

# MEMORANDUM

July 31, 2023

Project #: 28302

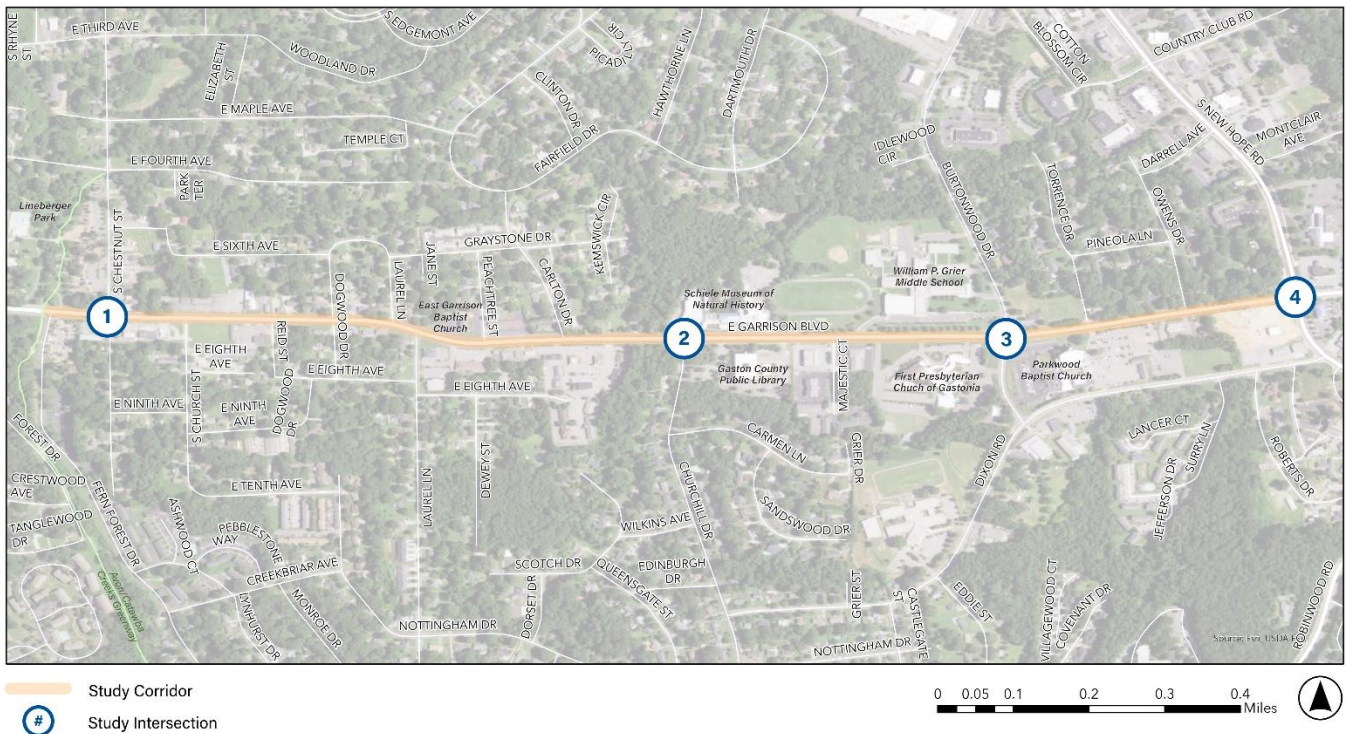
To: Randi Gates, AICP  
 City of Gastonia

From: Justin Bansen, PE; Emily Chen; Scott Curry, AICP, CNU-A

RE: Garrison Boulevard Corridor Study: Existing Traffic Conditions and Volume Growth Memo

This memorandum describes the existing traffic conditions and recommended volume growth rates as part of the Garrison Boulevard Corridor Study, which has limits from the Avon/Catawba Creeks Greenway at Lineberger Park (approximately at Fern Forest Dr) in the west to New Hope Road in the east. The intersections along the study corridor that are included in the traffic analysis are as follows and shown in **Figure 1**.

1. Garrison Boulevard at Chestnut Street,
2. Garrison Boulevard at Churchill Drive,
3. Garrison Boulevard at Burtonwood Drive, and
4. Garrison Boulevard/Armstrong Park Drive at New Hope Road.



**Figure 1.** Garrison Boulevard study corridor and study intersections.

## EXISTING TRAFFIC VOLUMES AND SPEEDS

Forty-eight hour vehicular speed, volume, and classification tube counts were collected on Wednesday, May 3 and Thursday, May 4, 2023 at two locations along the corridor (east of Chestnut Street and east of Burtonwood Drive). The daily volumes at these count locations are shown in **Figure 2** and **Figure 3**.

Start Time	Mon	Tue	Wed 3 May 23	Thu 4 May 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			86	101		94			94	
01:00 AM			51	71		61			61	
02:00 AM			37	44		41			41	
03:00 AM			40	40		40			40	
04:00 AM			99	88		94			94	
05:00 AM			254	242		248			248	
06:00 AM			572	609		591			591	
07:00 AM			1415	1337		1376			1376	
08:00 AM			1318	1262		1290			1290	
09:00 AM			960	932		946			946	
10:00 AM			1055	1009		1032			1032	
11:00 AM			1146	1109		1128			1128	
12:00 PM			1276	1186		1231			1231	
01:00 PM			1365	1283		1324			1324	
02:00 PM			1572	1554		1563			1563	
03:00 PM			1581	1581		1581			1581	
04:00 PM			1478	1495		1487			1487	
05:00 PM			1500	1488		1494			1494	
06:00 PM			1141	1214		1178			1178	
07:00 PM			858	902		880			880	
08:00 PM			638	681		660			660	
09:00 PM			444	457		451			451	
10:00 PM			307	300		304			304	
11:00 PM			185	201		193			193	
Day Total			19378	19186		19287			19287	

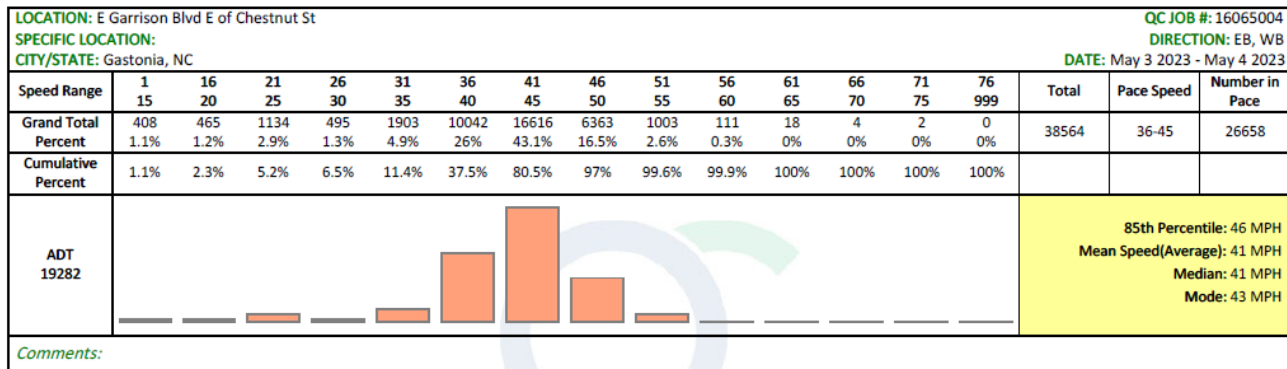
Figure 2. Existing volumes on Garrison Boulevard east of Chestnut Street (Quality Counts, 2023).

Start Time	Mon	Tue	Wed 3 May 23	Thu 4 May 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			63	78		71			71	
01:00 AM			47	56		52			52	
02:00 AM			29	34		32			32	
03:00 AM			28	31		30			30	
04:00 AM			68	73		71			71	
05:00 AM			187	181		184			184	
06:00 AM			478	497		488			488	
07:00 AM			1120	1036		1078			1078	
08:00 AM			1051	1010		1031			1031	
09:00 AM			741	753		747			747	
10:00 AM			831	784		808			808	
11:00 AM			839	878		859			859	
12:00 PM			978	924		951			951	
01:00 PM			1002	978		990			990	
02:00 PM			1166	1121		1144			1144	
03:00 PM			1235	1193		1214			1214	
04:00 PM			1122	1152		1137			1137	
05:00 PM			1154	1100		1127			1127	
06:00 PM			864	898		881			881	
07:00 PM			625	695		660			660	
08:00 PM			498	534		516			516	
09:00 PM			361	366		364			364	
10:00 PM			260	239		250			250	
11:00 PM			141	148		145			145	
Day Total			14888	14759		14830			14830	

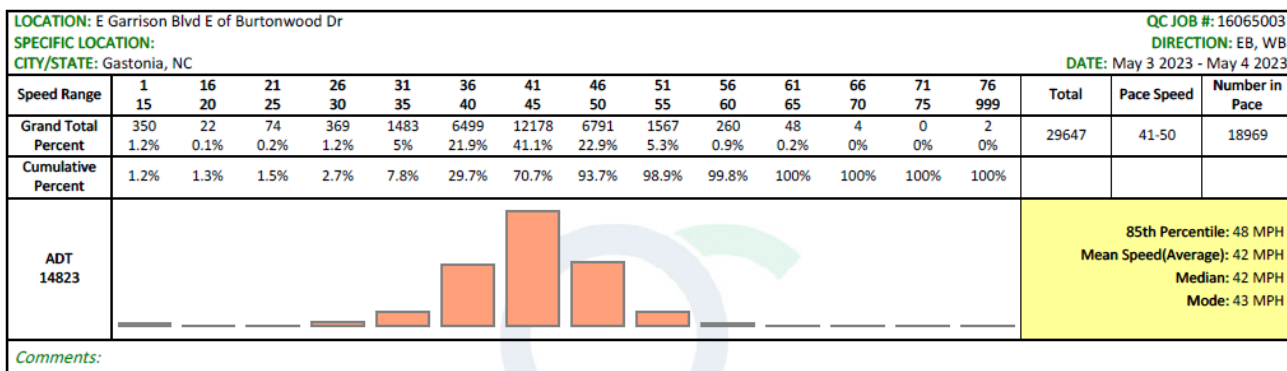
Figure 3. Existing volumes on Garrison Boulevard east of Burtonwood Drive (Quality Counts, 2023).

The tube counts indicate that the true hourly peak occurs during mid-afternoon, around 3 pm, coinciding with school operations. However, the difference between the hourly volume at 3 pm is less than 100 vehicles more than the hourly volume at 5 pm, showing that PM peak traffic volumes are generally sustained at a consistent level over approximately a 4-hour peak period from school dismissal through the typical commute hours.

The existing speed limit on the study corridor is 45 miles per hour. Speed distributions collected from two count locations on May 3 and May 4, 2023 are shown in **Figure 4** and **Figure 5**. Vehicles were generally traveling near or slightly above the speed limit, with 85<sup>th</sup> percentile speeds of 46 miles per hour on Garrison Boulevard east of Chestnut Street and 48 miles per hour on Garrison Boulevard east of Burtonwood Drive. The percentage of vehicles observed to be traveling over the speed limit on the corridor was 19.4% east of Chestnut Street and 29.3% east of Burtonwood Drive.



**Figure 4.** Existing speeds on Garrison Boulevard east of Chestnut Street (Quality Counts, 2023).



**Figure 5.** Existing speeds on Garrison Boulevard east of Burtonwood Drive (Quality Counts, 2023).

## EXISTING INTERSECTION OPERATIONS

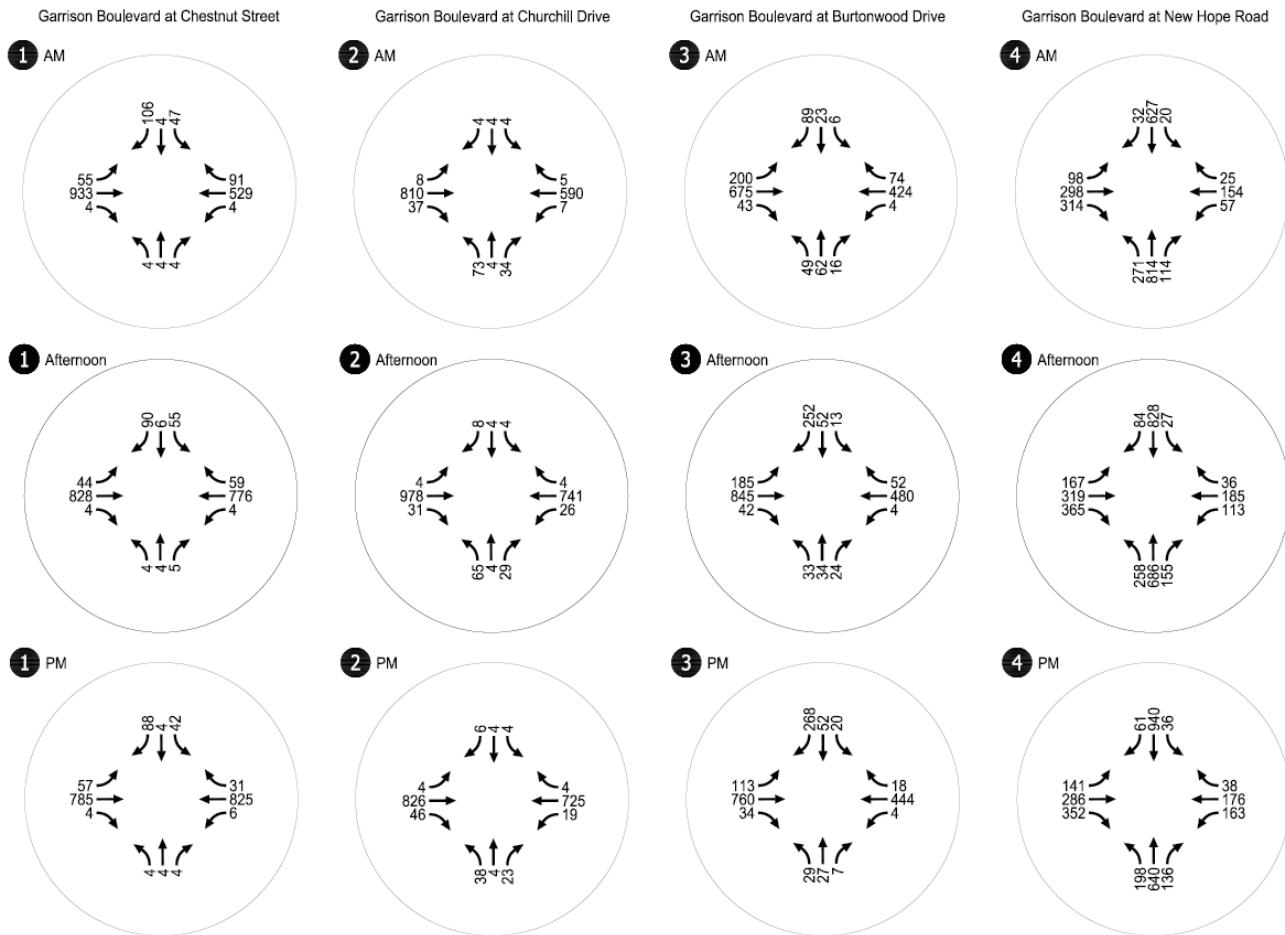
All four study intersections are currently signalized. The existing weekday AM, afternoon, and PM peak hour volumes at each intersection were analyzed in Synchro 11 using Highway Capacity Manual (HCM) 6<sup>th</sup> Edition methodologies. Weekday AM and afternoon counts for all study intersections except for Garrison Boulevard at Chestnut Street were collected on Thursday, May 12, 2022 as part of the Grier Middle School Expansion TIA (dated January 13, 2023), which analyzed the weekday AM and afternoon peak hour volumes. Weekday AM, afternoon, and PM vehicular turning movement counts (TMCs) for Garrison Boulevard at Chestnut Street were collected on Wednesday, May 3, 2023, and Weekday PM counts for the three eastern study intersections were collected on Thursday, May 11, 2023 (provided in **Appendix A**). Signal timings for the three eastern intersections were consistent with those from the timing plans provided in the Middle School TIA, and timings for Garrison Boulevard at Chestnut Street were obtained from North Carolina Department of Transportation (NCDOT) signal plan data (provided in **Appendix B**).

A peak hour factor (PHF) of 0.9 was used for the PM peak hour analyses to be consistent with NCDOT Capacity Analysis Guidelines. This value was, overall, more conservative than the intersection PHFs from the traffic counts, which ranged from 0.89 to 0.97.

Note that the weekday AM and afternoon Synchro parameters used for the analysis were consistent with those from the Middle School TIA except for the following changes that are also reflected in the weekday PM analysis:

- Updates to the heavy vehicle percentages on all approaches to reflect the collected counts, with a minimum of 2% heavy vehicles (the TIA previously used a 2% heavy vehicle percentage across all approaches),
- Updates to the eastbound and westbound through movement signal timings (phases 2 and 6) at all intersections to have minimum, rather than maximum, recalls, based on the latest NCDOT signal timing plan data (see **Appendix B**), and
- Coding all movements with less than 4 vehicles per hour as 4 vehicles per hour based on NCDOT Capacity Analysis Guidelines.

**Figure 6** shows the TMCs used for the existing weekday AM, afternoon, and PM peak hour analyses.



**Figure 6.** Existing weekday AM, afternoon, and PM peak hour TMCs.

**Table 1** through **Table 4** summarize the existing approach-level intersection operations for the weekday AM, afternoon, and PM peak hours. All intersections currently operate at a LOS D or better during each peak hour analyzed. Full operational analysis results are provided in **Appendix C**.

**Table 1.** Existing Intersection Peak Hour Operations: Garrison Boulevard at Chestnut Street

Approach	Level of Service (LOS)			Delay (s/veh)			Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)		
	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak
Garrison Boulevard West Leg (EB)	A	A	A	3.2	2.4	3.2	19 (L) 140 (TR)	14 (L) 102 (TR)	18 (L) 109 (TR)
Garrison Boulevard East Leg (WB)	A	A	C	6.6	5.6	32.9	2* (L) 217 (TR)	2* (L) 78 (TR)	7* (L) 229 (TR)
Chestnut Street South Leg (NB)	D	D	D	35.3	45.5	45.1	20	26	25
Chestnut Street North Leg (SB)	D	D	D	38.3	48.4	48.3	61 (LT) 109 (R)	80 (LT) 110 (R)	68 (LT) 115 (R)
<b>Overall Intersection</b>	<b>A</b>	<b>A</b>	<b>C</b>	<b>7.7</b>	<b>7.8</b>	<b>20.6</b>	-	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 2.** Existing Intersection Peak Hour Operations: Garrison Boulevard at Churchill Drive

Approach	Level of Service (LOS)			Delay (s/veh)			Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)		
	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak
Garrison Boulevard West Leg (EB)	A	A	A	6.7	3.4	2.1	3* (L) 98 (TR)	2* (L) 131 (TR)	1* (L) 43 (TR)
Garrison Boulevard East Leg (WB)	B	A	A	11.4	0.5	0.4	2* (L) 24 (TR)	4* (L) 31 (TR)	7 (L) 76 (TR)
Churchill Dr South Leg (NB)	B	D	D	16.4	47.0	47.9	41 (LT) 21 (R)	95 (LT) 48 (R)	67 (LT) 44 (R)
Schiele Museum Driveway North Leg (SB)	B	D	D	15.5	44.5	47.0	11	31	30
<b>Overall Intersection</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>9.2</b>	<b>4.4</b>	<b>3.4</b>	-	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 3.** Existing Intersection Peak Hour Operations: Garrison Boulevard at Burtonwood Drive

Approach	Level of Service (LOS)			Delay (s/veh)			Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)		
	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak
Garrison Boulevard West Leg (EB)	B	C	A	13.6	23.0	7.6	162 (L) 233 (TR)	160 (L) 332 (TR)	139 (L) 249 (TR)
Garrison Boulevard East Leg (WB)	B	C	B	18.6	24.2	14.8	2* (L) 212* (TR)	3* (L) 263* (TR)	6* (L) 192* (TR)
Burtonwood Drive South Leg (NB)	D	D	D	40.8	51.0	48.6	59* (L) 82* (TR)	54* (L) 75* (TR)	52 (L) 58 (TR)
Burtonwood Drive North Leg (SB)	C	C	D	29.2	31.6	46.3	46 (LT) 45 (R)	86* (LT) 130 (R)	100 (LT) 194 (R)
<b>Overall Intersection</b>	<b>B</b>	<b>C</b>	<b>B</b>	<b>18.1</b>	<b>25.9</b>	<b>18.4</b>	-	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 4.** Existing Intersection Peak Hour Operations: Garrison Boulevard/Armstrong Park Drive at New Hope Road

Approach	Level of Service (LOS)			Delay (s/veh)			Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)		
	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak	AM Peak	Afternoon Peak	PM Peak
Garrison Boulevard West Leg (EB)	D	D	D	46.8	48.6	46.6	124** (L) 284** (T) 43 (R)	216 (L) 407** (T) 58 (R)	189 (L) 341** (T) 66 (R)
Armstrong Park Drive East Leg (WB)	D	D	D	35.7	44.9	42.9	74 (L) 76 (TR)	141 (L) 113 (TR)	193 (L) 116 (TR)
New Hope Road South Leg (NB)	C	D	C	32.4	36.7	27.5	284** (L) 277 (T) 74 (R)	308** (L) 248 (T) 55 (R)	264** (L) 268 (T) 78 (R)
New Hope Road North Leg (SB)	D	D	D	43.9	53.1	42.7	30* (L) 244** (TR)	35* (L) 577** (TR)	61 (L) 588** (TR)
<b>Overall Intersection</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>39.3</b>	<b>45.4</b>	<b>39.0</b>	-	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

\*\*95<sup>th</sup> percentile volume exceeds capacity; queues may be longer. Queue shown is maximum after two cycles.

## CRASH HISTORY

In the five-year timeframe from May 1, 2018 to April 30, 2023, there were 189 crashes that took place along the study corridor. **Table 5** provides a high-level crash summary for the corridor. **Table 6** and **Table 7** show the overall five-year corridor crash trends by severity and type. **Table 8** and **Figure 7** show the crashes by time of day, and **Table 9** shows the crashes by year and severity. The complete crash analysis summary, generated using the NCDOT Traffic Engineering Accident Analysis System (TEAAS), is provided in **Appendix D**.

**Table 5.** Five-Year High-Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	189	100.00%
Fatal Crashes	0	0.00%
Total Injury Crashes	54	28.57%
Property Damage Only Crashes	135	71.43%
Night Crashes	31	16.40%
Wet Roadway Crashes	33	17.46%
Alcohol/Drug-Related Crashes	7	3.70%

**Table 6.** Five-Year Crash Severity Summary

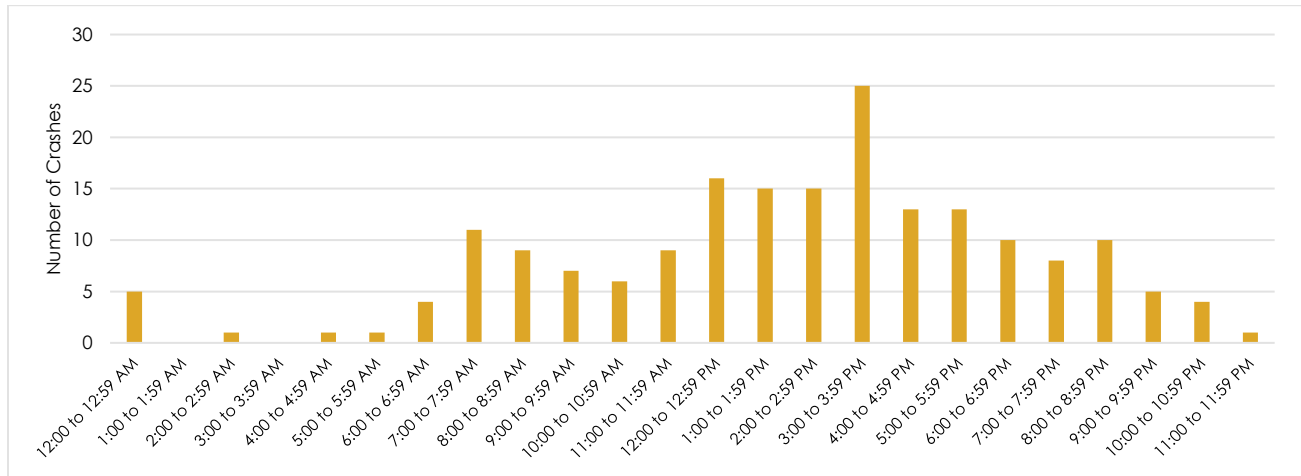
Crash Type	Number of Crashes	Percent of Total
Fatal Crashes	0	0.00%
Class A (Disabling Injury) Crashes	0	0.00%
Class B (Evident Injury) Crashes	8	4.23%
Class C (Possible Injury) Crashes	46	24.34%
Property Damage Only Crashes	135	71.43%

**Table 7.** Five-Year Crash Type Summary

Crash Type	Number of Crashes	Percent of Total
Angle	35	18.52%
Animal	2	1.06%
Backing Up	2	1.06%
Fixed Object	2	1.06%
Left Turn, Different Roadways	15	7.94%
Left Turn, Same Roadway	10	5.29%
Other Collision with Vehicle	1	0.53%
Parked Motor Vehicle	1	0.53%
Pedestrian	1	0.53%
Ran Off Road – Left	2	1.06%
Ran Off Road – Right	6	3.17%
Rear End, Slow or Stop	81	42.86%
Rear End, Turn	2	1.06%
Right Turn, Different Roadways	3	1.59%
Right Turn, Same Roadway	3	1.59%
Sideswipe, Opposite Direction	2	1.06%
Sideswipe, Same Direction	20	10.58%

**Table 8.** Five-Year Crash Time of Day Summary

Hour	Number of Crashes	Percent of Total
12:00 to 12:59 AM	5	2.65%
1:00 to 1:59 AM	0	0.00%
2:00 to 2:59 AM	1	0.53%
3:00 to 3:59 AM	0	0.00%
4:00 to 4:59 AM	1	0.53%
5:00 to 5:59 AM	1	0.53%
6:00 to 6:59 AM	4	2.12%
7:00 to 7:59 AM	11	5.82%
8:00 to 8:59 AM	9	4.76%
9:00 to 9:59 AM	7	3.70%
10:00 to 10:59 AM	6	3.17%
11:00 to 11:59 AM	9	4.76%
12:00 to 12:59 PM	16	8.47%
1:00 to 1:59 PM	15	7.94%
2:00 to 2:59 PM	15	7.94%
3:00 to 3:59 PM	25	13.23%
4:00 to 4:59 PM	13	6.88%
5:00 to 5:59 PM	13	6.88%
6:00 to 6:59 PM	10	5.29%
7:00 to 7:59 PM	8	4.23%
8:00 to 8:59 PM	10	5.29%
9:00 to 9:59 PM	5	2.65%
10:00 to 10:59 PM	4	2.12%
11:00 to 11:59 PM	1	0.53%



**Figure 7.** Graph of five-year total crashes by time of day.

**Table 9.** Crash Totals by Year and Severity

Year	Number of Months	Total Crashes	Fatal Crashes	Injury Crashes	PDO Crashes
2018	8	26	0	9	17
2019	12	49	0	20	29
2020	12	28	0	8	20
2021	12	34	0	8	26
2022	12	43	0	8	35
2023	4	9	0	1	8
Total		189	0	54	135

Over 70 percent of crashes were property damage only (PDO) and the predominant crash types were rear end crashes, frontal crashes (angle, left turn, or right turn), and sideswipe crashes. One crash involved a pedestrian, where the pedestrian ran north across Garrison Boulevard at Church Street and was struck by an eastbound vehicle. The severity index (SI) for the corridor is 3.11, indicating that crashes have generally been less severe. (An SI of 8.4 is the threshold for locations that have more serious crashes.)

A higher number of crashes took place during the afternoon and evening hours between 12 PM and 6 PM compared to other times of day, with a peak in crash frequency between 3:00 and 3:59 PM. This hour corresponds to when school dismissal generally occurs (Grier Middle School on Garrison Boulevard at Burtonwood Drive has a dismissal time of 3:30 PM) and is associated with increases in traffic during student pick-up times.

The yearly crash totals were higher pre-COVID-19 (in 2019) and post-COVID-19 (in 2022) compared to in 2020 and 2021, when there was likely a notable decrease in traffic along the corridor due to the pandemic.

**Table 10** provides a summary of the 92 crashes that took place at signalized intersections (i.e., within 150 feet of a signalized intersection) by type. The predominant crash type at signalized intersections were frontal crashes (including angle crashes), followed by rear end crashes.



**Table 10.** Five-Year Crashes by Type at Signalized Intersections

Signalized Intersection	Crash Type						Total Crashes
	Angle	Other Frontal*	Rear End	Sideswipe	Ran off Road**	Other	
Garrison Boulevard at Chestnut Street	3	5	6	0	0	1	15
Garrison Boulevard at Churchill Drive	1	0	5	1	0	1	8
Garrison Boulevard at Burtonwood Drive	6	7	11	2	1	0	27
Garrison Boulevard/ Armstrong Park Drive at New Hope Road	15	5	19	2	1	0	42

\*Other frontal crashes include Left Turn, Same Roadway; Left Turn, Different Roadways; Right Turn, Same Roadway; Right Turn, Different Roadways

\*\*Ran Off Road crashes include Fixed Object; Ran Off Road – Left; Ran Off Road – Right

In addition to crashes at signalized intersections, there were 11 crashes related to unsignalized intersections and 30 crashes related to driveways. These crashes involved a vehicle planning or attempting to turn into or out of an unsignalized minor street or driveway from or onto Garrison Boulevard. **Table 11** summarizes the crash types at these locations.

**Table 11.** Five-Year Crashes by Type at Unsignalized Intersections and Driveways

Location	Crash Type						Total Crashes
	Angle	Other Frontal*	Rear End	Sideswipe	Ran off Road**	Pedestrian	
<b>Unsignalized Intersections</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>11</b>
East of Fern Forest Drive and West of Chestnut Street	1	2	0	0	0	0	3
East of Chestnut Street and West of Churchill Drive	1	3	0	0	1	1	6
East of Churchill Drive and West of Burtonwood Drive	0	2	0	0	0	0	2
East of Burtonwood Drive and West of New Hope Road	0	0	0	0	0	0	0
<b>Driveways</b>	<b>6</b>	<b>7</b>	<b>11</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>30</b>
East of Fern Forest Drive and West of Chestnut Street	0	0	0	0	0	0	0
East of Chestnut Street and West of Churchill Drive	1	0	5	4	0	0	10
East of Churchill Drive and West of Burtonwood Drive	3	2	1	1	0	0	7
East of Burtonwood Drive and West of New Hope Road	2	5	5	1	0	0	13

\*Other frontal crashes include Left Turn, Same Roadway; Left Turn, Different Roadways; Right Turn, Same Roadway; Right Turn, Different Roadways

\*\*Ran Off Road crashes include Fixed Object; Ran Off Road – Left; Ran Off Road – Right

Fifty-eight crashes along the study corridor were not at signalized intersections and did not involve vehicles turning into or out of unsignalized intersections or driveways. A majority of these crashes, summarized in **Table 12** by segment, were rear ends or sideswipes, followed by ran off road crashes.

**Table 12.** Five-Year Crashes by Type: Other Crash Locations

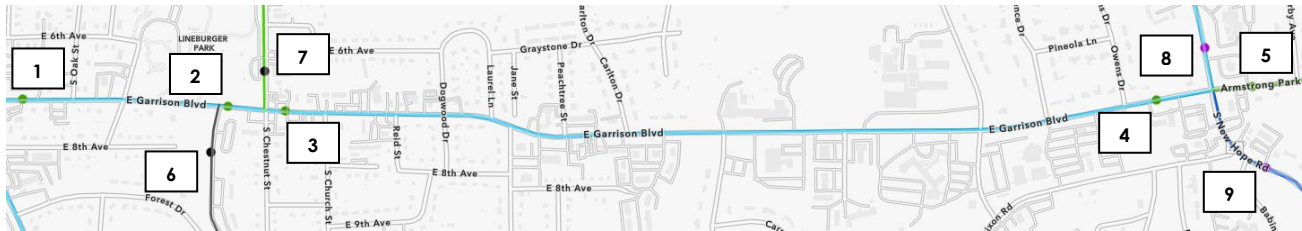
Segment of Garrison Boulevard	Crash Type						Total Crashes
	Angle	Other Frontal*	Rear End	Sideswipe	Ran Off Road**	Other	
<b>All Other Crashes</b>	<b>2</b>	<b>0</b>	<b>33</b>	<b>12</b>	<b>7</b>	<b>4</b>	<b>58</b>
East of Fern Forest Drive and West of Chestnut Street	0	0	0	1	0	0	1
East of Chestnut Street and West of Churchill Drive	0	0	6	8	7	2	23
East of Churchill Drive and West of Burtonwood Drive	1	0	4	0	0	1	6
East of Burtonwood Drive and West of New Hope Road	1	0	23	3	0	1	28

\*Other frontal crashes include Left Turn, Same Roadway; Left Turn, Different Roadways; Right Turn, Same Roadway; Right Turn, Different Roadways

\*\*Ran Off Road crashes include Fixed Object; Ran Off Road – Left; Ran Off Road – Right

## HISTORICAL VOLUMES

Figure 8 and Table 13 show the historical volume data collection locations and volumes from the NCDOT Annual Average Daily Traffic (AADT) Mapping Application in proximity to the study corridor. Since 2004, all data collection locations have experienced an overall negative growth in AADT.



**Figure 8.** Historical volume data collection locations in proximity of the study intersection.

**Table 13.** Historical AADT Volumes and Growth

No.	Location	AADT									Compound Annual Historic Growth Rate
		2004	2006	2008	2009	2010	2012	2014	2016	2018	
1	Garrison Blvd east of Union Rd	23,000	24,000	22,000	-	21,000	18,000	19,000	21,000	19,500	-1.46%
2	Garrison Blvd west of Chestnut St	21,000	21,000	20,000	-	20,000	16,000	18,000	18,000	17,500	-1.57%
3	Garrison Blvd east of Chestnut St	21,000	20,000	20,000	-	19,000	18,000	17,000	18,000	17,500	-1.40%
4	Garrison Blvd west of New Hope Rd	14,000	15,000	14,000	-	13,000	12,000	13,000	14,000	13,000	-0.74%
5	Armstrong Park Dr east of New Hope Rd	9,900	10,000	10,000	-	11,000	8,800	9,300	8,700	8,600	-1.33%
6	Fern Forest Dr south of Garrison Blvd	-	-	-	1,900	-	1,800	1,700	1,700	1,800	-1.23%
7	Chestnut St north of Garrison Blvd	-	3,100	2,800	-	2,700	2,600	2,300	2,800	2,500	-1.23%
8	New Hope Rd north of Garrison Blvd	18,000	20,000	20,000	-	22,000	18,000	19,000	19,000	-	-0.21%
9	New Hope Rd south of Garrison Blvd	23,000	26,000	25,000	-	25,000	22,000	24,000	24,000	-	-0.45%

The May 2023 daily volumes collected on Garrison Boulevard east of Chestnut Street and on Garrison Boulevard east of Burtonwood Drive (shown in Figure 2 and Figure 3) were 19,287 vehicles and 14,830 vehicles,

respectively. These volumes are within the historical AADT ranges from 2004 and 2018 for the corresponding historical traffic count locations on Garrison Boulevard.

## VOLUME GROWTH POTENTIAL

**Table 14** and **Table 15** summarize the daily volume projections and corresponding compound growth rates for the Garrison Boulevard study segments based on the latest version of the Metrolina Regional Model (MRM), MRM22v1.0. Compared to the historical AADT volumes from 2018, the model underestimates the 2018 volume at the west end of the corridor and overestimates the 2018 volume at the east end of the corridor.

