	
v/s Ratio Prot				c0.27	c0.14	
v/s Ratio Perm						
v/c Ratio				0.53	0.38	
Uniform Delay, d1				19.8	27.3	
Progression Factor				0.06	1.00	
Incremental Delay, d2				0.2	0.9	
Delay (s)				1.4	28.1	
Level of Service				A	C	
Approach Delay (s)	0.0			1.4	28.1	
Approach LOS	A			A	C	

Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

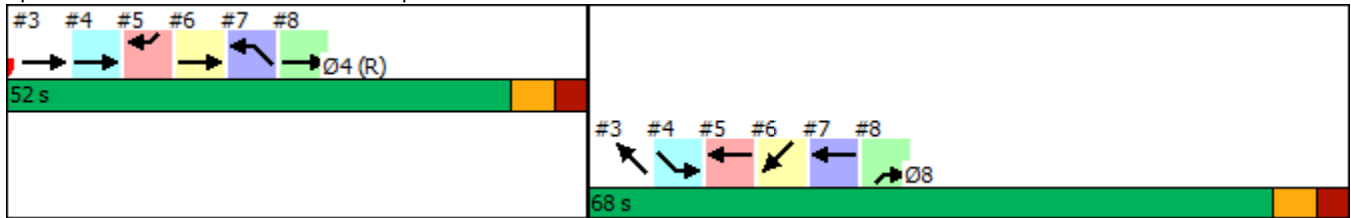
Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

2024 No Build AM
02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↑
Traffic Volume (vph)	1248	0	0	0	0	533
Future Volume (vph)	1248	0	0	0	0	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	207			262	427	
Travel Time (s)	4.0			4.5	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	52.0					68.0
Total Split (%)	43.3%					56.7%
Maximum Green (s)	45.0					61.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	C-Max					None
Act Effct Green (s)	45.0					61.0
Actuated g/C Ratio	0.38					0.51
v/c Ratio	0.73					0.72
Control Delay	6.1					28.8
Queue Delay	0.0					0.0
Total Delay	6.1					28.8
LOS	A					C
Approach Delay	6.1				28.8	
Approach LOS	A				C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 12.9				Intersection LOS: B		
Intersection Capacity Utilization 68.8%				ICU Level of Service C		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

8: I-95 NB Off-Ramp & Courthouse Road

2024 No Build AM
02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1248	0	0	0	0	533
Future Volume (vph)	1248	0	0	0	0	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1580
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1580
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1357	0	0	0	0	579
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1357	0	0	0	0	576
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	45.0					61.0
Effective Green, g (s)	45.0					61.0
Actuated g/C Ratio	0.38					0.51
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	1852					803
v/s Ratio Prot	c0.27					c0.36
v/s Ratio Perm						
v/c Ratio	0.73					0.72
Uniform Delay, d1	32.3					22.8
Progression Factor	0.14					1.00
Incremental Delay, d2	1.7					3.1
Delay (s)	6.1					25.9
Level of Service	A					C
Approach Delay (s)	6.1			0.0	25.9	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay		12.0		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.72				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		68.8%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build AM

02/23/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	492	1048	240	55	793	81	428	13	55	60	10	493
Future Volume (vph)	492	1048	240	55	793	81	428	13	55	60	10	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		2	3		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	7%	7%	7%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2	6		6			8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0	13.0	13.8	48.2	12.2	14.8	14.1	12.8
Total Split (s)	28.0	43.0	43.0	13.0	28.0	28.0	35.0	49.0	13.0	15.0	29.0	28.0
Total Split (%)	23.3%	35.8%	35.8%	10.8%	23.3%	23.3%	29.2%	40.8%	10.8%	12.5%	24.2%	23.3%
Maximum Green (s)	20.2	36.9	36.9	5.8	22.8	22.8	26.2	41.8	5.8	6.2	19.9	20.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2	4.2	4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0	1.0	4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2	5.2	8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	Max	Max	None
Walk Time (s)								8.0				
Flash Dont Walk (s)								33.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)	20.2	39.5	39.5	26.6	22.8	22.8	17.2	20.2	25.4	46.1	28.9	58.2
Actuated g/C Ratio	0.17	0.33	0.33	0.22	0.19	0.19	0.14	0.17	0.21	0.38	0.24	0.48
v/c Ratio	0.96	0.70	0.38	0.41	0.95	0.16	0.68	0.05	0.13	0.11	0.02	0.39
Control Delay	81.3	45.4	10.3	33.4	68.9	0.6	53.8	32.1	0.6	20.4	37.2	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	45.4	10.3	33.4	68.9	0.6	53.8	32.1	0.6	20.4	37.2	21.2
LOS	F	D	B	C	E	A	D	C	A	C	D	C
Approach Delay		50.6			60.8			47.3			21.4	
Approach LOS		D			E			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build AM
02/23/2022

Actuated Cycle Length: 120

Offset: 79 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 48.3

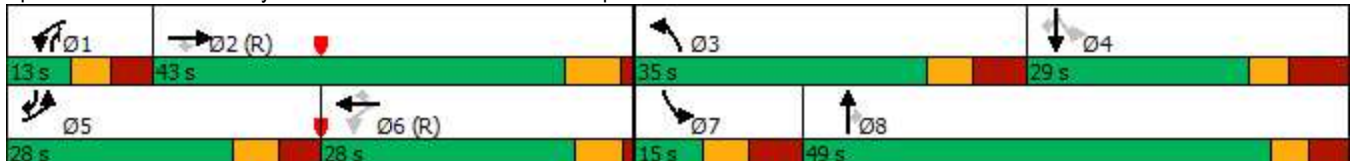
Intersection LOS: D

Intersection Capacity Utilization 61.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build AM
02/23/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  				 	 
Traffic Volume (veh/h)	492	1048	240	55	793	81	428	13	55	60	10	493
Future Volume (veh/h)	492	1048	240	55	793	81	428	13	55	60	10	493
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	1913	1913	1913	1767	1767	1767	1834	1834	1834	1876	1876	1876
Adj Flow Rate, veh/h	535	1139	261	60	862	88	465	14	60	65	11	536
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	9	9	9	7	7	7	0	0	0
Cap, veh/h	587	2164	672	212	1348	419	608	436	426	373	311	929
Arrive On Green	0.17	0.41	0.41	0.04	0.28	0.28	0.12	0.24	0.24	0.05	0.17	0.17
Sat Flow, veh/h	3534	5222	1621	1682	4823	1497	4926	1834	1554	1787	1876	2799
Grp Volume(v), veh/h	535	1139	261	60	862	88	465	14	60	65	11	536
Grp Sat Flow(s),veh/h/ln	1767	1741	1621	1682	1608	1497	1642	1834	1554	1787	1876	1399
Q Serve(g_s), s	17.8	19.6	13.5	3.0	18.8	5.4	11.0	0.7	3.5	3.5	0.6	19.0
Cycle Q Clear(g_c), s	17.8	19.6	13.5	3.0	18.8	5.4	11.0	0.7	3.5	3.5	0.6	19.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	587	2164	672	212	1348	419	608	436	426	373	311	929
V/C Ratio(X)	0.91	0.53	0.39	0.28	0.64	0.21	0.76	0.03	0.14	0.17	0.04	0.58
Avail Cap(c_a), veh/h	595	2164	672	233	1348	419	1076	639	598	373	311	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	26.3	24.5	29.2	37.9	33.1	50.9	35.1	32.9	38.1	42.0	33.1
Incr Delay (d2), s/veh	18.2	0.9	1.7	0.7	2.3	1.1	2.0	0.0	0.1	1.0	0.2	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	8.0	5.5	1.3	7.5	2.1	4.6	0.3	1.3	1.7	0.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.3	27.2	26.2	29.9	40.3	34.2	52.9	35.2	33.0	39.1	42.2	35.7
LnGrp LOS	E	C	C	C	D	C	D	D	C	D	D	D
Approach Vol, veh/h	1935			1010			539			612		
Approach Delay, s/veh	38.2			39.1			50.3			36.2		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	55.8	23.6	29.0	27.7	39.6	15.0	37.6				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 5.8	* 37	* 26	* 20	* 20	* 23	* 6.2	* 42				
Max Q Clear Time (g_c+I1), s	5.0	21.6	13.0	21.0	19.8	20.8	5.5	5.5				
Green Ext Time (p_c), s	0.0	11.3	1.9	0.0	0.1	1.5	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay 39.7
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6629	6515	6671	6567	6687	6625	6616
Vehs Exited	6649	6485	6647	6716	6611	6659	6693
Starting Vehs	355	309	329	504	330	394	401
Ending Vehs	335	339	353	355	406	360	324
Travel Distance (mi)	6000	5877	6005	6077	6058	6066	6012
Travel Time (hr)	368.9	331.5	344.4	359.9	373.0	377.8	340.7
Total Delay (hr)	188.2	155.0	165.0	178.2	191.8	196.1	160.2
Total Stops	11998	10591	11107	11709	12231	12588	10955
Fuel Used (gal)	253.5	241.5	249.6	254.7	255.1	258.7	248.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6735	6525	6713	6627
Vehs Exited	6689	6541	6672	6638
Starting Vehs	361	364	346	367
Ending Vehs	407	348	387	357
Travel Distance (mi)	6153	5910	6065	6022
Travel Time (hr)	354.8	349.1	349.4	355.0
Total Delay (hr)	170.5	171.7	167.7	174.4
Total Stops	11506	10984	11392	11507
Fuel Used (gal)	254.9	247.8	252.4	251.6

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1644	1549	1667	1617	1618	1610	1598
Vehs Exited	1616	1556	1715	1827	1635	1656	1675
Starting Vehs	355	309	329	504	330	394	401
Ending Vehs	383	302	281	294	313	348	324
Travel Distance (mi)	1446	1377	1525	1593	1490	1489	1464
Travel Time (hr)	87.1	75.0	82.1	97.7	84.6	83.2	81.3
Total Delay (hr)	43.7	33.6	36.8	50.2	40.0	38.9	37.2
Total Stops	2786	2348	2558	3167	2749	2670	2588
Fuel Used (gal)	60.8	56.0	62.0	67.6	61.5	61.5	60.3

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1644	1630	1661	1625
Vehs Exited	1688	1684	1673	1673
Starting Vehs	361	364	346	367
Ending Vehs	317	310	334	321
Travel Distance (mi)	1542	1485	1480	1489
Travel Time (hr)	90.7	83.7	81.1	84.6
Total Delay (hr)	44.4	39.2	37.0	40.1
Total Stops	3002	2637	2589	2711
Fuel Used (gal)	64.4	61.3	61.0	61.6

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1755	1716	1741	1727	1754	1776	1760
Vehs Exited	1730	1636	1585	1623	1659	1637	1698
Starting Vehs	383	302	281	294	313	348	324
Ending Vehs	408	382	437	398	408	487	386
Travel Distance (mi)	1643	1553	1527	1558	1597	1593	1618
Travel Time (hr)	110.6	89.5	89.2	96.0	98.1	105.0	94.9
Total Delay (hr)	61.0	42.7	43.6	49.4	50.4	57.2	46.4
Total Stops	3726	2916	2904	3282	3261	3693	3125
Fuel Used (gal)	71.3	64.5	63.5	66.1	67.0	69.1	66.7

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1744	1698	1729	1737
Vehs Exited	1655	1598	1641	1645
Starting Vehs	317	310	334	321
Ending Vehs	406	410	422	412
Travel Distance (mi)	1567	1522	1576	1575
Travel Time (hr)	88.5	92.9	92.5	95.7
Total Delay (hr)	41.6	46.8	45.2	48.4
Total Stops	2847	3079	3097	3190
Fuel Used (gal)	64.6	64.1	65.3	66.2

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1615	1625	1620	1590	1657	1627	1650
Vehs Exited	1723	1674	1720	1719	1736	1817	1724
Starting Vehs	408	382	437	398	408	487	386
Ending Vehs	300	333	337	269	329	297	312
Travel Distance (mi)	1488	1498	1512	1495	1531	1563	1504
Travel Time (hr)	88.5	83.8	90.5	83.2	96.3	102.1	86.1
Total Delay (hr)	43.8	39.2	45.4	38.6	50.7	55.3	40.9
Total Stops	2790	2650	2951	2615	3070	3285	2742
Fuel Used (gal)	62.3	61.4	64.5	61.7	65.4	68.0	62.4

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1656	1589	1658	1629
Vehs Exited	1769	1694	1782	1735
Starting Vehs	406	410	422	412
Ending Vehs	293	305	298	301
Travel Distance (mi)	1534	1485	1573	1518
Travel Time (hr)	86.0	89.5	89.9	89.6
Total Delay (hr)	39.9	45.1	42.9	44.2
Total Stops	2681	2750	2850	2839
Fuel Used (gal)	63.1	63.0	65.7	63.7

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1615	1625	1643	1633	1658	1612	1608
Vehs Exited	1580	1619	1627	1547	1581	1549	1596
Starting Vehs	300	333	337	269	329	297	312
Ending Vehs	335	339	353	355	406	360	324
Travel Distance (mi)	1423	1448	1440	1431	1441	1422	1426
Travel Time (hr)	82.6	83.2	82.6	82.9	94.0	87.5	78.5
Total Delay (hr)	39.7	39.6	39.2	40.0	50.8	44.7	35.7
Total Stops	2696	2677	2694	2645	3151	2940	2500
Fuel Used (gal)	59.1	59.7	59.6	59.3	61.2	60.1	58.9

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1691	1608	1665	1635
Vehs Exited	1577	1565	1576	1581
Starting Vehs	293	305	298	301
Ending Vehs	407	348	387	357
Travel Distance (mi)	1509	1417	1436	1439
Travel Time (hr)	89.6	83.1	85.9	85.0
Total Delay (hr)	44.5	40.6	42.6	41.8
Total Stops	2976	2518	2856	2766
Fuel Used (gal)	62.8	59.4	60.5	60.1

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	118	148	138	284	285	138	161	197	97	51
Average Queue (ft)	52	82	57	130	147	50	64	115	42	9
95th Queue (ft)	93	135	113	246	258	107	152	183	79	31
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)				4						
Queuing Penalty (veh)				0						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	LT	TR	R	L
Maximum Queue (ft)	183	422	427	259	395	390	232	8	55	58	30	301
Average Queue (ft)	18	239	259	164	200	219	83	0	12	25	4	164
95th Queue (ft)	111	396	410	268	349	357	172	6	37	50	20	270
Link Distance (ft)		2357	2357		367	367	367		928	928		
Upstream Blk Time (%)					1	1						
Queuing Penalty (veh)					4	4						
Storage Bay Dist (ft)	390			260				205			225	330
Storage Blk Time (%)	0	1		1	3							0
Queuing Penalty (veh)	0	0		5	5							0

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	354	293	43
Average Queue (ft)	198	156	9
95th Queue (ft)	314	258	27
Link Distance (ft)	1421	1421	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			360
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	2	0	

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	215	211	194	134	129	122
Average Queue (ft)	185	163	140	100	100	91
95th Queue (ft)	199	224	194	134	120	123
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	58	37	31	28	35	28
Queuing Penalty (veh)	224	144	118	121	148	120
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	96	60	38	219	202
Average Queue (ft)	58	12	5	129	108
95th Queue (ft)	96	44	27	204	184
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	44	5	2	2	1
Queuing Penalty (veh)	167	18	6	4	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	77	92	83	262
Average Queue (ft)	19	26	14	155
95th Queue (ft)	59	72	55	254
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)		0	0	6
Queuing Penalty (veh)		0	0	16
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	142	136	135	189	185	150
Average Queue (ft)	113	111	103	155	125	74
95th Queue (ft)	128	129	131	188	186	133
Link Distance (ft)	36	36	36	34	34	34
Upstream Blk Time (%)	59	54	56	43	35	30
Queuing Penalty (veh)	246	224	233	174	140	119
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	84	61	46	221	233
Average Queue (ft)	28	16	9	124	136
95th Queue (ft)	68	47	32	196	201
Link Distance (ft)	38	38	38	154	154
Upstream Blk Time (%)	13	4	1	4	5
Queuing Penalty (veh)	53	16	5	9	13
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	96	96	106	347
Average Queue (ft)	40	46	60	219
95th Queue (ft)	85	96	101	337
Link Distance (ft)	77	77	77	255
Upstream Blk Time (%)	8	10	21	5
Queuing Penalty (veh)	32	43	86	25
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	B34	B34	WB	WB	WB	WB
Directions Served	L	L	T	T	T	R	T	T	L	T	T	T
Maximum Queue (ft)	274	284	357	346	359	260	14	7	229	437	460	225
Average Queue (ft)	185	204	227	241	254	130	0	0	71	263	252	183
95th Queue (ft)	276	292	327	325	343	303	14	7	199	397	400	260
Link Distance (ft)			396	396	396		200	200		1487	1487	
Upstream Blk Time (%)			0	0	0							
Queuing Penalty (veh)			2	0	0							
Storage Bay Dist (ft)	285	285				260			230			225
Storage Blk Time (%)	0	1	1		6	1			0	15	8	4
Queuing Penalty (veh)	1	4	3		15	2			0	8	29	12

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R	L	T	R	R
Maximum Queue (ft)	214	286	324	122	86	92	42	245	210
Average Queue (ft)	57	146	195	17	24	28	9	148	109
95th Queue (ft)	176	245	290	91	61	66	31	228	192
Link Distance (ft)				455			777		
Upstream Blk Time (%)				0					
Queuing Penalty (veh)				0					
Storage Bay Dist (ft)	225	395	395		275	250		425	425
Storage Blk Time (%)	0	0	0						
Queuing Penalty (veh)	0	0	0						

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB	EB
Directions Served	L	T	T	T
Maximum Queue (ft)	73	325	283	272
Average Queue (ft)	9	148	115	82
95th Queue (ft)	47	278	246	221
Link Distance (ft)		408	408	408
Upstream Blk Time (%)		1	1	0
Queuing Penalty (veh)		5	3	1
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	37		
Queuing Penalty (veh)	0	140		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	60	401	388	372
Average Queue (ft)	5	85	94	79
95th Queue (ft)	34	279	273	257
Link Distance (ft)		413	413	413
Upstream Blk Time (%)		3	1	0
Queuing Penalty (veh)		15	6	3
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	11		
Queuing Penalty (veh)	0	43		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB	NB
Directions Served	T	R
Maximum Queue (ft)	187	82
Average Queue (ft)	10	5
95th Queue (ft)	92	45
Link Distance (ft)	1325	1325
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	290	164	118	71
Average Queue (ft)	95	21	7	34
95th Queue (ft)	229	112	71	84
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)	1	0	0	
Queuing Penalty (veh)	5	1	1	
Storage Bay Dist (ft)				50
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			1	1

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

SB

SB

SB

Directions Served

T

T

R

Maximum Queue (ft)

34

4

38

Average Queue (ft)

2

0

3

95th Queue (ft)

28

4

23

Link Distance (ft)

1213

1213

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

500

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

41

312

Average Queue (ft)

2

62

95th Queue (ft)

27

260

Link Distance (ft)

184

190

Upstream Blk Time (%)

0

Queuing Penalty (veh)

0

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB	EB
Directions Served	T	T	TR
Maximum Queue (ft)	466	442	405
Average Queue (ft)	255	185	133
95th Queue (ft)	480	440	406
Link Distance (ft)	506	506	506
Upstream Blk Time (%)	4	1	1
Queuing Penalty (veh)	23	6	6
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Rt 630 & Courthouse Road

Movement	WB	WB	SE	SE	SE
Directions Served	R	R	T	T	T
Maximum Queue (ft)	20	17	108	340	236
Average Queue (ft)	1	1	12	24	14
95th Queue (ft)	19	20	101	173	126
Link Distance (ft)	438	438	367	367	367
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	1	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	WB	WB	WB	B34	B34	B34	NE	NE
Directions Served	T	T	T	T	T	T	R	R
Maximum Queue (ft)	29	25	28	13	9	42	15	32
Average Queue (ft)	2	2	2	1	0	1	1	1
95th Queue (ft)	41	35	33	14	9	42	15	23
Link Distance (ft)	200	200	200	396	396	396	217	217
Upstream Blk Time (%)	0	0	0			0		
Queuing Penalty (veh)	2	0	0			0		
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 2870

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2024 No Build PM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	658	0	0	885	338	0	0	0	520	0	316
Future Volume (vph)	125	658	0	0	885	338	0	0	0	520	0	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	21.0	68.5		13.0	60.5	46.0	22.5	22.5		46.0	46.0	21.0
Total Split (%)	14.0%	45.7%		8.7%	40.3%	30.7%	15.0%	15.0%		30.7%	30.7%	14.0%
Maximum Green (s)	12.0	59.5		4.0	51.5	37.0	13.5	13.5		37.0	37.0	12.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	90.5	99.5		79.9	121.4					32.5	32.5	52.1
Actuated g/C Ratio	0.60	0.66		0.53	0.81					0.22	0.22	0.35
v/c Ratio	0.38	0.30		0.51	0.27					0.76	0.31	0.25
Control Delay	13.5	11.5		2.5	0.5					62.1	1.4	1.1
Queue Delay	0.0	0.0		0.0	0.0					0.0	0.0	0.0
Total Delay	13.5	11.5		2.5	0.5					62.1	1.4	1.1
LOS	B	B		A	A					E	A	A
Approach Delay		11.8			1.9						39.1	
Approach LOS		B			A						D	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Lanes, Volumes, Timings

