Traffic Impact Analysis

Lystra Gardens

Chatham County, NC

Prepared for:
W.R. Henderson & Associates

May 2006

SPEC-05280

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1.0 Executive Summary

The proposed Lystra Gardens Subdivision is located along the southern side of Lystra Road approximately 1 mile east of US 15-501, southeast of Chapel Hill, North Carolina. Originally, 140 residential single-family units were envisioned as part of this development. Following completion of the analysis, only 130 residential single-family units are currently being proposed. Therefore, this traffic study presents a conservative analysis. As proposed the site will have two full movement site drives, one of which may align with the eastern portion of Lystra Estates Road. Build out of the development is expected in 2011.

This study was performed to determine the future traffic impacts of the proposed development on the surrounding street network. This study also examined the potential impacts of multiple approved developments within the site vicinity. Analyses were conducted during a.m. and p.m. peak hours. Projected traffic volumes for intersections within the study area were analyzed under three scenarios: Existing, Future No Build, and Future Build.

Based on the analysis, and assuming approved development site traffic and committed improvements, no additional roadway improvements are necessary to accommodate projected site traffic demands. Given the relatively low existing and projected traffic volumes along the site frontage, both site drives intersections are expected to operate at good levels of service.

2.0 Project Background

The proposed Lystra Gardens Subdivision is located along the southern side of Lystra Road approximately 1 mile east of US 15-501, southeast of Chapel Hill, North Carolina. Originally, 140 residential single-family units were envisioned as part of this development. Following completion of the analysis, only 130 residential single-family units are currently being proposed. Therefore, this traffic study presents a conservative analysis. As proposed the site will have two full movement site drives, one of which may align with the eastern portion of Lystra Estates Road. Build out of the development is expected in 2011.

The John R. McAdams Company, Inc. was retained to determine potential traffic impacts of this proposed project. This report presents trip generation, trip distribution, analysis and recommendations for improvements to meet anticipated traffic demands.

This analysis was performed using *Synchro Professional Software Version 6.0.*

3.0 Inventory

3.1 Study Area

The study area for this traffic impact analysis has been determined based on preliminary discussions with Town staff. The following intersections are included in the study area.

- US 15-501 – Lystra Road
- Lystra Road – Lystra Estates Drive – Western Site Drive
- Lystra Road – Eastern Site Drive
- Lystra Road – Jack Bennett Road

3.2 Existing Conditions

Streets within the study area include US 15-501, Lystra Road, Lystra Estates Drive and Jack Bennett Road. Existing traffic volumes along the street network are relatively low in the a.m. and p.m. peak hours, but are projected to increase substantially in the future due to multiple approved developments. Current roadway laneage is shown on Figure 2.

Located west of the site, US 15-501 is a five-lane, north/south arterial with posted speed limits of 45 mph in the vicinity of the site, and a 2003 average daily traffic (ADT) of 20,000 vehicles per day (vpd). Currently under construction, NCDOT TIP project R-942 will widen US 15-501 to a multi-lane facility from a point north of Pittsboro to Chapel Hill. US 15-501 has been constructed as a five lane section at the signalized Lystra Road intersection. US 15-501 is a major arterial route between Chapel Hill and Pittsboro and is projected to have a 2025 ADT of approximately 35,000 vpd according to the North Carolina Department of Transportation Planning Branch.

Lystra Road is generally a two-lane east/west minor thoroughfare with a posted 45 mph speed limit and a 2003 ADT of 2,900 vpd in the site vicinity. Lystra Road forms a signalized T-intersection with US 15-501 and an unsignalized T-intersection with Jack Bennett Road. Lystra Road is located along rolling terrain with limited site distance in certain sections. The subject development proposes two full-movement site drives onto Lystra Road.

Jack Bennett Road is generally a two-lane east/west minor thoroughfare with a posted 45 mph speed limit and an estimated 2006 ADT of 4,000 vpd near the intersection with Lystra Road.

Lystra Estates is a residential loop street located on the north side of Lystra Road providing access to approximately 19 single-family units. The proposed Western Site Drive may align with the eastern loop portion of Lystra Estates to create a four leg unsignalized intersection.

3.3 Publicly Funded Improvements

According to the NCDOT's *Transportation Improvement Program* (TIP), TIP Project R-942 proposes to widen US 15-501 to a multi-lane facility. This 12.8 mile project begins in Chapel Hill and continues south along US 15-501 to Northwood School Road / Russet Run near Pittsboro. Based on the most recent schedule provided by NCDOT, construction is scheduled to be complete in June 2006. However, roadway improvements associated with this TIP project are already operational at the Lystra Road intersection and are therefore assumed in all scenario analyses.

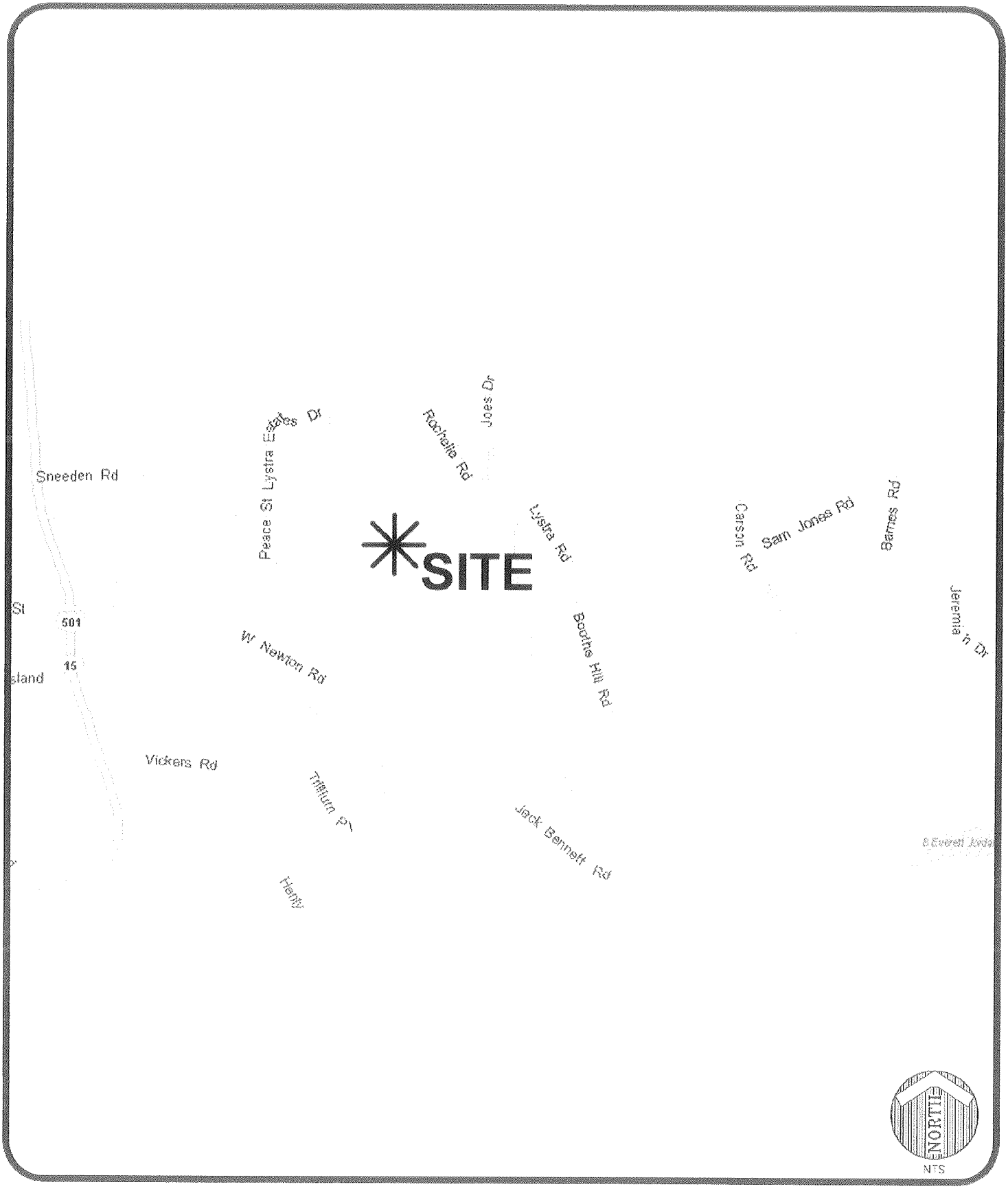
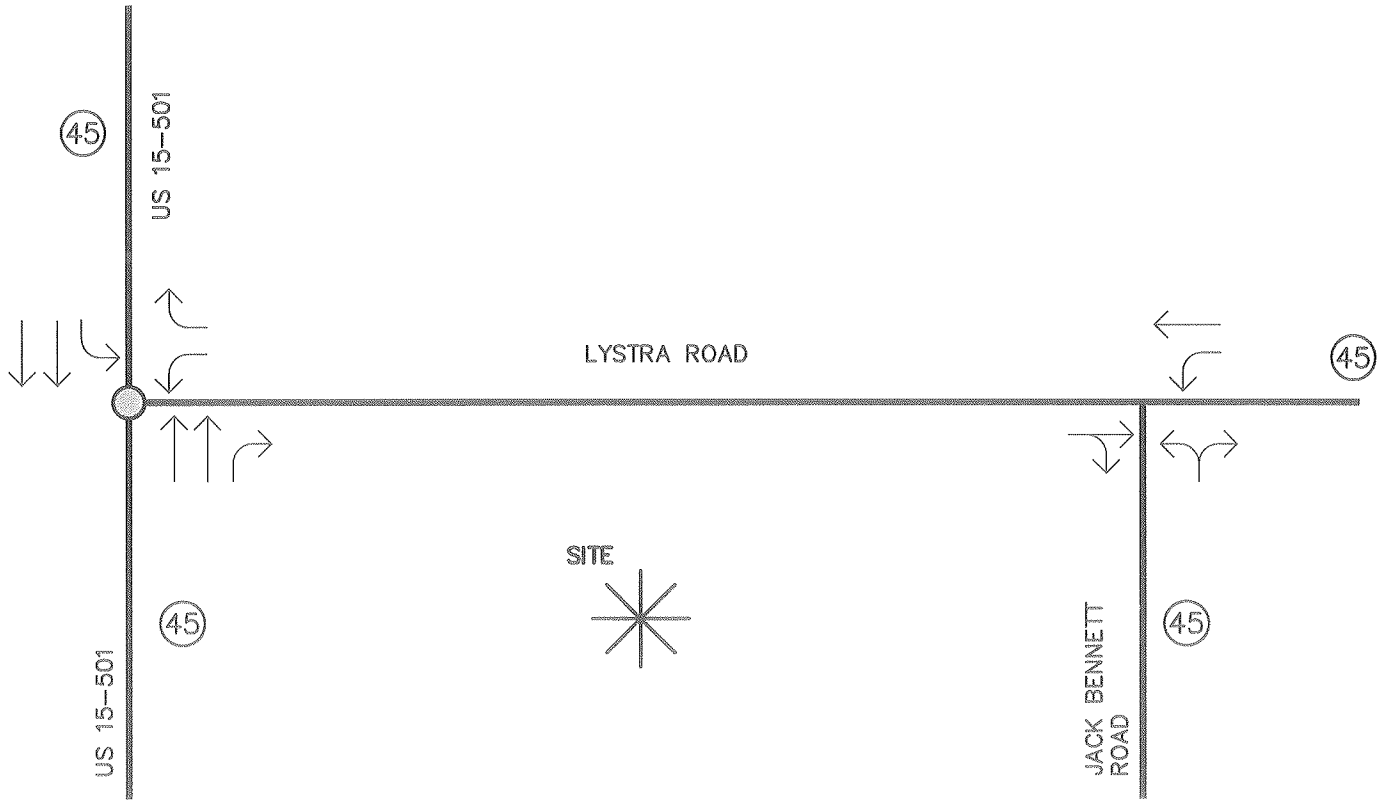


FIGURE:			
1	SITE LOCATION MAP	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000



LEGEND

- EXISTING SIGNAL
- EXISTING LANE
- (XX) – POSTED SPEED LIMIT

NORTH

NTS

McADAMS FIGURE: 2	EXISTING LANEAGE	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000

4.0 Trip Generation

The gross estimated traffic generation for the proposed development was calculated based on the proposed site plan, and using the methodology, rates and equations in the *Institute of Transportation Engineers (ITE) - Trip Generation, 7th Edition*, 2003. No adjustments for internal trip capture or passby traffic were assumed in the analysis.

Table 1 summarizes the proposed site trip generation.

Table 1
ITE Traffic Generation – Lystra Gardens
(Average Weekday Traffic)

Land Use Code	Land Use Density	Average Daily Traffic	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
210	Single Family Detached (140 Units)	1,417	27	81	91	54

4.1 Approved Development Trip Generation

Based on conversations with Town staff, the approved, yet un-built, developments in the site vicinity include Chatham Downs, Williams Corner, Booth Mountain and Briar Chapel. These projects are assumed as approved developments and are discussed further in Section 6.3. Gross trip generation was calculated based on the methodology, rates and equations in the *Institute of Transportation Engineers (ITE) - Trip Generation, 7th Edition*, 2003.

Table 2 summarizes the total approved development gross trip generation. For general purposes, no adjustments are shown for internal capture or passby trips.