**Table 14.** Garrison Boulevard Volume Projections from Metrolina Regional Model

Segment of Garrison Blvd	2018 Historical AADT	MRM Daily Volumes			
		2018 (Estimated)	2025 (Projected)	2035 (Projected)	2045 (Projected)
Fern Forest Dr to Churchill Dr	17,500	15,920	15,972	16,523	16,809
Churchill Dr to Burtonwood Dr	15,250*	18,983	18,328	19,452	19,628
Burtonwood Dr to New Hope Rd	13,000	19,810	19,525	19,118	19,339

\*No historical traffic count in this segment. AADT estimated as average of adjacent segment AADTs (to the west and east).

**Table 15.** Garrison Boulevard Volume Growth Rates from Metrolina Regional Model

Segment of Garrison Blvd	MRM Compound Annual Growth Rate		
	2018 to 2025	2018 to 2035	2018 to 2045
Fern Forest Dr to Churchill Dr	0.05%	0.22%	0.20%
Churchill Dr to Burtonwood Dr	-0.50%	0.14%	0.12%
Burtonwood Dr to New Hope Rd	-0.21%	-0.21%	-0.09%

For comparison purposes, **Table 16** and **Table 17** show the MRM volume projections and growth rates for New Hope Road just north and just south of Garrison Boulevard/Armstrong Park Drive. The model's projected growth rates are higher for New Hope Road than for Garrison Boulevard, with no negative growth projected.

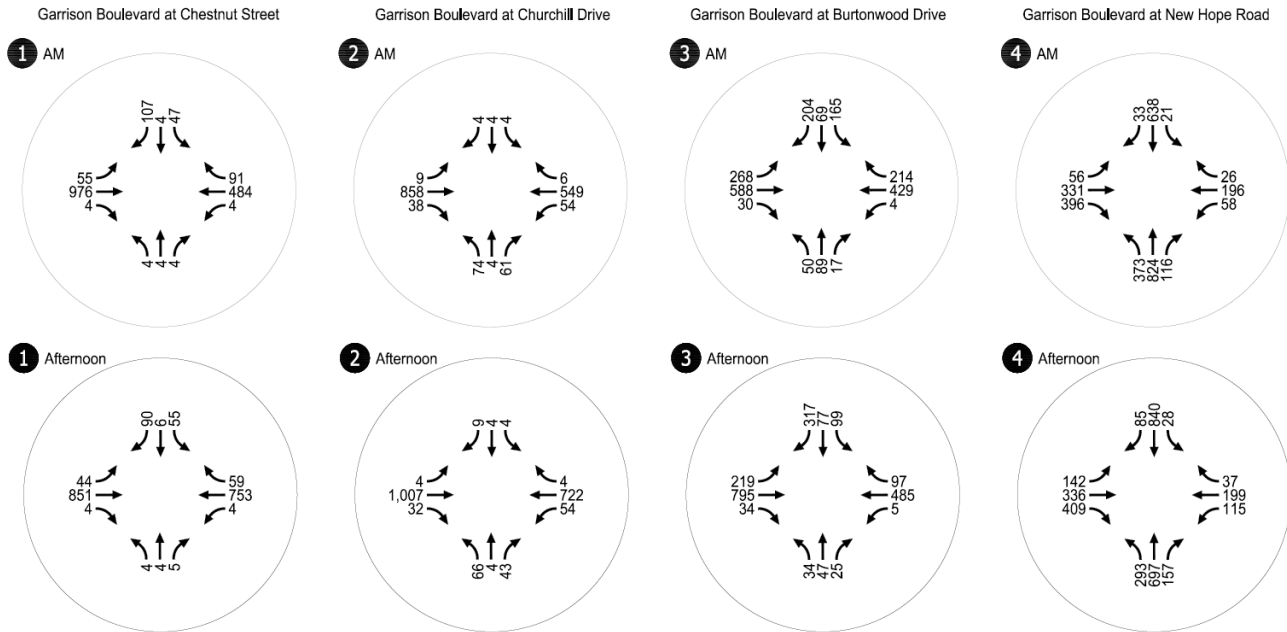
**Table 16.** New Hope Road Volume Projections from Metrolina Regional Model

Location on New Hope Rd	MRM Daily Volumes			
	2018 (Estimated)	2025 (Projected)	2035 (Projected)	2045 (Projected)
North of Garrison Blvd/Armstrong Park Dr	21,416	21,638	23,586	24,822
South of Garrison Blvd/Armstrong Park Dr	29,680	30,826	32,593	34,327

**Table 17.** New Hope Road Volume Growth Rates from Metrolina Regional Model

Location on New Hope Rd	MRM Compound Annual Growth Rate		
	2018 to 2025	2018 to 2035	2018 to 2045
North of Garrison Blvd/Armstrong Park Dr	0.15%	0.57%	0.55%
South of Garrison Blvd/Armstrong Park Dr	0.54%	0.55%	0.54%

The Grier Middle School Expansion TIA applied a CAGR of 0.5% for background growth to forecast future year volumes for near-term scenarios (years 2024 and 2029). In addition, the TIA included new site trips expected to be generated by the school expansion during future weekday AM and afternoon roadway volumes along with re-routing of trips based upon site access modifications. For reference, the expected build TMCs in the opening year of the school expansion (2024) are shown in **Figure 9**, with volumes extrapolated to the Garrison Boulevard and Chestnut Street intersection (as this intersection was not included in the Middle School TIA). Note that some movements have been rounded to reflect a minimum of four vehicles per hour to reflect NCDOT Capacity Analysis Guidelines.



**Figure 9.** Projected weekday AM and afternoon peak hour TMCs with a 0.5% CAGR for 2024 (Grier Middle School Expansion opening year).

## GROWTH RATE AND HORIZON YEAR RECOMMENDATIONS

Through discussions with City of Gastonia and NCDOT staff, an evaluation of historical and MRM data, and a review of the Middle School TIA, we recommend a horizon year of 2045 with an applied CAGR of 0.25% for peak hour background traffic growth plus in-process trips from the Grier Middle School expansion and other known projects. A 0.5% CAGR is recommended for northbound through (NBT) and southbound through (SBT) volumes along New Hope Road at the intersection with Garrison Boulevard.

With a 2045 horizon year and 0.25% background growth rate, the forecasted AADTs are similar to the historical high AADTs observed on Garrison Boulevard at both the western and eastern ends of the study corridor. **Table 18** shows the estimated 2023 and forecasted 2045 AADT volumes (rounded to the nearest hundred) based on the average daily traffic (ADT) volumes collected on Garrison Boulevard in May 2023. (The forecasted 2045 volumes using a 0.5% CAGR are also included for reference.) The historical high AADTs are also shown as a point of comparison.

**Table 18.** Projected Volumes Using Recommended CAGRs

Count Location on Garrison Blvd	2023 ADT	Estimated 2023 AADT*	CAGR	Forecasted 2045 AADT	Historical High AADT
East of Chestnut St	19,287	19,100	0.25%	20,200	21,000 (2004)
			0.50%	21,300	
East of Burtonwood Dr	14,830	14,700	0.25%	15,500	15,000 (2006)
			0.50%	16,400	

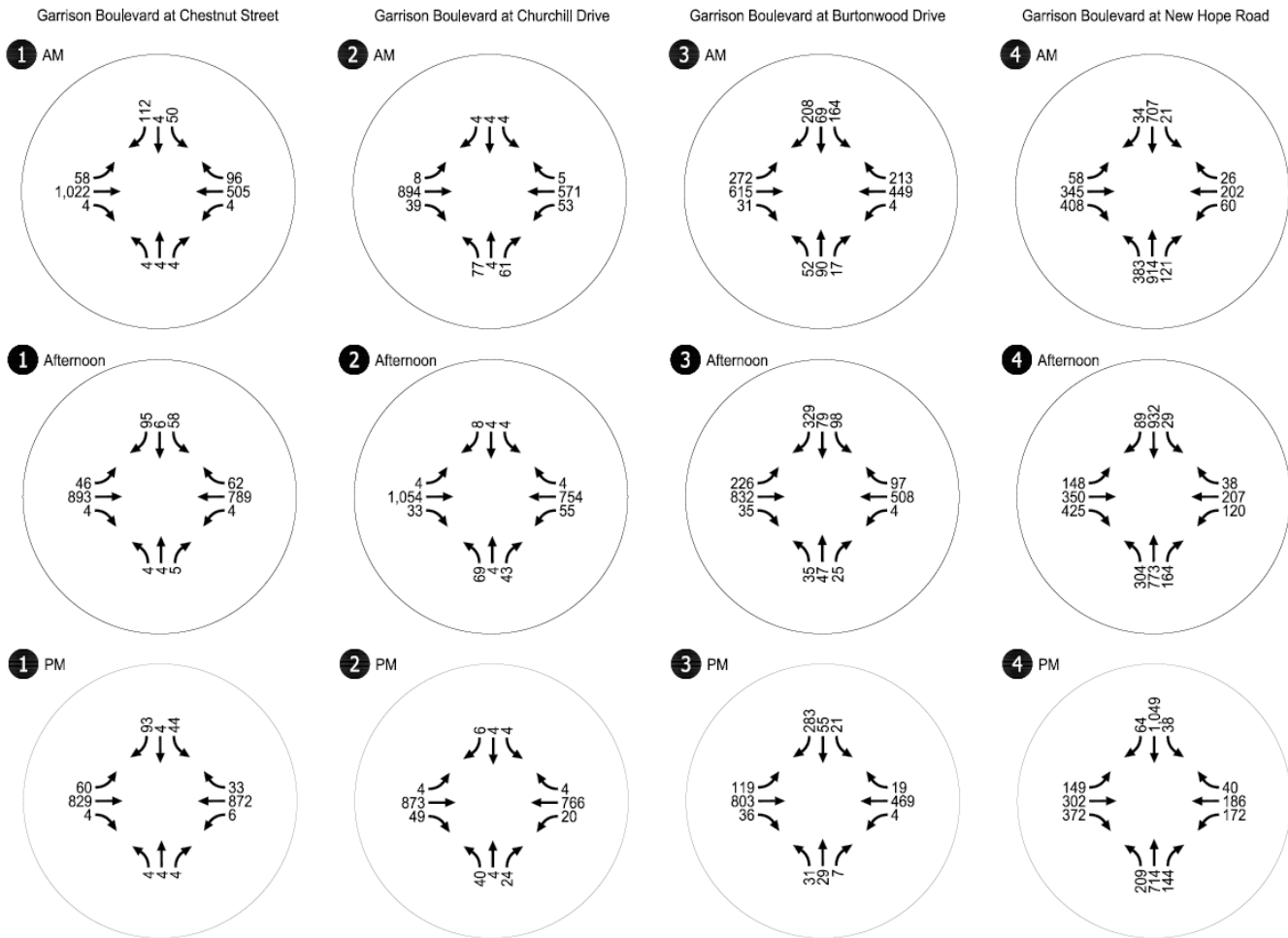
\*Applied NCDOT seasonal factor to ADT to estimate AADT: average of May Wednesday and May Thursday seasonal factor for traffic counts under ATR Group 4 is 0.99 (NCDOT, 2013)

The recommended 2045 AADT volumes are close to historical high volumes at both the western and eastern count locations on the corridor. East of Chestnut Street, the projected 2045 AADT would be 800 vehicles lower than the historical high volume using a 0.25% CAGR. East of Burtonwood Drive, the projected 2045 AADT would be 500 vehicles higher than the historical high volume using a 0.25% CAGR.

## 2045 NO-BUILD INTERSECTION OPERATIONS

To obtain the 2045 weekday AM and afternoon peak hour volumes, the volume forecast methodology from the Middle School TIA was used for consistency. Existing school trips related to Grier Middle School (provided in **Appendix E**) were first removed from the 2022 or 2023 existing volumes, with the trip removal extrapolated to the Chestnut St intersection. Then, the 0.25% CAGR for background growth (or 0.5% CAGR for NBT and SBT New Hope Road) was applied to the adjusted existing volumes to obtain 2045 volumes without school-related trips. Finally, the site trips from with the school expansion and committed background trips from the Middle School TIA (extrapolated to the Chestnut St intersection) were added to obtain the total 2045 weekday AM and afternoon volumes.

To obtain the 2045 weekday PM peak hour volumes, a 0.25% CAGR (or 0.5% CAGR for NBT and SBT New Hope Road) was applied to 2023 existing volumes. **Figure 10** shows the projected 2045 weekday AM, afternoon, and PM peak hour volumes.



**Figure 10.** Projected 2045 weekday AM, afternoon, and PM peak hour TMCs.

Based on a comparison of the projected 2045 weekday afternoon and PM peak hour volumes, the critical time period of the two is afternoon peak hour. Because of this, the 2045 no-build future year traffic analysis was conducted for the 2045 weekday AM and afternoon peak hours, with the same peak hours anticipated to be evaluated for the 2045 build scenarios.

According to the recommendations in the Middle School TIA and through confirmation with the City of Gastonia, an additional southbound left turn lane is to be constructed on Burtonwood Drive at Garrison Boulevard in conjunction with the school expansion project. As a result, this additional lane was included the 2045 no-build analysis, summarized in **Table 19** through **Table 22**. However, the lane configurations for the Burtonwood Drive intersection will be revisited as part of the future year build alternatives evaluation.

To evaluate the 2045 no-build operations, the existing cycle length at all study intersections (110 seconds) was kept, as all four signals are coordinated, but the splits were optimized.

**Table 19** through **Table 22** summarize the 2045 no-build approach-level intersection operations for the weekday AM and afternoon peak hours. Under no-build conditions, the three western intersections are projected to operate at a LOS D or better during each peak hour analyzed. The New Hope Road intersection is projected to operate at an overall LOS D in the AM peak hour and an overall LOS E in the afternoon peak hour. Full 2045 no-build operational analysis results are provided in **Appendix F**.

**Table 19.** 2045 No-Build Intersection Peak Hour Operations: Garrison Boulevard at Chestnut Street

Approach	Level of Service (LOS)		Delay (s/veh)		Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)	
	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak
Garrison Boulevard West Leg (EB)	A	A	3.4	3.0	21 (L) 173 (TR)	15 (L) 114 (TR)
Garrison Boulevard East Leg (WB)	A	C	6.2	34.3	3* (L) 132 (TR)	1* (L) 48 (TR)
Chestnut Street South Leg (NB)	D	D	43.4	45.1	24	26
Chestnut Street North Leg (SB)	D	D	47.3	48.2	76 (LT) 137 (R)	83 (LT) 114 (R)
Overall Intersection	A	C	8.4	20.5	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 20.** 2045 No-Build Intersection Peak Hour Operations: Garrison Boulevard at Churchill Drive

Approach	Level of Service (LOS)		Delay (s/veh)		Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)	
	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak
Garrison Boulevard West Leg (EB)	A	A	4.8	4.1	2* (L) 68 (TR)	2* (L) 150 (TR)
Garrison Boulevard East Leg (WB)	A	A	0.4	0.5	7* (L) 25 (TR)	19* (L) 72 (TR)
Churchill Dr South Leg (NB)	D	D	46.4	45.9	106 (LT) 79 (R)	99 (LT) 65 (R)
Schiele Museum Driveway North Leg (SB)	D	D	42.5	43.2	24	31
Overall Intersection	A	A	6.5	5.0	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 21.** 2045 No-Build Intersection Peak Hour Operations: Garrison Boulevard at Burtonwood Drive

Approach	Level of Service (LOS)		Delay (s/veh)		Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)	
	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak
Garrison Boulevard West Leg (EB)	C	A	22.1	2.8	230 (L) 157 (TR)	200 (L) 268 (TR)
Garrison Boulevard East Leg (WB)	D	D	45.6	41.7	4* (L) 143* (TR)	4* (L) 272* (TR)
Burtonwood Drive South Leg (NB)	D	D	54.4	51.0	79 (L) 133 (TR)	60 (L) 95 (TR)
Burtonwood Drive North Leg (SB)	D	C	39.7	29.5	151 (L) 153 (LT) 156 (R)	124 (L) 127 (LT) 272 (R)
<b>Overall Intersection</b>	<b>C</b>	<b>C</b>	<b>34.7</b>	<b>21.1</b>	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

**Table 22.** 2045 No-Build Intersection Peak Hour Operations: Garrison Boulevard/ Armstrong Park Drive at New Hope Road

Approach	Level of Service (LOS)		Delay (s/veh)		Synchro 95 <sup>th</sup> Percentile Queue Lengths (ft)	
	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak	AM Peak	Afternoon Peak
Garrison Boulevard West Leg (EB)	D	D	48.3	47.4	70* (L) 411** (T) 133 (R)	232** (L) 499** (T) 183 (R)
Armstrong Park Drive East Leg (WB)	D	E	40.8	76.9	93 (L) 112 (TR)	218** (L) 127 (TR)
New Hope Road South Leg (NB)	D	E	43.3	61.8	446** (L) 372 (T) 51 (R)	378** (L) 333 (T) 59 (R)
New Hope Road North Leg (SB)	E	E	59.2	71.2	42 (L) 440** (TR)	47 (L) 586** (TR)
<b>Overall Intersection</b>	<b>D</b>	<b>E</b>	<b>47.9</b>	<b>62.3</b>	-	-

\*Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

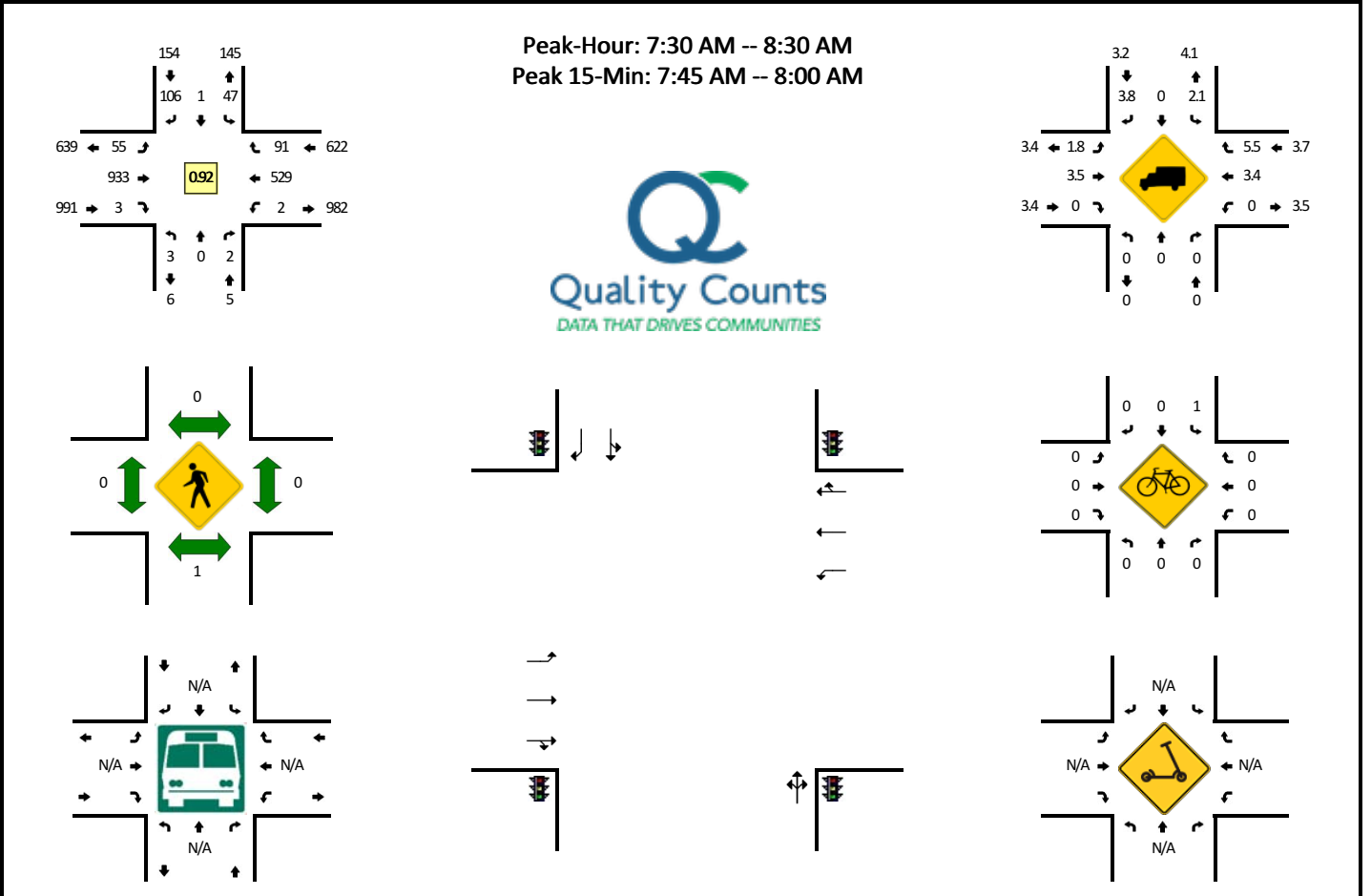
\*\*95<sup>th</sup> percentile volume exceeds capacity; queues may be longer. Queue shown is maximum after two cycles.

## **APPENDIX A – 2023 WEEKDAY TRAFFIC COUNTS**



**LOCATION:** Garrison Blvd -- S Chestnut St  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16065001  
**DATE:** Wed, May 3 2023

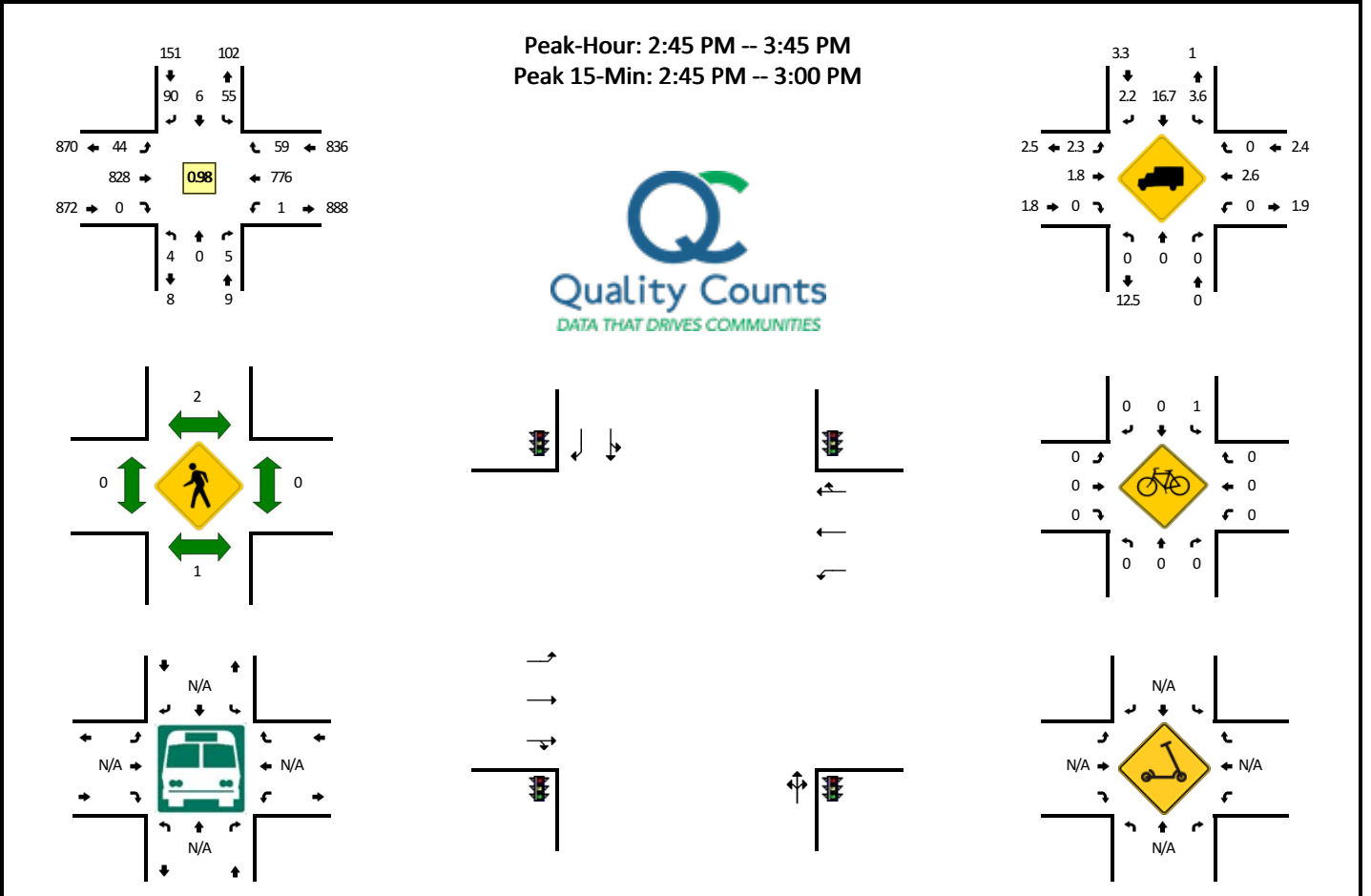


15-Min Count Period Beginning At	Garrison Blvd (Northbound)				Garrison Blvd (Southbound)				S Chestnut St (Eastbound)				S Chestnut St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	10	0	12	0	6	156	0	0	0	105	8	0	298	
7:15 AM	1	0	0	0	12	0	9	0	7	203	1	0	0	127	7	0	367	
7:30 AM	1	0	0	0	13	1	14	0	15	242	1	1	1	152	7	0	448	
7:45 AM	2	0	1	0	11	0	15	0	16	262	1	0	0	155	20	0	483	1596
8:00 AM	0	0	1	0	14	0	22	0	11	225	0	0	0	122	16	0	411	1709
8:15 AM	0	0	0	0	9	0	55	0	12	204	1	0	1	100	48	0	430	1772
8:30 AM	1	0	0	0	8	0	24	0	6	197	0	0	0	132	24	0	392	1716
8:45 AM	0	0	0	0	15	0	15	0	11	185	2	0	1	119	8	0	356	1589
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	0	4	0	44	0	60	0	64	1048	4	0	0	620	80	0	1932	
Heavy Trucks	0	0	0		0	0	0		0	40	0		0	32	0		72	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

**LOCATION:** Garrison Blvd -- S Chestnut St  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16065002  
**DATE:** Wed, May 3 2023

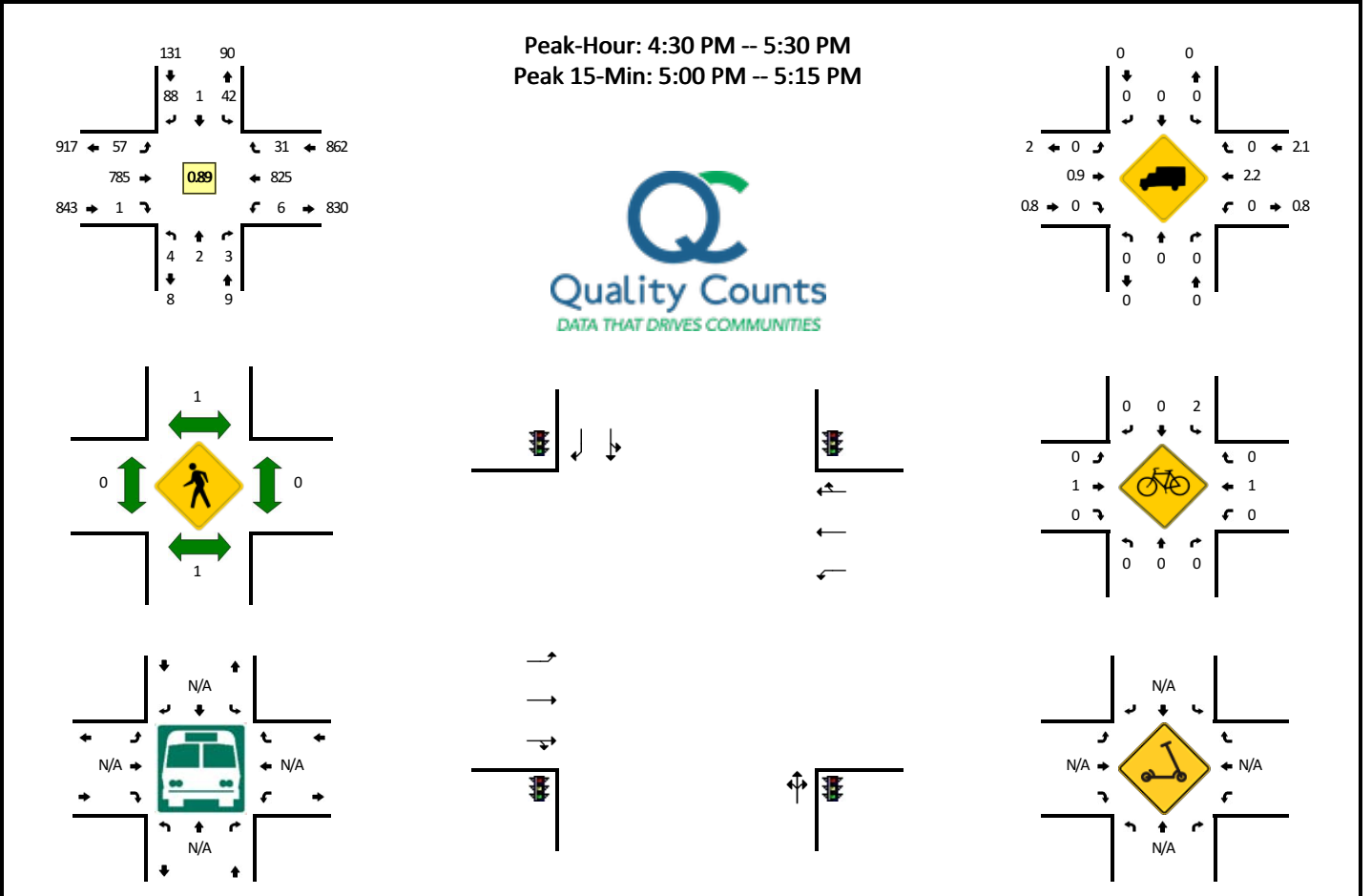


15-Min Count Period Beginning At	Garrison Blvd (Northbound)				Garrison Blvd (Southbound)				S Chestnut St (Eastbound)				S Chestnut St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	1	0	10	0	23	0	14	176	0	0	0	174	17	0	415	
2:15 PM	3	0	0	0	11	0	16	0	11	179	0	0	1	174	19	0	414	
2:30 PM	0	0	2	0	8	0	27	0	14	210	0	0	0	184	17	0	462	
2:45 PM	0	0	1	0	22	1	14	0	9	247	0	1	0	170	13	0	478	1769
3:00 PM	3	0	2	1	16	2	34	0	8	197	0	0	0	196	12	0	471	1825
3:15 PM	0	0	1	0	6	1	25	0	13	184	0	0	0	202	21	0	453	1864
3:30 PM	0	0	1	0	11	2	17	0	13	200	0	0	1	208	13	0	466	1868
3:45 PM	1	0	0	0	9	0	19	0	14	176	1	0	0	209	13	0	442	1832
4:00 PM	2	0	1	0	7	1	24	0	10	204	0	0	0	150	16	0	415	1776
4:15 PM	1	0	0	0	7	0	22	0	10	184	1	0	1	169	11	0	406	1729
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	4	0	88	4	56	0	36	988	0	4	0	680	52	0	1912	
Heavy Trucks	0	0	0	0	8	0	0	0	0	8	0	0	0	4	0	0	20	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

**LOCATION:** Garrison Blvd -- S Chestnut St  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16065002  
**DATE:** Wed, May 3 2023

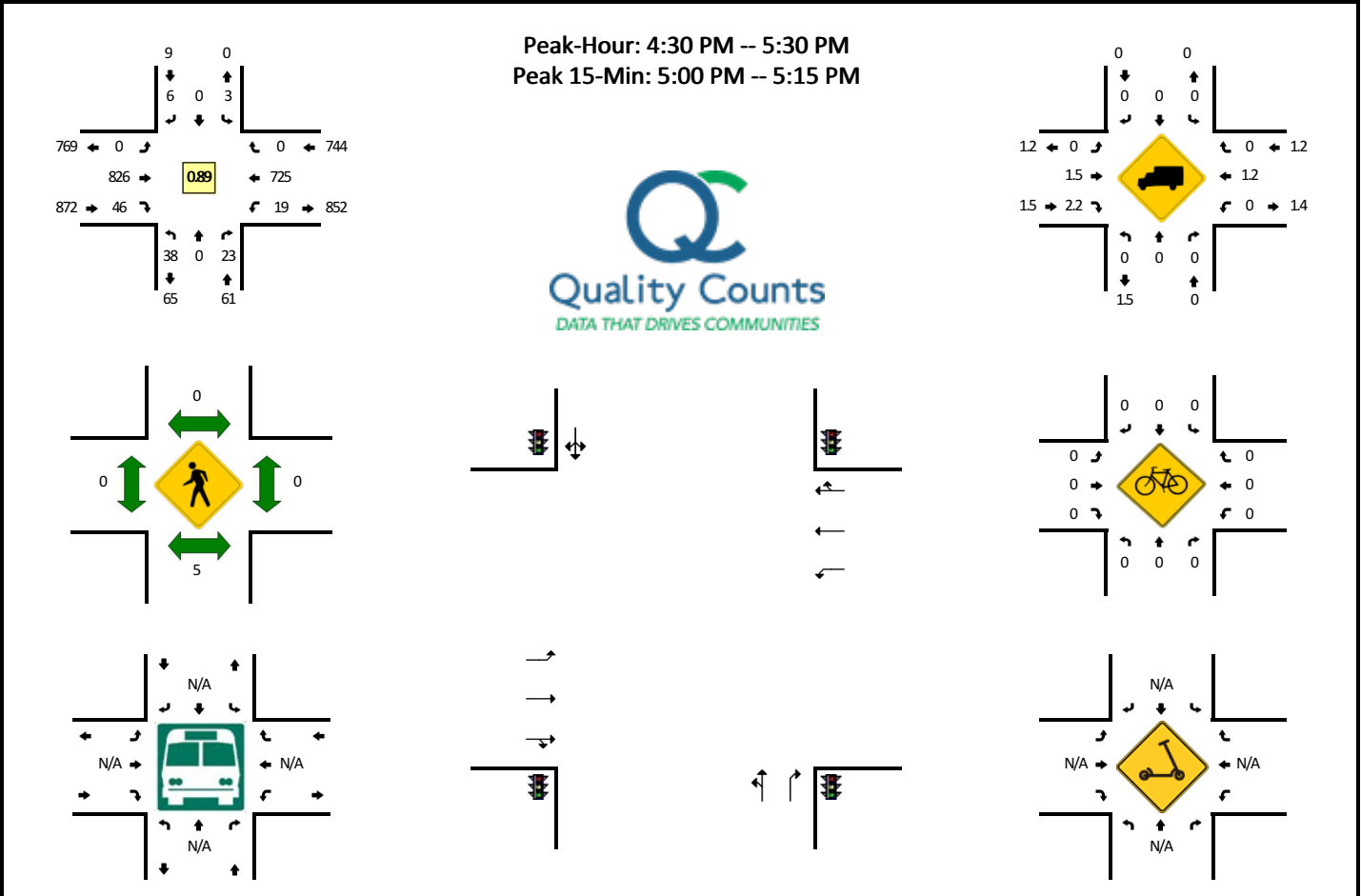


15-Min Count Period Beginning At	Garrison Blvd (Northbound)				Garrison Blvd (Southbound)				S Chestnut St (Eastbound)				S Chestnut St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	0	1	0	7	1	24	0	10	204	0	0	0	150	16	0	415	
4:15 PM	1	0	0	0	7	0	22	0	10	184	1	0	1	169	11	0	406	
4:30 PM	2	0	1	0	5	0	22	0	13	192	1	0	1	221	6	0	464	
4:45 PM	0	1	0	0	12	1	19	0	16	169	0	0	1	187	7	0	413	1698
5:00 PM	0	0	1	0	10	0	27	0	16	225	0	0	1	227	10	0	517	1800
5:15 PM	2	1	1	0	15	0	20	0	12	199	0	0	3	190	8	0	451	1845
5:30 PM	0	0	1	0	17	0	23	0	10	184	0	0	3	184	13	0	435	1816
5:45 PM	0	0	1	0	7	0	17	0	15	154	1	0	2	180	7	0	384	1787
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	4	0	40	0	108	0	64	900	0	0	4	908	40	0	2068	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	0	12	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

