TRAFFIC IMPACT ANALYSIS
LIBRARY EXPANSION ADDENDUM

Chapel Hill, North Carolina

Prepared for:

Town of Chapel Hill, NC

RS&H
IMPROVING YOUR WORLD
RS&H Architects-Engineers-Planners, Inc.

prepared by:

Architects-Engineers-Planners, Inc.

October 2007

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1.0 INTRODUCTION

This is an addendum report to the *Chapel Hill Public Library Expansion Traffic Impact Analysis Report* prepared in July 2007. Because the schools in Chapel Hill were closed when the traffic counts were performed in June 2007for the intersection of Estes Drive/Library Drive, the project team re-collected the traffic counts in September 2007 to determine if there are any additional impacts of the proposed development on the local traffic conditions due to the additional traffic to/from schools in the study area. Traffic counts for the other two study intersections (Estes Drive/Caswell Road and Estes Drive/Franklin Street) were performed when schools were in session. Therefore, this addendum report provides analysis and results only for the intersection of Estes Drive/Library Drive.

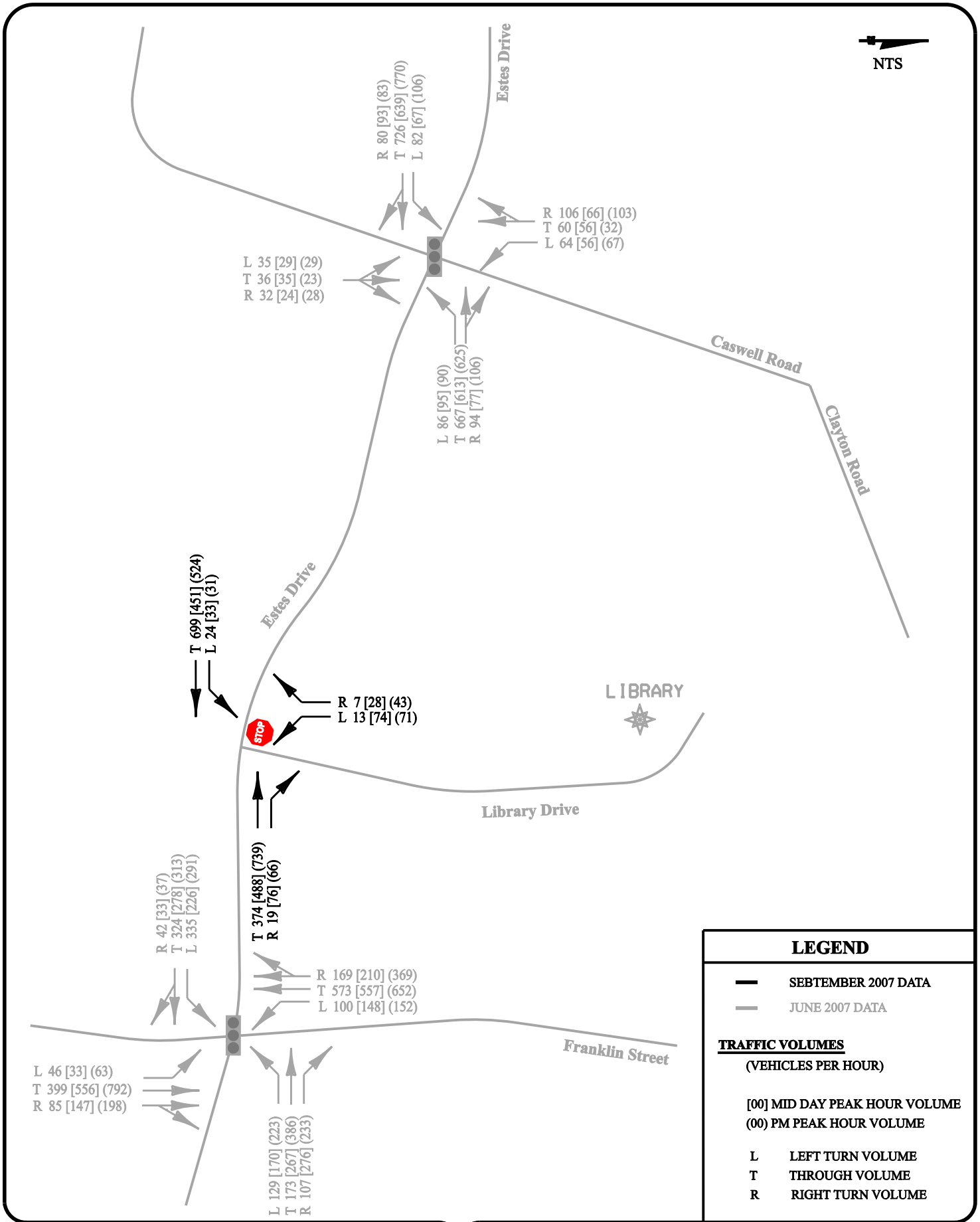
The proposed expansion of the existing Chapel Hill Public Library located off of Estes Drive near its intersection with Franklin Street, would add 47,000 square feet to the existing 28,000 square feet. This expansion is expected to be completed by 2009. The existing library is bounded by other private residential developments to the north and west, commercial development to the east, and Estes Drive to the south.

Table 1 provides a comparison of the July 2007 and September 2007 traffic count data for the intersection of Estes Drive/Library Drive.

Table 1
June 2007 - September 2007 Traffic Count Data Comparison

Intersection	Traffic Movement		June 2007 Counts			September 2007 Counts		
			AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Estes Drive at Library Drive	Eastbound	L	15	33	19	24	33	31
		T	641	595	430	699	451	524
	Westbound	T	347	486	711	374	488	739
		R	17	87	48	19	76	66
	Southbound	L	9	46	51	13	74	71
		R	12	66	51	7	28	43

Figures 1, 2 and 3 respectively show the lane configurations and intersection traffic volumes for the 2007 Existing Conditions, the 2010 No Build Conditions and Build Conditions.