1: Driveway/Mine Road & Courthouse Road

2024 No Build PM

02/17/2022

Offset: 50 (33%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.6

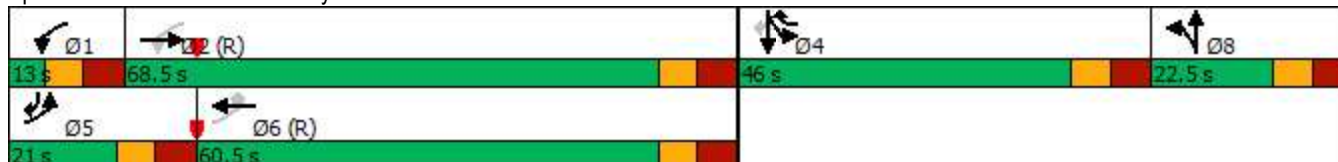
Intersection LOS: B

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road



HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2024 No Build PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	658	0	0	885	338	0	0	0	520	0	316
Future Volume (veh/h)	125	658	0	0	885	338	0	0	0	520	0	316
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	136	715	0	0	962	367	0	0	0	565	0	343
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	2568	0	525	2186	1283	0	1	0	662	0	725
Arrive On Green	0.04	0.69	0.00	0.00	0.59	0.59	0.00	0.00	0.00	0.19	0.00	0.19
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	136	715	0	0	962	367	0	0	0	565	0	343
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	4.3	11.0	0.0	0.0	21.6	9.6	0.0	0.0	0.0	23.1	0.0	14.1
Cycle Q Clear(g_c), s	4.3	11.0	0.0	0.0	21.6	9.6	0.0	0.0	0.0	23.1	0.0	14.1
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	2568	0	525	2186	1283	0	1	0	662	0	725
V/C Ratio(X)	0.43	0.28	0.00	0.00	0.44	0.29	0.00	0.00	0.00	0.85	0.00	0.47
Avail Cap(c_a), veh/h	388	2568	0	573	2186	1283	0	168	0	876	0	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.47	0.47	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	8.7	0.0	0.0	17.0	4.8	0.0	0.0	0.0	59.0	0.0	49.9
Incr Delay (d2), s/veh	0.9	0.3	0.0	0.0	0.3	0.3	0.0	0.0	0.0	6.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.2	0.0	0.0	8.9	6.5	0.0	0.0	0.0	10.9	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.0	9.0	0.0	0.0	17.3	5.1	0.0	0.0	0.0	65.4	0.0	50.4
LnGrp LOS	B	A	A	A	B	A	A	A	A	E	A	D
Approach Vol, veh/h	851			1329			0			908		
Approach Delay, s/veh	9.8			13.9			0.0			59.8		
Approach LOS	A			B						E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	113.0		37.0	15.5	97.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	59.5		37.0	12.0	51.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	13.0		25.1	6.3	23.6		0.0				
Green Ext Time (p_c), s	0.0	5.1		2.9	0.1	8.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay 26.3

HCM 6th LOS C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2024 No Build PM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1156	13	69	1346	615	34	11	180	869	5	12
Future Volume (vph)	8	1156	13	69	1346	615	34	11	180	869	5	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	33%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	62.0		18.0	66.0	45.0	25.0	25.0	18.0	45.0	45.0	14.0
Total Split (%)	9.3%	41.3%		12.0%	44.0%	30.0%	16.7%	16.7%	12.0%	30.0%	30.0%	9.3%
Maximum Green (s)	5.0	53.0		9.0	57.0	36.0	16.0	16.0	9.0	36.0	36.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	75.1	60.2		11.3	71.3	114.5	8.4	8.4	28.7	34.1	34.1	40.1
Actuated g/C Ratio	0.50	0.40		0.08	0.48	0.76	0.06	0.06	0.19	0.23	0.23	0.27
v/c Ratio	0.07	0.86		0.54	0.84	0.47	0.35	0.50	0.26	0.83	0.83	0.03
Control Delay	21.8	39.8		74.2	48.7	1.1	78.0	37.5	7.3	65.5	74.1	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	39.8		74.2	48.7	1.1	78.0	37.5	7.3	65.5	74.1	0.1
LOS	C	D		E	D	A	E	D	A	E	E	A
Approach Delay		39.7			35.1			30.7			67.5	
Approach LOS		D			D			C			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings

2: Austin Ridge Drive & Courthouse Road

2024 No Build PM
02/17/2022

Actuated Cycle Length: 150

Offset: 149 (99%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 42.8

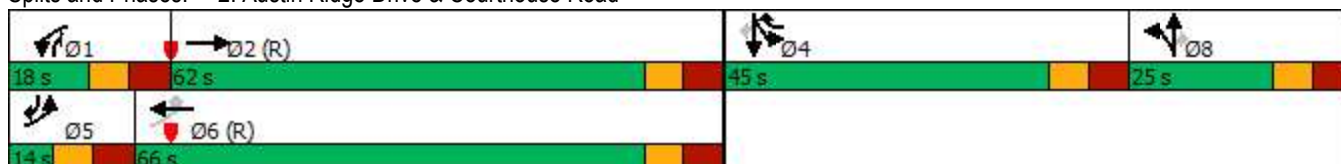
Intersection LOS: D

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 No Build PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1156	13	69	1346	615	34	11	180	869	5	12
Future Volume (veh/h)	8	1156	13	69	1346	615	34	11	180	869	5	12
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	1879	1879	1879	1832	1832	1832	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	8	1204	14	72	1402	641	23	47	188	909	0	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	92	1588	18	90	1676	1049	126	132	377	1071	0	333
Arrive On Green	0.01	0.44	0.44	0.05	0.48	0.48	0.08	0.08	0.08	0.19	0.00	0.19
Sat Flow, veh/h	1790	3615	42	1745	3481	1553	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	8	595	623	72	1402	641	23	47	188	909	0	12
Grp Sat Flow(s),veh/h/ln	1790	1785	1872	1745	1741	1553	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.3	42.0	42.0	6.1	52.5	34.2	1.9	3.8	8.8	23.8	0.0	0.9
Cycle Q Clear(g_c), s	0.3	42.0	42.0	6.1	52.5	34.2	1.9	3.8	8.8	23.8	0.0	0.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	784	822	90	1676	1049	126	132	377	1071	0	333
V/C Ratio(X)	0.09	0.76	0.76	0.80	0.84	0.61	0.18	0.36	0.50	0.85	0.00	0.04
Avail Cap(c_a), veh/h	135	784	822	105	1676	1049	178	187	470	1326	0	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.1	35.3	35.4	70.4	33.8	13.5	65.0	65.9	61.1	58.3	0.0	47.9
Incr Delay (d2), s/veh	0.3	5.8	5.5	30.6	5.1	2.7	0.7	1.6	1.0	4.5	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	0.2	19.1	20.0	3.5	22.6	20.7	0.8	1.8	3.4	11.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.4	41.1	40.9	101.0	38.9	16.1	65.7	67.5	62.1	62.8	0.0	48.0
LnGrp LOS	C	D	D	F	D	B	E	E	E	E	A	D
Approach Vol, veh/h	1226			2115			258			921		
Approach Delay, s/veh	40.9			34.1			63.4			62.6		
Approach LOS	D			C			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.7	74.9		38.1	10.4	81.2		20.3				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	9.0	53.0		36.0	5.0	57.0		16.0				
Max Q Clear Time (g_c+I1), s	8.1	44.0		25.8	2.3	54.5		10.8				
Green Ext Time (p_c), s	0.0	8.6		3.3	0.0	2.5		0.4				

Intersection Summary

HCM 6th Ctrl Delay 43.4

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
3: Courthouse Road

2024 No Build PM

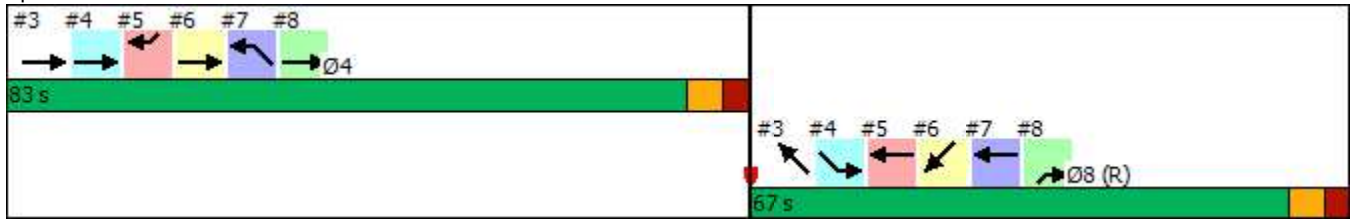
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1645	0	0	0	0	0	0	0	0	1647	0
Future Volume (vph)	0	1645	0	0	0	0	0	0	0	0	1647	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		83.0									67.0	
Total Split (%)		55.3%									44.7%	
Maximum Green (s)		76.0									60.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
v/c Ratio		0.68									0.85	
Control Delay		39.0									30.2	
Queue Delay		0.0									0.4	
Total Delay		39.0									30.7	
LOS		D									C	
Approach Delay		39.0									30.7	
Approach LOS		D									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.85												
Intersection Signal Delay: 34.8	Intersection LOS: C											

Intersection Capacity Utilization 75.3%
Analysis Period (min) 15

ICU Level of Service D

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

3: Courthouse Road

2024 No Build PM

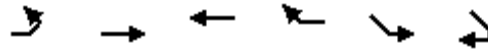
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1645	0	0	0	0	0	0	0	0	1647	0
Future Volume (vph)	0	1645	0	0	0	0	0	0	0	0	1647	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4960									5036	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4960									5036	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1714	0	0	0	0	0	0	0	0	1716	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1714	0	0	0	0	0	0	0	0	1716	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		76.0									60.0	
Effective Green, g (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2513									2014	
v/s Ratio Prot		c0.35									c0.34	
v/s Ratio Perm												
v/c Ratio		0.68									0.85	
Uniform Delay, d1		27.9									41.0	
Progression Factor		1.35									0.64	
Incremental Delay, d2		0.9									3.8	
Delay (s)		38.7									30.0	
Level of Service		D									C	
Approach Delay (s)		38.7			0.0			0.0			30.0	
Approach LOS		D			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		34.3										
HCM 2000 Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		150.0									14.0	
Intersection Capacity Utilization		75.3%										
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1645	0	0	817	0
Future Volume (vph)	0	1645	0	0	817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		83.0			67.0	
Total Split (%)		55.3%			44.7%	
Maximum Green (s)		76.0			60.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		Max			C-Max	
Act Effct Green (s)		76.0			60.0	
Actuated g/C Ratio		0.51			0.40	
v/c Ratio		0.68			0.61	
Control Delay		1.8			37.2	
Queue Delay		0.0			0.0	
Total Delay		1.8			37.2	
LOS		A			D	
Approach Delay		1.8			37.2	
Approach LOS		A			D	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.85						
Intersection Signal Delay: 13.5	Intersection LOS: B					

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

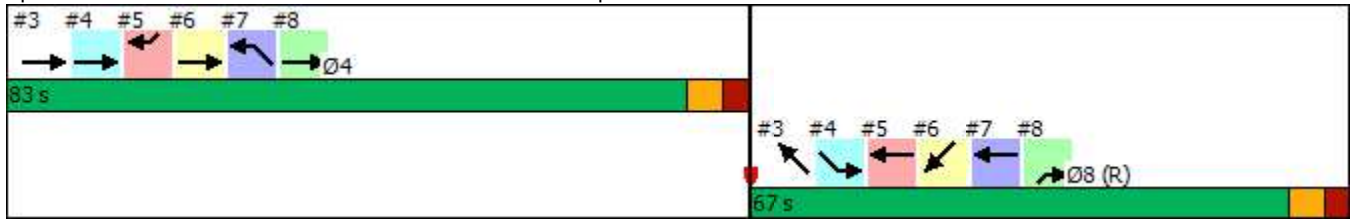
02/17/2022

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp

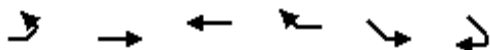


HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

02/17/2022



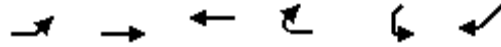
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1645	0	0	817	0
Future Volume (vph)	0	1645	0	0	817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4960			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4960			3433	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1714	0	0	851	0
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	1714	0	0	839	0
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		76.0			60.0	
Effective Green, g (s)		76.0			60.0	
Actuated g/C Ratio		0.51			0.40	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		2513			1373	
v/s Ratio Prot		c0.35			c0.24	
v/s Ratio Perm						
v/c Ratio		0.68			0.61	
Uniform Delay, d1		27.9			35.7	
Progression Factor		0.02			1.00	
Incremental Delay, d2		1.1			2.0	
Delay (s)		1.8			37.8	
Level of Service		A			D	
Approach Delay (s)		1.8	0.0		37.8	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay		13.7		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.65				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		66.8%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1647	0	0	383
Future Volume (vph)	0	0	1647	0	0	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			67.0			83.0
Total Split (%)			44.7%			55.3%
Maximum Green (s)			60.0			76.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			C-Max			Max
Act Effct Green (s)			60.0			76.0
Actuated g/C Ratio			0.40			0.51
v/c Ratio			0.84			0.49
Control Delay			5.6			26.6
Queue Delay			0.1			0.0
Total Delay			5.7			26.6
LOS			A			C
Approach Delay			5.7		26.6	
Approach LOS			A		C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.85						
Intersection Signal Delay: 9.6	Intersection LOS: A					

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

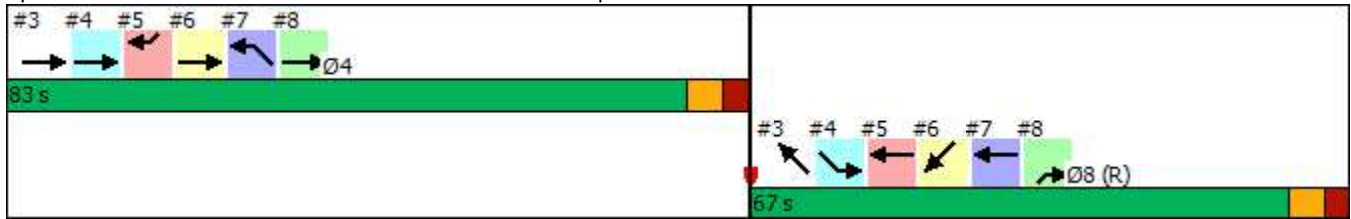
02/17/2022

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp

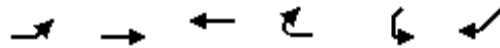


HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2024 No Build PM

02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↗
Traffic Volume (vph)	0	0	1647	0	0	383
Future Volume (vph)	0	0	1647	0	0	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			5111			1611
Flt Permitted			1.00			1.00
Satd. Flow (perm)			5111			1611
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1716	0	0	399
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	1716	0	0	398
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			60.0			76.0
Effective Green, g (s)			60.0			76.0
Actuated g/C Ratio			0.40			0.51
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2044			816
v/s Ratio Prot			c0.34			c0.25
v/s Ratio Perm						
v/c Ratio			0.84			0.49
Uniform Delay, d1			40.7			24.2
Progression Factor			0.08			1.00
Incremental Delay, d2			2.2			2.1
Delay (s)			5.5			26.3
Level of Service			A			C
Approach Delay (s)		0.0	5.5		26.3	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			9.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			75.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

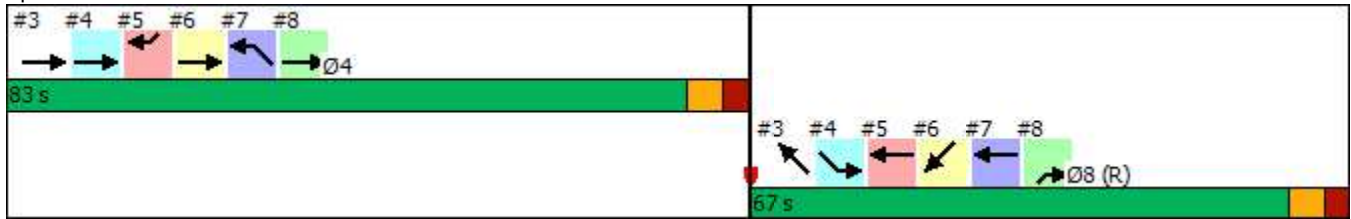
2024 No Build PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	2048	0	0	0	0	0	0	0	0	1599	0
Future Volume (vph)	0	2048	0	0	0	0	0	0	0	0	1599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		255			190			238			109	
Travel Time (s)		4.3			3.2			4.1			1.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		83.0									67.0	
Total Split (%)		55.3%									44.7%	
Maximum Green (s)		76.0									60.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
v/c Ratio		0.82									0.80	
Control Delay		22.9									34.8	
Queue Delay		0.7									0.0	
Total Delay		23.6									34.8	
LOS		C									C	
Approach Delay		23.6									34.8	
Approach LOS		C									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.85												
Intersection Signal Delay: 28.5	Intersection LOS: C											

Intersection Capacity Utilization 82.1%
Analysis Period (min) 15

ICU Level of Service E

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

6: Courthouse Road & Rt.630 East

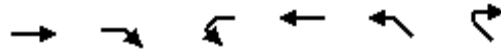
2024 No Build PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	2048	0	0	0	0	0	0	0	0	1599	0
Future Volume (vph)	0	2048	0	0	0	0	0	0	0	0	1599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5036									5111	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5036									5111	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2090	0	0	0	0	0	0	0	0	1632	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2090	0	0	0	0	0	0	0	0	1632	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		76.0									60.0	
Effective Green, g (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2551									2044	
v/s Ratio Prot		c0.42									c0.32	
v/s Ratio Perm												
v/c Ratio		0.82									0.80	
Uniform Delay, d1		31.2									39.7	
Progression Factor		0.65									0.81	
Incremental Delay, d2		2.3									2.2	
Delay (s)		22.7									34.5	
Level of Service		C									C	
Approach Delay (s)		22.7			0.0			0.0			34.5	
Approach LOS		C			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		27.9										
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		150.0									14.0	
Intersection Capacity Utilization		82.1%									E	
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 No Build PM
02/17/2022



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1599	525	0
Future Volume (vph)	0	0	0	1599	525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	501			238	198	
Travel Time (s)	8.5			4.1	3.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				67.0	83.0	
Total Split (%)				44.7%	55.3%	
Maximum Green (s)				60.0	76.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				C-Max	Max	
Act Effect Green (s)				60.0	76.0	
Actuated g/C Ratio				0.40	0.51	
v/c Ratio				0.80	0.31	
Control Delay				3.4	22.0	
Queue Delay				0.0	0.0	
Total Delay				3.4	22.0	
LOS				A	C	
Approach Delay				3.4	22.0	
Approach LOS				A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.85						
Intersection Signal Delay: 8.0	Intersection LOS: A					

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

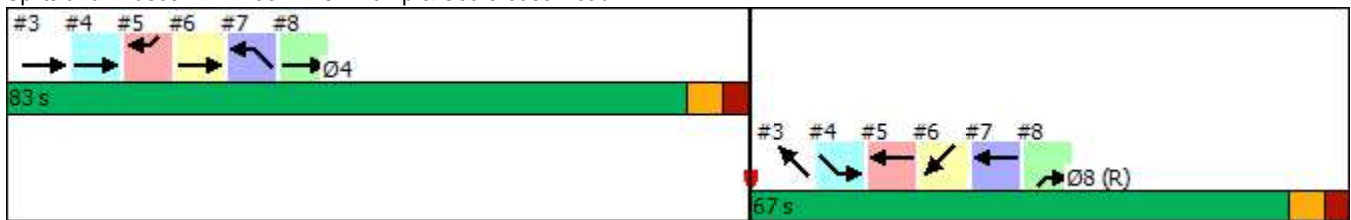
2024 No Build PM
02/17/2022

Intersection Capacity Utilization 57.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road

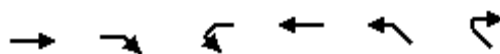


HCM Signalized Intersection Capacity Analysis

7: I-95 NB Off-Ramp & Courthouse Road

2024 No Build PM

02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1599	525	0
Future Volume (vph)	0	0	0	1599	525	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				5111	3400	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				5111	3400	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	1632	536	0
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	1632	533	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				60.0	76.0	
Effective Green, g (s)				60.0	76.0	
Actuated g/C Ratio				0.40	0.51	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2044	1722	
v/s Ratio Prot				c0.32	c0.16	
v/s Ratio Perm						
v/c Ratio				0.80	0.31	
Uniform Delay, d1				39.7	21.6	
Progression Factor				0.04	1.00	
Incremental Delay, d2				2.0	0.5	
Delay (s)				3.4	22.1	
Level of Service				A	C	
Approach Delay (s)	0.0			3.4	22.1	
Approach LOS	A			A	C	

Intersection Summary

HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

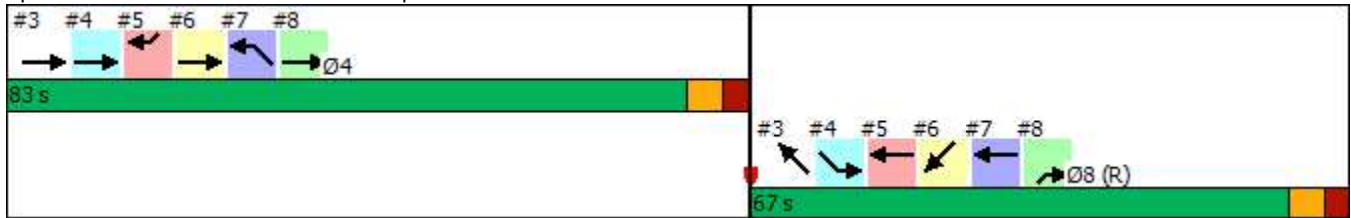
2024 No Build PM

02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	2048	0	0	0	0	439
Future Volume (vph)	2048	0	0	0	0	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	190			262	427	
Travel Time (s)	3.7			4.5	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	83.0					67.0
Total Split (%)	55.3%					44.7%
Maximum Green (s)	76.0					60.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	Max					C-Max
Act Effct Green (s)	76.0					60.0
Actuated g/C Ratio	0.51					0.40
v/c Ratio	0.84					0.70
Control Delay	2.9					44.3
Queue Delay	0.0					0.0
Total Delay	2.9					44.3
LOS	A					D
Approach Delay	2.9				44.3	
Approach LOS	A				D	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.85						
Intersection Signal Delay: 10.2				Intersection LOS: B		
Intersection Capacity Utilization 82.1%				ICU Level of Service E		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

8: I-95 NB Off-Ramp & Courthouse Road

2024 No Build PM

02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	2048	0	0	0	0	439
Future Volume (vph)	2048	0	0	0	0	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1596
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1596
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2090	0	0	0	0	448
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	2090	0	0	0	0	446
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	76.0					60.0
Effective Green, g (s)	76.0					60.0
Actuated g/C Ratio	0.51					0.40
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2502					638
v/s Ratio Prot	c0.42					c0.28
v/s Ratio Perm						
v/c Ratio	0.84					0.70
Uniform Delay, d1	31.6					37.5
Progression Factor	0.03					1.00
Incremental Delay, d2	1.9					6.3
Delay (s)	2.9					43.8
Level of Service	A					D
Approach Delay (s)	2.9			0.0	43.8	
Approach LOS	A			A	D	
Intersection Summary						
HCM 2000 Control Delay		10.1		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.77				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		82.1%		ICU Level of Service		E
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build PM