*Comments:*

**LOCATION:** Churchill Dr -- E Garrison Blvd  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16214203  
**DATE:** Thu, May 11 2023

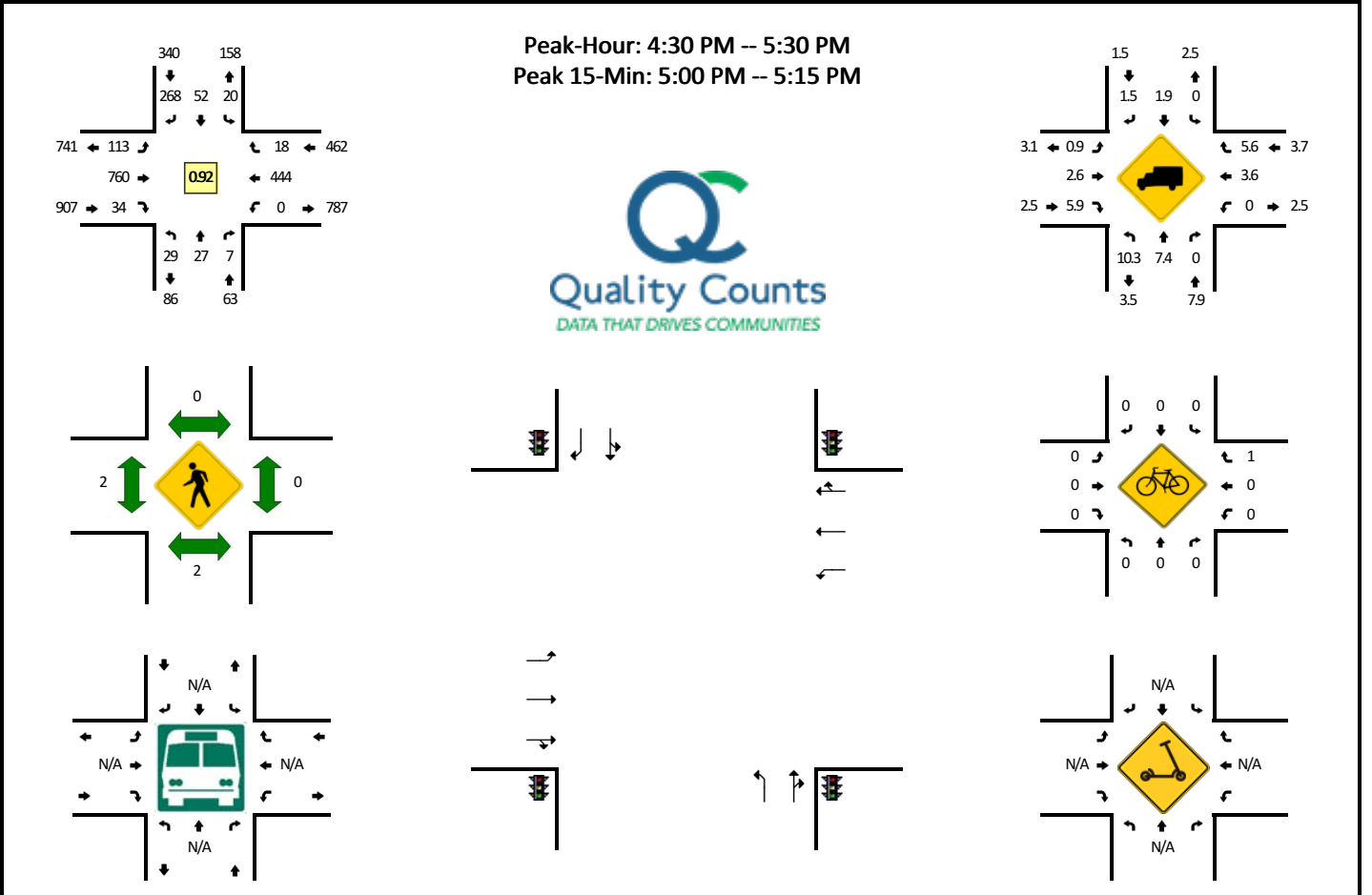


15-Min Count Period Beginning At	Churchill Dr (Northbound)				Churchill Dr (Southbound)				E Garrison Blvd (Eastbound)				E Garrison Blvd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
4:00 PM	10	0	4	0	2	0	0	0	1	191	7	0	7	184	0	0	406		
4:15 PM	6	0	8	0	3	0	0	0	1	175	11	0	8	176	0	0	388		
4:30 PM	6	0	8	0	1	0	3	0	0	192	6	0	6	178	0	0	400		
4:45 PM	10	0	4	0	0	0	1	0	0	186	14	0	4	170	0	0	389	1583	
5:00 PM	12	0	4	0	1	0	1	0	0	232	15	0	5	203	0	0	473	1650	
5:15 PM	10	0	7	0	1	0	1	0	0	216	11	0	4	174	0	0	424	1686	
5:30 PM	9	0	10	0	1	0	0	0	0	174	7	0	9	167	0	0	377	1663	
5:45 PM	4	0	4	0	1	0	0	0	0	171	5	0	8	145	0	0	338	1612	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	48	0	16	0	4	0	4	0	0	928	60	0	20	812	0	0	1892		
Heavy Trucks	0	0	0		0	0	0		0	16	0		0	8	0		24		
Buses																			
Pedestrians		0				0				0				0			0		
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0		
Scoters																			

*Comments:*

**LOCATION:** Burtonwood Dr -- E Garrison Blvd  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16214204  
**DATE:** Thu, May 11 2023



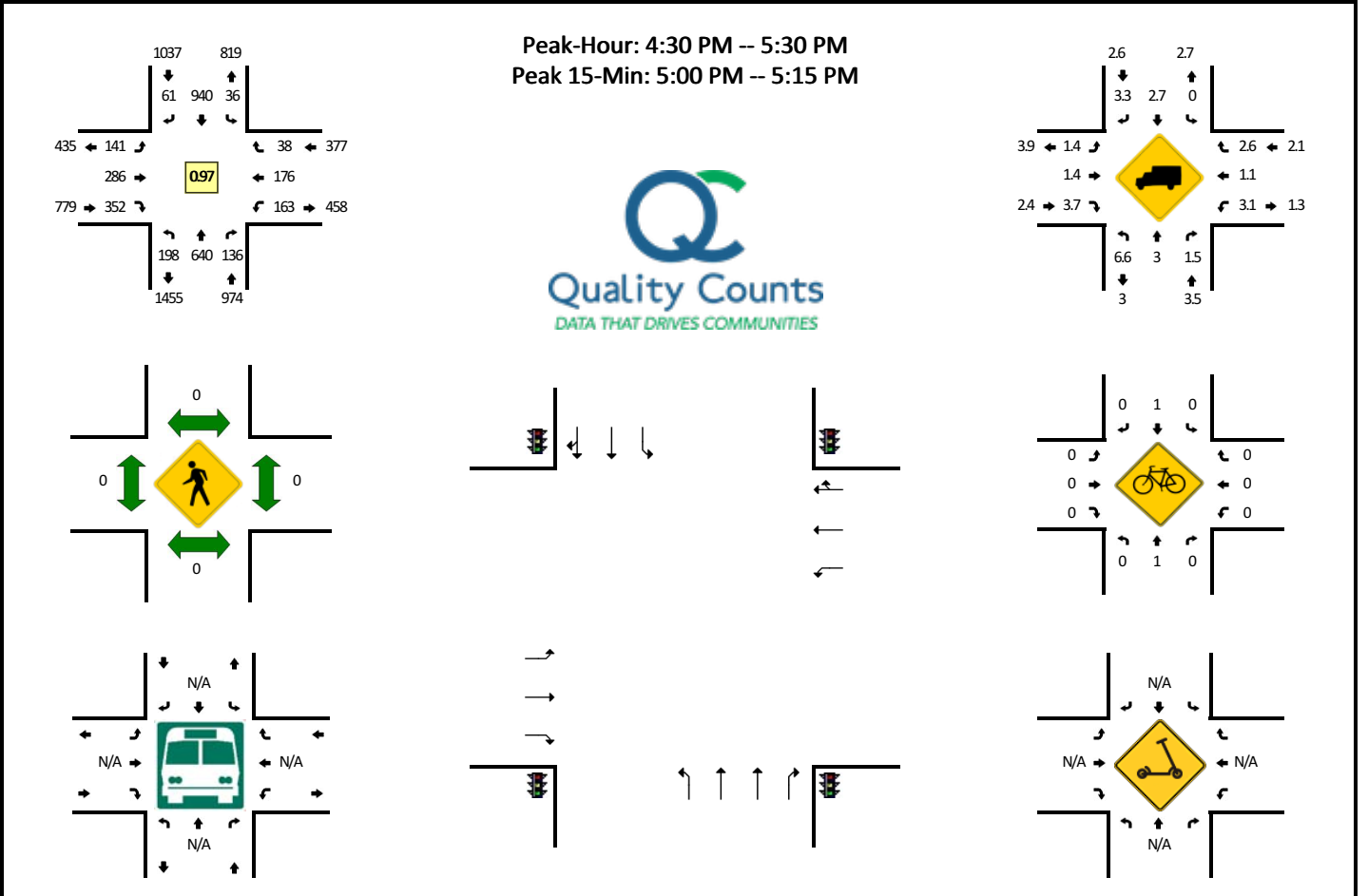
15-Min Count Period Beginning At	Burtonwood Dr (Northbound)				Burtonwood Dr (Southbound)				E Garrison Blvd (Eastbound)				E Garrison Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	9	5	0	5	8	69	0	34	155	7	0	1	99	8	0	408	
4:15 PM	6	3	3	0	10	16	67	0	36	150	6	0	1	116	7	0	421	
4:30 PM	6	5	4	0	3	12	65	0	30	175	9	0	0	117	6	0	432	
4:45 PM	9	5	2	0	8	13	64	0	20	176	7	0	0	101	5	0	410	1671
5:00 PM	7	8	0	0	7	9	79	0	28	219	7	0	0	115	5	0	484	1747
5:15 PM	7	9	1	0	2	18	60	0	35	190	11	0	0	111	2	0	446	1772
5:30 PM	6	5	4	0	6	13	78	0	24	161	4	0	0	93	2	0	396	1736
5:45 PM	3	12	7	0	4	6	53	0	29	145	5	0	0	90	2	0	356	1682

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	32	0	0	28	36	316	0	112	876	28	0	0	460	20	0	1936
Heavy Trucks	4	4	0		0	4	4		0	32	4		0	4	0		56
Buses																	0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scoters																	0

*Comments:*

**LOCATION:** S New Hope Rd -- E Garrison Blvd/Armstrong Park Dr  
**CITY/STATE:** Gastonia, NC

**QC JOB #:** 16214202  
**DATE:** Thu, May 11 2023

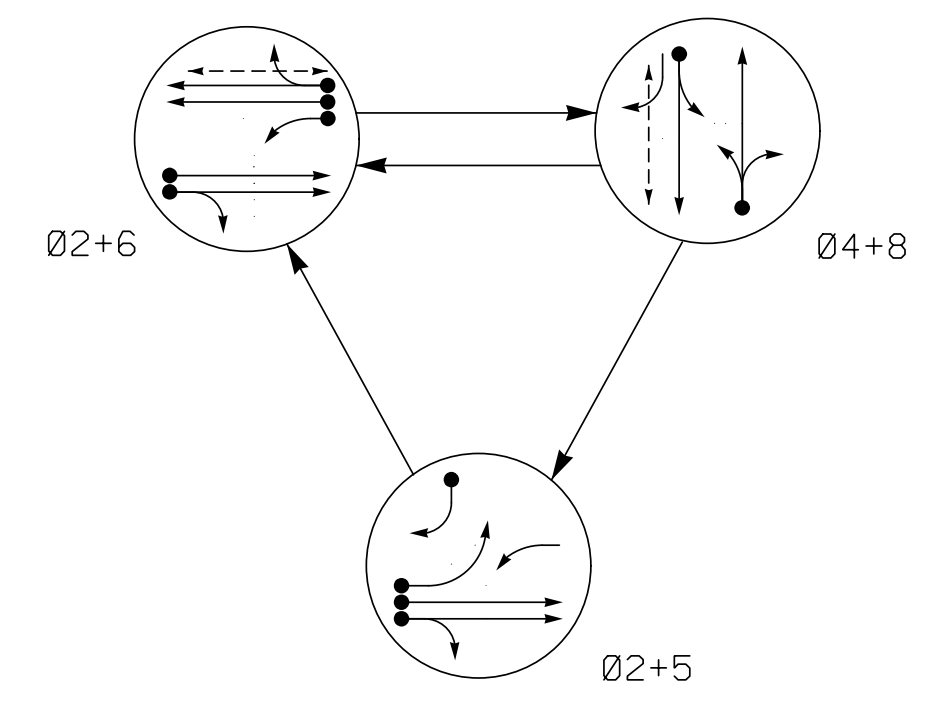


15-Min Count Period Beginning At	S New Hope Rd (Northbound)				S New Hope Rd (Southbound)				E Garrison Blvd/Armstrong Park Dr (Eastbound)				E Garrison Blvd/Armstrong Park Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	49	171	31	0	7	241	20	0	43	65	68	0	30	38	13	0	776	
4:15 PM	54	159	33	0	10	248	20	0	32	62	71	0	30	43	7	0	769	
4:30 PM	45	152	44	0	8	223	19	0	33	65	74	0	40	51	10	0	764	
4:45 PM	49	157	28	0	12	246	13	0	32	66	75	0	44	40	8	0	770	3079
5:00 PM	52	149	36	0	8	230	13	0	41	81	112	0	42	47	9	0	820	3123
5:15 PM	52	182	28	0	8	241	16	0	35	74	91	0	37	38	11	0	813	3167
5:30 PM	50	169	28	0	8	246	14	0	21	74	76	0	29	29	12	0	756	3159
5:45 PM	46	162	21	0	11	249	17	0	29	55	59	0	40	34	10	0	733	3122
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	208	596	144	0	32	920	52	0	164	324	448	0	168	188	36	0	3280	
Heavy Trucks	4	24	4		0	20	0		0	12	12		8	0	0		84	
Buses																		
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	
Bicycles					0	4	0		0	0	0		0	0	0		4	
Scoters																		

Comments:

## **APPENDIX B – NCDOT SIGNAL TIMING PLANS**

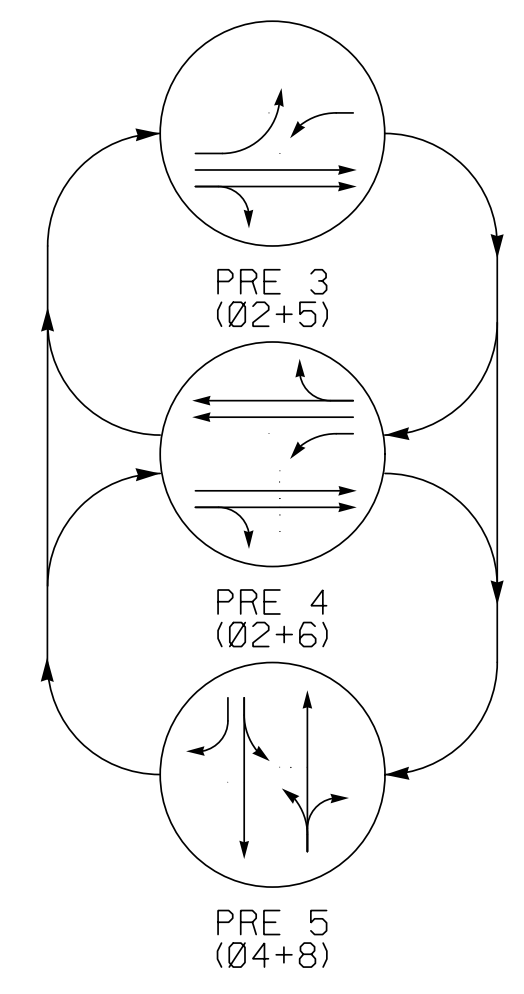
**PHASING DIAGRAM**



**PHASING DIAGRAM DETECTION LEGEND**

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

**EV PREEMPT PHASES**  
(Medium Priority)



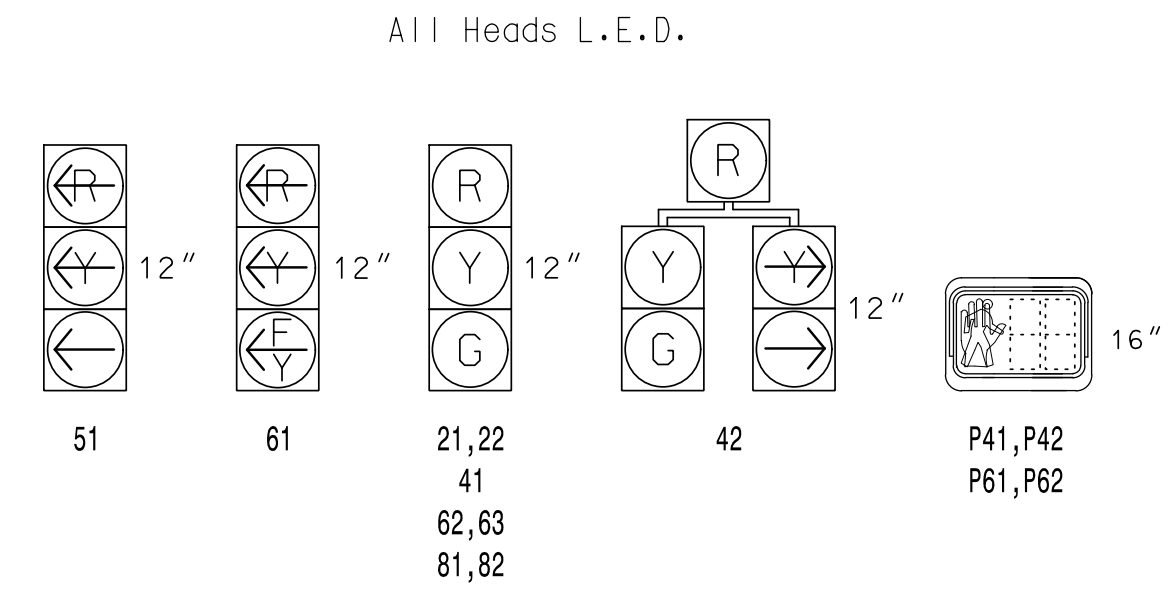
**TABLE OF OPERATION**

SIGNAL FACE	PHASE							
	Ø 2+5	Ø 2+6	Ø 4+8	PRE 3	PRE 4	PRE 5	DRK	DRK
21, 22	G	G	R	G	G	R	Y	
41	R	R	G	R	R	G	R	
42	R	R	G	R	R	G	R	
51	←	←	←	←	←	←	←	
61	←	←	←	←	←	←	←	
62, 63	R	G	R	G	R	G	R	
81, 82	R	R	G	R	R	G	R	
P41, P42	DW	DW	W	DW	DW	DRK	DRK	
P61, P62	DW	W	DW	DW	DW	DRK	DRK	

**DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
2A	6X6	300	EXIST	-	2	Yes	1.8	-	-	N	-	X
2B	6X6	300	EXIST	-	2	Yes	1.8	-	-	N	-	X
2C	6X6	80	EXIST	-	2	Yes	-	-	-	N	-	X
2D	6X6	80	EXIST	-	2	Yes	-	-	-	N	-	X
4A	6X40	+5	2-4-2	-	4	Yes	-	3	-	N	-	X
5A	6X40	+5	2-4-2	-	5	Yes	-	-	-	N	-	X
5B	6X40	+5	2-4-2	-	5	Yes	-	5	-	N	-	X
6A	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	-
6B	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	-
6C	6X40	0	2-4-2	-	6	Yes	-	3	-	G	-	X
8A	6X40	+5	2-4-2	-	8	Yes	-	-	-	N	-	X

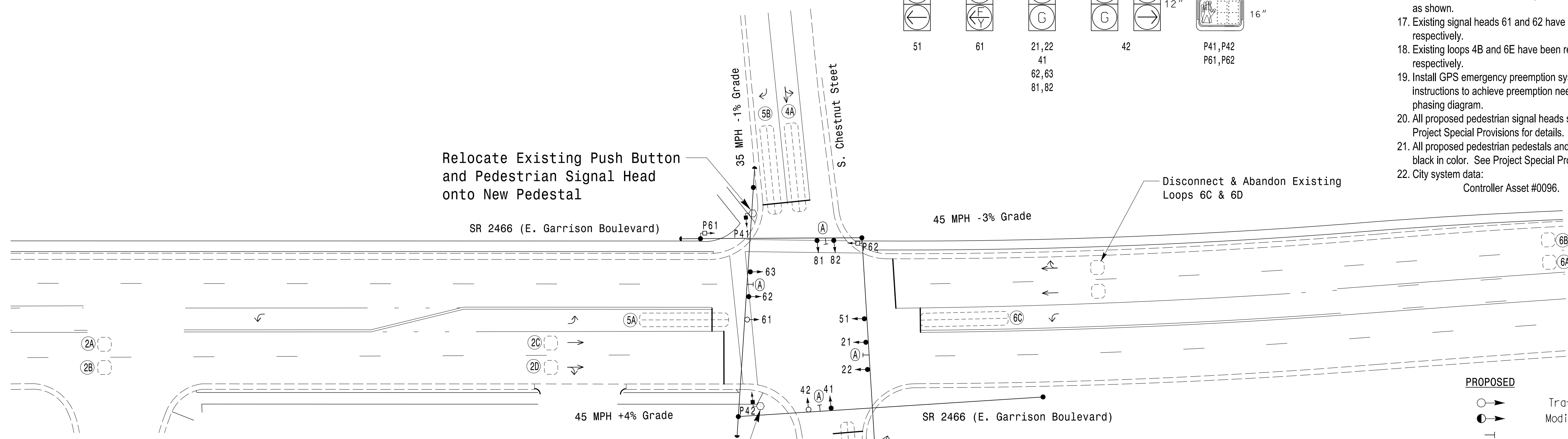
**SIGNAL FACE I.D.**



**3 Phase Fully Actuated w/ Emergency Vehicle Preemption Gastonia Signal System**

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Reposition existing signal heads numbered 62 and 63.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Remove existing "Left Turn Only" sign-(R3-5L).
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Disconnect and abandon existing loops 6C and 6D.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Reconnect lead-in cable to separate loops 2A, 2B, 2C, 2D, 6A & 6B, as shown.
- Existing signal heads 61 and 62 have been relabeled to 62 and 63, respectively.
- Existing loops 4B and 6E have been relabeled to 5B and 6C, respectively.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian pedestals and pushbutton posts shall be black in color. See Project Special Provisions for details.
- City system data: Controller Asset #0096.



**TIMING CHART**

FEATURE	PHASE				
	2	4	5	6	8
Min Green *	12	7	7	12	7
Walk *	-	7	-	7	-
Ped Clear	-	17	-	14	-
Veh. Extension *	2.0	2.0	2.0	6.0	2.0
Max I *	45	25	15	45	25
Yellow	4.8	3.9	3.0	4.8	3.9
Red Clear	1.2	2.2	2.3	1.2	2.2
Red Revert	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-
Seconds / Actuation *	-	-	-	1.5	-
Max Initial *	-	-	-	34	-
Time Before Reduction *	-	-	-	15	-
Time To Reduce *	-	-	-	30	-
Minimum Gap	-	-	-	3.0	-
Locking Detector	X	-	-	X	-
Recall Position	MIN RECALL	-	-	MIN RECALL	-
Dual Entry	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X

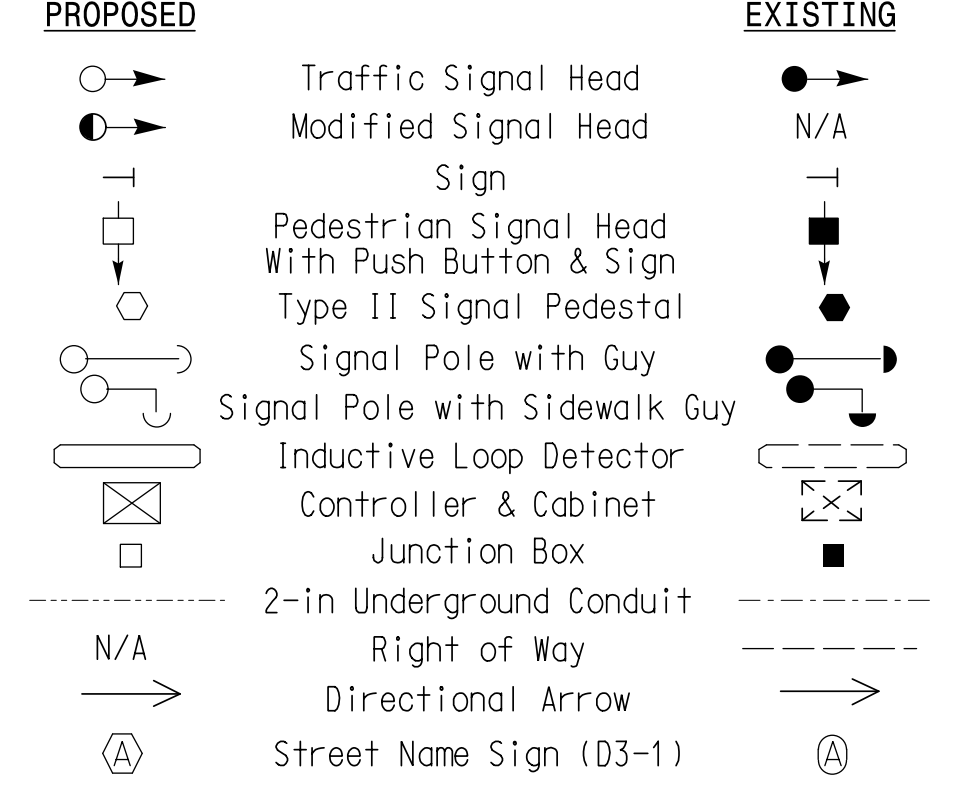
\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

**EV PREEMPT**

FUNCTION	PRE 3	PRE 4	PRE 5
Exit Phase(s)	2+6	2+6	4+8
Preempt Override	OFF	OFF	OFF
Delay Time	0	0	0
Ped Clear Through Yellow	Y	Y	Y
Terminate Phases	N	N	N
Entrance Walk	1	1	1
Entrance Ped Clear	255*	255*	255*
Entrance Min Green	1	1	1
Entrance Yellow Change	25.5*	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*	25.5*
Minimum Dwell Time	7	7	7
Preempt Input Extension Time **	2	2	2
Preempt Max Time	120	120	120
Exit Yellow Change	25.5*	25.5*	25.5*
Exit Red Clear	25.5*	25.5*	25.5*

\* Time defaults to time used for phase during normal operation  
\*\* Program Timing on GPS Detection Unit

**LEGEND**



**Signal Upgrade**

Prepared For:  
**Kimley-Horn**

NC License #0102  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000

**SR 2466 (E. Garrison Boulevard) at S. Chestnut Street**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: DM Curri REVIEWED BY: KP Baumann

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

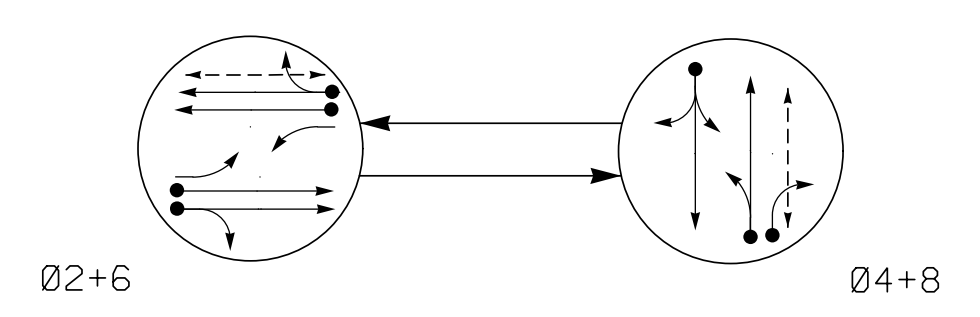
Discussed by: *[Signature]* 3/11/2022

SIG. INVENTORY NO. 12-0096

3/9/2022 11:16:10 AM Dantelle.Curri \*\*\*Kinley-Horn.com/E:\RAL\MRAL\TIP\DK-TIS\011036569\_Gastonia Signal System9\_Signal\SW54 - Signal Design\120096-2021.dgn



**PHASING DIAGRAM**



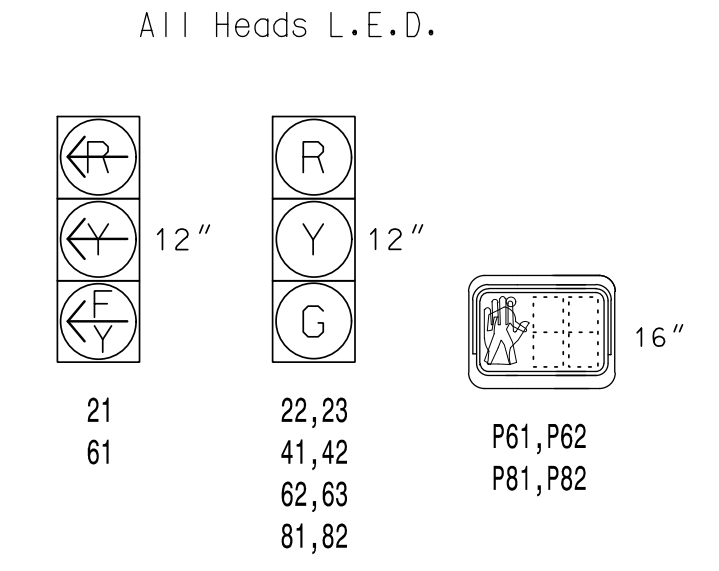
**PHASING DIAGRAM DETECTION LEGEND**

- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ◄—► PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE			
	02+6	04+8	F	L
21	←	←	←	←
22, 23	G	R	Y	
41, 42	R	G	R	
61	←	←	←	←
62, 63	G	R	Y	
81, 82	R	G	R	
P61, P62	W	DW	DRK	
P81, P82	DW	W	DRK	

**SIGNAL FACE I.D.**



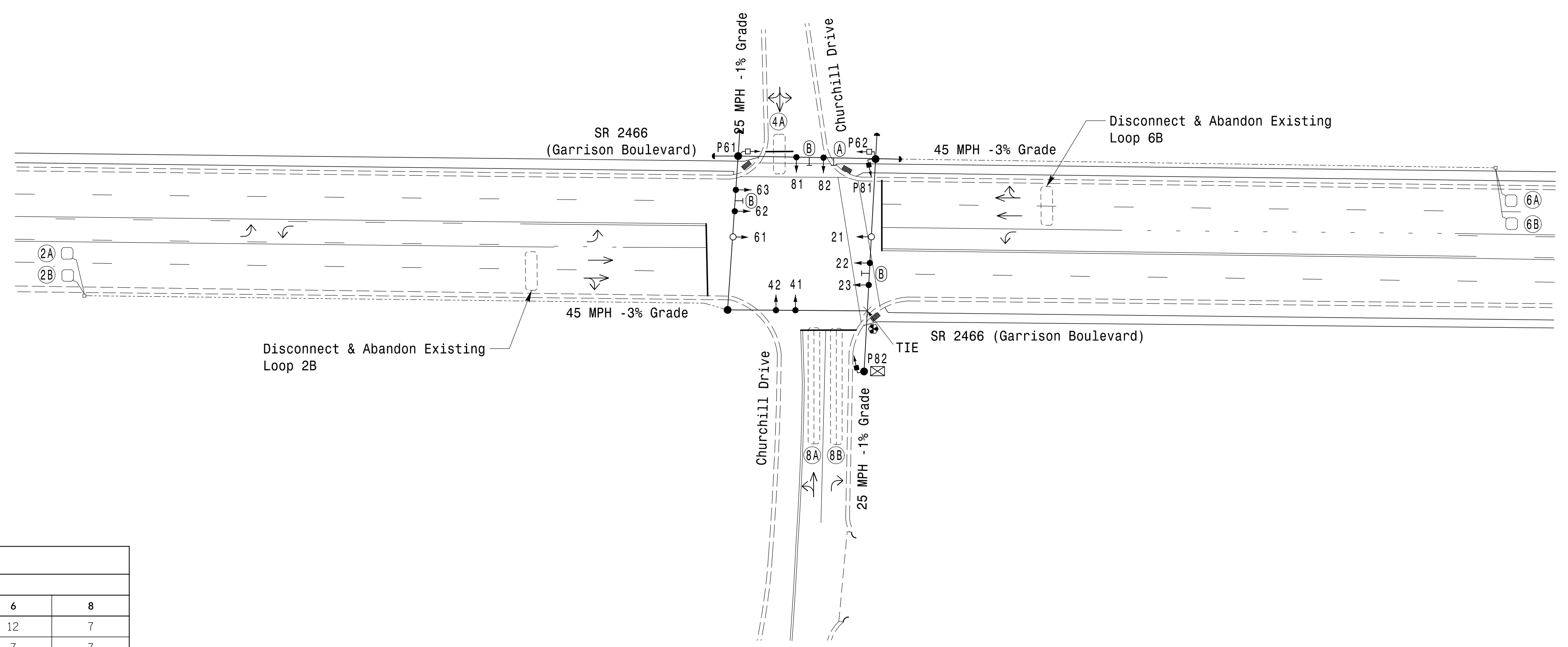
**DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	300	6	X	2	Yes	-	-	X	N	-	X
2B	6X6	300	6	X	2	Yes	-	-	X	N	-	X
4A	6X20	+10	EXIST	-	4	Yes	-	-	-	N	-	X
6A	6X6	300	6	X	6	Yes	-	-	X	N	-	X
6B	6X6	300	6	X	6	Yes	-	-	X	N	-	X
8A	6X60	0	2-4-2	-	8	Yes	-	-	-	N	-	X
8B	6X60	0	2-4-2	-	8	Yes	-	-	-	N	-	X

**2 Phase Fully Actuated Gastonia Signal System**

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered 22, 23, 62, and 63.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Remove existing Left Arrow "ONLY" Signs-(R3-5L).
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Disconnect and abandon existing loops 2B and 6B.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Existing signal heads 21, 22, 61, and 62 have been relabeled to 22, 23, 62, and 63, respectively.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- City system data:  
Controller Asset #0276.



