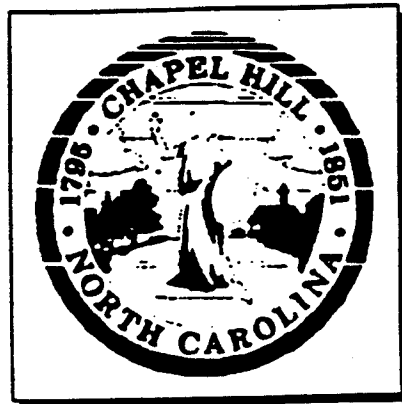


8

TRAFFIC IMPACT ANALYSIS SUMMARY

FOR THE

PROPOSED EUROPA OFFICE BUILDING

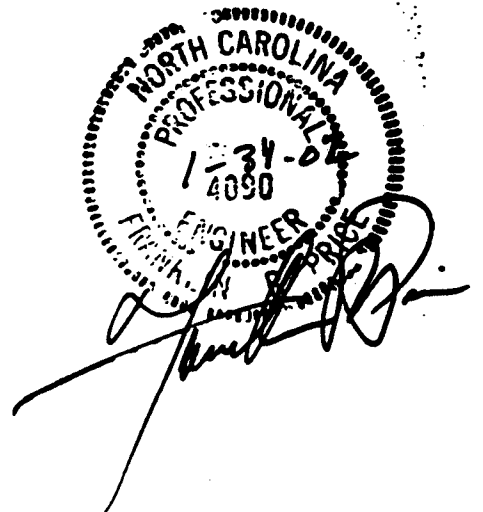


Prepared For
Town of Chapel Hill
Chapel Hill, North Carolina

Prepared By
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January 2002

RKA Project # 01115



TRAFFIC IMPACT ANALYSIS PROPOSED EUROPA OFFICE BUILDING CHAPEL HILL, NORTH CAROLINA

A. SUMMARY

The purpose of this document is to summarize the results of the Traffic Impact Analysis (TIA) Report for the proposed Europa Office Building in Chapel Hill, North Carolina.

1. Project Overview

This study summarizes the findings of the Traffic Impact Analysis (TIA) that was performed for the proposed Europa Office Building at the intersection of Europa Drive and Legion Road in Chapel Hill, North Carolina. The purpose of this study is to determine the impact to the surrounding transportation system caused by the additional traffic generated by the proposed Europa Office Building, which is anticipated to be fully built out by the year 2003. It is a requirement of the Town of Chapel Hill that a TIA be prepared as part of the proposed development's Special Use Permit application.