02/23/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  					 
Traffic Volume (vph)	472	1834	180	51	1071	64	559	14	51	70	12	541
Future Volume (vph)	472	1834	180	51	1071	64	559	14	51	70	12	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		2	3		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2	6		6			8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0	13.0	13.8	48.2	12.2	14.8	14.1	12.8
Total Split (s)	36.0	73.0	73.0	13.0	50.0	50.0	43.0	49.0	13.0	15.0	21.0	36.0
Total Split (%)	24.0%	48.7%	48.7%	8.7%	33.3%	33.3%	28.7%	32.7%	8.7%	10.0%	14.0%	24.0%
Maximum Green (s)	28.2	66.9	66.9	5.8	44.8	44.8	34.2	41.8	5.8	6.2	11.9	28.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2	4.2	4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0	1.0	4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2	5.2	8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	Max	Max	None
Walk Time (s)								8.0				
Flash Dont Walk (s)								33.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	26.8	69.5	69.5	50.0	46.2	46.2	24.7	20.3	25.4	42.8	21.4	57.3
Actuated g/C Ratio	0.18	0.46	0.46	0.33	0.31	0.31	0.16	0.14	0.17	0.29	0.14	0.38
v/c Ratio	0.84	0.85	0.23	0.47	0.76	0.10	0.76	0.06	0.15	0.17	0.05	0.56
Control Delay	52.6	34.3	3.8	35.9	51.0	0.3	66.4	47.2	0.8	36.5	59.0	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	34.3	3.8	35.9	51.0	0.3	66.4	47.2	0.8	36.5	59.0	39.4
LOS	D	C	A	D	D	A	E	D	A	D	E	D
Approach Delay		35.6			47.6			60.6			39.5	
Approach LOS		D			D			E			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build PM
02/23/2022

Actuated Cycle Length: 150

Offset: 8.4 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 42.2

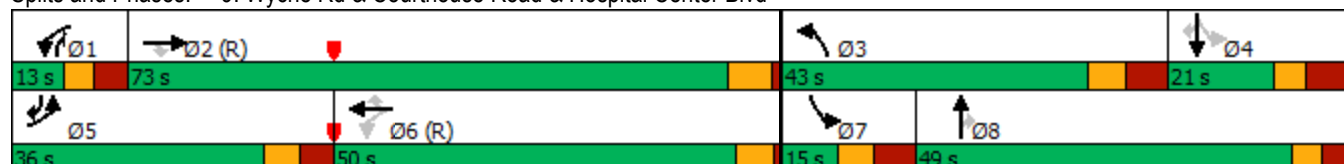
Intersection LOS: D

Intersection Capacity Utilization 74.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 No Build PM

02/23/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  					 
Traffic Volume (veh/h)	472	1834	180	51	1071	64	559	14	51	70	12	541
Future Volume (veh/h)	472	1834	180	51	1071	64	559	14	51	70	12	541
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	1958	1958	1958	1841	1841	1841	1849	1849	1849	1832	1832	1832
Adj Flow Rate, veh/h	513	1993	196	55	1164	70	608	15	55	76	13	588
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	6	6	6	3	3	3
Cap, veh/h	574	2851	885	146	2014	625	741	346	340	224	145	650
Arrive On Green	0.16	0.53	0.53	0.03	0.40	0.40	0.15	0.19	0.19	0.04	0.08	0.08
Sat Flow, veh/h	3618	5345	1659	1753	5025	1560	4967	1849	1567	1745	1832	2732
Grp Volume(v), veh/h	513	1993	196	55	1164	70	608	15	55	76	13	588
Grp Sat Flow(s),veh/h/ln	1809	1782	1659	1753	1675	1560	1656	1849	1567	1745	1832	1366
Q Serve(g_s), s	20.9	41.6	9.4	2.8	27.1	4.2	17.8	1.0	4.3	6.0	1.0	11.9
Cycle Q Clear(g_c), s	20.9	41.6	9.4	2.8	27.1	4.2	17.8	1.0	4.3	6.0	1.0	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	574	2851	885	146	2014	625	741	346	340	224	145	650
V/C Ratio(X)	0.89	0.70	0.22	0.38	0.58	0.11	0.82	0.04	0.16	0.34	0.09	0.90
Avail Cap(c_a), veh/h	680	2851	885	161	2014	625	1132	515	484	224	145	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.9	26.0	18.5	27.4	35.1	28.2	61.9	49.9	47.6	60.6	64.0	55.5
Incr Delay (d2), s/veh	12.8	1.5	0.6	1.6	1.2	0.4	2.9	0.1	0.2	4.1	1.2	18.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	17.4	3.8	1.2	11.1	1.7	7.7	0.5	1.7	2.9	0.5	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.6	27.5	19.1	29.0	36.3	28.6	64.8	50.0	47.8	64.7	65.2	73.8
LnGrp LOS	E	C	B	C	D	C	E	D	D	E	E	E
Approach Vol, veh/h		2702			1289			678			677	
Approach Delay, s/veh		35.8			35.5			63.1			72.6	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	86.1	31.2	21.0	31.6	66.2	15.0	37.2				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 5.8	* 67	* 34	* 12	* 28	* 45	* 6.2	* 42				
Max Q Clear Time (g_c+I1), s	4.8	43.6	19.8	13.9	22.9	29.1	8.0	6.3				
Green Ext Time (p_c), s	0.0	21.2	2.6	0.0	1.0	10.8	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay 43.9

HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7773	7790	7556	7645	7626	7638	7584
Vehs Exited	7377	7597	7455	7435	7250	7337	7181
Starting Vehs	556	588	535	513	550	528	493
Ending Vehs	952	781	636	723	926	829	896
Travel Distance (mi)	7413	7624	7491	7467	7301	7439	7245
Travel Time (hr)	691.2	738.2	550.9	550.8	890.7	594.8	661.8
Total Delay (hr)	469.8	510.4	327.6	328.0	673.2	373.4	445.2
Total Stops	20079	22960	17544	17272	22402	18660	18828
Fuel Used (gal)	358.6	374.4	332.5	330.7	399.9	339.5	348.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	7749	7544	7822	7672
Vehs Exited	7700	7488	7474	7431
Starting Vehs	595	482	489	534
Ending Vehs	644	538	837	779
Travel Distance (mi)	7707	7515	7484	7469
Travel Time (hr)	644.3	524.2	650.3	649.7
Total Delay (hr)	414.9	299.9	426.1	426.8
Total Stops	20829	16495	19948	19500
Fuel Used (gal)	356.6	327.7	352.6	352.1

Interval #0 Information Seeding

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1901	1877	1867	1873	1896	1758	1867
Vehs Exited	1895	1811	1852	1891	1746	1767	1799
Starting Vehs	556	588	535	513	550	528	493
Ending Vehs	562	654	550	495	700	519	561
Travel Distance (mi)	1909	1859	1891	1897	1804	1822	1847
Travel Time (hr)	135.3	146.6	136.1	121.7	155.7	128.3	125.7
Total Delay (hr)	78.3	91.1	79.7	65.1	101.9	74.0	70.5
Total Stops	4224	4721	4334	3747	4873	3958	4062
Fuel Used (gal)	84.1	83.9	83.9	80.7	84.1	79.4	80.2

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1864	1843	1954	1872
Vehs Exited	1885	1866	1894	1840
Starting Vehs	595	482	489	534
Ending Vehs	574	459	549	562
Travel Distance (mi)	1899	1884	1907	1872
Travel Time (hr)	149.2	120.2	130.2	134.9
Total Delay (hr)	92.5	64.1	73.0	79.0
Total Stops	4709	3642	4097	4239
Fuel Used (gal)	86.1	80.1	82.3	82.5

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2139	2095	2021	2081	2096	2082	2014
Vehs Exited	2010	1912	1971	1945	1858	1969	1960
Starting Vehs	562	654	550	495	700	519	561
Ending Vehs	691	837	600	631	938	632	615
Travel Distance (mi)	1998	1945	1969	1977	1871	1976	1935
Travel Time (hr)	157.3	190.1	141.0	136.6	212.5	145.8	147.6
Total Delay (hr)	97.6	132.0	82.3	77.5	156.8	86.9	89.7
Total Stops	5264	6226	4451	4459	6063	4723	4765
Fuel Used (gal)	90.1	95.5	86.7	85.4	98.6	87.4	86.5

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	2110	2062	2077	2077
Vehs Exited	2015	1914	1992	1952
Starting Vehs	574	459	549	562
Ending Vehs	669	607	634	679
Travel Distance (mi)	2000	1925	1972	1957
Travel Time (hr)	160.2	129.6	139.6	156.0
Total Delay (hr)	100.7	72.0	80.5	97.6
Total Stops	5204	4096	4490	4977
Fuel Used (gal)	90.6	82.7	86.4	89.0

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1875	1890	1850	1856	1820	1901	1865
Vehs Exited	1753	1937	1928	1897	1871	1916	1749
Starting Vehs	691	837	600	631	938	632	615
Ending Vehs	813	790	522	590	887	617	731
Travel Distance (mi)	1798	1908	1899	1890	1876	1889	1752
Travel Time (hr)	187.6	205.4	134.6	148.6	245.7	150.6	163.2
Total Delay (hr)	134.0	148.5	78.1	92.3	190.0	94.5	110.6
Total Stops	5361	6318	4340	4750	5976	4716	4782
Fuel Used (gal)	91.0	98.6	82.8	85.7	106.5	86.7	84.0

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1902	1786	1856	1862
Vehs Exited	1868	1851	1733	1852
Starting Vehs	669	607	634	679
Ending Vehs	703	542	757	693
Travel Distance (mi)	1887	1861	1781	1854
Travel Time (hr)	167.0	139.2	177.5	171.9
Total Delay (hr)	110.7	83.8	124.3	116.7
Total Stops	5519	4459	5536	5178
Fuel Used (gal)	89.4	82.7	88.3	89.6

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1858	1928	1818	1835	1814	1897	1838
Vehs Exited	1719	1937	1704	1702	1775	1685	1673
Starting Vehs	813	790	522	590	887	617	731
Ending Vehs	952	781	636	723	926	829	896
Travel Distance (mi)	1707	1912	1731	1703	1751	1751	1711
Travel Time (hr)	211.0	196.0	139.2	144.0	276.7	170.2	225.3
Total Delay (hr)	159.9	138.8	87.5	93.1	224.5	117.9	174.4
Total Stops	5230	5695	4419	4316	5490	5263	5219
Fuel Used (gal)	93.3	96.3	79.0	79.0	110.8	86.1	97.5

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1873	1853	1935	1867
Vehs Exited	1932	1857	1855	1786
Starting Vehs	703	542	757	693
Ending Vehs	644	538	837	779
Travel Distance (mi)	1920	1845	1824	1786
Travel Time (hr)	168.0	135.3	202.9	186.9
Total Delay (hr)	111.0	80.0	148.2	133.5
Total Stops	5397	4298	5825	5115
Fuel Used (gal)	90.6	82.2	95.5	91.0

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	187	174	167	111	136	98	346	387	192	158
Average Queue (ft)	81	102	81	22	38	21	199	244	94	36
95th Queue (ft)	148	168	155	74	99	61	296	338	167	115
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)				0						
Queuing Penalty (veh)				0						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	LT	TR	R	L
Maximum Queue (ft)	177	804	811	260	435	433	181	48	101	166	139	330
Average Queue (ft)	15	430	441	115	397	404	85	3	36	88	37	265
95th Queue (ft)	116	907	924	259	494	487	151	21	80	152	106	373
Link Distance (ft)		2357	2357		367	367	367		928	928		
Upstream Blk Time (%)					26	32						
Queuing Penalty (veh)					176	219						
Storage Bay Dist (ft)	390			260				205			225	330
Storage Blk Time (%)	0	18		0	36							3
Queuing Penalty (veh)	0	1		1	25							10

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	1047	887	260
Average Queue (ft)	544	390	27
95th Queue (ft)	1248	921	172
Link Distance (ft)	1421	1421	
Upstream Blk Time (%)	9	5	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			360
Storage Blk Time (%)	25	20	0
Queuing Penalty (veh)	72	2	0

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	217	208	207	130	119	114
Average Queue (ft)	187	174	165	107	102	98
95th Queue (ft)	203	226	212	119	112	118
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	72	48	46	50	61	55
Queuing Penalty (veh)	396	260	251	275	337	304
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	86	91	67	264	259
Average Queue (ft)	57	40	33	234	220
95th Queue (ft)	88	83	71	275	277
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	47	25	15	31	25
Queuing Penalty (veh)	256	134	81	128	102
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	113	117	104	270
Average Queue (ft)	51	70	52	188
95th Queue (ft)	97	108	101	286
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)	0	0	0	11
Queuing Penalty (veh)	0	0	0	43
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	167	178	168	169	168	159
Average Queue (ft)	141	144	141	139	143	145
95th Queue (ft)	154	162	154	151	154	159
Link Distance (ft)	65	65	65	9	9	9
Upstream Blk Time (%)	50	61	63	60	61	56
Queuing Penalty (veh)	342	416	432	321	322	300
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	108	103	70	202	217
Average Queue (ft)	79	68	30	113	134
95th Queue (ft)	112	105	65	186	210
Link Distance (ft)	34	34	34	138	138
Upstream Blk Time (%)	59	59	40	8	12
Queuing Penalty (veh)	317	315	214	21	32
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	115	124	114	366
Average Queue (ft)	65	76	77	261
95th Queue (ft)	107	108	103	381
Link Distance (ft)	75	75	75	269
Upstream Blk Time (%)	24	37	41	10
Queuing Penalty (veh)	167	251	278	45
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	B34	B34	WB	WB	WB	WB
Directions Served	L	L	T	T	T	R	T	T	L	T	T	T
Maximum Queue (ft)	256	283	379	366	380	237	3	6	230	879	885	225
Average Queue (ft)	159	182	159	176	198	41	0	0	78	483	473	209
95th Queue (ft)	242	260	298	314	332	175	0	6	216	1055	1051	258
Link Distance (ft)			396	396	396		200	200		1487	1487	
Upstream Blk Time (%)			0	0	0					4	5	
Queuing Penalty (veh)			1	0	1					0	0	
Storage Bay Dist (ft)	285	285				260			230			225
Storage Blk Time (%)	0	0	0		2	0			0	34	22	10
Queuing Penalty (veh)	0	2	2		4	1			0	17	93	37

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	WB	NB	NB	NB	NB	B40	SB	SB	SB	SB
Directions Served	R	L	L	T	R	T	L	T	R	R
Maximum Queue (ft)	200	379	391	448	88	89	126	341	379	331
Average Queue (ft)	45	264	300	83	27	8	45	32	222	179
95th Queue (ft)	159	389	410	357	65	74	101	193	333	284
Link Distance (ft)				455		474		777		
Upstream Blk Time (%)				2				0		
Queuing Penalty (veh)				0				0		
Storage Bay Dist (ft)	225	395	395		275		250		425	425
Storage Blk Time (%)	0	0	2	0				0	0	
Queuing Penalty (veh)	1	0	1	1				0	0	

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB	EB
Directions Served	L	T	T	T
Maximum Queue (ft)	74	448	452	444
Average Queue (ft)	29	380	362	352
95th Queue (ft)	88	502	487	485
Link Distance (ft)		408	408	408
Upstream Blk Time (%)		12	7	7
Queuing Penalty (veh)		100	60	53
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	40		
Queuing Penalty (veh)	0	167		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	36	432	424	421
Average Queue (ft)	3	217	232	216
95th Queue (ft)	28	396	400	393
Link Distance (ft)		435	435	435
Upstream Blk Time (%)		5	5	4
Queuing Penalty (veh)		32	32	31
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	42		
Queuing Penalty (veh)	0	202		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB	NB
Directions Served	T	R
Maximum Queue (ft)	345	148
Average Queue (ft)	28	12
95th Queue (ft)	194	85
Link Distance (ft)	1325	1325
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	377	378	375	75
Average Queue (ft)	297	281	273	62
95th Queue (ft)	426	433	454	106
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)	36	32	32	
Queuing Penalty (veh)	262	227	232	
Storage Bay Dist (ft)				50
Storage Blk Time (%)			36	0
Queuing Penalty (veh)			204	2

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

SB

SB

SB

Directions Served

T

T

R

Maximum Queue (ft)

375

349

152

Average Queue (ft)

100

66

14

95th Queue (ft)

299

259

85

Link Distance (ft)

1213

1213

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

500

Storage Blk Time (%)

0

0

Queuing Penalty (veh)

0

0

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

57

306

Average Queue (ft)

2

103

95th Queue (ft)

27

334

Link Distance (ft)

185

190

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB	EB
Directions Served	T	T	TR
Maximum Queue (ft)	598	602	595
Average Queue (ft)	478	467	471
95th Queue (ft)	724	746	743
Link Distance (ft)	506	506	506
Upstream Blk Time (%)	46	40	41
Queuing Penalty (veh)	334	291	297
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Rt 630 & Courthouse Road

Movement	WB	WB	WB	SE	SE	SE
Directions Served	R	R	R	T	T	T
Maximum Queue (ft)	167	183	45	423	424	402
Average Queue (ft)	40	53	2	207	218	206
95th Queue (ft)	120	142	34	492	512	488
Link Distance (ft)	438	438	438	367	367	367
Upstream Blk Time (%)				7	8	7
Queuing Penalty (veh)				55	62	49
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	WB	WB	WB	B34	B34	B34	NE	NE	NE
Directions Served	T	T	T	T	T	T	R	R	R
Maximum Queue (ft)	277	278	281	361	379	356	28	33	85
Average Queue (ft)	129	124	128	122	130	131	1	1	4
95th Queue (ft)	343	342	345	398	420	410	22	23	43
Link Distance (ft)	200	200	200	396	396	396	217	217	217
Upstream Blk Time (%)	26	22	26	2	2	2			0
Queuing Penalty (veh)	190	156	186	15	17	14			0
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 10283

Appendix H

Build (2024) Capacity Analysis

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2024 Build AM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	885	0	0	694	274	0	0	0	211	0	209
Future Volume (vph)	150	885	0	0	694	274	0	0	0	211	0	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	17.0	61.5		13.0	57.5	23.0	22.5	22.5		23.0	23.0	17.0
Total Split (%)	14.2%	51.3%		10.8%	47.9%	19.2%	18.8%	18.8%		19.2%	19.2%	14.2%
Maximum Green (s)	8.0	52.5		4.0	48.5	14.0	13.5	13.5		14.0	14.0	8.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	80.3	89.3			71.7	93.4				12.7	12.7	30.3
Actuated g/C Ratio	0.67	0.74			0.60	0.78				0.11	0.11	0.25
v/c Ratio	0.32	0.36			0.35	0.23				0.63	0.24	0.19
Control Delay	6.7	5.9			24.9	3.7				59.6	1.2	0.7
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	6.7	5.9			24.9	3.7				59.6	1.2	0.7
LOS	A	A			C	A				E	A	A
Approach Delay		6.0			18.9						30.4	
Approach LOS		A			B						C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Lanes, Volumes, Timings 1: Driveway/Mine Road & Courthouse Road

2024 Build AM
02/17/2022

Offset: 80 (67%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 15.4

Intersection LOS: B

Intersection Capacity Utilization 56.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
13 s	61.5 s	23 s	22.5 s
 Ø5	 Ø6 (R)		
17 s	57.5 s		

HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2024 Build AM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	885	0	0	694	274	0	0	0	211	0	209
Future Volume (veh/h)	150	885	0	0	694	274	0	0	0	211	0	209
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	163	962	0	0	754	298	0	0	0	229	0	227
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	453	2817	0	473	2364	1201	0	2	0	317	0	432
Arrive On Green	0.05	0.76	0.00	0.00	0.64	0.64	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	163	962	0	0	754	298	0	0	0	229	0	227
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	3.6	10.1	0.0	0.0	11.1	7.2	0.0	0.0	0.0	7.5	0.0	8.0
Cycle Q Clear(g_c), s	3.6	10.1	0.0	0.0	11.1	7.2	0.0	0.0	0.0	7.5	0.0	8.0
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	453	2817	0	473	2364	1201	0	2	0	317	0	432
V/C Ratio(X)	0.36	0.34	0.00	0.00	0.32	0.25	0.00	0.00	0.00	0.72	0.00	0.53
Avail Cap(c_a), veh/h	489	2817	0	534	2364	1201	0	210	0	414	0	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.85	0.85	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	4.6	0.0	0.0	9.9	5.4	0.0	0.0	0.0	53.2	0.0	48.2
Incr Delay (d2), s/veh	0.5	0.3	0.0	0.0	0.3	0.4	0.0	0.0	0.0	4.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.0	0.0	0.0	4.1	3.2	0.0	0.0	0.0	3.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	5.0	0.0	0.0	10.2	5.9	0.0	0.0	0.0	57.5	0.0	49.2
LnGrp LOS	A	A	A	A	B	A	A	A	A	E	A	D
Approach Vol, veh/h	1125				1052				0			
Approach Delay, s/veh	5.4				8.9				0.0			
Approach LOS	A				A				D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	100.3		19.7	14.7	85.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	52.5		14.0	8.0	48.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	12.1		10.0	5.6	13.1		0.0				
Green Ext Time (p_c), s	0.0	7.5		0.7	0.1	6.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay 15.1

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2024 Build AM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1034	55	300	893	457	14	5	83	500	18	17
Future Volume (vph)	19	1034	55	300	893	457	14	5	83	500	18	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	31%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	47.0		25.0	58.0	23.0	25.0	25.0	25.0	23.0	23.0	14.0
Total Split (%)	11.7%	39.2%		20.8%	48.3%	19.2%	20.8%	20.8%	20.8%	19.2%	19.2%	11.7%
Maximum Green (s)	5.0	38.0		16.0	49.0	14.0	16.0	16.0	16.0	14.0	14.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effect Green (s)	69.9	38.0		28.3	66.0	90.8	6.6	6.6	41.0	14.0	14.0	22.0
Actuated g/C Ratio	0.58	0.32		0.24	0.55	0.76	0.06	0.06	0.34	0.12	0.12	0.18
v/c Ratio	0.07	1.08		0.83	0.53	0.40	0.15	0.27	0.08	1.00	0.99	0.04
Control Delay	9.5	90.7		61.1	28.1	1.0	57.2	22.5	0.3	99.7	117.5	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	90.7		61.1	28.1	1.0	57.2	22.5	0.3	99.7	117.5	0.2
LOS	A	F		E	C	A	E	C	A	F	F	A
Approach Delay		89.2			26.6			17.5			102.4	
Approach LOS		F			C			B			F	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2024 Build AM
02/17/2022