**TIMING CHART**

FEATURE	PHASE			
	2	4	6	8
Min Green *	12	7	12	7
Walk *	-	-	7	7
Ped Clear	-	-	11	20
Veh. Extension *	6.0	2.0	6.0	1.0
Max I *	60	20	60	20
Yellow	4.8	3.2	4.8	3.2
Red Clear	2.3	3.5	2.3	3.5
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	1.5	-	1.5	-
Max Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Locking Detector	X	-	X	-
Recall Position	MIN RECALL	-	MIN RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

**LEGEND**

PROPOSED	EXISTING
	N/A

**Signal Upgrade**

Prepared For:  
**Kimley-Horn**

PLANS PREPARED IN THE OFFICE OF:  
**Kimley-Horn**  
NC License #0102  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000

**SR 2466 (Garrison Boulevard) at Churchill Drive**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips  
PREPARED BY: DM Curri REVIEWED BY: KP Baumann

750 N. Greenfield Pkwy, Garner, NC 27529  
SCALE: 0 40  
1" = 40'

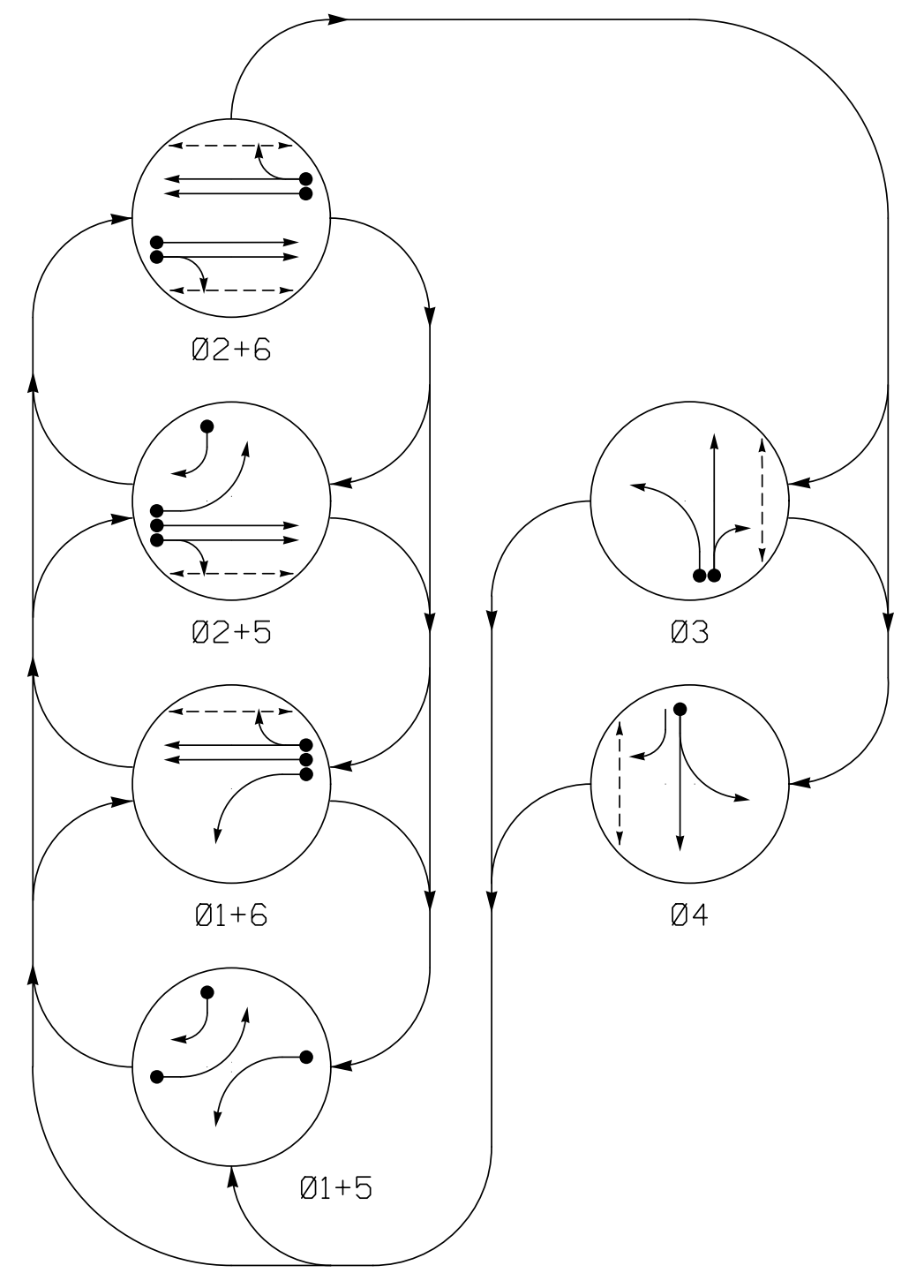
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DocuSigned by:  
  
3/11/2022

SIG. INVENTORY NO. 12-0276

3/9/2022 11:16:19 AM DanHill@curr1 \*\*\*Kimley-Horn.com\*\*\*RAL:MRAL:JPD:K-TIS:001:036569 Gastonia Signal System9 Signal.kws4 - Signal Design\NF120276-2021.dgn

**PHASING DIAGRAM**



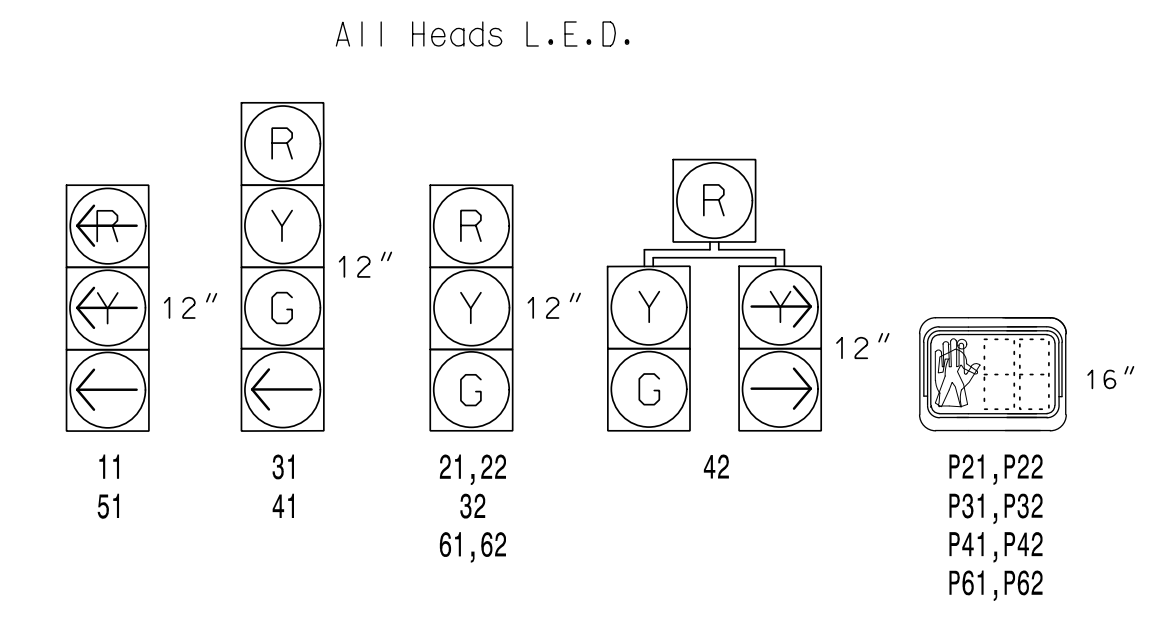
**PHASING DIAGRAM DETECTION LEGEND**

- ◄ ● → DETECTED MOVEMENT
- ◄ ◊ → UNDETECTED MOVEMENT (OVERLAP)
- ◄ - - - → UNSIGNALIZED MOVEMENT
- ◄ - - - ◊ → PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE					
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4
11	←	←	←	←	←	←
21,22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	G	R
42	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	Y
P21,P22	DW	DW	W	W	DW	DRK
P31,P32	DW	DW	DW	DW	W	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK

**SIGNAL FACE I.D.**



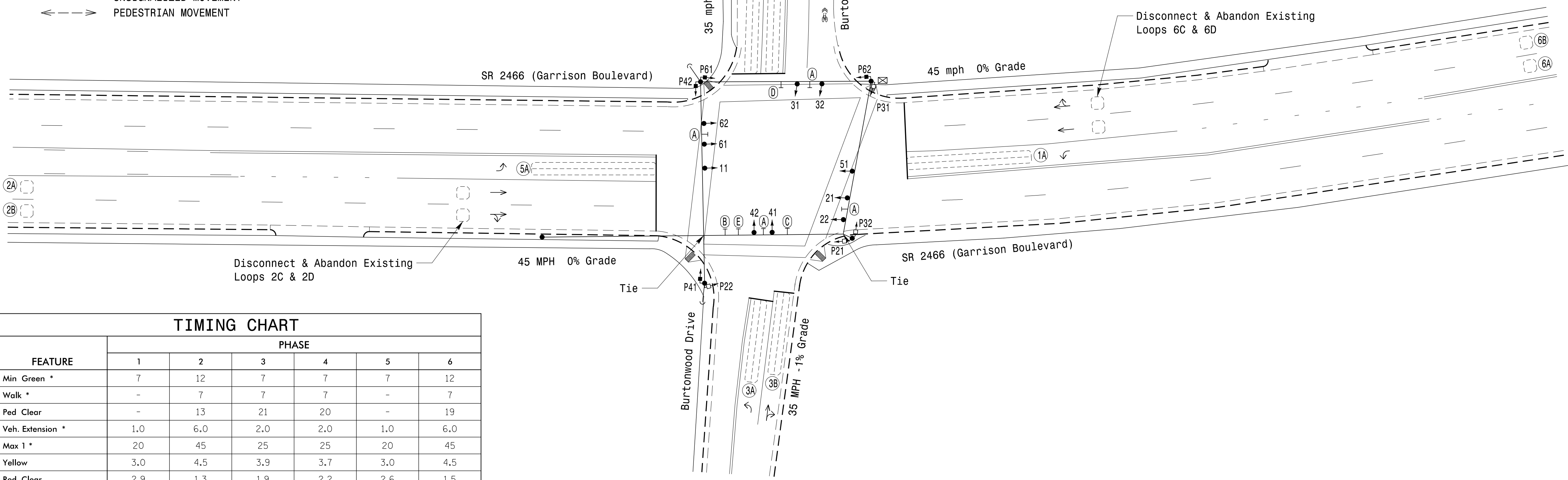
**DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Yes	-	-	-	N	-	X
2A	6X6	300	EXIST	-	2	Yes	-	-	-	X	N	-
2B	6X6	300	EXIST	-	2	Yes	-	-	-	X	N	-
3A	6X40	0	2-4-2	-	3	Yes	-	-	-	N	-	X
3B	6X40	0	2-4-2	-	3	Yes	-	-	-	N	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-	X
5A	6X60	0	2-4-2	-	5	Yes	-	-	-	N	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	-	-	N	-	X
6A	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	-
6B	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	-

**6 Phase Fully Actuated Gastonia Signal System**

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Disconnect and abandon existing loops 2C, 2D, 6C, and 6D.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Reconnect lead-in cable to separate loops 2A, 2B, 6A, and 6B, as shown.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- City of system data: Controller Asset #0634.



**TIMING CHART**

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	7	7	7	-	7
Ped Clear	-	13	21	20	-	19
Veh. Extension *	1.0	6.0	2.0	2.0	1.0	6.0
Max 1 *	20	45	25	25	20	45
Yellow	3.0	4.5	3.9	3.7	3.0	4.5
Red Clear	2.9	1.3	1.9	2.2	2.6	1.5
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	1.5	-	-	-	1.5
Max Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	X	-	-	-	X
Recall Position	-	MIN RECALL	-	-	-	MIN RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

**LEGEND**

PROPOSED	EXISTING
○ → Traffic Signal Head	● → Traffic Signal Head
◐ → Modified Signal Head	N/A
⊥ Sign	⊥ Sign
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ Pedestrian Signal Head
○ Type II Signal Pedestal	● Type II Signal Pedestal
○ Signal Pole with Guy	● Signal Pole with Guy
○ Signal Pole with Sidewalk Guy	● Signal Pole with Sidewalk Guy
⊠ Inductive Loop Detector	⊠ Inductive Loop Detector
⊠ Controller & Cabinet	⊠ Controller & Cabinet
□ Junction Box	■ Junction Box
2-in Underground Conduit	2-in Underground Conduit
N/A Right of Way	N/A Right of Way
→ Directional Arrow	→ Directional Arrow
N/A Curb Ramp	N/A Curb Ramp
(A) Street Name Sign (D3-1)	(A) Street Name Sign (D3-1)
(B) "NO TURN ON RED" Sign (R10-11)	(B) "NO TURN ON RED" Sign (R10-11)
(C) Combined Through and Left Arrow Sign (R3-6L)	(C) Combined Through and Left Arrow Sign (R3-6L)
(D) Left Arrow "ONLY" Sign (R3-5L)	(D) Left Arrow "ONLY" Sign (R3-5L)
(E) Right Arrow "ONLY" Sign (R3-5R)	(E) Right Arrow "ONLY" Sign (R3-5R)
N/A Sharrow	⊠ Sharrow

3/9/2022 11:16:26 AM DanHille.Cur1 \*\*\*K:\meyer-horn.com\SE-RAL\MRAL-TIP\DK-TIS\011036569\_Gastonia Signal System\Signal\SW4 - Signal Design\120834-2021.dgn

**Signal Upgrade**

SR 2466 (Garrison Boulevard) at Burtonwood Drive

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: MC Burke REVIEWED BY: KP Baumann

REVISIONS: \_\_\_\_\_ INIT. DATE

Discussed by: \_\_\_\_\_ DATE: 3/11/2022

SIG. INVENTORY NO. 12-0634

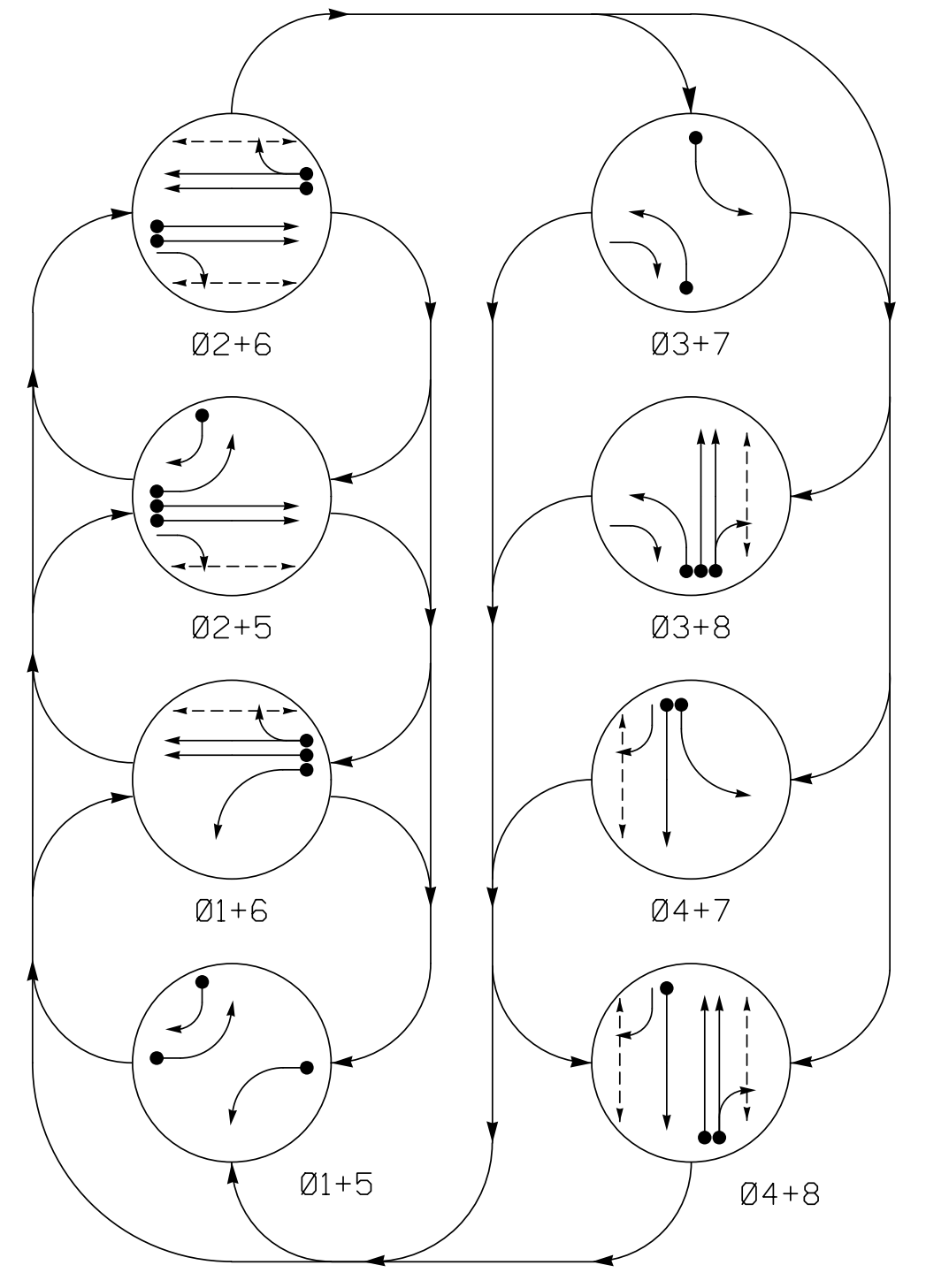
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Kimley-Horn  
750 N. Greenfield Pkwy, Garner, NC 27529  
NC License #0102  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000

Seal of Professional Engineer KEVIN P. BAUMANN, No. 044434

\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

### PHASING DIAGRAM



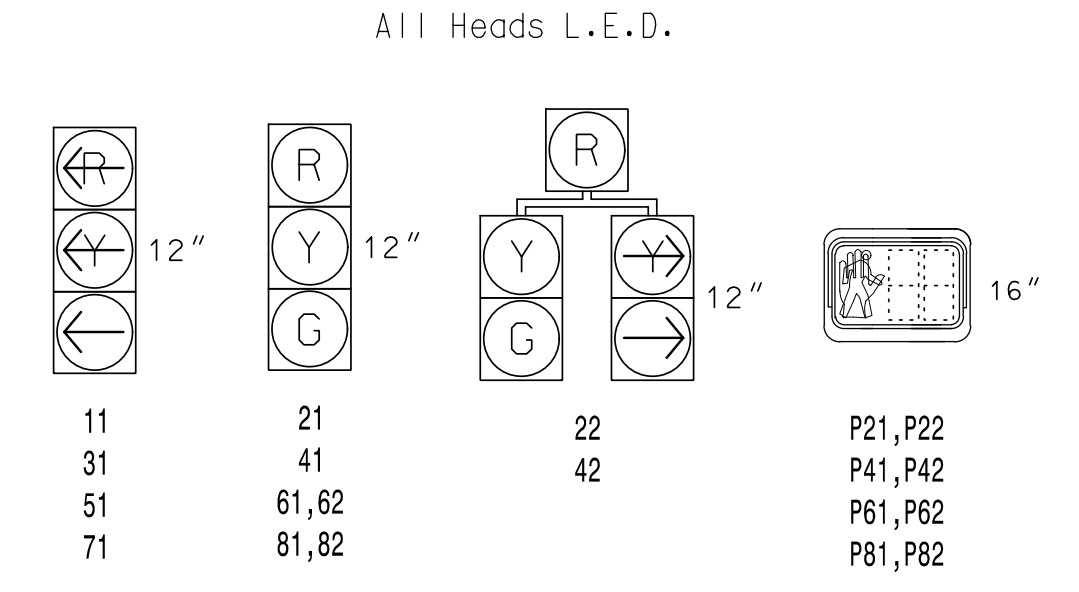
#### PHASING DIAGRAM DETECTION LEGEND

- ◄● DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄ UN SIGNALIZED MOVEMENT
- ◄ PEDESTRIAN MOVEMENT

### TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8
11	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41	R	R	R	R	R	R	G	R
42	R	R	R	R	R	R	G	R
51	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81,82	R	R	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DW	DRK

### SIGNAL FACE I.D.



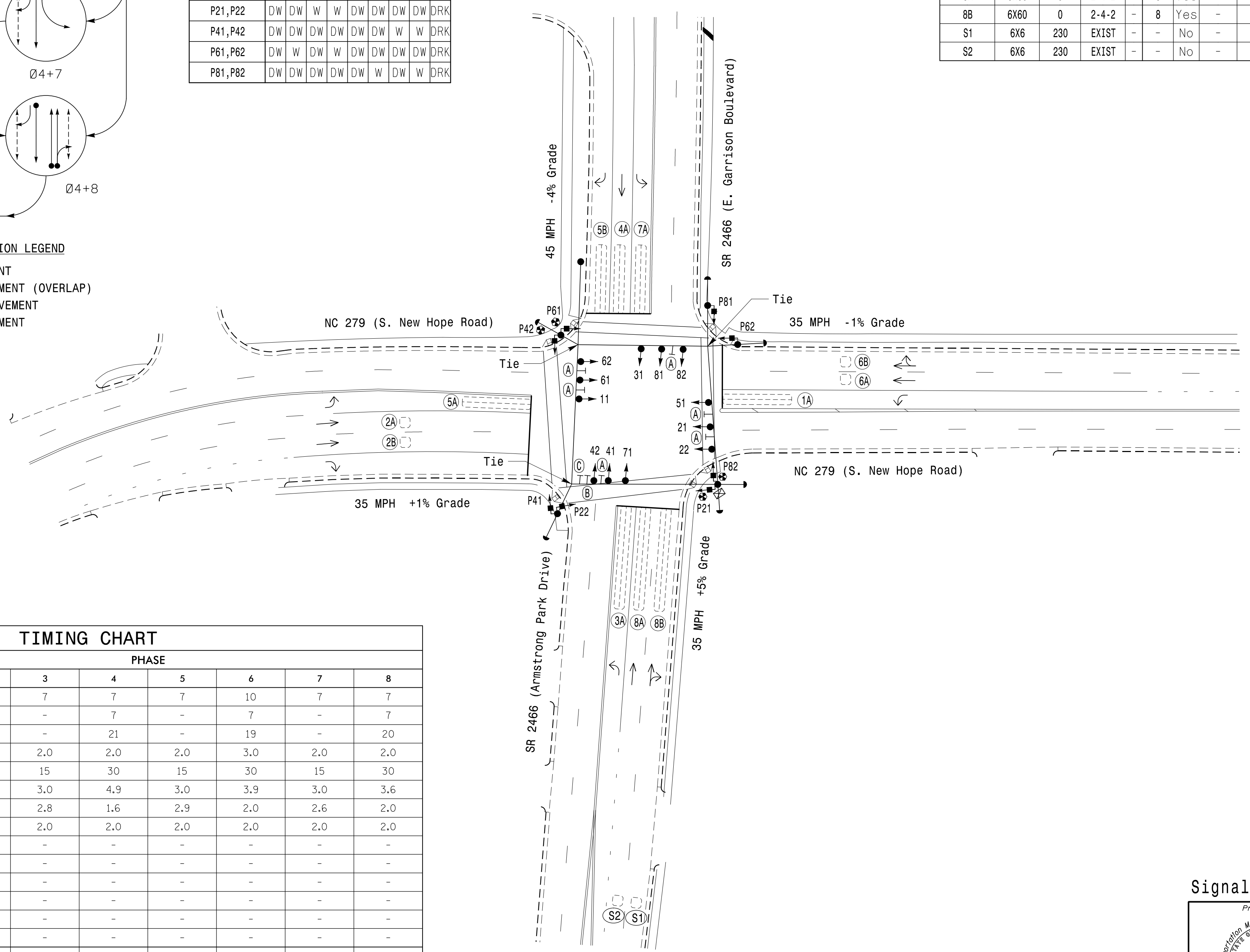
### DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	3	-	N	-	X
2A	6X6	70	EXIST	-	2	Yes	-	-	-	N	-	X
2B	6X6	70	EXIST	-	2	Yes	-	-	-	N	-	X
3A	6X60	0	2-4-2	-	3	Yes	-	3	-	N	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	3	-	N	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	15	-	N	-	X
6A	6X6	70	EXIST	-	6	Yes	-	-	-	N	-	X
6B	6X6	70	EXIST	-	6	Yes	-	-	-	N	-	X
7A	6X40	0	2-4-2	-	7	Yes	-	3	-	N	-	X
8A	6X60	0	2-4-2	-	8	Yes	-	-	-	N	-	X
8B	6X60	0	2-4-2	-	8	Yes	-	10	-	N	-	X
S1	6X6	230	EXIST	-	-	No	-	-	-	N	X	X
S2	6X6	230	EXIST	-	-	No	-	-	-	N	X	X

### 8 Phase Fully Actuated Gastonia Signal System

#### NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City of system data:  
Controller Asset #0079.



### TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	-	7	-	7	-	7	-	7
Ped Clear	-	20	-	21	-	19	-	20
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max I *	15	30	15	30	15	30	15	30
Yellow	3.0	3.8	3.0	4.9	3.0	3.9	3.0	3.6
Red Clear	2.9	2.1	2.8	1.6	2.9	2.0	2.6	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X	X	X

\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

### LEGEND

- | PROPOSED                          | EXISTING                          |
|-----------------------------------|-----------------------------------|
| ○→ Traffic Signal Head            | ●→ N/A                            |
| ●→ Modified Signal Head           | — Sign                            |
| □ Pedestrian Signal Head          | □ Type I Pushbutton Post          |
| □ With Push Button & Sign         | ○ Type II Signal Pedestal         |
| ⊗ Signal Pole with Guy            | ⊗ Signal Pole with Guy            |
| ⊗ Signal Pole with Sidewalk Guy   | ⊗ Inductive Loop Detector         |
| ⊗ Inductive Loop Detector         | ⊗ Controller & Cabinet            |
| □ Junction Box                    | □ Junction Box                    |
| — 2-in Underground Conduit        | — Right of Way                    |
| N/A                               | → Directional Arrow               |
| N/A                               | ▲ Curb Ramp                       |
| Ⓐ Street Name Sign                | Ⓐ Street Name Sign                |
| Ⓑ "NO TURN ON RED" Sign (R10-11)  | Ⓑ "NO TURN ON RED" Sign (R10-11)  |
| Ⓒ Right Arrow "ONLY" Sign (R3-5R) | Ⓒ Right Arrow "ONLY" Sign (R3-5R) |

### Signal Upgrade

Prepared For:  
**Kimley-Horn**

PLANS PREPARED IN THE OFFICE OF:  
**Kimley-Horn**  
NC License #F-0102  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000

NC 279 (S. New Hope Road)  
at  
SR 2466 (E. Garrison Boulevard/  
Armstrong Park Drive)

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips  
PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: \_\_\_\_\_ INIT: \_\_\_\_\_ DATE: \_\_\_\_\_

SCALE: 1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of Kevin P. Baumann, Professional Engineer, No. 044434, State of North Carolina.

Discussed by: \_\_\_\_\_ DATE: 3/11/2022

SIG. INVENTORY NO. 12-0079

3/9/2022 11:16:08 AM Dan1116.Cur1 \*\*\*Kinley-Horn.com/E:\RAL\MRAL\TIP\DK-LTS\011036569\_Gastonia\_Signal\_Sys\sm9\_Signal\SW4 - Signal Design\120079-2021.dgn

## **APPENDIX C – EXISTING INTERSECTION OPERATIONAL ANALYSIS RESULTS**

# Timings

## 1: Chestnut St & Garrison Boulevard

06/29/2023



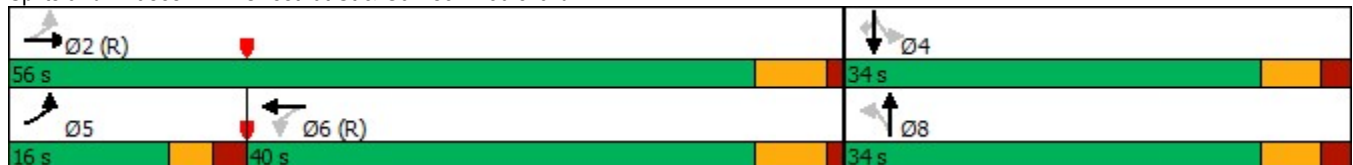
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	55	933	4	529	4	4	47	4	106
Future Volume (vph)	55	933	4	529	4	4	47	4	106
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	5	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	7.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	20.0	27.0	27.0	20.0	20.0	30.1	30.1	30.1
Total Split (s)	16.0	56.0	40.0	40.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	17.8%	62.2%	44.4%	44.4%	37.8%	37.8%	37.8%	37.8%	37.8%
Yellow Time (s)	3.0	4.8	4.8	4.8	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)	2.3	1.2	1.2	1.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	3.3	4.0	4.0	4.0		4.1		4.1	4.1
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	69.3	68.6	58.7	58.7		13.3		13.3	13.3
Actuated g/C Ratio	0.77	0.76	0.65	0.65		0.15		0.15	0.15
v/c Ratio	0.10	0.38	0.01	0.31		0.05		0.28	0.50
Control Delay	3.4	4.4	4.5	7.3		31.0		36.2	42.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	3.4	4.4	4.5	7.3		31.0		36.2	42.1
LOS	A	A	A	A		C		D	D
Approach Delay		4.3		7.3		31.0		40.2	
Approach LOS		A		A		C		D	

### Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 8 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 8.7  
 Intersection Capacity Utilization 52.6%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 1: Chestnut St & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 1: Chestnut St & Garrison Boulevard

06/29/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	933	4	4	529	91	4	4	4	47	4	106
Future Volume (veh/h)	55	933	4	4	529	91	4	4	4	47	4	106
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	1988	1988	1988	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	1037	4	4	588	101	4	4	4	52	4	118
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	712	3055	12	444	2039	349	94	87	64	234	15	187
Arrive On Green	0.08	0.79	0.79	0.67	0.67	0.67	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1893	3859	15	542	3034	520	342	733	537	1323	129	1585
Grp Volume(v), veh/h	61	508	533	4	344	345	12	0	0	56	0	118
Grp Sat Flow(s),veh/h/ln	1893	1889	1985	542	1777	1777	1612	0	0	1452	0	1585
Q Serve(g_s), s	0.7	6.9	6.9	0.2	7.1	7.1	0.0	0.0	0.0	2.5	0.0	6.4
Cycle Q Clear(g_c), s	0.7	6.9	6.9	0.2	7.1	7.1	0.5	0.0	0.0	3.1	0.0	6.4
Prop In Lane	1.00		0.01	1.00		0.29	0.33		0.33	0.93		1.00
Lane Grp Cap(c), veh/h	712	1495	1572	444	1194	1194	244	0	0	249	0	187
V/C Ratio(X)	0.09	0.34	0.34	0.01	0.29	0.29	0.05	0.00	0.00	0.23	0.00	0.63
Avail Cap(c_a), veh/h	822	1495	1572	444	1194	1194	573	0	0	555	0	527
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(l)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.8	2.7	2.7	4.9	6.0	6.0	35.2	0.0	0.0	36.3	0.0	37.8
Incr Delay (d2), s/veh	0.0	0.6	0.6	0.0	0.6	0.6	0.0	0.0	0.0	0.2	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	0.1	1.4	1.5	0.0	2.2	2.2	0.2	0.0	0.0	1.1	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.8	3.3	3.3	4.9	6.6	6.6	35.3	0.0	0.0	36.5	0.0	39.1
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		1102			693			12				174
Approach Delay, s/veh		3.2			6.6			35.3				38.3
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		75.3		14.7	10.8	64.5		14.7				
Change Period (Y+Rc), s		* 6		* 6.1	* 5.3	* 6		* 6.1				
Max Green Setting (Gmax), s		* 50		* 28	* 11	* 34		* 28				
Max Q Clear Time (g_c+I1), s		8.9		8.4	2.7	9.1		2.5				
Green Ext Time (p_c), s		4.1		0.3	0.0	9.9		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

### Notes

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

# Timings

## 2: Churchill Drive & Garrison Boulevard

06/29/2023



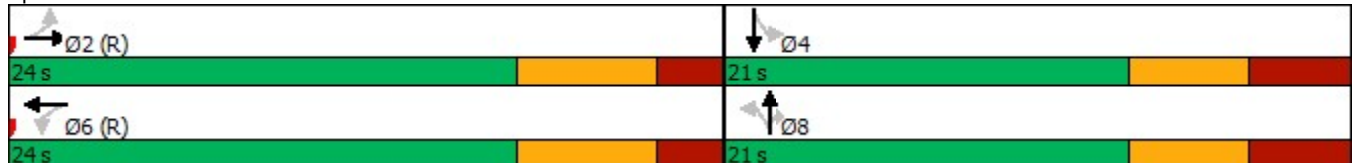
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↕	↔	↕		↕	↕		↕
Traffic Volume (vph)	8	810	7	590	73	4	34	4	4
Future Volume (vph)	8	810	7	590	73	4	34	4	4
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	12.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0	21.0	14.5	14.5
Total Split (s)	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	4.7	4.7	4.7	4.7	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.3	2.3	2.3	2.3	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	31.7	31.7	31.7	31.7		10.6	10.6		10.6
Actuated g/C Ratio	0.70	0.70	0.70	0.70		0.24	0.24		0.24
v/c Ratio	0.02	0.45	0.03	0.31		0.26	0.12		0.03
Control Delay	4.2	4.8	4.4	5.7		15.6	13.4		12.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	4.2	4.8	4.4	5.7		15.6	13.4		12.3
LOS	A	A	A	A		B	B		B
Approach Delay		4.8		5.7		14.8			12.3
Approach LOS		A		A		B			B

### Intersection Summary

Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 24 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.45  
 Intersection Signal Delay: 5.8  
 Intersection Capacity Utilization 48.6%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 2: Churchill Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 2: Churchill Drive & Garrison Boulevard

06/29/2023



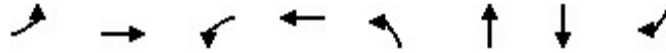
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Traffic Volume (veh/h)	8	810	37	7	590	5	73	4	34	4	4	4
Future Volume (veh/h)	8	810	37	7	590	5	73	4	34	4	4	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	1988	1973	1898	1988	1988	1988	1909	1909	1909	1909	1909	1939
Adj Flow Rate, veh/h	9	1080	41	9	787	6	81	4	45	4	4	4
Peak Hour Factor	0.90	0.75	0.90	0.75	0.75	0.90	0.90	0.90	0.75	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	8	2	2	2	2	2	2	2	2	0
Cap, veh/h	463	2184	83	386	2278	17	395	16	281	163	139	98
Arrive On Green	0.59	0.59	0.59	0.20	0.20	0.20	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	727	3682	140	534	3842	29	1374	92	1618	324	800	562
Grp Volume(v), veh/h	9	550	571	9	387	406	85	0	45	12	0	0
Grp Sat Flow(s),veh/h/ln	727	1874	1948	534	1889	1983	1466	0	1618	1686	0	0
Q Serve(g_s), s	0.3	7.6	7.6	0.7	8.0	8.0	2.0	0.0	1.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.3	7.6	7.6	8.3	8.0	8.0	2.2	0.0	1.1	0.2	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.95		1.00	0.33		0.33
Lane Grp Cap(c), veh/h	463	1112	1155	386	1120	1176	411	0	281	399	0	0
V/C Ratio(X)	0.02	0.49	0.49	0.02	0.35	0.35	0.21	0.00	0.16	0.03	0.00	0.00
Avail Cap(c_a), veh/h	463	1112	1155	386	1120	1176	659	0	557	674	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	5.3	5.3	14.0	10.6	10.6	16.3	0.0	15.8	15.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.5	1.4	0.1	0.8	0.8	0.2	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	1.7	0.1	2.3	2.4	0.7	0.0	0.4	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	6.7	6.7	14.1	11.4	11.4	16.5	0.0	16.1	15.5	0.0	0.0
LnGrp LOS	A	A	A	B	B	B	B	A	B	B	A	A
Approach Vol, veh/h		1130			802			130				12
Approach Delay, s/veh		6.7			11.4			16.4				15.5
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.7		13.3		31.7		13.3				
Change Period (Y+Rc), s		* 7		7.5		* 7		7.5				
Max Green Setting (Gmax), s		* 17		13.5		* 17		13.5				
Max Q Clear Time (g_c+I1), s		9.6		2.2		10.0		4.2				
Green Ext Time (p_c), s		6.1		0.0		4.7		0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				9.2								
HCM 6th LOS				A								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												



