Jetton Road Safety Study Technical Memorandum

Cornelius, NC

8/19/2016

WSP | Parsons Brinckerhoff
Jason Gorrie, PE

PURPOSE OF THE STUDY

WSB | Parsons Brinckerhoff was contracted by the Town of Cornelius to evaluate roadway and safety improvement alternatives along a 0.27 mile segment of Jetton Road. The project corridor is located on Jetton Road between West Catawba Avenue and Charles Towne Lane in Cornelius, NC. Over the past 5 years 85 accidents, including 17 accidents with injury, have occurred on the project corridor. The most accidents occurred at the intersection of Jetton Road and Old Jetton Road. Community outreach efforts also have revealed that speeding is an issue through the project corridor.

The objective of this study is to consider improvements to the existing facility by developing solutions to corridor deficiencies and increase safety. The design alternatives analyzed two variations of right-in / right out access on Old Jetton Road, which redirected left turns and through movements on the side street approaches. The access changes on Old Jetton Road will make the intersection safer by reducing the number of conflicting turn movements. A description of the design alternatives are presented below, along with a comparison of the operational results. A speed study was performed within the project corridor to investigate speeding concerns and the potential need for traffic calming features.

EXISTING ROADWAY CONDITIONS

Jetton Road is a local street with a four-lane cross section. Jetton Road is undivided, with the exception of the segment between Beaufain Street and West Catawba Avenue, which has a raised median. The posted speed limit of Jetton Road is 45 miles per hour (mph). The study area is defined by the following intersections and is shown in **Figure 1**. The existing lane configurations of the study area intersections are shown in **Figure 2**.

DATA COLLECTION

Traffic counts were conducted at the following four (4) intersections within the study area:

- Jetton Road & Catawba Avenue (Signalized)
- Jetton Road & Old Jetton Road (Unsignalized)
- Jetton Road & Beaufain Street (Unsignalized)
- Jetton Road & Charles Towne Lane/Lake Norman Cove Drive (Unsignalized)

Counts were conducted on Tuesday, February 23, 2016 during the AM and PM peak travel periods (7:00 – 9:00 AM and 4:00 – 6:00 PM). A review of the traffic counts revealed that the network had a morning peak hour of 8:00 – 9:00 AM and an afternoon peak hour of 4:30 – 5:30 PM for all unsignalized intersections and had a morning peak hour 7:30 – 8:30 AM and an afternoon peak hour of 5:00 – 6:00 PM for the one signalized intersection. The raw turning movement counts data is included at the end of the report. The existing volumes are shown in **Figure 3**.

The speed data was collected on Jetton Road on Tuesday, February 23, 2016 between 6:00 – 9:00 AM and 3:00 – 6:00 PM. A review of the speed data revealed that the 85th percentile speed during the AM was 38 mph and during the PM was 46 mph. The raw speed count data is included at the end of the report.

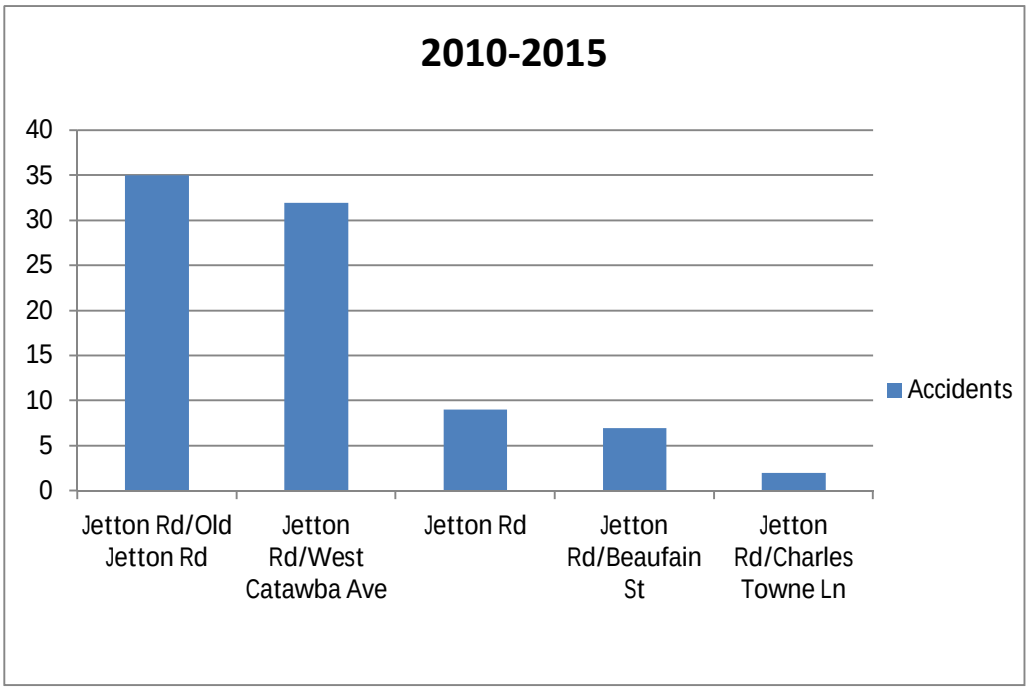
FUTURE TRAFFIC VOLUMES

For the future 2040 No-Build traffic volumes, a background growth rate of 0.8 percent per year was assumed for the study area. An annual growth rate of 0.8 percent coincides with other traffic studies along Catawba Avenue and matches the Traffic Forecasting Report for the R-2555B project *(NCDOT, 2013)*. The 2040 No-Build traffic volumes are shown in **Figure 4**.

SAFETY

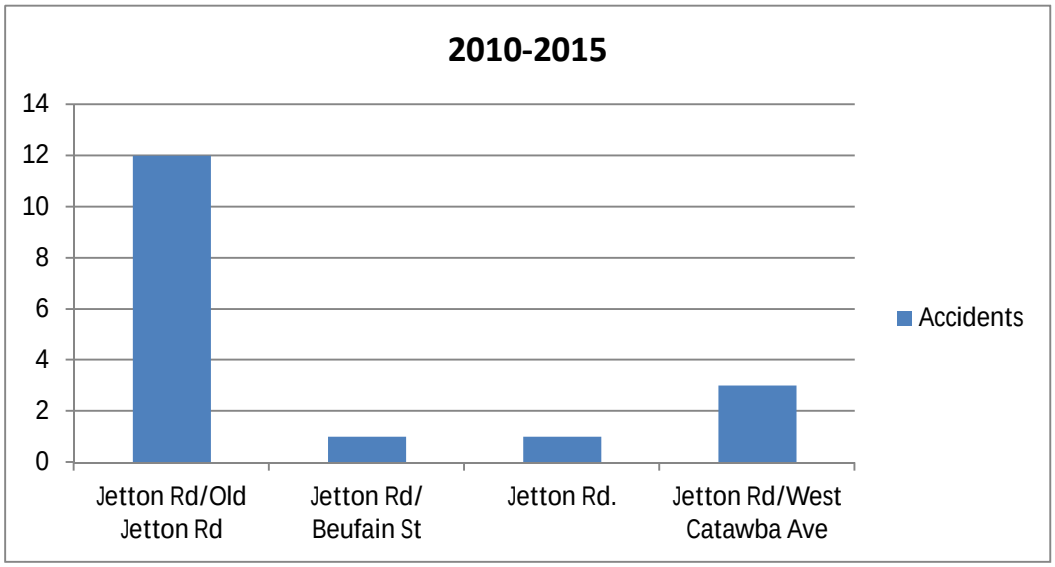
Crash data provided by the Town of Cornelius was used to evaluate the existing crash rate on Jetton Road between West Catawba and Charles Towne Lane. Between the dates of January 1, 2010 to December 31, 2015, there were 85 accidents along Jetton Road between West Catawba and Charles Towne Lane. Sixty eight accidents resulted in damage to vehicles with no personal injury and 17 were accidents with injury. As shown in **Table 1**, the majority of the accidents occurred at the Jetton Road and Old Jetton Road intersection.

Table 1: All Accidents by Intersection



As shown in **Table 2,** 12 out of the 17 accidents that involve injury occurred at the intersection of Jetton Road and Old Jetton Road. It is important to note that 11 out of the 12 (92%) accidents that involved left turns and angle accidents occurred at the intersection of Jetton Road and Old Jetton Road.

Table 2: Accidents with Injury at Intersections



Results of the speed study revealed that the 85th percentile speed on Jetton Road is between 38 mph (AM) and 46 mph (PM). The 85th percentile speed is the speed that 85 percent of vehicles do not exceed. The posted speed limit on Jetton Road is 45 mph. The proposed guidance for setting a speed limit reads, "When a speed limit is to be posted, it should be the 85th-percentile speed of free-flowing traffic, rounded up to the nearest 5 mph increment on non-residential streets. Based on the 85th percentile speed results on Jetton Road, the current posted speed limit of 45 mph is appropriate. Drivers generally choose reasonable speeds on their own and crash involvement is lowest for vehicles within approximately 5 mph of the average speed of traffic. For this reason, posting a speed limit that would result in a high violation rate does no usually promote safety. Reduced speed zoning is most appropriate in response to conditions not readily apparent to drivers; i.e. traffic calming features.

CAPACITY ANALYSIS METHODOLOGY

The traffic operations analysis was performed for the following scenarios:

- 2016 Existing
- 2040 No-Build
- 2040 Build Alternative 1
- 2040 Build Alternative 2

SYNCHRO Version 9.0 was used to analyze the four intersections identified within the study area. Synchro 9.0 is a comprehensive software package that allows users to model and optimize signal timing for signalized intersections to determine the level of service. The LOS is an important measure of roadway congestion. The LOS is determined by calculating the delay for the intersection and converting it to a letter. The LOS ranges from A (no congestion) to F (severe congestion). In addition, Synchro allows unsignalized analyses to be performed utilizing the methodologies outlined in the Highway Capacity Manual. The roadway network, intersection geometries, traffic volumes and NCDOT provided signal timings were input into a Synchro network in order to analyze the intersection operations. Additionally, SimTraffic was used for this study in order to analyze the existing and storage lengths at the study area intersections. The LOS criteria for signalized and unsignalized intersections as provided in the 2010 Highway Capacity Manual (HCM) are described in **Table 3**. In addition, SIDRA software was used for the analysis of roundabout operations.

Table 3: Level of Service Criteria

Signalized Intersections		Unsignalized Intersections	
LOS	Delay per Vehicle (seconds)	LOS	Delay per Vehicle (seconds)
A	≤10	A	≤10
B	>10 and ≤20	B	>10 and ≤15
C	>20 and ≤35	C	>15 and ≤25
D	>35 and ≤55	D	>25 and ≤35
E	>55 and ≤80	E	>35 and ≤50
F	>80	F	>50

Build Alternative 1

Build Alternative 1 proposes a raised median on Jetton Road that restricts access on Old Jetton Road to right-in/right-out operations, at the Jetton Road intersection. Northbound through and left turning traffic on Old Jetton Road would be rerouted to a U-turn movement at the West Catawba Avenue & Jetton Road intersection. Southbound through and left turning traffic on Old Jetton Road would be rerouted to the West Catawba Avenue and Jetton Road intersection. Build alternative 1 also proposes extending the existing median/concrete island on Jetton Road that currently ends at Beaufain Street, as far as west as possible to prohibit illegal turns. The 2040 volumes associated with Build Alternative 1 are shown in **Figure 5**. The Build Alternative 1 lane configurations are shown in **Figure 7**.

Build Alternative 2

Build Alternative 2 uses the same intersection modification as Build Alternative 1, but also includes a single lane roundabout with slip lanes at the Jetton Road and Charles Towne Lane intersection. Roundabouts reduce vehicle speeds, minimize vehicle weaving, and reduce conflict points by removing left turns. Southbound through and left turning traffic on Old Jetton Road would be rerouted to a U-turn movement at the proposed roundabout. Build Alternative 2 has the added benefit of a traffic calming feature. Vehicles on Jetton Road would be forced to reduce speed in order to navigate the rotary feature of the roundabout, which would be designed for slow operating speeds between 15 and 25 mph. This is done by adjusting the geometry of the entrance alignment, center island, and exit alignment to ensure that "through" vehicle paths are significantly deflected. The roundabout follows the "yield-at entry" rule in which approaching vehicles must wait for a gap in the circulating flow before entering the circle. Adequate deflection of the vehicle entering a roundabout is an important factor that reduces the speed and increase the safety operation. The 2040 volumes associated with Build Alternative 2 are shown in **Figure 6**. The Build Alternative 2 lane configurations are shown in **Figure 8**.

CAPACITY ANALYSIS RESULTS

Jetton Road & W. Catawba Avenue

This intersection is currently signalized and operates at LOS C during the AM peak hour and LOS D during PM peak hour. The addition of background traffic during the 2040 No-Build scenario degrades the intersection from LOS C to LOS D during AM peak hour and maintains LOS D during PM Peak hour. Both Build Alternative 1 and Alternative 2 maintain LOS D during AM and PM peak hours. The levels of service and delay results for the intersection are presented below in **Table 4**. The U-turn restrictions for trucks would remain the same for left turns on southbound Catawba Avenue.

Table 4: Jetton Road & W. Catawba Avenue

	2016 Existing	2040 No-Build	2040 Build Alternative 1	2040 Build Alternative 2
LOS AM (PM)	C (D)	D (D)	D (D)	D (D)
Delay/sec AM (PM)	30.8 (39.0)	38.0 (51.9)	37.7 (49.7)	38.1 (52.2)

At this intersection, the storage for the westbound left and northbound left turn lanes were exceeded by the maximum queue during the 2040 No-Build and Build scenarios. No mitigation is recommended since the queuing problems exist in the No-Build scenario. The 95th queue for the turn lanes are shown in **Table 5** next page.

Table 5: Jetton Road & W. Catawba Avenue

Movement	Available Storage	2016 Existing AM (PM)	2040 No-Build AM (PM)	2040 Build Alternative 1 AM (PM)	2040 Build Alternative 2 AM (PM)
Northbound Left	175	127 (248)	190 (310)	178 (313)	200 (300)
Westbound Left	100	138 (200)	153 (196)	137 (193)	162 (188)

Jetton Road & Old Jetton Road

The intersection of Jetton Road & Old Jetton Road is currently unsignalized and operates at LOS C during the AM peak hour and LOS F during the PM peak hour. The addition of background traffic during the 2040 No-Build maintains the same LOS during both AM and PM peak hours. The Build Alternatives propose a raised median through the intersection to restrict Old Jetton Road access to right-in/right-out operations. The revised access improves intersection safety by removing conflicting turn movements. Restricting Old Jetton Road to right-in/right out access will improve operations to LOS C and LOS B during both AM and PM peak hours for both Build Alternatives. The level of service and delay results for the intersection are presented below in **Table 6**. No queuing problems were observed in 2040 Build Alternatives as a result of rerouted traffic.

Table 6: Jetton Road & Old Jetton Road

	2016 Existing	2040 No-Build	2040 Build Alternative 1	2040 Build Alternative 2
LOS AM (PM)	C (F)	C (F)	B (B)	B (B)
Delay/sec AM (PM)	16.7 (57.5)	22.1 (244.4)	10.1 (10.9)	10.6 (13.4)

Note: Delay and LOS is based on the worst movement for unsignalized intersections.

Jetton Road & Beaufain Street

The intersection of Jetton Road & Beaufain Street is currently unsignalized and operates at LOS A during the AM peak hour and LOS B during the PM peak hour. The addition of background traffic during the 2040 No-Build and 2040 Build Alternative 1 scenarios maintain the same LOS during both AM and PM peak hours. In Alternative 1, traffic would be redirected to the West Catawba Avenue and no additional traffic would be rerouted to Jetton Road and Beaufain Street. Therefore, LOS is not impacted at this intersection during Alternative 1. The 2040 Build Alternative 2 operations degrade from LOS A to LOS B during the AM peak hour, but maintain LOS B during PM peak hour. Despite the change in LOS, the delay increases by less than one second. The level of service and delay results for the intersection are presented below in **Table 7**. No queuing problems were observed in 2040 Build Alternatives as a result of rerouted traffic. The roundabout operations in Build Alternative 2 do not impact this intersection and queues from the roundabout do not extend back to Beaufain Street.

Table 7: Jetton Road & Beaufain Street

	2016 Existing	2040 No-Build	2040 Build Alternative 1	2040 Build Alternative 2
LOS (AM (PM)	A (B)	A (B)	A (B)	B (B)
Delay/sec AM (PM)	9.5 (10.1)	9.9 (10.6)	9.9 (10.6)	10.1 (11.5)

Note: Delay and LOS is based on the worst movement for unsignalized intersections.

Jetton Road & Charles Towne Lane / Lake Norman Cove Drive

The Jetton Road & Charles Towne Lane intersection is currently unsignalized and operates at LOS C during both AM and PM peak hours. The addition of background traffic during the 2040 No-build and 2040 Build Alternative 1 scenarios degrade to LOS D during both AM and PM peak hours. Since U-turn movements are not re-routed to this intersection in Alternative 1, no impacts to delay or LOS are encountered at this intersection. Providing a roundabout at this intersection, as part or Build Alternative 2, will improve the operations to LOS to A and LOS B during both AM and PM peak hours, respectively. No queuing problems were observed in 2040 Build Alternative 2 scenario as a result of rerouted traffic. The level of service and delay results for the intersection are presented below in **Table 8**.

Table 8: Jetton Road & Charles Towne Lane / Lake Norman Cove Driver

	2016 Existing	2040 No-Build	2040 Build Alternative 1	2040 Build Alternative 2
LOS (AM (PM)	C (C)	D (D)	D (D)	A (B)
Delay/sec AM (PM)	20.5 (20.0)	28.4 (29.0)	28.4 (29.0)	8.8 (13.2)

Note: Delay and LOS is based on the worst movement for unsignalized intersections.

CONCLUSIONS

The Jetton Road and Old Jetton Road intersection is currently unsignalized and permits full access from the side streets. Over the past 5 years, 35 accidents have occurred at this intersection, with the majority of the accidents involving left turning vehicles. In the PM peak hour, over 125 vehicles turn southbound from Old Jetton Road onto Jetton Road. The proposed safety enhancement involves the construction of a raised median in order to restrict access on Old Jetton Road to right-in/right-out operations on the northbound and southbound approaches. The proposed access changes will reduce accidents at the intersection by removing conflicting turn movements. The operations of the Jetton Road and Old Jetton Road improve significantly with the revised access changes; right-in/right-out configuration on the side streets. Impacts to adjacent intersections that result from the rerouted traffic are minimal.

A variation of the access changes involves a proposed roundabout at the Jetton Road & Charles Towne Lane intersection. The proposed roundabout would significantly improve operations at the Jetton Road & Charles Towne Lane intersection and would serve as a traffic calming feature, requiring motorists to reduce speeds through the roundabout. The roundabout design would offer the greatest reduction in collisions, since it removes turning conflict points at traditional intersections. The roundabout follows the "yield-at entry" rule in which approaching vehicles must wait for a gap in the circulating flow before entering the circle. Adequate deflection of the vehicle entering a roundabout is an important factor that reduces the speed and increases the safety operation. The roundabout design allows each motorist to enter the roundabout with a minimum delay by yielding to the vehicles to the left and then proceeding to the desired destination. The roundabout eliminates unnecessary stops, since vehicles are allowed to move freely through an intersection unless there is conflicting traffic. Based on the angle of deflection entering the roundabout and the radius of the roadway's curvature, the speeds on Jetton Road would be reduced to approximately 25 mph in the vicinity of the roundabout.

CONSTRUCTION COST ESTIMATE

Below are estimate criteria used in the preparation of the construction cost estimate.

Roadway and Drainage Assumptions

Mobilization
Per NCDOT specification, mobilization assumed to be 5% of the total construction costs.

Surveying
Assume construction surveying to be done under separate contract.

Comprehensive Grading
Assume 30% of total construction costs.
The following line items are incorporated under "Comprehensive Grading:"

- Clearing and Grubbing
- Supplemental Clearing and Grubbing
- Roadway Excavation
- Unclassified Excavation
- Borrow Excavation
- Embankments
- Drainage Ditch Excavation
- Removal of Existing Pavement
- Proof Rolling
- Pipe Removal
- Box Culvert Excavation
- Channel Excavation
- Fine Grading, Sub-grade, Shoulders and Ditches
- Incidental Stone Base
- Shoulder Construction
- Unclassified Structure Excavation

Pavement Schedule
The following pavement schedule was used to calculate asphalt quantities:

- Asphalt Concrete Surface Course –3 inches
- Asphalt Concrete Intermediate Course – 4 inches
- Asphalt Concrete Base Course –5 inches
- Milling – 1.5 inches

Drainage
15" R.C. Pipe was assumed to be 25% the total curb and gutter length.
24" R.C. Pipe was assumed to be 25% the total curb and gutter length.

Foundation Conditioning Material
Per NCDOT specification, Foundation Conditioning Material is determined by the total amount of pipe length.

Masonry Drainage Structures
Assumed one masonry drainage structure for every 200 linear feet of curb and gutter.

Frame with Grate and Hood
Assumed one frame with grate and hood per catch basin.

Erosion Control
Erosion Control was assumed to be 5% of total construction costs.

Traffic Control
Traffic Control was assumed to be 10% of total construction costs.

Contingency
Assume 30% contingency for conceptual plans.

Right of Way
To calculate right of way area needed, assumed new right of way line 5 feet from back of sidewalk.
All unit costs for real estate costs were taken from Mecklenburg County POLARIS website based on latest tax evaluation price per square foot of total property.