Table 2
ITE Traffic Generation – Approved Developments
(Average Weekday Gross Traffic)

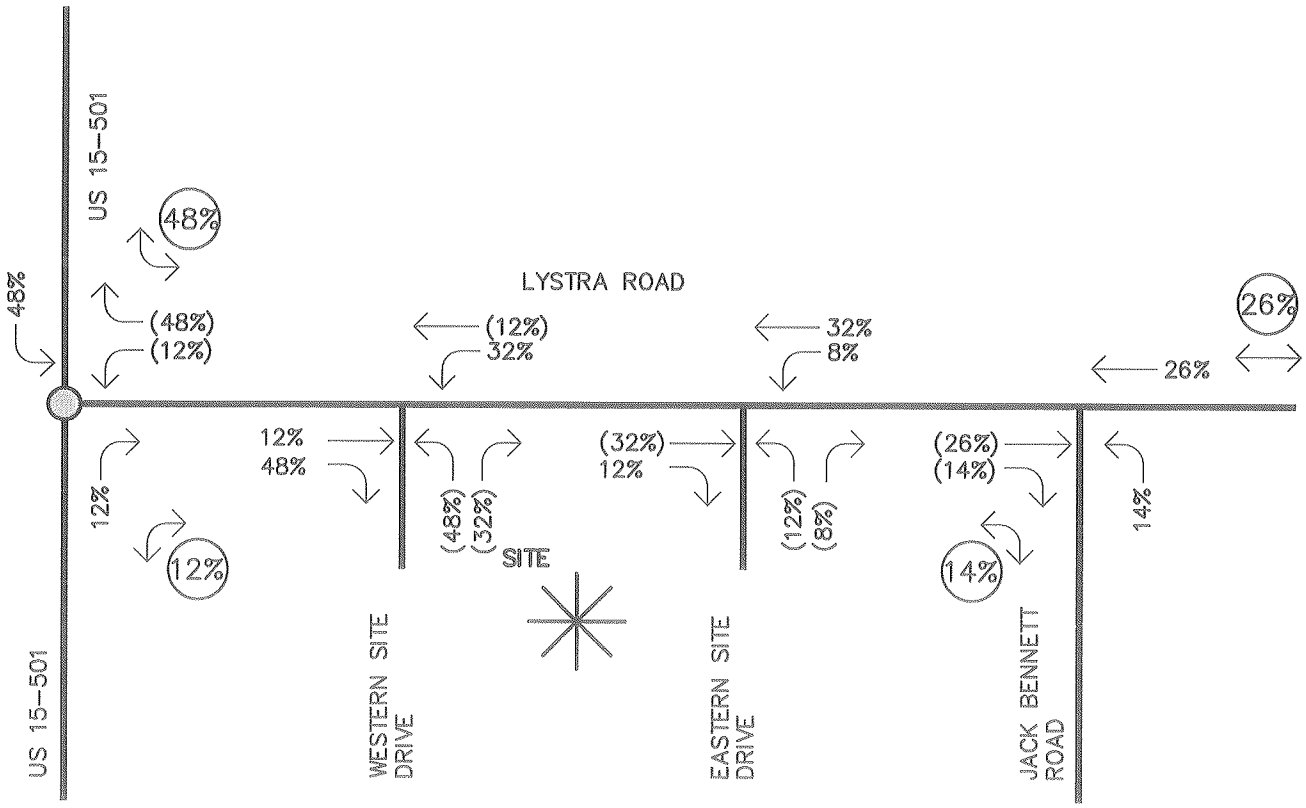
Approved Development	Average Daily Traffic	AM Peak		PM Peak	
		Enter	Exit	Enter	Exit
Williams Corner	17,717	701	291	656	1,044
Chatham Downs	5,905	134	88	366	357
Booth Mountain	1,786	37	102	115	67
Briar Chapel	39,101	1.576	1,847	1,985	1,771
Total Gross Approved Development Trips	64,509	2,448	2,328	3,122	3,239

5.0 Trip Distribution

The primary site traffic distribution was determined based on a review of site trip origins and destinations, future approved developments and existing peak hour traffic volumes in the site vicinity. Given the site location, a majority of site traffic is likely to access the site via US 15-501 towards the Town of Chapel Hill. Therefore the site distribution is weighted towards the north. Primary site traffic volumes were distributed as summarized below:

	Overall
To/From the north via US 15-501	48%
To/From the south via US 15-501	12%
To/From the south via Jack Bennett	14%
To/From the east via Lystra Road	26%
Total	100%

A more detailed distribution of site traffic is reflected on Figure 3.



LEGEND

- EXISTING SIGNAL

XX% – PRIMARY TRIP PERCENTAGE: IN(OUT)

NORTH

NTS

FIGURE:			
3	SITE TRAFFIC DISTRIBUTION	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000

6.0 Projected Traffic Volumes

6.1 Existing Traffic

Traffic Survey Services, Inc. collected turning movement counts at the intersection of US 15-501 and Jack Bennett Road on March 28th, 2006. These counts are included in the appendix. Figure 4 reflects these existing peak hour traffic volumes for intersections within the study area.

6.2 Historical Growth Traffic

Historical growth (background growth) traffic is the increase in traffic volumes due to non-specific growth throughout the area. Based on standard NCDOT practice, a 3.0% annual growth rate was applied to existing traffic volumes through the build out year 2011.

6.3 Approved Development Traffic

Approved development traffic is the traffic that will be generated by currently approved developments that are not yet constructed or occupied. Based on conversations with Town staff, there are four such developments to be specifically included in this analysis: Chatham Downs, Williams Corner, Booth Mountain and Briar Chapel.

The pending Williams Corner mixed-use development is located in the northeast quadrant of the US 15-501 – Lystra Road intersection. This development proposes 40 townhomes, a day care center, a specialty supermarket, a pharmacy with drive-through window, a drive-in bank, 50,500 square feet (s.f.) of specialty retail, 50,500 s.f. of office spaces, 166,000 s.f. of medical office space, and 60,000 s.f. of flex space in the projected 2010 build out year. Williams Corner site traffic volumes were distributed onto the network based on the traffic impact analysis prepared by Kimley-Horn and Associates, Inc. dated May 2005. Per the traffic study, dual westbound left turn lanes at the US 15-501 – Lystra Road intersection are recommended as part of this development and were therefore included in the Future No-Build and Future Build scenarios as a committed improvement. While this project has not yet been approved, staff asked that the traffic impacts be specifically reflected in this analysis.

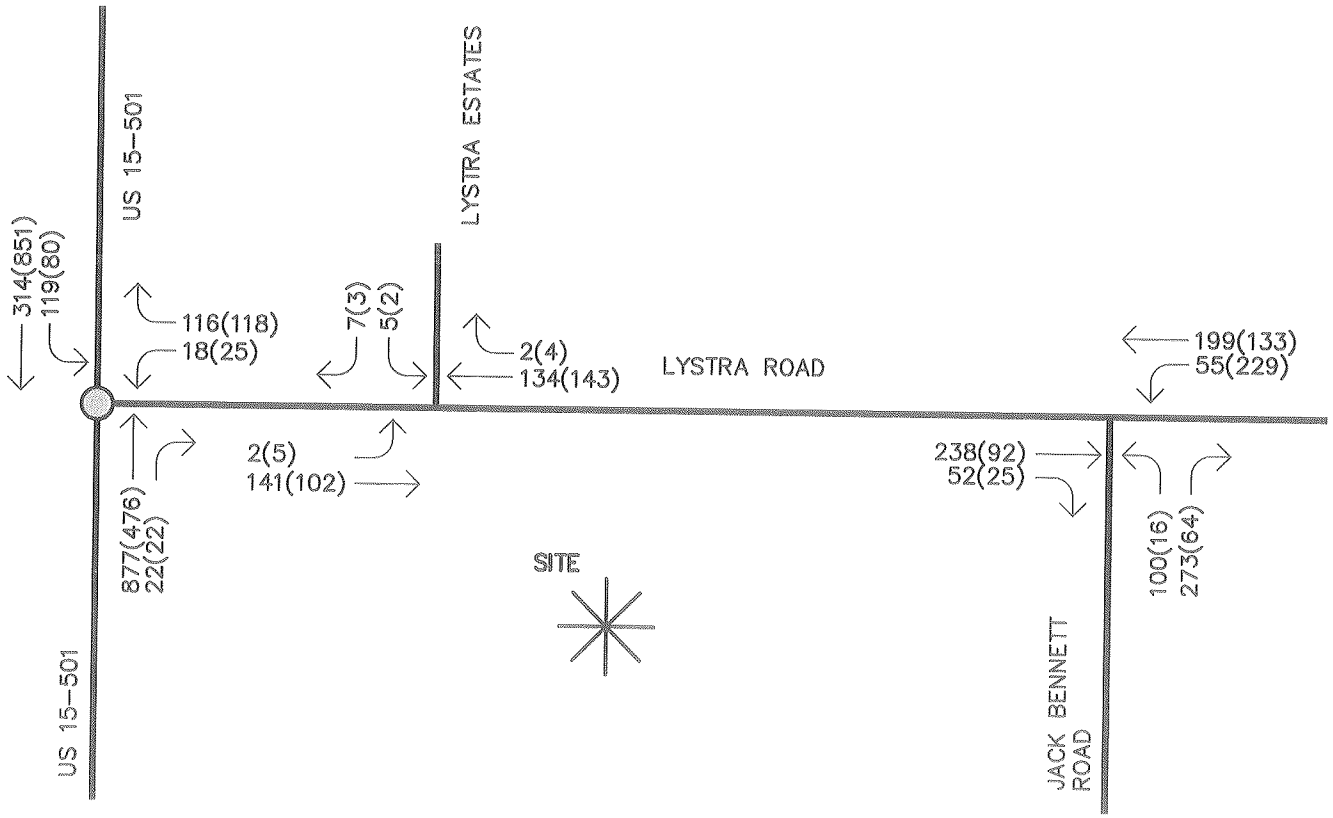
Chatham Downs is a retail development located on the southeast quadrant of the US 15-501 – Lystra Road intersection. This development proposes a 45,000 s.f. supermarket, a 4,000 s.f. drive-in bank, and 12,000 s.f. of retail/office space with a projected 2006 build out year. Chatham Downs site traffic volumes were distributed on the network based on the traffic impact analysis prepared by Mandala Services, Inc. dated July 2003.

The Briar Chapel mixed-use development is located west of US 15-501 between Mann's Chapel Road and Andrews Store Road in Chatham County, NC. The project proposes approximately 1,880 single-family units, 515 multi-family units, 252,000 s.f. of retail, 270,000 s.f. of office, two schools and a county park with a projected 2014 build out year. This study assumes 60% of the Briar Chapel will be constructed by the year 2011. Therefore, 60% of the trip generation potential of the development was assigned to the intersections in the study area based on the Briar Chapel TIA prepared by Kimley-Horn and Associates, Inc. in June 2004.

The Booth Mountain residential development will be located east of US 15-501, south of south of Lystra Road and north of Jack Bennett Road. This development proposes 180 single-family units divided into three separate sections. Two sections, consisting of 39 and 53 units, will only have access onto Jack Bennett Road, while the third section, 88 units, will only have access onto Lystra Road. Build out of the development is expected in 2011. Booth Mountain site traffic volumes were distributed on the network based on the traffic impact analysis prepared by Ramey Kemp and Associates, Inc. dated August 2004.

Where necessary, approved development traffic volumes were distributed onto the network based on existing and projected traffic volumes. Approved development traffic volumes are indicated on Figure 6. As directed by staff, Future No-Build traffic volumes were determined by adding both approved development traffic and historical growth traffic to existing traffic volumes. As a result existing traffic is projected to grow approximately 100% and 138% in the AM and PM peak, respectively, from year 2006 to 2011. For two reasons this approach is very conservative and likely overestimates future traffic volumes. First, by specifically including several large approved developments without accounting for interaction between any of these land uses, cumulative traffic impacts are overestimated. Second, in similar cases where traffic from several large approved projects are specifically included in the analysis, projected traffic increases resulting from additional "background" growth are often reduced or eliminated. This is based on the assumption that the approved projects adequately reflect historical background growth through the proposed build-out date. However, no such reductions were applied in this analysis.

These Future No-Build volumes are indicated on Figure 7. Roadway improvements associated with the Williams Corner development are included in the Future No Build and Future Build scenarios.



LEGEND

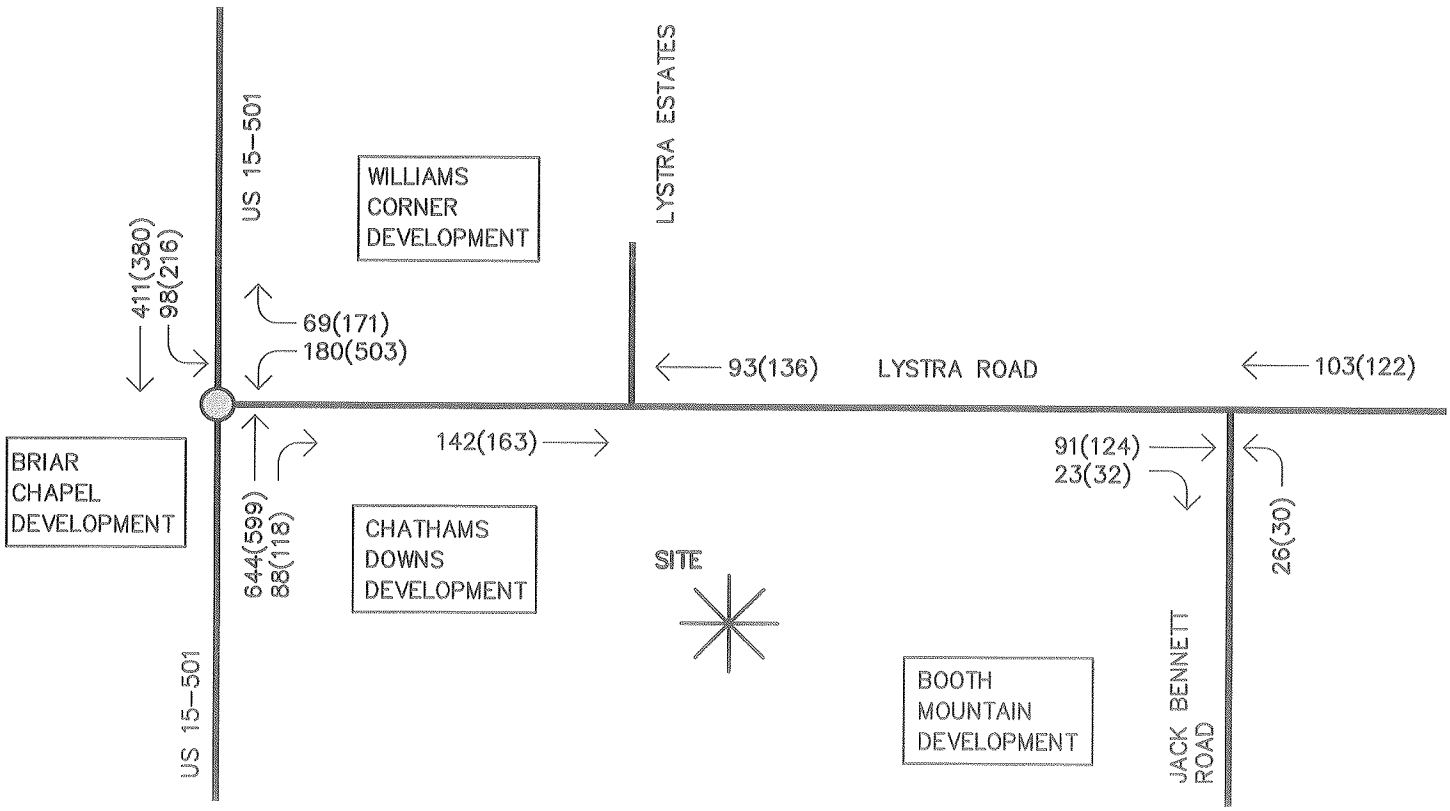
- EXISTING SIGNAL

XX(XX) - PEAK HOUR VOLUMES: AM(PM)

