ATTACHMENT 13

(65)

ADDENDUM TO TRAFFIC IMPACT ANALYSIS SUMMARY

FOR THE

PROPOSED WILSON ASSEMBLAGE

Prepared For
Town of Chapel Hill
Chapel Hill, North Carolina

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10/14/04

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ADDENDUM TO TRAFFIC IMPACT ANALYSIS
PROPOSED WILSON ASSEMBLAGE
CHAPEL HILL, NORTH CAROLINA

A. SUMMARY

The purpose of this document is to summarize the results of the addendum to the Traffic Impact Analysis (TIA) Report dated December 2003 performed for the proposed Wilson Assemblage on Dobbins Drive in Chapel Hill, North Carolina.

1. Project Overview

This addendum summarizes the findings of the analyses of three alternatives for access from the development to Sage Road that were not covered previously in the TIA that was performed for the proposed Wilson Assemblage on Dobbins Drive in Chapel Hill, North Carolina. Specifically, the three access alternatives that were studied are as follows:

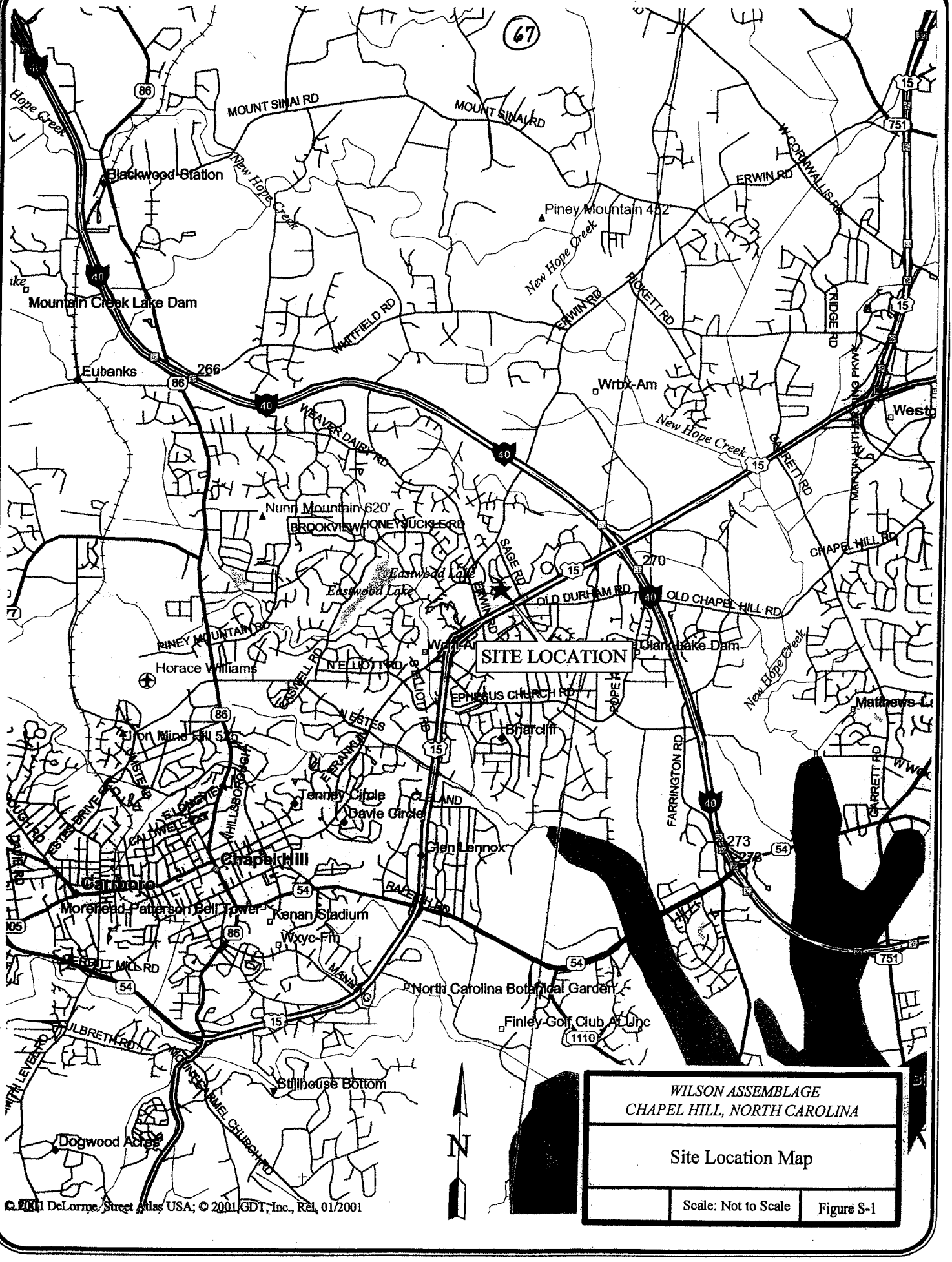
> **Access Alternative 1**: Considers realigning the proposed Site Driveway #1 with the existing Lowe's Driveway on the east side of Sage Road.
>
> **Access Alternative 2**: Considers realigning the existing Lowe's Driveway to the north to intersect with the proposed location of Site Driveway #1.
>
> **Access Alternative 3**: Considers the proposed Site Driveway #1 is restricted to right-in/right-out movements and will remain at the proposed location

The purpose of this study is to determine the impact to the surrounding transportation system caused by the additional traffic generated by the proposed Wilson Assemblage development, which is anticipated to be fully built out by the year 2007, based on the three access alternatives. Traffic conditions were examined one year after the anticipated build-out date (2008).

2. Study Area

The proposed development is located on the north side of Dobbins Drive, between Erwin Road and Sage Road. Refer to Figure S-1 for a site location map. The study area for this project consists of the following intersections:

1) US 15-501 and Erwin Road – (Signalized)
2) Erwin Road and Dobbins Drive – (Unsignalized)
3) Erwin Road and Sage Road – (Unsignalized)
4) Erwin Road and Weaver Dairy Road – (Signalized)
5) US 15-501 and Sage Road – (Signalized)
6) Sage Road and Dobbins Drive – (Unsignalized)
7) Sage Road and Lowe's Driveway – (Unsignalized)
8) Sage Road and Site Driveway #1 – (Future Intersection)
9) Dobbins Drive and Site Driveway #2 – (Future Intersection)



WILSON ASSEMBLAGE
CHAPEL HILL, NORTH CAROLINA

Site Location Map

Scale: Not to Scale | Figure S-1

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, 7th Edition. The independent variables are the number of dwelling units (for Residential land uses) and Gross Leaseable Area (square feet) for office and retail land uses. Refer to Table S-1 for the trip generation results of the proposed development.

TABLE S-1
TRIP GENERATION

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
Apartments (220)	118 Dwellings	430	430	12	50	54	29	54	29
Residential Condo/ Townhome (230)	31 Dwellings	119	119	3	17	15	8	15	8
General Office (710)	25,000 s.f.	229	229	54	7	18	89	18	89
Specialty Retail Center (814)	25,000 s.f.	554	554	0	0	28	37	28	37
Subtotal		**1,332**	**1,332**	**70**	**74**	**123**	**171**	**123**	**171**
Total Trips		**2,664**		**144**		**294**		**294**	

4. Access Analysis

Access to the proposed development is to be provided via two new driveways: a connection on Sage Road, and a connection on Dobbins Drive. The Dobbins Drive access road will service all movements and will be located 1100 feet west of the Dobbins Drive intersection with Sage Road. Given that the right-of-way of US 15-501 abuts the right-of-way of Dobbins Drive, there are no driveway connections located on the opposite side of Dobbins Drive for the site access road to be aligned. It is expected that the majority of exiting pedestrian and bike trips will turn left and proceed east on Dobbins Drive towards the bus stops along Dobbins Drive and Sage Road, or to the Lowe's shopping center complex on the east side of Sage Road. The Sage Road site access will operate under one of the three access alternatives presented in the addendum. A more detailed discussion of each alternative is provided in the following sections.

Access Alternative #1:
Align Site Driveway #1 with Existing Lowe's Driveway

Access Alternative 1 considers aligning the proposed Site Driveway #1 with the existing Lowe's Driveway on Sage Road. The existing Lowe's Driveway is located approximately 300 feet north of the intersection of Dobbins Drive and Sage Road and 450 feet north of the US 15-501 intersection. Aligning Site Driveway #1 with the Lowe's Driveway would require Site Driveway #1 to encroach on property not owned by the developer. The location of Site Driveway #2 would remains the same as in the TIA report.

Access Alternative #2:
Realign Lowe's Driveway to Proposed Site Driveway #1

Access Alternative 2 considers realigning the existing Lowe's Driveway approximately 220 feet to the north to align with the proposed Site Driveway #1 as a four-leg intersection. The new intersection would be located approximately 420 feet north of the intersection of Dobbins Drive and Sage Road and 700 feet north of the US 15-501 intersection.

Topography along the east side of Sage Road near the Lowe-s Driveway is relatively severe with significant elevation changes. Realigning the existing Lowe's Driveway would require significant earthwork due to these elevation changes. As in Alternative 1, the location of Site Driveway #2 on Dobbins remains the same as in the TIA report.