Total Project Cost – Build Alternative 1

Roadway Construction		$
Roadway Sub-Total:		$190,000
Structures Sub-Total:	$	-
Construction Sub-Total:	$	190,000.00
Construction Administration (5%):	$	9,500.00
Total Construction Cost:	$	200,000.00
Planning & Design		**$**
Planning (10%)	$	19,000.00
Design (15%)	$	28,500.00
Total Planning & Design Cost:	$	48,000.00
Right-of-Way		**$**
Right-of-Way Sub-Total:	$	-
Inflation (0% for 0years)	$	-
Contingency (10%)	$	-
Total Right-of-Way Cost:	$	-
Special Items (Ped Countdowns, Utilities, Landscaping, etc.)		**$**
Special Items Subtotal Cost:	$	1,242.00
Contingency (10%):	$	124.20
Total Special Items Cost:	$	2,000.00
TOTAL PROJECT COST:	***$***	***250,000.00***
SAY	**$**	**300,000.00**

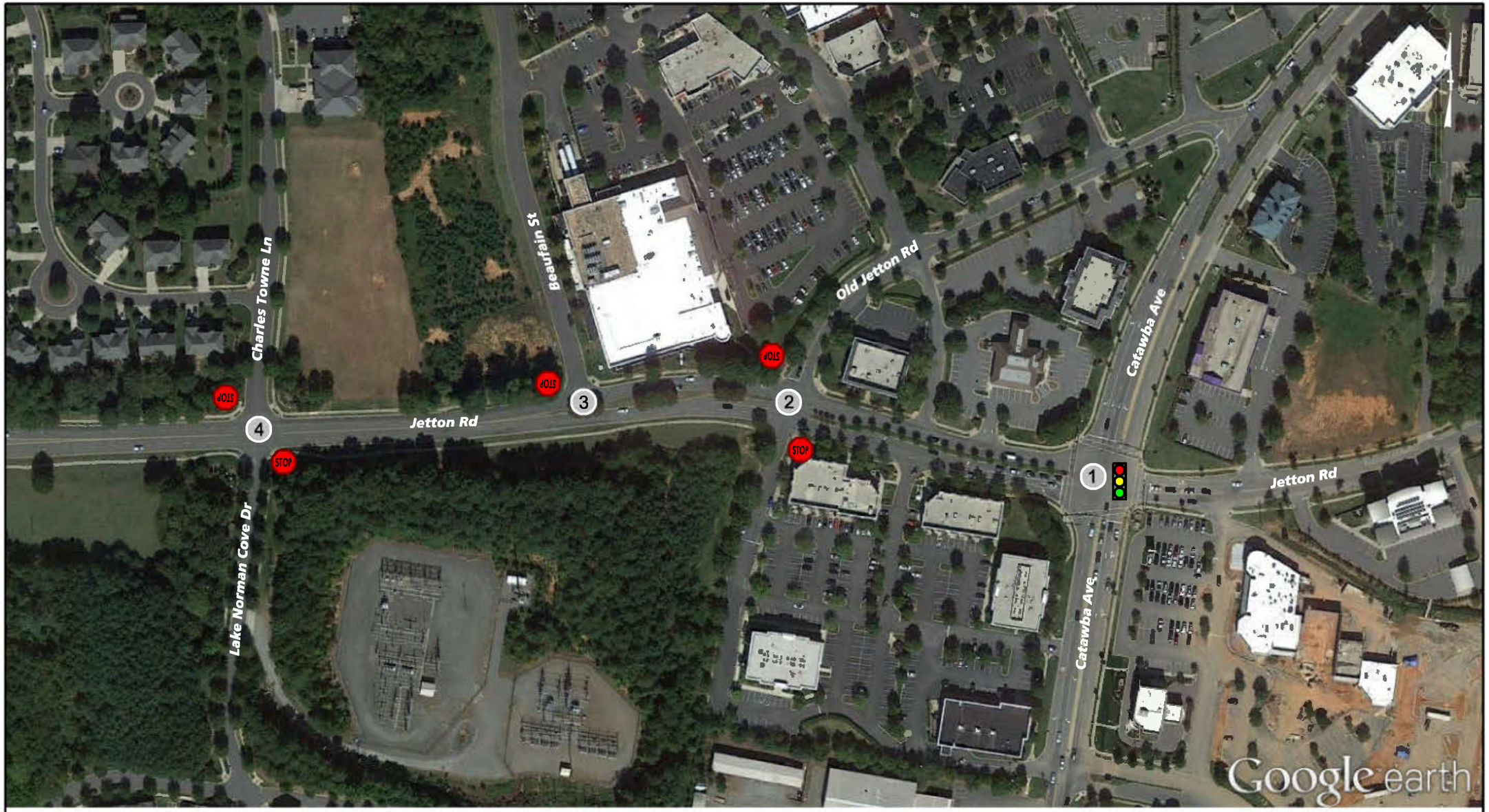
Total Project Cost – Build Alternative 2

Roadway Construction		$
Roadway Sub-Total:		$870,000
Structures Sub-Total:	$	-
Construction Sub-Total:	$	870,000.00
Construction Administration (5%):	$	43,500.00
Total Construction Cost:	$	914,000.00
Planning & Design		**$**
Planning (10%)	$	87,000.00
Design (15%)	$	130,500.00
Total Planning & Design Cost:	$	218,000.00
Right-of-Way		**$**
Right-of-Way Sub-Total:	$	185,100.00
Inflation (0% for 0years)	$	-
Contingency (10%)	$	18,510.00
Total Right-of-Way Cost:	$	204,000.00
Special Items (Ped Countdowns, Utilities, Landscaping, etc.)		**$**
Special Items Subtotal Cost:	$	101,220.00
Contingency (10%):	$	10,122.00
Total Special Items Cost:	$	112,000.00
TOTAL PROJECT COST:	***$***	***1,448,000.00***
SAY	**$**	**1,500,000.00**

RECOMMENDATIONS

Based on the operational improvements and safety benefits the roundabout design offers, Build Alternative 2 is recommended to mitigate the accident and vehicular speed concerns of the Town. Build Alternative 2 eliminates the need to modify the Catawba Ave & Jetton Rd intersection to accommodate U-turn movements; rather, re-routed traffic from Old Jetton Road would make a U-turn at the roundabout. The U-turn movement at the roundabout would also be easier a quicker to navigate, instead of making a U-turn movement at a signalized intersection. The roundabout design significantly improves the operations at the Beaufain Street intersection, even with re-routed traffic added to the intersection; LOS D to LOS A/B. Traffic speeds would also be reduced in this section of Jetton Road because of the traffic calming features of the roundabout; vehicles must reduce speed in order to navigate through the roundabout. In addition to the safety benefits of restricting access at Beaufain Street, the roundabout also improves safety along Jetton Road by removing turning conflict points at the Charles Towne Lane intersection.

FIGURES



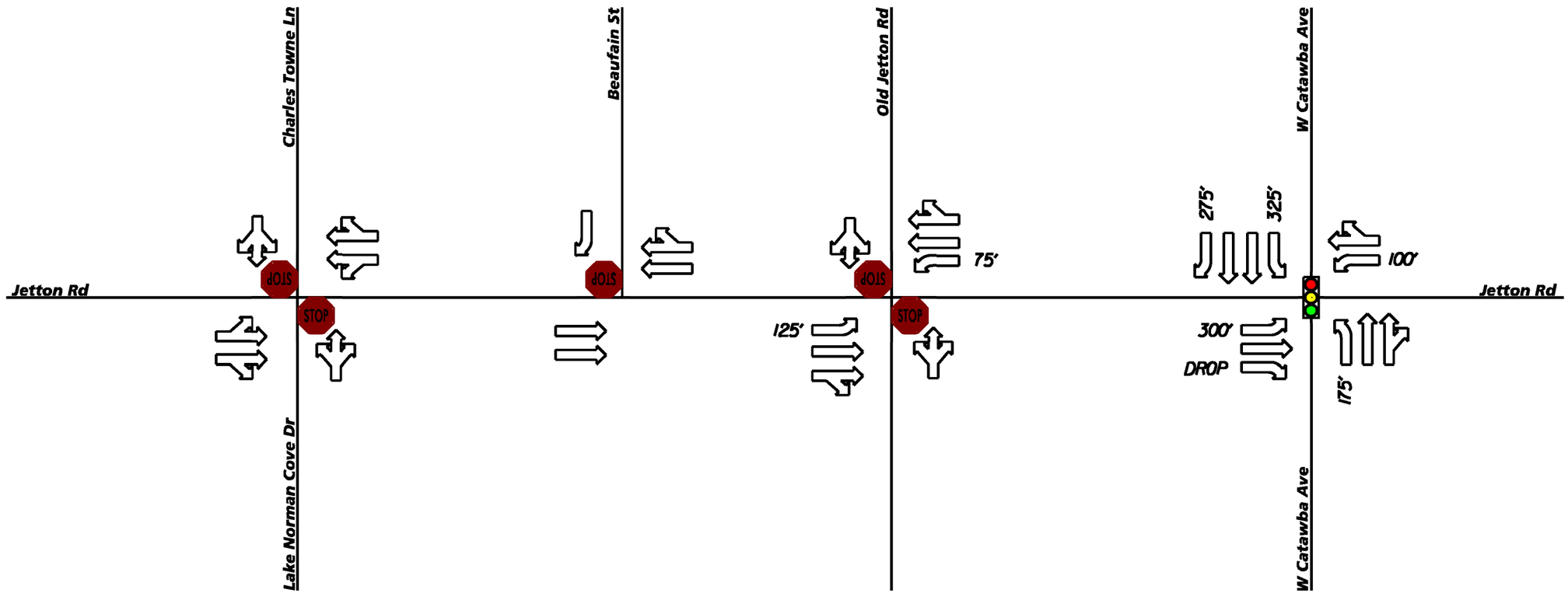
1. JETTON ROAD AT CATAWBA AVENUE
2. JETTON ROAD AT OLD JETTON ROAD
3. JETTON ROAD AT BEAUFAIN STREET
4. JETTON ROAD AT CHARLES TOWNE LANE / LAKE NORMAN COVE DRIVE

JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

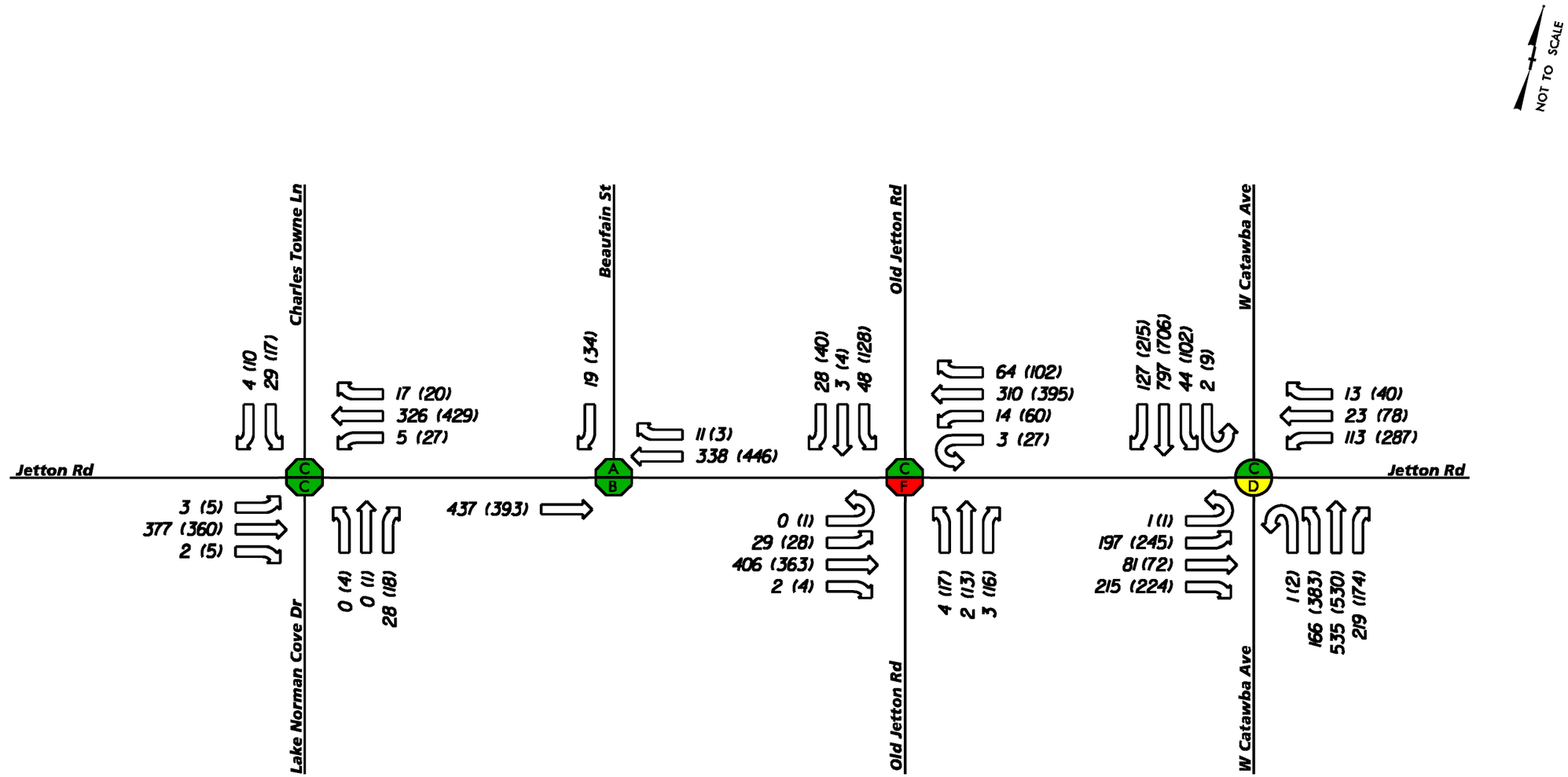
FIGURE 1
STUDY AREA

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF



JETTON RD SAFETY STUDY MECKLENBURG COUNTY, NC	FIGURE 2 EXISTING LANE CONFIGURATION LEGEND XX STORAGE LENGHT (FT)
DATE: MAY, 2016	N — NOT TO SCALE
WSP | PARSONS BRINCKERHOFF	



JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF

FIGURE 3
2016 EXISTING VOLUMES

LEGEND

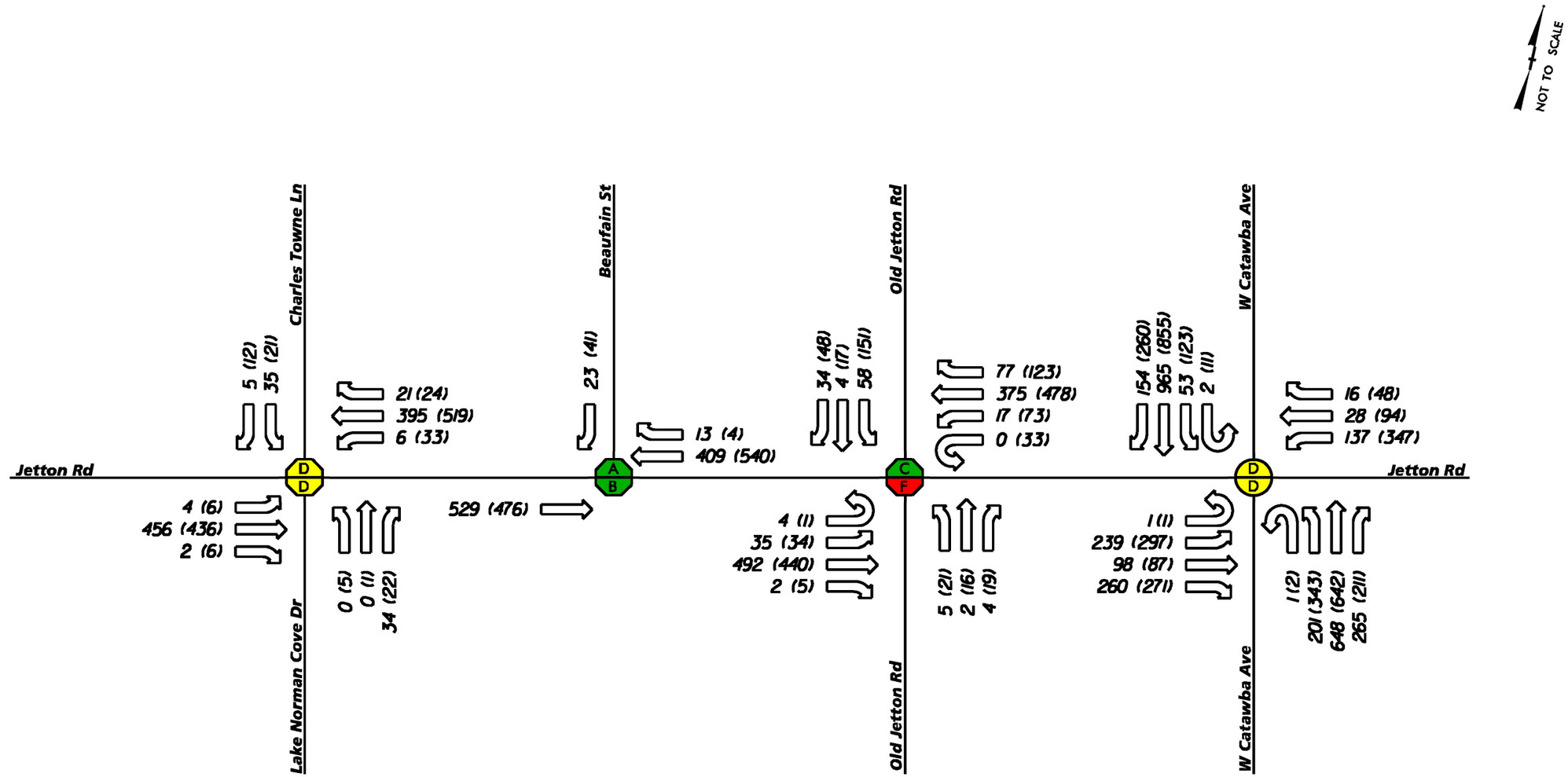
A AM LOS
A PM LOS SIGNALIZED

A AM LOS
A PM LOS UNSIGNALIZED

(LOS FOR UNSIGNALIZED INTERSECTIONS BASED ON WORST MOVEMENT)

XX AM PEAK HOUR VOLUMES

(XX) PM PEAK HOUR VOLUMES



JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF

FIGURE 4
2040 NO-BUILD VOLUME

LEGEND

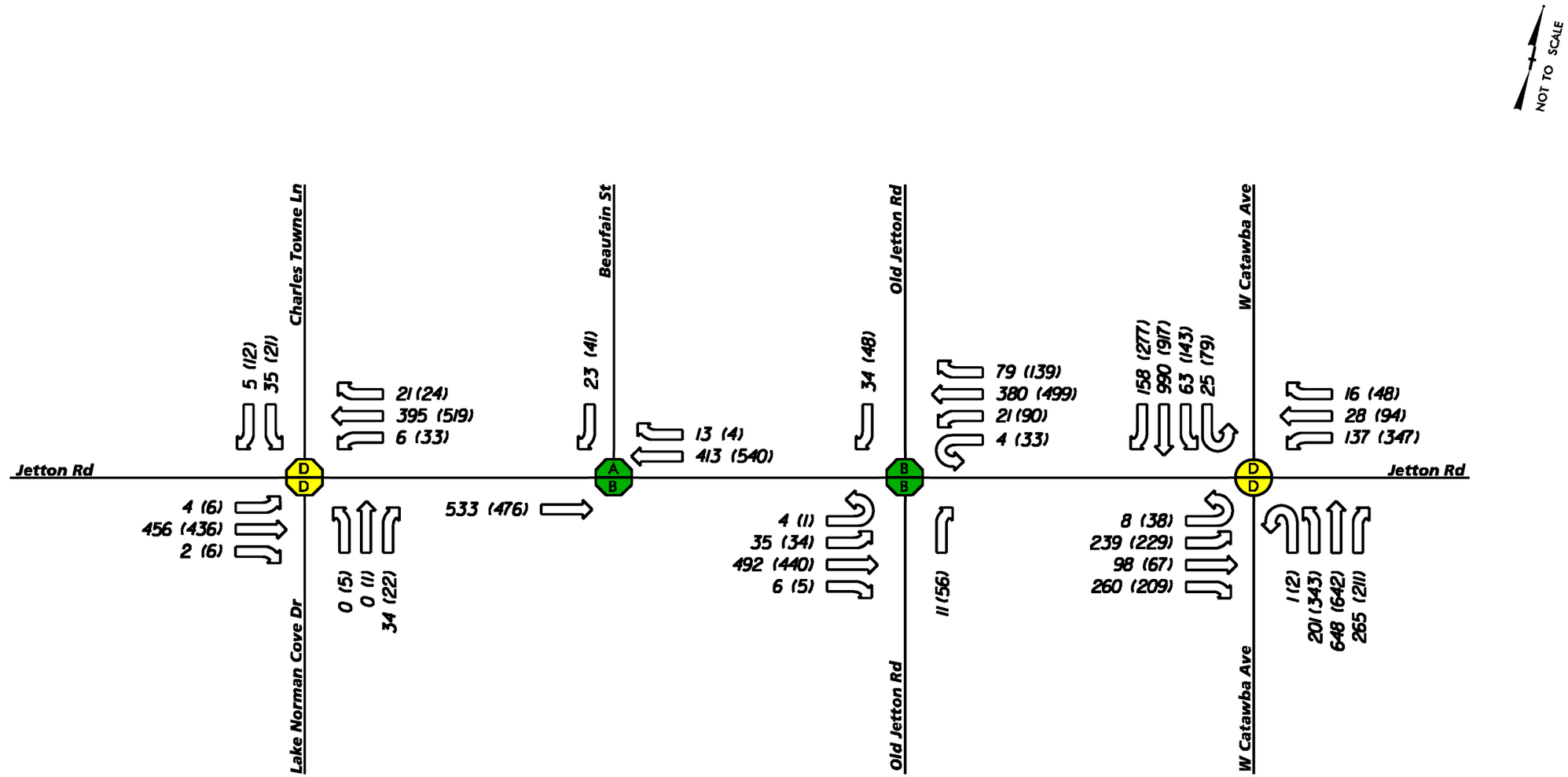
A A AM LOS PM LOS SIGNALIZED

A A AM LOS PM LOS UNSIGNALIZED

(LOS FOR UNSIGNALIZED INTERSECTIONS BASED ON WORST MOVEMENT)

XX AM PEAK HOUR VOLUMES

(XX) PM PEAK HOUR VOLUMES



JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF

FIGURE 5
2040 BUILD VOLUME
ALTERNATIVE 1

LEGEND

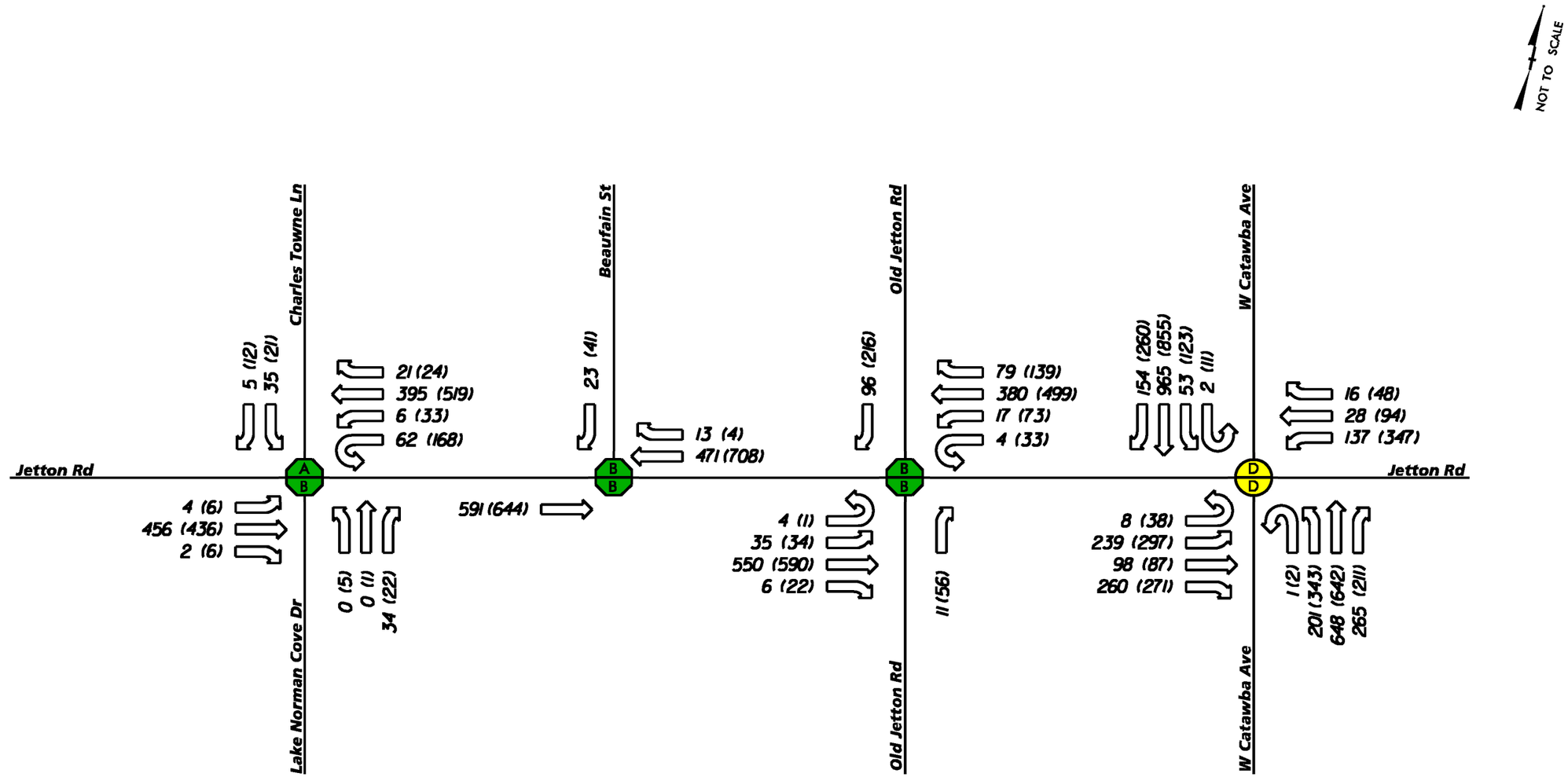
A A AM LOS PM LOS SIGNALIZED

A A AM LOS PM LOS UNSIGNALIZED

(LOS FOR UNSIGNALIZED INTERSECTIONS BASED ON WORST MOVEMENT)