# Timings

## 3: Burtonwood Drive & Garrison Boulevard

06/29/2023



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	200	675	4	424	49	62	23	89
Future Volume (vph)	200	675	4	424	49	62	23	89
Turn Type	Prot	NA	Prot	NA	Split	NA	NA	pm+ov
Protected Phases	5	2	1	6	8	8	4	5
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	5
Switch Phase								
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.1	13.7	23.1	17.8	17.8	13.2	13.0
Total Split (s)	20.0	35.0	15.0	30.0	18.0	18.0	22.0	20.0
Total Split (%)	22.2%	38.9%	16.7%	33.3%	20.0%	20.0%	24.4%	22.2%
Yellow Time (s)	4.0	4.7	4.0	4.7	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.4	2.7	1.4	1.8	1.8	2.2	2.0
Lost Time Adjust (s)	-1.0	-1.1	-1.7	-1.1	-0.8	-0.8	-1.2	-1.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.8
Lead/Lag	Lead	Lag	Lead	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effct Green (s)	18.6	61.8	8.7	39.9	10.5	10.5	8.8	24.5
Actuated g/C Ratio	0.21	0.69	0.10	0.44	0.12	0.12	0.10	0.27
v/c Ratio	0.73	0.40	0.02	0.37	0.27	0.48	0.25	0.28
Control Delay	41.0	10.1	22.8	29.6	38.7	44.4	49.1	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	10.1	22.8	29.6	38.7	44.4	49.1	17.8
LOS	D	B	C	C	D	D	D	B
Approach Delay		16.8		29.6		42.4	25.5	
Approach LOS		B		C		D	C	

### Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 80 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 22.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 47.7%  
 ICU Level of Service A  
 Analysis Period (min) 15

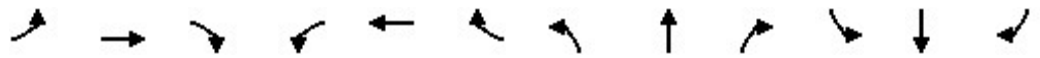
### Splits and Phases: 3: Burtonwood Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 3: Burtonwood Drive & Garrison Boulevard

06/29/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷			↷	↶
Traffic Volume (veh/h)	200	675	43	4	424	74	49	62	16	6	23	89
Future Volume (veh/h)	200	675	43	4	424	74	49	62	16	6	23	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1796	1870	1870	1841	1849	1894	1849	1387	1713	1847
Adj Flow Rate, veh/h	267	900	57	4	471	99	54	83	18	8	31	119
Peak Hour Factor	0.75	0.75	0.75	0.90	0.90	0.75	0.90	0.75	0.90	0.75	0.75	0.75
Percent Heavy Veh, %	2	3	7	2	2	4	6	3	6	33	11	2
Cap, veh/h	297	1919	122	47	1257	263	150	128	28	34	130	415
Arrive On Green	0.33	1.00	1.00	0.03	0.43	0.42	0.09	0.09	0.08	0.11	0.10	0.10
Sat Flow, veh/h	1781	3367	213	1781	2926	611	1761	1508	327	348	1348	1565
Grp Volume(v), veh/h	267	471	486	4	285	285	54	0	101	39	0	119
Grp Sat Flow(s),veh/h/ln	1781	1763	1817	1781	1777	1760	1761	0	1835	1696	0	1565
Q Serve(g_s), s	12.8	0.0	0.0	0.2	9.8	10.0	2.6	0.0	4.8	1.9	0.0	5.4
Cycle Q Clear(g_c), s	12.8	0.0	0.0	0.2	9.8	10.0	2.6	0.0	4.8	1.9	0.0	5.4
Prop In Lane	1.00		0.12	1.00		0.35	1.00		0.18	0.21		1.00
Lane Grp Cap(c), veh/h	297	1005	1036	47	763	756	150	0	156	163	0	415
V/C Ratio(X)	0.90	0.47	0.47	0.09	0.37	0.38	0.36	0.00	0.65	0.24	0.00	0.29
Avail Cap(c_a), veh/h	297	1005	1036	198	763	756	254	0	265	320	0	560
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.3	0.0	0.0	42.8	17.4	17.6	38.9	0.0	39.9	37.5	0.0	26.3
Incr Delay (d2), s/veh	27.5	1.6	1.5	0.2	0.9	0.9	0.5	0.0	1.7	0.3	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	6.4	0.4	0.4	0.1	3.8	3.9	1.1	0.0	2.2	0.8	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	1.6	1.5	42.9	18.3	18.5	39.4	0.0	41.6	37.8	0.0	26.4
LnGrp LOS	E	A	A	D	B	B	D	A	D	D	A	C
Approach Vol, veh/h		1224			574			155				158
Approach Delay, s/veh		13.6			18.6			40.8				29.2
Approach LOS		B			B			D				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	56.3		13.7	20.0	43.7		12.7				
Change Period (Y+Rc), s	* 6.7	* 6.1		* 6.2	6.0	* 6.1		5.8				
Max Green Setting (Gmax), s	* 8.3	* 29		* 16	14.0	* 24		12.2				
Max Q Clear Time (g_c+I1), s	2.2	2.0		7.4	14.8	12.0		6.8				
Green Ext Time (p_c), s	0.0	12.8		0.2	0.0	4.6		0.1				

### Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

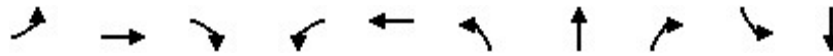
### Notes

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

# Timings

## 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

06/29/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↕	↖	↕	↗	↖	↕
Traffic Volume (vph)	98	298	314	57	154	271	814	114	20	627
Future Volume (vph)	98	298	314	57	154	271	814	114	20	627
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3	8	5	2	3	1	6
Permitted Phases			4					2		
Detector Phase	7	4	5	3	8	5	2	3	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	10.0
Minimum Split (s)	14.0	24.0	14.0	14.0	23.0	14.0	32.0	14.0	14.0	27.0
Total Split (s)	14.0	24.0	24.0	14.0	24.0	24.0	38.0	14.0	14.0	28.0
Total Split (%)	15.6%	26.7%	26.7%	15.6%	26.7%	26.7%	42.2%	15.6%	15.6%	31.1%
Yellow Time (s)	3.0	4.9	3.0	3.0	3.6	3.0	3.8	3.0	3.0	3.9
All-Red Time (s)	2.6	1.6	2.9	2.9	2.1	2.9	2.1	2.9	2.9	2.0
Lost Time Adjust (s)	-0.6	-1.5	-0.9	-0.9	-0.7	-0.9	-0.9	-0.9	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	9.2	20.6	44.6	8.6	20.1	19.0	40.3	54.0	8.2	21.8
Actuated g/C Ratio	0.10	0.23	0.50	0.10	0.22	0.21	0.45	0.60	0.09	0.24
v/c Ratio	0.71	0.92	0.53	0.39	0.31	0.97	0.57	0.13	0.14	0.86
Control Delay	65.8	61.1	12.6	45.7	31.1	77.2	21.4	12.5	42.5	44.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	61.1	12.6	45.7	31.1	77.2	21.4	12.5	42.5	44.0
LOS	E	E	B	D	C	E	C	B	D	D
Approach Delay		40.3			34.2		35.1			43.9
Approach LOS		D			C		D			D

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 38.4

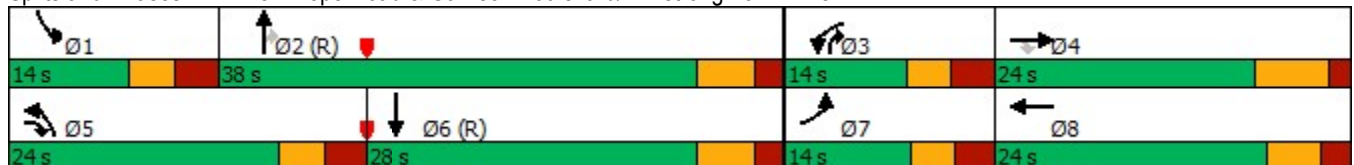
Intersection LOS: D

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive



# HCM 6th Signalized Intersection Summary

## 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

06/29/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	298	314	57	154	25	271	814	114	20	627	32
Future Volume (veh/h)	98	298	314	57	154	25	271	814	114	20	627	32
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	2027	2012	2012	1679	1723	1634	1864	1864	1864	1909	1909	1909
Adj Flow Rate, veh/h	131	397	419	63	205	28	361	904	127	22	697	36
Peak Hour Factor	0.75	0.75	0.75	0.90	0.75	0.90	0.75	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	3	5	2	8	2	2	2	2	2	2
Cap, veh/h	179	425	709	115	525	71	375	1602	828	78	996	51
Arrive On Green	0.03	0.07	0.07	0.07	0.18	0.17	0.21	0.45	0.45	0.01	0.09	0.09
Sat Flow, veh/h	1931	2012	1705	1599	2899	391	1776	3542	1580	1818	3509	181
Grp Volume(v), veh/h	131	397	419	63	115	118	361	904	127	22	360	373
Grp Sat Flow(s),veh/h/ln	1931	2012	1705	1599	1637	1653	1776	1771	1580	1818	1814	1877
Q Serve(g_s), s	6.1	17.7	16.5	3.4	5.5	5.7	18.1	16.9	3.7	1.1	17.3	17.3
Cycle Q Clear(g_c), s	6.1	17.7	16.5	3.4	5.5	5.7	18.1	16.9	3.7	1.1	17.3	17.3
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	179	425	709	115	296	299	375	1602	828	78	515	533
V/C Ratio(X)	0.73	0.93	0.59	0.55	0.39	0.40	0.96	0.56	0.15	0.28	0.70	0.70
Avail Cap(c_a), veh/h	193	425	709	160	346	349	375	1602	828	182	515	533
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	42.5	41.2	23.7	40.4	32.5	32.6	35.2	18.1	11.1	43.0	37.1	37.1
Incr Delay (d2), s/veh	11.3	26.4	1.2	4.1	0.8	0.8	36.7	1.4	0.4	1.8	7.0	6.8
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	3.4	12.5	7.6	1.4	2.2	2.3	11.3	6.8	1.3	0.5	9.3	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	67.6	24.9	44.4	33.3	33.4	71.9	19.6	11.5	44.7	44.0	43.8
LnGrp LOS	D	E	C	D	C	C	E	B	B	D	D	D
Approach Vol, veh/h		947			296			1392			755	
Approach Delay, s/veh		46.8			35.7			32.4			43.9	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	45.7	11.5	24.0	24.0	30.5	13.4	22.1				
Change Period (Y+Rc), s	5.9	* 5.9	5.9	* 6.5	5.9	5.9	5.6	* 6.5				
Max Green Setting (Gmax), s	8.1	* 32	8.1	* 18	18.1	22.1	8.4	* 18				
Max Q Clear Time (g_c+I1), s	3.1	18.9	5.4	19.7	20.1	19.3	8.1	7.7				
Green Ext Time (p_c), s	0.0	4.0	0.0	0.0	0.0	1.1	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			39.3									
HCM 6th LOS			D									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# Timings

## 1: Chestnut St & Garrison Boulevard

07/19/2023

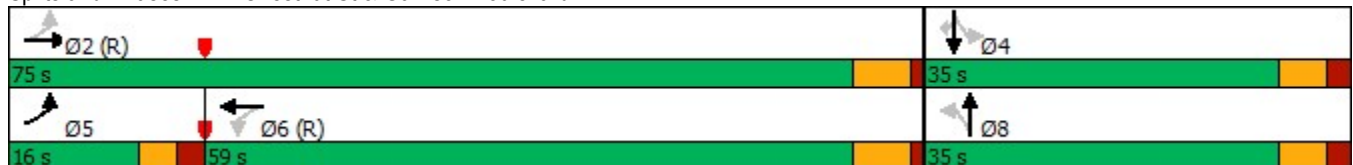


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	44	828	4	776	4	4	55	6	90
Future Volume (vph)	44	828	4	776	4	4	55	6	90
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	5	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	7.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	20.0	27.0	27.0	20.0	20.0	30.1	30.1	30.1
Total Split (s)	16.0	75.0	59.0	59.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	14.5%	68.2%	53.6%	53.6%	31.8%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	3.0	4.8	4.8	4.8	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)	2.3	1.2	1.2	1.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	3.3	4.0	4.0	4.0		4.1		4.1	4.1
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	89.6	88.9	79.0	79.0		13.0		13.0	13.0
Actuated g/C Ratio	0.81	0.81	0.72	0.72		0.12		0.12	0.12
v/c Ratio	0.08	0.29	0.01	0.34		0.07		0.38	0.49
Control Delay	2.7	3.2	4.8	3.6		41.7		50.6	53.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	2.7	3.2	4.8	3.6		41.7		50.6	53.6
LOS	A	A	A	A		D		D	D
Approach Delay		3.1		3.6		41.7		52.4	
Approach LOS		A		A		D		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 83 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.49  
 Intersection Signal Delay: 7.6  
 Intersection Capacity Utilization 51.4%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

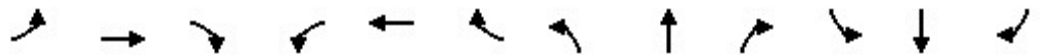
### Splits and Phases: 1: Chestnut St & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 1: Chestnut St & Garrison Boulevard

07/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	828	4	4	776	59	4	4	5	55	6	90
Future Volume (veh/h)	44	828	4	4	776	59	4	4	5	55	6	90
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	1988	1988	1988	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	845	4	4	792	60	4	4	5	56	6	92
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	640	3206	15	543	2464	187	71	66	59	192	18	150
Arrive On Green	0.07	0.83	0.83	0.74	0.74	0.74	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1893	3855	18	649	3348	254	296	693	619	1368	185	1585
Grp Volume(v), veh/h	45	414	435	4	420	432	13	0	0	62	0	92
Grp Sat Flow(s),veh/h/ln	1893	1889	1985	649	1777	1825	1608	0	0	1553	0	1585
Q Serve(g_s), s	0.5	5.2	5.2	0.2	9.0	9.0	0.0	0.0	0.0	0.3	0.0	6.1
Cycle Q Clear(g_c), s	0.5	5.2	5.2	0.2	9.0	9.0	3.9	0.0	0.0	3.6	0.0	6.1
Prop In Lane	1.00		0.01	1.00		0.14	0.31		0.38	0.90		1.00
Lane Grp Cap(c), veh/h	640	1571	1651	543	1308	1343	195	0	0	209	0	150
V/C Ratio(X)	0.07	0.26	0.26	0.01	0.32	0.32	0.07	0.00	0.00	0.30	0.00	0.61
Avail Cap(c_a), veh/h	734	1571	1651	543	1308	1343	484	0	0	478	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	2.0	2.0	3.9	5.0	5.0	45.4	0.0	0.0	46.7	0.0	47.9
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	0.6	0.6	0.1	0.0	0.0	0.3	0.0	1.5
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	0.1	1.0	1.1	0.0	2.7	2.8	0.3	0.0	0.0	1.6	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.4	2.4	2.4	3.9	5.6	5.6	45.5	0.0	0.0	47.0	0.0	49.4
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		894			856			13				154
Approach Delay, s/veh		2.4			5.6			45.5				48.4
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.5		14.5	10.5	85.0		14.5				
Change Period (Y+Rc), s		* 6		* 6.1	* 5.3	* 6		* 6.1				
Max Green Setting (Gmax), s		* 69		* 29	* 11	* 53		* 29				
Max Q Clear Time (g_c+I1), s		7.2		8.1	2.5	11.0		5.9				
Green Ext Time (p_c), s		3.1		0.3	0.0	16.1		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

### Notes

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

# Timings

## 2: Churchill Drive & Garrison Boulevard

07/19/2023



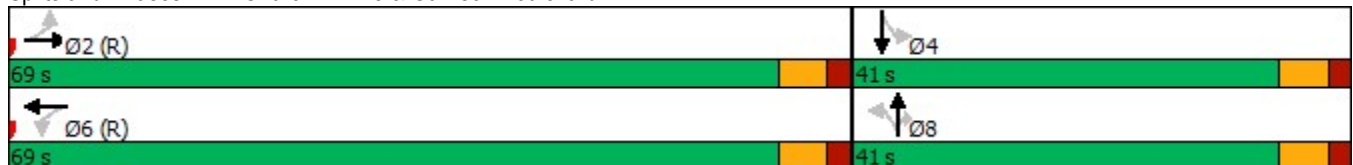
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕		↕	↖		↕
Traffic Volume (vph)	4	978	26	741	65	4	29	4	4
Future Volume (vph)	4	978	26	741	65	4	29	4	4
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	12.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0	21.0	14.5	14.5
Total Split (s)	69.0	69.0	69.0	69.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	37.3%	37.3%	37.3%	37.3%	37.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.5	-2.5		-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0		3.5	3.5		3.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	92.7	92.7	92.7	92.7		13.2	13.2		13.2
Actuated g/C Ratio	0.84	0.84	0.84	0.84		0.12	0.12		0.12
v/c Ratio	0.01	0.45	0.10	0.33		0.47	0.17		0.09
Control Delay	2.8	3.5	2.0	1.6		53.7	43.9		42.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	2.8	3.5	2.0	1.6		53.7	43.9		42.1
LOS	A	A	A	A		D	D		D
Approach Delay		3.5		1.6		50.8			42.1
Approach LOS		A		A		D			D

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 63 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.47  
 Intersection Signal Delay: 5.0  
 Intersection Capacity Utilization 49.7%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 2: Churchill Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 2: Churchill Drive & Garrison Boulevard

07/19/2023



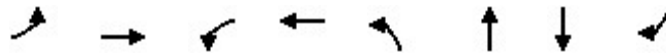
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↖		↕	↖
Traffic Volume (veh/h)	4	978	31	26	741	4	65	4	29	4	4	8
Future Volume (veh/h)	4	978	31	26	741	4	65	4	29	4	4	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	1988	1973	1913	1988	1988	1988	1909	1909	1909	1909	1909	1909
Adj Flow Rate, veh/h	4	1304	34	29	988	4	72	4	32	4	4	9
Peak Hour Factor	0.90	0.75	0.90	0.90	0.75	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	7	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	3077	80	383	3180	13	188	7	174	55	54	77
Arrive On Green	0.82	0.82	0.82	1.00	1.00	1.00	0.10	0.11	0.11	0.10	0.11	0.10
Sat Flow, veh/h	603	3733	97	434	3858	16	1154	64	1618	134	502	715
Grp Volume(v), veh/h	4	654	684	29	484	508	76	0	32	17	0	0
Grp Sat Flow(s),veh/h/ln	603	1874	1955	434	1889	1985	1218	0	1618	1350	0	0
Q Serve(g_s), s	0.1	10.4	10.4	0.9	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	10.4	10.4	11.2	0.0	0.0	7.4	0.0	2.0	7.4	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.01	0.95		1.00	0.24		0.53
Lane Grp Cap(c), veh/h	563	1545	1612	383	1557	1636	189	0	174	179	0	0
V/C Ratio(X)	0.01	0.42	0.42	0.08	0.31	0.31	0.40	0.00	0.18	0.09	0.00	0.00
Avail Cap(c_a), veh/h	563	1545	1612	383	1557	1636	527	0	552	557	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.7	2.6	2.6	0.6	0.0	0.0	47.3	0.0	44.7	44.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.4	0.5	0.5	0.5	0.0	0.2	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	2.3	0.0	0.2	0.2	2.1	0.0	0.8	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.7	3.4	3.4	1.0	0.5	0.5	47.8	0.0	44.9	44.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1342			1021			108				17
Approach Delay, s/veh		3.4			0.5			47.0				44.5
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		94.6		15.4		94.6		15.4				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		63.0		35.0		63.0		35.0				
Max Q Clear Time (g_c+I1), s		12.4		9.4		2.0		9.4				
Green Ext Time (p_c), s		29.2		0.0		19.4		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.4								
HCM 6th LOS				A								



# Timings

## 3: Burtonwood Drive & Garrison Boulevard

07/19/2023



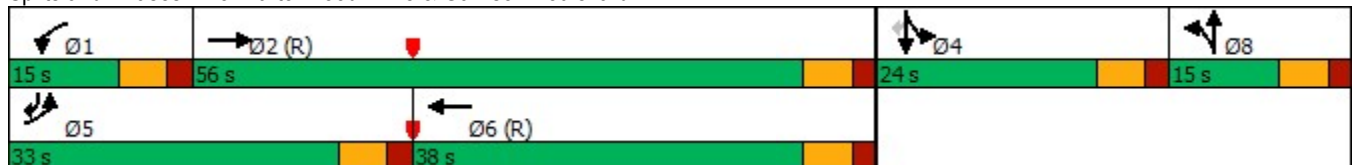
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	185	845	4	480	33	34	52	252
Future Volume (vph)	185	845	4	480	33	34	52	252
Turn Type	Prot	NA	Prot	NA	Split	NA	NA	pm+ov
Protected Phases	5	2	1	6	8	8	4	5
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	5
Switch Phase								
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.1	13.7	23.1	15.0	15.0	13.2	13.0
Total Split (s)	33.0	56.0	15.0	38.0	15.0	15.0	24.0	33.0
Total Split (%)	30.0%	50.9%	13.6%	34.5%	13.6%	13.6%	21.8%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.1	-1.7	-1.1	-0.8	-0.8	-1.2	-1.2
Total Lost Time (s)	5.0	4.9	4.3	4.9	5.2	5.2	4.8	4.8
Lead/Lag	Lead	Lag	Lead	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effct Green (s)	21.3	77.9	8.7	53.3	10.2	10.2	10.5	30.3
Actuated g/C Ratio	0.19	0.71	0.08	0.48	0.09	0.09	0.10	0.28
v/c Ratio	0.72	0.40	0.03	0.36	0.24	0.46	0.43	0.65
Control Delay	49.0	10.3	36.8	33.1	47.8	54.3	63.5	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	10.3	36.8	33.1	47.8	54.3	63.5	28.8
LOS	D	B	D	C	D	D	E	C
Approach Delay		18.1		33.1		52.1	35.9	
Approach LOS		B		C		D	D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 34 (31%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 26.4  
 Intersection Capacity Utilization 52.3%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service A

### Splits and Phases: 3: Burtonwood Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 3: Burtonwood Drive & Garrison Boulevard

07/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	845	42	4	480	52	33	34	24	13	52	252
Future Volume (veh/h)	185	845	42	4	480	52	33	34	24	13	52	252
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1826	1870	1870	1811	1789	1819	1879	1536	1832	1847
Adj Flow Rate, veh/h	247	939	47	4	533	69	37	45	27	14	58	280
Peak Hour Factor	0.75	0.90	0.90	0.90	0.90	0.75	0.90	0.75	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	5	2	2	6	10	8	4	23	3	2
Cap, veh/h	294	1917	96	41	1305	168	117	73	44	61	253	532
Arrive On Green	0.17	0.56	0.55	0.02	0.41	0.40	0.07	0.07	0.06	0.18	0.17	0.17
Sat Flow, veh/h	1781	3417	171	1781	3165	408	1704	1065	639	353	1462	1565
Grp Volume(v), veh/h	247	484	502	4	298	304	37	0	72	72	0	280
Grp Sat Flow(s),veh/h/ln	1781	1763	1825	1781	1777	1797	1704	0	1704	1814	0	1565
Q Serve(g_s), s	14.8	18.3	18.3	0.2	13.1	13.2	2.3	0.0	4.5	3.8	0.0	15.8
Cycle Q Clear(g_c), s	14.8	18.3	18.3	0.2	13.1	13.2	2.3	0.0	4.5	3.8	0.0	15.8
Prop In Lane	1.00		0.09	1.00		0.23	1.00		0.38	0.19		1.00
Lane Grp Cap(c), veh/h	294	989	1024	41	733	741	117	0	117	314	0	532
V/C Ratio(X)	0.84	0.49	0.49	0.10	0.41	0.41	0.32	0.00	0.62	0.23	0.00	0.53
Avail Cap(c_a), veh/h	453	989	1024	173	733	741	152	0	152	317	0	534
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(l)	1.00	1.00	1.00	0.64	0.64	0.64	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.5	14.6	14.7	52.6	22.8	23.0	48.8	0.0	50.0	39.1	0.0	29.2
Incr Delay (d2), s/veh	4.9	1.7	1.7	0.2	1.1	1.1	0.6	0.0	2.0	0.1	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	6.7	7.0	7.3	0.1	5.4	5.5	1.0	0.0	2.0	1.7	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	16.4	16.3	52.9	23.9	24.0	49.3	0.0	51.9	39.2	0.0	29.6
LnGrp LOS	D	B	B	D	C	C	D	A	D	D	A	C
Approach Vol, veh/h		1233			606			109				352
Approach Delay, s/veh		23.0			24.2			51.0				31.6
Approach LOS		C			C			D				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	66.6		23.8	23.2	50.2		12.7				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	9.0	50.0		18.0	27.0	32.0		9.0				
Max Q Clear Time (g_c+I1), s	2.2	20.3		17.8	16.8	15.2		6.5				
Green Ext Time (p_c), s	0.0	14.0		0.0	0.4	6.0		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

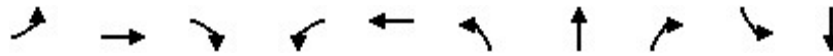
### Notes

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

# Timings

## 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/19/2023

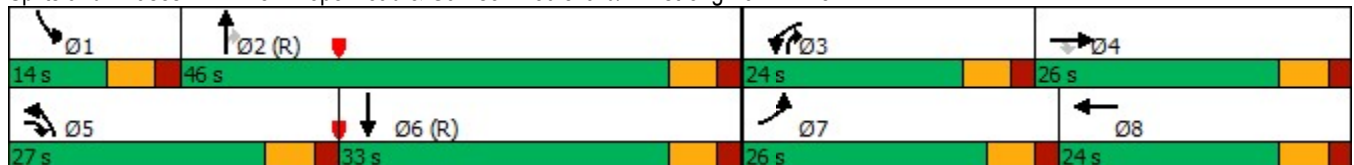


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑	↗	↘	↑↑	↘	↑↑	↗	↘	↑↑
Traffic Volume (vph)	167	319	365	113	185	258	686	155	27	828
Future Volume (vph)	167	319	365	113	185	258	686	155	27	828
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3	8	5	2	3	1	6
Permitted Phases			4					2		
Detector Phase	7	4	5	3	8	5	2	3	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	14.0	24.0	14.0	14.0	23.0	14.0	32.0	14.0	14.0	27.0
Total Split (s)	26.0	26.0	27.0	24.0	24.0	27.0	46.0	24.0	14.0	33.0
Total Split (%)	23.6%	23.6%	24.5%	21.8%	21.8%	24.5%	41.8%	21.8%	12.7%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-0.6	-1.5	-0.9	-0.9	-0.7	-0.9	-0.9	-0.9	-0.9	-0.9
Total Lost Time (s)	5.4	4.5	5.1	5.1	5.3	5.1	5.1	5.1	5.1	5.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	15.9	24.9	52.6	13.3	21.2	23.1	49.0	67.4	8.2	28.9
Actuated g/C Ratio	0.14	0.23	0.48	0.12	0.19	0.21	0.45	0.61	0.07	0.26
v/c Ratio	0.72	0.83	0.54	0.61	0.35	0.94	0.49	0.18	0.23	1.12
Control Delay	60.9	56.4	17.4	57.6	40.5	84.3	17.8	7.2	62.0	94.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	56.4	17.4	57.6	40.5	84.3	17.8	7.2	62.0	94.5
LOS	E	E	B	E	D	F	B	A	E	F
Approach Delay		40.6			46.6		34.3			93.5
Approach LOS		D			D		C			F

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 90 (82%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.12  
 Intersection Signal Delay: 54.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 79.4%  
 ICU Level of Service D  
 Analysis Period (min) 15

### Splits and Phases: 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive



HCM 6th Signalized Intersection Summary  
 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	319	365	113	185	36	258	686	155	27	828	84
Future Volume (veh/h)	167	319	365	113	185	36	258	686	155	27	828	84
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	2027	2012	1997	1723	1723	1723	1850	1864	1850	1879	1909	1909
Adj Flow Rate, veh/h	186	354	406	126	185	40	344	762	172	30	920	112
Peak Hour Factor	0.90	0.90	0.90	0.90	1.00	0.90	0.75	0.90	0.90	0.90	0.90	0.75
Percent Heavy Veh, %	2	3	4	2	2	2	3	2	3	4	2	2
Cap, veh/h	231	393	659	165	447	95	351	1692	906	83	1058	129
Arrive On Green	0.08	0.13	0.13	0.10	0.17	0.16	0.20	0.48	0.48	0.03	0.22	0.21
Sat Flow, veh/h	1931	2012	1693	1641	2689	569	1762	3542	1568	1790	3256	396
Grp Volume(v), veh/h	186	354	406	126	111	114	344	762	172	30	513	519
Grp Sat Flow(s),veh/h/ln	1931	2012	1693	1641	1637	1621	1762	1771	1568	1790	1814	1838
Q Serve(g_s), s	10.4	19.1	20.7	8.2	6.7	6.9	21.4	15.7	5.7	1.8	30.0	30.0
Cycle Q Clear(g_c), s	10.4	19.1	20.7	8.2	6.7	6.9	21.4	15.7	5.7	1.8	30.0	30.0
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	231	393	659	165	272	270	351	1692	906	83	590	597
V/C Ratio(X)	0.81	0.90	0.62	0.76	0.41	0.42	0.98	0.45	0.19	0.36	0.87	0.87
Avail Cap(c_a), veh/h	362	393	659	282	278	276	351	1692	906	145	590	597
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74
Uniform Delay (d), s/veh	49.3	46.7	28.9	48.2	41.0	41.2	43.8	19.1	11.0	51.7	40.8	40.8
Incr Delay (d2), s/veh	3.1	21.1	1.2	2.8	0.4	0.4	42.6	0.9	0.5	0.7	12.4	12.3
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	5.2	12.0	8.9	3.5	2.7	2.8	13.3	6.4	2.0	0.8	15.8	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.4	67.8	30.1	51.0	41.4	41.6	86.5	20.0	11.5	52.4	53.2	53.1
LnGrp LOS	D	E	C	D	D	D	F	B	B	D	D	D
Approach Vol, veh/h		946			351			1278			1062	
Approach Delay, s/veh		48.6			44.9			36.7			53.1	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	57.6	16.1	26.0	27.0	40.9	18.6	23.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	40.0	18.0	20.0	21.0	27.0	20.0	18.0				
Max Q Clear Time (g_c+I1), s	3.8	17.7	10.2	22.7	23.4	32.0	12.4	8.9				
Green Ext Time (p_c), s	0.0	0.8	0.1	0.0	0.0	0.0	0.2	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			45.4									
HCM 6th LOS			D									

# Timings

## 1: Chestnut St & Garrison Boulevard

06/29/2023

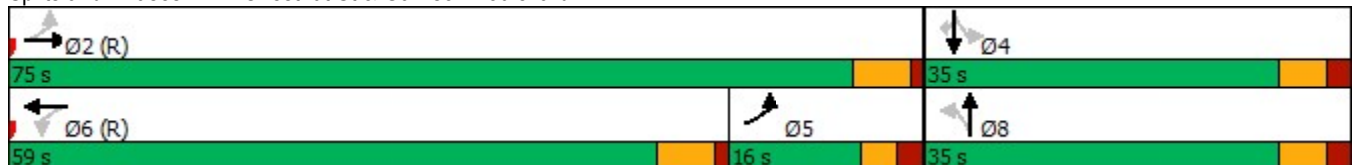


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	57	785	6	825	4	4	42	4	88
Future Volume (vph)	57	785	6	825	4	4	42	4	88
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	5	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	7.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	20.0	28.0	28.0	20.0	20.0	31.0	31.0	31.0
Total Split (s)	16.0	75.0	59.0	59.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	14.5%	68.2%	53.6%	53.6%	31.8%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	3.0	4.8	4.8	4.8	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)	2.3	1.2	1.2	1.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	3.3	4.0	4.0	4.0		4.1		4.1	4.1
Lead/Lag	Lag		Lead	Lead					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	91.0	88.5	78.7	78.7		13.4		13.4	13.4
Actuated g/C Ratio	0.83	0.80	0.72	0.72		0.12		0.12	0.12
v/c Ratio	0.12	0.30	0.02	0.38		0.06		0.31	0.51
Control Delay	3.4	3.3	6.2	7.4		41.1		47.6	53.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	3.4	3.3	6.2	7.4		41.1		47.6	53.8
LOS	A	A	A	A		D		D	D
Approach Delay		3.3		7.4		41.1		51.7	
Approach LOS		A		A		D		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 90 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.51  
 Intersection Signal Delay: 9.0  
 Intersection Capacity Utilization 47.8%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 1: Chestnut St & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 1: Chestnut St & Garrison Boulevard

06/29/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕			↕			↖	↗
Traffic Volume (veh/h)	57	785	4	6	825	31	4	4	4	42	4	88
Future Volume (veh/h)	57	785	4	6	825	31	4	4	4	42	4	88
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	1988	1988	1988	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	872	4	7	917	34	4	4	4	47	4	98
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	915	3194	15	279	1355	50	77	72	53	192	14	155
Arrive On Green	0.40	0.83	0.83	0.39	0.39	0.39	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1893	3856	18	633	3494	130	346	733	540	1317	142	1585
Grp Volume(v), veh/h	63	427	449	7	466	485	12	0	0	51	0	98
Grp Sat Flow(s),veh/h/ln	1893	1889	1985	633	1777	1847	1619	0	0	1459	0	1585
Q Serve(g_s), s	0.0	5.5	5.5	0.8	24.0	24.0	0.0	0.0	0.0	2.8	0.0	6.5
Cycle Q Clear(g_c), s	0.0	5.5	5.5	6.3	24.0	24.0	0.7	0.0	0.0	3.5	0.0	6.5
Prop In Lane	1.00		0.01	1.00		0.07	0.33		0.33	0.92		1.00
Lane Grp Cap(c), veh/h	915	1565	1644	279	689	716	202	0	0	206	0	155
V/C Ratio(X)	0.07	0.27	0.27	0.03	0.68	0.68	0.06	0.00	0.00	0.25	0.00	0.63
Avail Cap(c_a), veh/h	915	1565	1644	350	888	924	485	0	0	468	0	445
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(l)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	2.1	2.1	24.4	28.0	28.0	45.1	0.0	0.0	46.3	0.0	47.7
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.2	5.1	4.9	0.0	0.0	0.0	0.2	0.0	1.6
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	0.7	1.1	1.2	0.1	10.6	10.9	0.3	0.0	0.0	1.3	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	2.5	2.5	24.6	33.1	32.9	45.1	0.0	0.0	46.5	0.0	49.3
LnGrp LOS	B	A	A	C	C	C	D	A	A	D	A	D
Approach Vol, veh/h		939			958			12				149
Approach Delay, s/veh		3.2			32.9			45.1				48.3
Approach LOS		A			C			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.1		14.9	48.5	46.7		14.9				
Change Period (Y+Rc), s		* 6		* 6.1	* 6	* 6		* 6.1				
Max Green Setting (Gmax), s		* 69		* 29	* 11	* 53		* 29				
Max Q Clear Time (g_c+I1), s		7.5		8.5	2.0	26.0		2.7				
Green Ext Time (p_c), s		3.2		0.3	0.0	14.7		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	20.6
HCM 6th LOS	C