Access Alternative #3:
Right-In/Right-Out Access at Site Driveway #1

Access Alternative 3 considers restricting the proposed Site Driveway #1 to right-in/right-out movements only. The proposed Site Driveway #1 will be located approximately 220 feet north of the exiting Lowe's Driveway. The existing Lowe's Driveway on Sage Road will remain at its current location with full access movements. Restricting the northbound left turn movement into Site Driveway #1 prevents conflicting left turns on Sage Road turning into Site Driveway #1 and into the Lowe's Driveway. The location of Site Driveway #2 on Dobbins Drive remains the same as in the TIA report, but an exclusive left-turn lane is added to the eastbound approach of Dobbins Drive at Site Driveway #2.

It is expected that the majority of exiting pedestrian and bike trips will turn right and proceed south on Sage Road towards the bus stops along Dobbins Drive and Sage Road, or to the Lowe's shopping center complex on the east side of Sage Road. The potential therefore exists for pedestrian and/or bicycle traffic crossing Sage Road. Refer to the Conceptual Site Plan for an illustration of the land use and access plan.

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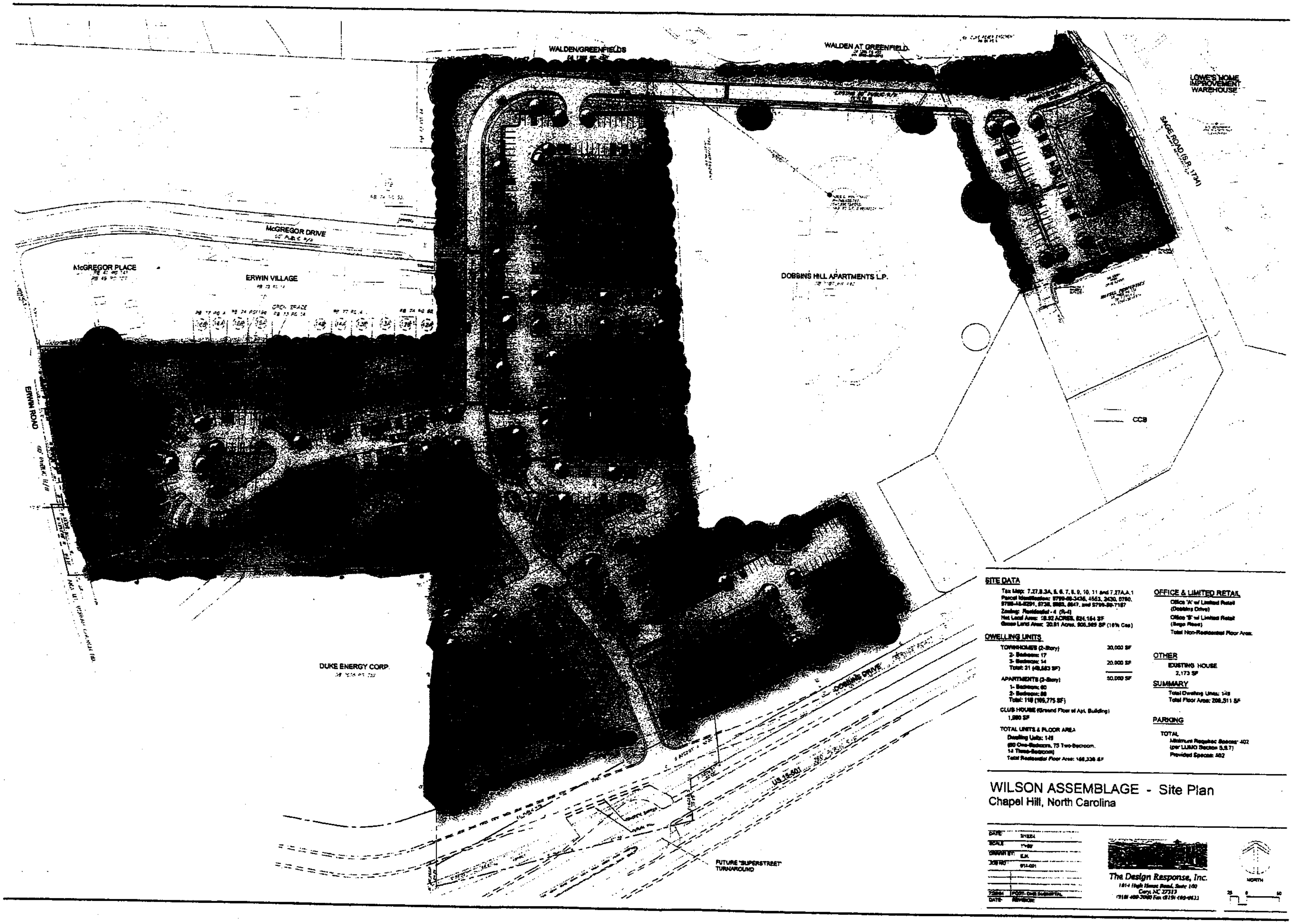

WALDEN/GREENFIELDS
WALDEN AT GREENFIELD
LOWE'S HOME IMPROVEMENT WAREHOUSE
SAGE ROAD (S.R. 1734)
McGREGOR DRIVE
McGREGOR PLACE
ERWIN VILLAGE
OPEN SPACE
ERWIN ROAD
DOBBINS HILL APARTMENTS L.P.
CCB
DUKE ENERGY CORP.
DOBBINS DRIVE
US 15-501
FUTURE "SUPERSTREET" TURNAROUND
SITE DATA
Zoning: Residential - 4 (R-4)
DWELLING UNITS
TOWNHOMES (2-Story)
30,000 SF
2- Bedroom: 17
3- Bedroom: 14
20,000 SF
50,000 SF
APARTMENTS (3-Story)
1- Bedroom: 60
CLUB HOUSE (Ground Floor of Apt. Building)
TOTAL UNITS & FLOOR AREA
OFFICE & LIMITED RETAIL
Office 'A' w/ Limited Retail
(Dobbins Drive)
Office 'B' w/ Limited Retail
(Sage Road)
Total Non-Residential Floor Area:
OTHER
EXISTING HOUSE
2,173 SF
SUMMARY
PARKING
TOTAL
Provided Spaces: 402
WILSON ASSEMBLAGE - Site Plan
Chapel Hill, North Carolina
The Design Response, Inc.
NORTH

5. Intersection Analysis

Intersection analyses were completed for the three access alternatives for combined (2008) conditions. A detailed description of the intersection analysis for each alternative is included in the following sections.

Access Alternative 1

Study intersections were analyzed under combined (2008) conditions with Access Alternative 1 using the same methodology as indicated in the TIA report. Results of the capacity analysis for combined (2008) traffic conditions with Access Alternative 1 are summarized in Table S-2.

Based on the analysis results, the intersection of US 15-501 and Sage Road will operate at LOS D in the AM, Mid-Day, and PM peak hours. The calculated 95th percentile queues on the southbound approach of Sage Road are approximately 320 feet in the AM peak hour, 370 feet in the Mid-Day peak hour, and 440 feet in the PM peak hour. During the PM peak hour, southbound queues on Sage Road at US 15-501 could extend to the intersection at Site Driveway #1/Lowe's Driveway. During other weekday periods, queues are not expected to extend through the new signalized intersection at Site Driveway #1/Lowe's Driveway.

Under combined (2008) conditions, analysis indicates the intersection of Sage Road and Site Driveway #1/Lowe's Driveway will operate at LOS B in the AM, Mid-Day, and PM peak hours. The calculated 95th percentile queues on the northbound approach of Sage Road are approximately 170 feet in the AM peak hour, 220 feet in the Mid-Day peak hour, and 230 feet in the PM peak hour. These queues are not expected to extend to US 15-501.

As discussed in the TIA report, the intersection of Sage road and Erwin Road is analyzed as a signalized intersection under combined (2008) conditions. As a signalized intersection, analysis indicates the intersection will operate at an acceptable level of service during each analysis period.

Also as discussed in the TIA report, the US 15-501 is analyzed with three through lanes in each direction at intersections within the superstreet. Capacity analysis indicates that the northbound left turn movement in the northeast quadrant and southbound left turn movement in the southwest quadrant will experience long queues and delays due to high through volumes on US 15-501.

Other study intersections are expected to operate at acceptable levels of service under Alternative 1 combined (2008) conditions in the AM, Mid-Day, and PM peak hours. Further, these intersections are expected to operate at the same levels of service as shown in the December 2003 TIA report for combined (2008) conditions.