XX AM PEAK HOUR VOLUMES

(XX) PM PEAK HOUR VOLUMES



JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF

FIGURE 6
2040 BUILD VOLUME
ALTERNATIVE 2

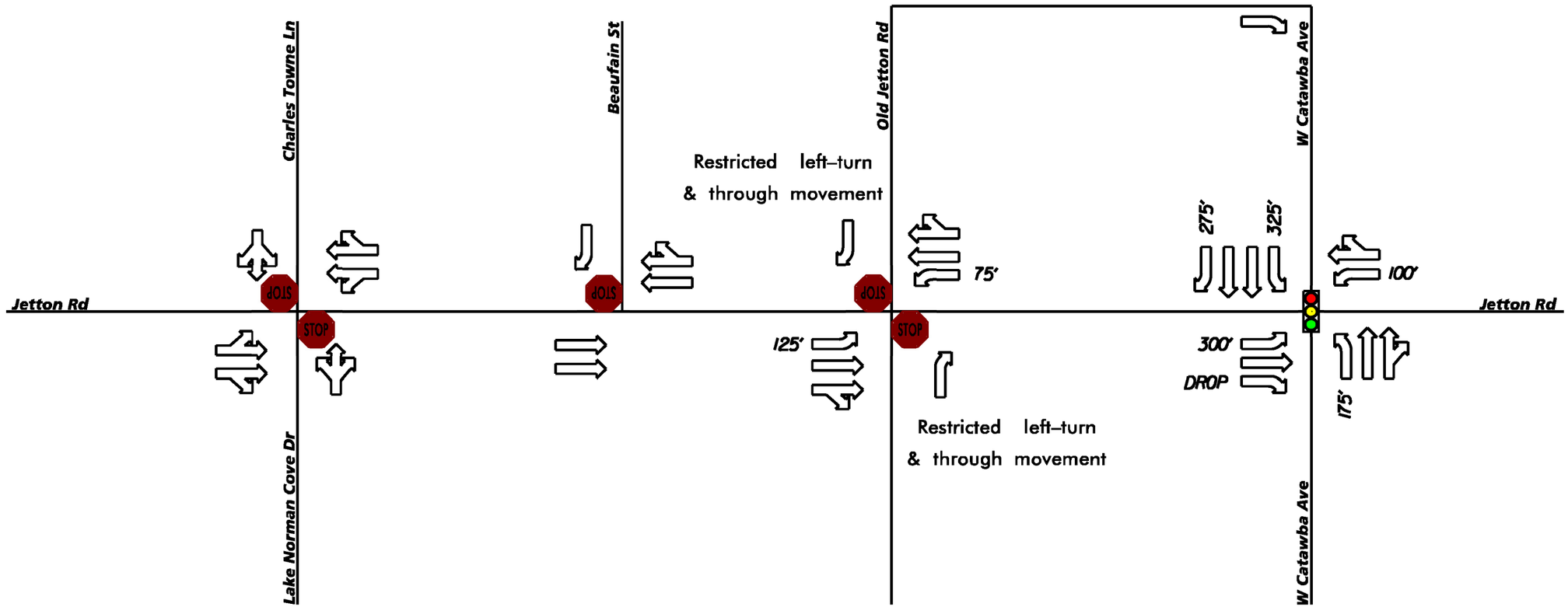
LEGEND

A A — AM LOS / PM LOS — SIGNALIZED

A A — AM LOS / PM LOS — UNSIGNALIZED
(LOS FOR UNSIGNALIZED INTERSECTIONS BASED ON WORST MOVEMENT)

XX AM PEAK HOUR VOLUMES

(XX) PM PEAK HOUR VOLUMES



JETTON RD SAFETY STUDY
MECKLENBURG COUNTY, NC

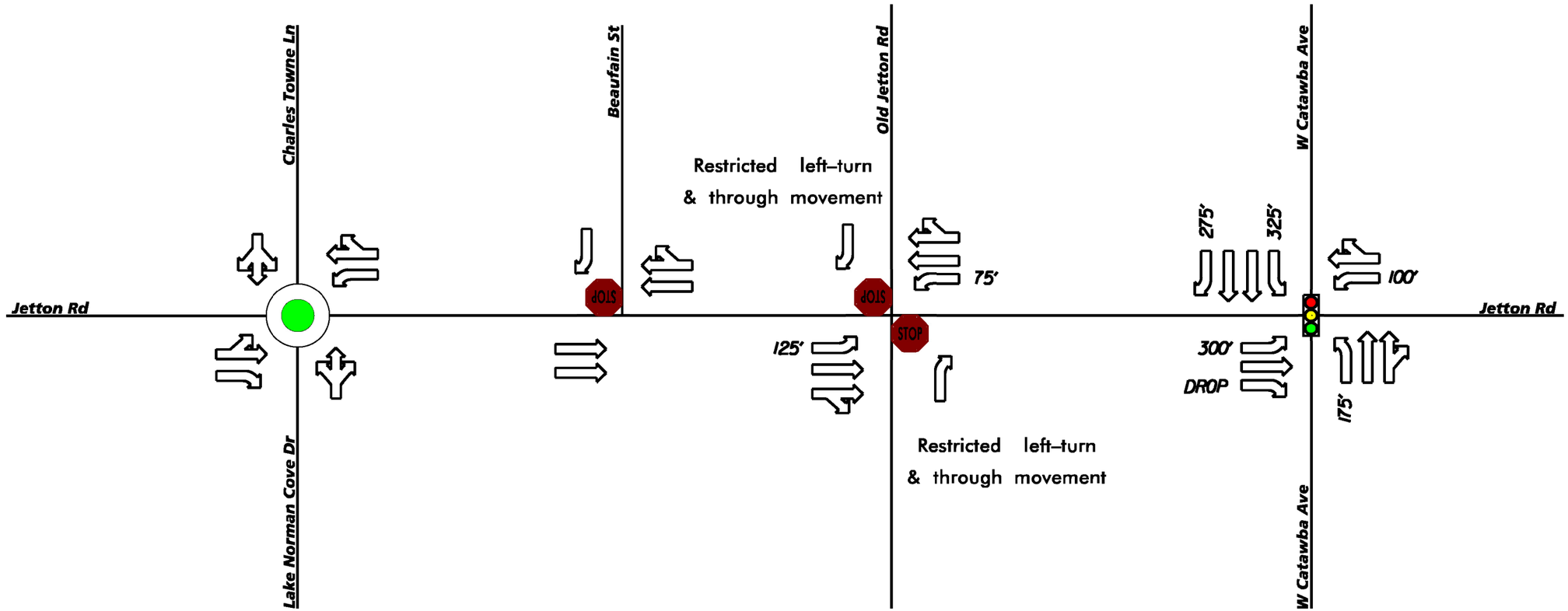
FIGURE 7
BUILD ALTERNATIVE 1
LANE CONFIGURATION

LEGEND
XX STORAGE LENGHT (FT)

DATE: MAY, 2016

WSP | PARSONS BRINCKERHOFF

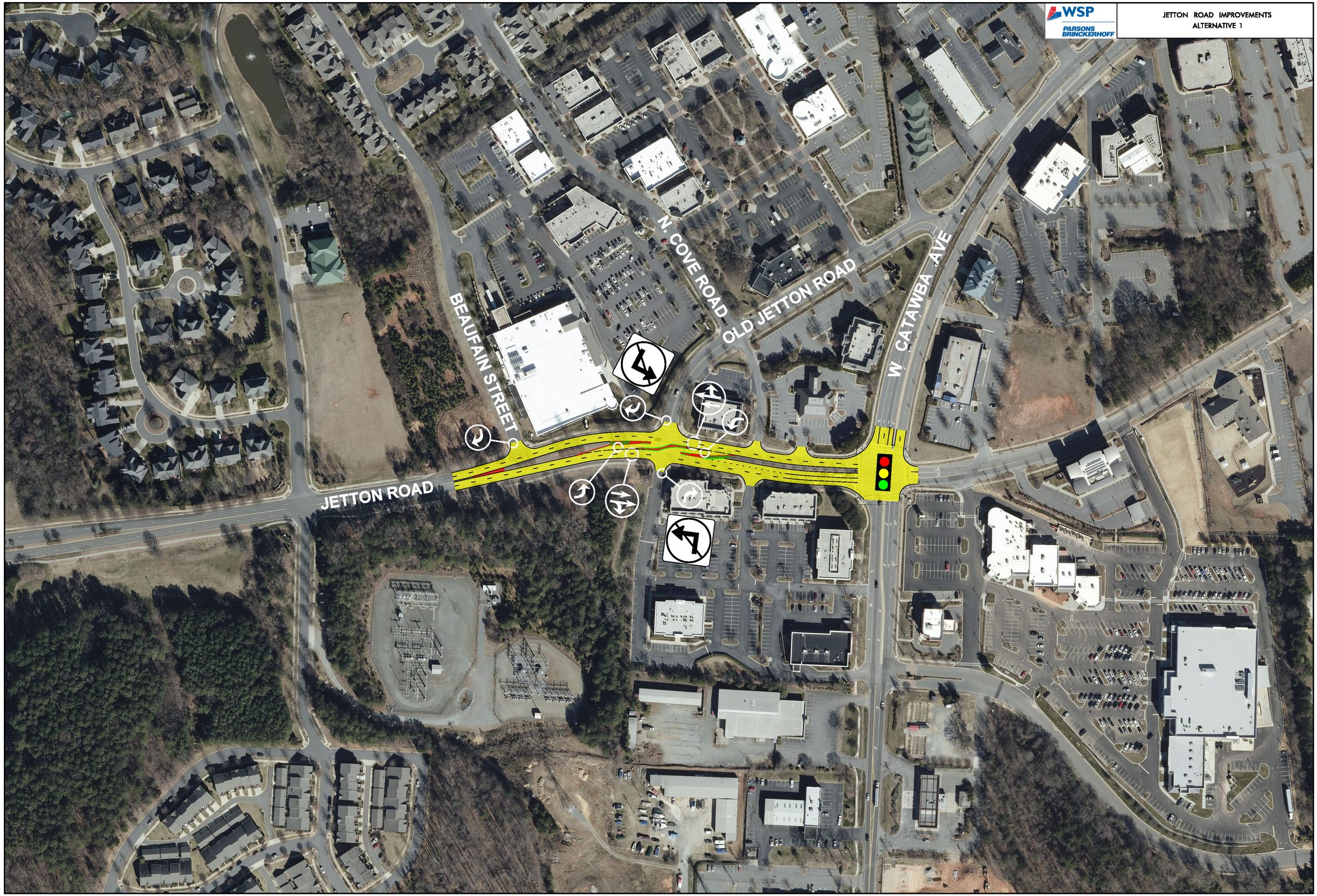
NOT TO SCALE



JETTON RD SAFETY STUDY MECKLENBURG COUNTY, NC	FIGURE 8 BUILD ALTERNATIVE 2 LANE CONFIGURATION
	LEGEND XX STORAGE LENGHT (FT)
DATE: MAY, 2016	NOT TO SCALE
WSP | PARSONS BRINCKERHOFF	

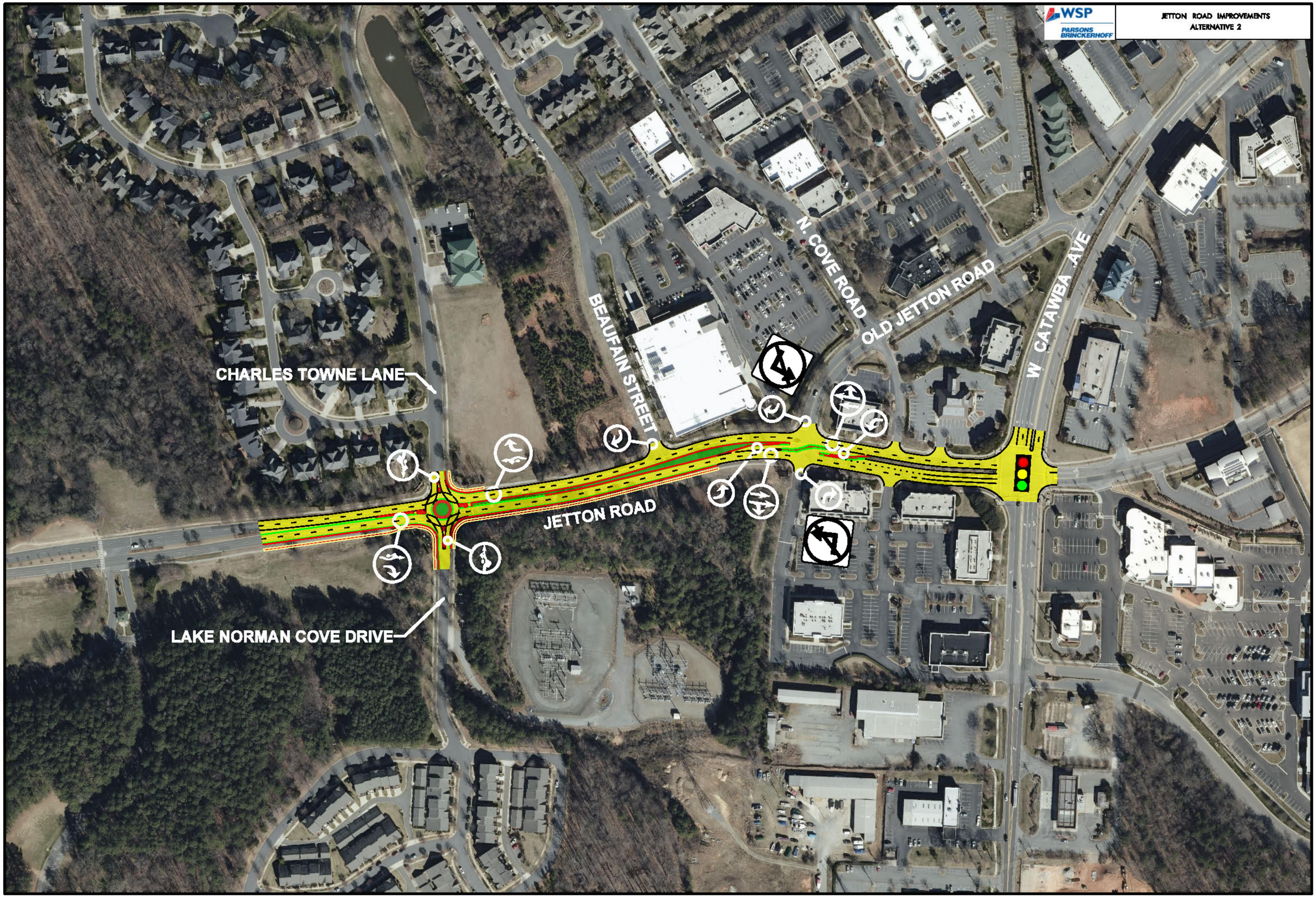
WSP
PARSONS BRINCKERHOFF

JETTON ROAD IMPROVEMENTS
ALTERNATIVE 1



WSP
PARSONS BRINCKERHOFF

JETTON ROAD IMPROVEMENTS
ALTERNATIVE 2



APPENDIX A

Raw Traffic Count Data

Project ID: 16-9080-001
Location: Catawba Ave & Jetton Rd
City: Cornelius

Day: Tuesday
Date: 2/23/2016

Peak Start Times	
AM	7:00 AM
MD	12:00 AM
PM	4:00 PM

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Catawba Ave Northbound					Catawba Ave Southbound					Jetton Rd Eastbound					Jetton Rd Westbound					
Start Time	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Int. Total
7:00 AM	22	69	18	0	109	8	149	11	0	168	27	4	99	0	130	23	3	2	0	28	435
7:15 AM	31	112	26	0	169	8	160	18	0	186	59	11	77	0	147	31	3	0	0	34	536
7:30 AM	32	143	42	0	217	7	192	21	0	220	53	28	53	0	134	24	4	2	0	30	601
7:45 AM	44	106	57	0	207	10	214	34	0	258	37	24	46	0	107	26	4	1	0	31	603
Total	129	430	143	0	702	33	715	84	0	832	176	67	275	0	518	104	14	5	0	123	2175
8:00 AM	40	134	60	0	234	12	195	31	0	238	49	16	62	0	127	30	10	5	0	45	644
8:15 AM	50	152	60	0	262	15	196	41	0	252	58	13	54	0	125	33	5	5	0	43	682
8:30 AM	58	126	57	0	241	18	121	30	0	169	47	15	49	0	111	31	11	1	0	43	564
8:45 AM	43	122	46	0	211	13	129	41	0	183	42	15	50	0	107	23	7	4	0	34	535
Total	191	534	223	0	948	58	641	143	0	842	196	59	215	0	470	117	33	15	0	165	2425
BREAK																					
4:00 PM	56	95	24	0	175	36	142	49	0	227	58	18	34	0	110	50	12	15	0	77	589
4:15 PM	72	119	32	0	223	28	159	46	0	233	52	17	45	0	114	30	23	8	0	61	631
4:30 PM	64	113	34	0	211	30	180	41	0	251	52	21	53	0	126	43	16	8	0	67	655
4:45 PM	71	124	31	0	226	25	161	44	0	230	54	16	37	0	107	46	14	13	0	73	636
Total	263	451	121	0	835	119	642	180	0	941	216	72	169	0	457	169	65	44	0	278	2511
5:00 PM	70	123	34	0	227	31	210	61	0	302	59	23	62	0	144	59	22	16	0	97	770
5:15 PM	60	150	61	0	271	26	170	45	0	241	64	22	57	0	143	87	26	8	0	121	776
5:30 PM	87	145	42	0	274	23	168	60	0	251	60	17	56	0	133	71	17	3	0	91	749
5:45 PM	66	112	37	0	215	22	158	49	0	229	62	10	49	0	121	70	13	13	0	96	661
Total	283	530	174	0	987	102	706	215	0	1023	245	72	224	0	541	287	78	40	0	405	2956
Grand Total	866	1945	661	0	3472	312	2704	622	0	3638	833	270	883	0	1986	677	190	104	0	971	10067
Apprch %	24.9	56.0	19.0	0.0		8.6	74.3	17.1	0.0		41.9	13.6	44.5	0.0		69.7	19.6	10.7	0.0		
Total %	8.6	19.3	6.6	0.0	34.5	3.1	26.9	6.2	0.0	36.1	8.3	2.7	8.8	0.0	19.7	6.7	1.9	1.0	0.0	9.6	
Cars, PU, Vans	864	1938	661	0	3463	307	2694	620	0	3621	829	268	880	0	1977	675	190	102	0	967	10028
% Cars, PU, Vans	99.8	99.6	100.0	0.0	99.7	98.4	99.6	99.7	0.0	99.5	99.5	99.3	99.7	0.0	99.5	99.7	100.0	98.1	0.0	99.6	99.6
Heavy Trucks	2	7	0		9	5	10	2		17	4	2	3		9	2	0	2		4	39
%Heavy Trucks	0.2	0.4	0.0	0.0	0.3	1.6	0.4	0.3	0.0	0.5	0.5	0.7	0.3	0.0	0.5	0.3	0.0	1.9	0.0	0.4	0.4

Project ID: 16-9080-001
Location: Catawba Ave & Jetton Rd
City: Cornelius

PEAK HOURS

Day: Tuesday
Date: 2/23/2016

AM

	Catawba Ave Northbound				Catawba Ave Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
7:30 AM	32	143	42	217	7	192	21	220	53	28	53	134	24	4	2	30	601
7:45 AM	44	106	57	207	10	214	34	258	37	24	46	107	26	4	1	31	603
8:00 AM	40	134	60	234	12	195	31	238	49	16	62	127	30	10	5	45	644
8:15 AM	50	152	60	262	15	196	41	252	58	13	54	125	33	5	5	43	682
Total Volume	166	535	219	920	44	797	127	968	197	81	215	493	113	23	13	149	2530
% App. Total	18.0	58.2	23.8	100	4.5	82.3	13.1	100	40.0	16.4	43.6	100	75.8	15.4	8.7	100	
PHF				0.878				0.938				0.920				0.828	
Cars, PU, Vans	165	534	219	918	42	793	126	961	195	81	213	489	112	23	12	147	2515
% Cars, PU, Vans	99.4	99.8	100.0	99.8	95.5	99.5	99.2	99.3	99.0	100.0	99.1	99.2	99.1	100.0	92.3	98.7	99.4
Heavy Trucks	1	1	0	2	2	4	1	7	2	0	2	4	1	0	1	2	15
%Heavy Trucks	0.6	0.2	0.0	0.2	4.5	0.5	0.8	0.7	1.0	0.0	0.9	0.8	0.9	0.0	7.7	1.3	0.6

PM

	Catawba Ave Northbound				Catawba Ave Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
5:00 PM	70	123	34	227	31	210	61	302	59	23	62	144	59	22	16	97	770
5:15 PM	60	150	61	271	26	170	45	241	64	22	57	143	87	26	8	121	776
5:30 PM	87	145	42	274	23	168	60	251	60	17	56	133	71	17	3	91	749
5:45 PM	66	112	37	215	22	158	49	229	62	10	49	121	70	13	13	96	661
Total Volume	283	530	174	987	102	706	215	1023	245	72	224	541	287	78	40	405	2956
% App. Total	28.7	53.7	17.6	100	10.0	69.0	21.0	100	45.3	13.3	41.4	100	70.9	19.3	9.9	100	
PHF				0.901				0.847				0.939				0.837	
Cars, PU, Vans	283	528	174	985	102	706	215	1023	245	72	224	541	287	78	40	405	2954
% Cars, PU, Vans	100.0	99.6	100.0	99.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9
Heavy Trucks	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
%Heavy Trucks	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

Project ID: 16-9080-002
Location: Old Jetton Rd & Jetton Rd
City: Cornelius

Day: Tuesday
Date: 2/23/2016

Peak Start Times	
AM	7:00 AM
MD	12:00 AM
PM	4:00 PM

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Old Jetton Rd Northbound					Old Jetton Rd Southbound					Jetton Rd Eastbound					Jetton Rd Westbound					
Start Time	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Int. Total
7:00 AM	0	0	0	0	0	13	0	4	0	17	4	125	2	0	131	2	24	10	0	36	184
7:15 AM	0	0	0	0	0	12	0	7	0	19	14	125	0	0	139	1	24	21	0	46	204
7:30 AM	0	1	0	0	1	18	0	5	0	23	3	128	2	0	133	2	31	20	0	53	210
7:45 AM	1	0	0	0	1	11	0	4	0	15	4	114	0	0	118	5	59	25	0	89	223
Total	1	1	0	0	2	54	0	20	0	74	25	492	4	0	521	10	138	76	0	224	821
8:00 AM	1	0	0	0	1	9	0	5	0	14	7	102	0	0	109	1	64	18	0	83	207
8:15 AM	2	0	2	0	4	10	0	7	0	17	10	105	0	0	115	7	76	15	0	98	234
8:30 AM	0	0	0	0	0	15	0	5	0	20	4	89	1	0	94	5	85	20	0	110	224
8:45 AM	1	2	1	0	4	14	3	11	0	28	8	110	1	0	119	1	85	11	0	97	248
Total	4	2	3	0	9	48	3	28	0	79	29	406	2	0	437	14	310	64	0	388	913
BREAK																					
4:00 PM	1	1	2	0	4	34	1	14	0	49	12	83	3	0	98	10	104	34	0	148	299
4:15 PM	0	2	2	0	4	30	1	8	0	39	14	69	0	0	83	16	86	26	0	128	254
4:30 PM	1	1	4	0	6	25	6	11	0	42	9	87	1	0	97	14	99	21	0	134	279
4:45 PM	7	3	3	0	13	27	3	17	0	47	10	77	2	0	89	16	106	22	0	144	293
Total	9	7	11	0	27	116	11	50	0	177	45	316	6	0	367	56	395	103	0	554	1125
5:00 PM	4	5	7	0	16	28	4	5	0	37	6	102	0	0	108	18	90	29	0	137	298
5:15 PM	5	4	2	0	11	45	1	7	0	53	3	97	1	0	101	12	100	30	0	142	307
5:30 PM	0	0	2	0	2	38	1	11	0	50	11	72	1	0	84	8	95	27	0	130	266
5:45 PM	3	1	3	0	7	34	3	14	0	51	12	72	3	0	87	11	101	24	0	136	281
Total	12	10	14	0	36	145	9	37	0	191	32	343	5	0	380	49	386	110	0	545	1152
Grand Total	26	20	28	0	74	363	23	135	0	521	131	1557	17	0	1705	129	1229	353	0	1711	4011
Apprch %	35.1	27.0	37.8	0.0		69.7	4.4	25.9	0.0		7.7	91.3	1.0	0.0		7.5	71.8	20.6	0.0		
Total %	0.6	0.5	0.7	0.0	1.8	9.1	0.6	3.4	0.0	13.0	3.3	38.8	0.4	0.0	42.5	3.2	30.6	8.8	0.0	42.7	
Cars, PU, Vans	26	20	28	0	74	359	23	135	0	517	131	1555	17	0	1703	129	1225	353	0	1707	4001
% Cars, PU, Vans	100.0	100.0	100.0	0.0	100.0	98.9	100.0	100.0	0.0	99.2	100.0	99.9	100.0	0.0	99.9	100.0	99.7	100.0	0.0	99.8	99.8
Heavy Trucks	0	0	0		0	4	0	0		4	0	2	0		2	0	4	0		4	10
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.2	0.2