2. Study Area

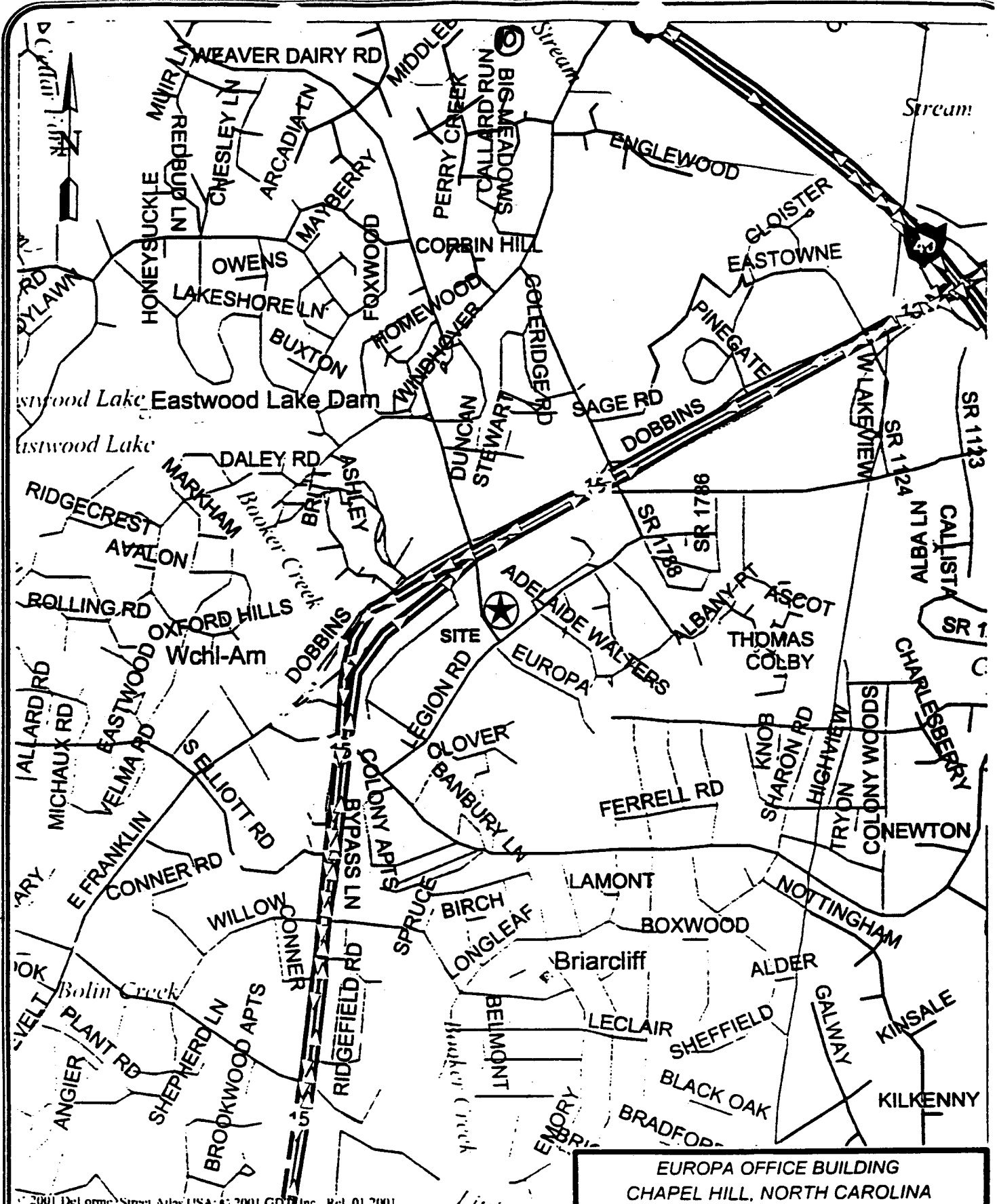
The study area for this project included the intersections of US 15-501 at Europa Drive/Erwin Road, Legion Road at Europa Drive, and Ephesus Church Road at Legion Road. The proposed development is located in the northeast quadrant of the Legion Road/Europa Drive intersection, south of US 15-501. Refer to Figure S-1 for a site location map.

3. Site Traffic Generation

Trip generation for the proposed development is based on rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation* manual, 6th Edition. It is anticipated that the proposed 38,000 square foot office building will be fully built out by the year 2003. Please refer to Table S-1 for the trip generation results of the proposed development.

4. Access Analysis

Direct access to the proposed development will be provided via one (1) new driveway connection on Europa Drive. This driveway will service all movements and will be located opposite the Europa Center parking deck drive, thereby eliminating potential turning conflicts associated with offset driveways. Please note that secondary access is to be provided, if necessary, via cross access to the Sheraton parking lot located to the north. However, it is anticipated that site traffic will primarily utilize the main driveway based on the site's layout and the minimal delay that traffic is expected to encounter when entering and exiting the site. Refer to Figure S-2 for an illustration of the land use plan.



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EUROPA OFFICE BUILDING CHAPEL HILL, NORTH CAROLINA		
SITE LOCATION MAP		
1/02	Scale: Not to Scale	Figure S-1

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THIS AREA TO BE LANDSCAPED IN
ACCORDANCE WITH TOWN OF CHAPEL
HILL BUFFER REQUIREMENTS

Cross Access

LANDSCAPED AREA
13.7642

LANDSCAPED AREA TO BE LANDSCAPED IN
ACCORDANCE WITH TOWN OF CHAPEL
HILL BUFFER REQUIREMENTS

LANDSCAPED AREA
13.7642

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EUROPA DRIVE

LEGION ROAD

EUROPA OFFICE BUILDING CHAPEL HILL, NORTH CAROLINA		
LAND USE PLAN		
1/02	Scale: Not to Scale	Figure S-2

TABLE S-1
TRIP GENERATION
(AVERAGE WEEKDAY TRAFFIC)

LAND USE (ITE CODE)	DENSITY	Daily Traffic (vpd)		AM Peak Hour Trips (vph)		Mid-Day Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
General Office (710)	38,000 sf	209	209	52	7	31	27	10	47
Total Trips		418		59		58		57	

5. Intersection Analysis

This study does not recommend signalization of the site driveway; therefore, a signal warrant analysis was not performed. However, a peak hour signal warrant analysis was performed for the intersection of Legion Road and Europa Drive at the Town's request. Based on the results of the peak hour signal warrant analysis for existing (2002) and combined (2004) traffic conditions, it was determined that a traffic signal was not warranted.