TABLE S-2 (72)

ANALYSIS OF ALTERNATIVE 1 COMBINED (2008) TRAFFIC CONDITIONS

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB WB NB SB	2 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT, **1 TH**, 1 TH-RT 2 LT, 1 TH, 1 RT	C E E D	**D**	C D E D	**D**	D D E F	**D**
Dobbins Drive and Sage Road (unsignalized)	EB NB SB	1 RT 2 TH 2 TH, 1 RT	B[2] -- --	--	B[2] -- --	--	B[2] -- --	--
Erwin Road and Sage Road **(signalized)**	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT, 1 RT	A A C	**B**	A A B	**A**	B B C	**B**
Erwin Road and Weaver Dairy Road (signalized)	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT, 1 RT	C B C	**C**	A B B	**A**	B B B	**B**
Erwin Road and Dobbins Drive **(realigned)**	EB WB NB SB	1 LT-TH, **1 RT** 1 LT-TH, **1 RT** 1 LT, 1 TH-RT 1 LT, 1 TH, 1 TH-RT	F[2] F[2] B[1] A[1]	--	D[2] D[2] A[1] A[1]	--	F[2] F[2] B[1] A[1]	--

TABLE S-2 (Continued)

US 15-501 (WB) and Median NE Quad (signalized)	WB NB	**3 TH** **2 LT**	C D	**C**	A E	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	**3 TH, 1 RT** **2 RT**	C D	**C**	A D	**B**	B D	**C**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	**3 TH** **2 LT**	A E	**B**	A E	**B**	B E	**B**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	**3 TH, 1 RT** **2 RT**	A E	**B**	A E	**B**	A E	**B**
Site Road #1/ LOWE'S Drive and Sage Road (**signalized**)	EB WB NB SB	**1 LT-RT** **1 LT-TH, 1 RT** **1 LT, 2 TH** 2 TH, 1 RT	E E A A	**B**	D D A A	**B**	D D A B	**B**
Site Road #2 and Dobbins Drive (unsignalized)	EB WB SB	1 LT-TH 1 TH-RT **1 LT-RT**	-- -- A^2	--	-- -- A^2	--	-- -- A^2	--

Bold type denotes lane improvements, or revised lane configurations.

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

A traffic signal warrant analysis was conducted for the intersection of Sage Road and Site Driveway #1/Lowe's Driveway to determine if a traffic signal is warranted at the intersection under combined (2008) traffic conditions.

Signal warrant criteria for this study were based on traffic volumes and recent crash data on Sage Road. Based on the combined peak hour traffic volumes, Warrant 3B (Peak Hour Volume Warrant) is met for the Mid-day and PM peak periods under combined (2008) traffic conditions. Two hourly periods are met for Warrant 1A and Warrant 2, while 3 hourly periods are met for Warrant 1B. Crash analysis indicates that there are no crashes in the most recent one-year period on Sage Road near the proposed Site Driveway #1/Lowe's Driveway intersection. With no crashes occurring near the intersection, Warrant 7 is not met.

The warrant analysis suggests that a traffic signal would be warranted at the intersection of Sage Road and Site Driveway #1/Lowe's Driveway. Minor street volume thresholds are exceeded due to the traffic exiting the Lowe's Driveway since traffic volumes exiting Site Driveway #1 are relatively minor.

Access Alternative 2

Combined (2008) traffic volumes with Access Alternative 2 are identical to the traffic volumes for Access Alternative 1. Results of the capacity analysis for combined (2008) traffic conditions with Access Alternative 2 are summarized in Table S-3.

Based on the analysis results, the intersection of US 15-501 and Sage Road will operate at LOS D in the AM, Mid-Day, and PM peak hours. As with Alternative 1, the calculated 95th percentile queues on the southbound approach of Sage Road at US 15-501 are approximately 320 feet in the AM peak hour, 370 feet in the Mid-Day peak hour, and 440 feet in the PM peak hour. These queues are not expected to extend through the new signalized intersection at Site Driveway #1/Lowe's Driveway during these peak hour periods.

Since traffic volumes and lane configurations are the same for Alternative 2 as in Alternative 1, the traffic signal warrant analysis conducted for Alternative 1 will be applicable for Alternative 2. Refer to the signal warrant analysis section in Alternative 1 for a discussion of the results of the analysis.

TABLE S-3 (75)

ANALYSIS OF ALTERNATIVE 2 COMBINED (2008) TRAFFIC CONDITIONS

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB WB NB SB	2 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT, 1 TH, 1 TH-RT 2 LT, 1 TH, 1 RT	C E E D	**D**	C D E D	**D**	D D E E	**D**
Dobbins Drive and Sage Road (unsignalized)	EB NB SB	1 RT 2 TH 2 TH, 1 RT	B[2] -- --	--	B[2] -- --	--	B[2] -- --	--
Erwin Road and Sage Road **(signalized)**	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT, 1 RT	A A C	**B**	A A B	**A**	B B C	**B**
Erwin Road and Weaver Dairy Road (signalized)	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT, 1 RT	C B C	**C**	A B B	**A**	B B B	**B**
Erwin Road and Dobbins Drive **(realigned)**	EB WB NB SB	1 LT-TH, 1 RT 1 LT-TH, 1 RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 TH-RT	F[2] F[2] B[1] A[1]	--	D[2] D[2] A[1] A[1]	--	F[2] F[2] B[1] A[1]	--

TABLE S-3 (Continued)

US 15-501 (WB) and Median NE Quad (signalized)	WB NB	**3 TH** **2 LT**	C D	**C**	A E	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	**3 TH, 1 RT** **2 RT**	C D	**C**	A D	**B**	B D	**C**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	**3 TH** **2 LT**	A E	**B**	A E	**B**	B E	**B**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	**3 TH, 1 RT** **2 RT**	A E	**B**	A E	**B**	A E	**B**
Site Road #1/ LOWE'S Drive and Sage Road **(signalized)**	EB WB NB SB	**1 LT-RT** **1 LT-TH, 1 RT** **1 LT, 2 TH** 2 TH, 1 RT	E E A A	**B**	D D A A	**B**	D D A B	**C**
Site Road #2 and Dobbins Drive (unsignalized)	EB WB SB	1 LT-TH 1 TH-RT **1 LT-RT**	-- -- A[2]	--	-- -- A[2]	--	-- -- A[2]	--

Bold type denotes lane improvements, or revised lane configurations.

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

Access Alternative 3

Study intersections were analyzed under combined conditions with Access Alternative 3 using the same methodology as indicated in the TIA report. The analysis considers study intersections operate with geometric improvements and traffic control as discussed in the December TIA report with the exception of Site Driveway #1. Results of the capacity analysis for combined (2008) traffic conditions with Access Alternative 3 are summarized in Table S-4.

Based on the analysis results, the intersection of US 15-501 and Sage Road will operate at LOS D in the AM, Mid-Day, and PM peak hours. The calculated 95th percentile queues on the southbound approach of Sage Road are 310 feet in the AM peak hour, 360 feet in the Mid-Day peak hour, and 430 feet in the PM peak hour. In the PM peak hour, there is the potential for southbound queues to extend to the intersection at the Lowe's Driveway. During other periods on a typical weekday, the queues are not expected to extend through the Lowe's Driveway.

Analysis indicates that the Lowe's Driveway approach will operate at LOS F in the Mid-Day and PM peak hours. The analysis does not consider the effects of the signalized intersections at US 15-501 and at Erwin Road, which will create gaps in through traffic on Sage Road. These gaps should allow left turning vehicles exiting the Lowe's Driveway to complete the turning movement with less delay than is indicated in the analysis printouts.

Capacity analysis indicates that the northbound left turn movement in the northeast quadrant and southbound left turn movement in the southwest quadrant will experience long queues and delays due to high through volumes on US 15-501 under combined (2008) conditions for Access Alternative 3.

The eastbound left-turn approach of Dobbins Road at Site Driveway #2 operates at LOS A and the southbound minor approach of Site Driveway #2 operates at LOS B or better during the AM, Mid-Day, and PM peak hours under Alternative 3 combined (2008) conditions.

Analysis indicates that the westbound minor approach of Dobbins Road at Erwin Road will operate at LOS F, LOS D, and LOS F under AM, Mid-Day, and PM peak hours, respectively, under Alternative 3 combined (2008) conditions with a through-and-left shared lane and an exclusive right-turn lane. This approach was also analyzed with an exclusive left-turn lane and a through-and-right shared lane configuration. However, the addition of an exclusive right turn lane requires less widening of the road than does an exclusive left turn lane. In addition, analysis indicates that the later configuration (exclusive left-turn lane and a shared through-and-right lane) provided very little delay reduction over the previous configuration and did not change the LOS of the approach.

Other study intersections are expected to operate at acceptable levels of service under Alternative 3 combined (2008) conditions in the AM, Mid-Day, and PM peak hours. Further, these intersections are expected to operate at similar levels

of service as shown in the December 2003 TIA report for combined (2008) conditions.

