

TRAFFIC ASSESSMENT FOR

Woodstock Street Townhomes

Roswell, GA

AUGUST 19, 2014

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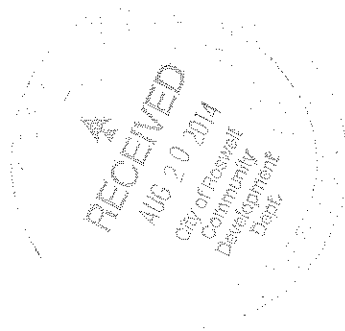


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1. Introduction

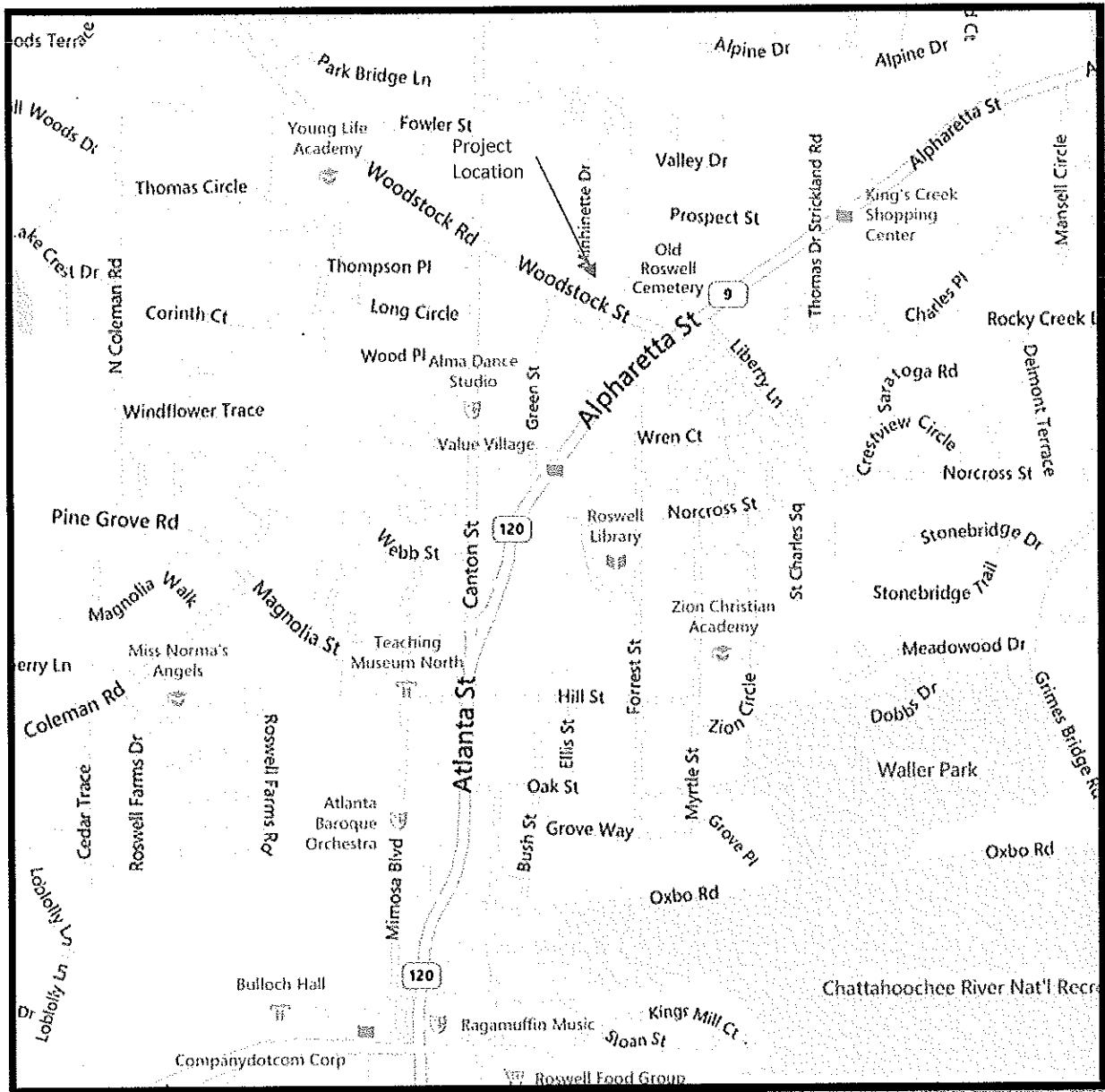
A new 21 unit townhome development is proposed off of Woodstock Street, west of SR 9 (Alpharetta Hwy). The purpose of this study is to provide an overall assessment of the traffic conditions in the area surrounding to the site and to document the future volumes expected from the subdivision. A measure of the level of congestion, current traffic counts, and the capacity impacts on the surrounding roads is also included in this study.