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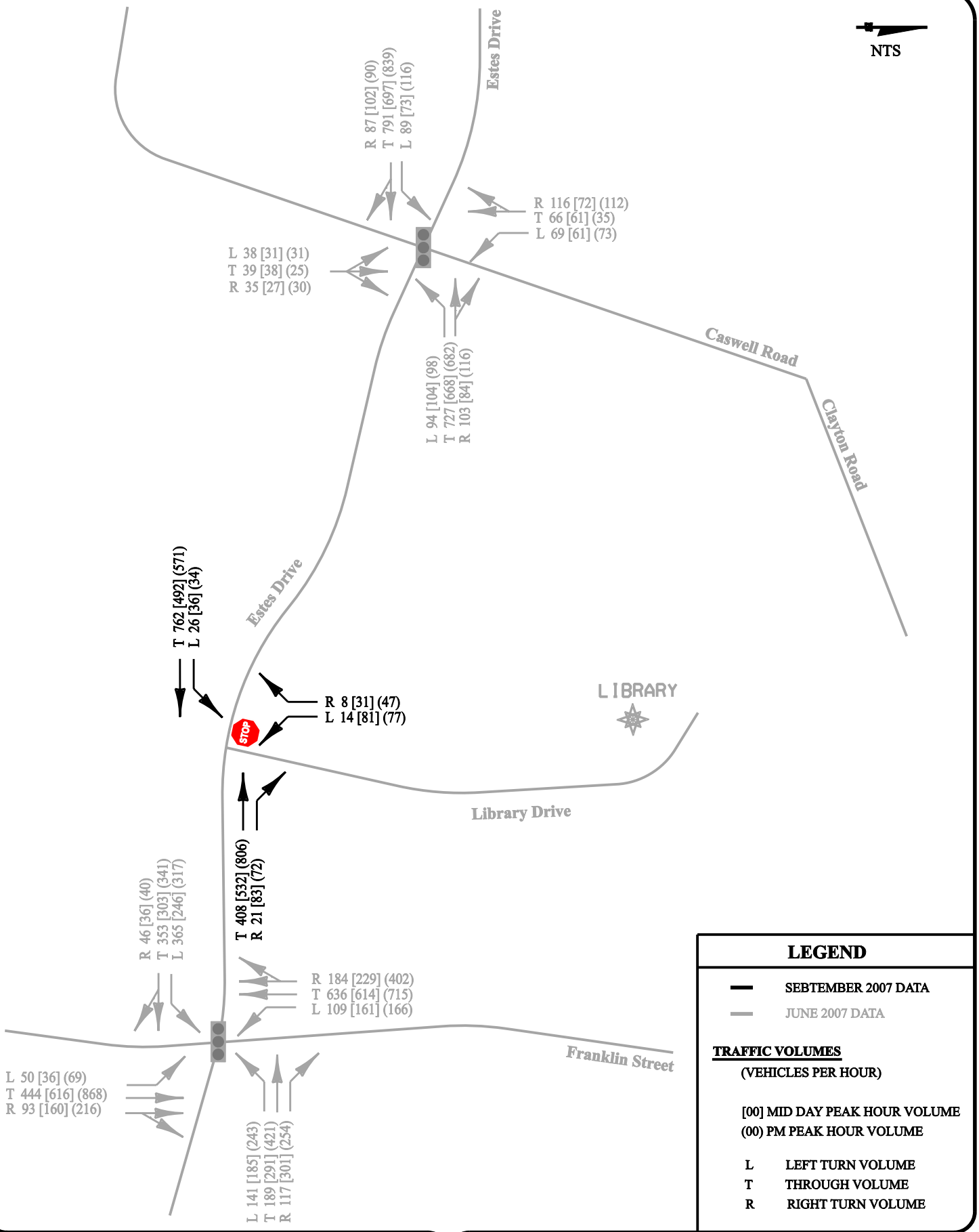
2007 EXISTING CONDITIONS

FIGURE 1



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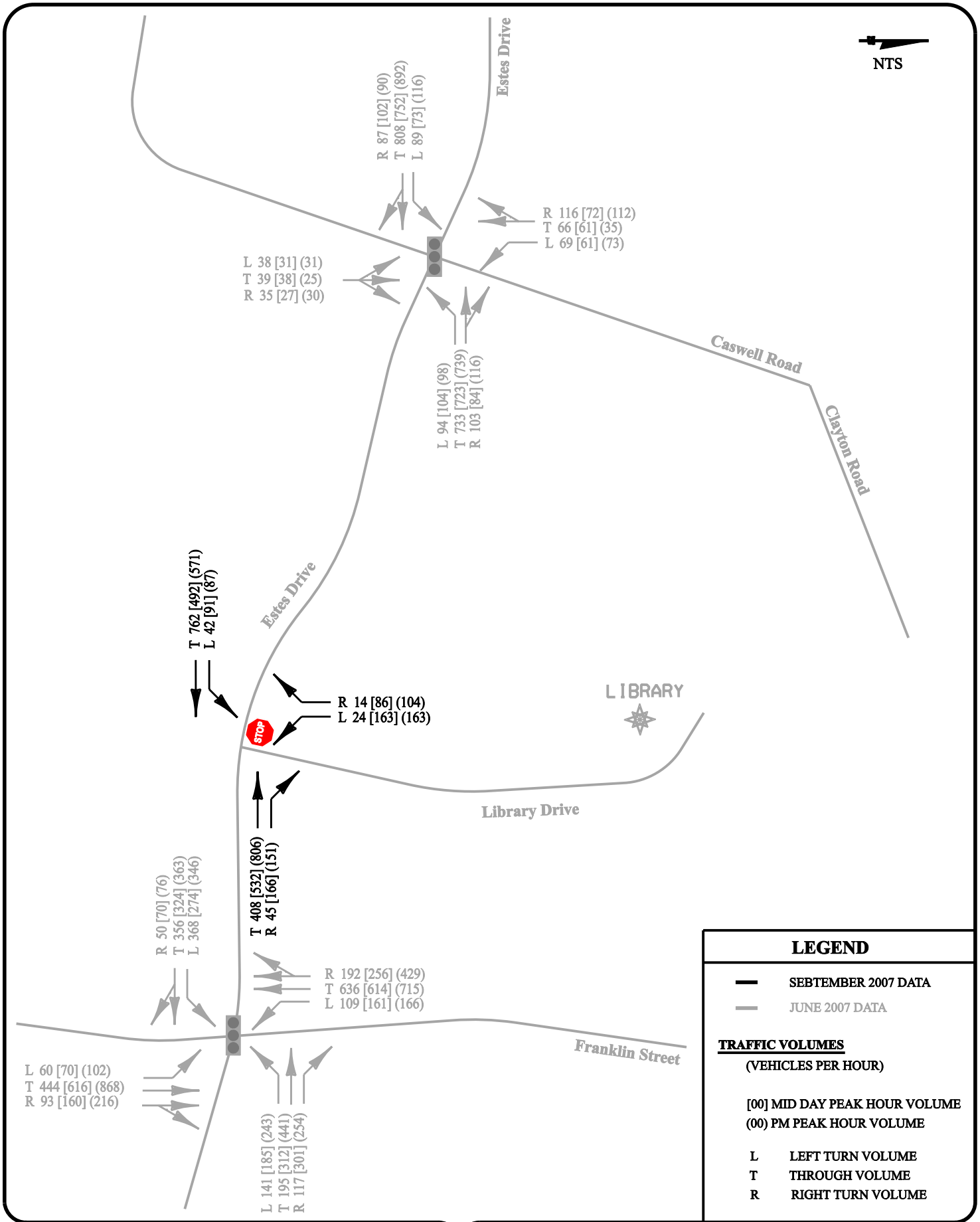
2010 NO BUILD CONDITIONS