TABLE S-4
ANALYSIS OF ALTERNATIVE 3 COMBINED (2008) TRAFFIC CONDITIONS

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB WB NB SB	2 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT,1 TH,1TH-RT 2 LT, 1 TH, 1 RT	C E E D	**D**	C D E E	**D**	D D E F	**D**
Lowe's Drive and Sage Road (unsignalized)	WB NB SB	1 LT, 1 RT 1 TH, 1 TH-RT 1 LT, 2 TH	C[2] -- A[1]	--	F[2] -- A[1]	--	F[2] -- A[1]	--
Dobbins Drive and Sage Road (unsignalized)	EB NB SB	1 RT 2 TH 2 TH, 1 RT	B[2] -- --	--	B[2] -- --	--	B[2] -- --	--
Erwin Road and Sage Road (**signalized**)	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT, 1 RT	A A C	**B**	A A B	**A**	B B C	**B**
Erwin Road and Weaver Dairy Road (signalized)	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT, 1 RT	C B C	**C**	A B B	**A**	B B B	**B**
Erwin Road and Dobbins Drive (**realigned**)	EB WB NB SB	1 LT-TH, 1 RT 1 LT-TH, 1 RT 1 LT, 1 TH-RT 1 LT,1 TH,1TH-RT	F[2] F[2] B[1] A[1]	--	D[2] D[2] A[1] A[1]	--	F[2] F[2] B[1] B[1]	--

TABLE S-4 (Continued)

US 15-501 (WB) and Median NE Quad (signalized)	WB NB	**2 TH** **2 LT**	A E	**B**	A E	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	**3 TH, 1 RT** **2 RT**	B D	**B**	A D	**B**	B D	**B**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	**3 TH** **2 LT**	A E	**B**	A E	**B**	B E	**B**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	**3 TH, 1 RT** **2 RT**	A E	**B**	A E	**B**	A E	**B**
Site Road #1 and Sage Road (unsignalized)	EB NB SB	**1 RT** 2 TH 1 TH, 1 TH-RT	B[2] A[1] --	--	B[2] A[1] --	--	B[2] A[1] --	--
Site Road #2 and Dobbins Drive (unsignalized)	EB WB SB	**1 LT, 1 TH** **1 TH-RT** **1 LT-RT**	A[1] -- A[2]	--	A[1] -- A[2]	--	A[1] -- B[2]	--

Bold type denotes lane improvements, or revised lane configurations.

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

6. Access Alternative Evaluation

Each access alternative was evaluated to determine which alternative has the least impact on the surrounding transportation system. Under Access Alternative 1, a traffic signal would be warranted at the intersection of Sage Road and Site Driveway #1/Lowe's Driveway. Typically, the NCDOT would require a minimum spacing of 1,000 feet -1,200 feet between signalized intersections. Installing a traffic signal at this location would provide a spacing of approximately 450 feet between the new signal and the signal at US 15-501. During the PM peak hour, analysis indicates southbound queues on Sage Road at US 15-501 could extend to the intersection of Site Driveway #1/Lowe's Driveway. With future traffic growth on Sage Road, it is anticipated that queues would extend through the intersection, blocking both Site Driveway #1 and the Lowe's Driveway. Traffic volumes on Sage Road could increase in the future with the completion of TIP Project U-3306. Due to the close signal spacing and potential for queuing problems on Sage Road, Alternative 1 is not recommended.

Access Alternative 2 is also anticipated to warrant a traffic signal at the intersection of Sage Road and Site Driveway #1/Lowe's Driveway. While this alternative provides a signal spacing of 700 feet between the new signal and US 15-501, the signal spacing is less than the typical minimum requirement of 1,000-1,200 feet. Queuing analysis indicates that southbound queues on Sage Road at US 15-501 will extend approximately 440 feet in the PM peak hour which will not extend to the new signalized intersection. In the future an increase in traffic volumes on Sage Road could result in longer southbound queues on Sage Road at US 15-501. An increase in traffic volumes on US 15-501 in the future is expected to require more green time for the through movements on US 15-501, which would create longer delays and queues on the minor street approach of Sage Road. Due to the relatively minor traffic volumes exiting Site Driveway #1, it is anticipated that a traffic signal would be warranted based on traffic exiting the Lowe's Driveway. Since left turning traffic from Site Driveway #1 is minor, it is anticipated that a traffic signal would not be necessary to allow left turning traffic to exit Site Driveway #1. In addition, existing topography along the east side of Sage Road would present challenges in realigning the Lowe's Driveway. Although Alternative 2 is more desirable than Alternative 1, Alternative 2 is not recommended due to signal spacing, existing topography, and minor benefit provided to Site Driveway #1.

Access Alternative 3 provides the least impact on the existing Lowe's property and proposed development while providing an adequate level of operation for ingress and egress site traffic. It is recommended to restrict the intersection of Sage Road and Site Driveway #1 to right-in/right-out movements. This prevents the potential for conflicting left turns in the center turn lane between Site Driveway #1 and the Lowe's Driveway. Restricting the left turn in and left turn out movements at Site Driveway #1 will have a minimal impact on the surrounding roadway network since the left turn volume from Site Driveway #1 was expected to be minor. In addition, this alternative avoids the issues with topography on the east side of Sage Road and limited traffic signal spacing. It is recommended to provide Access Alternative 3 at Sage Road and Site Driveway #1 as part of the proposed development.

Since Site Driveway #1 operates as a right-in/right-out only intersection in Alternative 3, there is potential for vehicles wanting to travel north to exit Site Driveway #1 by turning right onto southbound Sage Road and then make a U-turn at an intersection along Sage Road. To discourage this movement, a "No U-turn" sign may be placed on the concrete median installed on Sage Road. Restricting the intersection of Sage Road and Site Driveway #1 to right-in/right-out movements will increase site traffic utilizing Dobbins Drive to access the development. To mitigate this increase in site traffic on Dobbins Drive, it is recommended that an exclusive left turn lane be installed on Dobbins Drive at Site Driveway #2. In addition, it is recommended that the eastbound and westbound approaches of Dobbins Drive at Erwin Road be constructed with one shared left-through lane and one exclusive right turn lane.

7. Pedestrian and Bicycle Analysis

Since the proposed site driveway locations remain the same as in the December 2003 TIA report, no additional analysis is provided for pedestrians and bicycles. The recommendations of the TIA report should provide adequate facilities for pedestrians and bicycles for Access Alternative 3.

8. Public Transportation Analysis

The public transportation analysis is expected to remain the same as in the TIA report.

9. Special Analysis/Issues

The long-term analysis discussed in the December 2003 TIA report remains applicable to this addendum. Although Alternative 3 creates more traffic on Dobbins Drive than is shown in the TIA report, the traffic volumes are relatively minor and considered insignificant when considering an analysis of 2025 ADT traffic volumes.

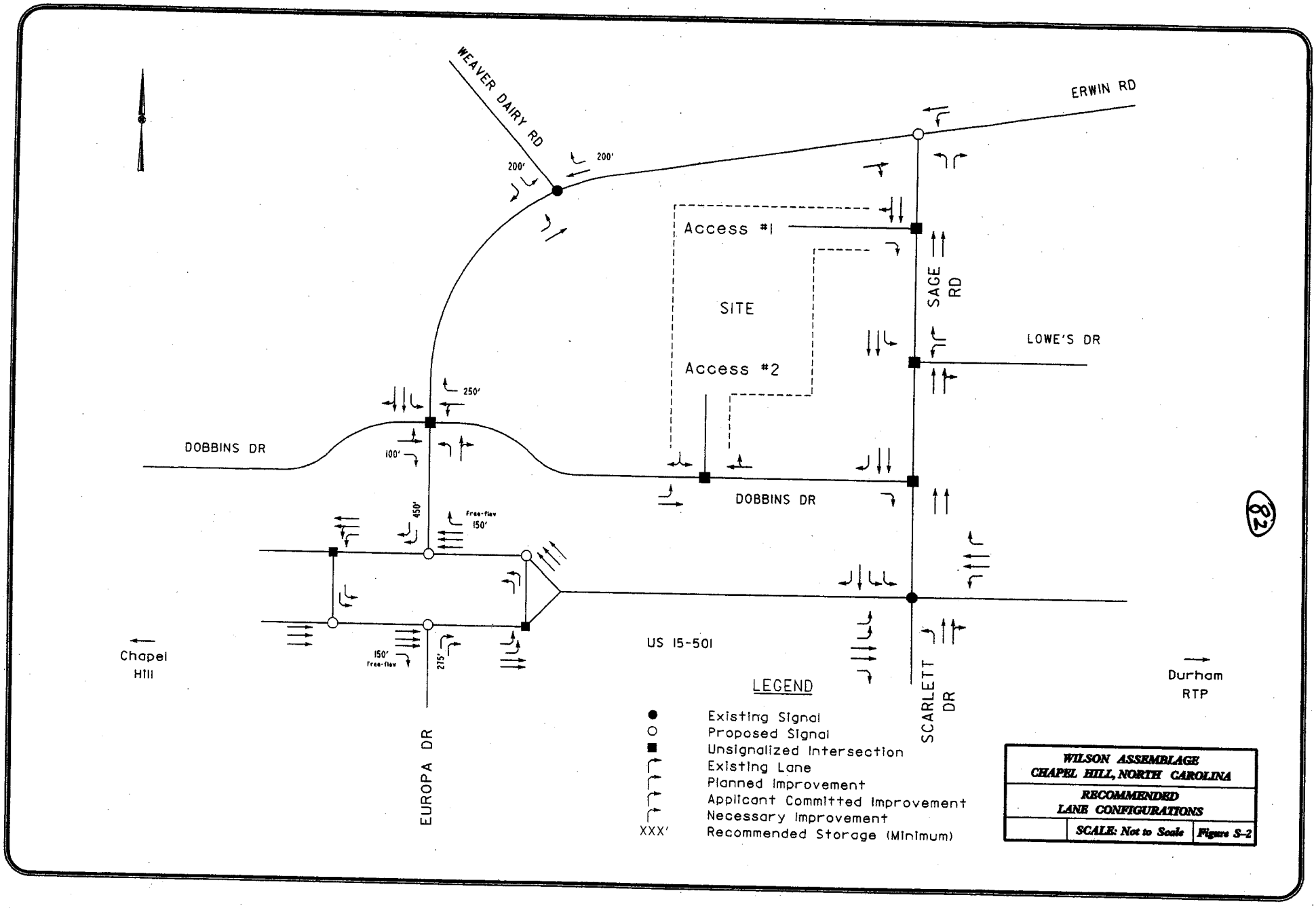
10. Mitigation Measures/Recommendations

The majority of improvements, as summarized below, is the result of planned projects, or can be attributed to the significant background growth from the surrounding community. Refer to Figure S-2 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 be converted into u-turn movements at nearby median breaks.