NORTH

NTS

FIGURE:			
4	EXISTING TRAFFIC VOLUMES	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000



LEGEND

⊕ — EXISTING SIGNAL

XX(XX) — PEAK HOUR VOLUMES: AM(PM)

NORTH

NTS

McADAMS	FIGURE: 5	APPROVED DEVELOPMENT TRAFFIC VOLUMES	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC

THE JOHN R. McADAMS COMPANY, INC.
ENGINEERS/PLANNERS/SURVEYORS
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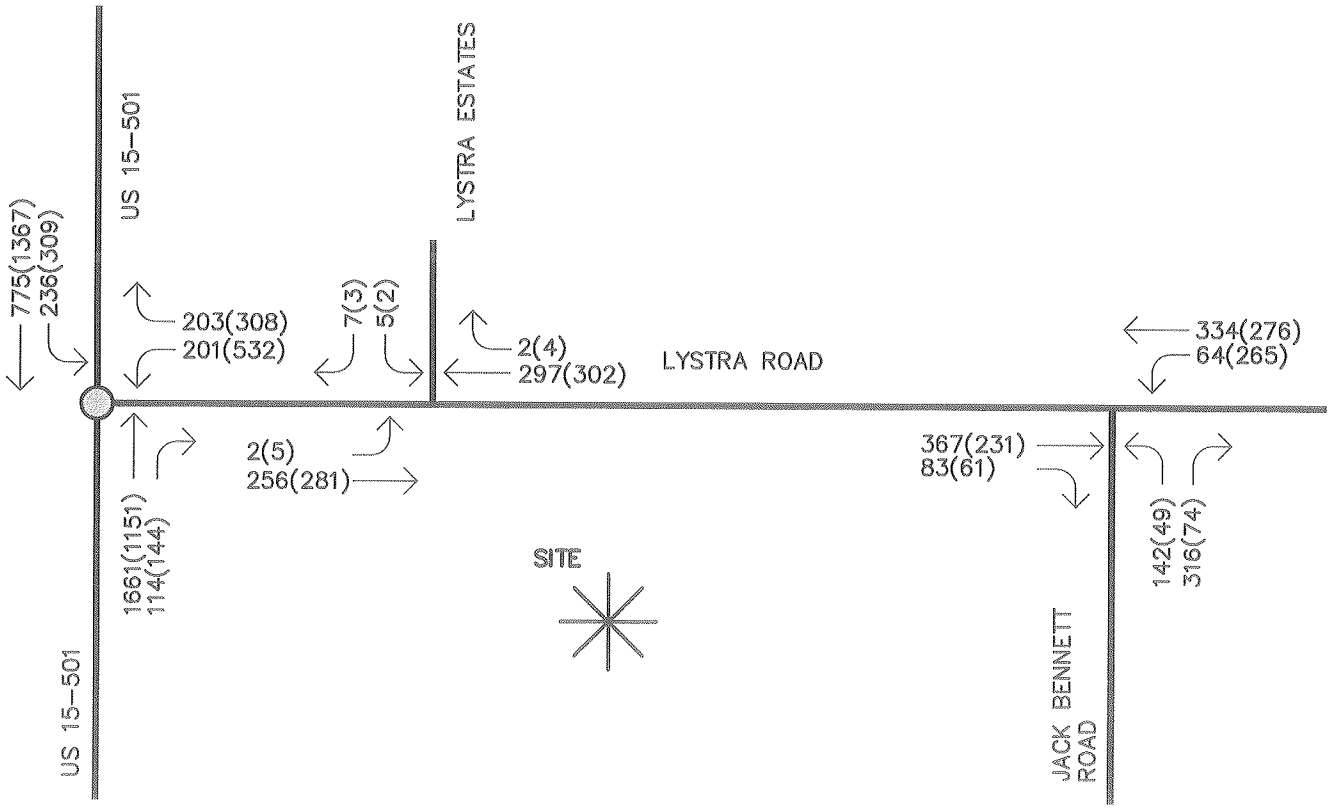

LEGEND

— EXISTING SIGNAL

XX(XX) — PEAK HOUR VOLUMES: AM(PM)

NORTH

NTS

FIGURE:			
6	FUTURE NO-BUILD TRAFFIC VOLUMES	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000

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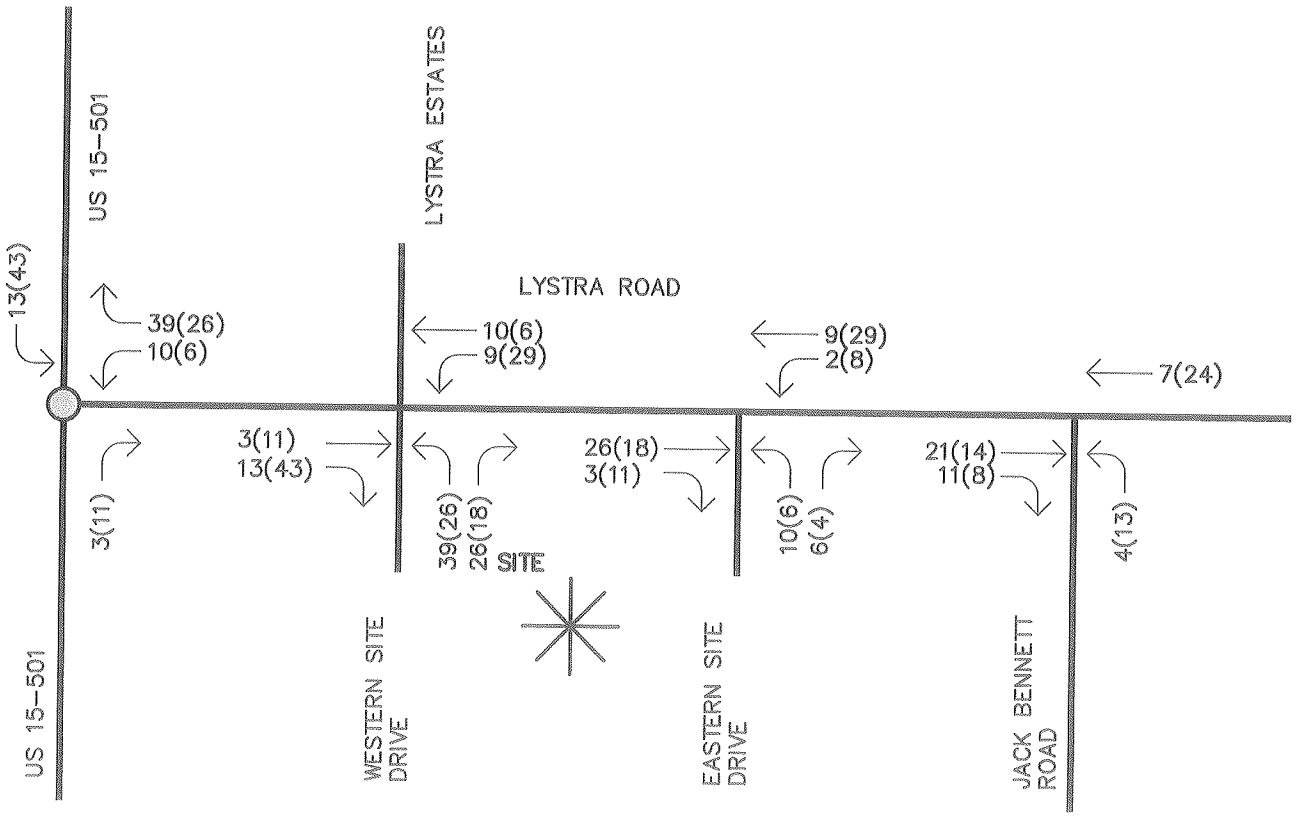
7.0 Site Access and Traffic Assignment

The proposed site will operate with two full movement drives onto Lystra Road. The Eastern Site Drive will operate as a T-intersection, while the Western Site Drive should either align opposite existing Lystra Estates Drive or be sufficiently offset so as to avoid left turn conflicts along Lystra Road.

Site traffic was distributed and assigned onto the street network based on the distributions described in Section 5.0. Site traffic volumes are indicated on Figure 5. Site generated traffic volumes were added to Future No-Build volumes to obtain anticipated Future Build volumes. Future Build traffic volumes are indicated on Figure 7.



LEGEND

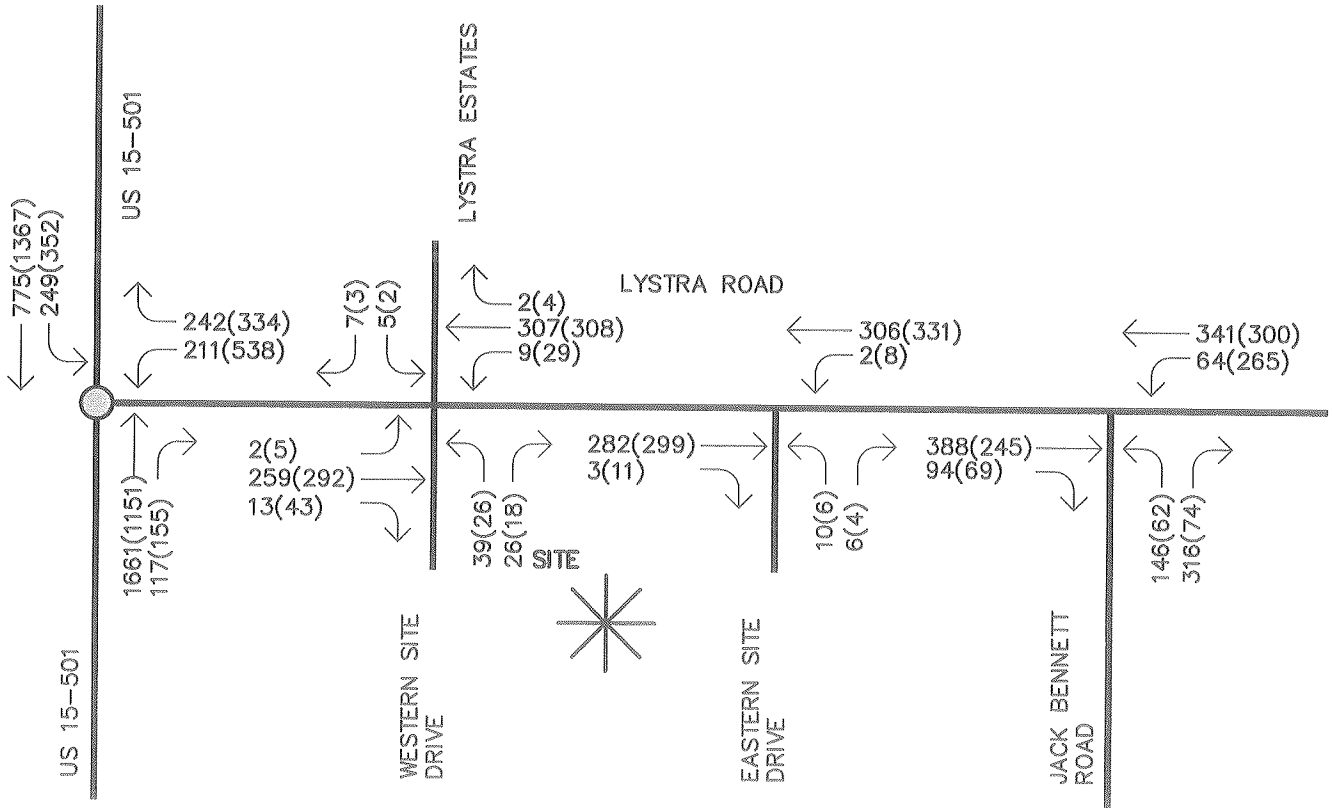
- EXISTING SIGNAL

XX(XX) - PEAK HOUR VOLUMES: AM(PM)

NORTH

NTS

FIGURE:			
7	SITE TRAFFIC VOLUMES	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14006 ZIP 27709-4006 (919) 361-5000



LEGEND

- EXISTING SIGNAL

XX(XX) - PEAK HOUR VOLUMES: AM(PM)

NORTH

NTS

FIGURE:			
8	FUTURE BUILD TRAFFIC VOLUMES	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000

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8.0 Traffic Analysis

The *Highway Capacity Manual 2000* describes capacity as "the maximum number of vehicles that can pass a given point during a specific period under given roadway, traffic and control conditions". Capacity is further defined at different levels of service to qualitatively measure the operational characteristics of the traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with LOS A indicating the shortest average delays and LOS F indicating the longest average delays. The tables below relate average intersection control delay to level of service for both signalized and unsignalized intersections.

LOS Criteria For Signalized Intersections	
LOS	Control Delay (sec./veh.)
A	0 – 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

LOS Criteria For Unsignalized Intersections (2-Way Stop)	
LOS	Control Delay (sec./veh.)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Capacity analyses for a.m. and p.m. peak hours were conducted for each of the following scenarios:

- Existing (2006)
- Future No Build (2011)
- Future Build (2011)

8.1 US 15-501 – Lystra Road Intersection

This intersection has recently signalized as part of NCDOT's TIP Project R-942, which improved US 15-501 to a four-land, median-divided facility. With these improvements, this intersection currently operates at level of service (LOS) A during peak hours. Under the Future No-Build scenario with the addition of background growth traffic, approved development traffic and recommended westbound dual left turn lanes by the Williams Corner development, the intersection is projected to operate at LOS C. This decline in level of service is largely due to the amount of approved development traffic volumes in the site vicinity. Under the Future Build scenario with site traffic volumes, LOS C remains with acceptable queues and delay. Site traffic is projected to only constitute 3.7% and 2.2% of intersection traffic volumes at full build out in the AM and PM peaks, respectfully. As depicted in the table below, the addition of site traffic adds only minimally to the overall intersection delay. Therefore, no improvements are necessary to address site-generated traffic.

Table 3 summarizes the peak hour levels of service.