Project ID: 16-9080-002
Location: Old Jetton Rd & Jetton Rd
City: Cornelius

PEAK HOURS

Day: Tuesday
Date: 2/23/2016

AM

	Old Jetton Rd Northbound				Old Jetton Rd Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
8:00 AM	1	0	0	1	9	0	5	14	7	102	0	109	1	64	18	83	207
8:15 AM	2	0	2	4	10	0	7	17	10	105	0	115	7	76	15	98	234
8:30 AM	0	0	0	0	15	0	5	20	4	89	1	94	5	85	20	110	224
8:45 AM	1	2	1	4	14	3	11	28	8	110	1	119	1	85	11	97	248
Total Volume	4	2	3	9	48	3	28	79	29	406	2	437	14	310	64	388	913
% App. Total	44.4	22.2	33.3	100	60.8	3.8	35.4	100	6.6	92.9	0.5	100	3.6	79.9	16.5	100	
PHF				0.563				0.705				0.918				0.882	
Cars, PU, Vans	4	2	3	9	45	3	28	76	29	404	2	435	14	308	64	386	906
% Cars, PU, Vans	100.0	100.0	100.0	100.0	93.8	100.0	100.0	96.2	100.0	99.5	100.0	99.5	100.0	99.4	100.0	99.5	99.2
Heavy Trucks	0	0	0	0	3	0	0	3	0	2	0	2	0	2	0	2	7
%Heavy Trucks	0.0	0.0	0.0	0.0	6.3	0.0	0.0	3.8	0.0	0.5	0.0	0.5	0.0	0.6	0.0	0.5	0.8

PM

	Old Jetton Rd Northbound				Old Jetton Rd Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
4:30 PM	1	1	4	6	25	6	11	42	9	87	1	97	14	99	21	134	279
4:45 PM	7	3	3	13	27	3	17	47	10	77	2	89	16	106	22	144	293
5:00 PM	4	5	7	16	28	4	5	37	6	102	0	108	18	90	29	137	298
5:15 PM	5	4	2	11	45	1	7	53	3	97	1	101	12	100	30	142	307
Total Volume	17	13	16	46	125	14	40	179	28	363	4	395	60	395	102	557	1177
% App. Total	37.0	28.3	34.8	100	69.8	7.8	22.3	100	7.1	91.9	1.0	100	10.8	70.9	18.3	100	
PHF				0.719				0.844				0.914				0.967	
Cars, PU, Vans	17	13	16	46	125	14	40	179	28	363	4	395	60	395	102	557	1177
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Project ID: 16-9080-003
Location: Beaufain St & Jetton Rd
City: Cornelius

Day: Tuesday
Date: 2/23/2016

Peak Start Times	
AM	7:00 AM
MD	12:00 AM
PM	4:00 PM

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Beaufain St Northbound					Beaufain St Southbound					Jetton Rd Eastbound					Jetton Rd Westbound					
Start Time	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Int. Total
7:00 AM	0	0	0	0	0	0	0	4	0	4	0	134	0	0	134	0	26	1	0	27	165
7:15 AM	0	0	0	0	0	0	0	2	0	2	0	137	0	0	137	0	32	0	0	32	171
7:30 AM	0	0	0	0	0	0	0	1	0	1	1	132	0	0	133	0	35	0	0	35	169
7:45 AM	0	0	0	0	0	0	0	4	0	4	0	121	0	0	121	0	55	2	0	57	182
Total	0	0	0	0	0	0	0	11	0	11	1	524	0	0	525	0	148	3	0	151	687
8:00 AM	0	0	0	0	0	0	0	3	0	3	1	110	0	0	111	0	72	3	0	75	189
8:15 AM	0	0	0	0	0	0	0	11	0	11	0	114	0	0	114	0	85	2	0	87	212
8:30 AM	0	0	0	0	0	0	0	4	0	4	0	93	0	0	93	0	86	3	0	89	186
8:45 AM	0	0	0	0	0	0	0	1	0	1	0	120	0	0	120	0	95	3	0	98	219
Total	0	0	0	0	0	0	0	19	0	19	1	437	0	0	438	0	338	11	0	349	806
BREAK																					
4:00 PM	0	0	0	0	0	0	0	5	0	5	0	97	0	0	97	0	115	0	0	115	217
4:15 PM	0	0	0	0	0	0	0	9	0	9	0	85	0	0	85	0	95	1	0	96	190
4:30 PM	0	0	0	0	0	0	0	8	0	8	0	94	0	0	94	0	112	1	0	113	215
4:45 PM	0	0	0	0	0	0	0	11	0	11	0	90	0	0	90	0	124	2	0	126	227
Total	0	0	0	0	0	0	0	33	0	33	0	366	0	0	366	0	446	4	0	450	849
5:00 PM	0	0	0	0	0	0	0	7	0	7	0	108	0	0	108	0	106	0	0	106	221
5:15 PM	0	0	0	0	0	0	0	8	0	8	0	101	0	0	101	0	104	0	0	104	213
5:30 PM	0	0	0	0	0	0	0	13	0	13	0	86	0	0	86	0	108	1	0	109	208
5:45 PM	0	0	0	0	0	0	0	3	0	3	0	88	0	0	88	0	112	2	0	114	205
Total	0	0	0	0	0	0	0	31	0	31	0	383	0	0	383	0	430	3	0	433	847
Grand Total	0	0	0	0	0	0	0	94	0	94	2	1710	0	0	1712	0	1362	21	0	1383	3189
Apprch %	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		0.1	99.9	0.0	0.0		0.0	98.5	1.5	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	2.9	0.1	53.6	0.0	0.0	53.7	0.0	42.7	0.7	0.0	43.4	
Cars, PU, Vans	0	0	0	0	0	0	0	94	0	94	2	1708	0	0	1710	0	1359	20	0	1379	3183
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	99.9	0.0	0.0	99.9	0.0	99.8	95.2	0.0	99.7	99.8
Heavy Trucks	0	0	0		0	0	0	0		0	0	2	0		2	0	3	1		4	6
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	4.8	0.0	0.3	0.2

Project ID: 16-9080-003
Location: Beaufain St & Jetton Rd
City: Cornelius

PEAK HOURS

Day: Tuesday
Date: 2/23/2016

AM

	Beaufain St Northbound				Beaufain St Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
8:00 AM	0	0	0	0	0	0	3	3	1	110	0	111	0	72	3	75	189
8:15 AM	0	0	0	0	0	0	11	11	0	114	0	114	0	85	2	87	212
8:30 AM	0	0	0	0	0	0	4	4	0	93	0	93	0	86	3	89	186
8:45 AM	0	0	0	0	0	0	1	1	0	120	0	120	0	95	3	98	219
Total Volume	0	0	0	0	0	0	19	19	1	437	0	438	0	338	11	349	806
% App. Total	0.0	0.0	0.0	0	0.0	0.0	100.0	100	0.2	99.8	0.0	100	0.0	96.8	3.2	100	
PHF				0.000				0.432				0.913				0.890	
Cars, PU, Vans	0	0	0	0	0	0	19	19	1	435	0	436	0	336	10	346	801
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	99.5	0.0	99.5	0.0	99.4	90.9	99.1	99.4
Heavy Trucks	0	0	0	0	0	0	0	0	0	2	0	2	0	2	1	3	5
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.6	9.1	0.9	0.6

PM

	Beaufain St Northbound				Beaufain St Southbound				Jetton Rd Eastbound				Jetton Rd Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
4:30 PM	0	0	0	0	0	0	8	8	0	94	0	94	0	112	1	113	215
4:45 PM	0	0	0	0	0	0	11	11	0	90	0	90	0	124	2	126	227
5:00 PM	0	0	0	0	0	0	7	7	0	108	0	108	0	106	0	106	221
5:15 PM	0	0	0	0	0	0	8	8	0	101	0	101	0	104	0	104	213
Total Volume	0	0	0	0	0	0	34	34	0	393	0	393	0	446	3	449	876
% App. Total	0.0	0.0	0.0	0	0.0	0.0	100.0	100	0.0	100.0	0.0	100	0.0	99.3	0.7	100	
PHF				0.000				0.773				0.910				0.891	
Cars, PU, Vans	0	0	0	0	0	0	34	34	0	393	0	393	0	446	3	449	876
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0	100.0	100.0
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Project ID: 16-9080-004
Location: Charles Towne Ln_Lake Norman Cove Dr & Jetton Rd
City: Cornelius

Day: Tuesday
Date: 2/23/2016

Peak Start Times	
AM	7:00 AM
MD	12:00 AM
PM	4:00 PM

Groups Printed - Cars, PU, Vans - Heavy Trucks

	arles Towne Ln_Lake Norman Cove Northbound					arles Towne Ln_Lake Norman Cove Southbound					Jetton Rd Eastbound					Jetton Rd Westbound					
Start Time	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Left	Thru	Rgt	Peds	App. Total	Int. Total
7:00 AM	0	0	4	0	4	7	0	3	0	10	3	122	1	0	126	1	28	2	0	31	171
7:15 AM	0	0	6	0	6	10	0	0	0	10	3	117	0	0	120	0	32	2	0	34	170
7:30 AM	0	1	2	0	3	9	0	0	0	9	1	121	0	0	122	1	35	0	0	36	170
7:45 AM	0	0	5	0	5	12	0	2	0	14	0	104	1	0	105	2	56	2	0	60	184
Total	0	1	17	0	18	38	0	5	0	43	7	464	2	0	473	4	151	6	0	161	695
8:00 AM	0	0	6	0	6	10	0	0	0	10	0	93	0	0	93	1	70	4	0	75	184
8:15 AM	0	0	12	0	12	9	0	2	0	11	2	95	1	0	98	2	84	6	0	92	213
8:30 AM	0	0	3	0	3	6	0	1	0	7	1	85	0	0	86	1	83	2	0	86	182
8:45 AM	0	0	7	0	7	4	0	1	0	5	0	104	1	0	105	1	89	5	0	95	212
Total	0	0	28	0	28	29	0	4	0	33	3	377	2	0	382	5	326	17	0	348	791
BREAK																					
4:00 PM	0	0	8	0	8	6	0	1	0	7	0	81	0	0	81	1	112	10	0	123	219
4:15 PM	1	1	5	0	7	3	0	2	0	5	3	77	0	0	80	0	101	2	0	103	195
4:30 PM	2	0	5	0	7	3	0	0	0	3	2	85	1	0	88	6	104	6	0	116	214
4:45 PM	1	0	5	0	6	6	0	2	0	8	1	81	1	0	83	6	122	3	0	131	228
Total	4	1	23	0	28	18	0	5	0	23	6	324	2	0	332	13	439	21	0	473	856
5:00 PM	0	0	3	0	3	2	0	4	0	6	2	103	1	0	106	4	108	5	0	117	232
5:15 PM	1	1	5	0	7	6	0	4	0	10	0	91	2	0	93	11	95	6	0	112	222
5:30 PM	1	0	2	0	3	6	0	2	0	8	0	75	0	0	75	5	110	6	0	121	207
5:45 PM	0	1	7	0	8	4	0	4	0	8	2	76	1	0	79	8	103	7	0	118	213
Total	2	2	17	0	21	18	0	14	0	32	4	345	4	0	353	28	416	24	0	468	874
Grand Total	6	4	85	0	95	103	0	28	0	131	20	1510	10	0	1540	50	1332	68	0	1450	3216
Apprch %	6.3	4.2	89.5	0.0		78.6	0.0	21.4	0.0		1.3	98.1	0.6	0.0		3.4	91.9	4.7	0.0		
Total %	0.2	0.1	2.6	0.0	3.0	3.2	0.0	0.9	0.0	4.1	0.6	47.0	0.3	0.0	47.9	1.6	41.4	2.1	0.0	45.1	
Cars, PU, Vans	6	4	85	0	95	102	0	28	0	130	20	1509	10	0	1539	50	1331	67	0	1448	3212
% Cars, PU, Vans	100.0	100.0	100.0	0.0	100.0	99.0	0.0	100.0	0.0	99.2	100.0	99.9	100.0	0.0	99.9	100.0	99.9	98.5	0.0	99.9	99.9
Heavy Trucks	0	0	0		0	1	0	0		1	0	1	0		1	0	1	1		2	4
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.1	1.5	0.0	0.1	0.1

Project ID: 16-9080-004
Location: Charles Towne Ln_Lake N
City: Cornelius

PEAK HOURS

Day: Tuesday
Date: 2/23/2016

AM

	s Towne Ln_Lake Norman C				s Towne Ln_Lake Norman C				Jetton Rd				Jetton Rd				
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
8:00 AM	0	0	6	6	10	0	0	10	0	93	0	93	1	70	4	75	184
8:15 AM	0	0	12	12	9	0	2	11	2	95	1	98	2	84	6	92	213
8:30 AM	0	0	3	3	6	0	1	7	1	85	0	86	1	83	2	86	182
8:45 AM	0	0	7	7	4	0	1	5	0	104	1	105	1	89	5	95	212
Total Volume	0	0	28	28	29	0	4	33	3	377	2	382	5	326	17	348	791
% App. Total	0.0	0.0	100.0	100	87.9	0.0	12.1	100	0.8	98.7	0.5	100	1.4	93.7	4.9	100	
PHF				0.583				0.750				0.910				0.916	
Cars, PU, Vans	0	0	28	28	28	0	4	32	3	376	2	381	5	325	17	347	788
% Cars, PU, Vans	0.0	0.0	100.0	100.0	96.6	0.0	100.0	97.0	100.0	99.7	100.0	99.7	100.0	99.7	100.0	99.7	99.6
Heavy Trucks	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
%Heavy Trucks	0.0	0.0	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.3	0.0	0.3	0.0	0.3	0.0	0.3	0.4

PM

	s Towne Ln_Lake Norman C				s Towne Ln_Lake Norman C				Jetton Rd				Jetton Rd				
	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Left	Thru	Rgt	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
4:30 PM	2	0	5	7	3	0	0	3	2	85	1	88	6	104	6	116	214
4:45 PM	1	0	5	6	6	0	2	8	1	81	1	83	6	122	3	131	228
5:00 PM	0	0	3	3	2	0	4	6	2	103	1	106	4	108	5	117	232
5:15 PM	1	1	5	7	6	0	4	10	0	91	2	93	11	95	6	112	222
Total Volume	4	1	18	23	17	0	10	27	5	360	5	370	27	429	20	476	896
% App. Total	17.4	4.3	78.3	100	63.0	0.0	37.0	100	1.4	97.3	1.4	100	5.7	90.1	4.2	100	
PHF				0.821				0.675				0.873				0.908	
Cars, PU, Vans	4	1	18	23	17	0	10	27	5	360	5	370	27	429	20	476	896
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX B

Speed Data

Spot Speed Study

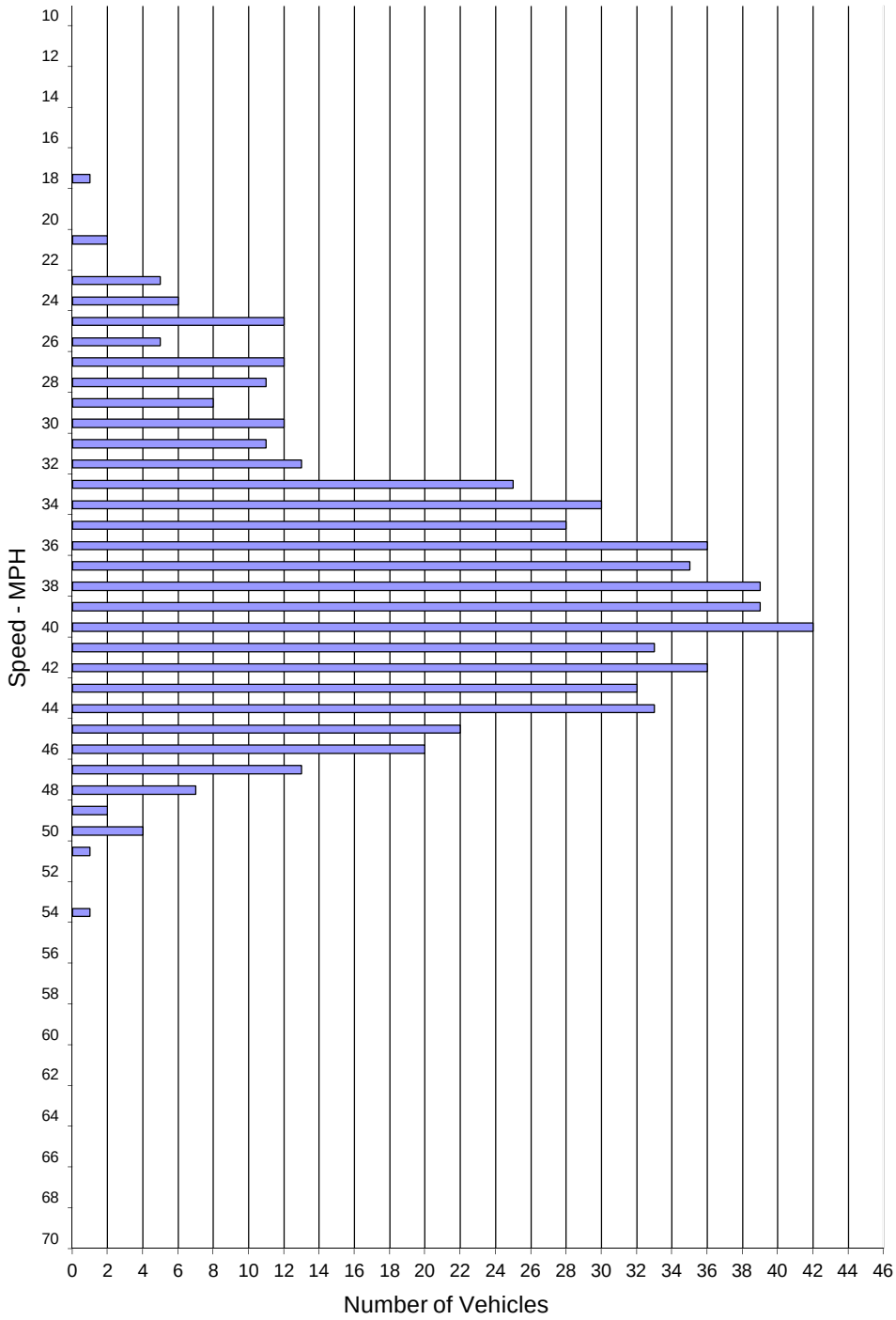
Prepared by: National Data & Surveying Services

City of Cornelius

DATE: 2/23/2016 **Location:** Jetton Rd bet. Charles Towne Ln/Lake Norman Cove Dr & Beaufain St
DAY: Tuesday **Posted Speed:** 45 MPH **Project #:** 16-9079-001
TIME: 6AM-9AM

Eastbound & Westbound Spot Speeds

Speed mph	ALL Vehicles
<=10	
11	
12	
13	
14	
15	
16	
17	
18	1
19	
20	
21	2
22	
23	5
24	6
25	12
26	5
27	12
28	11
29	8
30	12
31	11
32	13
33	25
34	30
35	28
36	36
37	35
38	39
39	39
40	42
41	33
42	36
43	32
44	33
45	22
46	20
47	13
48	7
49	2
50	4
51	1
52	
53	
54	1
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
>=70	



SPEED PARAMETERS

Class	Count	Average Speed	Range	50th Percentile	85th Percentile	10 MPH Pace	# in Pace	Percent in Pace	% / # Below Pace	% / # Above Pace
ALL	576	37.8	18 - 54	38 mph	44 mph	35 - 44	353	61%	26% / 153	13% / 70

Spot Speed Study

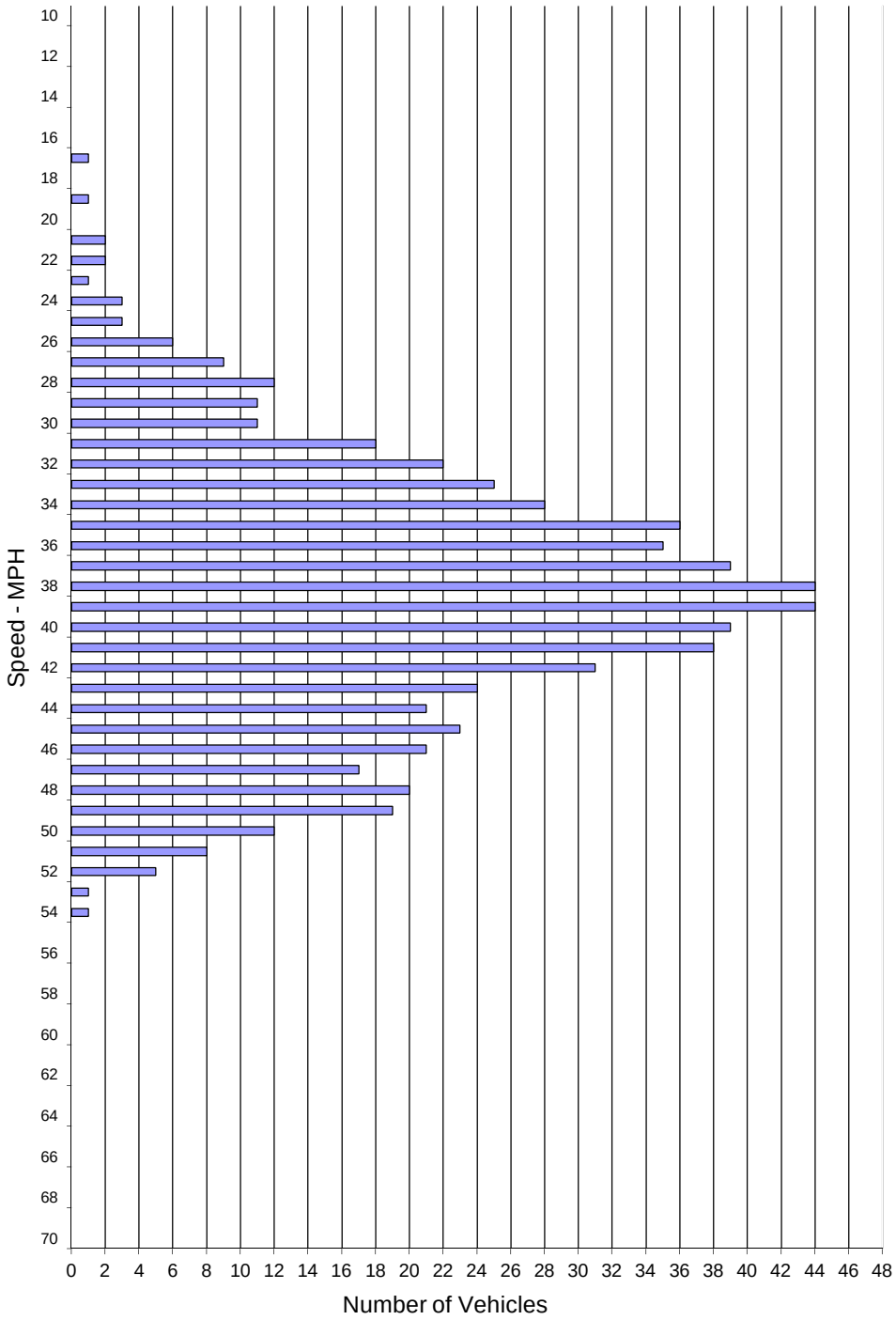
Prepared by: National Data & Surveying Services