In addition to the peak hour signal warrant analysis, the Town requested an intersection accident analysis. No fatal accidents occurred at any of the study intersections between November 1, 1998 and October 31, 2001. A total of 51 crashes occurred at the intersection of US 15-501 and Europa Drive/Erwin Road, while fewer than 10 accidents occurred at the intersections of Legion Road at Europa Drive (8) and Ephesus Church Road at Legion Road (5). Based on North Carolina crash data obtained from the An Illustrated Analysis of North Carolina Traffic Crash Statistics for 2000, the total crash rate and severity index for all study intersections were below the State average.

6. Peak Hour Intersection Level of Service

This study included three (3) separate analysis scenarios; existing (2002), background (2004), and combined (2004) traffic conditions for the a.m., mid-day, and p.m. peak hours of a typical weekday. Based on information provided from the Town of Chapel Hill, two (2) adjacent developments are located in the immediate vicinity of the proposed site. All traffic generated by these approved developments were included in the background (2004), as well as the combined (2004), traffic conditions. Refer to Tables S-2, S-3 and S-4 for existing (2002), background (2004), and combined (2004) peak hour traffic analysis results.

TABLE S-2

ANALYSIS OF EXISTING (2002) TRAFFIC CONDITIONS

INTERSECTION	A P P R O A C H	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 at Europa Drive (signalized)	EB	1 LT, 2 TH, 1 RT	C		C		D	
	WB	1 LT, 1 TH, 1 TH-RT	D	D	D	D	E	E
	NB	1 LT-TH, 1 RT	F		F		F	
	SB	1 LT-TH, 1 RT	F		E		F	
Ephesus Church Road at Legion Road (signalized)	WB	1 LT-RT	D		E		F	
	NB	1 TH-RT	B	B	B	C	B	E
	SB	1 LT, 1 TH	A		A		A	
Legion Road at Europa Drive (unsignalized)	EB	1 LT-TH	A ¹		A ¹		A ¹	
	WB	1 TH-RT						
	SB	1 LT, 1 RT	B ²		B ²		B ²	

1. Level of service for minor (left turn) movement.
2. Level of service for minor approach.

TABLE S-3
BACKGROUND (2004) TRAFFIC CONDITIONS WITHOUT SITE

INTERSECTION	A P P R O A C H	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 (WB) at Erwin Road	WB SB	3 TH, 1 RT 2 RT	B D	B	A D	B	B D	B
US 15-501 (WB) at Median	WB NB	2 TH 2 LT	B D	B	B D	C	B D	C
US 15-501 (EB) at Europa Drive	EB NB	3 TH, 1 RT 2 RT	A D	A	A D	A	A D	B
US 15-501 (EB) at Median	EB SB	2 TH 2 LT	B D	B	B D	B	C D	C
Ephesus Church Road at Legion Road	WB NB SB	1 LT, 1 RT 1 TH-RT 1 LT, 1 TH	C B A	B	C B A	B	C B A	B
Legion Road at Europa Drive	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ B ²		A ¹ B ²		A ¹ C ²	

Bold type denotes lane improvements, or revised lane configurations.

1. Level of service for minor (left turn) movement.
2. Level of service for minor approach.

TABLE S-4
COMBINED (2004) TRAFFIC CONDITIONS WITH SITE

INTERSECTION	A P P R O A C H	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 (WB) at Erwin Road	WB SB	3 TH, 1 RT 2 RT	B D	B	A D	B	B D	B
US 15-501 (WB) at Median	WB NB	2 TH 2 LT	B D	B	B D	C	C D	C
US 15-501 (EB) at Europa Drive	EB NB	3 TH, 1 RT 2 RT	A D	A	A D	A	A D	B
US 15-501 (EB) at Median	EB SB	2 TH 2 LT	B D	B	B D	B	C D	C
Ephesus Church Road at Legion Road	WB NB SB	1 LT, 1 RT 1 TH-RT 1 LT, 1 TH	C B A	B	C B A	B	C B A	B
Legion Road at Europa Drive	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ B ²		A ¹ B ²		A ¹ C ²	
Europa Drive at Site Driveway	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT	B ² A ² A ¹ A ¹		B ² A ² A ¹ A ¹		C ² B ² A ¹ A ¹	

Bold type denotes lane improvements, or revised lane configurations.