FIGURE 2



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2010 BUILD CONDITIONS

FIGURE 3

2.0 PROJECT IMPACTS

To determine the traffic impacts of the proposed expansion project on nearby roadways, peak hour intersection/arterial capacity analysis, and a signal warrant analysis were performed in the vicinity of the Estes Drive/Library Drive intersection for the following three conditions: 2007 Existing Conditions, 2010 No Build Conditions, and 2010 Build Conditions.

Peak Hour Arterial Capacity Analysis

Peak hour one-way arterial capacity analysis was preformed for the segment of Estes Drive between Caswell Road and Franklin Street for the 2007 Existing Conditions, 2010 No Build Conditions and 2010 Build Conditions.

The 2007 Existing Conditions capacity analysis indicates that the traffic demand on Estes Drive exceeds the roadway capacity limits during the peak hour conditions (volume-to-capacity greater than 1.0), similar to the results reported in July 2007.

The 2010 No Build and Build Conditions arterial capacity analysis indicates that the traffic demand on Estes Drive would continue to exceed the roadway capacity limits during the peak hour conditions (volume-to-capacity greater than 1.0), similar to the results reported in July 2007.. This analysis indicates that there is a need for roadway improvements along Estes Drive whether the proposed project is built or not.

Tables 2 through 4 show the peak hour arterial capacity analysis results for 2007 Existing Conditions and 2010 No Build and Build Conditions.

Table 2
Arterial Capacity Analysis
2007 Existing Traffic Conditions

Facility Type	Segment	Direction of Travel	No. of Lanes	Threshold Capacity (vehicles per hour per direction)*	One-Way Traffic Volume (vehicles per hour)			Volume-to-Capacity Ratio		
					AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Minor Arterial	Estes Drive	Eastbound	1	550	712	537	641	1.29	0.98	1.17
		Westbound	1	550	393	564	818	0.71	1.03	1.49

** Guidelines for Traffic Impact Analysis, Town of Chapel Hill, October 2001.*

Table 3
Arterial Capacity Analysis
2010 No Build Conditions

Facility Type	Segment	Direction of Travel	No. of Lanes	Threshold Capacity (vehicles per hour per direction)*	One-Way Traffic Volume (vehicles per hour)			Volume-to-Capacity Ratio		
					AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Minor Arterial	Estes Drive	Eastbound	1	550	776	585	699	1.41	1.06	1.27
		Westbound	1	550	428	615	892	0.78	1.12	1.62

**Guidelines for Traffic Impact Analysis, Town of Chapel Hill, October 2001.*

Table 4
Arterial Capacity Analysis
2010 Build Conditions

Facility Type	Segment	Direction of Travel	No. of Lanes	Threshold Capacity (vehicles per hour per direction)*	One-Way Traffic Volume (vehicles per hour)			Volume-to-Capacity Ratio		
					AM Peak	Mid- day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Minor Arterial	Estes Drive	Eastbound	1	550	786	668	785	1.43	1.21	1.43
		Westbound	1	550	453	697	971	0.82	1.27	1.77

**Guidelines for Traffic Impact Analysis, Town of Chapel Hill, October 2001.*

Signal Warrant Analysis

Traffic demand on Library Drive would either approach or exceed the roadway capacity limits at its intersection with Estes Drive during the 2007 Existing Conditions, the 2010 No Build Conditions and 2010 Build Conditions Mid-day and PM peak hours. A signal warrant analysis was performed to determine the need for a traffic signal at this intersection under the 2007 Existing Conditions.

Of the eight signal warrants described in the Manual on Uniform Traffic Control Devices (MUTCD) 2003 edition, the following two warrants for which the required data was available were analyzed: Warrant 2 - Four-Hour Vehicular Volume, and Warrant 7 - Crash Experience. A brief description of each of these warrants is given below.

Warrant 2 – Four-Hour Vehicular Volume: According to the MUTCD, the need for a traffic signal under the Four-Hour Vehicular Volume Warrant shall be considered if, during any four hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and corresponding vehicles per hour on the higher-volume minor-street approach (one-direction only) fall above the applicable curve representing the warrant threshold.

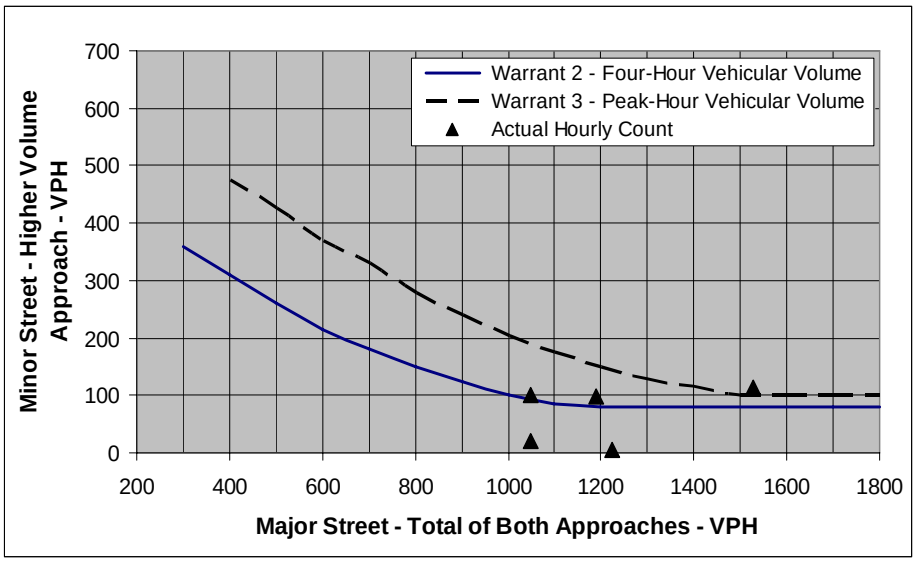
Warrant 7 - Crash Experience: According to the MUTCD, the need for a traffic signal under the Crash Experience Warrant shall be considered if five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period. Each crash must have involved personal injury or property damage apparently exceeding the applicable requirements for a reportable crash.