Figure 1 shows the proposed site location in Roswell, Georgia. The site location is shown on an aerial image in **Error! Reference source not found.** A copy of the proposed site plan is shown in Appendix A.

This report has been prepared for reference during public outreach meetings.

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Figure 1: Vicinity Map



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Figure 2: Site Location Aerial



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Proposed Development Description

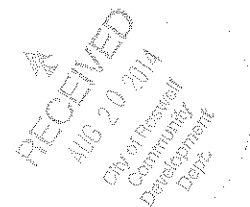
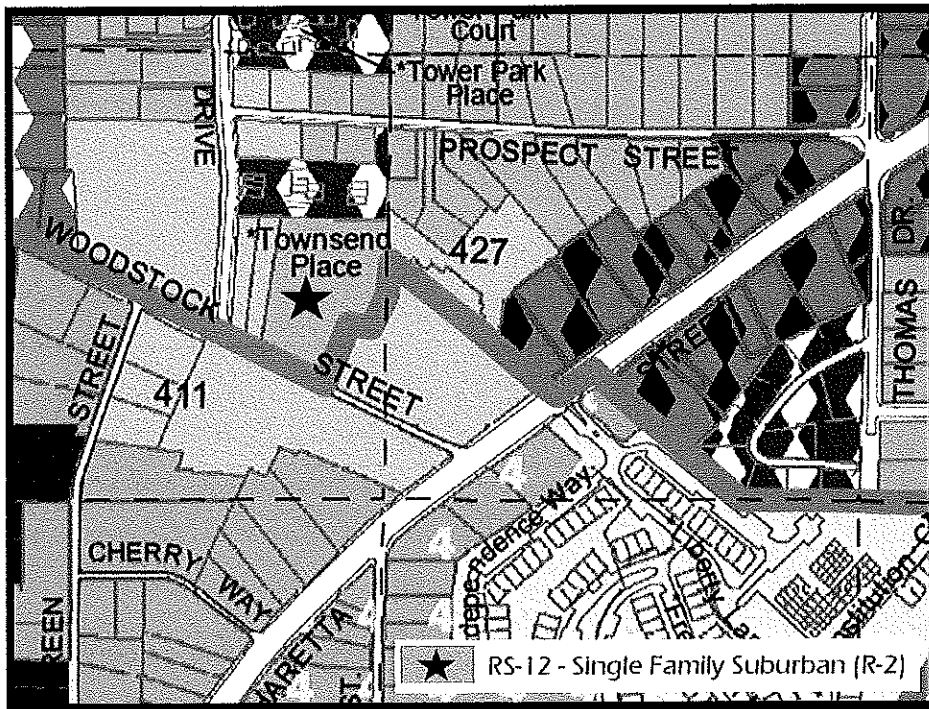
The proposed development is located on Woodstock Street, to the west of SR 9 (Alpharetta Hwy) and to the southeast of Canton Street in Roswell, GA. The single access to the site is on Woodstock Street, approximate 400 feet east of Minhinnett Dr.

1.1. Phasing

The project is assumed to be a single phase development and will be built as the market condition warrant. For the purposes of this study, a two year build-out horizon is assumed.

1.2. Zoning and Land Use

The site is currently zoned RS-12 Single Family Suburban in the Uniform Development Code (UDC). The proposed zoning is R-TH. The surrounding land use is Municipal and includes a cemetery to the east and a park to the west.



2. Background Information

2.1. Transportation Facilities

Woodstock Street is a two lane local road that connects SR 9 to Canton Street and further west to SR 92. It provides access to several streets, a park and some commercial businesses.

There are two main roadways that provide access to Woodstock Street and to the proposed site. SR 9 is a major arterial that runs north/south through Roswell.

Canton Street is a two-lane collector road that connects the historic downtown area with north Roswell and beyond. There are numerous retail, restaurant, and office developments in the vicinity of Canton Street and Woodstock Street.

The roadway characteristics are summarized below in Table 1.

Table 1: Roadway Characteristics

Roadway	Number of Lanes	Posted Speed Limit (MPH)	Functional Classification
Woodstock Street	2	25	Collector Road
SR 9 (Alpharetta Hwy)	5	45	Major Arterial Road
Canton St	2	35	Collector Road

2.2. Traffic Count Data

Recent traffic counts were provided by the City of Roswell and came from a study performed by Kimley Horn & Assoc for another nearby project. Table 2 contains a summary of the roadways' AADT estimates from publicly available sources.

Table 2: Roadway AADT

Road	Location	Year	Daily Traffic
SR 9 (Alpharetta Hwy)	South of Woodstock St	22,190	2012
SR 9 (Alpharetta Hwy)	North of Woodstock St	28,980	2012
Canton St	South of Woodstock St	12,000	2012

Source: Georgia DOT

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3. Future Conditions

3.1. Trip Generation

Project trips for the proposed subdivision were calculated using equations contained in the Institute of Transportation Engineers' (ITE) latest *Trip Generation Manual*, 9th Edition, 2012. Table 3 summarizes the trip generation.