Actuated Cycle Length: 120

Offset: 117 (98%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 58.7

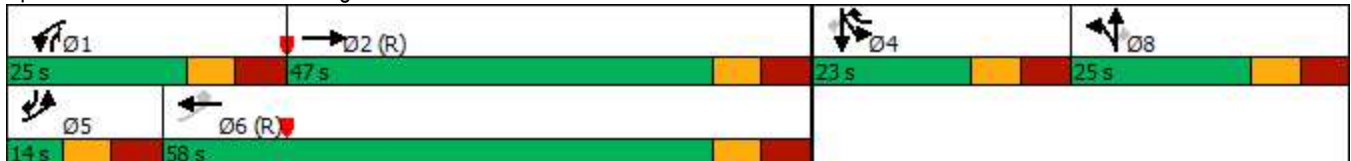
Intersection LOS: E

Intersection Capacity Utilization 85.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 Build AM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1034	55	300	893	457	14	5	83	500	18	17
Future Volume (veh/h)	19	1034	55	300	893	457	14	5	83	500	18	17
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	1850	1850	1850	1758	1758	1758	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	21	1124	60	326	971	497	10	22	90	557	0	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	6	6	6	0	0	0	3	3	3
Cap, veh/h	212	1380	74	223	1734	946	73	77	526	641	0	225
Arrive On Green	0.02	0.41	0.41	0.13	0.52	0.52	0.04	0.04	0.04	0.12	0.00	0.12
Sat Flow, veh/h	1762	3393	181	1674	3340	1490	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	21	582	602	326	971	497	10	22	90	557	0	18
Grp Sat Flow(s),veh/h/ln	1762	1757	1817	1674	1670	1490	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.7	35.2	35.3	16.0	23.6	21.9	0.7	1.5	3.1	11.9	0.0	1.2
Cycle Q Clear(g_c), s	0.7	35.2	35.3	16.0	23.6	21.9	0.7	1.5	3.1	11.9	0.0	1.2
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	715	739	223	1734	946	73	77	526	641	0	225
V/C Ratio(X)	0.10	0.81	0.81	1.46	0.56	0.53	0.14	0.29	0.17	0.87	0.00	0.08
Avail Cap(c_a), veh/h	248	715	739	223	1734	946	223	234	792	645	0	226
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.3	31.6	31.6	52.0	19.6	12.0	55.2	55.6	41.9	52.1	0.0	45.2
Incr Delay (d2), s/veh	0.2	9.1	8.8	230.1	1.3	2.1	0.8	2.0	0.2	12.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	16.1	16.6	20.8	9.0	10.0	0.3	0.7	1.1	6.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	40.6	40.4	282.1	20.9	14.1	56.0	57.6	42.0	64.3	0.0	45.3
LnGrp LOS	B	D	D	F	C	B	E	E	D	E	A	D
Approach Vol, veh/h	1205				1794				122			
Approach Delay, s/veh	40.1				66.5				46.0			
Approach LOS	D				E				D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	57.8		22.9	11.5	71.3		14.3				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	16.0	38.0		14.0	5.0	49.0		16.0				
Max Q Clear Time (g_c+I1), s	18.0	37.3		13.9	2.7	25.6		5.1				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	17.0		0.3				

Intersection Summary

HCM 6th Ctrl Delay 56.7

HCM 6th LOS E

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
3: Courthouse Road

2024 Build AM

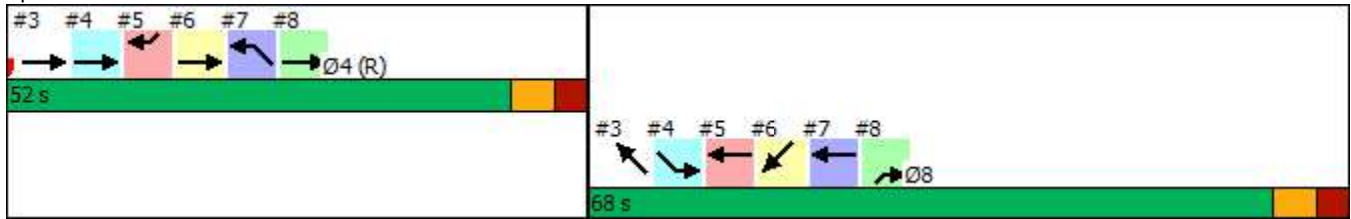
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1165	0	0	0	0	0	0	0	0	1333	0
Future Volume (vph)	0	1165	0	0	0	0	0	0	0	0	1333	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		52.0									68.0	
Total Split (%)		43.3%									56.7%	
Maximum Green (s)		45.0									61.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
v/c Ratio		0.69									0.59	
Control Delay		38.0									17.6	
Queue Delay		0.0									0.0	
Total Delay		38.0									17.6	
LOS		D									B	
Approach Delay		38.0									17.6	
Approach LOS		D									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 27.1	Intersection LOS: C											

Intersection Capacity Utilization 59.9%
Analysis Period (min) 15

ICU Level of Service B

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

3: Courthouse Road

2024 Build AM

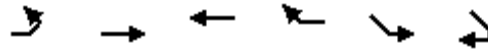
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1165	0	0	0	0	0	0	0	0	1333	0
Future Volume (vph)	0	1165	0	0	0	0	0	0	0	0	1333	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4866									4848	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4866									4848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1266	0	0	0	0	0	0	0	0	1449	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1266	0	0	0	0	0	0	0	0	1449	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		45.0									61.0	
Effective Green, g (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1824									2464	
v/s Ratio Prot		c0.26									c0.30	
v/s Ratio Perm												
v/c Ratio		0.69									0.59	
Uniform Delay, d1		31.7									20.7	
Progression Factor		1.17									0.80	
Incremental Delay, d2		0.7									0.3	
Delay (s)		37.7									16.9	
Level of Service		D									B	
Approach Delay (s)		37.7			0.0			0.0			16.9	
Approach LOS		D			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		26.6										
HCM 2000 Volume to Capacity ratio		0.63										
Actuated Cycle Length (s)		120.0									14.0	
Intersection Capacity Utilization		59.9%										
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 Build AM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1165	0	0	477	0
Future Volume (vph)	0	1165	0	0	477	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		52.0			68.0	
Total Split (%)		43.3%			56.7%	
Maximum Green (s)		45.0			61.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		C-Max			None	
Act Effct Green (s)		45.0			61.0	
Actuated g/C Ratio		0.38			0.51	
v/c Ratio		0.69			0.31	
Control Delay		1.8			17.1	
Queue Delay		0.0			0.0	
Total Delay		1.8			17.1	
LOS		A			B	
Approach Delay		1.8			17.1	
Approach LOS		A			B	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 6.3	Intersection LOS: A					

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 Build AM

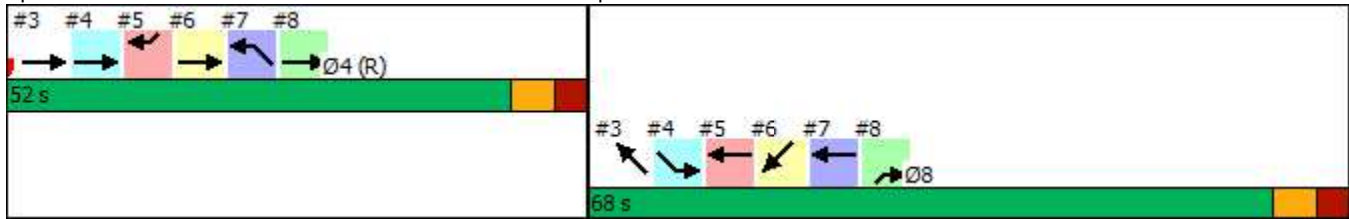
02/17/2022

Intersection Capacity Utilization 47.8%

ICU Level of Service A

Analysis Period (min) 15

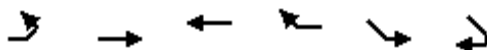
Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

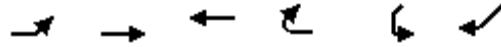
2024 Build AM
02/17/2022



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1165	0	0	477	0
Future Volume (vph)	0	1165	0	0	477	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4866			3242	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4866			3242	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1266	0	0	518	0
RTOR Reduction (vph)	0	0	0	0	10	0
Lane Group Flow (vph)	0	1266	0	0	508	0
Heavy Vehicles (%)	5%	5%	2%	2%	8%	8%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		45.0			61.0	
Effective Green, g (s)		45.0			61.0	
Actuated g/C Ratio		0.38			0.51	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1824			1648	
v/s Ratio Prot		c0.26			c0.16	
v/s Ratio Perm						
v/c Ratio		0.69			0.31	
Uniform Delay, d1		31.7			17.2	
Progression Factor		0.01			1.00	
Incremental Delay, d2		1.6			0.1	
Delay (s)		1.8			17.3	
Level of Service		A			B	
Approach Delay (s)		1.8	0.0		17.3	
Approach LOS		A	A		B	
Intersection Summary						
HCM 2000 Control Delay		6.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.47				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		47.8%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 Build AM
02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1333	0	0	317
Future Volume (vph)	0	0	1333	0	0	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			68.0			52.0
Total Split (%)			56.7%			43.3%
Maximum Green (s)			61.0			45.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			None			C-Max
Act Effect Green (s)			61.0			45.0
Actuated g/C Ratio			0.51			0.38
v/c Ratio			0.58			0.59
Control Delay			2.2			32.9
Queue Delay			0.0			0.0
Total Delay			2.3			32.9
LOS			A			C
Approach Delay			2.3		32.9	
Approach LOS			A		C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 8.1	Intersection LOS: A					

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 Build AM

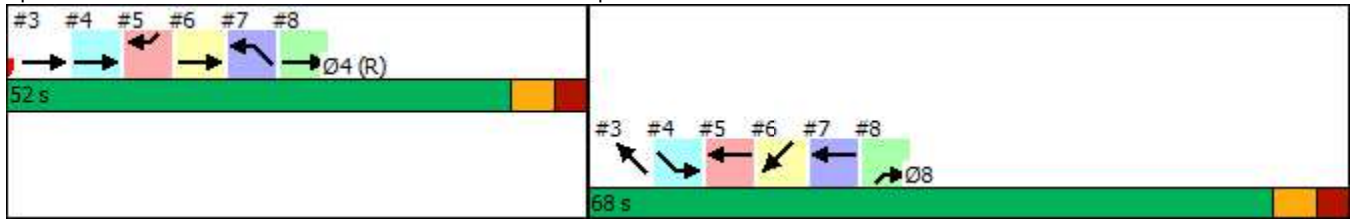
02/17/2022

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

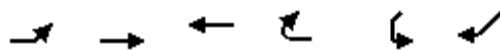
Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2024 Build AM
02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1333	0	0	317
Future Volume (vph)	0	0	1333	0	0	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			4920			1522
Flt Permitted			1.00			1.00
Satd. Flow (perm)			4920			1522
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1449	0	0	345
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	0	1449	0	0	331
Heavy Vehicles (%)	2%	2%	7%	7%	8%	8%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			61.0			45.0
Effective Green, g (s)			61.0			45.0
Actuated g/C Ratio			0.51			0.38
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2501			570
v/s Ratio Prot			c0.29			c0.22
v/s Ratio Perm						
v/c Ratio			0.58			0.58
Uniform Delay, d1			20.6			30.0
Progression Factor			0.07			1.00
Incremental Delay, d2			0.3			4.3
Delay (s)			1.7			34.2
Level of Service			A			C
Approach Delay (s)		0.0	1.7		34.2	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			7.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			59.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

2024 Build AM

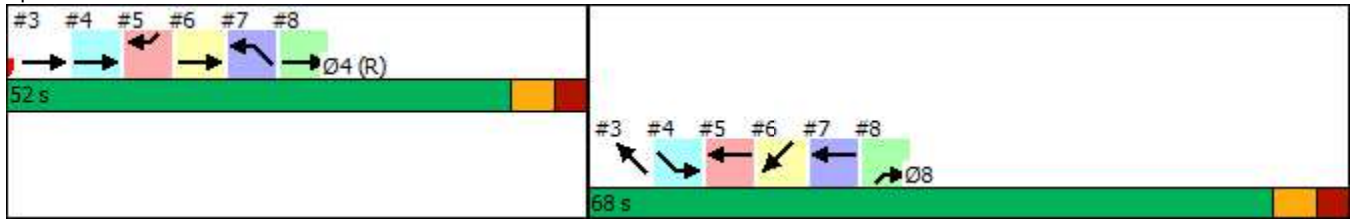
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1251	0	0	0	0	0	0	0	0	1209	0
Future Volume (vph)	0	1251	0	0	0	0	0	0	0	0	1209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		238			207			236			128	
Travel Time (s)		4.1			3.5			4.0			2.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		52.0									68.0	
Total Split (%)		43.3%									56.7%	
Maximum Green (s)		45.0									61.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									None	
Act Effct Green (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
v/c Ratio		0.73									0.53	
Control Delay		24.0									15.7	
Queue Delay		0.0									0.0	
Total Delay		24.0									15.7	
LOS		C									B	
Approach Delay		24.0									15.7	
Approach LOS		C									B	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 19.9	Intersection LOS: B											

Intersection Capacity Utilization 59.2%
Analysis Period (min) 15

ICU Level of Service B

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

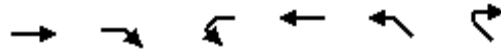
6: Courthouse Road & Rt.630 East

2024 Build AM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1251	0	0	0	0	0	0	0	0	1209	0
Future Volume (vph)	0	1251	0	0	0	0	0	0	0	0	1209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4940									4872	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4940									4872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1360	0	0	0	0	0	0	0	0	1314	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1360	0	0	0	0	0	0	0	0	1314	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	7%	7%	7%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		45.0									61.0	
Effective Green, g (s)		45.0									61.0	
Actuated g/C Ratio		0.38									0.51	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1852									2476	
v/s Ratio Prot		c0.28									c0.27	
v/s Ratio Perm												
v/c Ratio		0.73									0.53	
Uniform Delay, d1		32.3									19.9	
Progression Factor		0.67									0.76	
Incremental Delay, d2		2.3									0.2	
Delay (s)		23.8									15.2	
Level of Service		C									B	
Approach Delay (s)		23.8			0.0			0.0			15.2	
Approach LOS		C			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		19.6			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		59.2%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 Build AM
02/17/2022



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1209	519	0
Future Volume (vph)	0	0	0	1209	519	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	478			236	215	
Travel Time (s)	8.1			4.0	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				68.0	52.0	
Total Split (%)				56.7%	43.3%	
Maximum Green (s)				61.0	45.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				None	C-Max	
Act Effct Green (s)				61.0	45.0	
Actuated g/C Ratio				0.51	0.38	
v/c Ratio				0.53	0.43	
Control Delay				1.9	25.8	
Queue Delay				0.0	0.0	
Total Delay				1.9	25.8	
LOS				A	C	
Approach Delay				1.9	25.8	
Approach LOS				A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 9.1	Intersection LOS: A					

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 Build AM

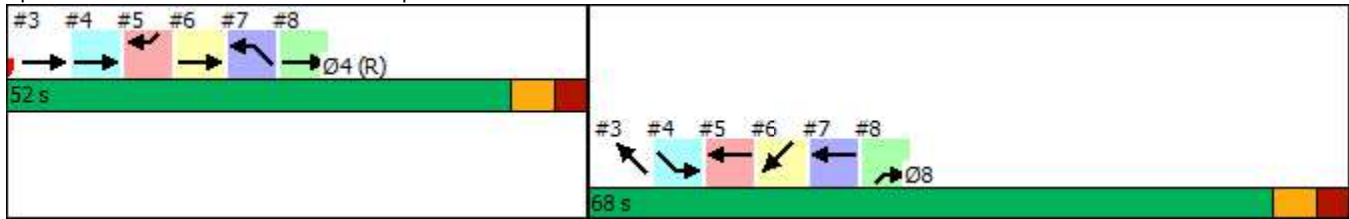
02/17/2022

Intersection Capacity Utilization 49.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road

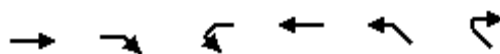


HCM Signalized Intersection Capacity Analysis

7: I-95 NB Off-Ramp & Courthouse Road

2024 Build AM

02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1209	519	0
Future Volume (vph)	0	0	0	1209	519	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				4872	3367	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				4872	3367	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1314	564	0
RTOR Reduction (vph)	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	1314	524	0
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				61.0	45.0	
Effective Green, g (s)				61.0	45.0	
Actuated g/C Ratio				0.51	0.38	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2476	1262	
v/s Ratio Prot				c0.27	c0.16	
v/s Ratio Perm						
v/c Ratio				0.53	0.42	
Uniform Delay, d1				19.9	27.8	
Progression Factor				0.06	1.00	
Incremental Delay, d2				0.2	1.0	
Delay (s)				1.4	28.8	
Level of Service				A	C	
Approach Delay (s)	0.0			1.4	28.8	
Approach LOS	A			A	C	

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

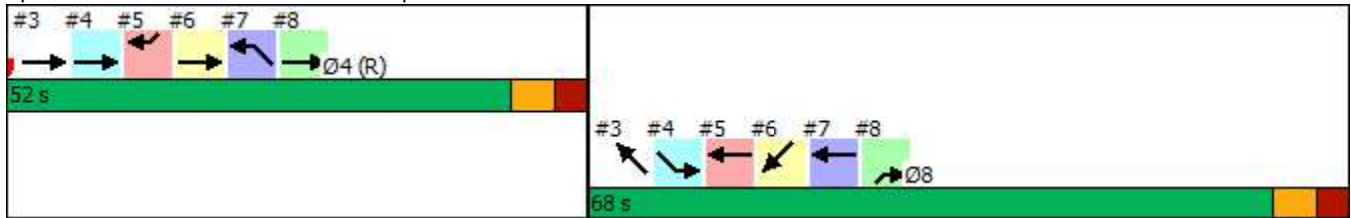
Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

2024 Build AM
02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↑
Traffic Volume (vph)	1251	0	0	0	0	533
Future Volume (vph)	1251	0	0	0	0	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	207			262	427	
Travel Time (s)	4.0			4.5	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	52.0					68.0
Total Split (%)	43.3%					56.7%
Maximum Green (s)	45.0					61.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	C-Max					None
Act Effct Green (s)	45.0					61.0
Actuated g/C Ratio	0.38					0.51
v/c Ratio	0.73					0.72
Control Delay	6.2					28.8
Queue Delay	0.0					0.0
Total Delay	6.2					28.8
LOS	A					C
Approach Delay	6.2				28.8	
Approach LOS	A				C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 69 (58%), Referenced to phase 4:EBT, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.73						
Intersection Signal Delay: 13.0				Intersection LOS: B		
Intersection Capacity Utilization 68.8%				ICU Level of Service C		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

8: I-95 NB Off-Ramp & Courthouse Road

2024 Build AM
02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1251	0	0	0	0	533
Future Volume (vph)	1251	0	0	0	0	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1580
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1580
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1360	0	0	0	0	579
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1360	0	0	0	0	576
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	45.0					61.0
Effective Green, g (s)	45.0					61.0
Actuated g/C Ratio	0.38					0.51
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	1852					803
v/s Ratio Prot	c0.28					c0.36
v/s Ratio Perm						
v/c Ratio	0.73					0.72
Uniform Delay, d1	32.3					22.8
Progression Factor	0.14					1.00
Incremental Delay, d2	1.7					3.1
Delay (s)	6.2					25.9
Level of Service	A					C
Approach Delay (s)	6.2			0.0	25.9	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay		12.1		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.72				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		68.8%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build AM
02/23/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	492	1051	240	55	805	81	428	13	55	60	10	493
Future Volume (vph)	492	1051	240	55	805	81	428	13	55	60	10	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		2	3		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	7%	7%	7%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2	6		6			8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0	13.0	13.8	48.2	12.2	14.8	14.1	12.8
Total Split (s)	28.0	43.0	43.0	13.0	28.0	28.0	35.0	49.0	13.0	15.0	29.0	28.0
Total Split (%)	23.3%	35.8%	35.8%	10.8%	23.3%	23.3%	29.2%	40.8%	10.8%	12.5%	24.2%	23.3%
Maximum Green (s)	20.2	36.9	36.9	5.8	22.8	22.8	26.2	41.8	5.8	6.2	19.9	20.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2	4.2	4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0	1.0	4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2	5.2	8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	Max	Max	None
Walk Time (s)								8.0				
Flash Dont Walk (s)								33.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	20.2	39.5	39.5	26.6	22.8	22.8	17.2	20.2	25.4	46.1	28.9	58.2
Actuated g/C Ratio	0.17	0.33	0.33	0.22	0.19	0.19	0.14	0.17	0.21	0.38	0.24	0.48
v/c Ratio	0.96	0.71	0.38	0.41	0.97	0.16	0.68	0.05	0.13	0.11	0.02	0.39
Control Delay	81.3	45.3	10.2	33.4	71.5	0.6	53.8	32.1	0.6	20.4	37.2	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	45.3	10.2	33.4	71.5	0.6	53.8	32.1	0.6	20.4	37.2	21.2
LOS	F	D	B	C	E	A	D	C	A	C	D	C
Approach Delay		50.5			63.2			47.3			21.4	
Approach LOS		D			E			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 120

Lanes, Volumes, Timings 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build AM
02/23/2022