Table 3
Level of Service Comparison
US 15-501 – Lystra Road Intersection

Scenario	AM Peak LOS (Delay in Seconds)	PM Peak LOS (Delay in Seconds)
Existing (2006)	A (6.4)	A (3.9)
Future No Build (2011)	C (21.2)	C (25.6)
Future Build (2011)	C (22.3)	C (26.9)

8.2 Lystra Road – Lystra Estates Drive – Western Site Drive Intersection

This existing unsignalized intersection currently operates at level of service (LOS) A during peak hours. Under the Future No-Build scenario, with approved development and background growth traffic, LOS B is expected. In the Future Build scenario with build-out of Lystra Gardens Subdivision, the proposed Western Site Drive will either create a three-leg unsignalized intersection or align opposite existing Lystra Estates. This analysis considers the worst-case scenario of a four-leg intersection. Analysis indicates that left turns out of the site will operate at LOS C in the AM and PM peaks with minimal queues and delay. This good level of service is due largely to the relatively low traffic volumes along Lystra Road and the low number of projected turning movements to and from this site. Therefore, no improvements are necessary to address site-generated traffic.

It should be noted the proposed Western Site Drive should either align or be sufficiently offset from Lystra Estates so as to avoid left turn conflicts. No additional improvements are necessary to address anticipated traffic demands.

Table 4 summarizes the peak hour levels of service.

Table 4
Level of Service Comparison
Lystra Road – Lystra Estates Drive – Western Site Drive Intersection

Scenario	AM Peak LOS (Delay in Seconds)	PM Peak LOS (Delay in Seconds)
Existing (2006)	A (9.6)	A (9.5)
Future No Build (2011)	B (11.4)	B (11.5)
Future Build (2011)	B (14.3)	C (15.3)

*Note: HCS2000 methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above.

8.3 Lystra Road – Eastern Site Drive Intersection

In the Future Build scenario, the proposed Eastern Site Drive will form an unsignalized T-intersection with Lystra Road. This intersection is expected to operate at LOS B during peak hours with approved development and background traffic volumes. This good level of service is largely due to the relatively low traffic volume along Lystra Road and the low number of projected turning movements to and from this site drive. Therefore, no improvements are necessary to address site-generated traffic.

Table 5 summarizes the peak hour levels of service.

Table 5
Level of Service Comparison
Lystra Road – Eastern Site Drive Intersection

Scenario	AM Peak LOS (Delay in Seconds)	PM Peak LOS (Delay in Seconds)
Future Build (2011)	B (12.4)	B (12.8)

*Note: HCS2000 methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above.

8.4 Lystra Road – Jack Bennett Road Intersection

This existing unsignalized intersection currently operates at level of service (LOS) C during the AM peak with acceptable queues and delay. This level of service is due largely to the existing North Chatham School (K-8) located near the subject intersection. Under the Future No-Build scenario, with approved development and background growth traffic, LOS F is expected with queuing on Jack Bennett Road. In the Future Build scenario with build-out of Lystra Gardens Subdivision, LOS F remains with minor increases in queues and delay. The Lystra Gardens Subdivision site traffic volumes are projected to constitute only 3.2% and 5.8% of total intersection volumes in the AM and PM peaks, respectfully. It should also be noted that this intersection is located almost 1.5 miles from the nearest site drive. As noted above this poor side street level of service is primarily related to school traffic and traffic associated with other approved developments. Therefore, no improvements are necessary to address site-generated traffic. This intersection should continue to be monitored for future geometric improvements and signalization.

Table 6 summarizes the peak hour levels of service.

Table 6
Level of Service Comparison
Lystra Road – Jack Bennett Road Intersection

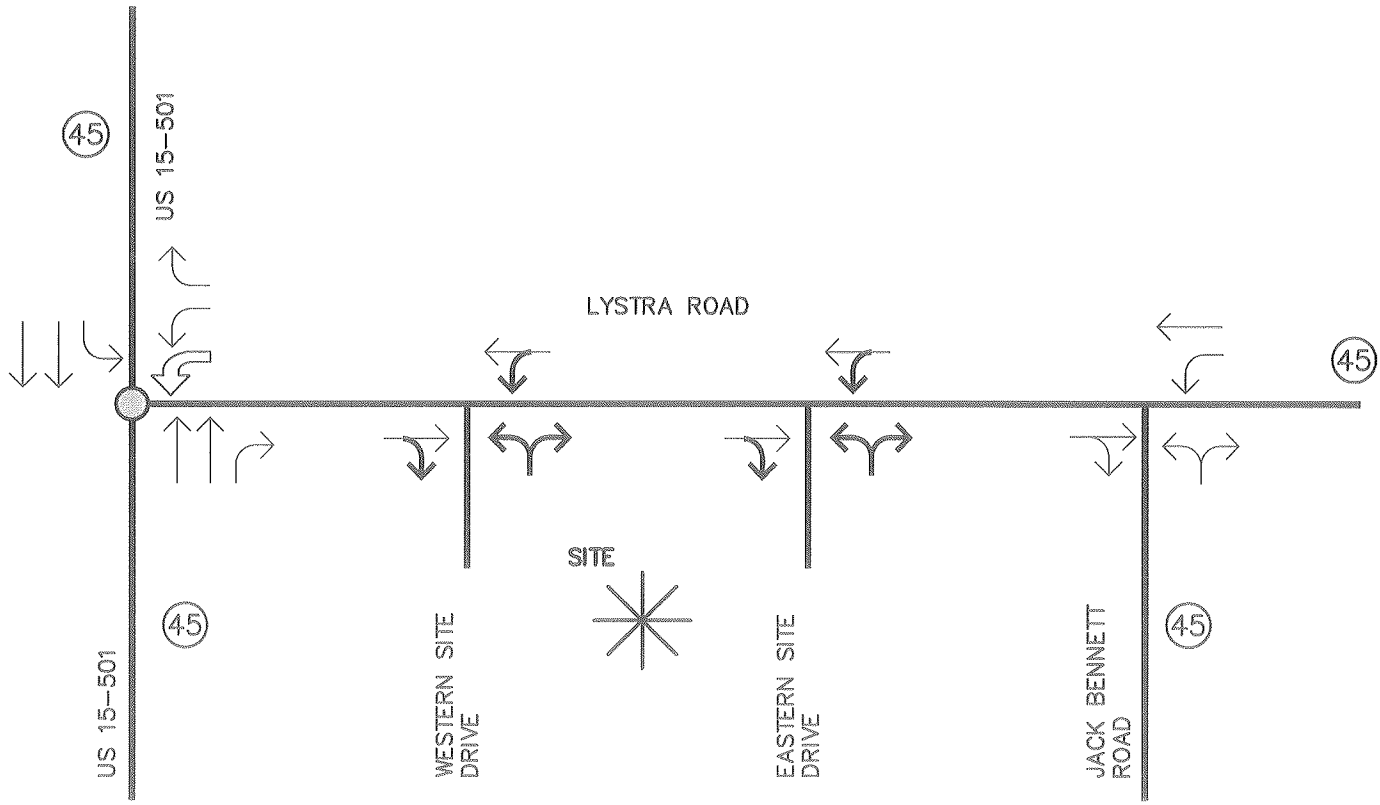
Scenario	AM Peak LOS (Delay in Seconds)	PM Peak LOS (Delay in Seconds)
Existing (2006)	C (21.9)	B (11.3)
Future No Build (2011)	F (131.4)	D (26.4)
Future Build (2011)	F (161.0)	E (36.1)

*Note: HCS2000 methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above.

9.0 Summary of Conclusions and Recommendations

With build-out of Lystra Gardens Subdivision, background growth and approved development traffic volumes largely account for decreases in level of service throughout the study area. Site traffic volumes will not account for a significant portion of total intersection volumes, nor will they have a substantial impact on future intersection operations. With the addition of Williams Corner committed roadway improvements, no additional improvements are necessary at the US 15-501 – Lystra Road intersection. Also, because of the limited site traffic impact at the Lystra Road – Jack Bennett intersection and the fact that this intersection is located almost 1.5 miles from the nearest site drive, no improvements are recommended to address site traffic impact.

It should be noted the proposed Western Site Drive should either align or be sufficiently offset from Lystra Estates so as to avoid left turn conflicts. Therefore, based on the analysis, no improvements are recommended to accommodate site-generated traffic.



LEGEND

- EXISTING SIGNAL
- EXISTING LANE
- PROPOSED LANEAGE
- COMMITTED LANE / BY OTHERS
- XX – POSTED SPEED LIMIT

NORTH

NTS

FIGURE:			
9	PROPOSED LANEAGE	LYSTRA GARDENS TRAFFIC IMPACT ANALYSIS CHATHAM COUNTY, NC	THE JOHN R. McADAMS COMPANY, INC. ENGINEERS/PLANNERS/SURVEYORS RESEARCH TRIANGLE PARK, NC P.O. BOX 14005 ZIP 27709-4005 (919) 361-5000

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Appendix

Traffic Counts, Trip Generation & Trip Summary

Traffic Survey Services, Inc.
US 15-501 @ Lystra Road

Chapel Hill, N.C.

Date:March 28, 2006
Counter:JAG
Weather: Clear

File Name : 15501Lystra
Site Code : 00260152
Start Date : 03/28/2006
Page No : 1

Groups Printed- Unshifted

	US 51-501 From North			Lystra Rd. From East			US 51-501 From South			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00	0	65	25	14	0	9	4	174	0	291
07:15	0	87	26	15	0	4	4	199	0	335
07:30	0	71	30	35	0	7	10	222	0	375
07:45	0	64	26	33	0	4	6	219	0	352
Total	0	287	107	97	0	24	24	814	0	1353
08:00	0	96	30	27	0	6	5	215	0	379
08:15	0	83	33	21	0	1	1	221	0	360
08:30	0	94	18	14	0	2	4	161	0	293
08:45	0	88	21	15	0	4	3	151	0	282
Total	0	361	102	77	0	13	13	748	0	1314
*** BREAK ***										
16:00	0	167	15	13	0	2	3	119	0	319
16:15	0	194	40	20	0	9	6	98	0	367
16:30	0	173	16	30	0	8	6	106	0	339
16:45	0	138	12	17	0	6	3	90	0	266
Total	0	672	83	80	0	25	18	413	0	1291
17:00	0	208	24	21	0	8	2	94	0	357
17:15	0	225	19	32	0	7	9	139	0	431
17:30	0	214	20	28	0	5	7	123	0	397
17:45	0	204	17	37	0	5	4	120	0	387
Total	0	851	80	118	0	25	22	476	0	1572
Grand Total	0	2171	372	372	0	87	77	2451	0	5530
Apprch %	0.0	85.4	14.6	81.0	0.0	19.0	3.0	97.0	0.0	
Total %	0.0	39.3	6.7	6.7	0.0	1.6	1.4	44.3	0.0	

	US 51-501 From North				Lystra Rd. From East				US 51-501 From South					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	App. Total	Int. Total
Peak Hour From 07:00 to 12:30 - Peak 1 of 1														
Intersection	07:30													
Volume	0	314	119	433	116	0	18	134	22	877	0	899	0	1466
Percent	0.0	72.5	27.5		86.6	0.0	13.4		2.4	97.6	0.0			
Volume	0	314	119	433	116	0	18	134	22	877	0	899	0	1466
Volume	0	96	30	126	27	0	6	33	5	215	0	220	0	379
Peak Factor														0.967
High Int.	08:00				07:30				07:30				6:45:00 AM	
Volume	0	96	30	126	35	0	7	42	10	222	0	232		
Peak Factor				0.859				0.798				0.969		
Peak Hour From 12:45 to 17:45 - Peak 1 of 1														
Intersection	17:00													
Volume	0	851	80	931	118	0	25	143	22	476	0	498	0	1572
Percent	0.0	91.4	8.6		82.5	0.0	17.5		4.4	95.6	0.0			
Volume	0	851	80	931	118	0	25	143	22	476	0	498	0	1572
Volume	0	225	19	244	32	0	7	39	9	139	0	148	0	431
Peak Factor														0.912
High Int.	17:15				17:45				17:15					
Volume	0	225	19	244	37	0	5	42	9	139	0	148		
Peak Factor				0.954				0.851				0.841		

Traffic Survey Services, Inc.
Lystra Road @ Jack Bennett Road

Date:March 28, 2006
Counter:JG
Weather: Clear

Chapel Hill, N.C.