### Notes

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

# Timings

## 2: Churchill Drive & Garrison Boulevard

06/29/2023



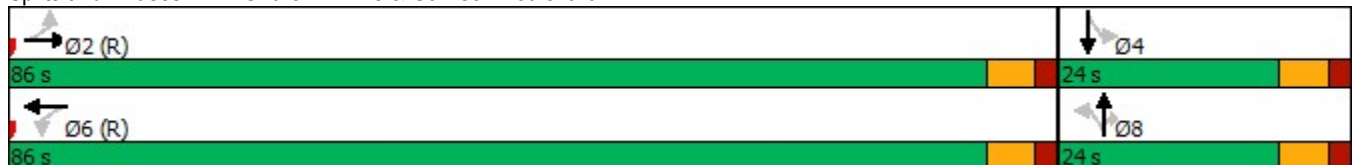
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖	↗		↖	↗		↗
Traffic Volume (vph)	4	826	19	725	38	4	23	4	4
Future Volume (vph)	4	826	19	725	38	4	23	4	4
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	12.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0	21.0	14.5	14.5
Total Split (s)	86.0	86.0	86.0	86.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	78.2%	78.2%	78.2%	78.2%	21.8%	21.8%	21.8%	21.8%	21.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.5	-2.5		-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0		3.5	3.5		3.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	94.8	94.8	94.8	94.8		11.1	11.1		11.1
Actuated g/C Ratio	0.86	0.86	0.86	0.86		0.10	0.10		0.10
v/c Ratio	0.01	0.32	0.04	0.26		0.33	0.16		0.09
Control Delay	1.0	1.2	2.2	2.1		52.0	46.6		45.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	1.0	1.2	2.2	2.1		52.0	46.6		45.0
LOS	A	A	A	A		D	D		D
Approach Delay		1.2		2.1		50.0			45.0
Approach LOS		A		A		D			D

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 60 (55%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.33  
 Intersection Signal Delay: 3.8  
 Intersection Capacity Utilization 46.0%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 2: Churchill Drive & Garrison Boulevard



HCM 6th Signalized Intersection Summary  
 2: Churchill Drive & Garrison Boulevard

06/29/2023



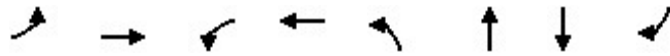
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Traffic Volume (veh/h)	4	826	46	19	725	4	38	4	23	4	4	6
Future Volume (veh/h)	4	826	46	19	725	4	38	4	23	4	4	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	1988	1988	1988	1988	1988	1988	1909	1909	1909	1909	1909	1909
Adj Flow Rate, veh/h	4	918	51	21	806	4	42	4	26	4	4	7
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	674	3092	172	558	3276	16	172	14	133	64	51	64
Arrive On Green	0.85	0.85	0.85	1.00	1.00	1.00	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	716	3638	202	617	3854	19	1334	170	1618	271	621	781
Grp Volume(v), veh/h	4	477	492	21	395	415	46	0	26	15	0	0
Grp Sat Flow(s),veh/h/ln	716	1889	1952	617	1889	1985	1503	0	1618	1673	0	0
Q Serve(g_s), s	0.1	5.6	5.6	0.2	0.0	0.0	2.2	0.0	1.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	5.6	5.6	5.8	0.0	0.0	3.1	0.0	1.6	0.9	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.01	0.91		1.00	0.27		0.47
Lane Grp Cap(c), veh/h	674	1605	1659	558	1605	1687	179	0	133	171	0	0
V/C Ratio(X)	0.01	0.30	0.30	0.04	0.25	0.25	0.26	0.00	0.20	0.09	0.00	0.00
Avail Cap(c_a), veh/h	674	1605	1659	558	1605	1687	332	0	302	340	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.2	1.7	1.7	0.2	0.0	0.0	47.9	0.0	47.1	46.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.4	0.1	0.4	0.3	0.3	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.9	0.0	0.2	0.2	1.2	0.0	0.7	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.3	2.1	2.1	0.3	0.4	0.3	48.2	0.0	47.4	47.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		973			831			72				15
Approach Delay, s/veh		2.1			0.4			47.9				47.0
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		97.5		12.5		97.5		12.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		80.0		18.0		80.0		18.0				
Max Q Clear Time (g_c+I1), s		7.6		2.9		2.0		5.1				
Green Ext Time (p_c), s		19.9		0.0		14.6		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				3.4								
HCM 6th LOS				A								



# Timings

## 3: Burtonwood Drive & Garrison Boulevard

06/29/2023



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	113	760	4	444	29	27	52	268
Future Volume (vph)	113	760	4	444	29	27	52	268
Turn Type	Prot	NA	Prot	NA	Split	NA	NA	pm+ov
Protected Phases	5	2	1	6	8	8	4	5
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	5
Switch Phase								
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.1	13.7	23.1	15.2	15.2	13.2	13.0
Total Split (s)	15.0	56.0	15.0	56.0	19.0	19.0	20.0	15.0
Total Split (%)	13.6%	50.9%	13.6%	50.9%	17.3%	17.3%	18.2%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effct Green (s)	16.9	80.1	9.0	61.1	9.7	9.7	11.5	26.6
Actuated g/C Ratio	0.15	0.73	0.08	0.56	0.09	0.09	0.10	0.24
v/c Ratio	0.46	0.35	0.03	0.27	0.22	0.25	0.42	0.79
Control Delay	48.5	8.7	36.0	26.8	50.0	50.5	52.3	45.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	8.7	36.0	26.8	50.0	50.5	52.3	45.1
LOS	D	A	D	C	D	D	D	D
Approach Delay		13.7		26.8		50.3	46.6	
Approach LOS		B		C		D	D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 30 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 24.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 48.4%  
 ICU Level of Service A  
 Analysis Period (min) 15

### Splits and Phases: 3: Burtonwood Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 3: Burtonwood Drive & Garrison Boulevard

06/29/2023

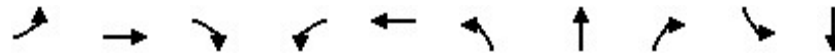


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	760	34	4	444	18	29	27	7	20	52	268
Future Volume (veh/h)	113	760	34	4	444	18	29	27	7	20	52	268
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1811	1870	1841	1811	1789	1834	1909	1847	1847	1847
Adj Flow Rate, veh/h	126	844	38	4	493	20	32	30	8	22	58	298
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
Percent Heavy Veh, %	2	3	6	2	4	6	10	7	2	2	2	2
Cap, veh/h	178	2093	94	45	1832	74	127	104	28	73	192	384
Arrive On Green	0.20	1.00	1.00	0.03	0.53	0.52	0.07	0.07	0.06	0.15	0.15	0.15
Sat Flow, veh/h	1781	3436	155	1781	3426	139	1704	1395	372	501	1321	1565
Grp Volume(v), veh/h	126	433	449	4	251	262	32	0	38	80	0	298
Grp Sat Flow(s),veh/h/ln	1781	1763	1828	1781	1749	1816	1704	0	1767	1822	0	1565
Q Serve(g_s), s	7.3	0.0	0.0	0.2	8.6	8.6	1.9	0.0	2.2	4.3	0.0	16.0
Cycle Q Clear(g_c), s	7.3	0.0	0.0	0.2	8.6	8.6	1.9	0.0	2.2	4.3	0.0	16.0
Prop In Lane	1.00		0.08	1.00		0.08	1.00		0.21	0.27		1.00
Lane Grp Cap(c), veh/h	178	1074	1114	45	935	971	127	0	131	265	0	384
V/C Ratio(X)	0.71	0.40	0.40	0.09	0.27	0.27	0.25	0.00	0.29	0.30	0.00	0.78
Avail Cap(c_a), veh/h	178	1074	1114	178	935	971	232	0	241	265	0	384
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	0.0	0.0	52.3	13.9	14.0	48.0	0.0	48.4	42.0	0.0	38.7
Incr Delay (d2), s/veh	10.4	1.1	1.1	0.2	0.6	0.5	0.4	0.0	0.4	0.2	0.0	8.8
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	3.4	0.3	0.3	0.1	3.3	3.4	0.8	0.0	1.0	1.9	0.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.9	1.1	1.1	52.6	14.5	14.5	48.4	0.0	48.8	42.2	0.0	47.4
LnGrp LOS	D	A	A	D	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1008			517			70				378
Approach Delay, s/veh		7.6			14.8			48.6				46.3
Approach LOS		A			B			D				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	71.0		20.0	15.0	62.8		12.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	9.0	50.0		14.0	9.0	50.0		13.0				
Max Q Clear Time (g_c+I1), s	2.2	2.0		18.0	9.3	10.6		4.2				
Green Ext Time (p_c), s	0.0	14.6		0.0	0.0	6.9		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.4								
HCM 6th LOS				B								

Timings

4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

06/29/2023

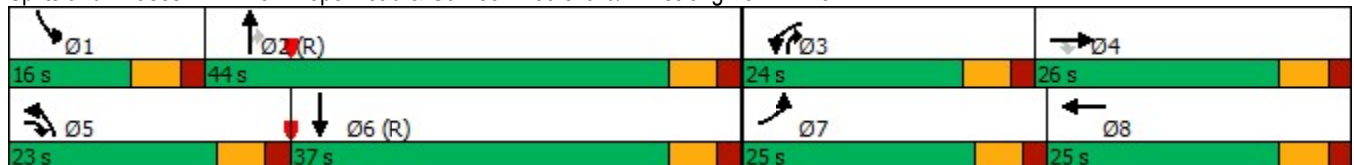


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↕	↖	↕	↗	↖	↕
Traffic Volume (vph)	141	286	352	163	176	198	640	136	36	940
Future Volume (vph)	141	286	352	163	176	198	640	136	36	940
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3	8	5	2	3	1	6
Permitted Phases			4					2		
Detector Phase	7	4	5	3	8	5	2	3	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	14.0	24.0	14.0	14.0	23.0	14.0	32.0	14.0	14.0	27.0
Total Split (s)	25.0	26.0	23.0	24.0	25.0	23.0	44.0	24.0	16.0	37.0
Total Split (%)	22.7%	23.6%	20.9%	21.8%	22.7%	20.9%	40.0%	21.8%	14.5%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	15.8	21.8	43.7	17.0	23.0	17.9	50.7	71.7	9.7	37.3
Actuated g/C Ratio	0.14	0.20	0.40	0.15	0.21	0.16	0.46	0.65	0.09	0.34
v/c Ratio	0.61	0.85	0.62	0.69	0.34	0.81	0.44	0.15	0.25	0.94
Control Delay	58.2	57.1	23.7	57.3	38.6	66.7	23.5	9.4	50.6	52.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	57.1	23.7	57.3	38.6	66.7	23.5	9.4	50.6	52.4
LOS	E	E	C	E	D	E	C	A	D	D
Approach Delay		42.2			46.7		30.3			52.4
Approach LOS		D			D		C			D

Intersection Summary
























Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 82 (75%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 42.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 76.3%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive



HCM 6th Signalized Intersection Summary  
 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

06/29/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	286	352	163	176	38	198	640	136	36	940	61
Future Volume (veh/h)	141	286	352	163	176	38	198	640	136	36	940	61
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	2027	2027	1997	1708	1723	1708	1790	1850	1864	1909	1894	1894
Adj Flow Rate, veh/h	157	318	391	181	196	42	220	711	151	40	1044	68
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
Percent Heavy Veh, %	2	2	4	3	2	3	7	3	2	2	3	3
Cap, veh/h	226	405	611	235	612	128	275	1571	935	115	1198	78
Arrive On Green	0.04	0.07	0.07	0.14	0.23	0.21	0.16	0.45	0.45	0.08	0.46	0.44
Sat Flow, veh/h	1931	2027	1693	1627	2693	565	1705	3514	1580	1818	3430	223
Grp Volume(v), veh/h	157	318	391	181	118	120	220	711	151	40	548	564
Grp Sat Flow(s),veh/h/ln	1931	2027	1693	1627	1637	1621	1705	1757	1580	1818	1800	1854
Q Serve(g_s), s	8.8	17.0	20.5	11.8	6.6	6.9	13.7	15.4	4.7	2.3	30.1	30.2
Cycle Q Clear(g_c), s	8.8	17.0	20.5	11.8	6.6	6.9	13.7	15.4	4.7	2.3	30.1	30.2
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	226	405	611	235	372	368	275	1571	935	115	628	647
V/C Ratio(X)	0.69	0.78	0.64	0.77	0.32	0.33	0.80	0.45	0.16	0.35	0.87	0.87
Avail Cap(c_a), veh/h	369	405	611	296	372	368	295	1571	935	198	628	647
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	49.0	33.9	45.3	35.4	35.8	44.4	21.1	10.1	48.3	27.2	27.4
Incr Delay (d2), s/veh	1.4	8.5	1.7	6.9	0.2	0.2	12.4	0.9	0.4	0.7	15.3	15.0
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	4.5	10.1	9.5	5.1	2.6	2.7	6.6	6.4	1.7	1.0	13.9	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	57.5	35.5	52.2	35.6	36.0	56.9	22.0	10.5	48.9	42.6	42.4
LnGrp LOS	D	E	D	D	D	D	E	C	B	D	D	D
Approach Vol, veh/h		866			419			1082			1152	
Approach Delay, s/veh		46.6			42.9			27.5			42.7	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	53.2	19.9	26.0	21.7	42.4	16.9	29.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	10.0	38.0	18.0	20.0	17.0	31.0	19.0	19.0				
Max Q Clear Time (g_c+I1), s	4.3	17.4	13.8	22.5	15.7	32.2	10.8	8.9				
Green Ext Time (p_c), s	0.0	0.8	0.2	0.0	0.1	0.0	0.1	1.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			39.0									
HCM 6th LOS			D									

## **APPENDIX D – CRASH ANALYSIS SUMMARY**

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Study Criteria Summary**

**County:** GASTON      **City:** All and Rural  
**Date:** 05/01/2018 to 04/30/2023      **Study:** GARRISONBLVDCORRIDORSTUDY  
**Location:** SR 2466 (E Garrison Blvd) from Fern Forest Dr to NC 279 (S New Hope Rd)

**Report Details**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	105479131	2.641	05/15/2018 17:42	LEFT TURN, DIFFERENT ROADWAYS	\$ 10000	0	0	0	2	2	1	2	4	0	1	1
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 15 MPH	<b>Dir:</b> N	<b>Veh Mnvr/Ped Actn:</b>			8	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
-----																
2	105728827	2.641	01/03/2019 08:11	ANGLE	\$ 2000	0	0	0	0	2	1	3	3	0	1	1
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 15 MPH	<b>Dir:</b> N	<b>Veh Mnvr/Ped Actn:</b>			8	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 35 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
-----																
3	106054165	2.641	11/09/2019 10:37	LEFT TURN, DIFFERENT ROADWAYS	\$ 2000	0	0	0	0	1	1	1	3	0	1	1
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 15 MPH	<b>Dir:</b> W	<b>Veh Mnvr/Ped Actn:</b>			8	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 15 MPH	<b>Dir:</b> N	<b>Veh Mnvr/Ped Actn:</b>			8	<b>Obj Strk:</b>						
-----																
4	106852686	2.653	02/06/2022 09:49	SIDESWIPE, SAME DIRECTION	\$ 2500	0	0	0	0	1	1	1	1	0	0	
<b>Unit</b>	1 : 4	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> W	<b>Veh Mnvr/Ped Actn:</b>			5	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> W	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
-----																
5	105801647	2.664	03/13/2019 06:18	ANIMAL	\$ 1500	0	0	0	0	1	4	1	3	0	0	
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b> 17						
-----																
6	106480318	2.679	02/03/2021 12:57	RIGHT TURN, SAME ROADWAY	\$ 1250	0	0	0	0	1	1	1	1	0		
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 35 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			5	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 3	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 35 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
-----																
7	106061639	2.682	11/07/2019 17:35	RIGHT TURN, SAME ROADWAY	\$ 5000	0	0	0	1	1	2	1	1	0	3	1
<b>Unit</b>	1 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 5 MPH	<b>Dir:</b> S	<b>Veh Mnvr/Ped Actn:</b>			7	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 1	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> W	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
-----																
8	105817042	2.691	03/31/2019 13:16	ANGLE	\$ 6000	0	0	0	0	1	1	1	1	0	3	1
<b>Unit</b>	1 : 4	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 45 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			4	<b>Obj Strk:</b>						
<b>Unit</b>	2 : 2	<b>Alchl/Drugs:</b>	0	<b>Speed:</b> 5 MPH	<b>Dir:</b> E	<b>Veh Mnvr/Ped Actn:</b>			8	<b>Obj Strk:</b>						

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
9	105851492	2.691	05/03/2019 10:16	ANGLE	\$ 6000	0	0	0	3	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 5	Alchl/Drugs:	0	Speed:	25 MPH Dir: S	Veh Mnvr/Ped Actn:				4	Obj Strk:					
10	106391566	2.691	10/31/2020 19:10	ANGLE	\$ 7000	0	0	0	0	1	1	1	1	0	3	2
Unit	1 : 4	Alchl/Drugs:	0	Speed:	35 MPH Dir: S	Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
11	107167205	2.691	11/24/2022 13:52	LEFT TURN, SAME ROADWAY	\$ 7000	0	0	1	2	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	10 MPH Dir: S	Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 20	Alchl/Drugs:	0	Speed:	50 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
12	107191918	2.691	12/24/2022 16:10	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	1	1	1	2	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	40 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
13	107252221	2.691	02/22/2023 15:22	LEFT TURN, DIFFERENT ROADWAYS	\$ 21000	0	0	0	0	1	1	1	2	0	5	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:		35			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				8	Obj Strk:					
14	107279309	2.691	03/23/2023 08:35	LEFT TURN, DIFFERENT ROADWAYS	\$ 6000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	40 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 3	Alchl/Drugs:	0	Speed:	10 MPH Dir: SE	Veh Mnvr/Ped Actn:				8	Obj Strk:					
15	105697767	2.700	12/02/2018 15:09	REAR END, SLOW OR STOP	\$ 5000	0	0	0	1	2	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	40 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				8	Obj Strk:					
16	106312278	2.702	08/20/2020 12:18	REAR END, SLOW OR STOP	\$ 4300	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	30 MPH Dir: W	Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
17	105546570	2.708	07/20/2018 13:05	REAR END, SLOW OR STOP	\$ 800	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 3	Alchl/Drugs:	0	Speed:	30 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	15 MPH Dir: W	Veh Mnvr/Ped Actn:				7	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
18	107193883	2.710	12/13/2022 19:04	REAR END, SLOW OR STOP	\$ 10000	0	0	0	0	1	4	1	2	0	0	
Unit	1 : 2	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 3	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
19	105789444	2.714	03/04/2019 00:20	REAR END, SLOW OR STOP	\$ 18000	0	0	1	0	1	4	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs:	1	Speed:	60 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
20	106716641	2.729	10/04/2021 15:02	REAR END, SLOW OR STOP	\$ 6500	0	0	0	0	1	1	2	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
21	106879410	2.765	03/04/2022 12:50	REAR END, SLOW OR STOP	\$ 3000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				11	Obj Strk:			
22	106889851	2.766	03/05/2022 14:43	BACKING UP	\$ 300	0	0	0	0	1	1	2	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				10	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	7	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				3	Obj Strk:			
23	105729205	2.771	01/03/2019 15:36	PEDESTRIAN	\$ 200	0	0	0	0	1	1	2	1	0	0	
Unit	1 : 24	Alchl/Drugs:	0	Speed:	0 MPH	Dir:		Veh Mnvr/Ped Actn:					Obj Strk: 14			
Unit	2 : 2	Alchl/Drugs:	0	Speed:	40 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk: 14			
24	106104818	2.812	12/23/2019 15:20	SIDESWIPE, SAME DIRECTION	\$ 2000	0	0	0	0	2	4	3	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
25	106084648	2.817	12/01/2019 05:12	SIDESWIPE, SAME DIRECTION	\$ 1000	0	0	0	0	3	4	3	1	0	0	
Unit	1 : 1	Alchl/Drugs:	7	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
26	106159737	2.817	02/11/2020 14:40	SIDESWIPE, SAME DIRECTION	\$ 3400	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
27	106223758	2.817	04/30/2020 22:30	UNKNOWN	\$ 15000	0	0	0	0	1	4	1	1	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				7	Obj Strk:			
28	106584360	2.853	05/23/2021 11:21	SIDESWIPE, OPPOSITE DIRECTION	\$ 6000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	3 MPH	Dir:	E	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
29	105487966	2.871	05/23/2018 18:10	FIXED OBJECT	\$ 5600	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:		37	
30	106853032	2.932	02/03/2022 14:33	REAR END, SLOW OR STOP	\$ 7500	0	0	0	0	2	1	2	2	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
31	106112058	2.962	12/28/2019 08:27	RAN OFF ROAD - RIGHT	\$ 31000	0	0	0	1	1	1	1	7	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:		64	
32	106977243	2.963	05/23/2022 00:18	RAN OFF ROAD - RIGHT	\$ 8000	0	0	0	0	1	2	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	1	Speed:	40 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
33	106801531	3.002	12/13/2021 08:50	SIDESWIPE, SAME DIRECTION	\$ 1000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
34	106784366	3.013	11/29/2021 21:52	RAN OFF ROAD - LEFT	\$ 29000	0	0	0	0	1	4	1	5	0	0	
Unit	1 : 1	Alchl/Drgs:	1	Speed:	80 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:		34	
35	105606382	3.022	09/19/2018 08:20	LEFT TURN, DIFFERENT ROADWAYS	\$ 3300	0	0	0	0	1	2	1	5	0	13	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	N	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:			
36	107004662	3.022	07/02/2022 16:06	LEFT TURN, DIFFERENT ROADWAYS	\$ 15000	0	0	0	0	1	1	1	5	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
37	107087054	3.022	09/22/2022 12:55	LEFT TURN, DIFFERENT ROADWAYS	\$ 3000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: SW		Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: N		Veh Mnvr/Ped Actn:				7	Obj Strk:					
38	107254226	3.022	02/20/2023 06:45	ANGLE	\$ 4000	0	0	0	0	1	3	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs:	0	Speed: 20 MPH Dir: NW		Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
39	105791766	3.035	03/05/2019 07:35	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	2	5	0	0	
Unit	1 : 5	Alchl/Drgs:	0	Speed: 35 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: W		Veh Mnvr/Ped Actn:				11	Obj Strk:					
40	106080745	3.041	12/02/2019 09:33	OTHER COLLISION WITH VEHICLE	\$ 6500	0	0	0	0	1	1	1	5	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed: 20 MPH Dir: W		Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	3 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
41	106242573	3.057	06/04/2020 14:09	SIDESWIPE, SAME DIRECTION	\$ 4000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
42	106721393	3.057	10/08/2021 15:44	SIDESWIPE, SAME DIRECTION	\$ 6500	0	0	0	1	2	1	2	5	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
43	106552691	3.073	04/21/2021 07:44	SIDESWIPE, SAME DIRECTION	\$ 7000	0	0	0	0	1	1	1	5	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 40 MPH Dir: E		Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 40 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
44	106637876	3.105	06/19/2021 07:04	RAN OFF ROAD - LEFT	\$ 16600	0	0	0	1	1	1	1	2	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 50 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:		34			
45	106715280	3.138	10/03/2021 02:35	RAN OFF ROAD - RIGHT	\$ 3000	0	0	0	0	1	4	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	1	Speed: 55 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:		34			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
46	105836467	3.149	04/18/2019 20:48	REAR END, SLOW OR STOP	\$ 9500	0	0	1	0	1	4	1	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 20	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
47	105773531	3.183	02/14/2019 11:17	REAR END, SLOW OR STOP	\$ 1500	0	0	0	1	1	1	1	3	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
48	106221818	3.183	05/01/2020 21:50	SIDESWIPE, OPPOSITE DIRECTION	\$ 3000	0	0	1	0	1	4	1	2	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					
49	106450367	3.183	12/30/2020 15:35	RAN OFF ROAD - RIGHT	\$ 2000	0	0	0	0	1	1	2	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: NE		Veh Mnvr/Ped Actn:				8	Obj Strk:		33			
50	106597081	3.183	06/05/2021 10:53	RAN OFF ROAD - RIGHT	\$ 10500	0	0	0	0	1	1	2	3	0	0	
Unit	1 : 4	Alchl/Drgs:	7	Speed: 40 MPH Dir: N		Veh Mnvr/Ped Actn:				8	Obj Strk:		38			
51	105680120	3.202	11/19/2018 09:01	REAR END, SLOW OR STOP	\$ 100	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 40 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
52	105834169	3.230	04/11/2019 17:00	ANGLE	\$ 11000	0	0	0	1	1	1	1	2	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 20 MPH Dir: SE		Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
53	105597853	3.236	09/07/2018 17:15	SIDESWIPE, SAME DIRECTION	\$ 2700	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 25 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
54	106609353	3.253	06/18/2021 07:01	REAR END, SLOW OR STOP	\$ 3000	0	0	0	0	1	1	1	4	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
55	105823467	3.262	04/03/2019 13:27	SIDESWIPE, SAME DIRECTION	\$ 10000	0	0	0	1	1	1	1	3	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				5	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:		34	
56	106118728	3.289	01/05/2020 19:36	REAR END, SLOW OR STOP	\$ 3000	0	0	0	1	1	4	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
57	106094133	3.295	12/09/2019 17:08	REAR END, SLOW OR STOP	\$ 3500	0	0	0	0	2	1	2	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	7	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
58	107133870	3.295	11/04/2022 08:33	SIDESWIPE, SAME DIRECTION	\$ 4000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
59	105963774	3.310	08/01/2019 13:20	REAR END, SLOW OR STOP	\$ 7000	0	0	0	1	1	1	1	4	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
60	105608792	3.323	09/13/2018 09:09	ANGLE	\$ 5000	0	0	0	1	1	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				12	Obj Strk:			
61	107081472	3.323	09/14/2022 07:32	REAR END, SLOW OR STOP	\$ 7000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
62	105724154	3.332	12/20/2018 06:56	REAR END, SLOW OR STOP	\$ 25000	0	0	3	2	1	1	2	3	0	3	1
Unit	1 : 2	Alchl/Drgs:	3	Speed:	50 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
Unit	3 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
63	105573903	3.334	08/13/2018 16:43	REAR END, SLOW OR STOP	\$ 7000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
64	105963778	3.342	08/01/2019 13:30	BACKING UP	\$ 1500	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				10	Obj Strk:			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
65	105616467	3.355	09/26/2018 15:33	SIDESWIPE, SAME DIRECTION	\$ 1200	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	30 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:			
66	107044905	3.403	08/13/2022 17:19	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
67	106941693	3.415	05/03/2022 14:00	REAR END, SLOW OR STOP	\$ 1800	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	40 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				1	Obj Strk:			
68	106608293	3.423	06/23/2021 13:25	LEFT TURN, DIFFERENT ROADWAYS	\$ 12500	0	0	0	4	1	1	2	3	0	0	
Unit	1 : 4	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
69	106259707	3.431	06/24/2020 16:51	ANGLE	\$ 9000	0	0	0	1	1	1	1	3	0	0	
Unit	1 : 4	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
70	107134473	3.431	11/04/2022 12:04	ANGLE	\$ 750	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
71	105812086	3.446	03/25/2019 11:40	ANGLE	\$ 4000	0	0	5	1	1	1	1	3	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
72	106689503	3.486	09/09/2021 14:29	LEFT TURN, DIFFERENT ROADWAYS	\$ 4400	0	0	0	1	1	1	1	1	0	1	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 2	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk: 20			
Unit	3 : 4	Alchl/Drugs:	7	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				2	Obj Strk: 20			
73	107304788	3.486	04/17/2023 13:21	LEFT TURN, DIFFERENT ROADWAYS	\$ 7000	0	0	0	2	1	1	1	3	0	1	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				8	Obj Strk:			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
74	106104664	3.494	12/19/2019 15:50	REAR END, SLOW OR STOP	\$ 9250	0	0	0	1	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	W	Veh Mnvr/Ped Actn:				11	Obj Strk:			
Unit	3 : 2	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				11	Obj Strk:			
75	106036258	3.551	10/24/2019 17:04	ANIMAL	\$ 3000	0	0	0	1	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk: 17			
76	105628380	3.586	10/08/2018 13:42	ANGLE	\$ 8000	0	0	0	2	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
77	106556049	3.597	04/26/2021 15:36	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
78	106126027	3.599	01/15/2020 18:15	REAR END, SLOW OR STOP	\$ 2000	0	0	0	0	1	4	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				11	Obj Strk:			
79	105801643	3.623	03/08/2019 13:56	LEFT TURN, DIFFERENT ROADWAYS	\$ 4000	0	0	0	0	2	1	3	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
80	106474500	3.642	01/28/2021 15:07	REAR END, SLOW OR STOP	\$ 250	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	2 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
81	106124226	3.646	01/13/2020 15:15	SIDESWIPE, SAME DIRECTION	\$ 10000	0	0	0	0	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	3 : 2	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
82	106466977	3.646	01/19/2021 15:30	REAR END, SLOW OR STOP	\$ 200	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
83	106845398	3.646	01/25/2022 16:47	REAR END, SLOW OR STOP	\$ 1300	0	0	0	0	1	4	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	7	Speed:	25 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
84	106172090	3.650	03/02/2020 20:46	RIGHT TURN, DIFFERENT ROADWAYS	\$ 6200	0	0	0	1	1	4	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	1	Speed:	10 MPH Dir: W	Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	5 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
85	106477746	3.650	02/01/2021 16:10	REAR END, SLOW OR STOP	\$ 200	0	0	0	0	1	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 3	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
86	106499626	3.650	02/27/2021 09:30	REAR END, SLOW OR STOP	\$ 500	0	0	0	0	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	7	Speed:	10 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
87	106976726	3.650	06/04/2022 13:46	REAR END, SLOW OR STOP	\$ 25000	0	0	0	2	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				11	Obj Strk:					
88	106820755	3.656	12/29/2021 08:20	REAR END, SLOW OR STOP	\$ 100	0	0	0	0	1	1	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: E	Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
89	105626118	3.665	10/06/2018 17:09	LEFT TURN, SAME ROADWAY	\$ 6000	0	0	0	4	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH Dir: E	Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	7	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				3	Obj Strk:					
90	105847906	3.665	04/30/2019 18:39	LEFT TURN, SAME ROADWAY	\$ 7000	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	10 MPH Dir: N	Veh Mnvr/Ped Actn:				8	Obj Strk:					
91	105894793	3.665	06/10/2019 11:34	FIXED OBJECT	\$ 800	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk: 64					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
92	105917342	3.665	07/07/2019 18:35	ANGLE	\$ 4000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	N	Veh Mnvr/Ped Actn:		4	Obj Strk:					
93	105969628	3.665	07/24/2019 16:01	ANGLE	\$ 1300	0	0	0	0	1	1	1		0	3	1
Unit	1 : 2	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 2	Alchl/Drugs:	0	Speed:	5 MPH	Dir:	S	Veh Mnvr/Ped Actn:		8	Obj Strk:					
94	106066861	3.665	10/26/2019 21:50	SIDESWIPE, SAME DIRECTION	\$ 100	0	0	0	0	2	4	3	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	7	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:		16	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	S	Veh Mnvr/Ped Actn:		1	Obj Strk:					
95	106191807	3.665	03/24/2020 14:44	LEFT TURN, SAME ROADWAY	\$ 5500	0	0	0	0	2	1	3	1	0	3	1
Unit	1 : 10	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	N	Veh Mnvr/Ped Actn:		8	Obj Strk:					
96	106192957	3.665	03/27/2020 16:10	ANGLE	\$ 8000	0	0	0	2	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	S	Veh Mnvr/Ped Actn:		4	Obj Strk:					
97	106247304	3.665	06/10/2020 07:49	ANGLE	\$ 4500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	S	Veh Mnvr/Ped Actn:		4	Obj Strk:					
98	106629009	3.665	07/14/2021 10:45	ANGLE	\$ 12000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	25 MPH	Dir:	S	Veh Mnvr/Ped Actn:		4	Obj Strk:					
99	106694344	3.665	09/04/2021 12:20	LEFT TURN, SAME ROADWAY	\$ 6000	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	NE	Veh Mnvr/Ped Actn:		8	Obj Strk:					
100	106899568	3.665	03/24/2022 18:02	RIGHT TURN, DIFFERENT ROADWAYS	\$ 2000	0	0	0	0	1	1	1	1	0	5	1
Unit	1 : 5	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	S	Veh Mnvr/Ped Actn:		7	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
101	106977276	3.665	06/03/2022 18:02	ANGLE	\$ 2000	0	0	0	0	2	1	3	1	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	25 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed:	30 MPH Dir: N	Veh Mnvr/Ped Actn:				4	Obj Strk:					
102	107072456	3.665	09/03/2022 18:00	LEFT TURN, SAME ROADWAY	\$ 7000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	20 MPH Dir: E	Veh Mnvr/Ped Actn:				8	Obj Strk:					
103	106356906	3.680	10/05/2020 12:43	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	25 MPH Dir: W	Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
104	106154706	3.684	02/12/2020 15:30	REAR END, SLOW OR STOP	\$ 1300	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	25 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	5 MPH Dir: W	Veh Mnvr/Ped Actn:				11	Obj Strk:					
105	107095738	3.684	09/30/2022 17:22	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	3	1	3	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
106	107147303	3.684	11/10/2022 15:09	REAR END, SLOW OR STOP	\$ 3500	0	0	0	0	2	1	3	1	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed:	45 MPH Dir: W	Veh Mnvr/Ped Actn:				1	Obj Strk:					
107	105483846	3.755	05/19/2018 20:20	LEFT TURN, SAME ROADWAY	\$ 3000	0	0	0	0	1	4	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH Dir: W	Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
108	105724651	3.755	12/30/2018 14:14	ANGLE	\$ 3600	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH Dir: N	Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
109	106102524	3.755	12/20/2019 12:26	SIDESWIPE, SAME DIRECTION	\$ 2000	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	30 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
110	105503794	3.774	06/08/2018 14:52	REAR END, SLOW OR STOP	\$ 700	0	0	0	0	1	1	1	1	0	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 15 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 10 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
111	107306975	3.820	04/16/2023 15:01	LEFT TURN, DIFFERENT ROADWAYS	\$ 14500	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 4 MPH Dir: N		Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	3 : 4	Alchl/Drgs:	0	Speed: 30 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
112	105792767	3.827	03/04/2019 15:44	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 4	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 40 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
113	106734455	3.830	10/20/2021 10:33	REAR END, TURN	\$ 3000	0	0	0	1	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: E		Veh Mnvr/Ped Actn:				7	Obj Strk:					
114	105738651	3.836	01/10/2019 08:46	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
115	106105872	3.836	12/23/2019 04:27	REAR END, SLOW OR STOP	\$ 12800	0	0	0	4	2	1	3	1	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	3 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	4 : 4	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
116	105518826	3.876	06/22/2018 10:39	SIDESWIPE, SAME DIRECTION	\$ 2000	0	0	0	0	1	1	1	3	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: W		Veh Mnvr/Ped Actn:				5	Obj Strk:					
117	106138170	3.876	01/27/2020 15:51	REAR END, SLOW OR STOP	\$ 10000	0	0	0	1	2	1	2	3	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
118	106723309	3.885	09/22/2021 15:10	REAR END, SLOW OR STOP	\$ 1000	0	0	0	0	2	1	2	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl		
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op	
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
Unit	3 : 1	Alchl/Drugs:	7	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
119	107101587	3.891	10/06/2022 12:16	REAR END, SLOW OR STOP	\$ 1500			0	0	0	0	1	1	1	1	0	0
Unit	1 : 2	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:				
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
120	105782040	3.895	02/19/2019 16:24	REAR END, SLOW OR STOP	\$ 4500			0	0	0	0	2	1	3	3	0	0
Unit	1 : 4	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
Unit	2 : 3	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
121	105778379	3.895	02/20/2019 07:17	REAR END, SLOW OR STOP	\$ 13500			0	0	0	3	2	1	3	1	0	0
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
Unit	2 : 4	Alchl/Drugs:	0	Speed:	40 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
Unit	3 : 1	Alchl/Drugs:	0	Speed:	40 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
122	106242973	3.895	06/05/2020 13:32	REAR END, SLOW OR STOP	\$ 200			0	0	0	0	1	1	1	3	0	0
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
Unit	2 : 4	Alchl/Drugs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
123	106532022	3.906	04/01/2021 11:42	REAR END, SLOW OR STOP	\$ 0			0	0	0	0	1	1	1	1	0	3 1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:				
124	105827864	3.923	04/09/2019 15:50	REAR END, SLOW OR STOP	\$ 1300			0	0	0	0	1	1	2	3	0	0
Unit	1 : 2	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				12	Obj Strk:				
Unit	2 : 5	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
Unit	3 : 4	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:				
125	106912469	3.923	04/01/2022 16:34	LEFT TURN, DIFFERENT ROADWAYS	\$ 1800			0	0	0	0	1	1	1	1	0	0
Unit	1 : 1	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	N	Veh Mnvr/Ped Actn:				8	Obj Strk:				
Unit	2 : 1	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:				
126	105962699	3.933	08/19/2019 22:41	PARKED MOTOR VEHICLE	\$ 15000			0	0	0	1	1	4	1	3	0	0
Unit	1 : 1	Alchl/Drugs:	1	Speed:	65 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk: 20				
Unit	2 : 31	Alchl/Drugs:	7	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				3	Obj Strk: 20				