1. Level of service for minor (left turn) movement.
2. Level of service for minor approach.

Capacity analysis indicates that the existing traffic signal located at the intersection of US 15-501 and Europa Drive/Erwin Road is currently operating acceptably during the a.m. and mid-day peak hours, but deteriorates to an unacceptable level during the p.m. peak hour. The North Carolina Department of Transportation is redesigning this intersection to provide a superstreet configuration. Analysis indicates that all traffic signals associated with the superstreet design on US 15-501 will operate at acceptable levels of service under background (2004), and combined (2004), traffic conditions during peak times.

Analysis indicates that the intersection of Ephesus Church Road and Legion Road operates acceptably during the a.m. and mid-day peak hours, but deteriorates to an unacceptable level during the p.m. peak hour. While the intersection will continue to operate acceptably under background (2004) traffic conditions during the a.m. and mid-day peak hours, the level of service will continue to deteriorate during the p.m. peak hour due to background traffic growth. With the exclusive left turn lane provided on Legion Road, analysis indicates that the signalized intersection of Ephesus Church Road and Legion Road will operate at an overall LOS B or better under background (2004), and combined (2004), traffic conditions during peak times.

Capacity analysis indicates that the minor movements at all study intersections will experience minor delays during peak times.

In conclusion, the additional traffic generated by the proposed development is expected to have minimal impact to the surrounding roadway network with the improvements that are planned under the superstreet design, and the improvements that are deemed necessary regardless of whether the site is built out.

7. Pedestrian and Bicycle Analysis

Sidewalks and crosswalks currently exist on Europa Drive between Legion Road and the US 15-501 Service Road, and sidewalk will also be provided across the site's frontage to Legion Road. Considering that sidewalks will be available for pedestrian use between the proposed development and nearby bus stops, and the small amount of pedestrian traffic observed at the intersection of Europa Drive and Legion Road, no additional improvements are recommended.

8. Public Transportation Analysis

Based on information obtained from the Chapel Hill Transit Guide, the bus stops located along Europa Drive and Legion Road are serviced during the weekday by Bus Routes CL (a.m. and p.m. hours) and D (all day), and during the weeknight by Bus Route C/D. Bus Route F basically provides weekday service all day to the bus stops located along Ephesus Road in the vicinity of Legion Road. Transit service is also provided on Saturday for Europa Drive and Legion Road by Bus Route D/J, while Bus Route F services Ephesus Church Road.

9. Special Analysis/Issues

Based on discussions with the Town of Chapel Hill, no additional analyses are required as part of this study.

10. Mitigation Measures/Recommendations

The majority of improvements, as summarized below, are the result of planned projects, or can be attributed to the significant background growth from the surrounding community. Refer to Figure S-3 for an illustration of improvements.