Estes Drive with Library Drive: The five peak hour traffic volumes (7:00 AM – 9:00 AM, 12:00 PM – 1:00 PM and 4:00 PM – 6:00 PM) for the 2007 Existing Conditions at the intersection of Estes Drive with Library Drive were used to determine if this intersection meets the requirements for a traffic signal according to the warrants described above.

Warrant 2 – Four-Hour Vehicular Volume: As shown in Figure 4, three of the five points corresponding to the counts available for this intersection fall above the four-hour vehicular volume curve. Based on this information, the conditions for Warrant 2 were not met. However, it should be noted the library is not open during the AM peak period (7:00AM – 9:00 AM) and the three points that fall above the curve correspond to the Mid-day and PM peak hours. A more detailed warrant analysis study should be performed to determine if the traffic volumes on Library Drive would warrant a traffic signal during the other off-peak periods in the future.

Warrant 7 - Crash Experience: The NCDOT crash records show that there was one crash per year at this intersection for the period from April 1, 2004 to March 31, 2007. Based on this information, the conditions for Warrant 7 were not met.

Figure 4
Four-Hour and Peak Hour Traffic Signal Warrant Analysis
Estes Drive with Library Drive



Peak Hour Intersection Capacity Analysis

The peak hour intersection capacity analyses results for the intersection of Estes Drive/Library Drive using the September 2007 traffic counts are summarized below.

The 2007 Existing Conditions capacity analysis indicates that the eastbound left-turning traffic demand flows without delay (Level of Service A). The southbound Library Drive right-turning traffic demand functions at a Level of Service C or better throughout the day, which is a good rate of flow. The southbound Library Drive left-turning traffic demand functions at Level of Service D during the AM and Mid-day peak hours\, which is an acceptable rate of traffic flow. However, during the PM peak hours, this movement flows at Level of Service F. It should be noted that the unsignalized intersection capacity analysis is extremely conservative and this intersection should be monitored to determine if traffic demand at this intersection warrants a traffic signal in the future.

The 2010 No Build Conditions capacity analysis indicates that the eastbound left-turning traffic demand would flow at a very good rate of flow (Level of Service B). The southbound Library Drive right-turning traffic demand would function at a Level of Service C or better throughout the day, which is a good rate of flow. The southbound Library Drive left-turning traffic demand would function at a Level of Service D during the AM peak hour, Level of Service E during the Mid-day peak hour, which is an acceptable rate of traffic flow conditions for left-turning movements during the peak hour conditions. However, during the PM peak hour, this movement flows at Level of Service F. It should be noted that the unsignalized intersection capacity analysis is extremely conservative and this intersection should be monitored to determine if traffic demand at this intersection warrants a traffic signal in the future.

The 2010 Build Conditions capacity analysis indicates that the eastbound left-turning traffic demand would flow at a Level Service B or better throughout the day, which is a very good rate of flow. The southbound Library Drive right-turning traffic demand would function at a Level of Service C or better throughout the day, which is a good rate of flow. The southbound Library Drive left-turning traffic demand would function at a Level of Service D during the AM peak hour and Level of Service F during the Mid-day and PM peak hours. It should be noted that the unsignalized intersection capacity analysis is extremely conservative and this intersection should be monitored to determine if traffic demand at this intersection warrants a traffic signal in the future.

The intersection capacity analyses results for the 2007 Existing Conditions, 2010 No Build Conditions and 2010 Build Conditions are summarized in Tables 5 though 7. It should be noted that even though this addendum report provides the capacity analysis for the intersection of Estes Drive/Library Drive, however the following tables show the capacity analysis results for all three intersections in the study area.

In conclusion, the September 2007 intersection/arterial capacity analysis and the traffic signal warrant analysis indicate that the impacts of the proposed expansion of the Chapel Hill Public Library on the roadways and intersections in the study area are similar to the traffic impact analysis reported in July 2007.

Table 5
Intersection Capacity Analysis
2007 Existing Traffic Conditions

Intersection	Traffic Movement		Level of Service			Volume-to-Capacity Ratio		
			AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Estes Drive at Caswell Road	**Overall Intersection**		C	B	B	N/A	N/A	N/A
	Eastbound	L	A	A	A	0.21	0.17	0.27
		TR	A	A	A	0.61	0.55	0.64
	Westbound	L	C	B	C	0.35	0.36	0.41
		TR	C	C	C	0.88	0.8	0.85
	Northbound	LTR	C	C	C	0.36	0.28	0.26
	Southbound	L	D	C	C	0.32	0.27	0.31
		TR	C	C	B	0.44	0.33	0.34
Estes Drive at Library Drive	**Eastbound**	L	A	A	A	0.02	0.04	0.04
	Southbound	L	D	D	F	0.07	0.37	0.58
		R	B	B	C	0.01	0.06	0.12
Franklin Street at Estes Drive	**Overall Intersection**		D	D	**E**	N/A	N/A	N/A
	Eastbound	L	**E**	F	F	0.93	0.87	1.07
		TR	D	**E**	**E**	0.78	0.8	0.8
	Westbound	L	**E**	**E**	**E**	0.61	0.72	0.84
		T	D	**E**	**E**	0.59	0.77	0.93
		R	A	A	A	0.3	0.52	0.42
	Northbound	L	**E**	**E**	**E**	0.37	0.31	0.55
		TR	C	D	**E**	0.47	0.66	1.01
	Southbound	L	**E**	**E**	F	0.58	0.77	0.84
		TR	C	C	D	0.64	0.58	0.87