Actuated Cycle Length: 120

Offset: 79 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 48.9

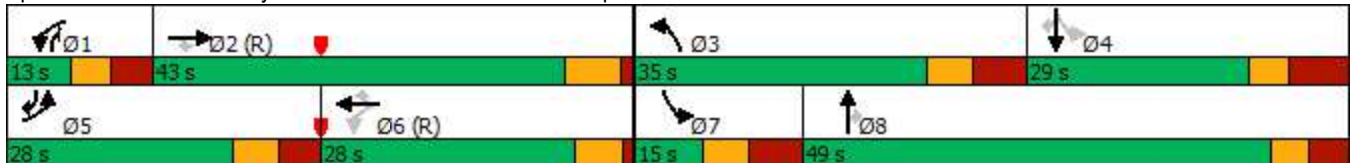
Intersection LOS: D

Intersection Capacity Utilization 61.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build AM
02/23/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  					 
Traffic Volume (veh/h)	492	1051	240	55	805	81	428	13	55	60	10	493
Future Volume (veh/h)	492	1051	240	55	805	81	428	13	55	60	10	493
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	1913	1913	1913	1767	1767	1767	1834	1834	1834	1876	1876	1876
Adj Flow Rate, veh/h	535	1142	261	60	875	88	465	14	60	65	11	536
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	9	9	9	7	7	7	0	0	0
Cap, veh/h	587	2164	672	212	1348	419	608	436	426	373	311	929
Arrive On Green	0.17	0.41	0.41	0.04	0.28	0.28	0.12	0.24	0.24	0.05	0.17	0.17
Sat Flow, veh/h	3534	5222	1621	1682	4823	1497	4926	1834	1554	1787	1876	2799
Grp Volume(v), veh/h	535	1142	261	60	875	88	465	14	60	65	11	536
Grp Sat Flow(s),veh/h/ln	1767	1741	1621	1682	1608	1497	1642	1834	1554	1787	1876	1399
Q Serve(g_s), s	17.8	19.7	13.5	3.0	19.2	5.4	11.0	0.7	3.5	3.5	0.6	19.0
Cycle Q Clear(g_c), s	17.8	19.7	13.5	3.0	19.2	5.4	11.0	0.7	3.5	3.5	0.6	19.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	587	2164	672	212	1348	419	608	436	426	373	311	929
V/C Ratio(X)	0.91	0.53	0.39	0.28	0.65	0.21	0.76	0.03	0.14	0.17	0.04	0.58
Avail Cap(c_a), veh/h	595	2164	672	232	1348	419	1076	639	598	373	311	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	26.3	24.5	29.2	38.0	33.1	50.9	35.1	32.9	38.1	42.0	33.1
Incr Delay (d2), s/veh	18.2	0.9	1.7	0.7	2.4	1.1	2.0	0.0	0.1	1.0	0.2	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	8.1	5.5	1.3	7.7	2.1	4.6	0.3	1.3	1.7	0.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.3	27.3	26.2	29.9	40.5	34.2	52.9	35.2	33.0	39.1	42.2	35.7
LnGrp LOS	E	C	C	C	D	C	D	D	C	D	D	D
Approach Vol, veh/h	1938			1023			539			612		
Approach Delay, s/veh	38.2			39.3			50.3			36.2		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	55.8	23.6	29.0	27.7	39.6	15.0	37.6				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 5.8	* 37	* 26	* 20	* 20	* 23	* 6.2	* 42				
Max Q Clear Time (g_c+I1), s	5.0	21.7	13.0	21.0	19.8	21.2	5.5	5.5				
Green Ext Time (p_c), s	0.0	11.2	1.9	0.0	0.1	1.2	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	39.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6742	6771	6639	6734	6854	6771	6765
Vehs Exited	6769	6624	6662	6781	6846	6578	6748
Starting Vehs	374	339	359	352	386	388	303
Ending Vehs	347	486	336	305	394	581	320
Travel Distance (mi)	6164	6007	6028	6078	6165	5960	6088
Travel Time (hr)	375.5	420.2	364.3	373.0	410.1	382.9	351.2
Total Delay (hr)	190.6	239.6	184.5	190.7	224.8	204.2	168.9
Total Stops	12192	13428	11776	12128	13524	12468	11351
Fuel Used (gal)	261.1	265.5	255.0	258.2	267.5	256.1	253.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6803	6684	6810	6761
Vehs Exited	6787	6662	6869	6734
Starting Vehs	371	392	400	363
Ending Vehs	387	414	341	392
Travel Distance (mi)	6190	6067	6194	6094
Travel Time (hr)	396.2	406.0	383.8	386.3
Total Delay (hr)	211.0	224.6	197.8	203.7
Total Stops	12996	13304	12790	12591
Fuel Used (gal)	266.0	264.6	264.0	261.2

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1683	1735	1675	1609	1638	1617	1643
Vehs Exited	1733	1748	1683	1613	1694	1709	1625
Starting Vehs	374	339	359	352	386	388	303
Ending Vehs	324	326	351	348	330	296	321
Travel Distance (mi)	1577	1554	1493	1449	1490	1490	1457
Travel Time (hr)	93.6	87.5	84.6	84.6	88.9	84.3	83.2
Total Delay (hr)	46.5	40.9	40.1	41.0	44.2	39.5	39.7
Total Stops	2939	2851	2716	2719	2961	2689	2690
Fuel Used (gal)	66.8	64.2	61.8	60.8	62.4	61.4	60.6

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1668	1628	1698	1659
Vehs Exited	1759	1710	1755	1704
Starting Vehs	371	392	400	363
Ending Vehs	280	310	343	319
Travel Distance (mi)	1557	1518	1550	1513
Travel Time (hr)	90.1	94.7	92.5	88.4
Total Delay (hr)	43.5	49.5	46.1	43.1
Total Stops	2903	3088	3022	2858
Fuel Used (gal)	65.3	64.9	65.3	63.4

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1780	1751	1773	1783	1836	1814	1779
Vehs Exited	1631	1634	1719	1696	1689	1674	1708
Starting Vehs	324	326	351	348	330	296	321
Ending Vehs	473	443	405	435	477	436	392
Travel Distance (mi)	1563	1556	1620	1610	1571	1572	1572
Travel Time (hr)	97.6	100.1	98.5	99.7	103.6	96.8	93.1
Total Delay (hr)	50.6	53.1	50.3	51.5	56.3	49.8	46.0
Total Stops	3373	3373	3319	3298	3511	3319	3134
Fuel Used (gal)	66.1	66.8	68.5	68.8	67.6	66.6	65.9

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1725	1772	1760	1777
Vehs Exited	1540	1614	1651	1655
Starting Vehs	280	310	343	319
Ending Vehs	465	468	452	444
Travel Distance (mi)	1507	1565	1580	1572
Travel Time (hr)	99.1	108.6	102.2	99.9
Total Delay (hr)	54.0	61.7	54.7	52.8
Total Stops	3241	3639	3501	3368
Fuel Used (gal)	65.1	69.0	68.0	67.2

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1626	1582	1553	1637	1685	1657	1634
Vehs Exited	1797	1550	1666	1772	1750	1775	1716
Starting Vehs	473	443	405	435	477	436	392
Ending Vehs	302	475	292	300	412	318	310
Travel Distance (mi)	1543	1371	1470	1513	1592	1549	1525
Travel Time (hr)	97.7	113.2	99.6	101.0	114.9	95.8	88.0
Total Delay (hr)	51.4	72.0	55.6	55.5	67.1	49.3	42.4
Total Stops	3136	3373	3081	3255	3746	3188	2775
Fuel Used (gal)	66.5	63.9	65.2	65.8	71.5	66.5	63.6

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1721	1578	1682	1635
Vehs Exited	1823	1716	1749	1729
Starting Vehs	465	468	452	444
Ending Vehs	363	330	385	349
Travel Distance (mi)	1598	1526	1547	1523
Travel Time (hr)	103.7	107.4	98.7	102.0
Total Delay (hr)	56.1	61.9	52.5	56.4
Total Stops	3331	3490	3276	3266
Fuel Used (gal)	69.3	67.7	66.7	66.7

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1653	1703	1638	1705	1695	1683	1709
Vehs Exited	1608	1692	1594	1700	1713	1420	1699
Starting Vehs	302	475	292	300	412	318	310
Ending Vehs	347	486	336	305	394	581	320
Travel Distance (mi)	1481	1526	1445	1506	1511	1350	1535
Travel Time (hr)	86.7	119.4	81.6	87.7	102.7	106.1	86.8
Total Delay (hr)	42.1	73.4	38.5	42.6	57.2	65.6	40.8
Total Stops	2744	3831	2660	2856	3306	3272	2752
Fuel Used (gal)	61.6	70.6	59.5	62.8	66.0	61.7	63.8

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1689	1706	1670	1682
Vehs Exited	1665	1622	1714	1642
Starting Vehs	363	330	385	349
Ending Vehs	387	414	341	392
Travel Distance (mi)	1529	1459	1517	1486
Travel Time (hr)	103.2	95.2	90.3	96.0
Total Delay (hr)	57.4	51.5	44.6	51.4
Total Stops	3521	3087	2991	3101
Fuel Used (gal)	66.2	63.0	64.1	63.9

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	111	151	144	287	298	150	161	197	108	45
Average Queue (ft)	52	78	58	144	163	56	64	115	46	9
95th Queue (ft)	94	130	119	259	275	119	148	175	88	29
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)				5						
Queuing Penalty (veh)				0						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	LT	TR	R	L
Maximum Queue (ft)	249	615	632	260	430	429	219	10	56	85	30	296
Average Queue (ft)	19	364	386	217	261	249	88	1	18	34	8	170
95th Queue (ft)	119	575	588	311	459	419	173	7	44	67	28	279
Link Distance (ft)		2357	2357		367	367	367		928	928		
Upstream Blk Time (%)					7	2						
Queuing Penalty (veh)					37	11						
Storage Bay Dist (ft)	390			260				205			225	330
Storage Blk Time (%)	0	10		10	7							0
Queuing Penalty (veh)	0	2		47	20							0

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	378	308	46
Average Queue (ft)	204	162	7
95th Queue (ft)	334	274	26
Link Distance (ft)	1421	1421	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			360
Storage Blk Time (%)	2	0	
Queuing Penalty (veh)	3	0	

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	215	213	196	141	128	120
Average Queue (ft)	186	156	138	104	100	93
95th Queue (ft)	203	231	200	132	120	123
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	61	32	28	34	38	31
Queuing Penalty (veh)	236	126	107	150	168	139
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	106	51	44	237	218
Average Queue (ft)	62	13	6	134	112
95th Queue (ft)	102	43	29	213	197
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	50	4	2	2	1
Queuing Penalty (veh)	194	17	7	6	3
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	87	101	70	269
Average Queue (ft)	22	27	15	184
95th Queue (ft)	64	79	51	278
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)		0		10
Queuing Penalty (veh)		0		32
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	140	135	134	197	182	155
Average Queue (ft)	112	109	104	156	125	72
95th Queue (ft)	126	125	132	189	189	137
Link Distance (ft)	36	36	36	34	34	34
Upstream Blk Time (%)	60	55	58	47	37	28
Queuing Penalty (veh)	249	231	242	191	147	113
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	86	59	47	227	237
Average Queue (ft)	35	18	9	139	147
95th Queue (ft)	76	51	33	217	226
Link Distance (ft)	38	38	38	154	154
Upstream Blk Time (%)	19	6	2	9	10
Queuing Penalty (veh)	77	25	10	23	25
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	89	107	100	346
Average Queue (ft)	39	48	61	221
95th Queue (ft)	82	97	101	332
Link Distance (ft)	77	77	77	255
Upstream Blk Time (%)	7	11	21	4
Queuing Penalty (veh)	31	48	90	22
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	B34	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	T	R	T	L	T	T	T	R
Maximum Queue (ft)	279	284	392	347	377	260	30	229	474	477	225	202
Average Queue (ft)	205	218	237	243	253	136	2	70	278	265	188	51
95th Queue (ft)	298	307	361	340	355	312	27	198	425	435	261	157
Link Distance (ft)			396	396	396		200		1487	1487		
Upstream Blk Time (%)			1	0	0		0					
Queuing Penalty (veh)			7	0	1		0					
Storage Bay Dist (ft)	285	285				260		230			225	225
Storage Blk Time (%)	0	2	2		7	1		0	18	10	4	0
Queuing Penalty (veh)	1	8	8		16	2		0	10	34	12	0

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	T	R	L	T	R	R
Maximum Queue (ft)	274	313	54	67	80	59	247	213
Average Queue (ft)	143	189	12	22	24	9	147	107
95th Queue (ft)	236	284	40	50	62	43	226	191
Link Distance (ft)			455			777		
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	395	395		275	250		425	425
Storage Blk Time (%)	0	0				0		
Queuing Penalty (veh)	0	0				0		

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB	EB
Directions Served	L	T	T	T
Maximum Queue (ft)	74	382	359	317
Average Queue (ft)	11	169	130	94
95th Queue (ft)	54	334	287	248
Link Distance (ft)		408	408	408
Upstream Blk Time (%)		3	1	1
Queuing Penalty (veh)		15	8	3
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	39		
Queuing Penalty (veh)	0	154		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	67	405	403	398
Average Queue (ft)	6	129	130	109
95th Queue (ft)	39	363	342	315
Link Distance (ft)		413	413	413
Upstream Blk Time (%)		6	3	2
Queuing Penalty (veh)		36	19	12
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	18		
Queuing Penalty (veh)	0	72		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB	NB
Directions Served	T	R
Maximum Queue (ft)	320	64
Average Queue (ft)	28	3
95th Queue (ft)	164	35
Link Distance (ft)	1325	1325
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	329	247	217	74
Average Queue (ft)	119	38	18	31
95th Queue (ft)	306	165	121	81
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)	5	1	1	
Queuing Penalty (veh)	29	4	5	
Storage Bay Dist (ft)				50
Storage Blk Time (%)			1	0
Queuing Penalty (veh)			5	1

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

SB

SB

SB

Directions Served

T

T

R

Maximum Queue (ft)

66

32

91

Average Queue (ft)

4

1

9

95th Queue (ft)

39

24

53

Link Distance (ft)

1213

1213

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

500

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

34

308

Average Queue (ft)

2

59

95th Queue (ft)

20

255

Link Distance (ft)

184

190

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB	EB
Directions Served	T	T	TR
Maximum Queue (ft)	520	485	474
Average Queue (ft)	314	243	198
95th Queue (ft)	569	532	511
Link Distance (ft)	506	506	506
Upstream Blk Time (%)	12	5	3
Queuing Penalty (veh)	65	24	17
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Rt 630 & Courthouse Road

Movement	WB	WB	SE	SE	SE
Directions Served	R	R	T	T	T
Maximum Queue (ft)	128	94	308	364	191
Average Queue (ft)	13	8	43	52	29
95th Queue (ft)	78	58	221	258	184
Link Distance (ft)	438	438	367	367	367
Upstream Blk Time (%)			1	1	0
Queuing Penalty (veh)			4	3	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	WB	WB	WB	B34	B34	B34	NE	NE
Directions Served	T	T	T	T	T	T	R	R
Maximum Queue (ft)	136	83	56	86	117	92	24	59
Average Queue (ft)	14	5	3	4	6	3	1	2
95th Queue (ft)	98	56	49	59	79	60	20	36
Link Distance (ft)	200	200	200	396	396	396	217	217
Upstream Blk Time (%)	2	1	1	0	0	0		0
Queuing Penalty (veh)	11	3	3	1	1	1		0
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 3426

Lanes, Volumes, Timings
1: Driveway/Mine Road & Courthouse Road

2024 Build PM
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	666	0	0	907	338	0	0	0	520	0	316
Future Volume (vph)	125	666	0	0	907	338	0	0	0	520	0	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			-2%			0%			1%	
Storage Length (ft)	335		0	170		760	0		0	530		450
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	0			0			25			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		1812			2454			528			1033	
Travel Time (s)		27.5			37.2			14.4			17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												50%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov				Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8		4	4	5
Permitted Phases	6			2		6						4
Detector Phase	5	2		1	6	4	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	13.0	22.5		13.0	56.0	22.5	22.5	22.5		22.5	22.5	13.0
Total Split (s)	21.0	68.5		13.0	60.5	46.0	22.5	22.5		46.0	46.0	21.0
Total Split (%)	14.0%	45.7%		8.7%	40.3%	30.7%	15.0%	15.0%		30.7%	30.7%	14.0%
Maximum Green (s)	12.0	59.5		4.0	51.5	37.0	13.5	13.5		37.0	37.0	12.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5		4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5		4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0		9.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					40.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	90.5	99.5		79.9	121.4					32.5	32.5	52.1
Actuated g/C Ratio	0.60	0.66		0.53	0.81					0.22	0.22	0.35
v/c Ratio	0.39	0.31		0.52	0.27					0.76	0.31	0.25
Control Delay	13.7	11.5		2.6	0.4					62.1	1.5	1.2
Queue Delay	0.0	0.0		0.0	0.0					0.0	0.0	0.0
Total Delay	13.7	11.5		2.6	0.4					62.1	1.5	1.2
LOS	B	B		A	A					E	A	A
Approach Delay		11.9			2.0						39.2	
Approach LOS		B			A						D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												

Lanes, Volumes, Timings

1: Driveway/Mine Road & Courthouse Road

2024 Build PM
02/17/2022

Offset: 50 (33%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.5

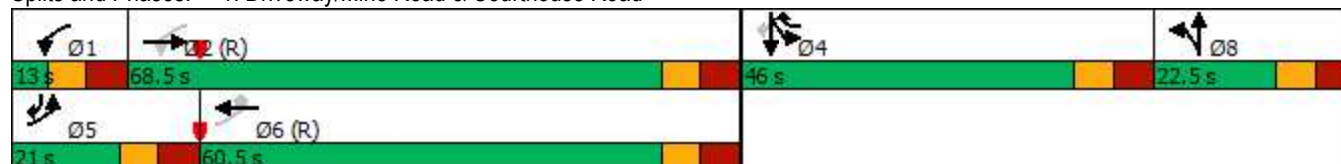
Intersection LOS: B

Intersection Capacity Utilization 69.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Driveway/Mine Road & Courthouse Road



HCM 6th Signalized Intersection Summary

1: Driveway/Mine Road & Courthouse Road

2024 Build PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	666	0	0	907	338	0	0	0	520	0	316
Future Volume (veh/h)	125	666	0	0	907	338	0	0	0	520	0	316
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	1949	1949	1949	1949	1949	1949	1870	1870	1870	1864	1864	1864
Adj Flow Rate, veh/h	136	724	0	0	986	367	0	0	0	565	0	343
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	2568	0	520	2186	1283	0	1	0	662	0	725
Arrive On Green	0.04	0.69	0.00	0.00	0.59	0.59	0.00	0.00	0.00	0.19	0.00	0.19
Sat Flow, veh/h	1856	3800	0	1856	3702	1651	0	1870	0	3551	0	3160
Grp Volume(v), veh/h	136	724	0	0	986	367	0	0	0	565	0	343
Grp Sat Flow(s),veh/h/ln	1856	1851	0	1856	1851	1651	0	1870	0	1776	0	1580
Q Serve(g_s), s	4.3	11.2	0.0	0.0	22.3	9.6	0.0	0.0	0.0	23.1	0.0	14.1
Cycle Q Clear(g_c), s	4.3	11.2	0.0	0.0	22.3	9.6	0.0	0.0	0.0	23.1	0.0	14.1
Prop In Lane	1.00		0.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	2568	0	520	2186	1283	0	1	0	662	0	725
V/C Ratio(X)	0.43	0.28	0.00	0.00	0.45	0.29	0.00	0.00	0.00	0.85	0.00	0.47
Avail Cap(c_a), veh/h	382	2568	0	568	2186	1283	0	168	0	876	0	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.41	0.41	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	8.8	0.0	0.0	17.1	4.8	0.0	0.0	0.0	59.0	0.0	49.9
Incr Delay (d2), s/veh	0.9	0.3	0.0	0.0	0.3	0.2	0.0	0.0	0.0	6.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.2	0.0	0.0	9.2	6.5	0.0	0.0	0.0	10.9	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	9.0	0.0	0.0	17.4	5.0	0.0	0.0	0.0	65.4	0.0	50.4
LnGrp LOS	B	A	A	A	B	A	A	A	A	E	A	D
Approach Vol, veh/h	860			1353			0			908		
Approach Delay, s/veh	9.9			14.1			0.0			59.8		
Approach LOS	A			B						E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	113.0		37.0	15.5	97.6		0.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	4.0	59.5		37.0	12.0	51.5		13.5				
Max Q Clear Time (g_c+I1), s	0.0	13.2		25.1	6.3	24.3		0.0				
Green Ext Time (p_c), s	0.0	5.2		2.9	0.1	8.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 26.2

HCM 6th LOS C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2024 Build PM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1156	21	113	1346	615	56	18	294	869	8	12
Future Volume (vph)	8	1156	21	113	1346	615	56	18	294	869	8	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	33%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	62.0		18.0	66.0	45.0	25.0	25.0	18.0	45.0	45.0	14.0
Total Split (%)	9.3%	41.3%		12.0%	44.0%	30.0%	16.7%	16.7%	12.0%	30.0%	30.0%	9.3%
Maximum Green (s)	5.0	53.0		9.0	57.0	36.0	16.0	16.0	9.0	36.0	36.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effect Green (s)	71.9	54.1		14.3	68.5	111.6	11.5	11.5	34.8	34.1	34.1	39.8
Actuated g/C Ratio	0.48	0.36		0.10	0.46	0.74	0.08	0.08	0.23	0.23	0.23	0.27
v/c Ratio	0.07	0.96		0.71	0.87	0.48	0.42	0.89dr	0.37	0.83	0.83	0.03
Control Delay	23.9	53.6		79.9	51.6	1.0	75.5	52.9	18.4	65.5	74.9	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	53.6		79.9	51.6	1.0	75.5	52.9	18.4	65.5	74.9	0.1
LOS	C	D		E	D	A	E	D	B	E	E	A
Approach Delay		53.5			38.1			42.2			67.7	
Approach LOS		D			D			D			E	