Table 3: Project Trip Generation

Use (ITE LUC)	Size	Daily			AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out	Total	In	Out
Townhomes (230)	21 units	165	83	82	15	3	12	17	11	6

3.2. Distribution

The assignment and directional distribution of new project trips was based on the existing traffic counts, the site design, and review of land uses and residential density around the study area. The directional distribution for new trips for the proposed development is anticipated to be as follows:

- 66% to/from SR 9
- 33% to/from Canton Street and Woodstock Road

The existing traffic as well as the expected traffic from the townhome development is shown in Figure 3.

3.3. Capacity Analysis

The existing traffic volumes were entered into a Synchro 8.0 model to perform capacity analysis of existing conditions for the AM peak period – the more significant time period associated with the development. The results of the capacity analysis are shown by lane group movement in **Table 4** below. Average vehicular delays are reported in seconds, and LOS is level-of service, as defined by the Highway Capacity Manual (HCM) 2000. Full Synchro output reports are included in Appendix C.

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Table 4: Capacity Analysis Results

Intersection	Control	Lane Group Movement	AM Peak Hour	
			Delay (s)	LOS
1 SR 9 at Woodstock St	Traffic Signal	EBL/R	62.6	E
		NBL	17.1	B
		NBT	15.7	B
		SBT/R	26.4	C
2 Woodstock St at Proposed Dwy	Side-Street Stop	EBL	7.6	A
		SBL/R	12.0	B

As can be seen by the capacity results, there is some congestion on Woodstock Street at SR 9 because there is only a shared left/right lane. Because of the cemetery on both sides of the road, widening Woodstock Street is not feasible.

The queuing on Woodstock Street varies but in the AM, the 95th percentile queue is less than 470 feet. The proposed driveway is approximately 520 feet from SR 9. There is expected to be occasional backup beyond the driveway but it should be limited in duration and frequency.

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Figure 3: Traffic Volumes (AM Peak Hour)



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4. Conclusions

The traffic volumes expected from the 21 unit townhome development is relatively low compared with the traffic already on the adjacent roadways. There is not expected to be any congestion at the entrance to the development. The minimal amount of cars that will turn into the new road is not enough to necessitate a left or right turn lane.

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Appendix A: Site Plan

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Appendix B: Synchro Outputs

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Queues

2: Woodstock St at SR 9

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Lane Group	EBL	NEL	NET	SWT
Lane Group Flow (vph)	442	99	1093	1139
v/c Ratio	0.85	0.38	0.49	0.62
Control Delay	61.5	16.8	17.0	28.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	61.5	16.8	17.0	28.5
Queue Length 50th (ft)	383	36	287	396
Queue Length 95th (ft)	467	76	421	588
Internal Link Dist (ft)	474		390	490
Turn Bay Length (ft)		200		
Base Capacity (vph)	745	278	2226	1845
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.36	0.49	0.62

Intersection Summary

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HCM Signalized Intersection Capacity Analysis

2: Woodstock St at SR 9

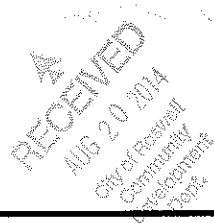
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Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations	Y		Y	↑↑	↑↑	
Volume (vph)	227	179	91	1006	958	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.94		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1704		1770	3539	3494	
Flt Permitted	0.97		0.15	1.00	1.00	
Satd. Flow (perm)	1704		271	3539	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	195	99	1093	1041	98
RTOR Reduction (vph)	23	0	0	0	4	0
Lane Group Flow (vph)	419	0	99	1093	1135	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	43.6		94.4	94.4	79.1	
Effective Green, g (s)	43.6		94.4	94.4	79.1	
Actuated g/C Ratio	0.29		0.63	0.63	0.53	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	495		263	2227	1842	
v/s Ratio Prot	c0.25		0.02	c0.31	c0.32	
v/s Ratio Perm			0.21			
v/c Ratio	0.85		0.38	0.49	0.62	
Uniform Delay, d1	50.0		16.2	14.9	24.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	12.6		0.9	0.8	1.6	
Delay (s)	62.6		17.1	15.7	26.4	
Level of Service	E		B	B	C	
Approach Delay (s)	62.6			15.8	26.4	
Approach LOS	E			B	C	

Intersection Summary

HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



HCM 2010 TWSC
5: Woodstock St at Proposed Dwy

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Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	398	181	1	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	433	197	1	9	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	198	0	634
Stage 1	-	-	197
Stage 2	-	-	437
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1375	-	443
Stage 1	-	-	836
Stage 2	-	-	651
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1375	-	442
Mov Cap-2 Maneuver	-	-	442
Stage 1	-	-	836
Stage 2	-	-	650

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	525
HCM Lane V/C Ratio	0.002	-	-	-	0.025
HCM Control Delay (s)	7.6	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