City of Cornelius

DATE: 2/23/2016 **Location:** Jetton Rd bet. Charles Towne Ln/Lake Norman Cove Dr & Beaufain St
DAY: Tuesday **Posted Speed:** 45 MPH **Project #:** 16-9079-001
TIME: 3PM-6PM

Eastbound & Westbound Spot Speeds

Speed mph	ALL Vehicles
<=10	
11	
12	
13	
14	
15	
16	
17	1
18	
19	1
20	
21	2
22	2
23	1
24	3
25	3
26	6
27	9
28	12
29	11
30	11
31	18
32	22
33	25
34	28
35	36
36	35
37	39
38	44
39	44
40	39
41	38
42	31
43	24
44	21
45	23
46	21
47	17
48	20
49	19
50	12
51	8
52	5
53	1
54	1
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
>=70	



SPEED PARAMETERS

Class	Count	Average Speed	Range	50th Percentile	85th Percentile	10 MPH Pace	# in Pace	Percent in Pace	% / # Below Pace	% / # Above Pace
ALL	633	38.7	17 - 54	39 mph	46 mph	33 - 42	359	57%	16% / 102	28% / 172

APPENDIX C

SYNCHRO Reports

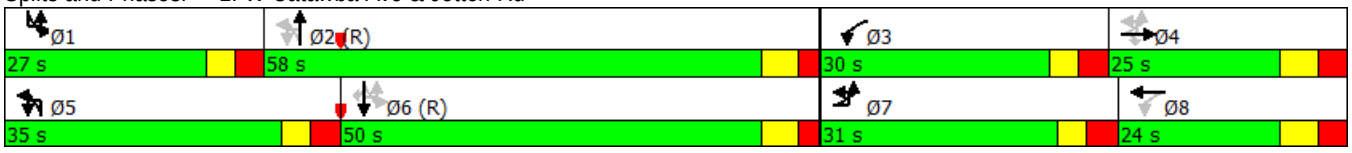
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	1	197	81	215	113	23	13	1	166	535	219	2
Future Volume (vph)	1	197	81	215	113	23	13	1	166	535	219	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.947				0.956		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1764	0	0	1770	3383	0	0
Flt Permitted		0.599			0.700				0.209			
Satd. Flow (perm)	0	1116	1863	1583	1304	1764	0	0	389	3383	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			511			1383				1569		
Travel Time (s)			7.7			37.7				30.6		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	214	88	234	126	26	14	1	184	594	243	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	88	234	126	40	0	0	185	837	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		48.9	30.6	30.6	33.4	21.0			82.4	72.1		
Actuated g/C Ratio		0.35	0.22	0.22	0.24	0.15			0.59	0.52		
v/c Ratio		0.42	0.22	0.68	0.35	0.15			0.51	0.48		
Control Delay		36.3	46.7	61.2	37.2	51.5			18.7	24.1		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		36.3	46.7	61.2	37.2	51.5			18.7	24.1		
LOS		D	D	E	D	D			B	C		
Approach Delay			48.8			40.6				23.1		
Approach LOS			D			D				C		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 30.8 Intersection LOS: C
Intersection Capacity Utilization 65.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	29	406	2	3	14	310	64	4	2	3	48	3
Future Volume (Veh/h)	29	406	2	3	14	310	64	4	2	3	48	3
Sign Control		Free				Free			Stop			Stop
Grade		0%				0%			0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	32	441	2	0	16	344	71	4	2	3	53	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None				None						
Median storage veh)												
Upstream signal (ft)						511						
pX, platoon unblocked				0.00								
vC, conflicting volume	415			0	443			742	953	222	700	918
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			0	443			742	953	222	700	918
tC, single (s)	4.1			0.0	4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)												
tF (s)	2.2			0.0	2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	97			0	99			99	99	100	83	99
cM capacity (veh/h)	1140			0	1113			280	247	782	312	259

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	32	294	149	16	229	186	9	87
Volume Left	32	0	0	16	0	0	4	53
Volume Right	0	0	2	0	0	71	3	31
cSH	1140	1700	1700	1113	1700	1700	343	395
Volume to Capacity	0.03	0.17	0.09	0.01	0.13	0.11	0.03	0.22
Queue Length 95th (ft)	2	0	0	1	0	0	2	21
Control Delay (s)	8.2	0.0	0.0	8.3	0.0	0.0	15.8	16.7
Lane LOS	A			A			C	C
Approach Delay (s)	0.6			0.3			15.8	16.7
Approach LOS							C	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	437	338	11	0	19
Future Volume (Veh/h)	0	437	338	11	0	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	480	376	12	0	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			852			
pX, platoon unblocked						
vC, conflicting volume	388				622	194
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	388				622	194
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1167				419	815

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	240	240	251	137	21
Volume Left	0	0	0	0	0
Volume Right	0	0	0	12	21
cSH	1700	1700	1700	1700	815
Volume to Capacity	0.14	0.14	0.15	0.08	0.03
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	9.5
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.5
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	377	2	5	326	17	4	4	28	29	4	4
Future Volume (Veh/h)	3	377	2	5	326	17	4	4	28	29	4	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	414	2	5	354	18	4	4	31	32	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	372			416			614	803	415	826	795	186
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372			416			614	803	415	826	795	186
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	95	87	99	100
cM capacity (veh/h)	1183			1139			369	313	586	247	317	824

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	3	416	182	195	39	40
Volume Left	3	0	5	0	4	32
Volume Right	0	2	0	18	31	4
cSH	1183	1700	1139	1700	510	272
Volume to Capacity	0.00	0.24	0.00	0.11	0.08	0.15
Queue Length 95th (ft)	0	0	0	0	6	13
Control Delay (s)	8.1	0.0	0.3	0.0	12.6	20.5
Lane LOS	A		A		B	C
Approach Delay (s)	0.1		0.1		12.6	20.5
Approach LOS					B	C

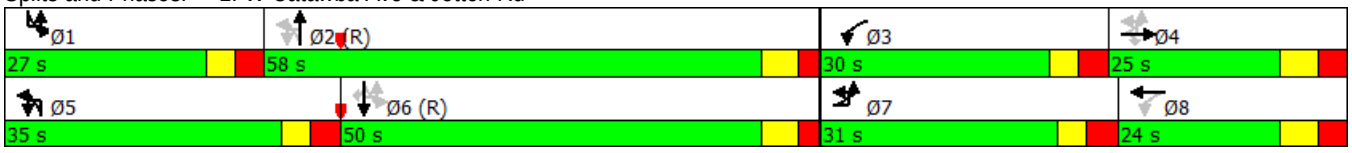
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	1	245	72	224	287	78	40	2	283	530	174	9
Future Volume (vph)	1	245	72	224	287	78	40	2	283	530	174	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.950				0.963		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1770	0	0	1770	3408	0	0
Flt Permitted		0.641			0.652				0.179			
Satd. Flow (perm)	0	1194	1863	1583	1215	1770	0	0	333	3408	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	261	77	238	319	87	44	2	314	589	193	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	77	238	319	131	0	0	316	782	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		48.7	27.1	27.1	53.7	29.4			76.3	60.8		
Actuated g/C Ratio		0.35	0.19	0.19	0.38	0.21			0.54	0.43		
v/c Ratio		0.52	0.21	0.78	0.57	0.35			0.77	0.53		
Control Delay		35.6	52.5	72.6	36.4	52.5			34.0	30.8		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		35.6	52.5	72.6	36.4	52.5			34.0	30.8		
LOS		D	D	E	D	D			C	C		
Approach Delay			53.1			41.1				31.7		
Approach LOS			D			D				C		

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 39.0	Intersection LOS: D
Intersection Capacity Utilization 79.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	28	363	4	27	60	395	102	17	13	16	125
Future Volume (Veh/h)	1	28	363	4	27	60	395	102	17	13	16	125
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.91	0.91	0.91	0.90	0.97	0.97	0.97	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	31	399	4	0	62	407	105	19	14	18	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	512			0	403			842	1099	202	870
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	512			0	403			842	1099	202	870
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	97			0	95			91	93	98	35
cM capacity (veh/h)	0	1050			0	1152			214	194	806	213

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	31	266	137	62	271	241	51	199
Volume Left	31	0	0	62	0	0	19	139
Volume Right	0	0	4	0	0	105	18	44
cSH	1050	1700	1700	1152	1700	1700	278	252
Volume to Capacity	0.03	0.16	0.08	0.05	0.16	0.14	0.18	0.79
Queue Length 95th (ft)	2	0	0	4	0	0	16	148
Control Delay (s)	8.5	0.0	0.0	8.3	0.0	0.0	20.8	57.5
Lane LOS	A			A			C	F
Approach Delay (s)	0.6			0.9			20.8	57.5
Approach LOS							C	F

Intersection Summary			
Average Delay	10.6		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	393	446	3	0	34
Future Volume (Veh/h)	0	393	446	3	0	34
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	432	496	3	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	499				714	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	499				714	250
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	1061				366	750

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	216	216	331	168	38
Volume Left	0	0	0	0	0
Volume Right	0	0	0	3	38
cSH	1700	1700	1700	1700	750
Volume to Capacity	0.13	0.13	0.19	0.10	0.05
Queue Length 95th (ft)	0	0	0	0	4
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	360	5	27	429	20	4	1	18	17	4	10
Future Volume (Veh/h)	5	360	5	27	429	20	4	1	18	17	4	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	400	6	30	471	22	4	1	20	19	4	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	493			406			724	968	403	974	960	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	493			406			724	968	403	974	960	246
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			99	100	97	90	98	99
cM capacity (veh/h)	1067			1149			298	244	597	194	247	754

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	6	406	266	258	25	34
Volume Left	6	0	30	0	4	19
Volume Right	0	6	0	22	20	11
cSH	1067	1700	1149	1700	490	264
Volume to Capacity	0.01	0.24	0.03	0.15	0.05	0.13
Queue Length 95th (ft)	0	0	2	0	4	11
Control Delay (s)	8.4	0.0	1.1	0.0	12.7	20.7
Lane LOS	A		A		B	C
Approach Delay (s)	0.1		0.6		12.7	20.7
Approach LOS					B	C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				652		
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1084	1622			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	0	0	0	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

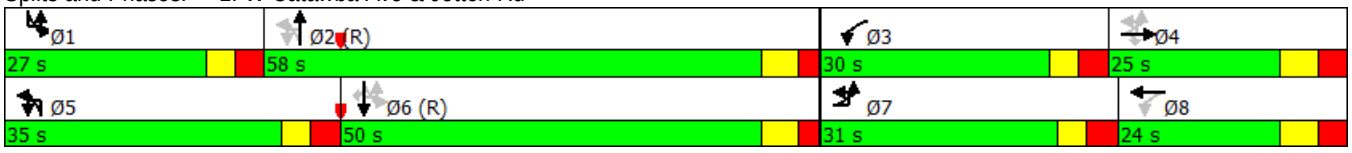
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	1	239	98	260	137	28	16	1	201	648	265	2
Future Volume (vph)	1	239	98	260	137	28	16	1	201	648	265	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.945				0.957		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1760	0	0	1770	3387	0	0
Flt Permitted		0.595			0.688				0.099			
Satd. Flow (perm)	0	1108	1863	1583	1282	1760	0	0	184	3387	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	260	107	283	152	31	18	1	223	720	294	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	261	107	283	152	49	0	0	224	1014	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		53.9	33.8	33.8	35.3	21.0			77.7	66.9		
Actuated g/C Ratio		0.38	0.24	0.24	0.25	0.15			0.56	0.48		
v/c Ratio		0.46	0.24	0.74	0.40	0.19			0.71	0.63		
Control Delay		35.0	47.0	63.2	37.5	53.5			37.9	29.5		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		35.0	47.0	63.2	37.5	53.5			37.9	29.5		
LOS		D	D	E	D	D			D	C		
Approach Delay			49.3			41.4				31.0		
Approach LOS			D			D				C		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 38.0 Intersection LOS: D
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	4	35	492	2	17	375	77	5	2	4	58	4
Future Volume (Veh/h)	4	35	492	2	17	375	77	5	2	4	58	4
Sign Control			Free			Free			Stop			Stop
Grade			0%			0%			0%			0%
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	535	2	19	417	86	6	2	4	64	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None			None						
Median storage veh)												
Upstream signal (ft)						518						
pX, platoon unblocked	0.00											
vC, conflicting volume	0	503			537			898	1153	268	846	1111
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	503			537			898	1153	268	846	1111
tC, single (s)	0.0	4.1			4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	0	96			98			97	99	99	74	98
cM capacity (veh/h)	0	1058			1027			210	186	730	242	197

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	38	357	180	19	278	225	12	106
Volume Left	38	0	0	19	0	0	6	64
Volume Right	0	0	2	0	0	86	4	38
cSH	1058	1700	1700	1027	1700	1700	267	315
Volume to Capacity	0.04	0.21	0.11	0.02	0.16	0.13	0.04	0.34
Queue Length 95th (ft)	3	0	0	1	0	0	4	36
Control Delay (s)	8.5	0.0	0.0	8.6	0.0	0.0	19.1	22.1
Lane LOS	A			A			C	C
Approach Delay (s)	0.6			0.3			19.1	22.1
Approach LOS							C	C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	529	409	13	0	23
Future Volume (Veh/h)	0	529	409	13	0	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	581	454	14	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	468				752	234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				752	234
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1090				346	768

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	290	290	303	165	26
Volume Left	0	0	0	0	0
Volume Right	0	0	0	14	26
cSH	1700	1700	1700	1700	768
Volume to Capacity	0.17	0.17	0.18	0.10	0.03
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	456	2	6	395	21	4	4	34	35	4	5
Future Volume (Veh/h)	4	456	2	6	395	21	4	4	34	35	4	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	501	2	7	429	23	4	4	38	39	4	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	452			503			746	976	502	1004	966	226
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			503			746	976	502	1004	966	226
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	98	93	78	98	99
cM capacity (veh/h)	1105			1058			293	247	515	178	251	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	503	222	238	46	49
Volume Left	4	0	7	0	4	39
Volume Right	0	2	0	23	38	6
cSH	1105	1700	1058	1700	444	202
Volume to Capacity	0.00	0.30	0.01	0.14	0.10	0.24
Queue Length 95th (ft)	0	0	0	0	9	23
Control Delay (s)	8.3	0.0	0.3	0.0	14.0	28.4
Lane LOS	A		A		B	D
Approach Delay (s)	0.1		0.2		14.0	28.4
Approach LOS					B	D

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

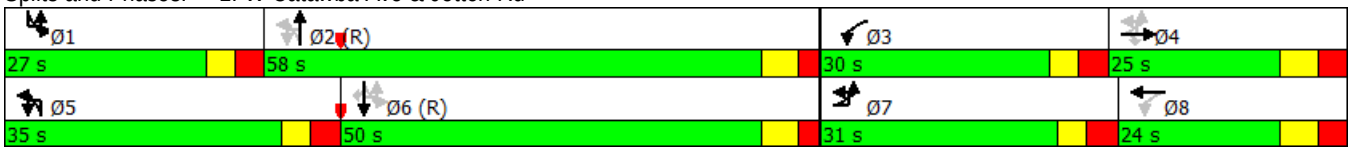
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	1	297	87	271	347	94	48	2	343	642	211	11
Future Volume (vph)	1	297	87	271	347	94	48	2	343	642	211	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.949				0.963		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1768	0	0	1770	3408	0	0
Flt Permitted		0.523			0.631				0.081			
Satd. Flow (perm)	0	974	1863	1583	1175	1768	0	0	151	3408	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	316	93	288	386	104	53	2	381	713	234	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	317	93	288	386	157	0	0	383	947	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		48.0	23.6	23.6	50.5	24.7			78.2	61.8		
Actuated g/C Ratio		0.34	0.17	0.17	0.36	0.18			0.56	0.44		
v/c Ratio		0.68	0.30	1.08	0.73	0.50			0.91	0.63		
Control Delay		42.6	57.1	131.4	44.9	61.0			66.8	32.5		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		42.6	57.1	131.4	44.9	61.0			66.8	32.5		
LOS		D	E	F	D	E			E	C		
Approach Delay			81.2			49.6				42.4		
Approach LOS			F			D				D		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 51.9 Intersection LOS: D
Intersection Capacity Utilization 93.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	34	440	5	33	73	478	123	21	16	19	151
Future Volume (Veh/h)	1	34	440	5	33	73	478	123	21	16	19	151
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.91	0.91	0.91	0.90	0.97	0.97	0.97	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	37	484	5	0	75	493	127	23	18	21	168
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	620			0	489			1020	1330	244	1052
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	620			0	489			1020	1330	244	1052
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	96			0	93			84	87	97	0
cM capacity (veh/h)	0	956			0	1070			146	137	756	145

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	37	323	166	75	329	291	62	240
Volume Left	37	0	0	75	0	0	23	168
Volume Right	0	0	5	0	0	127	21	53
cSH	956	1700	1700	1070	1700	1700	196	176
Volume to Capacity	0.04	0.19	0.10	0.07	0.19	0.17	0.32	1.36
Queue Length 95th (ft)	3	0	0	6	0	0	32	356
Control Delay (s)	8.9	0.0	0.0	8.6	0.0	0.0	31.6	244.4
Lane LOS	A			A			D	F
Approach Delay (s)	0.6			0.9			31.6	244.4
Approach LOS							D	F

Intersection Summary			
Average Delay	40.4		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	476	540	4	0	41
Future Volume (Veh/h)	0	476	540	4	0	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	523	600	4	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	604				864	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604				864	302
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	970				294	694

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	262	262	400	204	46
Volume Left	0	0	0	0	0
Volume Right	0	0	0	4	46
cSH	1700	1700	1700	1700	694
Volume to Capacity	0.15	0.15	0.24	0.12	0.07
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	10.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	436	6	33	519	24	5	1	22	21	4	12
Future Volume (Veh/h)	6	436	6	33	519	24	5	1	22	21	4	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	484	7	36	570	26	6	1	24	23	4	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	596			491			874	1170	488	1178	1160	298
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596			491			874	1170	488	1178	1160	298
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	99	95	83	98	98
cM capacity (veh/h)	976			1069			228	184	526	135	186	698

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	7	491	321	311	31	40
Volume Left	7	0	36	0	6	23
Volume Right	0	7	0	26	24	13
cSH	976	1700	1069	1700	401	190
Volume to Capacity	0.01	0.29	0.03	0.18	0.08	0.21
Queue Length 95th (ft)	1	0	3	0	6	19
Control Delay (s)	8.7	0.0	1.3	0.0	14.7	29.0
Lane LOS	A		A		B	D
Approach Delay (s)	0.1		0.6		14.7	29.0
Approach LOS					B	D

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

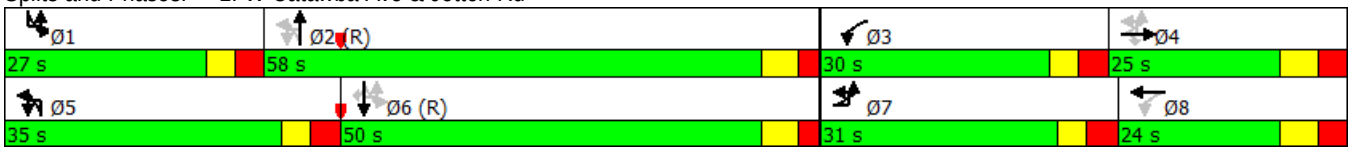
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	8	216	88	235	137	28	16	1	201	648	265	25
Future Volume (vph)	8	216	88	235	137	28	16	1	201	648	265	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.945				0.957		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1760	0	0	1770	3387	0	0
Flt Permitted		0.595			0.695				0.098			
Satd. Flow (perm)	0	1108	1863	1583	1295	1760	0	0	183	3387	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	235	96	255	152	31	18	1	223	720	294	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	244	96	255	152	49	0	0	224	1014	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		52.4	32.2	32.2	35.4	21.1			78.9	64.9		
Actuated g/C Ratio		0.37	0.23	0.23	0.25	0.15			0.56	0.46		
v/c Ratio		0.44	0.22	0.70	0.40	0.18			0.71	0.65		
Control Delay		35.3	47.4	62.0	37.7	53.2			37.5	31.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		35.3	47.4	62.0	37.7	53.2			37.5	31.0		
LOS		D	D	E	D	D			D	C		
Approach Delay			48.7			41.4				32.2		
Approach LOS			D			D				C		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 37.7 Intersection LOS: D
Intersection Capacity Utilization 75.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	4	35	492	2	4	21	380	79	0	0	11	0
Future Volume (Veh/h)	4	35	492	2	4	21	380	79	0	0	11	0
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	535	2	0	23	422	88	0	0	12	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	510			0	537			907	1168	268	868
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	510			0	537			907	1168	268	868
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	96			0	98			100	100	98	100
cM capacity (veh/h)	0	1051			0	1027			209	181	730	232

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	38	357	180	23	281	229	12	38
Volume Left	38	0	0	23	0	0	0	0
Volume Right	0	0	2	0	0	88	12	38
cSH	1051	1700	1700	1027	1700	1700	730	744
Volume to Capacity	0.04	0.21	0.11	0.02	0.17	0.13	0.02	0.05
Queue Length 95th (ft)	3	0	0	2	0	0	1	4
Control Delay (s)	8.6	0.0	0.0	8.6	0.0	0.0	10.0	10.1
Lane LOS	A			A			B	B
Approach Delay (s)	0.6			0.4			10.0	10.1
Approach LOS							B	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	529	409	13	0	23
Future Volume (Veh/h)	0	529	409	13	0	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	581	454	14	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	468				752	234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				752	234
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1090				346	768

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	290	290	303	165	26
Volume Left	0	0	0	0	0
Volume Right	0	0	0	14	26
cSH	1700	1700	1700	1700	768
Volume to Capacity	0.17	0.17	0.18	0.10	0.03
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	456	2	6	395	21	4	4	34	35	4	5
Future Volume (Veh/h)	4	456	2	6	395	21	4	4	34	35	4	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	501	2	7	429	23	4	4	38	39	4	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	452			503			746	976	502	1004	966	226
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			503			746	976	502	1004	966	226
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	98	93	78	98	99
cM capacity (veh/h)	1105			1058			293	247	515	178	251	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	503	222	238	46	49
Volume Left	4	0	7	0	4	39
Volume Right	0	2	0	23	38	6
cSH	1105	1700	1058	1700	444	202
Volume to Capacity	0.00	0.30	0.01	0.14	0.10	0.24
Queue Length 95th (ft)	0	0	0	0	9	23
Control Delay (s)	8.3	0.0	0.3	0.0	14.0	28.4
Lane LOS	A		A		B	D
Approach Delay (s)	0.1		0.2		14.0	28.4
Approach LOS					B	D