Intersection Summary

Area Type: Other

Cycle Length: 150

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2024 Build PM
02/17/2022

Actuated Cycle Length: 150

Offset: 149 (99%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 48.3

Intersection LOS: D

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 Build PM
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1156	21	113	1346	615	56	18	294	869	8	12
Future Volume (veh/h)	8	1156	21	113	1346	615	56	18	294	869	8	12
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	1879	1879	1879	1832	1832	1832	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	8	1204	22	118	1402	641	39	78	306	911	0	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	81	1432	26	105	1565	1000	178	187	495	1073	0	334
Arrive On Green	0.01	0.40	0.40	0.06	0.45	0.45	0.11	0.11	0.11	0.19	0.00	0.19
Sat Flow, veh/h	1790	3587	66	1745	3481	1553	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	8	599	627	118	1402	641	39	78	306	911	0	12
Grp Sat Flow(s),veh/h/ln	1790	1785	1867	1745	1741	1553	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.4	45.5	45.6	9.0	55.7	37.6	3.2	6.2	14.4	23.9	0.0	0.9
Cycle Q Clear(g_c), s	0.4	45.5	45.6	9.0	55.7	37.6	3.2	6.2	14.4	23.9	0.0	0.9
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	81	712	745	105	1565	1000	178	187	495	1073	0	334
V/C Ratio(X)	0.10	0.84	0.84	1.13	0.90	0.64	0.22	0.42	0.62	0.85	0.00	0.04
Avail Cap(c_a), veh/h	124	712	745	105	1565	1000	178	187	495	1326	0	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.8	40.8	40.8	70.5	38.0	16.2	61.3	62.6	58.1	58.3	0.0	47.9
Incr Delay (d2), s/veh	0.4	10.0	9.6	126.3	8.4	3.2	0.6	1.5	2.3	4.5	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	0.2	21.5	22.5	7.7	24.8	22.3	1.4	2.8	5.5	11.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	50.7	50.4	196.8	46.4	19.4	61.9	64.1	60.4	62.8	0.0	48.0
LnGrp LOS	C	D	D	F	D	B	E	E	E	E	A	D
Approach Vol, veh/h	1234			2161			423			923		
Approach Delay, s/veh	50.4			46.6			61.2			62.6		
Approach LOS	D			D			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	68.9		38.1	10.4	76.4		25.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	9.0	53.0		36.0	5.0	57.0		16.0				
Max Q Clear Time (g_c+I1), s	11.0	47.6		25.9	2.4	57.7		16.4				
Green Ext Time (p_c), s	0.0	5.3		3.3	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	52.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
3: Courthouse Road

2024 Build PM

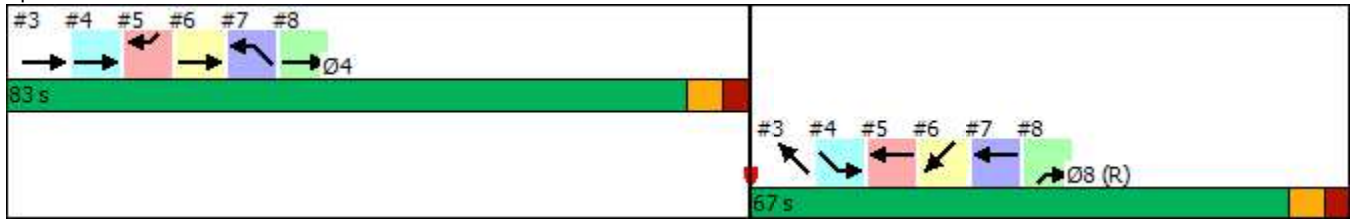
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1709	0	0	0	0	0	0	0	0	1672	0
Future Volume (vph)	0	1709	0	0	0	0	0	0	0	0	1672	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		152			208			219			220	
Travel Time (s)		2.6			3.5			3.7			3.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		83.0									67.0	
Total Split (%)		55.3%									44.7%	
Maximum Green (s)		76.0									60.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
v/c Ratio		0.71									0.86	
Control Delay		36.9									31.3	
Queue Delay		0.0									0.5	
Total Delay		36.9									31.8	
LOS		D									C	
Approach Delay		36.9									31.8	
Approach LOS		D									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 34.4	Intersection LOS: C											

Intersection Capacity Utilization 77.0%
Analysis Period (min) 15

ICU Level of Service D

Splits and Phases: 3: Courthouse Road



HCM Signalized Intersection Capacity Analysis

3: Courthouse Road

2024 Build PM

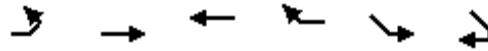
02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1709	0	0	0	0	0	0	0	0	1672	0
Future Volume (vph)	0	1709	0	0	0	0	0	0	0	0	1672	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			0%			0%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4960									5036	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4960									5036	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1780	0	0	0	0	0	0	0	0	1742	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1780	0	0	0	0	0	0	0	0	1742	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		76.0									60.0	
Effective Green, g (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2513									2014	
v/s Ratio Prot		c0.36									c0.35	
v/s Ratio Perm												
v/c Ratio		0.71									0.86	
Uniform Delay, d1		28.5									41.3	
Progression Factor		1.25									0.65	
Incremental Delay, d2		0.9									4.2	
Delay (s)		36.6									31.0	
Level of Service		D									C	
Approach Delay (s)		36.6			0.0			0.0			31.0	
Approach LOS		D			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		33.8										
HCM 2000 Volume to Capacity ratio		0.78										
Actuated Cycle Length (s)		150.0									14.0	
Intersection Capacity Utilization		77.0%										
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 Build PM

02/17/2022



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1709	0	0	817	0
Future Volume (vph)	0	1709	0	0	817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes	Yes	Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		208	475		232	
Travel Time (s)		3.5	8.1		4.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Detector Phase		4			8	
Switch Phase						
Minimum Initial (s)		4.0			4.0	
Minimum Split (s)		23.0			22.0	
Total Split (s)		83.0			67.0	
Total Split (%)		55.3%			44.7%	
Maximum Green (s)		76.0			60.0	
Yellow Time (s)		4.0			4.0	
All-Red Time (s)		3.0			3.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		7.0			7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0			3.0	
Recall Mode		Max			C-Max	
Act Effct Green (s)		76.0			60.0	
Actuated g/C Ratio		0.51			0.40	
v/c Ratio		0.71			0.62	
Control Delay		1.4			37.4	
Queue Delay		0.0			0.0	
Total Delay		1.4			37.4	
LOS		A			D	
Approach Delay		1.4			37.4	
Approach LOS		A			D	

Intersection Summary

Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 13.0	Intersection LOS: B

Lanes, Volumes, Timings
4: Courthouse Road & I-95 SB Off-Ramp

2024 Build PM

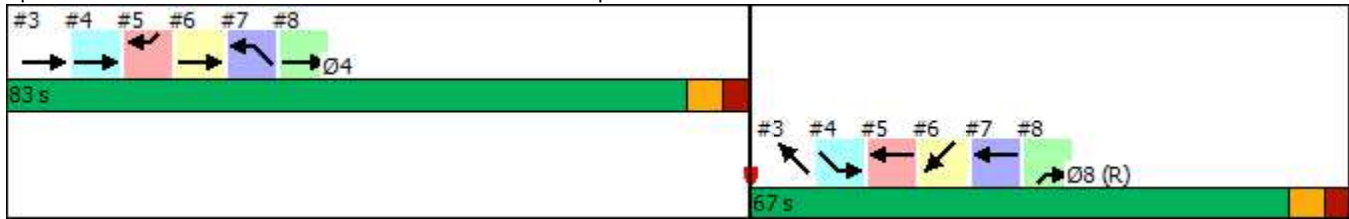
02/17/2022

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

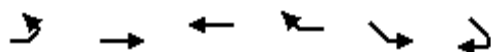
Splits and Phases: 4: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

4: Courthouse Road & I-95 SB Off-Ramp

2024 Build PM
02/17/2022



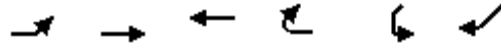
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	1709	0	0	817	0
Future Volume (vph)	0	1709	0	0	817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)		7.0			7.0	
Lane Util. Factor		0.91			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		4960			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		4960			3433	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1780	0	0	851	0
RTOR Reduction (vph)	0	0	0	0	10	0
Lane Group Flow (vph)	0	1780	0	0	841	0
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%
Turn Type		NA			Prot	
Protected Phases		4			8	
Permitted Phases						
Actuated Green, G (s)		76.0			60.0	
Effective Green, g (s)		76.0			60.0	
Actuated g/C Ratio		0.51			0.40	
Clearance Time (s)		7.0			7.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		2513			1373	
v/s Ratio Prot		c0.36			c0.24	
v/s Ratio Perm						
v/c Ratio		0.71			0.61	
Uniform Delay, d1		28.5			35.8	
Progression Factor		0.01			1.00	
Incremental Delay, d2		1.2			2.0	
Delay (s)		1.4			37.8	
Level of Service		A			D	
Approach Delay (s)		1.4	0.0		37.8	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay		13.2		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.67				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		68.0%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings
5: Courthouse Road & I-95 SB Off-Ramp

2024 Build PM

02/17/2022

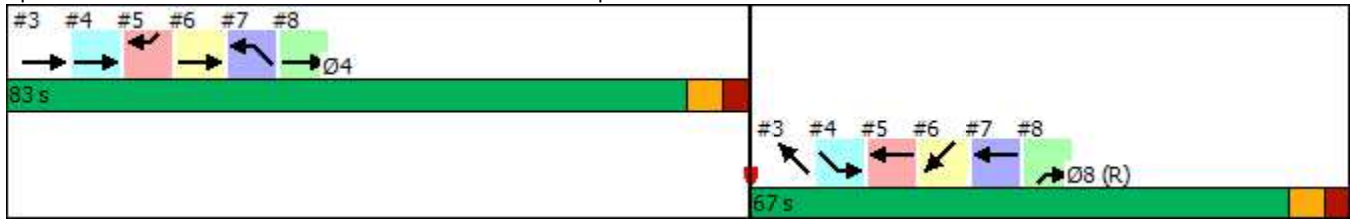


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1672	0	0	402
Future Volume (vph)	0	0	1672	0	0	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Right Turn on Red				Yes		Yes
Link Speed (mph)		40	40		35	
Link Distance (ft)		489	219		327	
Travel Time (s)		8.3	3.7		6.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Detector Phase			8			4
Switch Phase						
Minimum Initial (s)			4.0			4.0
Minimum Split (s)			22.0			23.0
Total Split (s)			67.0			83.0
Total Split (%)			44.7%			55.3%
Maximum Green (s)			60.0			76.0
Yellow Time (s)			4.0			4.0
All-Red Time (s)			3.0			3.0
Lost Time Adjust (s)			0.0			0.0
Total Lost Time (s)			7.0			7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			3.0			3.0
Recall Mode			C-Max			Max
Act Effect Green (s)			60.0			76.0
Actuated g/C Ratio			0.40			0.51
v/c Ratio			0.85			0.51
Control Delay			5.7			27.3
Queue Delay			0.1			0.0
Total Delay			5.8			27.3
LOS			A			C
Approach Delay			5.8		27.3	
Approach LOS			A		C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 80						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 10.0	Intersection LOS: A					

Intersection Capacity Utilization 77.0%
Analysis Period (min) 15

ICU Level of Service D

Splits and Phases: 5: Courthouse Road & I-95 SB Off-Ramp



HCM Signalized Intersection Capacity Analysis

5: Courthouse Road & I-95 SB Off-Ramp

2024 Build PM

02/17/2022



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1672	0	0	402
Future Volume (vph)	0	0	1672	0	0	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		3%	-3%		0%	
Total Lost time (s)			7.0			7.0
Lane Util. Factor			0.91			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			5111			1611
Flt Permitted			1.00			1.00
Satd. Flow (perm)			5111			1611
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1742	0	0	419
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	1742	0	0	418
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type			NA			Prot
Protected Phases			8			4
Permitted Phases						
Actuated Green, G (s)			60.0			76.0
Effective Green, g (s)			60.0			76.0
Actuated g/C Ratio			0.40			0.51
Clearance Time (s)			7.0			7.0
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2044			816
v/s Ratio Prot			c0.34			c0.26
v/s Ratio Perm						
v/c Ratio			0.85			0.51
Uniform Delay, d1			41.0			24.7
Progression Factor			0.08			1.00
Incremental Delay, d2			2.3			2.3
Delay (s)			5.6			26.9
Level of Service			A			C
Approach Delay (s)		0.0	5.6		26.9	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			9.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			77.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
6: Courthouse Road & Rt.630 East

2024 Build PM

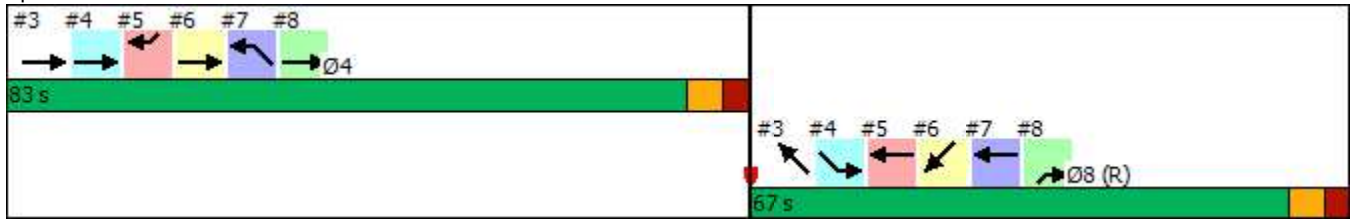
02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	2062	0	0	0	0	0	0	0	0	1605	0
Future Volume (vph)	0	2062	0	0	0	0	0	0	0	0	1605	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		255			190			238			109	
Travel Time (s)		4.3			3.2			4.1			1.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Detector Phase		4									8	
Switch Phase												
Minimum Initial (s)		4.0									4.0	
Minimum Split (s)		23.0									22.0	
Total Split (s)		83.0									67.0	
Total Split (%)		55.3%									44.7%	
Maximum Green (s)		76.0									60.0	
Yellow Time (s)		4.0									4.0	
All-Red Time (s)		3.0									3.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		7.0									7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		Max									C-Max	
Act Effct Green (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
v/c Ratio		0.82									0.80	
Control Delay		22.8									34.7	
Queue Delay		0.9									0.0	
Total Delay		23.7									34.7	
LOS		C									C	
Approach Delay		23.7									34.7	
Approach LOS		C									C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												
Actuated Cycle Length: 150												
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 28.5	Intersection LOS: C											

Intersection Capacity Utilization 82.5%
Analysis Period (min) 15

ICU Level of Service E

Splits and Phases: 6: Courthouse Road & Rt.630 East



HCM Signalized Intersection Capacity Analysis

6: Courthouse Road & Rt.630 East

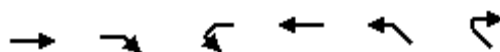
2024 Build PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	2062	0	0	0	0	0	0	0	0	1605	0
Future Volume (vph)	0	2062	0	0	0	0	0	0	0	0	1605	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			-1%	
Total Lost time (s)		7.0									7.0	
Lane Util. Factor		0.91									0.91	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5036									5111	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5036									5111	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2104	0	0	0	0	0	0	0	0	1638	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2104	0	0	0	0	0	0	0	0	1638	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA									NA	
Protected Phases		4									8	
Permitted Phases												
Actuated Green, G (s)		76.0									60.0	
Effective Green, g (s)		76.0									60.0	
Actuated g/C Ratio		0.51									0.40	
Clearance Time (s)		7.0									7.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2551									2044	
v/s Ratio Prot		c0.42									c0.32	
v/s Ratio Perm												
v/c Ratio		0.82									0.80	
Uniform Delay, d1		31.4									39.7	
Progression Factor		0.65									0.81	
Incremental Delay, d2		2.4									2.3	
Delay (s)		22.6									34.5	
Level of Service		C									C	
Approach Delay (s)		22.6			0.0			0.0			34.5	
Approach LOS		C			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		27.8					HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		150.0					Sum of lost time (s)			14.0		
Intersection Capacity Utilization		82.5%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
7: I-95 NB Off-Ramp & Courthouse Road

2024 Build PM
02/17/2022

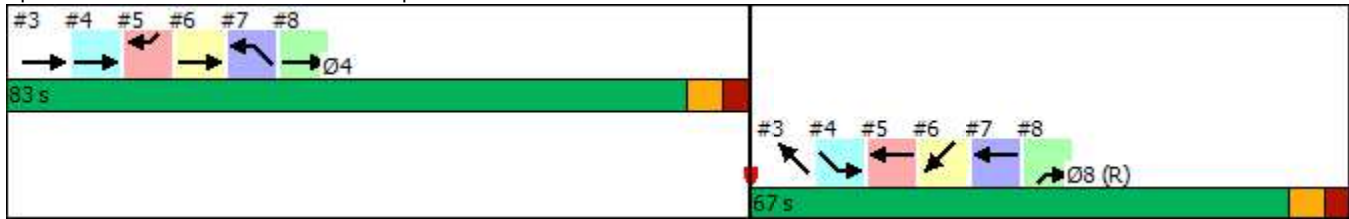


Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1605	544	0
Future Volume (vph)	0	0	0	1605	544	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Right Turn on Red		Yes			Yes	Yes
Link Speed (mph)	40			40	35	
Link Distance (ft)	501			238	198	
Travel Time (s)	8.5			4.1	3.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Detector Phase				8	4	
Switch Phase						
Minimum Initial (s)				4.0	4.0	
Minimum Split (s)				22.0	23.0	
Total Split (s)				67.0	83.0	
Total Split (%)				44.7%	55.3%	
Maximum Green (s)				60.0	76.0	
Yellow Time (s)				4.0	4.0	
All-Red Time (s)				3.0	3.0	
Lost Time Adjust (s)				0.0	0.0	
Total Lost Time (s)				7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				C-Max	Max	
Act Effect Green (s)				60.0	76.0	
Actuated g/C Ratio				0.40	0.51	
v/c Ratio				0.80	0.32	
Control Delay				3.4	22.1	
Queue Delay				0.0	0.0	
Total Delay				3.5	22.1	
LOS				A	C	
Approach Delay				3.5	22.1	
Approach LOS				A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 80						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 8.2	Intersection LOS: A					

Intersection Capacity Utilization 58.2%
Analysis Period (min) 15

ICU Level of Service B

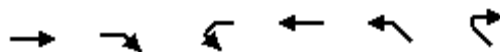
Splits and Phases: 7: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

7: I-95 NB Off-Ramp & Courthouse Road

2024 Build PM
02/17/2022



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑↑	
Traffic Volume (vph)	0	0	0	1605	544	0
Future Volume (vph)	0	0	0	1605	544	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			-1%	0%	
Total Lost time (s)				7.0	7.0	
Lane Util. Factor				0.91	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				5111	3400	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				5111	3400	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	1638	555	0
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	1638	552	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type				NA	Prot	
Protected Phases				8	4	
Permitted Phases						
Actuated Green, G (s)				60.0	76.0	
Effective Green, g (s)				60.0	76.0	
Actuated g/C Ratio				0.40	0.51	
Clearance Time (s)				7.0	7.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				2044	1722	
v/s Ratio Prot				c0.32	c0.16	
v/s Ratio Perm						
v/c Ratio				0.80	0.32	
Uniform Delay, d1				39.7	21.8	
Progression Factor				0.04	1.00	
Incremental Delay, d2				2.0	0.5	
Delay (s)				3.4	22.3	
Level of Service				A	C	
Approach Delay (s)	0.0			3.4	22.3	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			8.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			150.0	Sum of lost time (s)		14.0
Intersection Capacity Utilization			58.2%	ICU Level of Service		B
Analysis Period (min)			15			

c Critical Lane Group

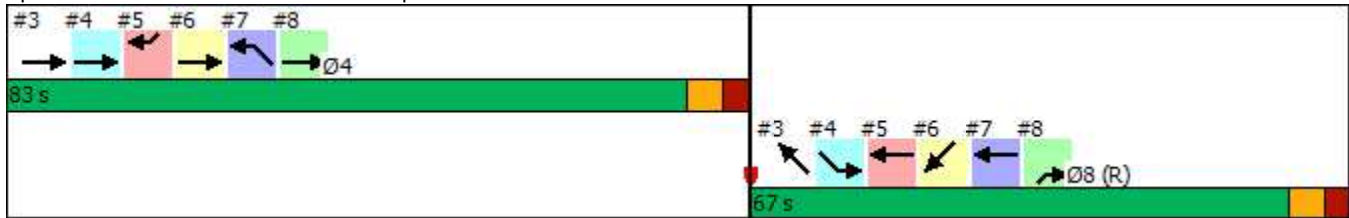
Lanes, Volumes, Timings
8: I-95 NB Off-Ramp & Courthouse Road

2024 Build PM
02/17/2022

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	2062	0	0	0	0	439
Future Volume (vph)	2062	0	0	0	0	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			40	35	
Link Distance (ft)	190			262	427	
Travel Time (s)	3.7			4.5	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Detector Phase	4					8
Switch Phase						
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	23.0					22.0
Total Split (s)	83.0					67.0
Total Split (%)	55.3%					44.7%
Maximum Green (s)	76.0					60.0
Yellow Time (s)	4.0					4.0
All-Red Time (s)	3.0					3.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	7.0					7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	Max					C-Max
Act Effct Green (s)	76.0					60.0
Actuated g/C Ratio	0.51					0.40
v/c Ratio	0.84					0.70
Control Delay	3.1					44.3
Queue Delay	0.0					0.0
Total Delay	3.1					44.3
LOS	A					D
Approach Delay	3.1				44.3	
Approach LOS	A				D	
Intersection Summary						
Area Type:	Other					
Cycle Length: 150						
Actuated Cycle Length: 150						
Offset: 12 (8%), Referenced to phase 8:NWT, Start of Green						
Natural Cycle: 80						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 10.3				Intersection LOS: B		
Intersection Capacity Utilization 82.5%				ICU Level of Service E		