Table 6
Intersection Capacity Analysis
2010 No Build Conditions

Intersection	Traffic Movement		Level of Service			Volume-to-Capacity Ratio		
			AM Peak	Mid- day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Estes Drive at Caswell Road	Overall Intersection		C	C	C	N/A	N/A	N/A
	Eastbound	L	A	A	A	0.23	0.18	0.29
		TR	B	A	B	0.67	0.64	0.74
	Westbound	L	C	C	D	0.49	0.48	0.73
		TR	D	D	D	0.97	0.93	0.99
	Northbound	LTR	C	C	C	0.41	0.31	0.28
	Southbound	L	D	C	D	0.36	0.30	0.34
		R	C	C	B	0.48	0.36	0.37
Estes Drive at Library Drive	Eastbound	L	A	A	B	0.03	0.04	0.05
	Southbound	L	D	**E**	F	0.09	0.47	0.77
		R	B	B	C	0.01	0.07	0.15
Franklin Street at Estes Drive	Overall Intersection		D	D	F	N/A	N/A	N/A
	Eastbound	L	**E**	F	F	0.88	1.01	1.28
		TR	D	**E**	F	0.82	0.91	1
	Westbound	L	**E**	**E**	F	0.63	0.75	0.89
		T	**E**	**E**	F	0.73	0.79	1.03
		R	A	B	A	0.34	0.54	0.46
	Northbound	L	**E**	F	F	0.49	0.62	0.84
		TR	C	D	F	0.55	0.79	1.14
	Southbound	L	**E**	F	F	0.66	0.88	0.89
		TR	D	D	F	0.76	0.76	1.06

Table 7
Intersection Capacity Analysis
2010 Build Conditions

Intersection	Traffic Movement		Level of Service			Volume-to-Capacity Ratio		
			AM Peak	Mid- day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Estes Drive at Caswell Road	Overall Intersection		C	C	C	N/A	N/A	N/A
	Eastbound	L	A	A	A	0.23	0.18	0.29
		TR	B	A	B	0.67	0.64	0.74
	Westbound	L	C	C	D	0.49	0.48	0.73
		TR	D	D	D	0.97	0.93	0.99
	Northbound	LTR	C	C	C	0.41	0.31	0.28
	Southbound	L	D	C	D	0.36	0.3	0.34
		R	C	C	B	0.48	0.36	0.37
Estes Drive at Library Drive	Eastbound	L	A	A	B	0.04	0.12	0.14
	Southbound	L	D	F	F	0.17	1.22	2.15
		R	B	B	C	0.02	0.19	0.34
Franklin Street at Estes Drive	Overall Intersection		D	D	F	N/A	N/A	N/A
	Eastbound	L	**E**	F	F	0.88	1.01	1.28
		TR	D	**E**	F	0.82	0.91	1
	Westbound	L	**E**	**E**	F	0.63	0.75	0.89
		T	**E**	**E**	F	0.73	0.79	1.03
		R	A	B	A	0.34	0.54	0.46
	Northbound	L	**E**	F	F	0.49	0.62	0.84
		TR	C	D	F	0.55	0.79	1.14
	Southbound	L	**E**	F	F	0.66	0.88	0.89
		TR	D	D	F	0.76	0.76	1.06

Technical Appendix

- **Traffic Count Data**
- **Intersection Capacity Analysis Worksheets**
- **Trip Generation, Distribution and Assignment Models**

Traffic Count Data

- Estes Drive at Caswell road
- Estes Drive at Library Drive
- Franklin Street at Estes Drive

INTERSECTION TRAFFIC COUNT

Location: Library Drive at Ested Drive

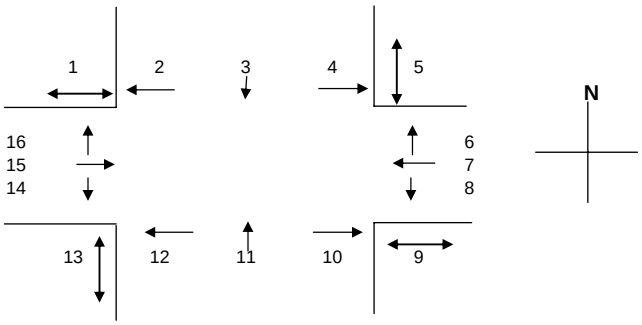
Date: 9/12/2207

Surveyor: Elizabeth Shelton

Weather: Clear and Hot/ Thunderstorm in the Afternoon

Other:

Project: Library Expansion Addendum



Begin	Southbound				Westbound				Northbound				Eastbound			
Time	Peds	Right	Through	Left	Peds	Right	Through	Left	Peds	Right	Through	Left	Peds	Right	Through	Left
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
7:00	0	0	0	0	2	1	49	0	0	0	0	0	1	0	58	0
7:15	1	0	0	2	1	4	66	0	0	0	0	0	0	0	87	2
7:30	0	1	0	1	3	1	101	0	0	0	0	0	0	0	143	1
7:45	0	1	0	1	0	1	122	0	0	0	0	0	0	0	209	2
8:00	**0**	**0**	**0**	**2**	**0**	**3**	**121**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**205**	**5**
8:15	**0**	**4**	**0**	**3**	**0**	**4**	**89**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**184**	**9**
8:30	**0**	**1**	**0**	**3**	**3**	**5**	**71**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**136**	**3**
8:45	**0**	**2**	**0**	**5**	**0**	**7**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**174**	**7**
11:30	0	5	0	18	0	19	84	0	0	0	0	0	0	0	133	4
11:45	0	15	0	27	0	14	103	0	0	0	0	0	0	0	119	8
12:00	**0**	**4**	**0**	**21**	**0**	**16**	**132**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**127**	**6**
12:15	**0**	**8**	**0**	**18**	**1**	**18**	**127**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**99**	**7**
12:30	**3**	**4**	**0**	**13**	**1**	**12**	**106**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**117**	**7**
12:45	**1**	**12**	**0**	**22**	**4**	**30**	**123**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**108**	**13**
1:00	1	14	0	21	0	16	128	0	0	0	0	0	0	0	96	10
1:15	0	10	0	21	0	12	126	0	0	0	0	0	0	0	113	11
4:00	1	11	0	15	0	18	158	0	0	0	0	0	1	0	147	8
4:15	0	13	0	14	0	16	140	0	0	0	0	0	0	0	141	5
4:30	0	6	0	13	2	13	203	0	0	0	0	0	0	0	153	7
4:45	0	5	0	21	0	18	156	0	0	0	0	0	0	0	162	11
5:00	**1**	**7**	**0**	**22**	**1**	**15**	**175**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**108**	**10**
5:15	**0**	**16**	**0**	**19**	**0**	**19**	**184**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**122**	**11**
5:30	**0**	**14**	**0**	**16**	**3**	**17**	**209**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**155**	**3**
5:45	**0**	**6**	**0**	**14**	**2**	**15**	**171**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**139**	**7**
		42	0	78	4	69	724	0	0	0	0	0	4	0	547	35