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

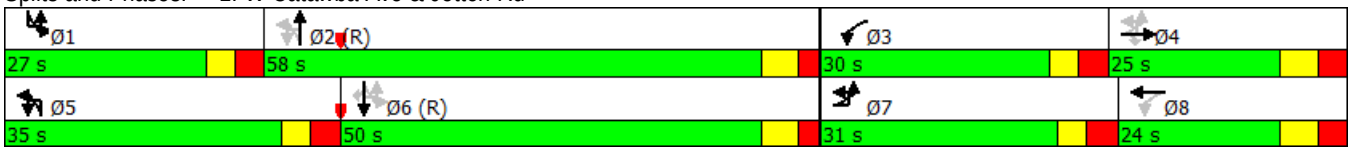
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	38	229	67	209	347	94	48	2	343	642	211	79
Future Volume (vph)	38	229	67	209	347	94	48	2	343	642	211	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.949				0.963		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1768	0	0	1770	3408	0	0
Flt Permitted		0.529			0.649				0.077			
Satd. Flow (perm)	0	985	1863	1583	1209	1768	0	0	143	3408	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	244	71	222	386	104	53	2	381	713	234	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	71	222	386	157	0	0	383	947	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		44.5	20.9	20.9	48.5	22.9			80.9	59.1		
Actuated g/C Ratio		0.32	0.15	0.15	0.35	0.16			0.58	0.42		
v/c Ratio		0.65	0.26	0.94	0.75	0.55			0.92	0.66		
Control Delay		42.7	57.4	104.7	47.1	63.1			67.8	35.8		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		42.7	57.4	104.7	47.1	63.1			67.8	35.8		
LOS		D	E	F	D	E			E	D		
Approach Delay			68.3			51.7				45.0		
Approach LOS			E			D				D		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 49.7 Intersection LOS: D
Intersection Capacity Utilization 91.2% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	34	440	5	33	90	499	139	0	0	56	0
Future Volume (Veh/h)	1	34	440	5	33	90	499	139	0	0	56	0
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.91	0.91	0.91	0.90	0.97	0.97	0.97	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	37	484	5	0	93	514	143	0	0	62	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	657			0	489			1056	1404	244	1150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	657			0	489			1056	1404	244	1150
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	96			0	91			100	100	92	100
cM capacity (veh/h)	0	926			0	1070			150	121	756	127

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	37	323	166	93	343	314	62	53
Volume Left	37	0	0	93	0	0	0	0
Volume Right	0	0	5	0	0	143	62	53
cSH	926	1700	1700	1070	1700	1700	756	667
Volume to Capacity	0.04	0.19	0.10	0.09	0.20	0.18	0.08	0.08
Queue Length 95th (ft)	3	0	0	7	0	0	7	6
Control Delay (s)	9.0	0.0	0.0	8.7	0.0	0.0	10.2	10.9
Lane LOS	A			A			B	B
Approach Delay (s)	0.6			1.1			10.2	10.9
Approach LOS							B	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	476	540	4	0	41
Future Volume (Veh/h)	0	476	540	4	0	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	523	600	4	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	604				864	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604				864	302
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	970				294	694

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	262	262	400	204	46
Volume Left	0	0	0	0	0
Volume Right	0	0	0	4	46
cSH	1700	1700	1700	1700	694
Volume to Capacity	0.15	0.15	0.24	0.12	0.07
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	10.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	436	6	33	519	24	5	1	22	21	4	12
Future Volume (Veh/h)	6	436	6	33	519	24	5	1	22	21	4	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	484	7	36	570	26	6	1	24	23	4	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	596			491			874	1170	488	1178	1160	298
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596			491			874	1170	488	1178	1160	298
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	99	95	83	98	98
cM capacity (veh/h)	976			1069			228	184	526	135	186	698

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	7	491	321	311	31	40
Volume Left	7	0	36	0	6	23
Volume Right	0	7	0	26	24	13
cSH	976	1700	1069	1700	401	190
Volume to Capacity	0.01	0.29	0.03	0.18	0.08	0.21
Queue Length 95th (ft)	1	0	3	0	6	19
Control Delay (s)	8.7	0.0	1.3	0.0	14.7	29.0
Lane LOS	A		A		B	D
Approach Delay (s)	0.1		0.6		14.7	29.0
Approach LOS					B	D

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

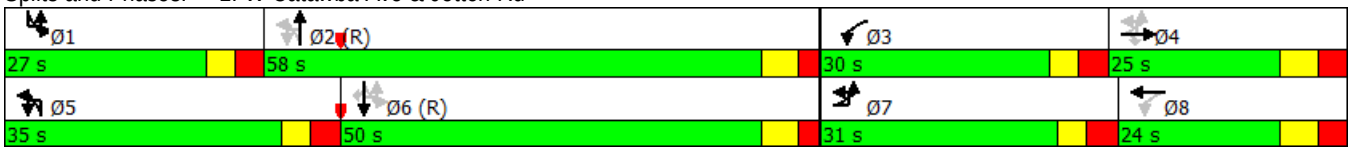
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	8	239	98	260	137	28	16	1	201	648	265	2
Future Volume (vph)	8	239	98	260	137	28	16	1	201	648	265	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.945				0.957		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1760	0	0	1770	3387	0	0
Flt Permitted		0.593			0.688				0.098			
Satd. Flow (perm)	0	1105	1863	1583	1282	1760	0	0	183	3387	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	260	107	283	152	31	18	1	223	720	294	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	269	107	283	152	49	0	0	224	1014	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		53.9	33.8	33.8	34.9	20.7			77.7	66.9		
Actuated g/C Ratio		0.38	0.24	0.24	0.25	0.15			0.56	0.48		
v/c Ratio		0.47	0.24	0.74	0.41	0.19			0.71	0.63		
Control Delay		35.4	47.0	63.2	37.6	53.8			38.0	29.5		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		35.4	47.0	63.2	37.6	53.8			38.0	29.5		
LOS		D	D	E	D	D			D	C		
Approach Delay			49.2			41.6				31.1		
Approach LOS			D			D				C		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 38.1 Intersection LOS: D
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	4	35	550	6	4	17	380	79	0	0	11	0
Future Volume (Veh/h)	4	35	550	6	4	17	380	79	0	0	11	0
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	38	598	7	0	19	422	88	0	0	12	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	510			0	605			1034	1226	302	891
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	510			0	605			1034	1226	302	891
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	96			0	98			100	100	98	100
cM capacity (veh/h)	0	1051			0	969			153	168	694	223

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	38	399	206	19	281	229	12	107
Volume Left	38	0	0	19	0	0	0	0
Volume Right	0	0	7	0	0	88	12	107
cSH	1051	1700	1700	969	1700	1700	694	744
Volume to Capacity	0.04	0.23	0.12	0.02	0.17	0.13	0.02	0.14
Queue Length 95th (ft)	3	0	0	1	0	0	1	13
Control Delay (s)	8.6	0.0	0.0	8.8	0.0	0.0	10.3	10.6
Lane LOS	A			A			B	B
Approach Delay (s)	0.5			0.3			10.3	10.6
Approach LOS							B	B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	591	471	13	0	23
Future Volume (Veh/h)	0	591	471	13	0	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	649	523	14	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	537				854	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537				854	268
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	1027				298	730

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	324	324	349	188	26
Volume Left	0	0	0	0	0
Volume Right	0	0	0	14	26
cSH	1700	1700	1700	1700	730
Volume to Capacity	0.19	0.19	0.21	0.11	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

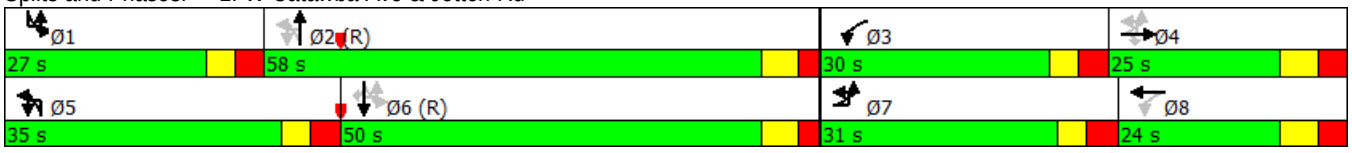
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	38	297	87	271	347	94	48	2	343	642	211	11
Future Volume (vph)	38	297	87	271	347	94	48	2	343	642	211	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		0	100		0		175		0	
Storage Lanes		1		1	1		0		1		0	
Taper Length (ft)		100			75				100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Frt				0.850		0.949				0.963		
Flt Protected		0.950			0.950				0.950			
Satd. Flow (prot)	0	1770	1863	1583	1770	1768	0	0	1770	3408	0	0
Flt Permitted		0.484			0.666				0.081			
Satd. Flow (perm)	0	902	1863	1583	1241	1768	0	0	151	3408	0	0
Right Turn on Red				No			No				No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			25				35		
Link Distance (ft)			518			1383				1568		
Travel Time (s)			7.8			37.7				30.5		
Peak Hour Factor	0.90	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	316	93	288	386	104	53	2	381	713	234	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	358	93	288	386	157	0	0	383	947	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA
Median Width(ft)			24			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	1	1	1	1	1		1	1	1		1
Detector Template	Left							Left				Left
Leading Detector (ft)	20	40	40	40	40	40		20	40	306		20
Trailing Detector (ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Position(ft)	0	0	0	0	0	0		0	0	300		0
Detector 1 Size(ft)	20	40	40	40	40	40		20	40	6		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	pm+pt	NA		pm+pt
Protected Phases	7	7	4		3	8		5	5	2		1
Permitted Phases	4	4		4	8			2	2			6
Detector Phase	7	7	4	4	3	8		5	5	2		1
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	12.0		7.0
Minimum Split (s)	14.0	14.0	24.1	24.1	14.0	23.1		14.0	14.0	24.2		14.0
Total Split (s)	31.0	31.0	25.0	25.0	30.0	24.0		35.0	35.0	58.0		27.0
Total Split (%)	22.1%	22.1%	17.9%	17.9%	21.4%	17.1%		25.0%	25.0%	41.4%		19.3%

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Maximum Green (s)	24.7	24.7	17.9	17.9	23.9	16.9		28.9	28.9	51.8		21.0
Yellow Time (s)	3.0	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.9		3.0
All-Red Time (s)	3.3	3.3	3.1	3.1	3.1	3.1		3.1	3.1	2.3		3.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0		
Total Lost Time (s)		4.3	5.1	5.1	4.1	5.1			4.1	4.2		
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	5.2		2.0
Recall Mode	None	None	None	None	None	None		None	None	C-Min		None
Walk Time (s)			4.0	4.0		4.0				7.0		
Flash Dont Walk (s)			13.0	13.0		12.0				11.0		
Pedestrian Calls (#/hr)			0	0		0				0		
Act Effct Green (s)		49.4	23.6	23.6	49.2	23.4			78.2	61.8		
Actuated g/C Ratio		0.35	0.17	0.17	0.35	0.17			0.56	0.44		
v/c Ratio		0.76	0.30	1.08	0.73	0.53			0.91	0.63		
Control Delay		47.0	57.1	131.4	44.9	62.9			66.8	32.5		
Queue Delay		0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay		47.0	57.1	131.4	44.9	62.9			66.8	32.5		
LOS		D	E	F	D	E			E	C		
Approach Delay			81.2			50.1				42.4		
Approach LOS			F			D				D		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 52.2 Intersection LOS: D
Intersection Capacity Utilization 93.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: W Catawba Ave & Jetton Rd



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	34	591	22	33	73	499	139	0	0	56	0
Future Volume (Veh/h)	1	34	591	22	33	73	499	139	0	0	56	0
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.90	0.91	0.91	0.91	0.90	0.97	0.97	0.97	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	37	649	24	0	75	514	143	0	0	62	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)							518					
pX, platoon unblocked	0.00				0.00							
vC, conflicting volume	0	657			0	673			1382	1542	336	1196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	657			0	673			1382	1542	336	1196
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	96			0	92			100	100	91	100
cM capacity (veh/h)	0	926			0	914			60	100	659	117

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	37	433	240	75	343	314	62	240
Volume Left	37	0	0	75	0	0	0	0
Volume Right	0	0	24	0	0	143	62	240
cSH	926	1700	1700	914	1700	1700	659	667
Volume to Capacity	0.04	0.25	0.14	0.08	0.20	0.18	0.09	0.36
Queue Length 95th (ft)	3	0	0	7	0	0	8	41
Control Delay (s)	9.0	0.0	0.0	9.3	0.0	0.0	11.0	13.4
Lane LOS	A			A			B	B
Approach Delay (s)	0.5			1.0			11.0	13.4
Approach LOS							B	B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	644	708	4	0	41
Future Volume (Veh/h)	0	644	708	4	0	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	708	787	4	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			859			
pX, platoon unblocked						
vC, conflicting volume	791				1143	396
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	791				1143	396
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	825				194	604

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	354	354	525	266	46
Volume Left	0	0	0	0	0
Volume Right	0	0	0	4	46
cSH	1700	1700	1700	1700	604
Volume to Capacity	0.21	0.21	0.31	0.16	0.08
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	11.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.5
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX D

SimTraffic Reports

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2627	2777	2708	2704
Vehs Exited	2651	2797	2734	2728
Starting Vehs	78	78	71	75
Ending Vehs	54	58	45	49
Denied Entry Before	2	0	0	1
Denied Entry After	0	0	0	0
Travel Distance (mi)	1231	1295	1263	1263
Travel Time (hr)	57.5	62.5	60.9	60.3
Total Delay (hr)	19.9	22.8	22.3	21.6
Total Stops	1549	1664	1701	1637
Fuel Used (gal)	45.9	48.9	47.6	47.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	2627	2777	2708	2704
Vehs Exited	2651	2797	2734	2728
Starting Vehs	78	78	71	75
Ending Vehs	54	58	45	49
Denied Entry Before	2	0	0	1
Denied Entry After	0	0	0	0
Travel Distance (mi)	1231	1295	1263	1263
Travel Time (hr)	57.5	62.5	60.9	60.3
Total Delay (hr)	19.9	22.8	22.3	21.6
Total Stops	1549	1664	1701	1637
Fuel Used (gal)	45.9	48.9	47.6	47.5

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.0	0.0	0.0	2.8	0.3	0.4	2.3	0.2	0.3	0.1	0.1
Total Delay (hr)	0.0	2.3	1.0	3.5	1.5	0.4	0.4	1.0	2.5	1.0	0.0	0.2
Total Del/Veh (s)		42.2	47.8	55.8	46.2	53.4	74.6	22.4	16.3	15.9	13.5	17.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.3
Denied Del/Veh (s)	0.3	0.2	0.4
Total Delay (hr)	4.6	0.6	19.1
Total Del/Veh (s)	21.2	17.8	26.7
Denied Entry Before	1	0	1
Denied Entry After	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.9	1.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.3	0.4	0.0	4.3	3.4	1.1	0.7	4.4	15.6	5.1	9.8	9.9
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	SBR	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.2	0.1
Total Delay (hr)	0.0	0.4
Total Del/Veh (s)	5.2	1.4
Denied Entry Before	0	0
Denied Entry After	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	0.3	0.4	0.3	4.3	0.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.6	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	0.3	0.6	0.2	0.8	0.3	0.1	7.5	8.6	4.6	7.1	11.1	4.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.2
Total Del/Veh (s)	1.0
Denied Entry Before	0
Denied Entry After	0

13: W Catawba Ave Performance by movement

Movement	EBT	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.3	0.3
Total Del/Veh (s)	0.2	1.3	1.2
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

Total Network Performance

Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.5
Total Delay (hr)	21.3
Total Del/Veh (s)	27.6
Denied Entry Before	1
Denied Entry After	0

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	247	120	305	158	143	154	262	274	70	296	278	193
Average Queue (ft)	127	46	168	82	43	68	125	138	29	218	153	62
95th Queue (ft)	217	96	267	138	95	127	217	240	62	326	262	137
Link Distance (ft)		427	427		1329		1521	1521				
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)				7	1	0	3			0	1	0
Queuing Penalty (veh)				3	1	0	5			0	1	0

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	LTR	LTR
Maximum Queue (ft)	26	43	46	68
Average Queue (ft)	4	8	8	33
95th Queue (ft)	18	30	31	59
Link Distance (ft)			1250	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	38
Average Queue (ft)	17
95th Queue (ft)	41
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	WB	NB	SB
Directions Served	LT	LTR	LTR
Maximum Queue (ft)	8	62	48
Average Queue (ft)	0	24	19
95th Queue (ft)	4	52	42
Link Distance (ft)	465	804	1033
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: W Catawba Ave

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

Network Summary

Network wide Queuing Penalty: 9

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3093	3068	3112	3091
Vehs Exited	3096	3073	3121	3097
Starting Vehs	83	90	81	83
Ending Vehs	80	85	72	75
Denied Entry Before	1	1	3	1
Denied Entry After	0	1	0	0
Travel Distance (mi)	1463	1469	1471	1468
Travel Time (hr)	83.2	81.8	82.1	82.4
Total Delay (hr)	36.9	35.2	35.3	35.8
Total Stops	2455	2499	2558	2504
Fuel Used (gal)	59.4	59.5	59.7	59.5

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	3093	3068	3112	3091
Vehs Exited	3096	3073	3121	3097
Starting Vehs	83	90	81	83
Ending Vehs	80	85	72	75
Denied Entry Before	1	1	3	1
Denied Entry After	0	1	0	0
Travel Distance (mi)	1463	1469	1471	1468
Travel Time (hr)	83.2	81.8	82.1	82.4
Total Delay (hr)	36.9	35.2	35.3	35.8
Total Stops	2455	2499	2558	2504
Fuel Used (gal)	59.4	59.5	59.7	59.5

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Denied Del/Veh (s)		0.0	0.0	0.0	2.6	0.6	0.7	3.0	2.2	0.3	0.3	1.4
Total Delay (hr)	0.0	2.7	1.0	3.3	3.3	1.2	0.8	0.0	2.8	4.1	1.4	0.1
Total Del/Veh (s)		38.1	50.7	56.9	43.3	53.8	57.7	43.3	34.2	28.2	29.6	25.0
Denied Entry Before	0	0	0	0	1	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.2	0.1	0.7
Denied Del/Veh (s)	0.5	0.8	0.9	0.8
Total Delay (hr)	0.7	7.8	2.0	31.2
Total Del/Veh (s)	25.7	39.3	34.6	37.9
Denied Entry Before	0	0	0	1
Denied Entry After	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.2
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.1	0.0	0.8
Total Del/Veh (s)	0.3	3.0	0.6	0.0	4.1	4.0	1.4	1.0	10.6	26.4	8.2	22.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.4	0.2	0.0
Total Delay (hr)	0.1	0.2	1.6
Total Del/Veh (s)	30.1	16.8	4.9
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	0.3	0.4	0.4	4.4	0.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.3	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.6	0.7	0.6	2.4	0.5	0.1	6.9	5.1	4.6	8.3	11.6	4.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.2
Total Del/Veh (s)	1.0
Denied Entry Before	0
Denied Entry After	0

13: W Catawba Ave Performance by movement

Movement	EBT	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.3	0.4
Total Del/Veh (s)	0.3	1.5	1.3
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

Total Network Performance

Denied Delay (hr)	0.7
Denied Del/Veh (s)	0.8
Total Delay (hr)	35.1
Total Del/Veh (s)	39.8
Denied Entry Before	1
Denied Entry After	0

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	276	122	280	174	467	274	334	332	134	289	293	282
Average Queue (ft)	149	48	148	145	180	153	168	179	59	257	206	126
95th Queue (ft)	255	100	238	200	366	248	282	287	107	320	299	220
Link Distance (ft)		434	434		1329		1519	1519				
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)	0			26	14	5	7				3	0
Queuing Penalty (veh)	0			31	40	14	20				6	2

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	LTR	LTR
Maximum Queue (ft)	45	77	68	179
Average Queue (ft)	8	19	29	71
95th Queue (ft)	28	51	56	133
Link Distance (ft)			1250	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	57
Average Queue (ft)	23
95th Queue (ft)	48
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	L	LT	LTR	LTR
Maximum Queue (ft)	15	39	54	41
Average Queue (ft)	1	8	14	19
95th Queue (ft)	9	29	41	41
Link Distance (ft)	1254	465	804	1033
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: W Catawba Ave

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

Network Summary

Network wide Queuing Penalty: 113

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3121	3205	3156	3163
Vehs Exited	3125	3176	3151	3151
Starting Vehs	88	81	115	92
Ending Vehs	84	110	120	101
Denied Entry Before	0	1	0	0
Denied Entry After	1	1	0	1
Travel Distance (mi)	2083	2133	2103	2106
Travel Time (hr)	94.5	98.1	96.6	96.4
Total Delay (hr)	31.3	33.4	32.8	32.5
Total Stops	2266	2357	2306	2312
Fuel Used (gal)	73.3	75.8	74.5	74.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	3121	3205	3156	3163
Vehs Exited	3125	3176	3151	3151
Starting Vehs	88	81	115	92
Ending Vehs	84	110	120	101
Denied Entry Before	0	1	0	0
Denied Entry After	1	1	0	1
Travel Distance (mi)	2083	2133	2103	2106
Travel Time (hr)	94.5	98.1	96.6	96.4
Total Delay (hr)	31.3	33.4	32.8	32.5
Total Stops	2266	2357	2306	2312
Fuel Used (gal)	73.3	75.8	74.5	74.5

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1	0.3	2.7	0.5	0.5		2.1	0.2	0.3	0.0
Total Delay (hr)	0.0	2.8	1.4	4.6	1.8	0.5	0.3	0.0	1.9	3.7	1.4	0.0
Total Del/Veh (s)	22.9	42.1	51.1	61.8	46.0	60.9	58.9		33.2	20.3	19.0	39.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	1	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.0	0.0	0.0	0.4
Total Delay (hr)	0.3	8.3	1.0	27.9
Total Del/Veh (s)	20.8	30.4	21.7	32.4
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	1

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.0	0.8	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.5	2.6	0.5	0.1	4.4	1.2	0.9	8.9	13.2	4.2	13.7	20.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	SBR	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.6
Total Del/Veh (s)	6.1	1.9
Denied Entry Before	0	0
Denied Entry After	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	0.4	0.4	0.1	4.0	0.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.3	0.6	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	2.0	0.9	0.6	2.0	0.3	0.2	7.3	10.0	4.8	11.2	17.8	4.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.3
Total Del/Veh (s)	1.3
Denied Entry Before	0
Denied Entry After	0

13: W Catawba Ave Performance by movement

Movement	EBT	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	0.0	0.3	0.5	0.3	0.0	1.1
Total Del/Veh (s)	0.2	8.6	1.8	1.1	0.7	1.7
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.5
Total Delay (hr)	32.1
Total Del/Veh (s)	35.5
Denied Entry Before	0
Denied Entry After	1

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	250	181	340	174	194	249	310	330	85	452	454	311
Average Queue (ft)	148	66	209	91	55	102	162	179	31	249	246	85
95th Queue (ft)	237	137	325	153	131	190	259	283	66	370	370	205
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)										0	0	
Queuing Penalty (veh)										0	1	
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)	0			11	4	1	5			2	5	
Queuing Penalty (veh)	0			5	5	4	11			1	8	

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	LTR	LTR
Maximum Queue (ft)	42	36	31	87
Average Queue (ft)	9	8	10	40
95th Queue (ft)	31	29	34	69
Link Distance (ft)			1250	798
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	37
Average Queue (ft)	15
95th Queue (ft)	40
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	L	LT	LTR	LTR
Maximum Queue (ft)	24	23	51	57
Average Queue (ft)	2	1	23	23
95th Queue (ft)	13	11	47	47
Link Distance (ft)	1254	465	804	1033
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: W Catawba Ave

Movement	EB
Directions Served	R
Maximum Queue (ft)	95
Average Queue (ft)	39
95th Queue (ft)	71
Link Distance (ft)	798
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 36

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3676	3624	3613	3636
Vehs Exited	3661	3593	3556	3603
Starting Vehs	134	145	128	132
Ending Vehs	149	176	185	171
Denied Entry Before	1	1	1	1
Denied Entry After	2	0	2	1
Travel Distance (mi)	2501	2452	2433	2462
Travel Time (hr)	159.6	144.7	135.9	146.7
Total Delay (hr)	81.7	67.7	59.9	69.7
Total Stops	3907	3783	3582	3756
Fuel Used (gal)	100.7	96.2	93.0	96.6

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	3676	3624	3613	3636
Vehs Exited	3661	3593	3556	3603
Starting Vehs	134	145	128	132
Ending Vehs	149	176	185	171
Denied Entry Before	1	1	1	1
Denied Entry After	2	0	2	1
Travel Distance (mi)	2501	2452	2433	2462
Travel Time (hr)	159.6	144.7	135.9	146.7
Total Delay (hr)	81.7	67.7	59.9	69.7
Total Stops	3907	3783	3582	3756
Fuel Used (gal)	100.7	96.2	93.0	96.6