Analysis Period (min) 15

Splits and Phases: 8: I-95 NB Off-Ramp & Courthouse Road



HCM Signalized Intersection Capacity Analysis

8: I-95 NB Off-Ramp & Courthouse Road

2024 Build PM
02/17/2022

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	2062	0	0	0	0	439
Future Volume (vph)	2062	0	0	0	0	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0					7.0
Lane Util. Factor	0.91					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	4940					1596
Flt Permitted	1.00					1.00
Satd. Flow (perm)	4940					1596
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2104	0	0	0	0	448
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	2104	0	0	0	0	446
Heavy Vehicles (%)	5%	5%	2%	2%	3%	3%
Turn Type	NA					Prot
Protected Phases	4					8
Permitted Phases						
Actuated Green, G (s)	76.0					60.0
Effective Green, g (s)	76.0					60.0
Actuated g/C Ratio	0.51					0.40
Clearance Time (s)	7.0					7.0
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2502					638
v/s Ratio Prot	c0.43					c0.28
v/s Ratio Perm						
v/c Ratio	0.84					0.70
Uniform Delay, d1	31.8					37.5
Progression Factor	0.03					1.00
Incremental Delay, d2	2.0					6.3
Delay (s)	3.1					43.8
Level of Service	A					D
Approach Delay (s)	3.1			0.0	43.8	
Approach LOS	A			A	D	
Intersection Summary						
HCM 2000 Control Delay		10.2		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.78				
Actuated Cycle Length (s)		150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		82.5%		ICU Level of Service		E
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build PM
02/23/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  					 
Traffic Volume (vph)	472	1848	180	51	1077	64	559	14	51	70	12	541
Future Volume (vph)	472	1848	180	51	1077	64	559	14	51	70	12	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			-1%			2%	
Storage Length (ft)	285		260	230		225	395		275	250		425
Storage Lanes	2		1	1		2	3		1	1		2
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		501			1546			557			853	
Travel Time (s)		8.5			26.4			12.7			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2	6		6			8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.8	11.1	11.1	12.2	13.0	13.0	13.8	48.2	12.2	14.8	14.1	12.8
Total Split (s)	36.0	73.0	73.0	13.0	50.0	50.0	43.0	49.0	13.0	15.0	21.0	36.0
Total Split (%)	24.0%	48.7%	48.7%	8.7%	33.3%	33.3%	28.7%	32.7%	8.7%	10.0%	14.0%	24.0%
Maximum Green (s)	28.2	66.9	66.9	5.8	44.8	44.8	34.2	41.8	5.8	6.2	11.9	28.2
Yellow Time (s)	4.0	5.0	5.0	3.4	4.2	4.2	4.1	3.4	3.4	4.1	3.5	4.0
All-Red Time (s)	3.8	1.1	1.1	3.8	1.0	1.0	4.7	3.8	3.8	4.7	5.6	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.1	6.1	7.2	5.2	5.2	8.8	7.2	7.2	8.8	9.1	7.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	Max	Max	None
Walk Time (s)								8.0				
Flash Dont Walk (s)								33.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	26.8	69.5	69.5	50.0	46.2	46.2	24.7	20.3	25.4	42.8	21.4	57.3
Actuated g/C Ratio	0.18	0.46	0.46	0.33	0.31	0.31	0.16	0.14	0.17	0.29	0.14	0.38
v/c Ratio	0.84	0.86	0.23	0.47	0.76	0.10	0.76	0.06	0.15	0.17	0.05	0.56
Control Delay	53.0	34.5	3.7	35.9	51.2	0.3	66.4	47.2	0.8	36.5	59.0	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	34.5	3.7	35.9	51.2	0.3	66.4	47.2	0.8	36.5	59.0	39.4
LOS	D	C	A	D	D	A	E	D	A	D	E	D
Approach Delay		35.8			47.8			60.6			39.5	
Approach LOS		D			D			E			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build PM

02/23/2022

Actuated Cycle Length: 150

Offset: 8.4 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 42.3

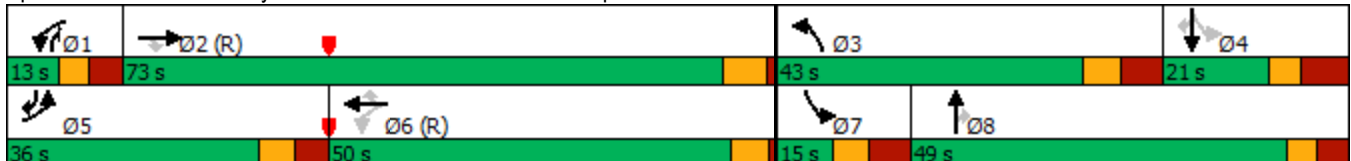
Intersection LOS: D

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd



HCM 6th Signalized Intersection Summary

9: Wyche Rd & Courthouse Road & Hospital Center Blvd

2024 Build PM
02/23/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  				 	 
Traffic Volume (veh/h)	472	1848	180	51	1077	64	559	14	51	70	12	541
Future Volume (veh/h)	472	1848	180	51	1077	64	559	14	51	70	12	541
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	1958	1958	1958	1841	1841	1841	1849	1849	1849	1832	1832	1832
Adj Flow Rate, veh/h	513	2009	196	55	1171	70	608	15	55	76	13	588
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	6	6	6	3	3	3
Cap, veh/h	574	2851	885	144	2014	625	741	346	340	224	145	650
Arrive On Green	0.16	0.53	0.53	0.03	0.40	0.40	0.15	0.19	0.19	0.04	0.08	0.08
Sat Flow, veh/h	3618	5345	1659	1753	5025	1560	4967	1849	1567	1745	1832	2732
Grp Volume(v), veh/h	513	2009	196	55	1171	70	608	15	55	76	13	588
Grp Sat Flow(s),veh/h/ln	1809	1782	1659	1753	1675	1560	1656	1849	1567	1745	1832	1366
Q Serve(g_s), s	20.9	42.1	9.4	2.8	27.3	4.2	17.8	1.0	4.3	6.0	1.0	11.9
Cycle Q Clear(g_c), s	20.9	42.1	9.4	2.8	27.3	4.2	17.8	1.0	4.3	6.0	1.0	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	574	2851	885	144	2014	625	741	346	340	224	145	650
V/C Ratio(X)	0.89	0.70	0.22	0.38	0.58	0.11	0.82	0.04	0.16	0.34	0.09	0.90
Avail Cap(c_a), veh/h	680	2851	885	160	2014	625	1132	515	484	224	145	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.9	26.2	18.5	27.5	35.1	28.2	61.9	49.9	47.6	60.6	64.0	55.5
Incr Delay (d2), s/veh	12.8	1.5	0.6	1.7	1.2	0.4	2.9	0.1	0.2	4.1	1.2	18.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	17.7	3.8	1.2	11.2	1.7	7.7	0.5	1.7	2.9	0.5	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.6	27.6	19.1	29.2	36.4	28.6	64.8	50.0	47.8	64.7	65.2	73.8
LnGrp LOS	E	C	B	C	D	C	E	D	D	E	E	E
Approach Vol, veh/h	2718			1296			678			677		
Approach Delay, s/veh	35.9			35.6			63.1			72.6		
Approach LOS	D			D			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	86.1	31.2	21.0	31.6	66.2	15.0	37.2				
Change Period (Y+Rc), s	* 7.2	* 6.1	* 8.8	* 9.1	* 7.8	* 6.1	* 8.8	* 9.1				
Max Green Setting (Gmax), s	* 5.8	* 67	* 34	* 12	* 28	* 45	* 6.2	* 42				
Max Q Clear Time (g_c+I1), s	4.8	44.1	19.8	13.9	22.9	29.3	8.0	6.3				
Green Ext Time (p_c), s	0.0	20.8	2.6	0.0	1.0	10.8	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay 43.9
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7933	7811	7894	7631	7845	7855	7891
Vehs Exited	7519	7568	7608	7165	7656	7744	7561
Starting Vehs	548	626	575	537	547	595	487
Ending Vehs	962	869	861	1003	736	706	817
Travel Distance (mi)	7515	7566	7611	7204	7617	7718	7524
Travel Time (hr)	766.6	782.5	735.5	836.3	666.0	666.4	713.1
Total Delay (hr)	542.6	557.1	508.8	621.3	438.2	435.7	488.2
Total Stops	19905	21814	22654	20970	19505	20492	21424
Fuel Used (gal)	379.7	383.1	375.1	387.9	361.5	364.6	367.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	8076	7863	7709	7849
Vehs Exited	7866	7747	7170	7562
Starting Vehs	515	574	571	555
Ending Vehs	725	690	1110	846
Travel Distance (mi)	7735	7689	7198	7538
Travel Time (hr)	593.5	678.1	878.7	731.7
Total Delay (hr)	361.7	448.2	663.4	506.5
Total Stops	18601	21503	21264	20812
Fuel Used (gal)	349.2	364.6	394.6	372.7

Interval #0 Information Seeding

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1953	1937	1979	1865	1885	1886	1968
Vehs Exited	1933	1869	1910	1884	1878	1888	1896
Starting Vehs	548	626	575	537	547	595	487
Ending Vehs	568	694	644	518	554	593	559
Travel Distance (mi)	1931	1917	1943	1895	1873	1878	1901
Travel Time (hr)	134.4	166.9	160.6	128.5	135.6	138.5	125.4
Total Delay (hr)	77.0	109.8	102.8	72.0	79.5	82.1	68.5
Total Stops	4353	5472	5199	3985	4222	4443	3760
Fuel Used (gal)	84.1	89.9	89.9	82.6	82.9	83.5	81.7

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1982	1891	1947	1931
Vehs Exited	1983	1769	1871	1891
Starting Vehs	515	574	571	555
Ending Vehs	514	696	647	599
Travel Distance (mi)	1955	1798	1882	1897
Travel Time (hr)	125.4	150.4	154.0	142.0
Total Delay (hr)	66.9	96.6	97.9	85.3
Total Stops	3746	4820	4791	4479
Fuel Used (gal)	83.4	83.5	86.8	84.8

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2140	2094	2141	2070	2117	2142	2145
Vehs Exited	2032	2003	1946	1648	1940	1998	1918
Starting Vehs	568	694	644	518	554	593	559
Ending Vehs	676	785	839	940	731	737	786
Travel Distance (mi)	1990	1976	1933	1699	1928	2007	1914
Travel Time (hr)	157.9	185.1	175.4	166.3	154.1	168.5	173.8
Total Delay (hr)	98.6	126.5	117.6	115.6	96.5	108.7	116.4
Total Stops	5198	5473	5563	4902	4878	5442	5770
Fuel Used (gal)	90.6	96.1	92.4	84.1	87.7	93.4	90.6

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	2178	2110	2107	2121
Vehs Exited	2070	2091	1889	1951
Starting Vehs	514	696	647	599
Ending Vehs	622	715	865	767
Travel Distance (mi)	2012	2028	1890	1938
Travel Time (hr)	136.3	178.3	171.8	166.8
Total Delay (hr)	75.8	117.8	115.1	108.9
Total Stops	4406	5919	5300	5283
Fuel Used (gal)	87.3	95.4	90.3	90.8

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1929	1953	1903	1844	1973	1989	1920
Vehs Exited	1658	1884	1964	1860	1918	1986	1828
Starting Vehs	676	785	839	940	731	737	786
Ending Vehs	947	854	778	924	786	740	878
Travel Distance (mi)	1718	1866	1922	1854	1944	1958	1837
Travel Time (hr)	215.2	192.2	199.8	256.0	188.8	183.6	195.6
Total Delay (hr)	164.0	136.7	142.8	200.6	130.9	125.1	140.9
Total Stops	5002	5368	6062	6322	5571	5408	6017
Fuel Used (gal)	95.3	94.1	98.3	108.8	97.0	95.8	93.7

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1977	1916	1903	1929
Vehs Exited	1903	1905	1767	1866
Starting Vehs	622	715	865	767
Ending Vehs	696	726	1001	832
Travel Distance (mi)	1887	1923	1775	1868
Travel Time (hr)	155.3	178.8	249.0	201.4
Total Delay (hr)	98.6	121.4	195.9	145.7
Total Stops	5005	5608	5832	5620
Fuel Used (gal)	87.2	93.7	104.3	96.8

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1911	1827	1871	1852	1870	1838	1858
Vehs Exited	1896	1812	1788	1773	1920	1872	1919
Starting Vehs	947	854	778	924	786	740	878
Ending Vehs	962	869	861	1003	736	706	817
Travel Distance (mi)	1876	1806	1813	1755	1871	1875	1872
Travel Time (hr)	259.1	238.2	199.6	285.5	187.4	175.8	218.3
Total Delay (hr)	203.0	184.1	145.6	233.1	131.3	119.8	162.4
Total Stops	5352	5501	5830	5761	4834	5199	5877
Fuel Used (gal)	109.7	103.0	94.6	112.4	93.9	92.0	101.1

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1939	1946	1752	1866
Vehs Exited	1910	1982	1643	1852
Starting Vehs	696	726	1001	832
Ending Vehs	725	690	1110	846
Travel Distance (mi)	1880	1940	1650	1834
Travel Time (hr)	176.6	170.6	303.9	221.5
Total Delay (hr)	120.4	112.4	254.4	166.6
Total Stops	5444	5156	5341	5433
Fuel Used (gal)	91.3	91.9	113.1	100.3

Intersection: 1: Driveway/Mine Road & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB
Directions Served	L	T	TR	T	T	R	L	L	TR	R
Maximum Queue (ft)	184	191	185	95	122	102	310	355	190	163
Average Queue (ft)	79	106	83	21	40	24	198	240	100	45
95th Queue (ft)	147	173	157	66	91	67	294	329	172	129
Link Distance (ft)		1761	1761	2357	2357			972	972	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	335					760	530			450
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	LT	TR	R	L
Maximum Queue (ft)	280	1301	1311	260	438	438	178	60	142	240	212	330
Average Queue (ft)	21	703	716	192	407	411	82	8	58	148	102	293
95th Queue (ft)	150	1523	1541	318	504	499	146	35	115	231	210	386
Link Distance (ft)		2357	2357		367	367	367		928	928		
Upstream Blk Time (%)		0	0		35	37						
Queuing Penalty (veh)		2	3		243	255						
Storage Bay Dist (ft)	390			260				205			225	330
Storage Blk Time (%)	0	41		11	38					1	0	5
Queuing Penalty (veh)	0	3		73	43					2	0	13

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	1379	1218	324
Average Queue (ft)	835	633	37
95th Queue (ft)	1696	1423	211
Link Distance (ft)	1421	1421	
Upstream Blk Time (%)	26	17	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			360
Storage Blk Time (%)	44	42	0
Queuing Penalty (veh)	128	5	0

Intersection: 3: Courthouse Road

Movement	EB	EB	EB	NW	NW	NW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	215	206	202	133	126	124
Average Queue (ft)	186	165	165	107	103	99
95th Queue (ft)	201	229	209	120	113	116
Link Distance (ft)	79	79	79	51	51	51
Upstream Blk Time (%)	74	45	45	49	61	56
Queuing Penalty (veh)	419	254	256	273	340	312
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Courthouse Road & I-95 SB Off-Ramp

Movement	EB	EB	EB	SE	SE
Directions Served	T	T	T	L	L
Maximum Queue (ft)	91	76	73	264	262
Average Queue (ft)	59	36	31	232	217
95th Queue (ft)	83	73	69	276	280
Link Distance (ft)	47	47	47	184	184
Upstream Blk Time (%)	50	21	13	31	25
Queuing Penalty (veh)	284	117	72	127	102
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Courthouse Road & I-95 SB Off-Ramp

Movement	WB	WB	WB	SW
Directions Served	T	T	T	R
Maximum Queue (ft)	113	124	113	268
Average Queue (ft)	55	72	57	200
95th Queue (ft)	99	111	104	303
Link Distance (ft)	138	138	138	184
Upstream Blk Time (%)	0	0	0	14
Queuing Penalty (veh)	0	2	1	55
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Courthouse Road & Rt.630 East

Movement	EB	EB	EB	SW	SW	SW
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	162	174	170	157	171	162
Average Queue (ft)	140	143	140	139	143	147
95th Queue (ft)	149	161	154	147	156	157
Link Distance (ft)	65	65	65	9	9	9
Upstream Blk Time (%)	49	61	63	61	61	56
Queuing Penalty (veh)	339	422	434	326	326	299
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: I-95 NB Off-Ramp & Courthouse Road

Movement	WB	WB	WB	NW	NW
Directions Served	T	T	T	L	L
Maximum Queue (ft)	107	107	71	208	223
Average Queue (ft)	82	71	28	120	139
95th Queue (ft)	112	109	65	192	209
Link Distance (ft)	34	34	34	138	138
Upstream Blk Time (%)	61	58	37	8	13
Queuing Penalty (veh)	324	312	196	23	34
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: I-95 NB Off-Ramp & Courthouse Road

Movement	EB	EB	EB	NE
Directions Served	T	T	T	R
Maximum Queue (ft)	107	123	106	371
Average Queue (ft)	63	75	74	253
95th Queue (ft)	104	111	101	384
Link Distance (ft)	75	75	75	269
Upstream Blk Time (%)	21	36	41	10
Queuing Penalty (veh)	146	249	280	44
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	EB	EB	EB	EB	EB	EB	B34	B34	B34	WB	WB	WB
Directions Served	L	L	T	T	T	R	T	T	T	L	T	T
Maximum Queue (ft)	248	283	338	360	366	260	5	26	5	230	992	993
Average Queue (ft)	153	174	157	174	191	42	0	1	0	87	558	549
95th Queue (ft)	225	255	292	304	310	178	0	12	5	234	1226	1227
Link Distance (ft)			396	396	396		200	200	200		1487	1487
Upstream Blk Time (%)				0	0						7	8
Queuing Penalty (veh)				0	0						0	0
Storage Bay Dist (ft)	285	285				260				230		
Storage Blk Time (%)	0	0	0		2	0				0	38	25
Queuing Penalty (veh)	0	0	2		3	1				1	19	104

Intersection: 9: Wyche Rd & Courthouse Road & Hospital Center Blvd

Movement	WB	WB	NB	NB	NB	NB	B40	SB	SB	SB	SB
Directions Served	T	R	L	L	T	R	T	L	T	R	R
Maximum Queue (ft)	225	215	385	394	485	85	94	126	354	380	341
Average Queue (ft)	214	55	254	294	83	29	17	43	37	231	190
95th Queue (ft)	256	187	390	408	359	66	154	96	215	346	303
Link Distance (ft)					455		474		777		
Upstream Blk Time (%)					3		1		0		
Queuing Penalty (veh)					0		0		0		
Storage Bay Dist (ft)	225	225	395	395		275		250		425	425
Storage Blk Time (%)	15	0	0	3					0	0	0
Queuing Penalty (veh)	53	1	0	2					0	0	0

Intersection: 11: Courthouse Road & Ramp A

Movement	EB	EB	EB	EB
Directions Served	L	T	T	T
Maximum Queue (ft)	74	450	454	436
Average Queue (ft)	24	375	350	333
95th Queue (ft)	79	499	479	469
Link Distance (ft)		408	408	408
Upstream Blk Time (%)		12	7	6
Queuing Penalty (veh)		97	58	51
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	40		
Queuing Penalty (veh)	0	186		

Intersection: 13: Ramp C & Courthouse Road

Movement	WB	WB	WB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	67	434	441	401
Average Queue (ft)	6	230	245	230
95th Queue (ft)	38	399	404	392
Link Distance (ft)		435	435	435
Upstream Blk Time (%)		3	3	3
Queuing Penalty (veh)		24	23	21
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	42		
Queuing Penalty (veh)	0	199		

Intersection: 15: Ramp B & I-95 NB Off-Ramp

Movement	NB	NB
Directions Served	T	R
Maximum Queue (ft)	368	146
Average Queue (ft)	31	13
95th Queue (ft)	207	79
Link Distance (ft)	1325	1325
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Rt.630 East/Rt.630 & Ramp A

Movement	WB	WB	WB	WB
Directions Served	T	T	T	R
Maximum Queue (ft)	380	370	377	76
Average Queue (ft)	316	292	293	62
95th Queue (ft)	432	436	453	107
Link Distance (ft)	310	310	310	
Upstream Blk Time (%)	40	31	32	
Queuing Penalty (veh)	291	225	234	
Storage Bay Dist (ft)				50
Storage Blk Time (%)			35	1
Queuing Penalty (veh)			202	3

Intersection: 18: Ramp A

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 20: I-95 SB Off-Ramp & Ramp D

Movement

SB

SB

SB

Directions Served

T

T

R

Maximum Queue (ft)

356

348

196

Average Queue (ft)

103

68

27

95th Queue (ft)

338

315

152

Link Distance (ft)

1213

1213

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

500

Storage Blk Time (%)

1

0

Queuing Penalty (veh)

3

0

Intersection: 24: Ramp C

Movement

SB

SE

Directions Served

T

R

Maximum Queue (ft)

46

313

Average Queue (ft)

2

106

95th Queue (ft)

23

340

Link Distance (ft)

185

190

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: Ramp C & Rt 630/Courthouse Road

Movement	EB	EB	EB
Directions Served	T	T	TR
Maximum Queue (ft)	599	600	602
Average Queue (ft)	522	518	514
95th Queue (ft)	707	720	736
Link Distance (ft)	506	506	506
Upstream Blk Time (%)	62	52	49
Queuing Penalty (veh)	475	403	376
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Rt 630 & Courthouse Road

Movement	WB	WB	WB	SE	SE	SE
Directions Served	R	R	R	T	T	T
Maximum Queue (ft)	254	264	94	417	434	423
Average Queue (ft)	76	89	5	279	290	283
95th Queue (ft)	217	232	68	535	558	543
Link Distance (ft)	438	438	438	367	367	367
Upstream Blk Time (%)				11	14	11
Queuing Penalty (veh)				86	107	87
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 38: Courthouse Road & Rt.630/Rt 630

Movement	WB	WB	WB	B34	B34	B34	NE	NE	NE
Directions Served	T	T	T	T	T	T	R	R	R
Maximum Queue (ft)	274	274	279	287	308	307	61	97	52
Average Queue (ft)	134	121	132	110	119	126	3	3	1
95th Queue (ft)	340	333	348	387	409	407	40	42	26
Link Distance (ft)	200	200	200	396	396	396	217	217	217
Upstream Blk Time (%)	24	19	24	2	3	2		0	0
Queuing Penalty (veh)	176	140	176	17	19	13		0	0
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 11021

Appendix I

Mitigated (2024) Capacity Analysis

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2024 Mitigated AM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1034	55	300	893	457	14	5	83	500	18	17
Future Volume (vph)	19	1034	55	300	893	457	14	5	83	500	18	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	2		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	31%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	49.0		22.0	57.0	24.0	25.0	25.0	22.0	24.0	24.0	14.0
Total Split (%)	11.7%	40.8%		18.3%	47.5%	20.0%	20.8%	20.8%	18.3%	20.0%	20.0%	11.7%
Maximum Green (s)	5.0	40.0		13.0	48.0	15.0	16.0	16.0	13.0	15.0	15.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	68.9	47.1		18.2	65.0	90.8	6.6	6.6	30.9	15.0	15.0	23.0
Actuated g/C Ratio	0.57	0.39		0.15	0.54	0.76	0.06	0.06	0.26	0.12	0.12	0.19
v/c Ratio	0.07	0.87		0.66	0.53	0.40	0.15	0.27	0.10	0.93	0.93	0.04
Control Delay	9.7	44.4		52.4	27.0	0.9	57.2	22.5	0.4	83.1	100.0	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	44.4		52.4	27.0	0.9	57.2	22.5	0.4	83.1	100.0	0.2
LOS	A	D		D	C	A	E	C	A	F	F	A
Approach Delay		43.8			24.4			17.6			86.0	
Approach LOS		D			C			B			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Lanes, Volumes, Timings