File Name : Lystra@Jack
Site Code : 00260153
Start Date : 03/28/2006
Page No : 1

Groups Printed- Unshifted

	Lystra Rd. From East				Jack Bennett RD. From South				Lystra Rd. From West						
Start Time	Right	Thru	Left	School Bus	Right	Thru	Left	School Bus	Right	Thru	Left	School Bus	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
07:00	0	19	10	0	44	0	6	1	4	24	0	4	5	107	112
07:15	0	46	21	1	64	0	32	0	10	38	0	0	1	211	212
07:30	0	92	9	6	70	0	50	2	20	99	0	1	9	340	349
07:45	0	37	15	0	78	0	15	0	19	71	0	0	0	235	235
Total	0	194	55	7	256	0	103	3	53	232	0	5	15	893	908
08:00	0	24	10	0	61	0	3	0	3	30	0	0	0	131	131
08:15	0	16	6	0	30	0	1	0	2	25	0	0	0	80	80
08:30	0	22	12	0	47	0	3	0	2	15	0	0	0	101	101
08:45	0	21	9	0	26	0	5	1	4	21	0	1	2	86	88
Total	0	83	37	0	164	0	12	1	11	91	0	1	2	398	400
*** BREAK ***															
16:00	0	15	23	1	13	0	2	1	1	12	0	1	3	66	69
16:15	0	11	30	1	11	0	2	0	6	21	0	0	1	81	82
16:30	0	26	34	0	6	0	1	0	4	15	0	0	0	86	86
16:45	0	21	37	0	21	0	6	0	4	15	0	0	0	104	104
Total	0	73	124	2	51	0	11	1	15	63	0	1	4	337	341
17:00	0	24	51	0	22	0	1	1	7	19	0	0	1	124	125
17:15	0	39	62	0	14	0	4	0	4	32	0	0	0	155	155
17:30	0	39	59	0	18	0	4	0	5	20	0	0	0	145	145
17:45	0	31	57	0	10	0	7	0	9	21	0	0	0	135	135
Total	0	133	229	0	64	0	16	1	25	92	0	0	1	559	560
Grand Total	0	483	445	9	535	0	142	6	104	478	0	7	22	2187	2209
Apprch %	0.0	52.0	48.0		79.0	0.0	21.0		17.9	82.1	0.0				
Total %	0.0	22.1	20.3		24.5	0.0	6.5		4.8	21.9	0.0		1.0	99.0	

		Lystra Rd. From East				Jack Bennett RD. From South				Lystra Rd. From West				
Start Time	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 to 12:30 - Peak 1 of 1														
Intersection	07:15													
Volume	0	0	199	55	254	273	0	100	373	52	238	0	290	917
Percent		0.0	78.3	21.7		73.2	0.0	26.8		17.9	82.1	0.0		
Volume	0	0	199	55	254	273	0	100	373	52	238	0	290	917
Volume	0	0	92	9	101	70	0	50	120	20	99	0	119	340
Peak Factor														0.674
High Int.	8:45:00 AM	07:30				07:30				07:30				
Volume	0	0	92	9	101	70	0	50	120	20	99	0	119	
Peak Factor					0.629				0.777				0.609	
Peak Hour From 12:45 to 17:45 - Peak 1 of 1														
Intersection	17:00													
Volume	0	0	133	229	362	64	0	16	80	25	92	0	117	559
Percent		0.0	36.7	63.3		80.0	0.0	20.0		21.4	78.6	0.0		
Volume	0	0	133	229	362	64	0	16	80	25	92	0	117	559
Volume	0	0	39	62	101	14	0	4	18	4	32	0	36	155
Peak Factor														0.902
High Int.		17:15				17:00				17:15				
Volume	0	0	39	62	101	22	0	1	23	4	32	0	36	
Peak Factor					0.896				0.870				0.813	

Lystra Road Property
Summary of Average Vehicle Trip Generation
For 140 Dwelling Units of Single Family Detached Housing
March 29, 2006

	24 Hour Two-Way Volume	7-9 AM Pk Hour		4-6 PM Pk Hour	
		Enter	Exit	Enter	Exit
Average Weekday	1417	27	81	91	54

	24 hour Two-Way Volume	Peak Hour	
		Enter	Exit
Saturday	1444	73	62
Sunday	1226	67	59

Note: A zero indicates no data available.
The above rates were calculated from these equations:

24-Hr. 2-Way Volume:	LN(T) = .92LN(X) + 2.71, R^2 = 0.96
7-9 AM Peak Hr. Total:	T = .7(X) + 9.43
	R^2 = 0.89 , 0.25 Enter, 0.75 Exit
4-6 PM Peak Hr. Total:	LN(T) = .9LN(X) + .53
	R^2 = 0.91 , 0.63 Enter, 0.37 Exit
AM Gen Pk Hr. Total:	T = .7(X) + 12.05
	R^2 = 0.89 , 0.26 Enter, 0.74 Exit
PM Gen Pk Hr. Total:	LN(T) = .89LN(X) + .61
	R^2 = 0.91 , 0.64 Enter, 0.36 Exit
Sat. 2-Way Volume:	LN(T) = .94LN(X) + 2.63, R^2 = 0.93
Sat. Pk Hr. Total:	T = .89(X) + 10.93
	R^2 = 0.9 , 0.54 Enter, 0.46 Exit
Sun. 2-Way Volume:	T = 8.83(X) + -9.76, R^2 = 0.94
Sun. Pk Hr. Total:	LN(T) = .89LN(X) + .44
	R^2 = 0.88 , 0.53 Enter, 0.47 Exit

Source: Institute of Transportation Engineers
Trip Generation, 7th Edition, 2003.

TRIP GENERATION BY MICROTRANS

Lystra Road Property
Trip Summary Spreadsheet

Intersection NAME Lystra Road - US 15-501 Peak AM

				Lystra Road			US 15-501			US 15-501		
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing (2005)				18		116		877	22	119	314	
Background	0	0	0	3	0	18	0	140	4	19	50	0
Approved Development	0	0	0	180	0	69	0	644	88	98	411	0
Future No-Build	**0**	**0**	**0**	**201**	**0**	**203**	**0**	**1661**	**114**	**236**	**775**	**0**
Site Primary				10		39			3	13		
Future Build	**0**	**0**	**0**	**211**	**0**	**242**	**0**	**1661**	**117**	**249**	**775**	**0**

Intersection NAME Lystra Road - Lystra Estates - Western Site Dı Peak AM

	Lystra Road			Lystra Road			Western Site Drive			Lystra Estates		
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing (2005)	2	141			134	2				5		7
Background	0	22	0	0	21	0	0	0	0	0	0	0
Approved Development	0	93	0	0	142	0	0	0	0	0	0	0
Future No-Build	**2**	**256**	**0**	**0**	**297**	**2**	**0**	**0**	**0**	**5**	**0**	**7**
Site Primary		3	13	9	10		39		26			
Future Build	**2**	**259**	**13**	**9**	**307**	**2**	**39**	**0**	**26**	**5**	**0**	**7**

Intersection NAME Lystra Road - Eastern Site Drive Peak AM

	Lystra Road			Lystra Road			Eastern Site Drive					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing		141			134							
Background	0	22	0	0	21	0	0	0	0	0	0	0
Approved Development	0	93	0	0	142	0	0	0	0	0	0	0
Future No-Build	**0**	**256**	**0**	**0**	**297**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Site Primary		26	3	2	9		10		6			
Future Build	**0**	**282**	**3**	**2**	**306**	**0**	**10**	**0**	**6**	**0**	**0**	**0**

Intersection NAME Lystra Road - Jack Bennett Road Peak AM

	Lystra Road			Lystra Road			Jack Bennett Road					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing		238	52	55	199		100		273			
Background	0	38	8	9	32	0	16	0	43	0	0	0
Approved Development	0	91	23	0	103	0	26	0	0	0	0	0
Future No-Build	**0**	**367**	**83**	**64**	**334**	**0**	**142**	**0**	**316**	**0**	**0**	**0**
Site Primary		21	11		7		4					
Future Build	**0**	**388**	**94**	**64**	**341**	**0**	**146**	**0**	**316**	**0**	**0**	**0**

Intersection NAME Lystra Road - US 15-501 Peak PM

Volumes	Lystra Road			Lystra Road			US 15-501			US 15-501		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing (2005)				25		118		476	22	80	851	
Background	0	0	0	4	0	19	0	76	4	13	136	0
Approved Development	0	0	0	503	0	171	0	599	118	216	380	0
Future No-Build	0	0	0	532	0	308	0	1151	144	309	1367	0
Site Primary				6		26			11	43		
Future Build	0	0	0	538	0	334	0	1151	155	352	1367	0

Intersection NAME Lystra Road - Lystra Estates - Western Site Di Peak PM

Volumes	Lystra Road			Lystra Road			Western Site Drive			Lystra Estates		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing (2005)	5	102			143	4				2		3
Background	0	16	0	0	23	0	0	0	0	0	0	0
Approved Development	0	163	0	0	136	0	0	0	0	0	0	0
Future No-Build	5	281	0	0	302	4	0	0	0	2	0	3
Site Primary		11	43	29	6		26		18			
Future Build	5	292	43	29	308	4	26	0	18	2	0	3

Intersection NAME Lystra Road - Eastern Site Drive Peak PM

Volumes	Lystra Road			Lystra Road			Eastern Site Drive					
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing		102			143							
Background	0	16	0	0	23	0	0	0	0	0	0	0
Approved Development	0	163	0	0	136	0	0	0	0	0	0	0
Future No-Build	0	281	0	0	302	0	0	0	0	0	0	0
Site Primary		18	11	8	29		6		4			
Future Build	0	299	11	8	331	0	6	0	4	0	0	0

Intersection NAME Lystra Road - Jack Bennett Road Peak PM

Volumes	Lystra Road			Lystra Road			Jack Bennett Road					
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing		92	25	229	133		16		64			
Background	0	15	4	36	21	0	3	0	10	0	0	0
Approved Development	0	124	32	0	122	0	30	0	0	0	0	0
Future No-Build	0	231	61	265	276	0	49	0	74	0	0	0
Site Primary		14	8		24		13					
Future Build	0	245	69	265	300	0	62	0	74	0	0	0

Approved Development

Lystra Road Property
Approved Development Trip Summary Spreadsheet

Intersection NAME Lystra Road - US 15-501 Peak AM

				Lystra Road			US 15-501			US 15-501		
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel				44		1		347	52	4	382	
Williams Corner				96		26		280	21	28	29	
Chatham Downs				36		24		17	13	60	0	
Booth Mountain				4		18		0	2	6	0	
Total Pending	**0**	**0**	**0**	**180**	**0**	**69**	**0**	**644**	**88**	**98**	**411**	**0**

Intersection NAME Lystra Road - Western Site Drive Peak AM

	Lystra Road			Lystra Road			Western Site Drive					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		56			45							
Williams Corner		26			64							
Chatham Downs		4			11							
Booth Mountain		7			22							
Total Pending	**0**	**93**	**0**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Intersection NAME Lystra Road - Eastern Site Drive Peak AM

	Lystra Road			Lystra Road			Eastern Site Drive					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		56			45							
Williams Corner		26			64							
Chatham Downs		4			11							
Booth Mountain		7			22							
Total Approved	**0**	**93**	**0**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Intersection NAME Lystra Road - Jack Bennett Road Peak AM

	Lystra Road			Lystra Road			Jack Bennett Road					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		45	11		36		9					
Williams Corner		21	5		51		13					
Chatham Downs		3	1		9		2					
Booth Mountain		22	6		7		2					
Total Approved	0	91	23	0	103	0	26	0	0	0	0	0

Intersection NAME Lystra Road - US 15-501 Peak PM

				Lystra Road			US 15-501			US 15-501		
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel				46		4		359	43	2	340	
Williams Corner				289		45		193	15	19	88	
Chatham Downs				165		110		47	40	190	-48	
Booth Mountain				3		12		0	20	5	0	
Total Pending	0	0	0	503	0	171	0	599	118	216	380	0

Intersection NAME Lystra Road - Western Site Drive Peak PM

	Lystra Road			Lystra Road			Western Site Drive					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		45			50							
Williams Corner		79			44							
Chatham Downs		14			27							
Booth Mountain		25			15							
Total Pending	0	163	0	0	136	0	0	0	0	0	0	0

Intersection NAME Lystra Road - Eastern Site Drive Peak PM

	Lystra Road			Lystra Road			Eastern Site Drive					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		45			50							
Williams Corner		79			44							
Chatham Downs		14			27							
Booth Mountain		25			15							
Total Approved	0	163	0	0	136	0	0	0	0	0	0	0

Intersection NAME Lystra Road - Jack Bennett Road Peak PM

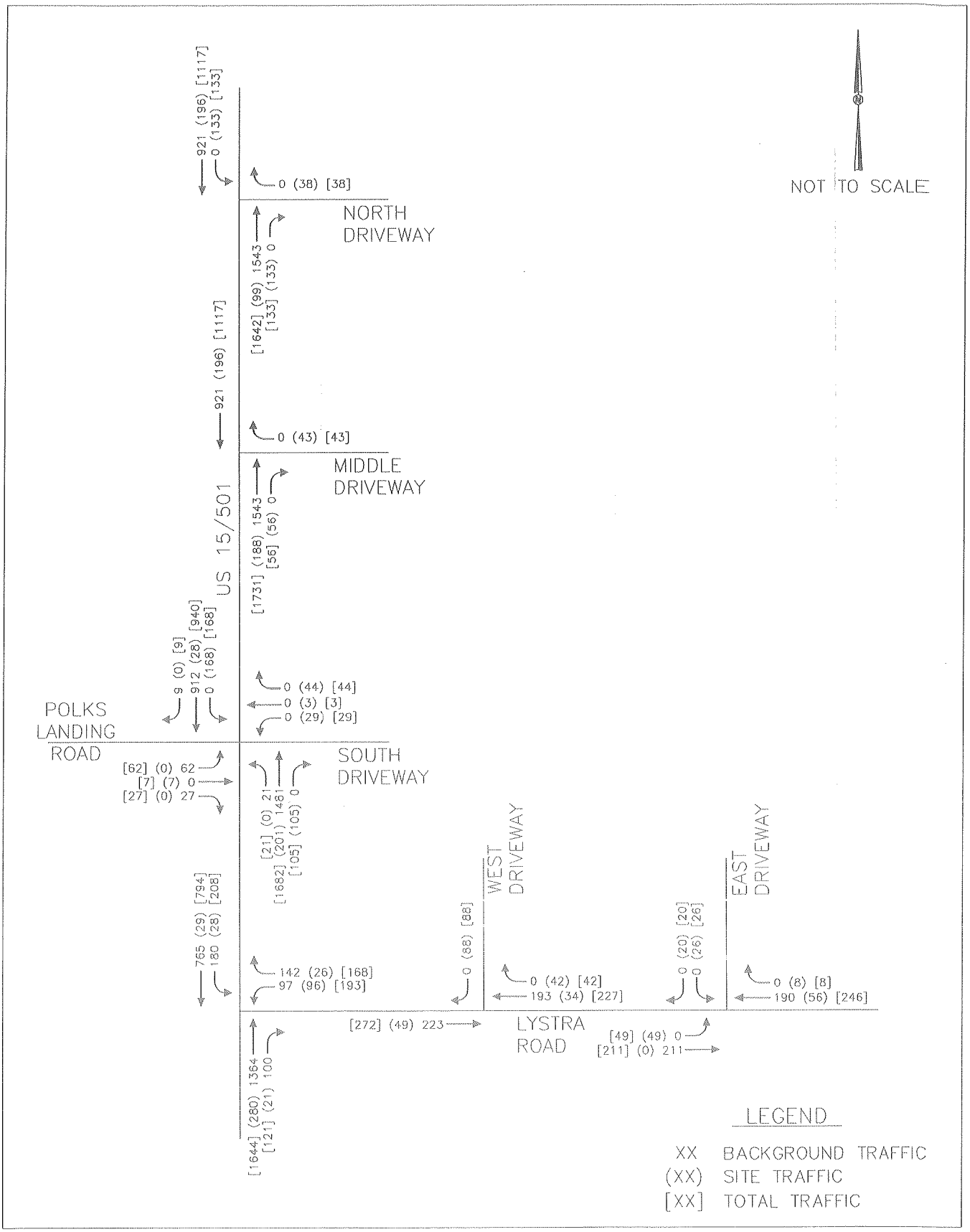
	Lystra Road			Lystra Road			Jack Bennett Road					
Volumes	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Briar Chapel		36	9		40		10					
Williams Corner		63	16		35		9					
Chatham Downs		11	3		22		5					
Booth Mountain		14	4		25		6					
Total Approved	0	124	32	0	122	0	30	0	0	0	0	0

4.0 Traffic Generation

The traffic generation potential of the proposed development was determined using the traffic generation rates published in *Trip Generation* (Institute of Transportation Engineers, Seventh Edition, 2003). As currently the proposed development will consist of approximately 40 townhomes, a 12,500 s.f. day care center, 50,500 s.f. of general office space, 60,000 s.f. of flex space, 150,000 s.f. of medical/dental office space, a 6,000 s.f. veterinary office, a 10,000 s.f. opticians office, 50,500 s.f. of specialty retail, a 25,000 s.f. specialty supermarket, a 15,000 s.f. pharmacy/drugstore with drive-through window, and a 5,000 s.f. drive-in bank. Table 4.0 summarizes the estimated traffic generation for the proposed development.