Planned Improvements

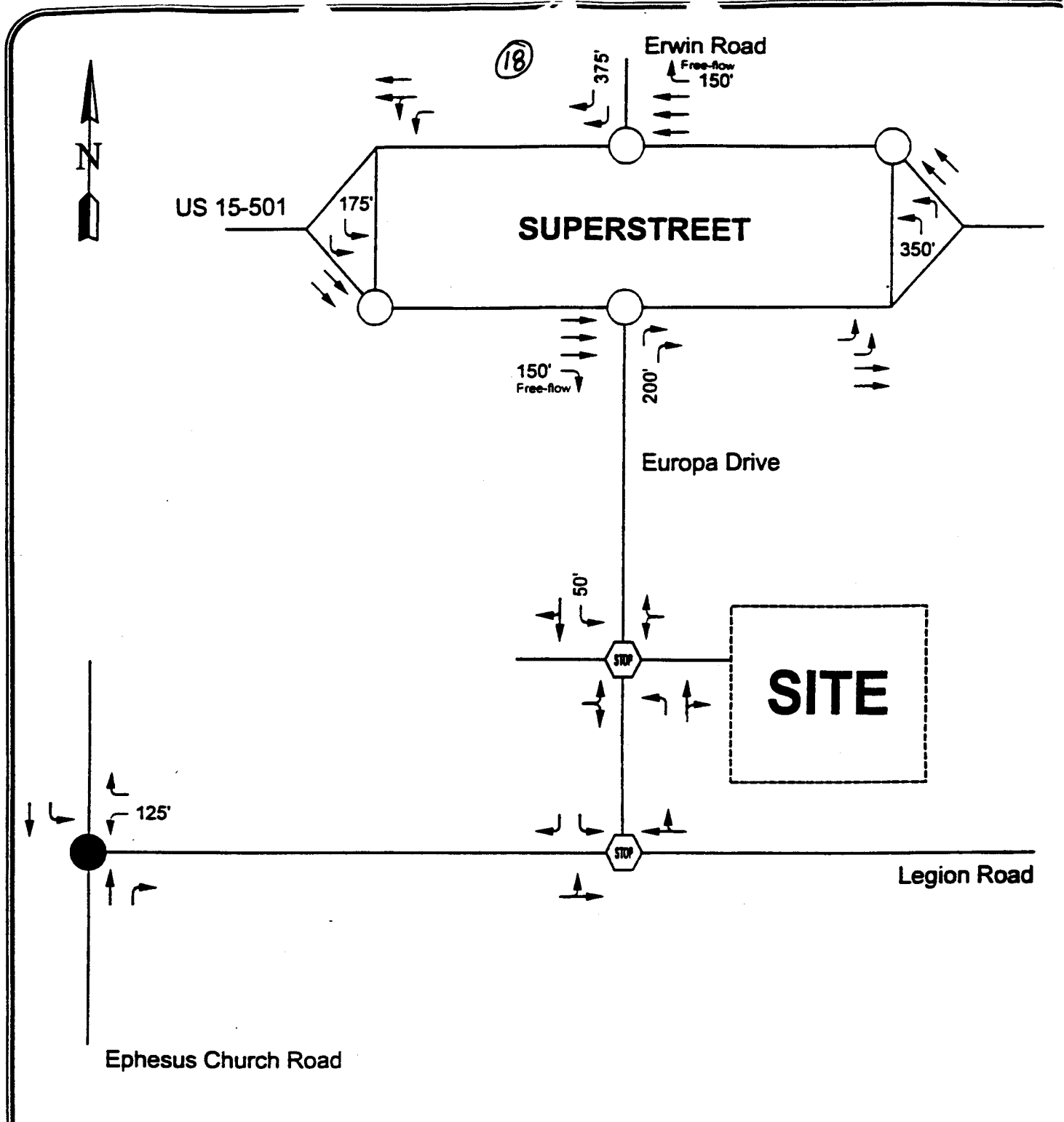
The intersection of US 15-501 and Europa Drive/Erwin Road will be modified by the NCDOT under TIP U-4008. A superstreet design will be provided so that two-phase signals can be utilized to process the heavy traffic volumes along US 15-501. Movements (left and through) associated with Europa Drive and Erwin Road will basically be converted into u-turn movements at nearby median breaks.

Applicant Committed Improvements

An exclusive southbound left turn lane should be provided as part of the proposed development in order to remove vehicles turning left into the site from the through lane. This left turn lane would also prevent left turning vehicles from impeding the progress of vehicles traveling southbound on Europa Drive. This improvement could be accomplished by re-striping the painted median that currently exists on Europa Drive between the Europa Center parking deck drive and the Sheraton's southern drive as a left turn lane.

Necessary Improvements

In order to service the heavy turning movements on Legion Road at the intersection with Ephesus Church Road, an exclusive left turn lane is needed regardless of whether the proposed development is constructed. In addition to separating the left turning vehicles from the right turning vehicles, the left turn lane would also permit the right turn movement to be serviced under a protected green arrow, in conjunction with the protected southbound left turn movement on Ephesus Church Road. These improvements would require pavement widening and some minor signal modifications.




LEGEND

- Planned Traffic Signal
- ↷ Planned Improvement
- ↷ Applicant Committed Improvement
- ↷ Necessary Improvement

125' Recommended Storage (Minimum)

EUROPA OFFICE BUILDING CHAPEL HILL, NORTH CAROLINA		
RECOMMENDED LANE CONFIGURATIONS		
1/02	Scale: Not to Scale	Figure S-3

(19)

TO: Gene Poveromo, Principal Planner
FROM: Kumar Neppalli, Traffic Engineer 
SUBJECT: Europa Office Building/Additional Information on Traffic Impact Analysis
DATE: March 26, 2002

The purpose of this memo is to provide information on the traffic operations at the intersection of Europa Drive and US 15/501 Service Road as directed by the Town Council.

Town Consulting Engineers prepared the attached report and we agree with their findings. The capacity analysis indicates level of service C or better during peak periods of the day. Service Road approach expected to incur minor delays due to the proposed developments in this area.

Please let me know if you need additional information.

ATTACHMENTS

1. Report for Europa Drive and US 15/501 Service Road