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.2	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	1.4	2.7	0.8	0.9	1.7	2.1	0.3	0.4	0.0
Total Delay (hr)	0.0	3.7	1.4	10.5	6.5	2.1	1.1	0.0	4.6	5.7	1.9	0.1
Total Del/Veh (s)	55.8	44.2	57.3	137.3	62.7	79.6	74.8	46.7	48.3	31.9	31.4	31.0
Denied Entry Before	0	0	0	0	0	0	0	0	1	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.7
Denied Del/Veh (s)	0.0	0.0	0.0	0.7
Total Delay (hr)	1.0	12.5	3.0	54.0
Total Del/Veh (s)	30.6	49.8	40.7	52.9
Denied Entry Before	0	0	0	1
Denied Entry After	0	0	0	1

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	0.0	0.4	0.0	0.2	0.4	0.2	0.0	0.1	0.2	0.1	6.1
Total Del/Veh (s)	3.9	4.2	3.2	2.1	17.5	19.3	1.6	1.1	39.1	55.3	18.0	147.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.5	1.9	10.2
Total Del/Veh (s)	117.0	139.0	24.9
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.1	0.1	0.0	0.1	0.2
Total Del/Veh (s)	0.5	0.5	0.4	4.8	0.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.3	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	3.0	1.0	0.9	3.1	0.7	0.3	7.3	26.3	5.0	14.3	15.1	5.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.4
Total Del/Veh (s)	1.4
Denied Entry Before	0
Denied Entry After	0

13: W Catawba Ave Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.3	0.3	0.2
Total Delay (hr)	0.5	0.6	0.5	0.1	1.7
Total Del/Veh (s)	10.6	2.0	1.7	1.7	2.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.8
Total Delay (hr)	68.9
Total Del/Veh (s)	65.7
Denied Entry Before	1
Denied Entry After	1

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	306	332	521	175	598	274	438	408	218	491	509	375
Average Queue (ft)	189	84	334	167	325	206	244	240	69	310	303	197
95th Queue (ft)	296	237	549	196	581	310	401	363	153	433	444	352
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)		0	15							0	0	
Queuing Penalty (veh)		0	47							0	1	
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)	1			50	23	19	13			7	13	1
Queuing Penalty (veh)	1			71	78	62	44			10	33	3

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	UL	T	TR	UL	T	TR	LTR	LTR
Maximum Queue (ft)	35	124	150	119	144	78	108	644
Average Queue (ft)	10	8	17	36	7	4	35	256
95th Queue (ft)	32	53	82	85	78	45	80	637
Link Distance (ft)		288	288		434	434	1250	798
Upstream Blk Time (%)								2
Queuing Penalty (veh)								5
Storage Bay Dist (ft)	125			75				
Storage Blk Time (%)		0		4	0			
Queuing Penalty (veh)		0		10	0			

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	53
Average Queue (ft)	24
95th Queue (ft)	49
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	L	LT	LTR	LTR
Maximum Queue (ft)	24	62	45	57
Average Queue (ft)	2	10	19	21
95th Queue (ft)	14	37	44	48
Link Distance (ft)	1254	465	804	1033
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: W Catawba Ave

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (ft)	148	61	67
Average Queue (ft)	53	2	3
95th Queue (ft)	98	34	41
Link Distance (ft)	798	1090	1090
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 365

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13
Time Recorded (min)	10	10	10	10
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	546	553	526	541
Vehs Exited	525	529	527	529
Starting Vehs	87	80	96	88
Ending Vehs	108	104	95	103
Denied Entry Before	1	0	0	0
Denied Entry After	0	1	0	0
Travel Distance (mi)	357	350	352	353
Travel Time (hr)	16.0	15.8	15.6	15.8
Total Delay (hr)	5.2	5.2	5.0	5.1
Total Stops	390	364	362	368
Fuel Used (gal)	12.5	12.2	12.3	12.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	546	553	526	541
Vehs Exited	525	529	527	529
Starting Vehs	87	80	96	88
Ending Vehs	108	104	95	103
Denied Entry Before	1	0	0	0
Denied Entry After	0	1	0	0
Travel Distance (mi)	357	350	352	353
Travel Time (hr)	16.0	15.8	15.6	15.8
Total Delay (hr)	5.2	5.2	5.0	5.1
Total Stops	390	364	362	368
Fuel Used (gal)	12.5	12.2	12.3	12.3

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.0	0.6	0.5	2.1	0.3	0.3	0.0	0.0
Total Delay (hr)	0.0	0.5	0.2	0.7	0.2	0.1	0.0	0.3	0.6	0.3	0.0	0.1
Total Del/Veh (s)	18.7	41.2	45.7	60.4	34.9	63.6	59.0	25.3	19.1	20.8	18.0	19.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.4
Total Delay (hr)	1.3	0.1	4.4
Total Del/Veh (s)	26.4	16.8	28.3
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	1.2	2.1	0.4	0.0	2.5	3.7	1.1	0.8	4.7	4.3	1.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.4	0.5	4.1	0.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.3		0.0	0.0	0.0		0.1	0.1	0.1		0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)		0.9		0.7	0.3	0.1	7.2	12.7	5.5	8.2	2.8	1.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

13: W Catawba Ave Performance by movement

Movement	EBT	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.1
Total Delay (hr)	0.0	0.0	0.1	0.1	0.0	0.2
Total Del/Veh (s)	0.0	6.9	1.8	1.0	0.6	1.6
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.5
Total Delay (hr)	5.1
Total Del/Veh (s)	28.9
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	237	88	231	125	150	164	243	280	58	307	298	122
Average Queue (ft)	164	61	186	75	62	97	173	194	34	245	234	65
95th Queue (ft)	267	111	232	137	163	178	259	303	76	342	330	146
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)	2			7	3	0	8			0	3	
Queuing Penalty (veh)	2			3	4	0	16			0	5	

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	R	R
Maximum Queue (ft)	24	20	30	41
Average Queue (ft)	5	8	12	21
95th Queue (ft)	21	29	37	48
Link Distance (ft)			1250	798
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	37
Average Queue (ft)	19
95th Queue (ft)	46
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	WB	NB	SB
Directions Served	LT	LTR	LTR
Maximum Queue (ft)	7	45	33
Average Queue (ft)	1	25	20
95th Queue (ft)	10	53	46
Link Distance (ft)	465	804	1033
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: W Catawba Ave

Movement	EB
Directions Served	R
Maximum Queue (ft)	47
Average Queue (ft)	30
95th Queue (ft)	62
Link Distance (ft)	798
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 30

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13
Time Recorded (min)	10	10	10	10
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	575	600	610	595
Vehs Exited	568	585	600	584
Starting Vehs	110	100	117	108
Ending Vehs	117	115	127	120
Denied Entry Before	1	0	1	1
Denied Entry After	1	0	0	0
Travel Distance (mi)	382	396	413	397
Travel Time (hr)	21.0	20.6	22.0	21.2
Total Delay (hr)	9.0	8.4	9.3	8.9
Total Stops	564	562	601	574
Fuel Used (gal)	14.6	14.9	15.7	15.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	575	600	610	595
Vehs Exited	568	585	600	584
Starting Vehs	110	100	117	108
Ending Vehs	117	115	127	120
Denied Entry Before	1	0	1	1
Denied Entry After	1	0	0	0
Travel Distance (mi)	382	396	413	397
Travel Time (hr)	21.0	20.6	22.0	21.2
Total Delay (hr)	9.0	8.4	9.3	8.9
Total Stops	564	562	601	574
Fuel Used (gal)	14.6	14.9	15.7	15.1

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.4	0.7	0.8		2.2	0.3	0.5	0.0
Total Delay (hr)	0.0	0.3	0.2	0.9	0.9	0.4	0.1	0.0	0.8	1.1	0.4	0.1
Total Del/Veh (s)	26.7	35.0	50.8	83.6	49.4	50.5	25.1	36.7	41.7	31.8	34.9	35.1
Denied Entry Before	0	0	0	0	0	0	0	0	1	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.6
Total Delay (hr)	0.2	2.1	0.6	8.0
Total Del/Veh (s)	30.4	47.4	41.1	43.3
Denied Entry Before	0	0	0	1
Denied Entry After	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)		2.4	0.6	0.1	4.2	3.5	1.3	1.1	4.2	5.1	1.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0		0.1	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.2	0.4		5.5	0.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.3	0.0	0.0	0.0	0.4		0.1	0.1	0.1	0.3
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.4	0.8	0.6	2.8	0.5	0.1	19.3		3.7	5.5	28.4	5.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.1
Total Del/Veh (s)	1.2
Denied Entry Before	0
Denied Entry After	0

13: W Catawba Ave Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.3	0.5	0.2
Total Delay (hr)	0.1	0.1	0.1	0.0	0.2
Total Del/Veh (s)	10.2	2.0	1.1	0.7	2.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.8
Total Del/Veh (s)	44.9
Denied Entry Before	1
Denied Entry After	0

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	167	84	307	174	446	262	320	325	273	428	399	371
Average Queue (ft)	116	47	215	168	313	217	237	244	139	330	320	241
95th Queue (ft)	179	101	348	193	504	313	354	334	272	477	462	414
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)				42	10	21	18			11	15	1
Queuing Penalty (veh)				59	36	67	62			24	41	4

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	R	R
Maximum Queue (ft)	29	30	38	41
Average Queue (ft)	9	23	28	27
95th Queue (ft)	37	42	48	45
Link Distance (ft)			1250	798
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	29
Average Queue (ft)	26
95th Queue (ft)	39
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	L	LT	LTR	LTR
Maximum Queue (ft)	16	24	37	26
Average Queue (ft)	3	8	21	18
95th Queue (ft)	16	25	47	36
Link Distance (ft)	1254	465	804	1033
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: W Catawba Ave

Movement	EB
Directions Served	R
Maximum Queue (ft)	75
Average Queue (ft)	45
95th Queue (ft)	88
Link Distance (ft)	798
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 292

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13
Time Recorded (min)	10	10	10	10
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	557	579	536	558
Vehs Exited	521	571	528	540
Starting Vehs	72	92	95	85
Ending Vehs	108	100	103	103
Denied Entry Before	1	2	0	0
Denied Entry After	0	1	3	1
Travel Distance (mi)	364	387	352	368
Travel Time (hr)	16.5	19.0	16.1	17.2
Total Delay (hr)	5.2	6.8	5.1	5.7
Total Stops	386	486	371	411
Fuel Used (gal)	13.6	14.7	13.1	13.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	557	579	536	558
Vehs Exited	521	571	528	540
Starting Vehs	72	92	95	85
Ending Vehs	108	100	103	103
Denied Entry Before	1	2	0	0
Denied Entry After	0	1	3	1
Travel Distance (mi)	364	387	352	368
Travel Time (hr)	16.5	19.0	16.1	17.2
Total Delay (hr)	5.2	6.8	5.1	5.7
Total Stops	386	486	371	411
Fuel Used (gal)	13.6	14.7	13.1	13.8

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.1	0.4	0.1		2.4	0.3	0.4	
Total Delay (hr)	0.0	0.5	0.3	0.5	0.3	0.1	0.0	0.0	0.3	0.8	0.3	0.0
Total Del/Veh (s)	39.1	37.9	53.7	42.6	38.5	78.5	58.7		28.1	20.5	19.5	
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.4
Total Delay (hr)	0.1	1.3	0.2	4.6
Total Del/Veh (s)	26.8	26.6	24.5	28.7
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.0	0.0	0.0	0.0	1.6	0.1	0.1	0.1	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)		2.8	0.4	0.2	3.2	6.2	1.3	0.6	5.0	4.2	1.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.6	1.0	0.3	2.7	0.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	WBU	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.3	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1		0.1
Total Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Del/Veh (s)		8.5	3.8	4.5	6.4	1.3	5.3	2.7	2.9	1.5		6.9
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

13: W Catawba Ave Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.1
Total Delay (hr)	0.1	0.1	0.0	0.0	0.2
Total Del/Veh (s)	11.8	1.9	0.9	0.9	1.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	1	0	1

Total Network Performance

Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.5
Total Delay (hr)	5.6
Total Del/Veh (s)	31.4
Denied Entry Before	0
Denied Entry After	1

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	220	136	241	146	141	185	261	288	63	346	341	185
Average Queue (ft)	170	82	162	101	72	108	186	203	36	225	221	76
95th Queue (ft)	246	149	261	162	184	200	299	321	73	339	334	213
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)				13	0	0	10			3	5	
Queuing Penalty (veh)				6	0	1	20			1	7	

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	R	R
Maximum Queue (ft)	26	28	30	48
Average Queue (ft)	8	10	10	36
95th Queue (ft)	28	38	33	58
Link Distance (ft)			1250	798
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	29
Average Queue (ft)	12
95th Queue (ft)	35
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	WB	NB	SB
Directions Served	LT	ULT	R	LTR	LTR
Maximum Queue (ft)	65	20	10	38	27
Average Queue (ft)	39	4	2	17	14
95th Queue (ft)	78	21	15	48	42
Link Distance (ft)	1186	406	406	746	982
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: W Catawba Ave

Movement	EB
Directions Served	R
Maximum Queue (ft)	69
Average Queue (ft)	46
95th Queue (ft)	89
Link Distance (ft)	798
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 36

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13
Time Recorded (min)	10	10	10	10
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	638	635	595	622
Vehs Exited	598	595	553	582
Starting Vehs	114	102	118	111
Ending Vehs	154	142	160	152
Denied Entry Before	1	1	0	1
Denied Entry After	0	2	1	1
Travel Distance (mi)	428	429	402	419
Travel Time (hr)	24.3	23.7	22.6	23.6
Total Delay (hr)	10.4	9.7	9.5	9.9
Total Stops	739	682	637	683
Fuel Used (gal)	17.2	17.1	16.1	16.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	638	635	595	622
Vehs Exited	598	595	553	582
Starting Vehs	114	102	118	111
Ending Vehs	154	142	160	152
Denied Entry Before	1	1	0	1
Denied Entry After	0	2	1	1
Travel Distance (mi)	428	429	402	419
Travel Time (hr)	24.3	23.7	22.6	23.6
Total Delay (hr)	10.4	9.7	9.5	9.9
Total Stops	739	682	637	683
Fuel Used (gal)	17.2	17.1	16.1	16.8

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.7	1.1	0.9	2.1	0.4	0.4	0.0	0.0
Total Delay (hr)	0.1	0.6	0.2	1.1	1.1	0.4	0.2	0.8	1.1	0.3	0.0	0.2
Total Del/Veh (s)	49.8	40.6	51.0	81.8	66.5	84.9	76.8	40.3	28.5	30.3	34.0	30.1
Denied Entry Before	0	0	0	0	1	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0

1: W Catawba Ave & Jetton Rd Performance by movement

Movement	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.6
Total Delay (hr)	1.6	0.5	8.3
Total Del/Veh (s)	39.4	40.0	44.3
Denied Entry Before	0	0	1
Denied Entry After	0	0	1

2: Old Jetton Rd & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	3.3	0.7	0.0	6.2	4.6	1.6	0.9	6.6	4.1	2.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

3: Jetton Rd & Beaufain St Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	0.6	1.8	0.1	2.9	1.3
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3		0.0	0.0	0.0	0.0	0.1		0.1	0.1	0.1
Total Delay (hr)	0.0	0.2	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.8	9.1		7.6	6.6	11.1	1.7	5.0		3.2	4.1	3.9
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd Performance by movement

Movement	SBR	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.1	0.1
Total Delay (hr)	0.0	0.5
Total Del/Veh (s)	2.8	9.2
Denied Entry Before	0	0
Denied Entry After	0	0

13: W Catawba Ave Performance by movement

Movement	EBT	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.0	0.0	0.3	0.4	0.2
Total Delay (hr)	0.0	0.1	0.1	0.1	0.0	0.3
Total Del/Veh (s)		9.1	2.0	1.4	1.4	2.1
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	47.8
Denied Entry Before	1
Denied Entry After	1

Intersection: 1: W Catawba Ave & Jetton Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	T	R	L	TR	UL	T	TR	UL	T	T	R
Maximum Queue (ft)	300	155	357	174	496	273	339	328	173	315	351	291
Average Queue (ft)	221	72	252	168	353	219	246	252	98	260	268	171
95th Queue (ft)	326	173	386	188	585	300	364	370	188	358	391	332
Link Distance (ft)		434	434		1329		1519	1519		542	542	
Upstream Blk Time (%)			0									
Queuing Penalty (veh)			1									
Storage Bay Dist (ft)	300			100		175			325			275
Storage Blk Time (%)	3			54	26	23	12			3	10	1
Queuing Penalty (veh)	3			77	91	74	43			4	25	5

Intersection: 2: Old Jetton Rd & Jetton Rd

Movement	EB	WB	NB	SB
Directions Served	UL	UL	R	R
Maximum Queue (ft)	26	45	68	59
Average Queue (ft)	7	28	40	44
95th Queue (ft)	25	55	84	66
Link Distance (ft)			1250	798
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125	75		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Jetton Rd & Beaufain St

Movement	SB
Directions Served	R
Maximum Queue (ft)	36
Average Queue (ft)	21
95th Queue (ft)	46
Link Distance (ft)	1061
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Lake Norman Cove Dr/Charles Towne Ln & Jetton Rd

Movement	EB	WB	WB	NB	SB
Directions Served	LT	ULT	R	LTR	LTR
Maximum Queue (ft)	68	158	22	38	39
Average Queue (ft)	49	60	8	12	20
95th Queue (ft)	80	191	31	40	49
Link Distance (ft)	1153	372	372	714	949
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: W Catawba Ave

Movement	EB
Directions Served	R
Maximum Queue (ft)	78
Average Queue (ft)	48
95th Queue (ft)	86
Link Distance (ft)	798
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 322

APPENDIX E

SIDRA Report

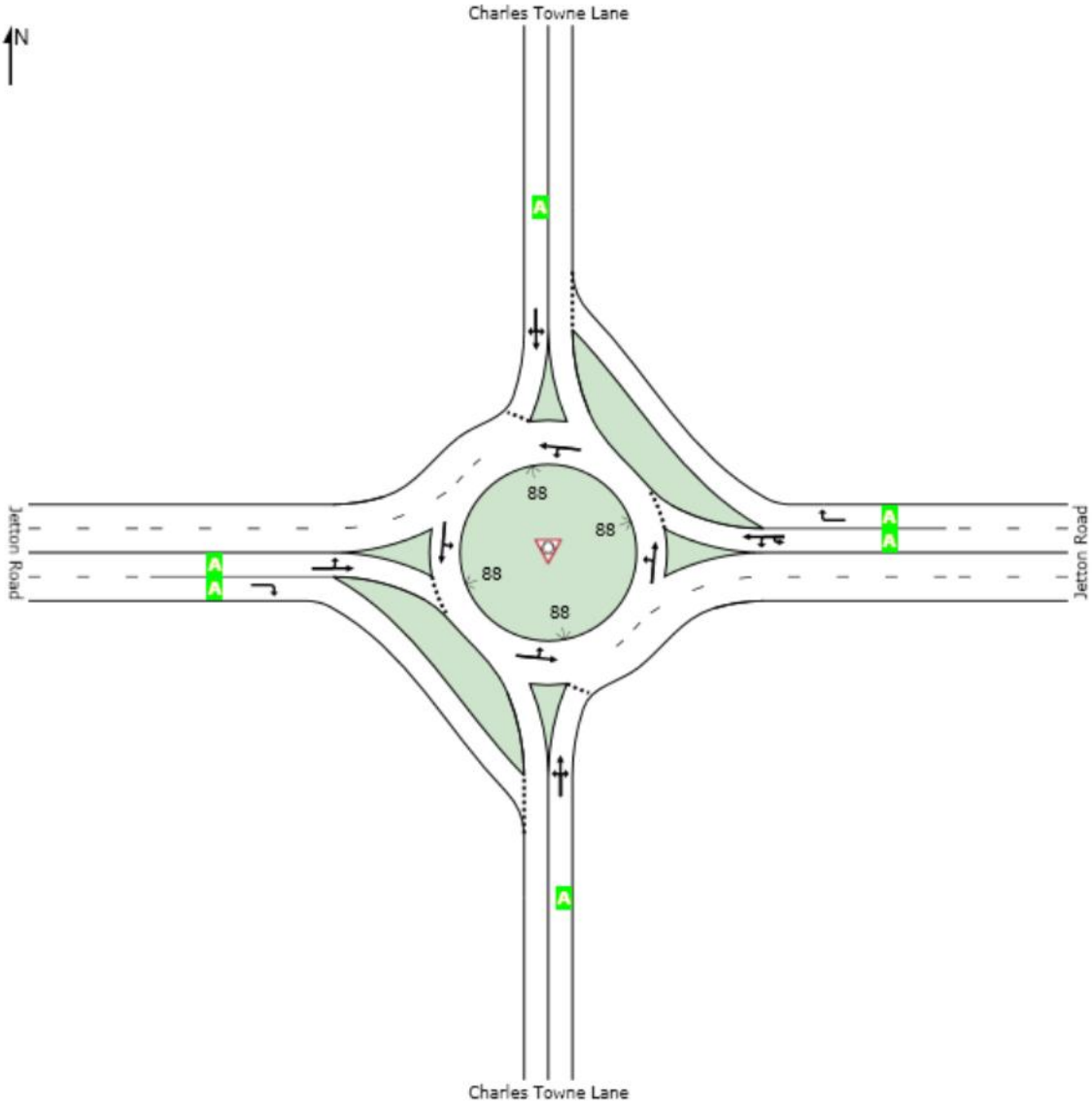
LEVEL OF SERVICE

Site: AM Peak

Jetton Road Safety Study
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: AM Peak