Table 4.0
ITE Traffic Generation (Vehicles)

Land Use Code	Land Use	24 Hour		AM Peak Hour		PM Peak Hour	
		In	Out	In	Out	In	Out
230	Townhomes (40 d.u.)	148	147	4	21	19	9
565	Day Care Center (12,500 s.f.)	496	495	85	75	52	59
710	General Office (50,500 s.f.)	394	394	96	13	23	112
720	Medical Office (150,000 s.f.)	2,959	2,960	294	78	124	335
720	Veterinarian (6,000 s.f.)	108	109	12	3	6	17
720	Optician (10,000 s.f.)	181	180	20	5	10	27
770	Flex Space (60,000 s.f.)	696	696	73	14	22	72
814	Specialty Retail (50,500 s.f.)	1,099	1,099	24	15	63	80
850	Supermarket (25,000 s.f.)	1,532	1,533	35	23	159	153
881	Pharmacy/Drugstore (15,000 s.f.)	661	661	23	17	63	66
912	Drive-In Bank (5,000 s.f.)	585	584	35	27	115	114
Subtotal		8,859	8,858	701	291	656	1,044
Internal Capture Total (4.7% Daily/4.1% PM)		415	414	0	0	35	34
Total Driveway Volumes		**8,444**	**8,444**	**701**	**291**	**621**	**1,010**
Pass-By Capture Total (16.8%)		1,050	1,050	0	0	138	135
Net New External Trips		**7,394**	**7,394**	**701**	**291**	**483**	**875**



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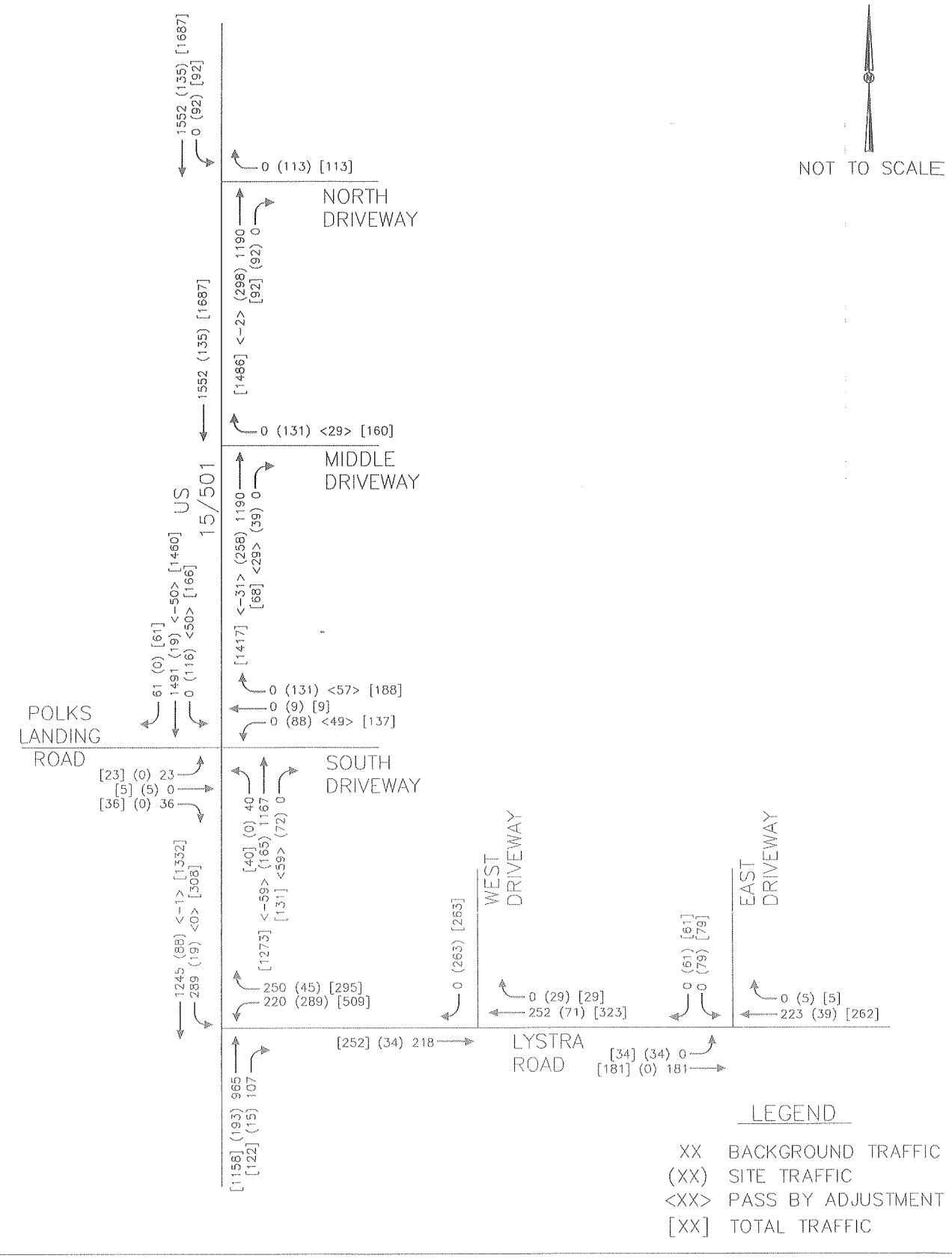
Kimley-Horn and Associates, Inc.	WILLIAMS CORNER TRAFFIC IMPACT ANALYSIS	PROPOSED (2010) AM PEAK HOUR TRAFFIC VOLUMES	FIGURE 6



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Kimley-Horn and Associates, Inc.

WILLIAMS CORNER
TRAFFIC IMPACT ANALYSIS

PROPOSED (2010) PM PEAK
HOUR TRAFFIC VOLUMES

FIGURE
7

Analyses indicate that the proposed unsignalized left-over intersection of US 15-501 at the North Project Driveway is projected to operate with short delays for the minor street approach (North Project Driveway) in the AM and PM peak hours with build-out of the proposed development.

Analyses indicate that the proposed unsignalized right-in/right-out intersection of Lystra Road at the West Project Driveway is projected to operate with short delays for the minor street approach (West Project Driveway) in the AM and PM peak hours with build-out of the proposed development.

Analyses indicate that the proposed unsignalized intersection of Lystra Road at the East Project Driveway is projected to operate with short delays for the minor street approach (East Project Driveway) in the AM and PM peak hours with build-out of the proposed development.

The following is a summary of the committed and recommended roadway improvements:

NCDOT Committed Improvements:

- Construct an additional northbound through lane on US 15-501
- Construct an additional southbound through lane on US 15-501

US 15-501 at Lystra Road:

- Construct an exclusive northbound left-turn lane on US 15-501
- Install a traffic signal

US 15-501 at Polks Landing Road:

- Construct exclusive northbound and southbound left-turn lanes on US 15-501

Recommended Improvements:

US 15-501 at Lystra Road:

- Construct an additional exclusive westbound left-turn lane on Lystra Road

US 15-501 at Polks Landing Road South Project Driveway:

- Construct an exclusive northbound right-turn lane on US 15-501
- Provide a shared westbound left/through lane and an exclusive westbound right-turn lane on the full-movement driveway

US 15-501 at Middle Project Driveway:

- Construct an exclusive northbound right-turn lane on US 15-501

6.0 Projected Traffic Volumes

6.1 Existing Traffic

AM and PM peak hour turning movement counts at the following intersection were obtained from the Briar Chapel Transportation Impact Assessment prepared by Kimley-Horn and Associates, Inc. in June 2004:

- US 15-501 at Lystra Road — March 17, 2004

These volumes were grown at an annual growth rate of 3% for one year to get existing year traffic volumes at this intersection. The existing AM and PM peak-hour traffic volumes are shown on Figure 5, and the traffic count data are included in the Appendix.

6.2 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to usage increases and non-specific growth throughout the area. A 3% annual growth rate was applied to the existing traffic to calculate background traffic volumes expected in 2010.

6.3 Approved Development Traffic

Approved development traffic is generated by approved, but not yet constructed, projects in the vicinity of the proposed project. There are two approved developments in the study area vicinity that were included in this analysis.

Chatham Downs is a retail development located on the southeast quadrant of the intersection of US 15-501 at Lystra Road. The project will consist of a 45,000 s.f. supermarket, a 4,000 s.f. drive-in bank, and 12,000 s.f. of retail/office space and is anticipated to be completed (built-out) in 2006. The trip generation potential of the development was assigned to the intersections in the study area based on the Chatham Downs TIA prepared by Mandala Services, Inc. in July 2003.

Briar Chapel is a mixed-use development primarily located west of US 15-501 between Mann's Chapel Road and Andrews Store Road in Chatham County, NC. The project will consist of approximately 1880 single family homes, 515 multi-family dwelling units, 252,000 s.f. of retail space, 270,000 s.f. of office space, two-schools serving a total of 1,300 students, and a county park. As currently envisioned, the development will be completed (built-out) in the year 2014. It was assumed that the development would be approximately 60% complete by the year 2010. Therefore, 60% of the trip generation potential of the development was assigned to the intersections in the study area based on the Briar Chapel TIA prepared by Kimley-Horn and Associates, Inc. in June 2004.

Williams Corner Traffic Impact Analysis
Chatham County, NC

INTERSECTION VOLUME DEVELOPMENT

US 15/501 & Lystra Road
AM PEAK HOUR

Description	US 15/501 Northbound			US 15/501 Southbound			- Eastbound			Lystra Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed Volumes (3/17/04)	0	838	29	97	320	0	0	0	0	15	0	98
Growth Factor (3% per year)	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030
Existing 2005 Traffic	0	863	30	100	330	0	0	0	0	15	0	101
Background Growth Factor (3% per year)	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159
Background Growth	0	137	5	16	53	0	0	0	0	2	0	16
Approved Development												
Briar Chapel	0	347	52	4	382	0	0	0	0	44	0	1
Chatham Downs	0	17	13	60	0	0	0	0	0	36	0	24
Total Approved Development Traffic	0	364	65	64	382	0	0	0	0	80	0	25
2010 Background Traffic	0	1,364	100	180	765	0	0	0	0	97	0	142
Project Traffic												
Percent Assignment	0%	40%	3%	4%	10%	0%	0%	0%	0%	33%	0%	6%
Direction		in	in	in	out					out		in + out
New Project Traffic	0	280	21	28	29	0	0	0	0	96	0	26
2010 Buildout Total	0	1,644	121	208	794	0	0	0	0	193	0	168

PM PEAK HOUR

Description	US 15 501 Northbound			US 15 501 Southbound			- Eastbound			Lystra Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed Volumes (3 17 04)	0	468	20	82	798	0	0	0	0	8	0	114
Growth Factor (3% per year)	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030
Existing 2005 Traffic	0	482	21	84	822	0	0	0	0	8	0	117
Background Growth Factor (3% per year)	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159
Background Growth	0	77	3	13	131	0	0	0	0	1	0	19
Approved Development												
Briar Chapel	0	371	13	2	371	0	0	0	0	16	0	4
Briar Chapel (Pass-By Capture)	0	-15	0	0	-34	0	0	0	0	0	0	0
Chatham Downs	0	57	30	112	0	0	0	0	0	123	0	80
Chatham Downs (Pass-By Capture)	0	-10	10	48	-48	0	0	0	0	42	0	30
Total Approved Development Traffic	0	406	83	192	292	0	0	0	0	211	0	114
2010 Background Traffic	0	965	107	289	1,245	0	0	0	0	220	0	250
Project Traffic												
Percent Assignment	0%	40%	3%	4%	10%	0%	0%	0%	0%	33%	0%	6%
Direction		in	in	in	out					out		in + out
New Project Traffic	0	193	15	19	88	0	0	0	0	289	0	45
Pass-By Traffic	0	0	0	0	-1	0	0	0	0	0	0	0
2010 Buildout Total	0	1,158	122	308	1,332	0	0	0	0	509	0	295

TABLE 1
TRIP GENERATION TABLE

PROPOSED BOOTH MOUNTAIN DEVELOPMENT

ITE Land Use (Code)	Density	2-way Volume (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
Single Family Detached Housing (210)	180 D.U.	1,786	34	102	115	67
TOTAL NEW SITE TRIPS		**1,786**	**34**	**102**	**115**	**67**