In addition, the NCDOT is going to realign the western leg of Dobbins Drive to intersect Erwin Road opposite the eastern leg of Dobbins Drive. Erwin Road will


WEAVER DAIRY RD
ERWIN RD
200'
200'
Access #1
SITE
Access #2
SAGE RD
LOWE'S DR
250'
DOBBINS DR
100'
DOBBINS DR
450'
Free-flow
150'
US 15-501
Chapel Hill
Durham RTP
150'
Free-flow
275'
EUROPA DR
SCARLETT DR
LEGEND
Existing Signal
Proposed Signal
Unsignalized Intersection
Existing Lane
Planned Improvement
Applicant Committed Improvement
Necessary Improvement
XXX' Recommended Storage (Minimum)
WILSON ASSEMBLAGE
CHAPEL HILL, NORTH CAROLINA
RECOMMENDED
LANE CONFIGURATIONS
SCALE: Not to Scale
Figure S-2

also be widened from US 15-501 to the northern property line of the proposed Residence Inn.

Background Committed Improvements

Per discussions with the Town of Chapel of Hill, there are no committed roadway improvements by adjacent developments within the study area.

Applicant Committed Improvements

The only recommended improvement for Access Alternative 3, in addition to those shown in the TIA report, is the installation of an exclusive left-turn lane for the eastbound approach of Dobbins Drive at Site Driveway #2. It is recommended to restrict Site Driveway #1 to allow only right-in and right-out movements.

All planned improvements, background improvements, and necessary improvements are discussed in the TIA report. As previously indicated, the developer should provide sidewalk along the north side of Dobbins Drive, and should restrict Site Driveway #1 to allow only right-in and right-out movements.

(84)

TRAFFIC IMPACT ANALYSIS SUMMARY

FOR THE

PROPOSED WILSON ASSEMBLAGE

Prepared For
Town of Chapel Hill
Chapel Hill, North Carolina

Prepared By
Ramey Kemp & Associates, Inc.
4928-A Windy Hill Drive
Raleigh, North Carolina

December 2003

A. Bowman Kelly

NORTH CAROLINA PROFESSIONAL SEAL 028203 ENGINEER A. BOWMAN KELLY

12/17/03

TRAFFIC IMPACT ANALYSIS
PROPOSED WILSON ASSEMBLAGE
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 Wilson Assemblage in Chapel Hill, North Carolina.

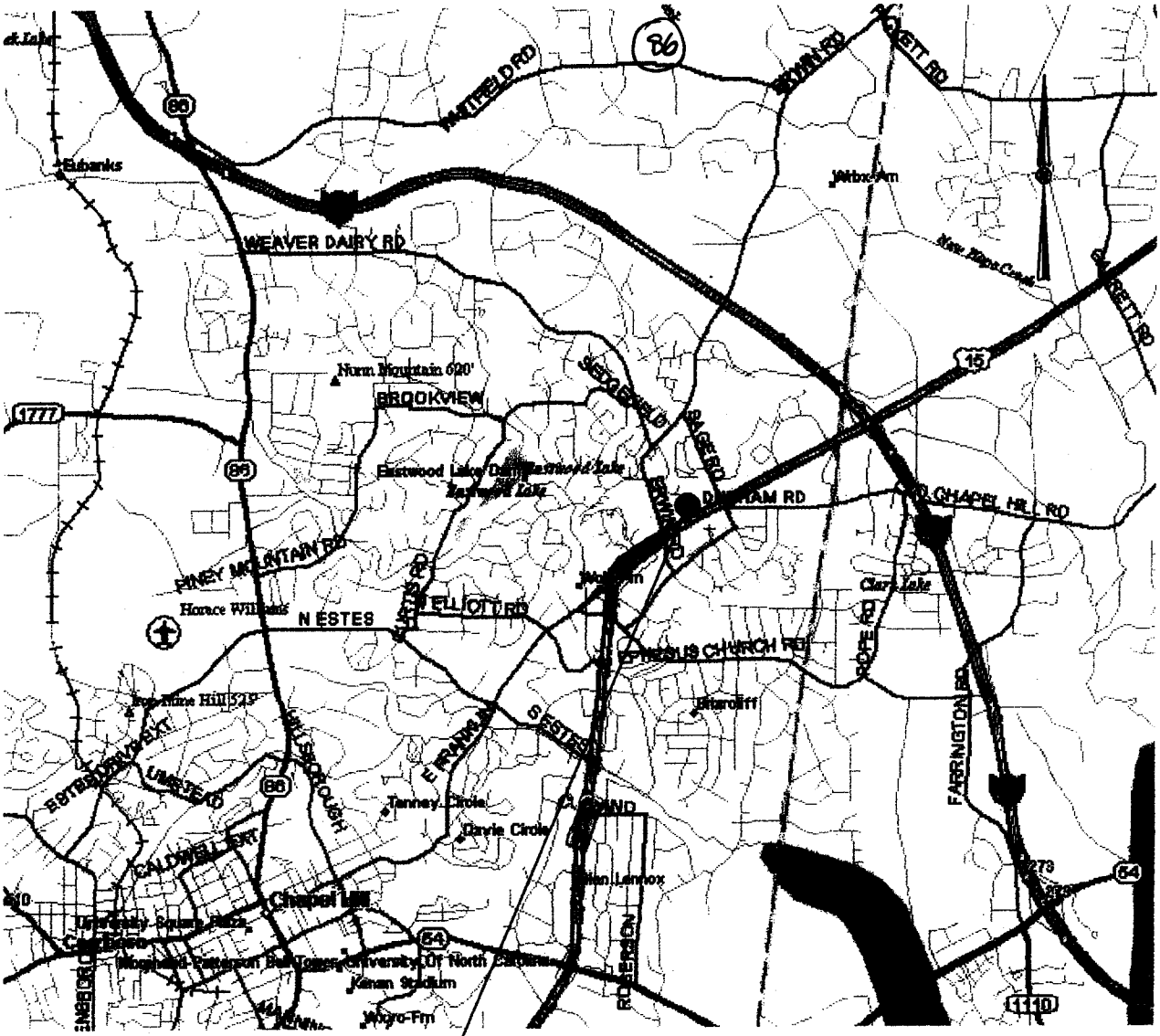
1. Project Overview

This study summarizes the findings of the Traffic Impact Analysis (TIA) that was performed for the proposed Wilson Assemblage on Dobbins Drive 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 Wilson Assemblage development, which is anticipated to be fully built out by the year 2007. Traffic conditions were examined one year after the anticipated build-out date (2008). The TIA was prepared as part of the proposed development's Special Use Permit application.

2. Study Area

The proposed development is located on the north side of Dobbins Drive, between Erwin Road and Sage Road. Refer to Figure S-1 for a site location map. The study area for this project consists of the following intersections:

1) US 15-501 and Erwin Road – (Signalized)
2) Erwin Road and Dobbins Drive – (Unsignalized)
3) Erwin Road and Sage Road – (Unsignalized)
4) Erwin Road and Weaver Dairy Road – (Signalized)
5) US 15-501 and Sage Road – (Signalized)
6) Sage Road and Dobbins Drive – (Unsignalized)
7) Sage Road and Lowe's Driveway – (Unsignalized)
8) Sage Road and Site Driveway #1 – (Future Intersection)
9) Dobbins Drive and Site Driveway #2 – (Future Intersection)



WILSON ASSEMBLAGE CHAPEL HILL, NORTH CAROLINA		
SITE LOCATION MAP		
12/16/2003	SCALE: Not to Scale	Figure S–1

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. The independent variables are the number of dwelling units (for Residential land uses) and Gross Leaseable Area (square feet) for office and retail land uses. Refer to Table S-1 for the trip generation results of the proposed development.