Intersection Capacity Analysis Worksheets

2007 Existing Condition
- AM Peak Hour
- Mid-day Peak Hour
- PM Peak Hour

2010 No Build Conditions
- AM Peak Hour
- Mid-day Peak Hour
- PM Peak Hour

2010 Build Conditions
- AM Peak Hour
- Mid-day Peak Hour
- PM Peak Hour

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2007 Existing Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*24*	*699*			*374*	*19*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*26*	*776*	*0*	*0*	*415*	*21*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*13*		*7*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*14*	*0*	*7*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*26*					*14*		*7*
C (m) (veh/h)	*1134*					*187*		*640*
v/c	*0.02*					*0.07*		*0.01*
95% queue length	*0.07*					*0.24*		*0.03*
Control Delay (s/veh)	*8.2*					*25.8*		*10.7*
LOS	*A*					*D*		*B*
Approach Delay	--	--				*20.8*		

(s/veh)				
Approach LOS	--	--		*C*

 HCS+™ Version 5.2 Generated: 10/3/2007 2:02 PM

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*Mid-day Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2007 Existing Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*33*	*0*			*488*	*76*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*36*	*0*	*0*	*0*	*542*	*84*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*74*		*28*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*82*	*0*	*31*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*36*					*82*		*31*
C (m) (veh/h)	*965*					*438*		*543*
v/c	*0.04*					*0.19*		*0.06*
95% queue length	*0.12*					*0.68*		*0.18*
Control Delay (s/veh)	*8.9*					*15.1*		*12.0*
LOS	*A*					*C*		*B*
Approach Delay	--	--				*14.3*		

(s/veh)				
Approach LOS	--	--		*B*

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2007 Existing Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*31*	*524*			*739*	*66*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*34*	*582*	*0*	*0*	*821*	*73*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*71*		*43*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*78*	*0*	*47*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*34*					*78*		*47*
C (m) (veh/h)	*767*					*134*		*377*
v/c	*0.04*					*0.58*		*0.12*
95% queue length	*0.14*					*2.94*		*0.42*
Control Delay (s/veh)	*9.9*					*63.8*		*15.9*
LOS	*A*					*F*		*C*
Approach Delay	--	--				*45.8*		

(s/veh)				
Approach LOS	--	--		*E*

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 No-Build Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*26*	*762*			*408*	*21*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*28*	*846*	*0*	*0*	*453*	*23*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*14*		*8*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*15*	*0*	*8*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*28*					*15*		*8*
C (m) (veh/h)	*1097*					*161*		*609*
v/c	*0.03*					*0.09*		*0.01*
95% queue length	*0.08*					*0.30*		*0.04*
Control Delay (s/veh)	*8.4*					*29.6*		*11.0*
LOS	*A*					*D*		*B*
Approach Delay	--	--				*23.2*		

(s/veh)				
Approach LOS	--	--		*C*

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*Mid-day Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 No-Build Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*36*	*492*			*532*	*83*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*40*	*546*	*0*	*0*	*591*	*92*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*81*		*31*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*90*	*0*	*34*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*40*					*90*		*34*
C (m) (veh/h)	*919*					*190*		*509*
v/c	*0.04*					*0.47*		*0.07*
95% queue length	*0.14*					*2.28*		*0.21*
Control Delay (s/veh)	*9.1*					*39.9*		*12.6*
LOS	*A*					*E*		*B*
Approach Delay	--	--				*32.4*		

(s/veh)				
Approach LOS	--	--		*D*

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 No-Build Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*34*	*571*			*806*	*72*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*37*	*634*	*0*	*0*	*895*	*80*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*77*		*47*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*85*	*0*	*52*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*37*					*85*		*52*
C (m) (veh/h)	*716*					*110*		*342*
v/c	*0.05*					*0.77*		*0.15*
95% queue length	*0.16*					*4.30*		*0.53*
Control Delay (s/veh)	*10.3*					*104.9*		*17.4*
LOS	*B*					*F*		*C*
Approach Delay	--	--				*71.7*		

(s/veh)				
Approach LOS	--	--		*F*

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 Build Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*42*	*762*			*408*	*45*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*46*	*846*	*0*	*0*	*453*	*50*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*24*		*14*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*26*	*0*	*15*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*46*					*26*		*15*
C (m) (veh/h)	*1072*					*149*		*609*
v/c	*0.04*					*0.17*		*0.02*
95% queue length	*0.13*					*0.61*		*0.08*
Control Delay (s/veh)	*8.5*					*34.2*		*11.1*
LOS	*A*					*D*		*B*
Approach Delay	--	--				*25.7*		

(s/veh)				
Approach LOS	--	--		*D*

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*Mid-day Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 Build Conditions*

Project Description *103-2134-016 - Library Expansiont*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*91*	*492*			*532*	*166*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*101*	*546*	*0*	*0*	*591*	*184*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*163*		*86*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*181*	*0*	*95*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*101*					*181*		*95*
C (m) (veh/h)	*850*					*148*		*509*
v/c	*0.12*					*1.22*		*0.19*
95% queue length	*0.40*					*10.56*		*0.68*
Control Delay (s/veh)	*9.8*					*205.6*		*13.7*
LOS	*A*					*F*		*B*
Approach Delay	--	--				*139.5*		

(s/veh)				
Approach LOS	--	--		*F*

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Beth Shelton*
Agency/Co.	*RS&H*
Date Performed	*9/24/07*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Library Dr @ Estes Rd*
Jurisdiction	*Chapel Hill, NC*
Analysis Year	*2010 No-Build Conditions*