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
127	107085898	3.933	09/21/2022 16:51	REAR END, SLOW OR STOP	\$ 800	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	5 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
128	107200631	3.933	01/03/2023 15:53	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	2	1	0	13	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	30 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
129	107249665	3.933	02/21/2023 09:10	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	2	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
130	106114051	3.941	01/04/2020 13:03	REAR END, SLOW OR STOP	\$ 6000	0	0	0	2	1	1	2	2	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	25 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
131	105592778	3.945	09/03/2018 07:56	SIDESWIPE, SAME DIRECTION	\$ 2500	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	40 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
132	106983584	3.945	06/07/2022 09:54	REAR END, SLOW OR STOP	\$ 50	0	0	0	1	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
133	107028086	3.945	07/26/2022 14:20	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	45 MPH Dir: E	Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
134	107106142	3.949	10/06/2022 22:16	RIGHT TURN, SAME ROADWAY	\$ 6000	0	0	0	0	1	4	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH Dir: E	Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	30 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
135	106568912	3.955	05/09/2021 16:49	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	10 MPH Dir: W	Veh Mnvr/Ped Actn:				7	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
136	106044053	3.959	10/31/2019 19:27	REAR END, SLOW OR STOP	\$ 750	0	0	0	0	2	1	3	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:		10	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
137	106942033	3.959	05/02/2022 18:00	ANGLE	\$ 1500	0	0	0	0	1	1	1	2	0	1	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	10 MPH	Dir:	NW	Veh Mnvr/Ped Actn:		8	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
138	107010029	3.959	07/08/2022 14:38	LEFT TURN, SAME ROADWAY	\$ 3500	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 2	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	SW	Veh Mnvr/Ped Actn:		8	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
139	107292012	3.959	04/03/2023 20:27	REAR END, TURN	\$ 3000	0	0	0	0	1	2	1	1	0	0	
Unit	1 : 5	Alchl/Drugs:	0	Speed:	30 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 4	Alchl/Drugs:	0	Speed:	30 MPH	Dir:	W	Veh Mnvr/Ped Actn:		5	Obj Strk:					
140	107041725	3.966	08/06/2022 20:38	REAR END, SLOW OR STOP	\$ 9000	0	0	0	2	2	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs:	1	Speed:	50 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:		34			
Unit	2 : 4	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:		1	Obj Strk:					
141	105862639	3.968	04/21/2019 21:05	REAR END, SLOW OR STOP	\$ 2000	0	0	0	0	1	4	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:		1	Obj Strk:					
142	106645447	3.968	07/27/2021 11:45	SIDESWIPE, SAME DIRECTION	\$ 1100	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:		11	Obj Strk:					
143	106480262	3.970	02/04/2021 16:19	ANGLE	\$ 400	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	7	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:		4	Obj Strk:					
144	105850998	3.971	04/29/2019 12:57	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	E	Veh Mnvr/Ped Actn:		11	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:		1	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
145	105857582	3.976	05/09/2019 20:21	REAR END, SLOW OR STOP	\$ 900	0	0	0	0	1	4	1	2	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
146	106026913	3.976	10/11/2019 17:24	REAR END, SLOW OR STOP	\$ 800	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
147	106300257	3.976	08/07/2020 11:52	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
148	105847456	3.983	04/30/2019 07:14	REAR END, SLOW OR STOP	\$ 6000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 5	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
149	105851844	3.983	04/30/2019 18:59	LEFT TURN, SAME ROADWAY	\$ 3000	0	0	1	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				9	Obj Strk:			
Unit	2 : 20	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
150	106026481	3.983	10/07/2019 15:45	REAR END, SLOW OR STOP	\$ 8000	0	0	0	1	1	1	1	3	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				1	Obj Strk:			
Unit	3 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	NW	Veh Mnvr/Ped Actn:				1	Obj Strk:			
151	106795657	3.983	12/08/2021 17:48	SIDESWIPE, SAME DIRECTION	\$ 2500	0	0	0	0	1	2	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 2	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
152	105482446	3.987	05/18/2018 08:39	REAR END, SLOW OR STOP	\$ 1250	0	0	0	1	1	1	2	3	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
153	105525069	3.987	06/27/2018 19:44	RAN OFF ROAD - RIGHT	\$ 2750	0	0	0	0	2	1	2	3	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk: 37			
Unit	2 : 4	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				2	Obj Strk: 20			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
154	105684230	3.987	11/23/2018 17:27	REAR END, SLOW OR STOP	\$ 7000	0	0	0	0	1	4	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
155	106274412	3.987	07/13/2020 13:43	REAR END, SLOW OR STOP	\$ 3000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					
156	106395567	3.987	11/06/2020 18:04	REAR END, SLOW OR STOP	\$ 3700	0	0	0	0	1	4	1	1	0	3	1
Unit	1 : 5	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					
157	105579234	3.991	08/22/2018 12:38	REAR END, SLOW OR STOP	\$ 500	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: E		Veh Mnvr/Ped Actn:				5	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					
158	105716360	3.991	12/20/2018 06:48	REAR END, SLOW OR STOP	\$ 400	0	0	0	0	1	2	2	2	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
159	105914621	3.991	07/03/2019 11:20	REAR END, SLOW OR STOP	\$ 0	0	0	0	2	1	1	1	2	0	3	1
Unit	1 : 2	Alchl/Drgs:	7	Speed: 5 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
160	106140530	3.991	01/30/2020 15:10	REAR END, SLOW OR STOP	\$ 100	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 5 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 5 MPH Dir: E		Veh Mnvr/Ped Actn:				11	Obj Strk:					
161	106164341	3.991	02/05/2020 12:25	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	2	1	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					
162	106349868	3.991	09/23/2020 12:38	REAR END, SLOW OR STOP	\$ 300	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				1	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
163	106494719	3.991	02/15/2021 19:09	REAR END, SLOW OR STOP	\$ 200	0	0	0	0	2	4	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
164	106762785	3.991	11/10/2021 07:29	REAR END, SLOW OR STOP	\$ 250	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				11	Obj Strk:			
Unit	2 : 5	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
165	107040832	3.991	07/25/2022 20:40	REAR END, SLOW OR STOP	\$ 1000	0	0	0	0	2	4	2	3	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 2	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
166	107081470	3.991	09/13/2022 07:38	REAR END, SLOW OR STOP	\$ 1000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
167	107084770	3.991	09/20/2022 17:10	REAR END, SLOW OR STOP	\$ 2200	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
168	107137035	3.991	11/07/2022 12:36	REAR END, SLOW OR STOP	\$ 5000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
169	105597885	3.993	09/11/2018 00:08	REAR END, SLOW OR STOP	\$ 5600	0	0	0	1	2	4	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	40 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:			
170	107173610	3.995	12/08/2022 21:04	SIDESWIPE, SAME DIRECTION	\$ 1200	0	0	0	0	2	2	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
171	105481955	4.006	05/16/2018 20:48	ANGLE	\$ 22000	0	0	0	1	1	4	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	S	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 31	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
172	105713998	4.006	12/18/2018 22:30	ANGLE	\$ 1350	0	0	0	0	1	4	1	3	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH Dir: S	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
173	105791899	4.006	03/04/2019 11:20	RIGHT TURN, DIFFERENT ROADWAYS	\$ 5500	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	0 MPH Dir: NW	Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH Dir: N	Veh Mnvr/Ped Actn:				4	Obj Strk:					
174	106051645	4.006	11/01/2019 14:02	ANGLE	\$ 9000	0	0	0	3	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH Dir: S	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	15 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
175	106069538	4.006	11/21/2019 20:36	ANGLE	\$ 4000	0	0	0	0	1	4	1	3	0	3	1
Unit	1 : 5	Alchl/Drgs:	0	Speed:	15 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 2	Alchl/Drgs:	0	Speed:	35 MPH Dir: S	Veh Mnvr/Ped Actn:				4	Obj Strk:					
176	106135554	4.006	01/24/2020 15:39	ANGLE	\$ 5000	0	0	0	0	2	1	3	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	10 MPH Dir: N	Veh Mnvr/Ped Actn:				12	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	15 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
177	106266258	4.006	07/01/2020 13:30	ANGLE	\$ 15000	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: N	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	20 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
178	106475732	4.006	01/31/2021 12:39	ANGLE	\$ 22400	0	0	0	2	2	1	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	40 MPH Dir: N	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	3 : 2	Alchl/Drgs:	0	Speed:	0 MPH Dir: S	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	4 : 2	Alchl/Drgs:	0	Speed:	0 MPH Dir: S	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	5 : 1	Alchl/Drgs:	0	Speed:	0 MPH Dir: S	Veh Mnvr/Ped Actn:				1	Obj Strk:					
179	106527338	4.006	03/28/2021 00:45	ANGLE	\$ 14000	0	0	0	0	1	4	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	7	Speed:	35 MPH Dir: S	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	45 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					
180	106590400	4.006	05/27/2021 19:04	ANGLE	\$ 10000	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 2	Alchl/Drgs:	0	Speed:	30 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	S	Veh Mnvr/Ped Actn:				4	Obj Strk:			
181	106751843	4.006	10/17/2021 19:50	LEFT TURN, SAME ROADWAY	\$ 500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				5	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	S	Veh Mnvr/Ped Actn:				8	Obj Strk:			
182	106842085	4.006	01/24/2022 20:14	LEFT TURN, DIFFERENT ROADWAYS	\$ 1400	0	0	0	0	1	2	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	S	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:			
183	106918844	4.006	04/02/2022 00:56	ANGLE	\$ 8000	0	0	1	0	1	4	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	S	Veh Mnvr/Ped Actn:				4	Obj Strk:			
184	106983106	4.006	06/10/2022 14:37	ANGLE	\$ 13000	0	0	0	3	1	1	1	3	0	3	1
Unit	1 : 31	Alchl/Drgs:	0	Speed:	55 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	S	Veh Mnvr/Ped Actn:				4	Obj Strk:			
185	107000868	4.006	06/28/2022 15:11	ANGLE	\$ 4000	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:			
186	107108401	4.006	10/12/2022 14:35	ANGLE	\$ 3800	0	0	0	2	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	40 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	S	Veh Mnvr/Ped Actn:				1	Obj Strk:			
187	107166631	4.006	12/02/2022 12:49	ANGLE	\$ 1200	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	40 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk: 33			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk:			
188	107183848	4.006	12/17/2022 23:05	LEFT TURN, DIFFERENT ROADWAYS	\$ 6000	0	0	0	0	1	4	1	1	0	3	1
Unit	1 : 4	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				1	Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	S	Veh Mnvr/Ped Actn:				8	Obj Strk:			
189	107285570	4.006	03/29/2023 14:48	ANGLE	\$ 2500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:			

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op

Unit 2 : 4      Alchl/Drgs: 0      Speed: 15 MPH Dir: W      Veh Mnvr/Ped Actn: 4      Obj Strk:

**Legend for Report Details:**

- Acc No - Accident Number
- Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
- Condition: R - Road Surface, L - Ambient Light, W - Weather
- Rd Ch - Road Character
- Rd Ci - Roadway Contributing Circumstances
- Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
- Alchl/Drgs - Alcohol Drugs Suspected
- Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
- Obj Strk - Object Struck

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Summary Statistics**

**High Level Crash Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	189	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	54	28.57
Total Injury Crashes	54	28.57
Property Damage Only Crashes	135	71.43
Night Crashes	31	16.40
Wet Crashes	33	17.46
Alcohol/Drugs Involvement Crashes	7	3.70

**Crash Severity Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	189	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	8	4.23
Class C Crashes	46	24.34
Property Damage Only Crashes	135	71.43

**Vehicle Exposure Statistics**

**Annual ADT = 14300**

**Total Length = 1.365 (Miles)**

**2.197 (Kilometers)**

**Total Vehicle Exposure = 35.64 (MVMT)**

**57.36 (MVKMT)**

<b>Crash Rate</b>	<b>Crashes Per 100 Million Vehicle Miles</b>	<b>Crashes Per 100 Million Vehicle Kilometers</b>
Total Crash Rate	530.26	329.49
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	151.50	94.14
Night Crash Rate	86.97	54.04
Wet Crash Rate	92.59	57.53
EPDO Rate	1651.39	1026.13

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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**Miscellaneous Statistics**

Severity Index =	3.11
EPDO Crash Index =	588.60
Estimated Property Damage Total = \$	974000.00

**Accident Type Summary**

Accident Type	Number of Crashes	Percent of Total
ANGLE	35	18.52
ANIMAL	2	1.06
BACKING UP	2	1.06
FIXED OBJECT	2	1.06
LEFT TURN, DIFFERENT ROADWAYS	15	7.94
LEFT TURN, SAME ROADWAY	10	5.29
OTHER COLLISION WITH VEHICLE	1	0.53
PARKED MOTOR VEHICLE	1	0.53
PEDESTRIAN	1	0.53
RAN OFF ROAD - LEFT	2	1.06
RAN OFF ROAD - RIGHT	6	3.17
REAR END, SLOW OR STOP	81	42.86
REAR END, TURN	2	1.06
RIGHT TURN, DIFFERENT ROADWAYS	3	1.59
RIGHT TURN, SAME ROADWAY	3	1.59
SIDESWIPE, OPPOSITE DIRECTION	2	1.06
SIDESWIPE, SAME DIRECTION	20	10.58
UNKNOWN	1	0.53

**Injury Summary**

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	14	15.22
Class C Injuries	78	84.78
Total Non-Fatal Injuries	92	100.00
Total Injuries	92	100.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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**Monthly Summary**

<b>Month</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Jan	16	8.47
Feb	16	8.47
Mar	17	8.99
Apr	18	9.52
May	14	7.41
Jun	17	8.99
Jul	12	6.35
Aug	9	4.76
Sep	17	8.99
Oct	17	8.99
Nov	14	7.41
Dec	22	11.64

**Daily Summary**

<b>Day</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Mon	35	18.52
Tue	23	12.17
Wed	33	17.46
Thu	35	18.52
Fri	28	14.81
Sat	20	10.58
Sun	15	7.94

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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**Hourly Summary**

<b>Hour</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
0000-0059	5	2.65
0100-0159	0	0.00
0200-0259	1	0.53
0300-0359	0	0.00
0400-0459	1	0.53
0500-0559	1	0.53
0600-0659	4	2.12
0700-0759	11	5.82
0800-0859	9	4.76
0900-0959	7	3.70
1000-1059	6	3.17
1100-1159	9	4.76
1200-1259	16	8.47
1300-1359	15	7.94
1400-1459	15	7.94
1500-1559	25	13.23
1600-1659	13	6.88
1700-1759	13	6.88
1800-1859	10	5.29
1900-1959	8	4.23
2000-2059	10	5.29
2100-2159	5	2.65
2200-2259	4	2.12
2300-2359	1	0.53

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Light and Road Conditions Summary**

<b>Condition</b>	<b>Dry</b>	<b>Wet</b>	<b>Other</b>	<b>Total</b>
Day	123	26	0	149
Dark	25	6	0	31
Other	8	1	0	9
<b>Total</b>	<b>156</b>	<b>33</b>	<b>0</b>	<b>189</b>

**Object Struck Summary**

<b>Object Type</b>	<b>Times Struck</b>	<b>Percent of Total</b>
ANIMAL	2	9.09
LUMINAIRE POLE NON-BREAKAWAY	1	4.55
OFFICIAL HIGHWAY SIGN BREAKAWAY	1	4.55
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	2	9.09
OTHER FIXED OBJECT	2	9.09
PARKED MOTOR VEHICLE	5	22.73
PEDESTRIAN	2	9.09
TREE	2	9.09
UTILITY POLE	5	22.73

**Vehicle Type Summary**

<b>Vehicle Type</b>	<b>Number Involved</b>	<b>Percent of Total</b>
LIGHT TRUCK (MINI-VAN, PANEL)	6	1.55
MOTORCYCLE	3	0.78
PASSENGER CAR	217	56.07
PEDESTRIAN	1	0.26
PICKUP	42	10.85
POLICE	3	0.78
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	0.26
SPORT UTILITY	105	27.13
VAN	9	2.33



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Yearly Totals Summary**

**Accident Totals**

<b>Year</b>	<b>Total Accidents</b>	<b>Fatal Accidents</b>	<b>Injury Accidents</b>	<b>Property Damage Only Accidents</b>
2018	26	0	9	17
2019	49	0	20	29
2020	28	0	8	20
2021	34	0	8	26
2022	43	0	8	35
2023	9	0	1	8
<b>Total</b>	<b>189</b>	<b>0</b>	<b>54</b>	<b>135</b>

**Injury Totals**

<b>Year</b>	<b>Fatal Injuries</b>	<b>Class A, B, or C Injuries</b>
2018	0	18
2019	0	35
2020	0	10
2021	0	12
2022	0	15
2023	0	2
<b>Total</b>	<b>0</b>	<b>92</b>

**Miscellaneous Totals**

<b>Year</b>	<b>Property Damage</b>	<b>EPDO Index</b>
2018	\$ 132350	92.60
2019	\$ 256200	197.00
2020	\$ 137000	87.20
2021	\$ 186850	93.20
2022	\$ 197100	102.20
2023	\$ 64500	16.40
<b>Total</b>	<b>\$ 974000</b>	<b>588.60</b>

**Type of Accident Totals**

<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp;</b>			
				<b>Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>	<b>Other</b>
2018	4	0	11	2	5	4	0
2019	4	2	21	2	9	5	6

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp; Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>	<b>Other</b>
2020	1	1	14	1	6	4	1
2021	4	1	14	4	5	6	0
2022	8	2	20	1	8	3	1
2023	4	0	3	0	2	0	0
<b>Total</b>	<b>25</b>	<b>6</b>	<b>83</b>	<b>10</b>	<b>35</b>	<b>22</b>	<b>8</b>

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**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Strip Diagram**

Features	Milepost	Crash IDs
FERN FOREST	2.64	105479131   105728827   106054165
	2.65	106852686
	2.66	105801647
	2.67	
	2.68	106480318   106061639
CHESTNUT	2.69	105817042   105851492   106391566   107167205
		107191918   107252221   107279309
	2.70	105697767   106312278
	2.71	105546570   107193883   105789444
	2.72	
	2.73	106716641
	2.74	
	2.75	
	2.76	
CHURCH	2.77	106879410   106889851   105729205
	2.78	
	2.79	
	2.80	
	2.81	106104818
	2.82	106084648   106159737   106223758
	2.83	
	2.84	
	2.85	106584360
	2.86	
REED	2.87	105487966
	2.88	
	2.89	
	2.90	
	2.91	
	2.92	
	2.93	106853032
DOGWOOD	2.94	
	2.95	
	2.96	106112058   106977243
	2.97	
	2.98	
LAUREL	2.99	
	3.00	106801531
	3.01	106784366
LAUREL	3.02	105606382   107004662   107087054   107254226
JANE	3.03	

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Features	Milepost	Crash IDs
	3.04	105791766   106080745
	3.05	
	3.06	106242573   106721393
	3.07	106552691
	3.08	
PEACHTREE	3.09	
	3.10	
	3.11	106637876
	3.12	
	3.13	
	3.14	106715280
	3.15	105836467
	3.16	
	3.17	
CARLETON	3.18	105773531   106221818   106450367   106597081
	3.19	
	3.20	105680120
	3.21	
	3.22	
	3.23	105834169
	3.24	105597853
	3.25	106609353
	3.26	105823467
	3.27	
	3.28	
	3.29	106118728
	3.30	106094133   107133870
	3.31	105963774
CHURCH HILL	3.32	105608792   107081472
	3.33	105724154   105573903
	3.34	105963778
	3.35	
	3.36	105616467
	3.37	
	3.38	
	3.39	
	3.40	107044905
	3.41	106941693
	3.42	106608293
	3.43	106259707   107134473
	3.44	
	3.45	105812086
	3.46	

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Features	Milepost	Crash IDs
	3.47	
	3.48	
MAJESTIC (CORRECTED)	3.49	106689503   107304788   106104664
	3.50	
	3.51	
	3.52	
	3.53	
	3.54	
	3.55	106036258
	3.56	
	3.57	
	3.58	
	3.59	105628380
	3.60	106556049   106126027
	3.61	
	3.62	105801643
	3.63	
	3.64	106474500
MAJESTIC	3.65	106124226   106466977   106845398   106172090   106477746   106499626   106976726
BURTONWOOD	3.66	106820755   105626118   105847906   105894793   105917342   105969628   106066861   106191807   106192957   106247304   106629009   106694344   106899568   106977276   107072456
	3.67	
	3.68	106356906   106154706   107095738   107147303
	3.69	
	3.70	
	3.71	
	3.72	
	3.73	
	3.74	
	3.75	
TORRENCE	3.76	105483846   105724651   106102524
	3.77	105503794
	3.78	
	3.79	
	3.80	
	3.81	
	3.82	107306975
	3.83	105792767   106734455
	3.84	105738651   106105872
	3.85	
	3.86	

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

Features	Milepost	Crash IDs
	3.87	
OWEN	3.88	105518826   106138170   106723309
	3.89	107101587   105782040   105778379   106242973
	3.90	
	3.91	106532022
	3.92	105827864   106912469
	3.93	105962699   107085898   107200631   107249665
	3.94	106114051   105592778   106983584   107028086
	3.95	107106142   106568912
	3.96	106044053   106942033   107010029   107292012
	3.97	107041725   105862639   106645447   106480262   105850998
	3.98	105857582   106026913   106300257   105847456   105851844   106026481   106795657
	3.99	105482446   105525069   105684230   106274412   106395567   105579234   105716360   105914621   106140530   106164341   106349868   106494719   106762785   107040832   107081470   107084770   107137035   105597885   107173610
	4.00	
NC 279   SR 2302   NEW HOPE	4.01	105481955   105713998   105791899   106051645   106069538   106135554   106266258   106475732   106527338   106590400   106751843   106842085   106918844   106983106   107000868   107108401   107166631   107183848   107285570

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Study Criteria**

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
GARRISONBLVDCORRIDORSTUDY				76.8	8.4	14300	

Request Date	Courier Service	Phone No.	Ext.	Fax No.

County			Municipality			Y-Line Ft.	Begin Date	End Date	Years
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years	
GASTON	36	12	All and Rural		0	05/01/2018	04/30/2023	5.00	

Location Text	Requestor
SR 2466 (E Garrison Blvd) from Fern Forest Dr to NC 279 (S New Hope Rd)	

Included Accidents	Old MP	New MP	Type
105479131		2.641	I
105482446		3.987	I
105525069		3.987	I
105546570		2.708	I
105573903		3.334	I
105579234		3.991	I
105592778		3.945	I
105597853		3.236	I
105597885		3.993	I
105606382		3.022	I
105616467		3.355	I
105628380		3.586	I
105713998		4.006	I
105716360		3.991	I
105724651		3.755	I
105738651		3.836	I
105778379		3.895	I
105782040		3.895	I
105791766		3.035	I
105792767		3.827	I
105801643		3.623	I
105801647		2.664	I
105812086		3.446	I
105823467		3.262	I
105834169		3.23	I
105847456		3.983	I

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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105851844	3.983	I
105857582	3.976	I
105914621	3.991	I
105963774	3.31	I
106026481	3.983	I
106026913	3.976	I
106036258	3.551	I
106044053	3.959	I
106080745	3.041	I
106084648	2.817	I
106094133	3.295	I
106104664	3.494	I
106104818	2.812	I
106105872	3.836	I
106112058	2.962	I
106114051	3.941	I
106118728	3.289	I
106124226	3.646	I
106126027	3.599	I
106140530	3.991	I
106154706	3.684	I
106159737	2.817	I
106164341	3.991	I
106172090	3.65	I
106223758	2.817	I
106242573	3.057	I
106242973	3.895	I
106259707	3.431	I
106274412	3.987	I
106300257	3.976	I
106312278	2.702	I
106349868	3.991	I
106356906	3.68	I
106395567	3.987	I
106466977	3.646	I
106474500	3.642	I
106477746	3.65	I
106480262	3.97	I
106480318	2.679	I
106494719	3.991	I



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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106499626	3.65	I
106532022	3.906	I
106556049	3.597	I
106568912	3.955	I
106590400	4.006	I
106597081	3.183	I
106609353	3.253	I
106637876	3.105	I
106645447	3.968	I
106689503	3.486	I
106715280	3.138	I
106721393	3.057	I
106723309	3.885	I
106734455	3.83	I
106751843	4.006	I
106762785	3.991	I
106784366	3.013	I
106795657	3.983	I
106801531	3.002	I
106820755	3.656	I
106845398	3.646	I
106942033	3.959	I
106976726	3.65	I
106977243	2.963	I
106983584	3.945	I
107010029	3.959	I
107028086	3.945	I
107040832	3.991	I
107041725	3.966	I
107081470	3.991	I
107084770	3.991	I
107095738	3.684	I
107101587	3.891	I
107106142	3.949	I
107133870	3.295	I
107134473	3.431	I
107137035	3.991	I
107147303	3.684	I
107173610	3.995	I
107183848	4.006	I

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

107193883	2.71	I
107254226	3.022	I
107285570	4.006	I
107292012	3.959	I
107304788	3.486	I
107306975	3.82	I

**Excluded Accidents**

105709991  
105836729  
105857584  
105530043  
106643731  
105837625  
106793043  
105697282  
105764274  
105787449  
106286647  
106425924  
106956539  
105842912  
106121491  
106607846  
106721395  
106869745  
106932505  
106936074  
106965698  
107215215  
107240173

**Fiche Roads**

<b>Name</b>	<b>Code</b>
SR 2466	40002466
GARRISON	50011518
ARMSTRONG PARK	50000997
ARMSTRONG	50000994
PARK	50023409
GARDNER PARK	50011475

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report**

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

**Fiche Roads**

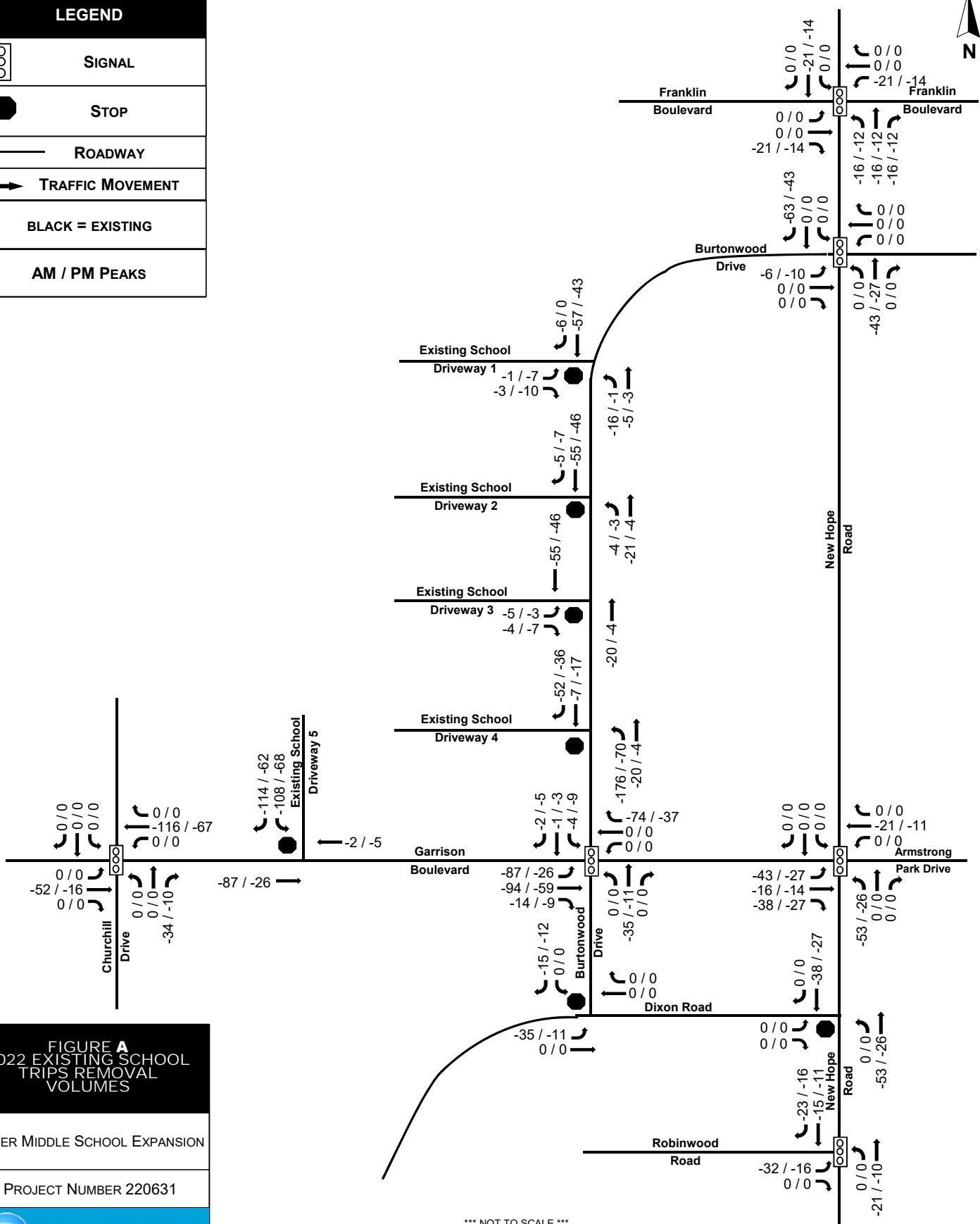
<b>Name</b>	<b>Code</b>
GARDNER	50011473
NC 274	30000274
BESSEMER CITY	50002480
BESSEMER	50002479
CITY	50006135

**Strip Road**

<b>Name</b>	<b>Code</b>	<b>Begin MP</b>	<b>End MP</b>	<b>Miles</b>	<b>Kilometers</b>
SR 2466	40002466	2.641	4.006	1.365	2.197

## **APPENDIX E – EXISTING GRIER MIDDLE SCHOOL TRIPS REMOVED FOR VOLUME FORECASTING**


LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
AM / PM PEAKS	



**FIGURE A**  
**2022 EXISTING SCHOOL TRIPS REMOVAL VOLUMES**

GRIER MIDDLE SCHOOL EXPANSION

PROJECT NUMBER 220631



\*\*\* NOT TO SCALE \*\*\*

\*\* A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management. This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of, or improper reliance on, this document by others without written authorization and adaptation by DAVENPORT, shall be without liability to DAVENPORT, and shall be a violation of the agreement between DAVENPORT and the client.