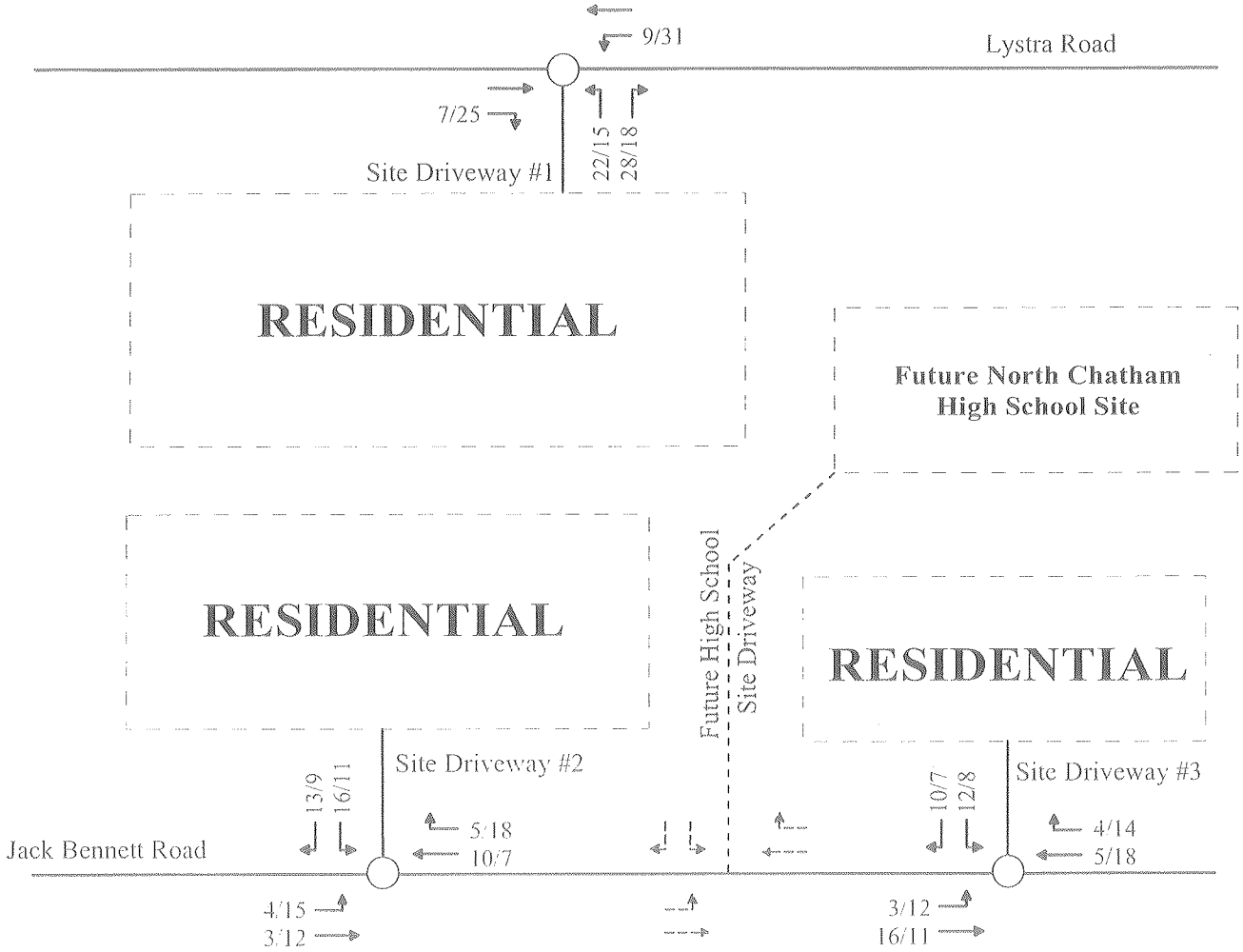
Site trips generated by the proposed development were distributed based on existing traffic patterns, location of employment centers, and engineering judgment. Total site trips were assigned to the site driveways based on the percentage of lots in each section relative to the total development. Refer to Figure 5 for the site trip distribution percentages. For the northern section of the site accessed by Site Driveway 1, it is expected that approximately 22% of the site trips will access the site to/from the west on Lystra Road, while approximately 27% will access the site to/from the east on Lystra Road. For the southwest section of the site accessed by Site Driveway 2, it is expected that approximately 13% of the site trips will access the site to/from the west on Jack Bennett Road, while approximately 16% will access the site to/from the east on Jack Bennett Road. For the southeast section of the site accessed by Site Driveway 3, it is expected that approximately 10% of the site trips will access the site to/from the west on Jack Bennett Road, while approximately 12% will access the site to/from the east on Jack Bennett Road. Figure 6 illustrates the total a.m. and p.m. peak hour site trips for the proposed development.

Future (2011) Traffic Conditions

Total peak hour site trips (Figure 6) were added to the background plus adjacent development traffic volumes (Figure 4) to determine future traffic conditions with the proposed site. Refer to Figure 7 for the future a.m. and p.m. peak hour traffic volumes with full build out of the proposed site.

For this study, the Highway Capacity Software (HCS) output module in Synchro (Version 5.0) was utilized to analyze all study intersections. Synchro version 5.0 includes HCM calculations for unsignalized intersections based on methodologies of the 2000 Highway Capacity Manual (HCM).

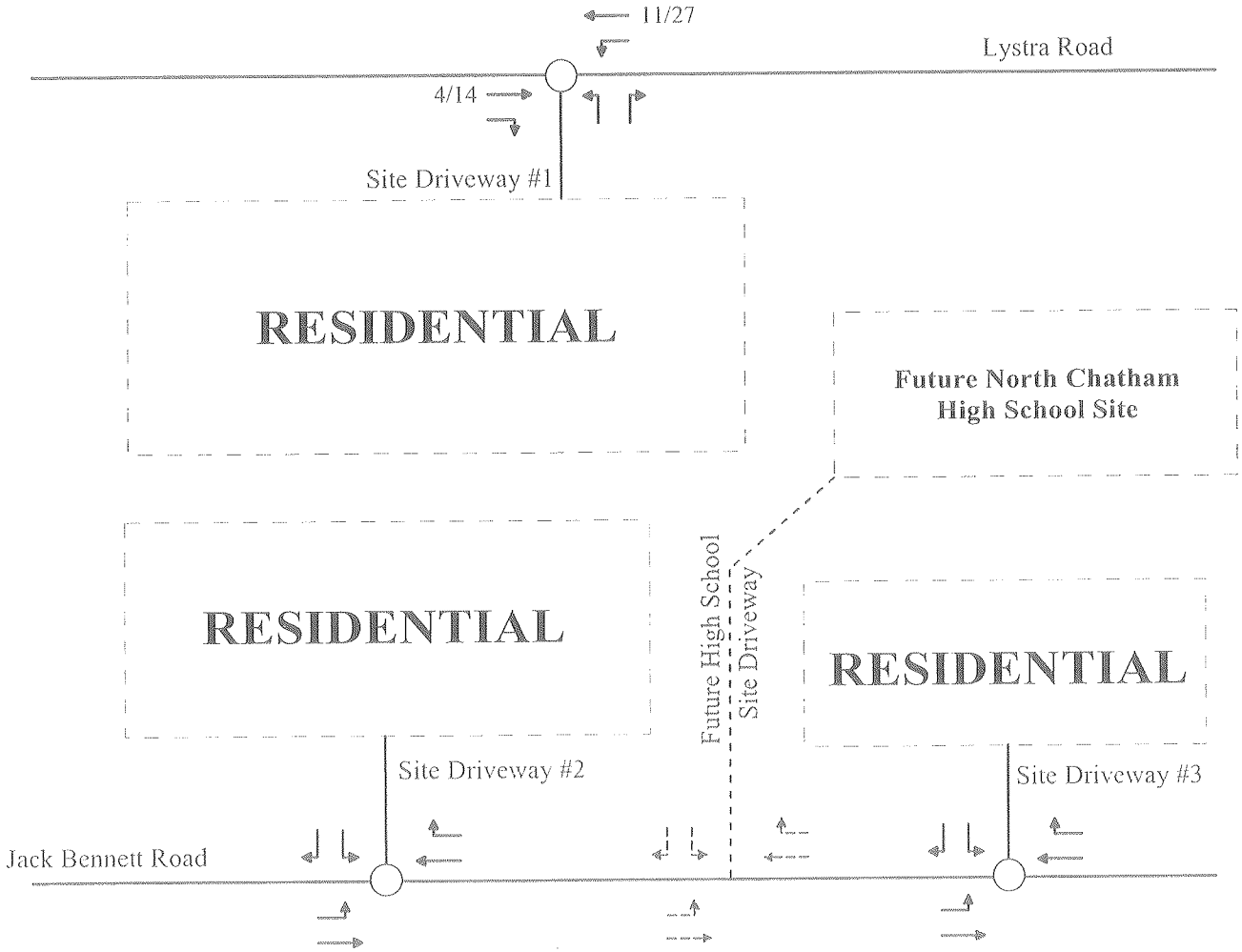
Future a.m. and p.m. peak hour traffic volumes at the study intersections were analyzed to determine the expected levels of service. The capacity analysis results are presented in Table 2. The detailed capacity analysis reports can be found in Appendix C of this letter.



LEGEND

○ X/Y — Unsignalized Intersection AM/PM Peak Hour Trips

PROPOSED RESIDENTIAL DEVELOPMENT CHATHAM COUNTY, NORTH CAROLINA		
PEAK HOUR SITE TRIPS		
	SCALE: Not to Scale	Figure 6



LEGEND

◯	Unsignalized Intersection
XX	AM/PM Peak Hour Trips

PROPOSED RESIDENTIAL DEVELOPMENT CHATHAM COUNTY, NORTH CAROLINA
CHATHAM DOWNS ADJACENT DEVELOPMENT PEAK HOUR TRAFFIC
SCALE: Not to Scale — *Figure 3*

US 15-501 – Lystra Road
Intersection Capacity Analyses

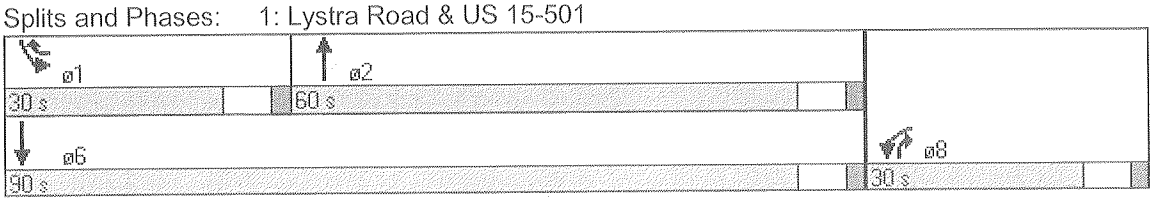
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.169	
Satd. Flow (perm)	1770	1583	3539	1583	315	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		67		24		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5024		1773			2200
Travel Time (s)	76.1		26.9			33.3
Volume (vph)	18	116	877	22	119	314
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	20	129	974	24	132	349
Lane Group Flow (vph)	20	129	974	24	132	349
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	30.0	30.0	60.0	30.0	30.0	90.0
Total Split (%)	25.0%	25.0%	50.0%	25.0%	25.0%	75.0%
Maximum Green (s)	23.0	23.0	53.0	23.0	23.0	83.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	9.8	18.9	93.1	107.0	107.2	108.8
Actuated g/C Ratio	0.08	0.16	0.78	0.89	0.89	0.91
v/c Ratio	0.14	0.42	0.35	0.02	0.33	0.11
Control Delay	52.8	25.1	5.3	0.6	3.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	25.1	5.3	0.6	3.4	1.2
LOS	D	C	A	A	A	A
Approach Delay	28.8		5.2			1.8
Approach LOS	C		A			A
Queue Length 50th (ft)	15	41	125	0	12	16
Queue Length 95th (ft)	40	95	174	3	23	26
Internal Link Dist (ft)	4944		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	384	506	2747	1559	597	3210
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.25	0.35	0.02	0.22	0.11

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 6.4 Intersection LOS: A
Intersection Capacity Utilization 44.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Lystra Road & US 15-501



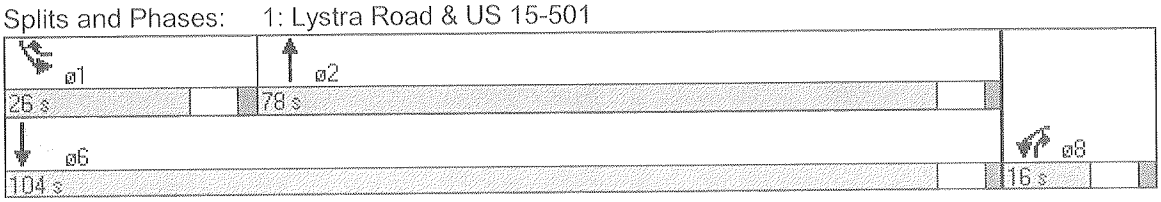
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.051	
Satd. Flow (perm)	3433	1583	3539	1583	95	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		18		127		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5003		1773			2200
Travel Time (s)	75.8		26.9			33.3
Volume (vph)	201	203	1661	114	236	775
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	223	226	1846	127	262	861
Lane Group Flow (vph)	223	226	1846	127	262	861
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	16.0	26.0	78.0	16.0	26.0	104.0
Total Split (%)	13.3%	21.7%	65.0%	13.3%	21.7%	86.7%
Maximum Green (s)	9.0	19.0	71.0	9.0	19.0	97.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	12.9	36.2	75.8	92.7	99.1	99.1
Actuated g/C Ratio	0.11	0.30	0.63	0.77	0.83	0.83
v/c Ratio	0.60	0.46	0.83	0.10	0.75	0.29
Control Delay	58.8	34.1	21.7	0.9	45.3	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	34.1	21.7	0.9	45.3	2.7
LOS	E	C	C	A	D	A
Approach Delay	46.3		20.3			12.6
Approach LOS	D		C			B
Queue Length 50th (ft)	86	126	575	0	138	64
Queue Length 95th (ft)	129	203	680	14	231	72
Internal Link Dist (ft)	4923		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	370	526	2239	1252	385	2949
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.43	0.82	0.10	0.68	0.29

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Lystra Road & US 15-501



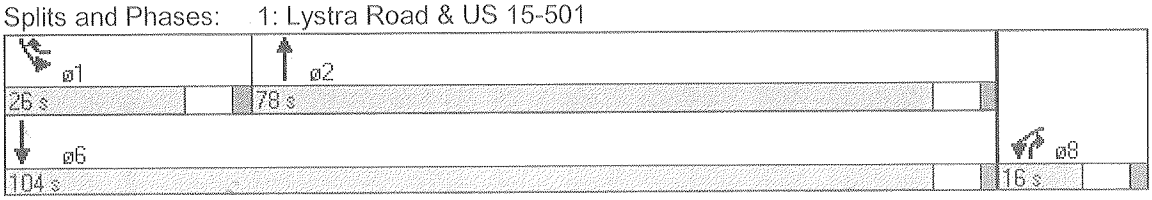
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.051	
Satd. Flow (perm)	3433	1583	3539	1583	95	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		18		130		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5024		1773			2200
Travel Time (s)	76.1		26.9			33.3
Volume (vph)	211	242	1661	117	249	775
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	234	269	1846	130	277	861
Lane Group Flow (vph)	234	269	1846	130	277	861
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	16.0	26.0	78.0	16.0	26.0	104.0
Total Split (%)	13.3%	21.7%	65.0%	13.3%	21.7%	86.7%
Maximum Green (s)	9.0	19.0	71.0	9.0	19.0	97.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	13.1	36.9	75.1	92.2	98.9	98.9
Actuated g/C Ratio	0.11	0.31	0.63	0.77	0.82	0.82
v/c Ratio	0.63	0.54	0.83	0.10	0.78	0.30
Control Delay	59.5	36.3	22.3	0.8	47.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	36.3	22.3	0.8	47.8	2.7
LOS	E	D	C	A	D	A
Approach Delay	47.1		20.9			13.7
Approach LOS	D		C			B
Queue Length 50th (ft)	90	156	584	0	150	64
Queue Length 95th (ft)	135	246	680	14	248	72
Internal Link Dist (ft)	4944		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	373	528	2223	1246	385	2949
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.51	0.83	0.10	0.72	0.29