Project Description *103-2134-016 - Library Expansion (Addendum)*

East/West Street: *Estes Drive* | North/South Street: *Library Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*87*	*571*			*806*	*151*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*96*	*634*	*0*	*0*	*895*	*167*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*163*		*104*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*181*	*0*	*115*
Percent Heavy Vehicles	*2*	*0*	*0*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*96*					*181*		*115*
C (m) (veh/h)	*664*					*84*		*342*
v/c	*0.14*					*2.15*		*0.34*
95% queue length	*0.50*					*16.29*		*1.45*
Control Delay (s/veh)	*11.3*					*637.9*		*20.8*
LOS	*B*					*F*		*C*
Approach Delay	--	--				*398.2*		

(s/veh)				
Approach LOS	--	--		*F*

Trip Generation Distribution and Assignment Models

- AM Peak Hour
- Mid-day Peak Hour
- PM Peak Hour

Name of Project:	**Library Expansion**	Time Period:	AM Peak Hour	0 <--Time Period: 0=AM, 1=Midday, 2=PM
Client:	Town of Chapel Hill	Condition:	Existing	0 <-- Condition: 0 - Existing; 1 - No Build; 2 - New Site: 3 - Build;
Date of Model:	07/11/07	Annual Growth Rate	3.0	
Latest Revision:	10/03/07	Data Year:	2007	
Printout date:	10/03/07	Project Year	2010	
		Projection Factor	1.09	
Filename:	Model	Diagram Dir- N is	up	

DEVELOPMENT SIZE Library Expansion

Library	210.7	47
TOTAL		47

GENERATED TRAFFIC - INBOUND

Library	210.7	41
TOTAL		41

GENERATED TRAFFIC - OUTBOUND

Library	210.7	16
TOTAL		16

Proportion of trips inbound from

Franklin Street SB	20%
Franklin Street NB	25%
Estes Drive WB	15%
Estes Drive EB	40%
TOTAL	100%

Proportion of trips outbound to

Franklin Street NB	20%
Franklin Street SB	25%
Estes Drive EB	15%
Estes Drive WB	40%
TOTAL	**100%**

DISTRIBUTED TRAFFIC
Number of Trips Inbound

Franklin Street SB	8
Franklin Street NB	10
Estes Drive WB	6
Estes Drive EB	16
TOTAL	**41**

Number of trips outbound

Franklin Street NB	3
Franklin Street SB	4
Estes Drive EB	2
Estes Drive WB	6
TOTAL	**16**

Name of Project:	Library Expansion	Time Period:	AM Peak Hour
Client:	Town of Chapel Hill	Condition:	Existing
Date of Model:	07/11/07	Annual Growth Rate	3.00
Latest Revision:	10/03/07	Data Year:	2007
Printout date:	10/03/07	Project Year	2010
Filename:	Model	Projection Factor	1.09
		Diagram Dir- N is	up

TRIP ASSIGNMENT

Intersection			Existing	Future Base	New Site Traffic	Starbuskc at Eastgate	NO Build	Build
Estes Drive at Caswell Road								
	1	SB Left	64	69	0	0	69	69
	2	SB Thru	60	66	0	0	66	66
	3	SB Right	106	116	0	0	116	116
	4	EB Left	82	89	0	0	89	89
	5	EB Thru	726	791	16	0	791	808
	6	EB Right	80	87	0	0	87	87
	7	NB Left	35	38	0	0	38	38
	8	NB Thru	36	39	0	0	39	39
	9	NB Right	32	35	0	0	35	35
	10	WB Left	86	94	0	0	94	94
	11	WB Thru	667	727	6	0	727	733
	12	WB Right	94	103	0	0	103	103
Estes Drive at Library Drive								
	1	SB Left	13	14	10	0	14	24
	2	SB Thru	0	0	0	0	0	0
	3	SB Right	7	8	6	0	8	14
	4	EB Left	24	26	16	0	26	42
	5	EB Thru	699	762	0	0	762	762
	6	EB Right	0	0	0	0	0	0
	7	NB Left	0	0	0	0	0	0
	8	NB Thru	0	0	0	0	0	0
	9	NB Right	0	0	0	0	0	0
	10	WB Left	0	0	0	0	0	0
	11	WB Thru	374	408	0	0	408	408
	12	WB Right	19	21	24	0	21	45
Franklin Street at Estes Drive								
	1	SB Left	100	109	0	0	109	109
	2	SB Thru	573	625	0	11	636	636
	3	SB Right	169	184	8	0	184	192
	4	EB Left	335	365	3	0	365	368
	5	EB Thru	324	353	2	0	353	356
	6	EB Right	42	46	4	0	46	50
	7	NB Left	46	50	10	0	50	60
	8	NB Thru	399	435	0	9	444	444
	9	NB Right	85	93	0	0	93	93
	10	WB Left	129	141	0	0	141	141
	11	WB Thru	173	189	6	0	189	195
	12	WB Right	107	117	0	0	117	117

Name of Project:	**Library Expansion**	Time Period:	Midday Peak Hou	1 <--Time Period: 0=AM, 1=Midday, 2=PM
Client:	Town of Chapel Hill	Condition:	Existing	0 <-- Condition: 0 - Existing; 1 - No Build; 2 - New Site: 3 - Build;
Date of Model:	07/11/07	Annual Growth Rate	3.0	
Latest Revision:	10/03/07	Data Year:	2007	
Printout date:	10/03/07	Project Year	2010	
		Projection Factor	1.09	
Filename:	Model	Diagram Dir- N is	up	

DEVELOPMENT SIZE		Library Expansion
Library	210.7	47
TOTAL		47

GENERATED TRAFFIC - INBOUND		
Library	210.7	138
TOTAL		138

GENERATED TRAFFIC - OUTBOUND		
Library	210.7	138
TOTAL		138

Proportion of trips inbound from	
Franklin Street SB	20%
Franklin Street NB	25%
Estes Drive WB	15%
Estes Drive EB	40%
TOTAL	100%

Proportion of trips outbound to	
Franklin Street NB	20%
Franklin Street SB	25%
Estes Drive EB	15%
Estes Drive WB	40%
TOTAL	**100%**

DISTRIBUTED TRAFFIC

Number of Trips Inbound	
Franklin Street SB	28
Franklin Street NB	34
Estes Drive WB	21
Estes Drive EB	55
TOTAL	**138**

Number of trips outbound	
Franklin Street NB	28
Franklin Street SB	34
Estes Drive EB	21
Estes Drive WB	55
TOTAL	**138**