TABLE S-1
TRIP GENERATION

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
Apartments (220)	75 Dwellings	292	292	6	34	40	20	40	20
Residential Condo/ Townhome (230)	45 Dwellings	165	165	5	23	21	10	21	10
General Office (710)	25,000 s.f.	229	229	54	7	18	89	18	89
Specialty Retail Center (814)	25,000 s.f.	508	508	0	0	28	37	28	37
Subtotal		**1,194**	**1,194**	**65**	**64**	**107**	**156**	**107**	**156**
Total Trips		**2,388**		**129**		**263**		**263**	

4. Access Analysis

Access to the proposed development is to be provided via two new driveways: a connection on Sage Road, and a connection on Dobbins Drive. The Dobbins Drive access road will service all movements and will be located 1100 feet west of the Dobbins Drive intersection with Sage Road. Given that the right-of-way of US 15-501 abuts the right-of-way of Dobbins Drive, there are no driveway connections located on the opposite side of Dobbins Drive for the site access road to be aligned. It is expected that the majority of exiting pedestrian and bike trips will turn left and proceed east on Dobbins Drive towards the bus stops along Dobbins Drive and Sage Road, or to the Lowe's shopping center complex on the east side of Sage Road. The Sage Road site access will service all movements and will be located 700 north of the Sage Road/US 15-501 intersection. This driveway lies approximately 275 feet north of the existing Sage Road/Lowe's Drive intersection. It is expected that the majority of exiting pedestrian and bike trips will turn right and proceed south on Sage Road towards the bus stops along Dobbins Drive and Sage Road, or to the Lowe's shopping center complex on the east side of Sage Road. The potential therefore exists for pedestrian and/or

bicycle traffic crossing Sage Road. Refer to the Conceptual Site Plan for an illustration of the land use and access plan.

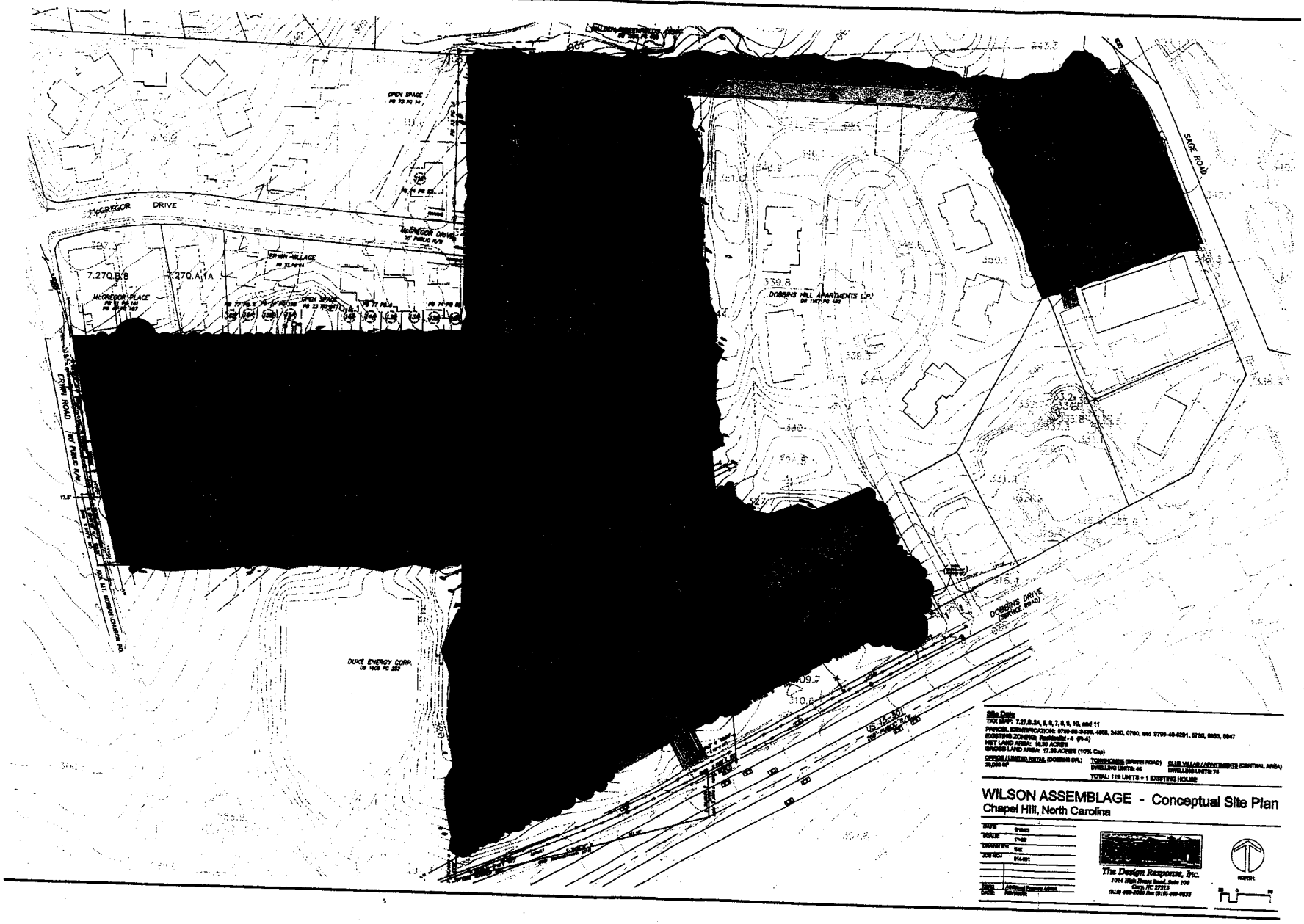
5. Intersection Analysis

A signal warrant analysis was not performed for the site access on Dobbins Drive. A signal warrant analysis *was* done for the site access on Sage Road. The new intersection does not meet the minimum criteria for a traffic signal. However, the intersection of Sage Road at Lowe's Drive does meet the peak hour volume warrant for the Combined (2008) scenario. It is desirable to move the existing Lowe's Drive north to align with the development's Site Access Road #1, both to increase the spacing between Lowe's Drive and the intersection of US15-501 at Sage Road, and to remove the possibility of overlapping left turn queues in the middle of Sage Road between Lowe's Drive and Site Access Road #1. Further study should be undertaken to investigate the practicality of realigning the existing Lowe's Drive with the new site access road.

An intersection accident analysis was performed as part of this study. According to accident data obtained from the NCDOT's Traffic Safety Systems Management Unit, a total of 46 crashes occurred at the intersection of US 15-501 and Sage Road between May 1, 2000 and April 30, 2003, with one fatality. In addition, 9 crashes occurred at the intersection of Erwin Road and Sage Road between May 1, 2000 and April 30, 2003, with no fatalities. 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 the intersection was below the State and County averages.

6. Peak Hour Intersection Level of Service

This study included four (4) separate analysis scenarios; Existing (2003), Background (2008), Combined (2008), and Combined (2008) with roadway improvements for the AM, Mid-Day, and PM peak hours of a typical weekday. Based on information provided from the Town of Chapel Hill, five (5) adjacent developments will impact the study intersections. All traffic generated by these adjacent developments were included in the Background (2008), as well as the Combined (2008) and Combined (2008) with improvements scenarios. Refer to Tables S-2, S-3, S-4 and S-5 for Existing (2003), Background (2008), Combined (2008) and Combined (2008) with improvements peak hour traffic analysis results.


McGREGOR DRIVE
McGREGOR PLACE
ERWIN VILLAGE
ERWIN ROAD
SAGE ROAD
DOBBINS DRIVE (RANGE ROAD)
DOBBINS HILL APARTMENTS L.P.
DUKE ENERGY CORP.
US-15-501
7.27Q.B.8
7.270.A.1A
339.6
Site Data
TAX MAP: 7.27.B.3A, 6, 8, 7, 6, 9, 10, and 11
EXISTING ZONING: Residential - 4 (R-4)
NET LAND AREA: 16.30 ACRES
GROSS LAND AREA: 17.55 ACRES (10% Cap)
TOWNHOMES (ERWIN ROAD) DWELLING UNITS: 45
CLUB VILLAS / APARTMENTS (CENTRAL AREA) DWELLING UNITS: 74
TOTAL: 119 UNITS + 1 EXISTING HOUSE
WILSON ASSEMBLAGE - Conceptual Site Plan
Chapel Hill, North Carolina
The Design Response, Inc.
NORTH

(90)

TABLE S-3

BACKGROUND (2008) TRAFFIC CONDITIONS WITHOUT SITE

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB WB NB SB	2 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT, 1 TH-RT 2 LT, 1 TH, 1 RT	C D F E	**D**	D D E C	**D**	E D F D	**D**
Lowe's Drive and Sage Road (unsignalized)	WB NB SB	1 LT, 1 RT 1 TH, 1 TH-RT 1 LT, 2 TH	C[2] -- A[1]	--	F[2] -- A[1]	--	F[2] -- A[1]	--
Dobbins Drive and Sage Road (unsignalized)	EB NB SB	1 RT 2 TH 2 TH, 1 RT	B[2] -- --	--	B[2] -- --	--	B[2] -- --	--
Erwin Road and Sage Road (unsignalized)	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT, 1 RT	-- B[1] F[2]	--	-- A[1] F[2]	--	-- B[1] F[2]	--
Erwin Road and Weaver Dairy Road (signalized)	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT, 1 RT	C F C	**E**	A E B	**C**	B F B	**F**

Erwin Road and Dobbins Drive **(realigned)**	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 TH-RT	E[2] F[2] B[1] A[1]	--	D[2] D[2] A[1] A[1]	--	F[2] F[2] B[1] A[1]	--
US 15-501 (WB) and Median NE Quad (signalized)	WB NB	**3 TH** **2 LT**	A E	**B**	A D	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	**3 TH, 1 RT** **2 RT**	B D	**C**	A B	**A**	B D	**C**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	**3 TH** **2 LT**	C C	**C**	C D	**C**	F E	**F**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	**3 TH, 1 RT** **2 RT**	A C	**A**	A D	**A**	B E	**B**

Bold type denotes lane improvements, or revised lane configurations.