2: Austin Ridge Drive & Courthouse Road

2024 Mitigated AM

02/17/2022

Actuated Cycle Length: 120

Offset: 117 (98%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 40.2

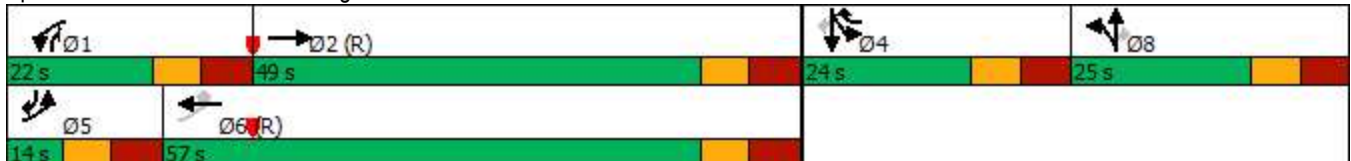
Intersection LOS: D

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road



HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 Mitigated AM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1034	55	300	893	457	14	5	83	500	18	17
Future Volume (veh/h)	19	1034	55	300	893	457	14	5	83	500	18	17
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	1850	1850	1850	1758	1758	1758	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	21	1124	60	326	971	497	10	22	90	557	0	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	6	6	6	0	0	0	3	3	3
Cap, veh/h	210	1455	78	352	1724	945	74	78	454	654	0	228
Arrive On Green	0.02	0.43	0.43	0.11	0.52	0.52	0.04	0.04	0.04	0.12	0.00	0.12
Sat Flow, veh/h	1762	3393	181	3248	3340	1490	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	21	582	602	326	971	497	10	22	90	557	0	18
Grp Sat Flow(s),veh/h/ln	1762	1757	1817	1624	1670	1490	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.7	33.9	34.0	11.9	23.8	22.0	0.7	1.5	3.2	11.9	0.0	1.1
Cycle Q Clear(g_c), s	0.7	33.9	34.0	11.9	23.8	22.0	0.7	1.5	3.2	11.9	0.0	1.1
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	210	753	779	352	1724	945	74	78	454	654	0	228
V/C Ratio(X)	0.10	0.77	0.77	0.93	0.56	0.53	0.13	0.28	0.20	0.85	0.00	0.08
Avail Cap(c_a), veh/h	247	753	779	352	1724	945	223	234	718	691	0	239
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	29.3	29.3	53.0	19.8	12.0	55.1	55.5	44.4	51.9	0.0	44.9
Incr Delay (d2), s/veh	0.2	6.9	6.7	29.9	1.3	2.1	0.8	1.9	0.2	9.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.1	15.6	6.2	9.1	10.1	0.3	0.7	1.2	6.0	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	36.2	36.0	83.0	21.2	14.1	55.9	57.4	44.6	61.5	0.0	45.1
LnGrp LOS	B	D	D	F	C	B	E	E	D	E	A	D
Approach Vol, veh/h	1205			1794			122			575		
Approach Delay, s/veh	35.7			30.4			47.8			60.9		
Approach LOS	D			C			D			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	60.4		23.2	11.5	70.9		14.3				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	13.0	40.0		15.0	5.0	48.0		16.0				
Max Q Clear Time (g_c+I1), s	13.9	36.0		13.9	2.7	25.8		5.2				
Green Ext Time (p_c), s	0.0	3.9		0.3	0.0	16.4		0.3				

Intersection Summary

HCM 6th Ctrl Delay 37.5

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6784	6742	6798	6866	6848	6682	6780
Vehs Exited	6825	6742	6867	6824	6858	6684	6831
Starting Vehs	406	394	407	350	347	368	369
Ending Vehs	365	394	338	392	337	366	318
Travel Distance (mi)	6192	6059	6167	6183	6198	6030	6136
Travel Time (hr)	389.6	366.4	371.3	385.3	366.5	363.5	385.0
Total Delay (hr)	203.7	184.2	186.2	200.0	180.2	182.3	201.0
Total Stops	12793	11815	12246	12650	12071	11892	12402
Fuel Used (gal)	265.2	255.7	259.5	263.5	259.9	254.7	262.3

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6775	6743	6715	6772
Vehs Exited	6784	6685	6758	6784
Starting Vehs	362	330	381	368
Ending Vehs	353	388	338	357
Travel Distance (mi)	6137	6094	6060	6126
Travel Time (hr)	365.4	362.6	352.2	370.8
Total Delay (hr)	181.0	180.0	169.7	186.8
Total Stops	11976	11650	11331	12086
Fuel Used (gal)	257.1	256.9	251.7	258.6

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1602	1636	1661	1654	1678	1650	1627
Vehs Exited	1678	1741	1764	1716	1697	1657	1644
Starting Vehs	406	394	407	350	347	368	369
Ending Vehs	330	289	304	288	328	361	352
Travel Distance (mi)	1493	1491	1534	1497	1547	1503	1491
Travel Time (hr)	99.2	84.0	87.8	82.8	93.8	87.0	88.1
Total Delay (hr)	54.3	39.1	41.7	37.9	47.2	42.1	43.4
Total Stops	3291	2605	2852	2618	3067	2842	2927
Fuel Used (gal)	65.4	61.6	63.9	61.9	65.1	62.4	63.2

Interval #1 Information 1

Start Time 7:15

End Time 7:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1659	1670	1629	1647
Vehs Exited	1713	1654	1680	1695
Starting Vehs	362	330	381	368
Ending Vehs	308	346	330	320
Travel Distance (mi)	1531	1475	1471	1503
Travel Time (hr)	89.0	85.0	89.4	88.6
Total Delay (hr)	43.0	40.6	45.1	43.4
Total Stops	2776	2719	2834	2851
Fuel Used (gal)	63.5	61.4	62.2	63.1

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1856	1742	1834	1829	1831	1795	1787
Vehs Exited	1740	1604	1679	1681	1727	1711	1735
Starting Vehs	330	289	304	288	328	361	352
Ending Vehs	446	427	459	436	432	445	404
Travel Distance (mi)	1653	1531	1640	1584	1605	1599	1575
Travel Time (hr)	107.6	92.9	104.7	95.0	98.9	102.2	108.1
Total Delay (hr)	58.1	47.0	55.7	47.5	50.6	53.9	60.8
Total Stops	3599	3078	3575	3254	3328	3483	3379
Fuel Used (gal)	71.4	64.4	70.2	66.5	68.1	68.9	69.1

Interval #2 Information 2

Start Time 7:30

End Time 7:45

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1756	1790	1741	1799
Vehs Exited	1674	1737	1653	1695
Starting Vehs	308	346	330	320
Ending Vehs	390	399	418	421
Travel Distance (mi)	1556	1654	1551	1595
Travel Time (hr)	91.9	100.0	89.2	99.0
Total Delay (hr)	45.1	50.7	42.5	51.2
Total Stops	3100	3363	2938	3309
Fuel Used (gal)	65.0	69.7	63.8	67.7

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1661	1656	1671	1709	1666	1584	1693
Vehs Exited	1774	1748	1805	1745	1765	1680	1748
Starting Vehs	446	427	459	436	432	445	404
Ending Vehs	333	335	325	400	333	349	349
Travel Distance (mi)	1564	1537	1543	1583	1562	1453	1559
Travel Time (hr)	97.6	92.6	96.6	110.3	89.4	88.1	105.2
Total Delay (hr)	50.7	46.5	50.3	63.1	42.6	44.6	58.4
Total Stops	3190	3016	3140	3689	2911	2845	3430
Fuel Used (gal)	66.9	65.0	65.7	69.8	65.5	61.9	67.7

Interval #3 Information 3

Start Time 7:45

End Time 8:00

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1680	1590	1646	1653
Vehs Exited	1697	1673	1742	1738
Starting Vehs	390	399	418	421
Ending Vehs	373	316	322	340
Travel Distance (mi)	1496	1487	1518	1530
Travel Time (hr)	93.4	88.8	86.9	94.9
Total Delay (hr)	48.4	44.3	41.1	49.0
Total Stops	3064	2732	2757	3081
Fuel Used (gal)	63.6	63.0	63.0	65.2

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1665	1708	1632	1674	1673	1653	1673
Vehs Exited	1633	1649	1619	1682	1669	1636	1704
Starting Vehs	333	335	325	400	333	349	349
Ending Vehs	365	394	338	392	337	366	318
Travel Distance (mi)	1481	1501	1450	1519	1484	1476	1512
Travel Time (hr)	85.2	96.9	82.2	97.2	84.4	86.2	83.6
Total Delay (hr)	40.6	51.6	38.4	51.6	39.8	41.7	38.5
Total Stops	2713	3116	2679	3089	2765	2722	2666
Fuel Used (gal)	61.6	64.7	59.7	65.2	61.2	61.4	62.3

Interval #4 Information 4

Start Time 8:00

End Time 8:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1680	1693	1699	1675
Vehs Exited	1700	1621	1683	1657
Starting Vehs	373	316	322	340
Ending Vehs	353	388	338	357
Travel Distance (mi)	1554	1479	1520	1497
Travel Time (hr)	91.1	88.7	86.8	88.2
Total Delay (hr)	44.5	44.3	41.0	43.2
Total Stops	3036	2836	2802	2845
Fuel Used (gal)	65.0	62.8	62.6	62.6

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	TR	L	L	T	T	R	L	LT	TR	R
Maximum Queue (ft)	156	478	491	226	259	389	394	188	19	59	85	33
Average Queue (ft)	18	279	300	114	149	198	218	77	1	18	33	7
95th Queue (ft)	96	443	455	197	247	348	358	146	9	47	63	27
Link Distance (ft)		2358	2358			365	365	365		922	922	
Upstream Blk Time (%)						1	1					
Queuing Penalty (veh)						5	5					
Storage Bay Dist (ft)	390			260	260				205			225
Storage Blk Time (%)	0	2		0	0	3						
Queuing Penalty (veh)	0	0		0	1	8						

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB	SB
Directions Served	L	L	LT	R
Maximum Queue (ft)	303	374	299	44
Average Queue (ft)	169	200	158	7
95th Queue (ft)	276	318	259	26
Link Distance (ft)		1415	1415	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	330			360
Storage Blk Time (%)	0	1	0	
Queuing Penalty (veh)	0	2	0	

Lanes, Volumes, Timings
2: Austin Ridge Drive & Courthouse Road

2024 Mitigated PM

02/17/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1156	21	113	1346	615	56	18	294	869	8	12
Future Volume (vph)	8	1156	21	113	1346	615	56	18	294	869	8	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			3%			5%			-2%	
Storage Length (ft)	390		0	260		0	205		225	330		360
Storage Lanes	1		0	2		1	1		1	1		1
Taper Length (ft)	0			0			0			0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		2454			458			980			1488	
Travel Time (s)		41.8			7.8			16.7			25.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)							10%		50%	33%		
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	5	2		1	6	4	8	8	1	4	4	5
Permitted Phases	6					6			8			4
Detector Phase	5	2		1	6	4	8	8	1	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	14.0	14.0		14.0	43.0	14.0	25.0	25.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	69.0		16.0	71.0	40.0	25.0	25.0	16.0	40.0	40.0	14.0
Total Split (%)	9.3%	46.0%		10.7%	47.3%	26.7%	16.7%	16.7%	10.7%	26.7%	26.7%	9.3%
Maximum Green (s)	5.0	60.0		7.0	62.0	31.0	16.0	16.0	7.0	31.0	31.0	5.0
Yellow Time (s)	4.3	4.3		4.3	4.3	4.5	4.5	4.5	4.3	4.5	4.5	4.3
All-Red Time (s)	4.7	4.7		4.7	4.7	4.5	4.5	4.5	4.7	4.5	4.5	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag		Lead	Lag				Lead			Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	None	None	None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					27.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)	75.4	62.7		9.0	71.9	111.8	11.4	11.4	29.4	30.9	30.9	36.5
Actuated g/C Ratio	0.50	0.42		0.06	0.48	0.75	0.08	0.08	0.20	0.21	0.21	0.24
v/c Ratio	0.07	0.83		0.58	0.83	0.48	0.43	0.89dr	0.42	0.92	0.92	0.03
Control Delay	12.1	32.3		92.5	21.2	1.0	76.0	51.8	20.0	77.6	91.3	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	32.3		92.5	21.2	1.0	76.0	51.8	20.0	77.6	91.3	0.1
LOS	B	C		F	C	A	E	D	C	E	F	A
Approach Delay		32.1			19.1			42.4			81.1	
Approach LOS		C			B			D			F	
Intersection Summary												
Area Type:	Other											
Cycle Length: 150												

Lanes, Volumes, Timings 2: Austin Ridge Drive & Courthouse Road

2024 Mitigated PM
02/17/2022

Actuated Cycle Length: 150

Offset: 17 (11%), Referenced to phase 2:EBT and 6:EBWB, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 36.6

Intersection LOS: D

Intersection Capacity Utilization 86.5%

ICU Level of Service E

Analysis Period (min) 15

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Austin Ridge Drive & Courthouse Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
16 s	69 s	40 s	25 s
 Ø5	 Ø6 (R)		
14 s	71 s		

HCM 6th Signalized Intersection Summary

2: Austin Ridge Drive & Courthouse Road

2024 Mitigated PM

02/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1156	21	113	1346	615	56	18	294	869	8	12
Future Volume (veh/h)	8	1156	21	113	1346	615	56	18	294	869	8	12
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	1879	1879	1879	1832	1832	1832	1753	1753	1753	1934	1934	1934
Adj Flow Rate, veh/h	8	1204	22	118	1402	641	39	78	306	911	0	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	84	1504	27	158	1589	1000	178	187	456	1035	0	322
Arrive On Green	0.01	0.42	0.42	0.05	0.46	0.46	0.11	0.11	0.11	0.19	0.00	0.19
Sat Flow, veh/h	1790	3587	66	3385	3481	1553	1669	1753	2971	5525	0	1639
Grp Volume(v), veh/h	8	599	627	118	1402	641	39	78	306	911	0	12
Grp Sat Flow(s),veh/h/ln	1790	1785	1867	1693	1741	1553	1669	1753	1485	1842	0	1639
Q Serve(g_s), s	0.4	44.0	44.0	5.2	55.0	37.6	3.2	6.2	14.6	24.1	0.0	0.9
Cycle Q Clear(g_c), s	0.4	44.0	44.0	5.2	55.0	37.6	3.2	6.2	14.6	24.1	0.0	0.9
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	749	783	158	1589	1000	178	187	456	1035	0	322
V/C Ratio(X)	0.10	0.80	0.80	0.75	0.88	0.64	0.22	0.42	0.67	0.88	0.00	0.04
Avail Cap(c_a), veh/h	126	749	783	158	1589	1000	178	187	456	1142	0	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.0	38.1	38.1	70.6	37.1	16.2	61.3	62.6	59.9	59.3	0.0	48.7
Incr Delay (d2), s/veh	0.4	7.6	7.3	17.6	7.4	3.2	0.6	1.5	3.8	7.6	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	0.2	20.4	21.2	2.6	24.3	22.0	1.4	2.8	5.7	11.8	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	45.6	45.3	88.2	44.5	19.4	61.9	64.1	63.8	67.0	0.0	48.8
LnGrp LOS	C	D	D	F	D	B	E	E	E	E	A	D
Approach Vol, veh/h	1234			2161			423			923		
Approach Delay, s/veh	45.4			39.4			63.7			66.7		
Approach LOS	D			D			E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	71.9		37.1	10.4	77.5		25.0				
Change Period (Y+Rc), s	9.0	9.0		9.0	9.0	9.0		9.0				
Max Green Setting (Gmax), s	7.0	60.0		31.0	5.0	62.0		16.0				
Max Q Clear Time (g_c+I1), s	7.2	46.0		26.1	2.4	57.0		16.6				
Green Ext Time (p_c), s	0.0	13.2		2.0	0.0	4.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 48.5

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7576	7871	7806	7665	7801	7858	7815
Vehs Exited	7289	7356	7499	7438	7557	7707	7650
Starting Vehs	656	475	578	538	511	551	492
Ending Vehs	943	990	885	765	755	702	657
Travel Distance (mi)	7263	7414	7492	7467	7565	7658	7641
Travel Time (hr)	950.7	797.3	748.6	657.9	651.9	690.1	613.4
Total Delay (hr)	734.3	575.2	524.8	435.3	426.3	461.7	384.9
Total Stops	22759	20837	18180	18354	17734	18433	19634
Fuel Used (gal)	413.5	383.3	377.0	354.7	357.9	367.9	349.4

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	7519	7838	7721	7747
Vehs Exited	7181	7636	7521	7486
Starting Vehs	477	554	565	536
Ending Vehs	815	756	765	803
Travel Distance (mi)	7080	7570	7529	7468
Travel Time (hr)	871.1	575.5	811.7	736.8
Total Delay (hr)	659.0	349.1	587.0	513.8
Total Stops	19214	17785	21537	19444
Fuel Used (gal)	392.2	340.2	390.7	372.7

Interval #0 Information Seeding

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1838	1995	1948	1897	1852	1918	1909
Vehs Exited	1731	1828	1883	1877	1885	1877	1868
Starting Vehs	656	475	578	538	511	551	492
Ending Vehs	763	642	643	558	478	592	533
Travel Distance (mi)	1758	1868	1894	1886	1877	1902	1878
Travel Time (hr)	173.6	134.4	153.9	133.2	118.2	140.9	119.6
Total Delay (hr)	121.5	78.2	97.6	76.8	62.3	84.2	63.3
Total Stops	5234	4165	4508	4271	3515	4543	3557
Fuel Used (gal)	87.5	82.1	87.4	82.8	79.6	84.4	79.7

Interval #1 Information 1

Start Time 4:30

End Time 4:45

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1861	1883	1899	1900
Vehs Exited	1726	1945	1770	1841
Starting Vehs	477	554	565	536
Ending Vehs	612	492	694	595
Travel Distance (mi)	1725	1874	1837	1850
Travel Time (hr)	135.5	130.1	143.6	138.3
Total Delay (hr)	83.7	74.0	88.8	83.0
Total Stops	4092	4099	4619	4258
Fuel Used (gal)	78.8	81.8	83.1	82.7

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2079	2142	2110	2083	2167	2177	2134
Vehs Exited	1851	1966	2010	2022	1959	1974	1916
Starting Vehs	763	642	643	558	478	592	533
Ending Vehs	991	818	743	619	686	795	751
Travel Distance (mi)	1838	1942	1986	1994	1991	1990	1922
Travel Time (hr)	237.0	180.5	178.2	146.8	141.4	177.7	168.1
Total Delay (hr)	182.3	122.4	118.7	87.1	82.1	118.6	110.6
Total Stops	5849	5405	4884	4769	4551	5198	5271
Fuel Used (gal)	104.2	93.7	95.9	88.3	86.7	94.4	90.2

Interval #2 Information 2

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	2093	2117	2036	2112
Vehs Exited	1879	1986	1858	1942
Starting Vehs	612	492	694	595
Ending Vehs	826	623	872	766
Travel Distance (mi)	1858	1983	1846	1935
Travel Time (hr)	187.6	139.6	209.5	176.6
Total Delay (hr)	132.0	80.3	154.4	118.8
Total Stops	4822	4325	5900	5096
Fuel Used (gal)	93.6	86.5	97.7	93.1

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1832	1927	1845	1912	1910	1812	1877
Vehs Exited	1949	1915	1925	1757	1771	1970	2012
Starting Vehs	991	818	743	619	686	795	751
Ending Vehs	874	830	663	774	825	637	616
Travel Distance (mi)	1904	1937	1900	1823	1808	1890	1953
Travel Time (hr)	260.6	222.2	194.2	175.3	187.0	188.6	163.9
Total Delay (hr)	203.4	164.5	137.3	121.3	133.2	132.2	105.6
Total Stops	5950	6024	4292	4768	4943	4320	5490
Fuel Used (gal)	111.0	103.0	96.5	89.6	92.6	94.9	91.0

Interval #3 Information 3

Start Time 5:00

End Time 5:15

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1786	1909	1873	1870
Vehs Exited	1668	1936	1950	1886
Starting Vehs	826	623	872	766
Ending Vehs	944	596	795	757
Travel Distance (mi)	1657	1905	1914	1869
Travel Time (hr)	259.2	146.0	223.8	202.1
Total Delay (hr)	209.5	89.0	166.8	146.3
Total Stops	5194	4494	5749	5123
Fuel Used (gal)	103.5	86.7	103.7	97.3

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1827	1807	1903	1773	1872	1951	1895
Vehs Exited	1758	1647	1681	1782	1942	1886	1854
Starting Vehs	874	830	663	774	825	637	616
Ending Vehs	943	990	885	765	755	702	657
Travel Distance (mi)	1763	1668	1713	1764	1889	1876	1888
Travel Time (hr)	279.6	260.2	222.3	202.6	205.4	182.9	161.8
Total Delay (hr)	227.1	210.1	171.2	150.1	148.7	126.8	105.5
Total Stops	5726	5243	4496	4546	4725	4372	5316
Fuel Used (gal)	110.8	104.5	97.2	94.0	99.1	94.1	88.4

Interval #4 Information 4

Start Time 5:15

End Time 5:30

Total Time (min) 15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1779	1929	1913	1865
Vehs Exited	1908	1769	1943	1816
Starting Vehs	944	596	795	757
Ending Vehs	815	756	765	803
Travel Distance (mi)	1840	1807	1932	1814
Travel Time (hr)	288.7	159.7	234.8	219.8
Total Delay (hr)	233.9	105.7	177.0	165.6
Total Stops	5106	4867	5269	4968
Fuel Used (gal)	116.3	85.3	106.2	99.6

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	TR	L	L	T	T	R	L	LT	TR	R
Maximum Queue (ft)	178	734	758	108	220	332	345	147	52	134	219	191
Average Queue (ft)	18	400	417	46	84	206	223	77	7	60	127	74
95th Queue (ft)	119	902	919	95	168	299	310	137	32	113	198	170
Link Distance (ft)		2358	2358			365	365	365		922	922	
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						1	1					
Storage Bay Dist (ft)	390			260	260				205			225
Storage Blk Time (%)	0	13			0	4					0	0
Queuing Penalty (veh)	0	1			0	4					0	0

Intersection: 2: Austin Ridge Drive & Courthouse Road

Movement	SB	SB	SB	SB
Directions Served	L	L	LT	R
Maximum Queue (ft)	330	1077	889	326
Average Queue (ft)	305	958	787	39
95th Queue (ft)	378	1430	1218	215
Link Distance (ft)		1415	1415	
Upstream Blk Time (%)		39	34	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)	330			360
Storage Blk Time (%)	5	57	53	0
Queuing Penalty (veh)	15	163	6	0