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 22.3 Intersection LOS: C
Intersection Capacity Utilization 75.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Lystra Road & US 15-501



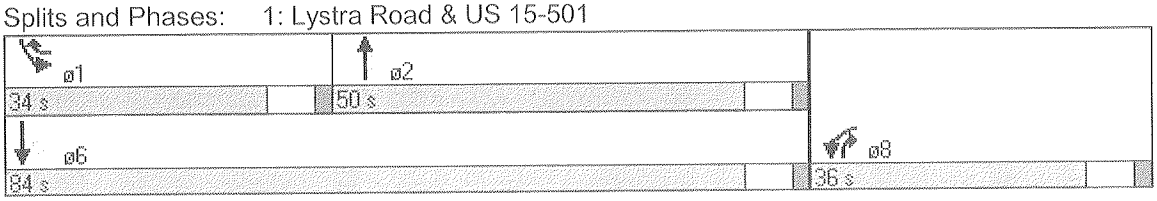
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.332	
Satd. Flow (perm)	1770	1583	3539	1583	618	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		131		24		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5024		1773			2200
Travel Time (s)	76.1		26.9			33.3
Volume (vph)	25	118	476	22	80	851
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	131	529	24	89	946
Lane Group Flow (vph)	28	131	529	24	89	946
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	36.0	34.0	50.0	36.0	34.0	84.0
Total Split (%)	30.0%	28.3%	41.7%	30.0%	28.3%	70.0%
Maximum Green (s)	29.0	27.0	43.0	29.0	27.0	77.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	10.2	18.4	93.6	108.6	106.9	108.5
Actuated g/C Ratio	0.08	0.15	0.78	0.90	0.89	0.90
v/c Ratio	0.19	0.37	0.19	0.02	0.14	0.30
Control Delay	53.3	9.6	4.4	0.5	1.8	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	9.6	4.4	0.5	1.8	1.7
LOS	D	A	A	A	A	A
Approach Delay	17.3		4.2			1.7
Approach LOS	B		A			A
Queue Length 50th (ft)	21	0	57	0	8	57
Queue Length 95th (ft)	50	51	85	3	17	84
Internal Link Dist (ft)	4944		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	472	604	2759	1583	838	3200
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.22	0.19	0.02	0.11	0.30

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 3.9 Intersection LOS: A
Intersection Capacity Utilization 33.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Lystra Road & US 15-501



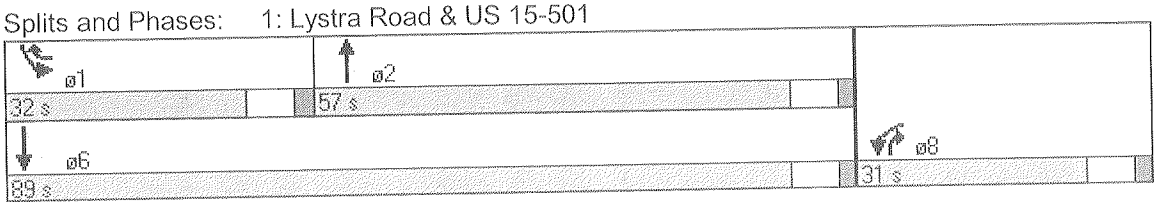
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.070	
Satd. Flow (perm)	3433	1583	3539	1583	130	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		21		160		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5003		1773			2200
Travel Time (s)	75.8		26.9			33.3
Volume (vph)	532	308	1151	144	309	1367
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	591	342	1279	160	343	1519
Lane Group Flow (vph)	591	342	1279	160	343	1519
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	31.0	32.0	57.0	31.0	32.0	89.0
Total Split (%)	25.8%	26.7%	47.5%	25.8%	26.7%	74.2%
Maximum Green (s)	24.0	25.0	50.0	24.0	25.0	82.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	26.0	54.4	57.6	87.6	86.0	86.0
Actuated g/C Ratio	0.22	0.45	0.48	0.73	0.72	0.72
v/c Ratio	0.79	0.47	0.75	0.13	0.80	0.60
Control Delay	53.1	22.8	30.1	1.1	45.3	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	22.8	30.1	1.1	45.3	9.8
LOS	D	C	C	A	D	A
Approach Delay	42.0		26.9			16.4
Approach LOS	D		C			B
Queue Length 50th (ft)	221	156	444	0	192	286
Queue Length 95th (ft)	288	234	542	19	301	340
Internal Link Dist (ft)	4923		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	775	776	1698	1212	476	2539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.44	0.75	0.13	0.72	0.60

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 25.6
Intersection LOS: C
Intersection Capacity Utilization 74.1%
ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Lystra Road & US 15-501



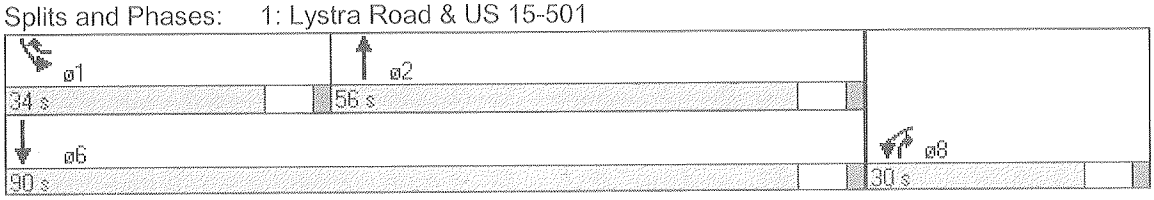
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.071	
Satd. Flow (perm)	3433	1583	3539	1583	132	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		20		172		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	5024		1773			2200
Travel Time (s)	76.1		26.9			33.3
Volume (vph)	538	334	1151	155	352	1367
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	598	371	1279	172	391	1519
Lane Group Flow (vph)	598	371	1279	172	391	1519
Turn Type		pm+ov		pm+ov	pm+pt	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	13.0	16.0	16.0	13.0	16.0
Total Split (s)	30.0	34.0	56.0	30.0	34.0	90.0
Total Split (%)	25.0%	28.3%	46.7%	25.0%	28.3%	75.0%
Maximum Green (s)	23.0	27.0	49.0	23.0	27.0	83.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	25.7	56.8	55.2	84.9	86.3	86.3
Actuated g/C Ratio	0.21	0.47	0.46	0.71	0.72	0.72
v/c Ratio	0.81	0.49	0.79	0.15	0.84	0.60
Control Delay	54.7	22.2	32.6	1.2	48.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	22.2	32.6	1.2	48.3	9.6
LOS	D	C	C	A	D	A
Approach Delay	42.3		28.9			17.5
Approach LOS	D		C			B
Queue Length 50th (ft)	228	171	454	0	227	272
Queue Length 95th (ft)	295	255	551	21	#358	328
Internal Link Dist (ft)	4944		1693			2120

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)						
Base Capacity (vph)	754	798	1627	1177	504	2555
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.46	0.79	0.15	0.78	0.59

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 26.9 Intersection LOS: C
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Lystra Road & US 15-501



Lystra Road – Lystra Estates Drive – Western Site Drive Intersection Capacity Analyses

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	141	134	2	5	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	157	149	2	6	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	151				311	150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				311	150
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1430				680	896

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	159	151	13
Volume Left	2	0	6
Volume Right	0	2	8
cSH	1430	1700	792
Volume to Capacity	0.00	0.09	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	0.1	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	256	297	2	5	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	284	330	2	6	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	332				620	331
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	332				620	331
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1227				451	710

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	287	332	13
Volume Left	2	0	6
Volume Right	0	2	8
cSH	1227	1700	573
Volume to Capacity	0.00	0.20	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.1	0.0	11.4
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	259	13	9	307	2	39	0	26	5	0	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	288	14	10	341	2	43	0	29	6	0	8
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	343			302			669	663	295	691	669	342
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	343			302			669	663	295	691	669	342
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			88	100	96	98	100	99
cM capacity (veh/h)	1216			1259			364	378	744	343	375	700

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	304	353	72	13
Volume Left	2	10	43	6
Volume Right	14	2	29	8
cSH	1216	1259	458	488
Volume to Capacity	0.00	0.01	0.16	0.03
Queue Length 95th (ft)	0	1	14	2
Control Delay (s)	0.1	0.3	14.3	12.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.3	14.3	12.6
Approach LOS			B	B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	102	143	4	2	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	113	159	4	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	163				286	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	163				286	161
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1415				702	884

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	119	163	6
Volume Left	6	0	2
Volume Right	0	4	3
cSH	1415	1700	801
Volume to Capacity	0.00	0.10	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.4	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	281	302	4	2	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	312	336	4	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	340				661	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340				661	338
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1219				425	704

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	318	340	6
Volume Left	6	0	2
Volume Right	0	4	3
cSH	1219	1700	558
Volume to Capacity	0.00	0.20	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	11.5
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	11.5
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	292	43	29	308	4	26	0	18	2	0	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	324	48	32	342	4	29	0	20	2	0	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)												
pX, platoon unblocked												
vC, conflicting volume	347			372			772	771	348	788	792	344
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			372			772	771	348	788	792	344
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			97			91	100	97	99	100	100
cM capacity (veh/h)	1212			1186			308	320	695	293	311	698

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	378	379	49	6
Volume Left	6	32	29	2
Volume Right	48	4	20	3
cSH	1212	1186	398	449
Volume to Capacity	0.00	0.03	0.12	0.01
Queue Length 95th (ft)	0	2	10	1
Control Delay (s)	0.2	0.9	15.3	13.1
Lane LOS	A	A	C	B
Approach Delay (s)	0.2	0.9	15.3	13.1
Approach LOS			C	B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lystra Road – Eastern Site Drive
Intersection Capacity Analyses

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	282	3	2	306	10	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	313	3	2	340	11	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			317		659	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			317		659	315
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	99
cM capacity (veh/h)			1243		428	725

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	317	342	18
Volume Left	0	2	11
Volume Right	3	0	7
cSH	1700	1243	505
Volume to Capacity	0.19	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.1	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.1	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	299	11	8	331	6	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	332	12	9	368	7	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			344		724	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			344		724	338
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1215		390	704

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	344	377	11
Volume Left	0	9	7
Volume Right	12	0	4
cSH	1700	1215	474
Volume to Capacity	0.20	0.01	0.02
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.3	12.8
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	12.8
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lystra Road – Jack Bennett Road
Intersection Capacity Analyses

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	238	52	55	199	100	273
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	264	58	61	221	111	303
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			322		637	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		637	293
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		74	59
cM capacity (veh/h)			1238		420	746

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	322	61	221	414
Volume Left	0	61	0	111
Volume Right	58	0	0	303
cSH	1700	1238	1700	617
Volume to Capacity	0.19	0.05	0.13	0.67
Queue Length 95th (ft)	0	4	0	128
Control Delay (s)	0.0	8.1	0.0	21.9
Lane LOS		A		C
Approach Delay (s)	0.0	1.7		21.9
Approach LOS				C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	367	83	64	334	142	316
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	408	92	71	371	158	351
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			500		967	454
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			500		967	454
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		40	42
cM capacity (veh/h)			1064		263	606

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	500	71	371	509
Volume Left	0	71	0	158
Volume Right	92	0	0	351
cSH	1700	1064	1700	432
Volume to Capacity	0.29	0.07	0.22	1.18
Queue Length 95th (ft)	0	5	0	487
Control Delay (s)	0.0	8.6	0.0	131.4
Lane LOS		A		F
Approach Delay (s)	0.0	1.4		131.4
Approach LOS				F

Intersection Summary			
Average Delay	46.5		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	388	94	64	341	146	316
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	431	104	71	379	162	351
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			536		1004	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			536		1004	483
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		35	40
cM capacity (veh/h)			1032		249	583

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	536	71	379	513
Volume Left	0	71	0	162
Volume Right	104	0	0	351
cSH	1700	1032	1700	410
Volume to Capacity	0.32	0.07	0.22	1.25
Queue Length 95th (ft)	0	6	0	544
Control Delay (s)	0.0	8.7	0.0	161.0
Lane LOS		A		F
Approach Delay (s)	0.0	1.4		161.0
Approach LOS				F

Intersection Summary			
Average Delay	55.5		
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	92	25	229	133	16	64
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	102	28	254	148	18	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			130		773	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			130		773	116
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			83		94	92
cM capacity (veh/h)			1455		303	936

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	130	254	148	89
Volume Left	0	254	0	18
Volume Right	28	0	0	71
cSH	1700	1455	1700	660
Volume to Capacity	0.08	0.17	0.09	0.13
Queue Length 95th (ft)	0	16	0	12
Control Delay (s)	0.0	8.0	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	5.1		11.3
Approach LOS				B

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	231	61	265	276	49	74
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	257	68	294	307	54	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			324		1186	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			324		1186	291
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			76		66	89
cM capacity (veh/h)			1235		159	749

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	324	294	307	137
Volume Left	0	294	0	54
Volume Right	68	0	0	82
cSH	1700	1235	1700	302
Volume to Capacity	0.19	0.24	0.18	0.45
Queue Length 95th (ft)	0	23	0	56
Control Delay (s)	0.0	8.8	0.0	26.4
Lane LOS		A		D
Approach Delay (s)	0.0	4.3		26.4
Approach LOS				D

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	245	69	265	300	62	74
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	272	77	294	333	69	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			349		1233	311
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			349		1233	311
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			76		53	89
cM capacity (veh/h)			1210		148	730

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	349	294	333	151
Volume Left	0	294	0	69
Volume Right	77	0	0	82
cSH	1700	1210	1700	261
Volume to Capacity	0.21	0.24	0.20	0.58
Queue Length 95th (ft)	0	24	0	83
Control Delay (s)	0.0	8.9	0.0	36.1
Lane LOS		A		E
Approach Delay (s)	0.0	4.2		36.1
Approach LOS				E

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

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