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

TABLE S-4

COMBINED (2008) TRAFFIC CONDITIONS WITH SITE

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB	2 LT, 2 TH, 1 RT	C	**D**	D	**D**	E	**E**
	WB	1 LT, 2 TH, 1 RT	D		D		D	
	NB	1 LT, 1 TH-RT	F		F		F	
	SB	2 LT, 1 TH, 1 RT	E		D		E	
Lowe's Drive and Sage Road (unsignalized)	WB	1 LT, 1 RT	D[2]	--	F[2]	--	F[2]	--
	NB	1 TH, 1 TH-RT	--		--		--	
	SB	1 LT, 2 TH	A[1]		A[1]		A[1]	
Dobbins Drive and Sage Road (unsignalized)	EB	1 RT	B[2]	--	B[2]	--	B[2]	--
	NB	2 TH	--		--		--	
	SB	2 TH, 1 RT	--		--		--	
Erwin Road and Sage Road (unsignalized)	EB	1 TH-RT	--	--	--	--	--	--
	WB	1 LT, 1 TH	B[1]		A[1]		B[1]	
	NB	1 LT, 1 RT	F[2]		F[2]		F[2]	

Erwin Road and Weaver Dairy Road (signalized)	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT, 1 RT	C F C	**E**	A E B	**C**	B F B	**F**
Erwin Road and Dobbins Drive **(realigned)**	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 TH-RT	F[2] F[2] B[1] A[1]	--	D[2] E[2] A[1] A[1]	--	F[2] F[2] B[1] A[1]	--
US 15-501 (WB) and Median NE Quad (signalized)	WB NB	2 TH 2 LT	A E	**C**	A D	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	3 TH, 1 RT 2 RT	B D	**C**	A C	**B**	B D	**C**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	2 TH 2 LT	D C	**D**	C C	**C**	F F	**F**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	3 TH, 1 RT 2 RT	A C	**A**	A D	**A**	B E	**B**
Site Road #1 and Sage Road (unsignalized)	EB NB SB	1 LT-RT 1 LT, 2 TH 2 TH, 1 RT	B[2] A[1] --	--	B[2] A[1] --	--	B[2] A[1] --	--
Site Road #2 and Dobbins Drive (unsignalized)	EB WB SB	1 LT-TH 1 TH-RT 1 LT-RT	-- -- A[2]	--	-- -- A[2]	--	-- -- A[2]	--

Bold type denotes lane improvements, or revised lane configurations.

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

The northbound left turn movement of Sage Road, at its intersection with Erwin Road operates at LOS F during the AM and PM peak periods. In response to concerns expressed by the Town of Chapel Hill that delay and level of service will continue to deteriorate, a signal warrant investigation was conducted at this intersection. Volume data for the intersection of Erwin Road and Sage Road is based on turning movement counts collected in October 2003. When Sage Road is analyzed as a two-lane approach, Warrant 3B (Peak Hour Volume Warrant) is met for the PM peak period under Existing (2003) traffic conditions. This study recommends the installation of a traffic signal at the intersection of Erwin Road and Sage Road as soon as possible.

Initial analysis of the roadway network under Background (2008) conditions identified a need to increase capacity at the intersection of Weaver Dairy Road at Erwin Road, and the intersection of Scarlett Drive at US 15-501. The intersection of Weaver Dairy Road at Erwin Road would operate at LOS F during the PM peak period, given its current lane configuration. However, construction of a 200-foot exclusive right turn lane on the westbound approach of Erwin Road, and a lengthening of the existing southbound exclusive left turn lane on Weaver Dairy Road from 100 feet to 200 feet would significantly enhance intersection operations. It is recommended that these improvements be in place by 2006.

The northbound approach of Scarlett Drive at US 15-501 would also experience long queues and operate at LOS F under Background (2008) conditions given its current lane configuration. An additional thru lane for the northbound approach would reduce 50th percentile queues and increase level of service from LOS F to LOS E during the PM peak period.

In addition, this study recommends that the eastbound and westbound approaches of US 15-501 to the superstreet be expanded to provide three thru lanes at each signalized intersection within the superstreet. Construction of these improvements should be coordinated to coincide with the opening of the superstreet. In order to minimize delays experienced by the right turn movements on Dobbins Drive, exclusive right turn lanes are needed on both approaches regardless of whether the proposed development is constructed. These improvements would require some pavement widening.

With these proposed improvements incorporated into the roadway network, the traffic models were reexamined for level of service and other measures of effectiveness. The resulting changes in level of service are shown in Table S-5.

TABLE S-5 (95)

COMBINED (2008) TRAFFIC CONDITIONS WITH SITE + IMPROVEMENTS

INTERSECTION	APPROACH	LANE CONFIGURATIONS	PEAK HOUR LEVEL OF SERVICE					
			AM PEAK		MID-DAY PEAK		PM PEAK	
			Approach	Overall	Approach	Overall	Approach	Overall
US 15-501 and Sage Road (signalized)	EB	2 LT, 2 TH, 1 RT	C	**D**	C	**C**	C	**D**
	WB	1 LT, 2 TH, 1 RT	D		C		C	
	NB	1 LT, **1 TH**, 1 TH-RT	E		D		E	
	SB	2 LT, 1 TH, 1 RT	E		D		E	
Lowe's Drive and Sage Road (unsignalized)	WB	1 LT, 1 RT	D[2]	--	F[2]	--	F[2]	--
	NB	1 TH, 1 TH-RT	--		--		--	
	SB	1 LT, 2 TH	A[1]		A[1]		A[1]	
Dobbins Drive and Sage Road (unsignalized)	EB	1 RT	B[2]	--	B[2]	--	B[2]	--
	NB	2 TH	--		--		--	
	SB	2 TH, 1 RT	--		--		--	
Erwin Road and Sage Road **(signalized)**	EB	1 TH-RT	A	**B**	A	**A**	B	**B**
	WB	1 LT, 1 TH	A		A		B	
	NB	1 LT, 1 RT	C		B		C	
Erwin Road and Weaver Dairy Road (signalized)	EB	1 LT, 1 TH	C	**C**	A	**A**	B	**B**
	WB	1 TH-RT	B		B		B	
	SB	1 LT, 1 RT	C		B		B	

Erwin Road and Dobbins Drive **(realigned)**	EB WB NB SB	1 LT-TH, **1 RT** 1 LT-TH, **1 RT** 1 LT, 1 TH-RT 1 LT, 1 TH, 1 TH-RT	F^2 F^2 B^1 A^1	--	D^2 D^2 A^1 A^1	--	F^2 F^2 B^1 A^1	--
US 15-501 (WB) and Median NE Quad (signalized)	WB NB	3 TH 2 LT	A D	**B**	A E	**B**	A E	**C**
US 15-501 (WB) and Erwin Road (signalized)	WB SB	3 TH, 1 RT 2 RT	B D	**B**	A C	**B**	B D	**C**
US 15-501 (EB) and Median SW Quad (signalized)	EB SB	3 TH 2 LT	A C	**A**	A D	**B**	A D	**B**
US 15-501 (EB) and Europa Drive (signalized)	EB NB	3 TH, 1 RT 2 RT	A C	**A**	A D	**A**	A E	**B**
Site Road #1 and Sage Road (unsignalized)	EB NB SB	1 LT-RT 1 LT, 2 TH 2 TH, 1 RT	B2 A1 --	--	B2 A1 --	--	B2 A1 --	--
Site Road #2 and Dobbins Drive (unsignalized)	EB WB SB	1 LT-TH 1 TH-RT 1 LT-RT	-- -- A2	--	-- -- A2	--	-- -- A2	--

Bold type denotes lane improvements, or revised lane configurations.

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

According to the peak hour analysis, the major street approaches on US 15-501 at Sage Road/Scarlett Drive will operate a LOS D or better during peak times, while the minor approaches operate at a LOS E. Based on these results, traffic appears to progress fairly well on the major approaches, while experiencing moderate delays. The greater delays experienced by the minor approaches can be attributed to the signal phase time required to optimize progression along US 15-501.

Major street approaches for the superstreet will operate at LOS B or better during the peak periods, although the minor street approaches will experience LOS D or LOS E during the heaviest travel periods. As was the case at the intersection of US 15-501 and Sage Road, greater delays experienced by the minor approaches can be attributed to the signal phase time required to optimize progression along US 15-501.

Traffic flow along Erwin Road from Dobbins Drive to Weaver Dairy Road to Sage Road will experience light to moderate delay. The major street approaches will generally operate at LOS C or better during the AM, midday and PM peak periods for the three intersections along Erwin Road.