Name of Project:	Library Expansion	Time Period:	Midday Peak Hour
Client:	Town of Chapel Hill	Condition:	Existing
Date of Model:	07/11/07	Annual Growth Rate	3.00
Latest Revision:	10/03/07	Data Year:	2007
Printout date:	10/03/07	Project Year	2010
Filename:	Model	Projection Factor	1.09
		Diagram Dir- N is	up

TRIP ASSIGNMENT

Intersection			Existing	Future Base	New Site Traffic	Starbuskc at Eastgate	NO Build	Build
Estes Drive at Caswell Road								
	1	SB Left	56	61	0	0	61	61
	2	SB Thru	56	61	0	0	61	61
	3	SB Right	66	72	0	0	72	72
	4	EB Left	67	73	0	0	73	73
	5	EB Thru	639	697	55	0	697	752
	6	EB Right	93	102	0	0	102	102
	7	NB Left	29	31	0	0	31	31
	8	NB Thru	35	38	0	0	38	38
	9	NB Right	24	27	0	0	27	27
	10	WB Left	95	104	0	0	104	104
	11	WB Thru	613	668	55	0	668	723
	12	WB Right	77	84	0	0	84	84
Estes Drive at Library Drive								
	1	SB Left	74	81	83	0	81	163
	2	SB Thru	0	0	0	0	0	0
	3	SB Right	28	31	55	0	31	86
	4	EB Left	33	36	55	0	36	91
	5	EB Thru	451	492	0	0	492	492
	6	EB Right	0	0	0	0	0	0
	7	NB Left	0	0	0	0	0	0
	8	NB Thru	0	0	0	0	0	0
	9	NB Right	0	0	0	0	0	0
	10	WB Left	0	0	0	0	0	0
	11	WB Thru	488	532	0	0	532	532
	12	WB Right	76	83	83	0	83	166
Franklin Street at Estes Drive								
	1	SB Left	148	161	0	0	161	161
	2	SB Thru	557	607	0	7	614	614
	3	SB Right	210	229	28	0	229	256
	4	EB Left	226	246	28	0	246	274
	5	EB Thru	278	303	21	0	303	324
	6	EB Right	33	36	34	0	36	70
	7	NB Left	33	36	34	0	36	70
	8	NB Thru	556	606	0	10	616	616
	9	NB Right	147	160	0	0	160	160
	10	WB Left	170	185	0	0	185	185
	11	WB Thru	267	291	21	0	291	312
	12	WB Right	276	301	0	0	301	301

Name of Project:	**Library Expansion**	Time Period:	PM Peak Hour	2 <--Time Period: 0=AM, 1=Midday, 2=PM
Client:	Town of Chapel Hill	Condition:	Existing	0 <-- Condition: 0 - Existing; 1 - No Build; 2 - New Site: 3 - Build;
Date of Model:	07/11/07	Annual Growth Rate	3.0	
Latest Revision:	10/03/07	Data Year:	2007	
Printout date:	10/03/07	Project Year	2010	
		Projection Factor	1.09	
Filename:	Model	Diagram Dir- N is	up	

DEVELOPMENT SIZE		Library Expansion
Library	210.7	47
TOTAL		47

GENERATED TRAFFIC - INBOUND		
Library	210.7	132
TOTAL		132

GENERATED TRAFFIC - OUTBOUND		
Library	210.7	143
TOTAL		143

Proportion of trips inbound from	
Franklin Street SB	20%
Franklin Street NB	25%
Estes Drive WB	15%
Estes Drive EB	40%
TOTAL	100%

Proportion of trips outbound to	
Franklin Street NB	20%
Franklin Street SB	25%
Estes Drive EB	15%
Estes Drive WB	40%
TOTAL	**100%**

DISTRIBUTED TRAFFIC

Number of Trips Inbound	
Franklin Street SB	26
Franklin Street NB	33
Estes Drive WB	20
Estes Drive EB	53
TOTAL	**132**

Number of trips outbound	
Franklin Street NB	29
Franklin Street SB	36
Estes Drive EB	22
Estes Drive WB	57
TOTAL	**143**

Name of Project:	Library Expansion	Time Period:	PM Peak Hour
Client:	Town of Chapel Hill	Condition:	Existing
Date of Model:	07/11/07	Annual Growth Rate	3.00
Latest Revision:	10/03/07	Data Year:	2007
Printout date:	10/03/07	Project Year	2010
Filename:	Model	Projection Factor	1.09
		Diagram Dir- N is	up

TRIP ASSIGNMENT

Intersection			Existing	Future Base	New Site Traffic	Starbuskc at Eastgate	NO Build	Build
Estes Drive at Caswell Road								
	1	SB Left	67	73	0	0	73	73
	2	SB Thru	32	35	0	0	35	35
	3	SB Right	103	112	0	0	112	112
	4	EB Left	106	116	0	0	116	116
	5	EB Thru	770	839	53	0	839	892
	6	EB Right	83	90	0	0	90	90
	7	NB Left	29	31	0	0	31	31
	8	NB Thru	23	25	0	0	25	25
	9	NB Right	28	30	0	0	30	30
	10	WB Left	90	98	0	0	98	98
	11	WB Thru	625	682	57	0	682	739
	12	WB Right	106	116	0	0	116	116
Estes Drive at Library Drive								
	1	SB Left	71	77	86	0	77	163
	2	SB Thru	0	0	0	0	0	0
	3	SB Right	43	47	57	0	47	104
	4	EB Left	31	34	53	0	34	87
	5	EB Thru	524	571	0	0	571	571
	6	EB Right	0	0	0	0	0	0
	7	NB Left	0	0	0	0	0	0
	8	NB Thru	0	0	0	0	0	0
	9	NB Right	0	0	0	0	0	0
	10	WB Left	0	0	0	0	0	0
	11	WB Thru	739	806	0	0	806	806
	12	WB Right	66	72	79	0	72	151
Franklin Street at Estes Drive								
	1	SB Left	152	166	0	0	166	166
	2	SB Thru	652	711	0	4	715	715
	3	SB Right	369	402	26	0	402	429
	4	EB Left	291	317	29	0	317	346
	5	EB Thru	313	341	22	0	341	363
	6	EB Right	37	40	36	0	40	76
	7	NB Left	63	69	33	0	69	102
	8	NB Thru	792	863	0	5	868	868
	9	NB Right	198	216	0	0	216	216
	10	WB Left	223	243	0	0	243	243
	11	WB Thru	386	421	20	0	421	441
	12	WB Right	233	254	0	0	254	254

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