## **APPENDIX F – 2045 NO-BUILD INTERSECTION OPERATIONAL ANALYSIS RESULTS**

# Timings

## 1: Chestnut St & Garrison Boulevard

07/28/2023

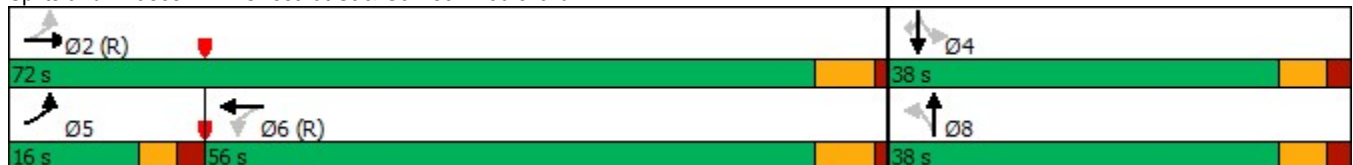


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	58	1022	4	505	4	4	50	4	112
Future Volume (vph)	58	1022	4	505	4	4	50	4	112
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	5	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	7.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	20.0	27.0	27.0	20.0	20.0	30.1	30.1	30.1
Total Split (s)	16.0	72.0	56.0	56.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	14.5%	65.5%	50.9%	50.9%	34.5%	34.5%	34.5%	34.5%	34.5%
Yellow Time (s)	3.0	4.8	4.8	4.8	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)	2.3	1.2	1.2	1.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	3.3	4.0	4.0	4.0		4.1		4.1	4.1
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	87.5	86.8	77.0	77.0		15.1		15.1	15.1
Actuated g/C Ratio	0.80	0.79	0.70	0.70		0.14		0.14	0.14
v/c Ratio	0.10	0.40	0.01	0.28		0.05		0.32	0.57
Control Delay	3.3	4.4	5.8	5.2		39.0		45.9	54.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	3.3	4.4	5.8	5.2		39.0		45.9	54.2
LOS	A	A	A	A		D		D	D
Approach Delay		4.4		5.2		39.0		51.5	
Approach LOS		A		A		D		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 107 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.57  
 Intersection Signal Delay: 9.0  
 Intersection Capacity Utilization 55.5%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service B

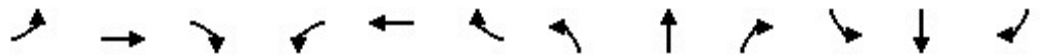
### Splits and Phases: 1: Chestnut St & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 1: Chestnut St & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	↖
Traffic Volume (veh/h)	58	1022	4	4	505	96	4	4	4	50	4	112
Future Volume (veh/h)	58	1022	4	4	505	96	4	4	4	50	4	112
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	1988	1988	1988	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	1136	4	4	561	107	4	4	4	56	4	124
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	727	3133	11	415	2112	401	85	81	61	224	14	182
Arrive On Green	0.07	0.81	0.81	0.71	0.71	0.71	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1893	3861	14	494	2979	566	359	703	531	1399	121	1585
Grp Volume(v), veh/h	64	556	584	4	334	334	12	0	0	60	0	124
Grp Sat Flow(s),veh/h/ln	1893	1889	1986	494	1777	1768	1593	0	0	1520	0	1585
Q Serve(g_s), s	0.8	8.6	8.6	0.3	7.4	7.5	0.0	0.0	0.0	0.3	0.0	8.3
Cycle Q Clear(g_c), s	0.8	8.6	8.6	0.3	7.4	7.5	3.8	0.0	0.0	3.4	0.0	8.3
Prop In Lane	1.00		0.01	1.00		0.32	0.33		0.33	0.93		1.00
Lane Grp Cap(c), veh/h	727	1533	1612	415	1260	1254	226	0	0	238	0	182
V/C Ratio(X)	0.09	0.36	0.36	0.01	0.27	0.27	0.05	0.00	0.00	0.25	0.00	0.68
Avail Cap(c_a), veh/h	808	1533	1612	415	1260	1254	523	0	0	514	0	488
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(l)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.7	2.8	2.8	4.7	5.7	5.7	43.4	0.0	0.0	44.6	0.0	46.8
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.5	0.5	0.0	0.0	0.0	0.2	0.0	1.7
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	2.0	2.1	0.0	2.4	2.4	0.3	0.0	0.0	1.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.7	3.4	3.4	4.7	6.2	6.3	43.4	0.0	0.0	44.8	0.0	48.5
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		1204			672			12				184
Approach Delay, s/veh		3.4			6.2			43.4				47.3
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		93.3		16.7	11.3	82.0		16.7				
Change Period (Y+Rc), s		* 6		* 6.1	* 5.3	* 6		* 6.1				
Max Green Setting (Gmax), s		* 66		* 32	* 11	* 50		* 32				
Max Q Clear Time (g_c+I1), s		10.6		10.3	2.8	9.5		5.8				
Green Ext Time (p_c), s		4.7		0.4	0.0	11.7		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

### Notes

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



# Timings

## 2: Churchill Drive & Garrison Boulevard

07/28/2023



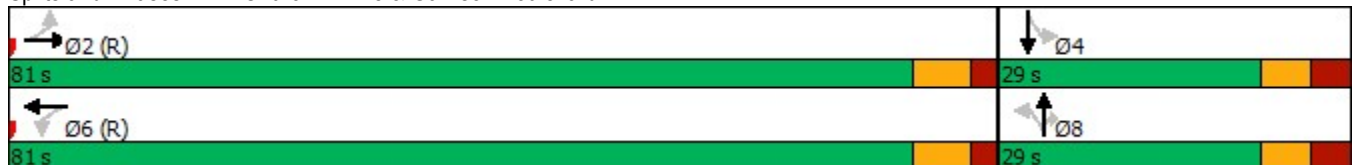
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	8	894	53	571	77	4	61	4	4
Future Volume (vph)	8	894	53	571	77	4	61	4	4
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	12.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0	21.0	14.5	14.5
Total Split (s)	81.0	81.0	81.0	81.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	73.6%	73.6%	73.6%	73.6%	26.4%	26.4%	26.4%	26.4%	26.4%
Yellow Time (s)	4.7	4.7	4.7	4.7	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.3	2.3	2.3	2.3	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	84.8	84.8	84.8	84.8		14.7	14.7		14.7
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.13	0.13		0.13
v/c Ratio	0.02	0.45	0.24	0.28		0.50	0.38		0.06
Control Delay	3.1	3.9	4.7	3.4		52.7	47.5		39.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.1	3.9	4.7	3.4		52.7	47.5		39.5
LOS	A	A	A	A		D	D		D
Approach Delay		3.9		3.5		50.2			39.5
Approach LOS		A		A		D			D

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 16 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 7.4  
 Intersection Capacity Utilization 59.7%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service B

### Splits and Phases: 2: Churchill Drive & Garrison Boulevard



HCM 6th Signalized Intersection Summary  
 2: Churchill Drive & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕			↕	↗		↕	↖
Traffic Volume (veh/h)	8	894	39	53	571	5	77	4	61	4	4	4
Future Volume (veh/h)	8	894	39	53	571	5	77	4	61	4	4	4
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	1988	1973	1898	1988	1988	1988	1909	1909	1909	1909	1909	1939
Adj Flow Rate, veh/h	9	1192	43	71	761	6	86	4	81	4	4	4
Peak Hour Factor	0.90	0.75	0.90	0.75	0.75	0.90	0.90	0.90	0.75	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	8	2	2	2	2	2	2	2	2	0
Cap, veh/h	645	2868	103	387	2985	24	201	7	206	65	62	42
Arrive On Green	0.78	0.78	0.78	1.00	1.00	1.00	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	745	3690	133	479	3841	30	1078	58	1618	167	490	329
Grp Volume(v), veh/h	9	605	630	71	374	393	90	0	81	12	0	0
Grp Sat Flow(s),veh/h/ln	745	1874	1949	479	1889	1983	1136	0	1618	986	0	0
Q Serve(g_s), s	0.3	11.7	11.7	2.8	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	11.7	11.7	14.5	0.0	0.0	9.6	0.0	5.1	9.6	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.02	0.96		1.00	0.33		0.33
Lane Grp Cap(c), veh/h	645	1457	1515	387	1468	1541	209	0	206	169	0	0
V/C Ratio(X)	0.01	0.42	0.42	0.18	0.25	0.25	0.43	0.00	0.39	0.07	0.00	0.00
Avail Cap(c_a), veh/h	645	1457	1515	387	1468	1541	334	0	346	306	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.8	4.0	4.0	1.0	0.0	0.0	46.0	0.0	44.1	42.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.8	0.3	0.3	1.4	0.0	1.2	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	3.4	0.1	0.1	0.1	2.5	0.0	2.1	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.8	4.8	4.8	1.8	0.3	0.3	47.5	0.0	45.3	42.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1244			838			171				12
Approach Delay, s/veh		4.8			0.4			46.4				42.5
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		90.5		19.5		90.5		19.5				
Change Period (Y+Rc), s		* 7		7.5		* 7		7.5				
Max Green Setting (Gmax), s		* 74		21.5		* 74		21.5				
Max Q Clear Time (g_c+I1), s		13.7		11.6		2.0		11.6				
Green Ext Time (p_c), s		34.0		0.0		15.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Notes

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

# Timings

## 3: Burtonwood Drive & Garrison Boulevard

07/28/2023

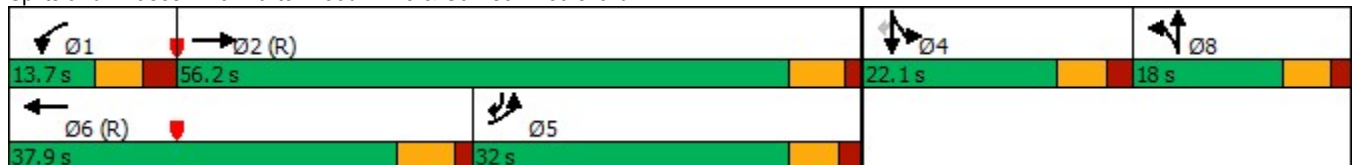


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	272	615	4	449	52	90	164	69	208
Future Volume (vph)	272	615	4	449	52	90	164	69	208
Turn Type	Prot	NA	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	5	2	1	6	8	8	4	4	5
Permitted Phases									4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.1	13.7	23.1	17.8	17.8	13.2	13.2	13.0
Total Split (s)	32.0	56.2	13.7	37.9	18.0	18.0	22.1	22.1	32.0
Total Split (%)	29.1%	51.1%	12.5%	34.5%	16.4%	16.4%	20.1%	20.1%	29.1%
Yellow Time (s)	4.0	4.7	4.0	4.7	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.4	2.7	1.4	1.8	1.8	2.2	2.2	2.0
Lost Time Adjust (s)	-1.0	-1.1	-1.7	-1.1	-0.8	-0.8	-2.0	-1.2	-1.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.2	5.0	4.8
Lead/Lag	Lag	Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	25.1	64.5	8.7	37.2	11.9	11.9	16.7	15.9	46.2
Actuated g/C Ratio	0.23	0.59	0.08	0.34	0.11	0.11	0.15	0.14	0.42
v/c Ratio	0.90	0.42	0.03	0.70	0.32	0.72	0.79	0.76	0.42
Control Delay	59.1	11.4	58.0	15.6	49.6	67.7	73.2	67.6	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	11.4	58.0	15.6	49.6	67.7	73.2	67.6	24.1
LOS	E	B	E	B	D	E	E	E	C
Approach Delay		25.6		15.8		62.4		48.6	
Approach LOS		C		B		E		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 106 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 30.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 59.8%  
 ICU Level of Service B  
 Analysis Period (min) 15

### Splits and Phases: 3: Burtonwood Drive & Garrison Boulevard



HCM 6th Signalized Intersection Summary  
 3: Burtonwood Drive & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	615	31	4	449	213	52	90	17	164	69	208
Future Volume (veh/h)	272	615	31	4	449	213	52	90	17	164	69	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1796	1870	1870	1841	1849	1894	1849	1387	1713	1847
Adj Flow Rate, veh/h	363	820	41	4	499	284	58	120	19	156	181	277
Peak Hour Factor	0.75	0.75	0.75	0.90	0.90	0.75	0.90	0.75	0.90	0.75	0.75	0.75
Percent Heavy Veh, %	2	3	7	2	2	4	6	3	6	33	11	2
Cap, veh/h	527	1884	94	41	606	344	175	158	25	201	248	693
Arrive On Green	0.30	0.55	0.54	0.02	0.28	0.27	0.10	0.10	0.09	0.15	0.14	0.14
Sat Flow, veh/h	1781	3417	171	1781	2185	1239	1761	1596	253	1321	1713	1565
Grp Volume(v), veh/h	363	423	438	4	405	378	58	0	139	156	181	277
Grp Sat Flow(s),veh/h/ln	1781	1763	1825	1781	1777	1647	1761	0	1849	1321	1713	1565
Q Serve(g_s), s	19.8	15.6	15.6	0.2	23.5	23.7	3.4	0.0	8.1	12.5	11.1	0.0
Cycle Q Clear(g_c), s	19.8	15.6	15.6	0.2	23.5	23.7	3.4	0.0	8.1	12.5	11.1	0.0
Prop In Lane	1.00		0.09	1.00		0.75	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	527	972	1006	41	493	457	175	0	183	201	248	693
V/C Ratio(X)	0.69	0.44	0.44	0.10	0.82	0.83	0.33	0.00	0.76	0.78	0.73	0.40
Avail Cap(c_a), veh/h	527	972	1006	141	531	493	208	0	218	215	266	709
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(l)	0.89	0.89	0.89	0.50	0.50	0.50	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	14.6	14.6	52.6	37.2	37.7	46.2	0.0	48.3	44.8	45.0	20.8
Incr Delay (d2), s/veh	2.8	1.3	1.2	0.2	7.7	8.5	0.4	0.0	9.4	13.5	7.5	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	8.6	6.0	6.2	0.1	10.8	10.2	1.5	0.0	4.1	4.8	5.2	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.1	15.8	15.8	52.8	45.0	46.1	46.6	0.0	57.7	58.3	52.5	20.9
LnGrp LOS	D	B	B	D	D	D	D	A	E	E	D	C
Approach Vol, veh/h		1224			787			197				614
Approach Delay, s/veh		22.1			45.6			54.4				39.7
Approach LOS		C			D			D				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	65.6		20.9	37.6	35.5		15.9				
Change Period (Y+Rc), s	* 6.7	* 6.1		* 6.2	* 6.1	* 6.1		5.8				
Max Green Setting (Gmax), s	* 7	* 50		* 16	* 26	* 32		12.2				
Max Q Clear Time (g_c+I1), s	2.2	17.6		14.5	21.8	25.7		10.1				
Green Ext Time (p_c), s	0.0	12.4		0.3	0.2	3.7		0.1				

Intersection Summary

HCM 6th Ctrl Delay	34.7
HCM 6th LOS	C

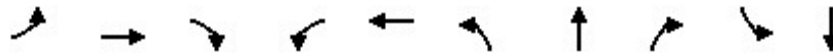
Notes

User approved volume balancing among the lanes for turning movement.  
 \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Timings

## 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/28/2023

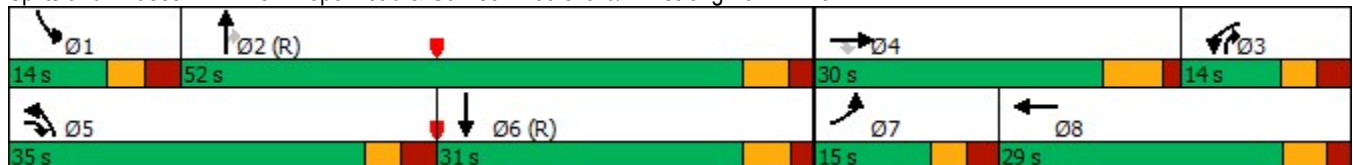


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕
Traffic Volume (vph)	58	345	408	60	202	383	914	121	21	707
Future Volume (vph)	58	345	408	60	202	383	914	121	21	707
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3	8	5	2	3	1	6
Permitted Phases			4					2		
Detector Phase	7	4	5	3	8	5	2	3	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	10.0
Minimum Split (s)	14.0	24.0	14.0	14.0	23.0	14.0	32.0	14.0	14.0	27.0
Total Split (s)	15.0	30.0	35.0	14.0	29.0	35.0	52.0	14.0	14.0	31.0
Total Split (%)	13.6%	27.3%	31.8%	12.7%	26.4%	31.8%	47.3%	12.7%	12.7%	28.2%
Yellow Time (s)	3.0	4.9	3.0	3.0	3.6	3.0	3.8	3.0	3.0	3.9
All-Red Time (s)	2.6	1.6	2.9	2.9	2.1	2.9	2.1	2.9	2.9	2.0
Lost Time Adjust (s)	-0.6	-1.5	-0.9	-0.9	-0.7	-0.9	-0.9	-0.9	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	9.3	25.0	55.2	8.8	27.0	30.2	55.7	67.5	8.3	26.0
Actuated g/C Ratio	0.08	0.23	0.50	0.08	0.25	0.27	0.51	0.61	0.08	0.24
v/c Ratio	0.50	1.08	0.68	0.50	0.36	1.06	0.57	0.14	0.17	0.99
Control Delay	59.2	102.0	13.7	61.9	37.1	96.3	21.7	7.6	50.7	70.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	102.0	13.7	61.9	37.1	96.3	21.7	7.6	50.7	70.8
LOS	E	F	B	E	D	F	C	A	D	E
Approach Delay		54.5			41.6		43.5			70.3
Approach LOS		D			D		D			E

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 104 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 52.1  
 Intersection LOS: D  
 Intersection Capacity Utilization 82.5%  
 ICU Level of Service E  
 Analysis Period (min) 15

### Splits and Phases: 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive



HCM 6th Signalized Intersection Summary  
 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	345	408	60	202	26	383	914	121	21	707	34
Future Volume (veh/h)	58	345	408	60	202	26	383	914	121	21	707	34
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	2027	2012	2012	1679	1723	1634	1864	1864	1864	1909	1909	1909
Adj Flow Rate, veh/h	77	460	544	67	269	29	511	1016	134	23	786	38
Peak Hour Factor	0.75	0.75	0.75	0.90	0.75	0.90	0.75	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	3	5	2	8	2	2	2	2	2	2
Cap, veh/h	122	457	843	102	674	72	484	1725	870	73	897	43
Arrive On Green	0.02	0.08	0.07	0.06	0.23	0.22	0.27	0.49	0.49	0.04	0.25	0.25
Sat Flow, veh/h	1931	2012	1705	1599	2984	319	1776	3542	1580	1818	3522	170
Grp Volume(v), veh/h	77	460	544	67	146	152	511	1016	134	23	405	419
Grp Sat Flow(s),veh/h/ln	1931	2012	1705	1599	1637	1666	1776	1771	1580	1818	1814	1879
Q Serve(g_s), s	4.4	25.0	13.6	4.5	8.4	8.5	30.0	22.7	0.8	1.4	23.5	23.6
Cycle Q Clear(g_c), s	4.4	25.0	13.6	4.5	8.4	8.5	30.0	22.7	0.8	1.4	23.5	23.6
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	122	457	843	102	370	376	484	1725	870	73	462	478
V/C Ratio(X)	0.63	1.01	0.65	0.66	0.40	0.40	1.06	0.59	0.15	0.31	0.88	0.88
Avail Cap(c_a), veh/h	176	457	843	131	370	376	484	1725	870	149	462	478
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	50.9	9.0	50.3	36.2	36.3	40.0	20.3	4.6	51.3	39.3	39.4
Incr Delay (d2), s/veh	4.7	40.7	1.5	7.7	0.7	0.7	56.2	1.5	0.4	2.4	20.3	19.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	18.6	6.2	2.0	3.4	3.5	20.3	9.3	0.8	0.7	12.8	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.2	91.6	10.5	58.0	36.9	37.0	96.2	21.8	4.9	53.7	59.6	59.1
LnGrp LOS	E	F	B	E	D	D	F	C	A	D	E	E
Approach Vol, veh/h		1081			365			1661			847	
Approach Delay, s/veh		48.3			40.8			43.3			59.2	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	58.6	12.0	30.0	35.0	33.0	11.9	30.1				
Change Period (Y+Rc), s	5.9	* 5.9	* 5.9	6.5	5.9	5.9	5.6	* 5.9				
Max Green Setting (Gmax), s	8.1	* 46	* 8.1	23.5	29.1	25.1	9.4	* 23				
Max Q Clear Time (g_c+I1), s	3.4	24.7	6.5	27.0	32.0	25.6	6.4	10.5				
Green Ext Time (p_c), s	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	47.9
HCM 6th LOS	D

Notes

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

# Timings

## 1: Chestnut St & Garrison Boulevard

07/28/2023

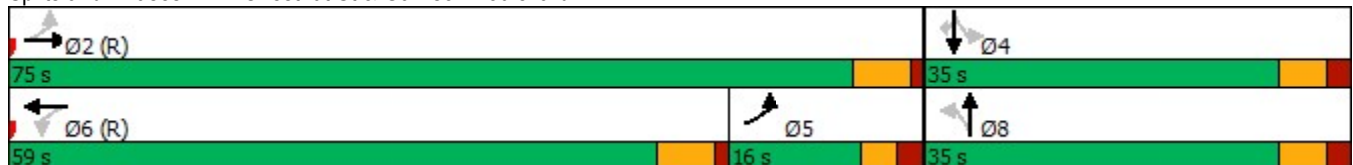


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	46	893	4	789	4	4	58	6	95
Future Volume (vph)	46	893	4	789	4	4	58	6	95
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		8		4	
Permitted Phases	2		6		8		4		4
Detector Phase	5	2	6	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	7.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	20.0	27.0	27.0	20.0	20.0	30.1	30.1	30.1
Total Split (s)	16.0	75.0	59.0	59.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	14.5%	68.2%	53.6%	53.6%	31.8%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	3.0	4.8	4.8	4.8	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)	2.3	1.2	1.2	1.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	3.3	4.0	4.0	4.0		4.1		4.1	4.1
Lead/Lag	Lag		Lead	Lead					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	91.1	88.6	78.7	78.7		13.3		13.3	13.3
Actuated g/C Ratio	0.83	0.81	0.72	0.72		0.12		0.12	0.12
v/c Ratio	0.08	0.32	0.01	0.35		0.07		0.39	0.51
Control Delay	3.1	3.4	2.8	2.8		41.3		50.5	53.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	3.1	3.4	2.8	2.8		41.3		50.5	53.8
LOS	A	A	A	A		D		D	D
Approach Delay		3.4		2.8		41.3		52.5	
Approach LOS		A		A		D		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 107 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.51  
 Intersection Signal Delay: 7.3  
 Intersection Capacity Utilization 53.7%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 1: Chestnut St & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 1: Chestnut St & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	893	4	4	789	62	4	4	5	58	6	95
Future Volume (veh/h)	46	893	4	4	789	62	4	4	5	58	6	95
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	1988	1988	1988	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	911	4	4	805	63	4	4	5	59	6	97
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	961	3195	14	255	1214	95	72	68	61	198	17	155
Arrive On Green	0.43	0.83	0.83	0.36	0.36	0.36	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1893	3857	17	610	3339	261	303	690	621	1386	176	1585
Grp Volume(v), veh/h	47	446	469	4	428	440	13	0	0	65	0	97
Grp Sat Flow(s),veh/h/ln	1893	1889	1985	610	1777	1823	1614	0	0	1562	0	1585
Q Serve(g_s), s	0.0	5.8	5.8	0.5	22.2	22.2	0.0	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	0.0	5.8	5.8	6.3	22.2	22.2	3.9	0.0	0.0	3.7	0.0	6.5
Prop In Lane	1.00		0.01	1.00		0.14	0.31		0.38	0.91		1.00
Lane Grp Cap(c), veh/h	961	1565	1645	255	646	663	201	0	0	215	0	155
V/C Ratio(X)	0.05	0.29	0.29	0.02	0.66	0.66	0.06	0.00	0.00	0.30	0.00	0.63
Avail Cap(c_a), veh/h	961	1565	1645	338	888	912	484	0	0	479	0	445
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(l)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	2.1	2.1	26.3	29.3	29.3	45.1	0.0	0.0	46.4	0.0	47.7
Incr Delay (d2), s/veh	0.0	0.5	0.4	0.1	5.0	4.9	0.0	0.0	0.0	0.3	0.0	1.5
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	0.5	1.2	1.2	0.1	9.9	10.1	0.3	0.0	0.0	1.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	2.6	2.6	26.4	34.4	34.3	45.1	0.0	0.0	46.7	0.0	49.2
LnGrp LOS	B	A	A	C	C	C	D	A	A	D	A	D
Approach Vol, veh/h		962			872			13				162
Approach Delay, s/veh		3.0			34.3			45.1				48.2
Approach LOS		A			C			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.1		14.9	51.1	44.0		14.9				
Change Period (Y+Rc), s		* 6		* 6.1	* 6	* 6		* 6.1				
Max Green Setting (Gmax), s		* 69		* 29	* 11	* 53		* 29				
Max Q Clear Time (g_c+I1), s		7.8		8.5	2.0	24.2		5.9				
Green Ext Time (p_c), s		3.4		0.3	0.0	13.8		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

### Notes

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



# Timings

## 2: Churchill Drive & Garrison Boulevard

07/28/2023

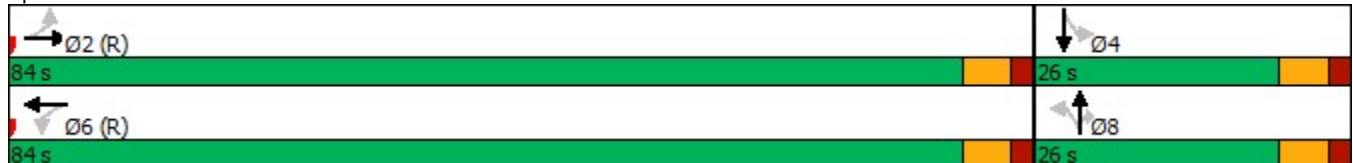


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶↷	↶	↶↷		↷	↷		↷↶
Traffic Volume (vph)	4	1054	55	754	69	4	43	4	4
Future Volume (vph)	4	1054	55	754	69	4	43	4	4
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	12.0	12.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	19.0	19.0	21.0	21.0	21.0	14.5	14.5
Total Split (s)	84.0	84.0	84.0	84.0	26.0	26.0	26.0	26.0	26.0
Total Split (%)	76.4%	76.4%	76.4%	76.4%	23.6%	23.6%	23.6%	23.6%	23.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.5	-2.5		-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0		3.5	3.5		3.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	92.2	92.2	92.2	92.2		13.7	13.7		13.7
Actuated g/C Ratio	0.84	0.84	0.84	0.84		0.12	0.12		0.12
v/c Ratio	0.01	0.49	0.24	0.34		0.48	0.24		0.08
Control Delay	3.0	3.9	4.9	2.8		53.7	45.1		41.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.0	3.9	4.9	2.8		53.7	45.1		41.5
LOS	A	A	A	A		D	D		D
Approach Delay		3.9		3.0		50.5			41.5
Approach LOS		A		A		D			D

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.49  
 Intersection Signal Delay: 6.0  
 Intersection Capacity Utilization 60.9%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service B

### Splits and Phases: 2: Churchill Drive & Garrison Boulevard



HCM 6th Signalized Intersection Summary  
 2: Churchill Drive & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1054	33	55	754	4	69	4	43	4	4	8
Future Volume (veh/h)	4	1054	33	55	754	4	69	4	43	4	4	8
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	1988	1973	1913	1988	1988	1988	1909	1909	1909	1909	1909	1909
Adj Flow Rate, veh/h	4	1405	37	61	1005	4	77	4	48	4	4	9
Peak Hour Factor	0.90	0.75	0.90	0.90	0.75	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	7	2	2	2	2	2	2	2	2	2
Cap, veh/h	547	3024	80	339	3127	12	191	9	196	55	56	79
Arrive On Green	0.81	0.81	0.81	1.00	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	594	3731	98	393	3858	15	1051	70	1618	119	460	651
Grp Volume(v), veh/h	4	705	737	61	492	517	81	0	48	17	0	0
Grp Sat Flow(s),veh/h/ln	594	1874	1955	393	1889	1985	1121	0	1618	1230	0	0
Q Serve(g_s), s	0.1	12.6	12.6	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.6	12.6	15.6	0.0	0.0	8.8	0.0	3.0	8.9	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.01	0.95		1.00	0.24		0.53
Lane Grp Cap(c), veh/h	547	1519	1585	339	1531	1609	195	0	196	184	0	0
V/C Ratio(X)	0.01	0.46	0.47	0.18	0.32	0.32	0.42	0.00	0.24	0.09	0.00	0.00
Avail Cap(c_a), veh/h	547	1519	1585	339	1531	1609	315	0	331	318	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.0	3.2	3.2	1.1	0.0	0.0	46.5	0.0	43.8	43.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.9	1.0	0.5	0.4	0.5	0.0	0.2	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	3.1	0.1	0.2	0.2	2.2	0.0	1.2	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.0	4.1	4.1	2.1	0.5	0.4	47.0	0.0	44.0	43.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1446			1070			129				17
Approach Delay, s/veh		4.1			0.5			45.9				43.2
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		93.1		16.9		93.1		16.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		78.0		20.0		78.0		20.0				
Max Q Clear Time (g_c+I1), s		14.6		10.9		2.0		10.8				
Green Ext Time (p_c), s		37.1		0.0		20.3		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.0								
HCM 6th LOS				A								

# Timings

## 3: Burtonwood Drive & Garrison Boulevard

07/28/2023

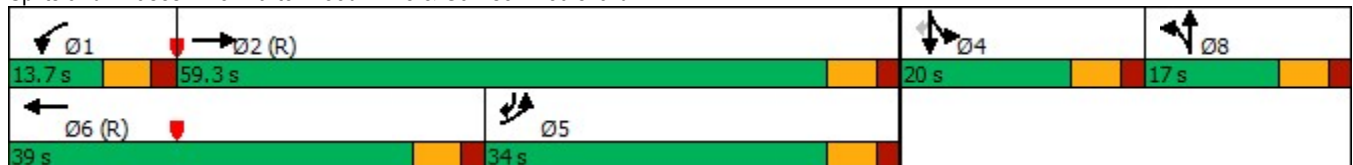


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	226	832	4	508	35	47	98	79	329
Future Volume (vph)	226	832	4	508	35	47	98	79	329
Turn Type	Prot	NA	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	5	2	1	6	8	8	4	4	5
Permitted Phases									4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.1	13.7	23.1	15.0	15.0	13.2	13.2	13.0
Total Split (s)	34.0	59.3	13.7	39.0	17.0	17.0	20.0	20.0	34.0
Total Split (%)	30.9%	53.9%	12.5%	35.5%	15.5%	15.5%	18.2%	18.2%	30.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.1	-1.7	-1.1	-0.8	-0.8	-2.0	-1.2	-1.2
Total Lost Time (s)	5.0	4.9	4.3	4.9	5.2	5.2	4.0	4.8	4.8
Lead/Lag	Lag	Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	24.9	72.0	8.7	44.7	10.5	10.5	13.4	12.6	42.5
Actuated g/C Ratio	0.23	0.65	0.08	0.41	0.10	0.10	0.12	0.11	0.39
v/c Ratio	0.75	0.42	0.03	0.50	0.25	0.56	0.57	0.53	0.60
Control Delay	45.5	8.6	45.5	11.1	49.4	60.6	58.8	55.4	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	8.6	45.5	11.1	49.4	60.6	58.8	55.4	30.7
LOS	D	A	D	B	D	E	E	E	C
Approach Delay		17.4		11.3		57.3		39.9	
Approach LOS		B		B		E		D	

### Intersection Summary

Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 16 (15%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 22.5  
 Intersection Capacity Utilization 55.8%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service B

### Splits and Phases: 3: Burtonwood Drive & Garrison Boulevard



# HCM 6th Signalized Intersection Summary

## 3: Burtonwood Drive & Garrison Boulevard

07/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	832	35	4	508	97	35	47	25	98	79	329
Future Volume (veh/h)	226	832	35	4	508	97	35	47	25	98	79	329
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1826	1870	1870	1811	1789	1819	1879	1536	1832	1847
Adj Flow Rate, veh/h	301	924	39	4	564	129	39	63	28	98	103	366
Peak Hour Factor	0.75	0.90	0.90	0.90	0.90	0.75	0.90	0.75	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	5	2	2	6	10	8	4	23	3	2
Cap, veh/h	687	2162	91	41	742	169	130	91	40	156	182	762
Arrive On Green	0.77	1.00	1.00	0.02	0.26	0.25	0.08	0.08	0.07	0.11	0.10	0.10
Sat Flow, veh/h	1781	3447	145	1781	2874	655	1704	1193	530	1462	1832	1565
Grp Volume(v), veh/h	301	473	490	4	348	345	39	0	91	98	103	366
Grp Sat Flow(s),veh/h/ln	1781	1763	1829	1781	1777	1752	1704	0	1724	1462	1832	1565
Q Serve(g_s), s	6.4	0.0	0.0	0.2	19.9	20.0	2.4	0.0	5.7	7.1	5.9	0.0
Cycle Q Clear(g_c), s	6.4	0.0	0.0	0.2	19.9	20.0	2.4	0.0	5.7	7.1	5.9	0.0
Prop In Lane	1.00		0.08	1.00		0.37	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	687	1106	1147	41	459	452	130	0	131	156	182	762
V/C Ratio(X)	0.44	0.43	0.43	0.10	0.76	0.76	0.30	0.00	0.69	0.63	0.57	0.48
Avail Cap(c_a), veh/h	687	1106	1147	152	551	543	183	0	185	213	253	822
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.87	0.87	0.87	0.32	0.32	0.32	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	52.6	37.6	37.9	48.0	0.0	49.7	47.1	47.3	18.9
Incr Delay (d2), s/veh	0.1	1.1	1.0	0.1	3.8	4.0	0.5	0.0	2.4	1.6	1.0	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	1.8	0.3	0.3	0.1	8.8	8.8	1.0	0.0	2.5	2.6	2.7	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.6	1.1	1.0	52.8	41.5	41.9	48.5	0.0	52.1	48.6	48.3	19.1
LnGrp LOS	A	A	A	D	D	D	D	A	D	D	D	B
Approach Vol, veh/h		1264			697			130				567
Approach Delay, s/veh		2.8			41.7			51.0				29.5
Approach LOS		A			D			D				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	73.9		15.7	47.4	33.3		13.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	7.7	53.3		14.0	28.0	33.0		11.0				
Max Q Clear Time (g_c+I1), s	2.2	2.0		9.1	8.4	22.0		7.7				
Green Ext Time (p_c), s	0.0	17.0		0.7	0.6	5.3		0.1				

### Intersection Summary

HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

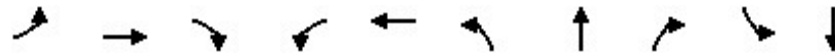
### Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.

# Timings

## 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/28/2023

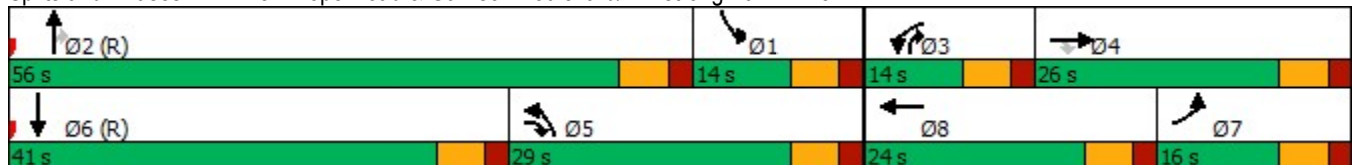


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↑↑	↖	↑↑	↗	↖	↑↑
Traffic Volume (vph)	148	350	425	120	207	304	773	164	29	932
Future Volume (vph)	148	350	425	120	207	304	773	164	29	932
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3	8	5	2	3	1	6
Permitted Phases			4					2		
Detector Phase	7	4	5	3	8	5	2	3	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	14.0	24.0	14.0	14.0	23.0	14.0	32.0	14.0	14.0	27.0
Total Split (s)	16.0	26.0	29.0	14.0	24.0	29.0	56.0	14.0	14.0	41.0
Total Split (%)	14.5%	23.6%	26.4%	12.7%	21.8%	26.4%	50.9%	12.7%	12.7%	37.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-0.6	-1.5	-0.9	-0.9	-0.7	-0.9	-0.9	-0.9	-0.9	-0.9
Total Lost Time (s)	5.4	4.5	5.1	5.1	5.3	5.1	5.1	5.1	5.1	5.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	16.1	21.5	44.8	8.9	13.2	23.9	54.4	66.4	13.2	35.9
Actuated g/C Ratio	0.15	0.20	0.41	0.08	0.12	0.22	0.49	0.60	0.12	0.33
v/c Ratio	0.62	1.06	0.73	0.96	0.62	1.07	0.49	0.19	0.15	1.01
Control Delay	60.6	107.7	30.0	117.2	52.6	108.4	22.5	8.5	42.1	66.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	107.7	30.0	117.2	52.6	108.4	22.5	8.5	42.1	66.6
LOS	E	F	C	F	D	F	C	A	D	E
Approach Delay		64.4			75.1		44.8			66.0
Approach LOS		E			E		D			E

### Intersection Summary

























Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 32 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.07  
 Intersection Signal Delay: 58.8  
 Intersection LOS: E  
 Intersection Capacity Utilization 87.0%  
 ICU Level of Service E  
 Analysis Period (min) 15

### Splits and Phases: 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive



HCM 6th Signalized Intersection Summary  
 4: New Hope Road & Garrison Boulevard/Armstrong Park Drive

07/28/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	350	425	120	207	38	304	773	164	29	932	89
Future Volume (veh/h)	148	350	425	120	207	38	304	773	164	29	932	89
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	2027	2012	1997	1723	1723	1723	1850	1864	1850	1879	1909	1909
Adj Flow Rate, veh/h	164	389	472	133	207	42	405	859	182	32	1036	119
Peak Hour Factor	0.90	0.90	0.90	0.90	1.00	0.90	0.75	0.90	0.90	0.90	0.90	0.75
Percent Heavy Veh, %	2	3	4	2	2	2	3	2	3	4	2	2
Cap, veh/h	302	393	689	133	299	59	383	953	548	492	1070	123
Arrive On Green	0.10	0.13	0.13	0.08	0.11	0.10	0.22	0.27	0.27	0.18	0.22	0.21
Sat Flow, veh/h	1931	2012	1693	1641	2721	542	1762	3542	1568	1790	3279	376
Grp Volume(v), veh/h	164	389	472	133	123	126	405	859	182	32	573	582
Grp Sat Flow(s),veh/h/ln	1931	2012	1693	1641	1637	1626	1762	1771	1568	1790	1814	1842
Q Serve(g_s), s	8.9	21.2	4.8	8.9	8.0	8.2	23.9	25.7	3.3	1.6	34.4	34.5
Cycle Q Clear(g_c), s	8.9	21.2	4.8	8.9	8.0	8.2	23.9	25.7	3.3	1.6	34.4	34.5
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	302	393	689	133	180	179	383	953	548	492	592	601
V/C Ratio(X)	0.54	0.99	0.68	1.00	0.68	0.71	1.06	0.90	0.33	0.07	0.97	0.97
Avail Cap(c_a), veh/h	302	393	689	133	278	276	383	1639	852	492	592	601
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	47.7	12.4	50.5	47.1	47.4	43.1	38.8	9.3	33.2	42.4	42.5
Incr Delay (d2), s/veh	1.0	40.0	2.1	78.6	1.7	1.9	62.2	13.3	1.6	0.0	29.8	29.8
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	4.3	15.2	6.2	6.5	3.3	3.4	16.8	12.7	1.6	0.7	20.7	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	87.7	14.5	129.1	48.8	49.3	105.2	52.1	11.0	33.2	72.2	72.3
LnGrp LOS	D	F	B	F	D	D	F	D	B	C	E	E
Approach Vol, veh/h		1025			382			1446			1187	
Approach Delay, s/veh		47.4			76.9			61.8			71.2	
Approach LOS		D			E			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.3	34.7	14.0	26.0	29.0	41.0	22.6	17.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	50.0	8.0	20.0	23.0	35.0	10.0	18.0				
Max Q Clear Time (g_c+I1), s	3.6	27.7	10.9	23.2	25.9	36.5	10.9	10.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											62.3	
HCM 6th LOS											E	