Traffic flow along Sage Road between Erwin to the north and US 15-501 to the south will operate at LOS C or better during peak travel times, with the exception of the US 15-501 intersection already discussed. The minor street approach at the unsignalized intersection of Sage Road and Lowe's Drive will operate at LOS F. Given that this intersection lies approximately 450 feet north of the Sage Road/US 15-501 intersection, improvements to the westbound approach of Lowe's Drive are deemed impractical.

7. Pedestrian and Bicycle Analysis

Sections of sidewalk currently exist on the north side of Dobbins Drive as well as on both sides of Sage Road. According to the Wilson Assemblage conceptual site plan, sidewalk will be provided along the site's frontage on the western side of Sage Road. In order to accommodate pedestrian traffic along Dobbins Drive, a continuous sidewalk is needed between Sage Road and Erwin Road. While the proposed development should be responsible for installing sidewalk across their frontage on Dobbins Drive, there will remain approximately 300 feet of frontage without sidewalk between Sage Road and Erwin Road. The Town of Chapel Hill or other parties should be responsible for the installation of sidewalk along the remaining section where sidewalk does not exist. The Town of Chapel Hill or other parties should be responsible for the installation of sidewalk along the eastern side of Erwin Road from the southern intersection of Windhover Road to the northern intersection of Erwin Road and Windhover Road. It should be noted that the installation of sidewalk is not recommended along Erwin Road towards US 15-501, since sidewalks are not currently provided along US 15-501.

While there currently exists a short section of bicycle lane on Erwin Road, between Windhover Road and Sage Road, the additional pavement widening on Erwin Road that is proposed as part of the Residence Inn will provide a 5-foot bike lane to accommodate bicycle traffic across that property's road frontage. No additional accommodations for bicycle traffic are recommended.

8. Public Transportation Analysis

Based on information obtained from the Chapel Hill Transit Guide, bus stops located along Erwin Road and Sage Road are serviced during the weekday by Bus Route CL (AM and PM hours); while the bus stops on Dobbins Drive and the southern part of Sage Road are serviced by Bus Route D (all day). In addition,

transit service is provided along Dobbins Drive during the weeknight by Bus Route C/D. Transit service is also provided on Saturday for Dobbins Drive by Bus Route D/J.

9. Special Analysis/Issues

Per the Town of Chapel Hill's request, a long-term analysis was conducted as part of this traffic study. Based on 2025 ADT traffic volumes for US 15-501 and Erwin Road that were obtained from the Regional Model and provided by the Town of Chapel Hill, US 15-501 is anticipated to carry 71,600 vpd west of the site, 55,800 vpd between Erwin Road and Sage Road, and 53,400 vpd east of Sage Road. As for Erwin Road, it is expected to carry 22,000 vpd north of the site. Sage Road will carry 16,900 vpd between US15-51 and Erwin Road. The proposed development will add approximately 2400 vehicles to the surrounding roadway network. When considering the distribution of site traffic on Sage Road, Erwin Road and US 15-501, traffic associated with the site will account for approximately 7% of the traffic on Sage Road, 3% of traffic on Erwin Road, and 2% of traffic on US 15-501. Therefore, it appears that the proposed development will have a minimal impact to the surrounding roadways when considering the anticipated traffic volumes in the year 2025.

10. Mitigation Measures/Recommendations

The majority of improvements, as summarized below, is 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 be converted into u-turn movements at nearby median breaks.

In addition, the NCDOT is going to realign the western leg of Dobbins Drive to intersect Erwin Road opposite the eastern leg of Dobbins Drive. Erwin Road will also be widened from US 15-501 to the northern property line of the proposed Residence Inn.

Background Committed Improvements

Per discussions with the Town of Chapel of Hill, there are no committed roadway improvements by adjacent developments within the study area.

Applicant Committed Improvements

As previously indicated, the developer should provide sidewalk along the north side of Dobbins Drive, and should restripe Sage Road to provide an exclusive left turn lane at site Access Road #1.

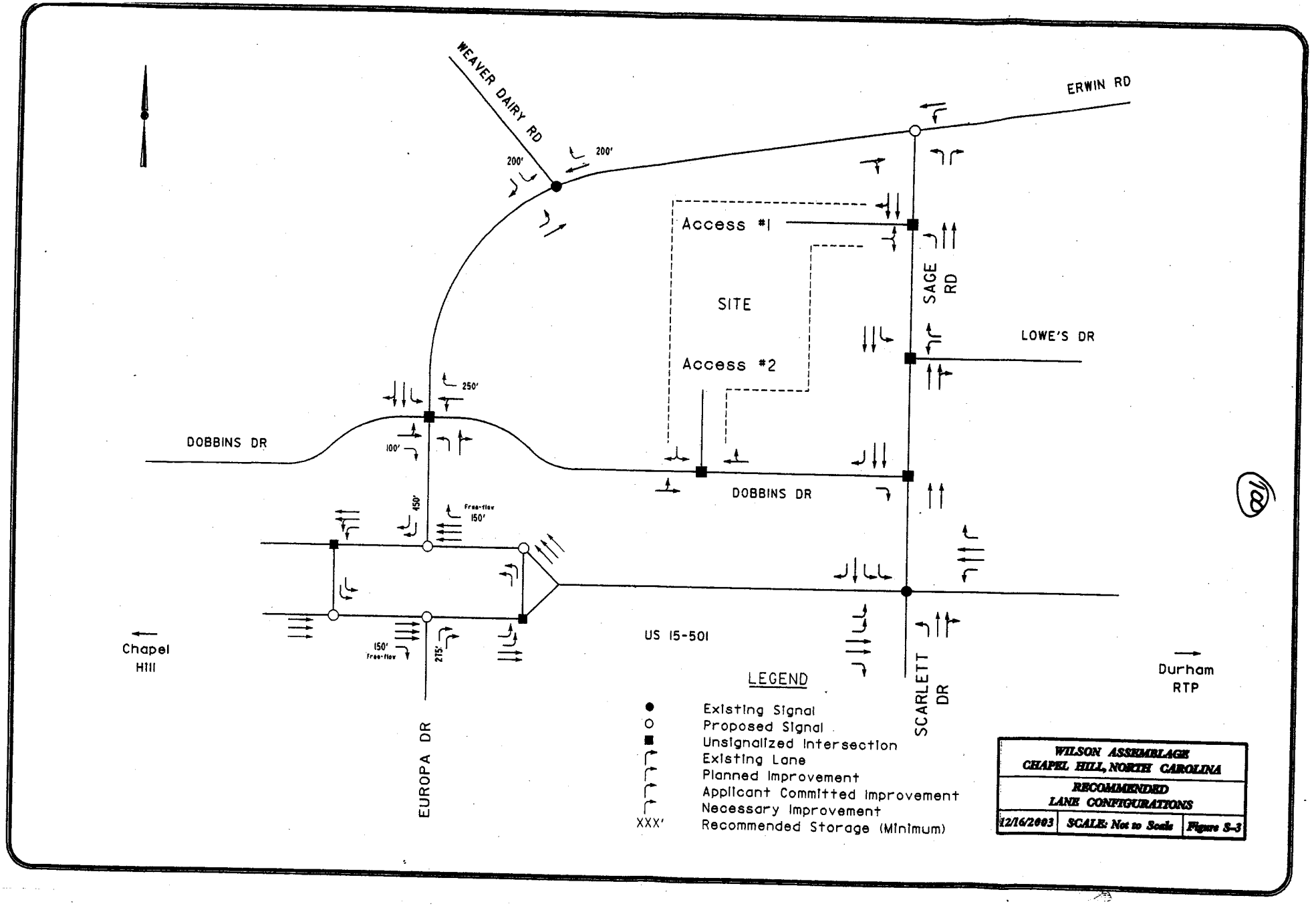
Necessary Improvements

In order to minimize delays experienced by the right turn movements on Dobbins Drive, exclusive right turn lanes are needed on both approaches regardless of whether the proposed development is constructed. These improvements would require some pavement widening.

Likewise, construction of a 200-foot exclusive right turn lane on the westbound approach of Erwin Road, and a lengthening of the existing southbound exclusive left turn lane on Weaver Dairy Road from 100 feet to 200 feet are needed regardless of whether the proposed development is constructed.

A traffic signal should be installed at the intersection of Sage Road and Erwin Road as soon as possible.

An additional northbound thru lane at the intersection of Sage Road and US 15-501 would improve overall intersection level of service without significantly disrupting progression along the US15-501 corridor.


WEAVER DAIRY RD
ERWIN RD
200'
200'
Access #1
SITE
Access #2
SAGE RD
LOWE'S DR
250'
DOBBINS DR
100'
DOBBINS DR
450'
Free-flow
150'
150'
Free-flow
275'
US 15-501
Chapel Hill
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Applicant Committed Improvement
Necessary Improvement
XXX' Recommended Storage (Minimum)
WILSON ASSEMBLAGE
CHAPEL HILL, NORTH CAROLINA
RECOMMENDED
LANE CONFIGURATIONS
12/16/2003
SCALE: Not to Scale
Figure 8-3