Jetton Road Safety Study
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Charles Towne Lane											
3	L2	4	2.0	0.078	6.9	LOS A	0.3	6.5	0.53	0.50	33.5
8	T1	4	2.0	0.078	6.9	LOS A	0.3	6.5	0.53	0.50	33.6
18	R2	38	2.0	0.078	6.9	LOS A	0.3	6.5	0.53	0.50	32.7
Approach		47	2.0	0.078	6.9	LOS A	0.3	6.5	0.53	0.50	32.8
East: Jetton Road											
1u	U	67	2.0	0.460	8.4	LOS A	2.7	69.6	0.11	0.03	33.3
1	L2	7	2.0	0.460	8.4	LOS A	2.7	69.6	0.11	0.03	32.7
6	T1	429	2.0	0.460	8.4	LOS A	2.7	69.6	0.11	0.03	32.7
16	R2	23	2.0	0.021	3.5	LOS A	0.1	1.8	0.05	0.01	34.7
Approach		526	2.0	0.460	8.2	LOS A	2.7	69.6	0.11	0.03	32.9
North: Charles Towne Lane											
7	L2	38	2.0	0.072	6.2	LOS A	0.2	6.1	0.49	0.44	32.2
4	T1	4	2.0	0.072	6.2	LOS A	0.2	6.1	0.49	0.44	32.2
14	R2	5	2.0	0.072	6.2	LOS A	0.2	6.1	0.49	0.44	31.4
Approach		48	2.0	0.072	6.2	LOS A	0.2	6.1	0.49	0.44	32.1
West: Jetton Road											
5	L2	4	2.0	0.508	9.9	LOS A	3.0	75.9	0.39	0.25	32.4
2	T1	496	2.0	0.508	9.9	LOS A	3.0	75.9	0.39	0.25	32.5
12	R2	2	2.0	0.002	3.3	LOS A	0.0	0.2	0.05	0.01	34.8
Approach		502	2.0	0.508	9.9	LOS A	3.0	75.9	0.39	0.25	32.5
All Vehicles		1123	2.0	0.508	8.8	LOS A	3.0	75.9	0.27	0.16	32.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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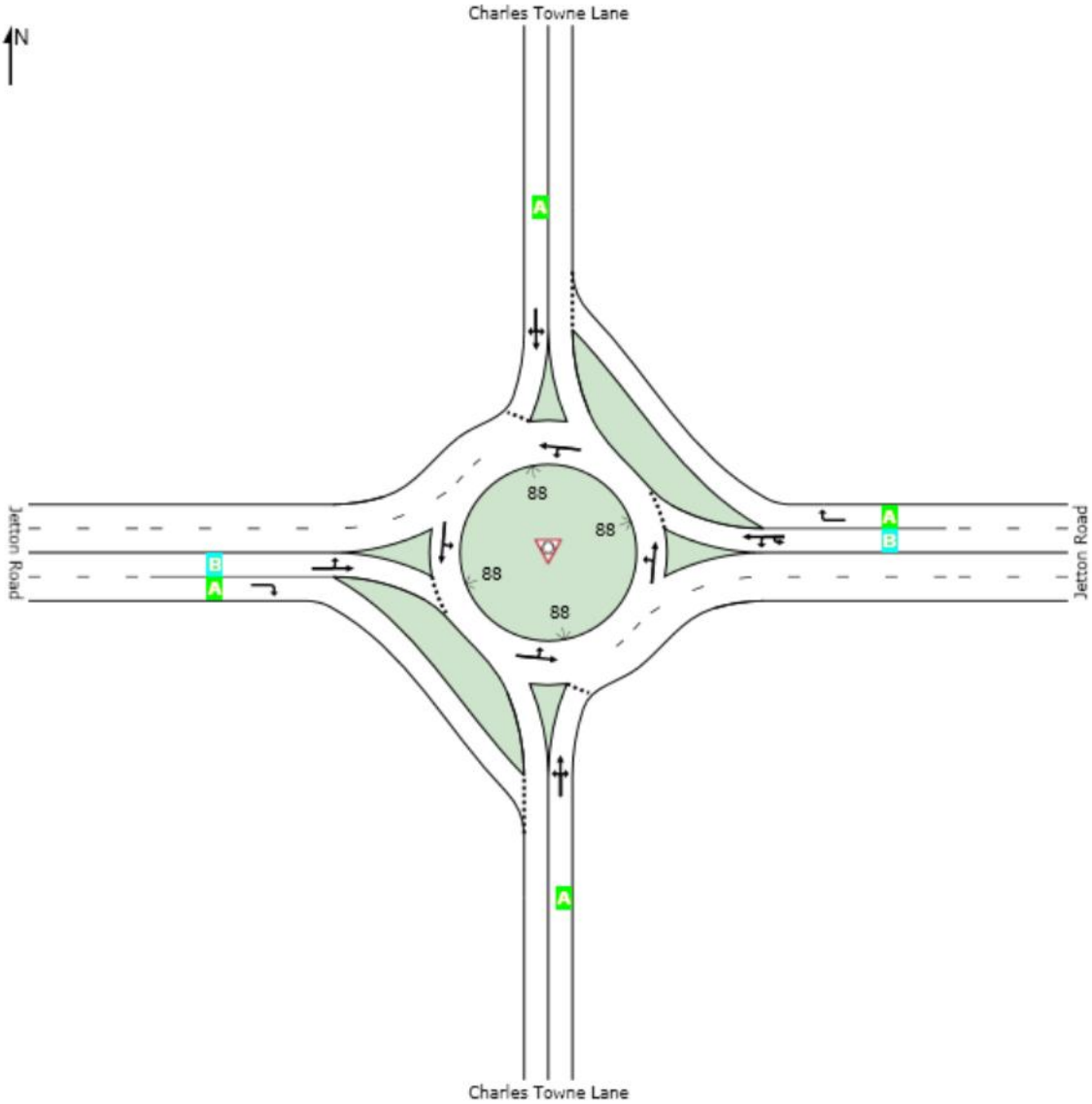
LEVEL OF SERVICE

Site: PM Peak

Jetton Road Safety Study
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	B	A	B	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: PM Peak

Jetton Road Safety Study
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Charles Towne Lane											
3	L2	6	2.0	0.057	7.2	LOS A	0.2	4.6	0.54	0.52	33.2
8	T1	1	2.0	0.057	7.2	LOS A	0.2	4.6	0.54	0.52	33.2
18	R2	24	2.0	0.057	7.2	LOS A	0.2	4.6	0.54	0.52	32.3
Approach		31	2.0	0.057	7.2	LOS A	0.2	4.6	0.54	0.52	32.5
East: Jetton Road											
1u	U	183	2.0	0.716	14.7	LOS B	7.7	195.3	0.20	0.06	30.2
1	L2	36	2.0	0.716	14.7	LOS B	7.7	195.3	0.20	0.06	29.6
6	T1	564	2.0	0.716	14.7	LOS B	7.7	195.3	0.20	0.06	29.6
16	R2	26	2.0	0.024	3.5	LOS A	0.1	2.0	0.05	0.01	34.7
Approach		809	2.0	0.716	14.3	LOS B	7.7	195.3	0.19	0.05	29.9
North: Charles Towne Lane											
7	L2	23	2.0	0.081	8.3	LOS A	0.3	6.6	0.58	0.58	31.8
4	T1	4	2.0	0.081	8.3	LOS A	0.3	6.6	0.58	0.58	31.8
14	R2	13	2.0	0.081	8.3	LOS A	0.3	6.6	0.58	0.58	31.0
Approach		40	2.0	0.081	8.3	LOS A	0.3	6.6	0.58	0.58	31.5
West: Jetton Road											
5	L2	7	2.0	0.557	12.1	LOS B	3.4	87.2	0.57	0.51	31.4
2	T1	474	2.0	0.557	12.1	LOS B	3.4	87.2	0.57	0.51	31.5
12	R2	7	2.0	0.006	3.4	LOS A	0.0	0.5	0.12	0.03	34.7
Approach		487	2.0	0.557	12.0	LOS B	3.4	87.2	0.57	0.50	31.5
All Vehicles		1367	2.0	0.716	13.2	LOS B	7.7	195.3	0.35	0.24	30.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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APPENDIX F

Construction Cost Estimate Worksheets

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 1**
NUMBER:
ESTIMATE: $ 300,000.00

EST. BY: BAW DATE: 8/9/16
CHECK BY: 0 DATE: 8/9/16

RESULTS
TOTAL PROJECT COST ESTIMATE

Roadway Construction		**$**
Roadway Sub-Total:		$190,000
Structures Sub-Total:	$	-
Construction Sub-Total:	$	190,000.00
Construction Administration (5%):	$	9,500.00
Total Construction Cost:	$	200,000.00

Planning & Design		**$**
Planning (10%)	$	19,000.00
Design (15%)	$	28,500.00
Total Planning & Design Cost:	$	48,000.00

Right-of-Way		**$**
Right-of-Way Sub-Total:	$	-
Inflation (0% for 0years)	$	-
Contingency (10%)	$	-
Total Right-of-Way Cost:	$	-

Special Items (Ped Countdowns, Utilities, Landscaping, etc.)		**$**
Special Items Subtotal Cost:	$	1,242.00
Contingency (10%):	$	124.20
Total Special Items Cost:	$	2,000.00

TOTAL PROJECT COST:	***$***	***250,000.00***
SAY	**$**	**300,000.00**

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE WORKSHEET

PROJECT: **Jetton Road Safety Study Alt 1**
NUMBER:
Fund/Cntr.:
ESTIMATE: **$190,000**

EST. BY: BAW DATE: 8/9/16
CHECK BY: 0 DATE: 8/9/16

Item#	Sect.#	ITEM DESCRIPTION	Quantity	Unit	Unit Price	Amount
1	800	Mobilization	1	LS	$6,900.00	$6,900.00
2	SP	Comprehensive Grading	1	LS	$32,000.00	$32,000.00
3	SP	Foundation Conditioning Material, Minor Structures	0	TN	$34.51	$0.00
4	SP	Foundation Conditioning Geotextile	0	SY	$2.35	$0.00
5	SP	15" RC Pipe Culverts, Class III	0	LF	$48.28	$0.00
6	SP	24" RC Pipe Culverts, Class III	0	LF	$51.86	$0.00
7	610	Asphalt Concrete Base Course, Type B 25.0C	60	TN	$48.38	$2,902.80
8	610	Asphalt Concrete Interm. Course,Type I 19.0C	50	TN	$40.18	$2,009.00
9	610	Asphalt Concrete Surface Course, Type S 9.5 C	720	TN	$36.69	$26,416.80
10	612	Milling Bituminous Pavement, 1.5"	8,070	SY	$1.51	$12,185.36
11	620	Asphalt Binder for Plant Mix	50	TN	$541.41	$27,070.50
12	840	Masonry Drainage Structures, NCDOT STD 840.01	0	EA	$1,544.07	$0.00
13	840	Frame with Grate & Hood, NCDOT STD 840.03	0	EA	$554.25	$0.00
14	846	1'-6" Curb & Gutter	310	LF	$14.52	$4,501.20
15	846	2'-6" Curb & Gutter	0	LF	$16.18	$0.00
16	846	Concrete Valley Gutter	0	LF	$22.63	$0.00
17	848	4" Concrete Sidewalk	0	SY	$36.44	$0.00
18	848	Concrete Wheelchair Ramps	0	EA	$1,432.83	$0.00
19	848	6" Concrete Driveway	0	SY	$59.02	$0.00
20	852	5" Monolithic Concrete Island	150	SY	$51.07	$7,660.50
21	SP	Erosion Control	1	LS	$4,600.00	$4,600.00
22	SP	Traffic Control	1	LS	$9,100.00	$9,100.00
23	1205	Thermoplastic Pavement Marking Lines (4", 120 mils)	7,126	LF	$0.68	$4,845.43
24	1205	Thermoplastic Pavement Marking Lines (6", 120 mils)	0	LF	$1.04	$0.00
25	1205	Thermoplastic Pavement Marking Lines (8",120 mils)	0	LF	$2.33	$0.00
26	1205	Thermoplastic Pavement Marking Lines (24",120 mils)	179	LF	$7.72	$1,379.78
27	1205	Thermoplastic Pavement Marking Symbols	12	EA	$139.25	$1,671.00

Unit prices from 2014 City of Charlotte Bid Tabs

SUBTOTAL	$143,242.37
30% CONTINGENCY	$42,973
ENGINEER'S ESTIMATE	$186,216.00
SAY	$190,000.00

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 1**
NUMBER:
ESTIMATE: $ -

EST. BY: BAW DATE: 8/9/16
CHECK BY: 0 DATE: 8/9/16

RIGHT-OF-WAY

Property To Acquire:	**SF**	**$/SF**	**Cost**
512312			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -

Proximity Damages Dist. from structure(s) to new right-of-way line	**Property Cost**	**% Damage**	**Cost**
40 ft (12 m) to 50 ft (15 m)			$ -
30 ft (9 m) to 40 ft (12 m)			$ -
20 ft (6 m) to 30 ft (9 m)			$ -
10 ft (3 m) to 20 ft (6 m)			$ -
less than 10 ft (3 m)			$ -

Structures (total takes)	**No.**	**Property Cost (Lots +Structures)**	**Cost**
residential			$ -
commercial			$ -
industrial			$ -
office			$ -

Parcels w/o Structures (total takes):	**No.**	**Property Cost**	**Cost**
farmland / wooded			$ -
commercial / office			$ -
residential			$ -
industrial			$ -

Temporary Construction Easement:	**SF**	**$/SF**	**Cost**
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -

Right-of-way Sub-Total: $ -

Administration:	**No.**	**Cost**	**Cost**
Admin. / Acquisition:		$ 5,000.00	$ -
Total Take of Property:			
			$ -
			$ -
			$ -
			$ -
Relocation Costs (5% of Total Take):			$ -
Condemnations (50% of parcels)		$ 10,000.00	$ -

Adjusted Right-of-Way: $ -

SAY: $ -

PLEASE NOTE THE ABOVE INFORMATION IS FOR CONCEPTUAL USE ONLY AND NOT TO BE CONSIDERED FINAL.
FURTHER REVIEW WILL BE NEEDED DURING PLANNING AND DESIGN FOR THE TOTAL TAKE PROPERTIES.

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 1**
NUMBER:
ESTIMATE: $ 1,242.00

EST. BY: BAW DATE: 8/9/16
CHECK BY: 0 DATE: 8/9/16

SPECIAL ITEMS

Major Intersections

	# intersections	$/int.	Cost
RR Signal Coordination		$ 50,000	$ -
Mast Arm Relocation		$ 25,000	$ -
Signal Modification		$ 60,000	$ -
New Signal		$ 100,000	$ -
Pedestrian Level Lighting	**# Of Poles**	**$/Unit**	**Cost**
(Length of Project X 2 / 50' Spacing)		$ 10,000	$ -
Street Lighting (Length of Project X 2 / 200' Spacing)		$ 10,000	$ -
Utility Relocation (Length of Project X 2 / 200' Spacing)		$ 10,000	$ -
Wetland Mitigation	**Acres**	**$/Acre**	**Cost**
	0.00	$ 100,000.00	$ -
CMU Utility Relocation	**Lin. Ft.**	**$/Lin. Ft.**	**Cost**
Water Line	0.00	$ 35.00	$ -
Sewer Line	0.00	$ 47.00	$ -
Overhead Utility Relocation	**Miles**	**$/Mile**	**Cost**
For widening projects, enter length of widening (both sides):		$ 300,000	$ -
Landscaping/Streetscape	**Miles**	**$/Mile**	**Cost**
(Trees @ 40' On Center)			
Planting Strips	0.02	$ 54,000	$ 1,242.00
Median			$ -
Miscellaneous			
Other	*Unit*	*$/Unit*	*Cost*
Fire Hydrant Relocation		$ 4,500.00	$ -
Cable Pedestal Relocation		$ 750.00	$ -
Communication Cabinet Relocation		$ 4,000.00	$ -
			$ -

Special Sub-Total: $ 1,242.00

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 1**
NUMBER:
ESTIMATE: $300,000.00

EST. BY: DATE: 8/9/16
CHECK BY: DATE: 8/9/16

STRUCTURES

		Cost per Unit	
Bridges:	**Surface Area (SF)**	**$/ sq.ft.**	**Cost**
A. Bridge Over Stream (1' - 25')		$ 130.00	$ -
B. Bridge Over Stream (26' - 100')		$ 160.00	$ -
C. Bridge Over Stream (101' - 200')		$ 190.00	$ -
Culverts:			
A. New Culvert		$ 140.00	$ -
B. Replace Existing Culvert			$ -
Interchanges/Grade Separations*:	**Number**	**$/each**	
Grade Separation		$ 1,100,000.00	$ -
Simple Diamond		$ 4,400,000.00	$ -
Half Clover		$ 6,000,000.00	$ -
Full Clover		$ 11,000,000.00	$ -
Simple Flyover		$ 14,000,000.00	$ -
Single Point (Urban) Diamond Interchange*		$15,175,000.00	$ -
		Structure Sub-Total:	$ -
Contingency		25%	$0.00
	No. of Yrs.		
Inflation	0	0%	$0.00
		Total:	$ -

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 2**
NUMBER:
ESTIMATE: $ 1,500,000.00

EST. BY: BAW DATE: 7/5/16
CHECK BY: 0 DATE: 7/5/16

RESULTS
TOTAL PROJECT COST ESTIMATE

Roadway Construction		**$**
Roadway Sub-Total:		$870,000
Structures Sub-Total:	$	-
Construction Sub-Total:	$	870,000.00
Construction Administration (5%):	$	43,500.00
Total Construction Cost:	$	914,000.00

Planning & Design		**$**
Planning (10%)	$	87,000.00
Design (15%)	$	130,500.00
Total Planning & Design Cost:	$	218,000.00

Right-of-Way		**$**
Right-of-Way Sub-Total:	$	185,100.00
Inflation (0% for 0years)	$	-
Contingency (10%)	$	18,510.00
Total Right-of-Way Cost:	$	204,000.00

Special Items (Ped Countdowns, Utilities, Landscaping, etc.)		**$**
Special Items Subtotal Cost:	$	101,220.00
Contingency (10%):	$	10,122.00
Total Special Items Cost:	$	112,000.00

TOTAL PROJECT COST:	***$***	***1,448,000.00***
SAY	**$**	**1,500,000.00**

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE WORKSHEET

PROJECT: **Jetton Road Safety Study Alt 2**
NUMBER:
Fund/Cntr.:
ESTIMATE: **$870,000**

EST. BY: BAW DATE: 7/5/16
CHECK BY: 0 DATE: 7/5/16

Item#	Sect.#	ITEM DESCRIPTION	Quantity	Unit	Unit Price	Amount
1	800	Mobilization	1	LS	$31,800.00	$31,800.00
2	SP	Comprehensive Grading	1	LS	$147,000.00	$147,000.00
3	SP	Foundation Conditioning Material, Minor Structures	240	TN	$34.51	$8,282.40
4	SP	Foundation Conditioning Geotextile	760	SY	$2.35	$1,786.00
5	SP	15" RC Pipe Culverts, Class III	1,130	LF	$48.28	$54,556.40
6	SP	24" RC Pipe Culverts, Class III	1,130	LF	$51.86	$58,601.80
7	610	Asphalt Concrete Base Course, Type B 25.0C	340	TN	$48.38	$16,449.20
8	610	Asphalt Concrete Interm. Course,Type I 19.0C	280	TN	$40.18	$11,250.40
9	610	Asphalt Concrete Surface Course, Type S 9.5 C	1,210	TN	$36.69	$44,394.90
10	612	Milling Bituminous Pavement, 1.5"	11,938	SY	$1.51	$18,026.99
11	620	Asphalt Binder for Plant Mix	100	TN	$541.41	$54,141.00
12	840	Masonry Drainage Structures, NCDOT STD 840.01	7	EA	$1,544.07	$10,808.49
13	840	Frame with Grate & Hood, NCDOT STD 840.03	7	EA	$554.25	$3,879.75
14	846	1'-6" Curb & Gutter	3,170	LF	$14.52	$46,028.40
15	846	2'-6" Curb & Gutter	380	LF	$16.18	$6,148.40
16	846	Concrete Valley Gutter	970	LF	$22.63	$21,951.10
17	848	4" Concrete Sidewalk	730	SY	$36.44	$26,601.20
18	848	Concrete Wheelchair Ramps	6	EA	$1,432.83	$8,596.98
19	848	6" Concrete Driveway	0	SY	$59.02	$0.00
20	852	5" Monolithic Concrete Island	370	SY	$51.07	$18,895.90
21	SP	Erosion Control	1	LS	$21,300.00	$21,300.00
22	SP	Traffic Control	1	LS	$42,500.00	$42,500.00
23	1205	Thermoplastic Pavement Marking Lines (4", 120 mils)	12,864	LF	$0.68	$8,747.70
24	1205	Thermoplastic Pavement Marking Lines (6", 120 mils)	0	LF	$1.04	$0.00
25	1205	Thermoplastic Pavement Marking Lines (8",120 mils)	0	LF	$2.33	$0.00
26	1205	Thermoplastic Pavement Marking Lines (24",120 mils)	179	LF	$7.72	$1,379.78
27	1205	Thermoplastic Pavement Marking Symbols	26	EA	$139.25	$3,620.50

Unit prices from 2014 City of Charlotte Bid Tabs

SUBTOTAL	$666,747.30
30% CONTINGENCY	$200,024
ENGINEER'S ESTIMATE	$866,772.00
SAY	$870,000.00

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 2**
NUMBER:
ESTIMATE: $ 185,100.00

EST. BY: BAW DATE: 7/5/16
CHECK BY: 0 DATE: 7/5/16

RIGHT-OF-WAY

Property To Acquire:	**SF**	**$/SF**	**Cost**
147118	6,176.51	$ 2.00	$ 12,353.03
147181	1,131.63	$ 2.00	$ 2,263.25
147192	1,763.26	$ 2.00	$ 3,526.51
147107	8,272.01	$ 14.00	$ 115,808.16
110130	525.05	$ 2.00	$ 1,050.11
			$ -
			$ -

Proximity Damages Dist. from structure(s) to new right-of-way line	**Property Cost**	**% Damage**	**Cost**
40 ft (12 m) to 50 ft (15 m)			$ -
30 ft (9 m) to 40 ft (12 m)			$ -
20 ft (6 m) to 30 ft (9 m)			$ -
10 ft (3 m) to 20 ft (6 m)			$ -
less than 10 ft (3 m)			$ -

Structures (total takes)	**No.**	**Property Cost (Lots +Structures)**	**Cost**
residential			$ -
commercial			$ -
industrial			$ -
office			$ -

Parcels w/o Structures (total takes):	**No.**	**Property Cost**	**Cost**
farmland / wooded			$ -
commercial / office			$ -
residential			$ -
industrial			$ -

Temporary Construction Easement:	**SF**	**$/SF**	**Cost**
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -

Right-of-way Sub-Total: $ 135,001.06

Administration:	**No.**	**Cost**	**Cost**
Admin. / Acquisition:	5	$ 5,000.00	$ 25,000.00
Total Take of Property:			
			$ -
			$ -
			$ -
			$ -
Relocation Costs (5% of Total Take):			$ -
Condemnations (50% of parcels)	2.5	$ 10,000.00	$ 25,000.00

Adjusted Right-of-Way: $ 185,001.06

SAY: $ 185,100.00

PLEASE NOTE THE ABOVE INFORMATION IS FOR CONCEPTUAL USE ONLY AND NOT TO BE CONSIDERED FINAL.
FURTHER REVIEW WILL BE NEEDED DURING PLANNING AND DESIGN FOR THE TOTAL TAKE PROPERTIES.

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 2**
NUMBER:
ESTIMATE: $ 101,220.00

EST. BY: BAW DATE: 7/5/16
CHECK BY: 0 DATE: 7/5/16

SPECIAL ITEMS

Major Intersections

	# intersections	$/int.	Cost
RR Signal Coordination		$ 50,000	$ -
Mast Arm Relocation		$ 25,000	$ -
Signal Modification		$ 60,000	$ -
New Signal		$ 100,000	$ -
Pedestrian Level Lighting	**# Of Poles**	**$/Unit**	**Cost**
(Length of Project X 2 / 50' Spacing)		$ 10,000	$ -
Street Lighting (Length of Project X 2 / 200' Spacing)		$ 10,000	$ -
Utility Relocation (Length of Project X 2 / 200' Spacing)		$ 10,000	$ -
Wetland Mitigation	**Acres**	**$/Acre**	**Cost**
	0.00	$ 100,000.00	$ -
CMU Utility Relocation	**Lin. Ft.**	**$/Lin. Ft.**	**Cost**
Water Line	0.00	$ 35.00	$ -
Sewer Line	0.00	$ 47.00	$ -
Overhead Utility Relocation	**Miles**	**$/Mile**	**Cost**
For widening projects, enter length of widening (both sides):	0.26	$ 300,000	$ 78,000.00
Landscaping/Streetscape (Trees @ 40' On Center)	**Miles**	**$/Mile**	**Cost**
Planting Strips	0.43	$ 54,000	$ 23,220.00
Median			$ -
Miscellaneous			
Other	*Unit*	*$/Unit*	*Cost*
Fire Hydrant Relocation		$ 4,500.00	$ -
Cable Pedestal Relocation		$ 750.00	$ -
Communication Cabinet Relocation		$ 4,000.00	$ -
			$ -

Special Sub-Total: $ 101,220.00

PARSONS BRINCKERHOFF
CONCEPTUAL PLANNING
ENGINEER'S ESTIMATE

PROJECT: **Jetton Road Safety Study Alt 2**
NUMBER:
ESTIMATE: $1,500,000.00

EST. BY: DATE: 7/5/16
CHECK BY: DATE: 7/5/16

STRUCTURES

			Cost per Unit		
Bridges:	**Surface Area (SF)**		**$/ sq.ft.**		**Cost**
A. Bridge Over Stream (1' - 25')		$	130.00	$	-
B. Bridge Over Stream (26' - 100')		$	160.00	$	-
C. Bridge Over Stream (101' - 200')		$	190.00	$	-
Culverts:					
A. New Culvert		$	140.00	$	-
B. Replace Existing Culvert				$	-
Interchanges/Grade Separations*:	**Number**		**$/each**		
Grade Separation		$	1,100,000.00	$	-
Simple Diamond		$	4,400,000.00	$	-
Half Clover		$	6,000,000.00	$	-
Full Clover		$	11,000,000.00	$	-
Simple Flyover		$	14,000,000.00	$	-
Single Point (Urban) Diamond Interchange*			$15,175,000.00	$	-
			Structure Sub-Total:	$	-
Contingency			25%		$0.00
	No. of Yrs.				
Inflation	0		0%		$0.00
			Total:	$	-