



# Z-16-08-002

## City of Greensboro Planning Department Zoning Staff Report and Plan Amendment Evaluation

Zoning Commission Hearing Date: August 15, 2016

### GENERAL INFORMATION

<b>APPLICANT</b>	Marc Isaacson on behalf of Sun Capital, Inc.
<b>HEARING TYPE</b>	Original Zoning Request
<b>REQUEST</b>	<b>County AG</b> (Agricultural), <b>County LB</b> (Limited Business) and <b>County RS-40</b> (Residential Single Family) to <b>City CD-C-M</b> (Conditional District-Commercial-Medium)
<b>CONDITIONS</b>	1. All uses permitted within the C-M district <b>except</b> cemeteries; bus and rail terminals; hotels and motels; funeral homes and crematoriums; taxi dispatch terminal; taxidermist; pawn shop; sexually oriented businesses; self storage facilities; vehicle sales and service; automobile towing and storage service; car washes; any Light Industrial uses; wholesale trade and any warehousing, storage and freight handling.
<b>LOCATION</b>	<b>5812,5908,5910 Lake Brandt Road, 2000 Trospen Road and a portion of Trospen Road right-of-way</b>
<b>PARCEL ID NUMBER(S)</b>	<b>Multiple</b>
<b>PUBLIC NOTIFICATION</b>	The notification area for this public hearing was 600 feet (Chapter 30-4-1.4 of the Land Development Ordinance requires notification of the owner of that parcel of land and the owners of all parcels of land adjoining and contiguous to that parcel of land as shown on the County tax listing). <b>64</b> notices were mailed to those property owners in the mailing area.
<b>TRACT SIZE</b>	~14.68 Acres
<b>TOPOGRAPHY</b>	Primarily flat
<b>VEGETATION</b>	Undeveloped

### SITE DATA

<b>Existing Use</b>	Former convenience store with fuel pumps, single family dwellings & undeveloped	
	<b>Adjacent Zoning</b>	<b>Adjacent Land Uses</b>
N	County AG (Agricultural)	Undeveloped
E	City CD-RM-5 (Conditional District-Residential Multifamily)	Undeveloped and single family dwellings
	County RS-40 (Residential Single-Family)	Single family dwellings

W	City PNR (Parks and Natural Resources)	Undeveloped and Jesse Wharton Elementary School
S	County RS-40 (Residential Single-Family)	Single family dwellings

**Zoning History**

Case #	Date	Request Summary
N/A	N/A	The subject property is not currently located in the City's planning jurisdiction.

**ZONING DISTRICT STANDARDS**

Zoning District Designation:	Existing (County AG)	Existing (County LB)	Existing (County RS-40)	Requested (CD-C-M)
Max. Density:	N/A	N/A	1.0 unit per gross acre.	N/A
Typical Uses	Primarily intended to accommodate uses of an agricultural nature, including farm residences and farm tenant housing.	Primarily intended to accommodate moderate intensity shopping and services close to residential areas.	Primarily intended to accommodate single-family detached dwellings on large lots in areas without access to public water or wastewater services.	Conditioned uses include all uses permitted within the C-M district <b>except</b> cemeteries; bus and rail terminals; hotels and motels; funeral homes and crematoriums; taxi dispatch terminal; taxidermist; pawn shop; sexually oriented businesses; self storage facilities; vehicle sales and service; automobile towing and storage service; car washes; any Light Industrial uses; wholesale trade and any warehousing, storage and freight handling.

**District Summary \***

*\*These regulations may not reflect all requirements for all situations; see the City of Greensboro Development Ordinance for all applicable regulations for site requirements for this zoning district.*

**SPECIAL INFORMATION**

**Overlay District Ordinance/Historic Preservation**

n/a

**Environmental/Soils**

Water Supply Watershed      Site drains to Greensboro WSIII, Watershed Critical Area Tier 3, watersupply watershed, Lake Townsend / Horse Pen Creek basin. See LDO Section 30-12-4 for Watershed Critical Area Provisions

- Floodplains < 2000 ft
- Streams Perennial streams onsite with a 50ft Jordan stream buffer. Refer to LDO Chp. 30-12-3.9 for Allowances and Restrictions within the stream buffer zones
- Other: Maximum BUA for WCA Tier 3 with sewer is 30% for High Density development or <12% for Low Density development. No High Density option without sewer. All BUA for the site must meet current watershed requirements Water Quality and Water Quantity must be addressed. 5908 Lake Brandt Rd previously was a gas station. The gas tanks have been removed therefore the site can no longer be utilized as a gas station. Per LDO 20% of site must be left undisturbed.

**Utilities**

- Potable Water Available
- Waste Water Sewer is currently not available. Contact Kenny Treadway 336-373-2897 for a sewer feasibility.

**Airport Noise Cone**

n/a

**Landscaping & Tree Conservation Requirements**

- Street Yard: Street planting yards must be installed abutting public street rights-of-way. The required street planting yard must have a minimum width of 10 feet (as measured from the outside edge of the right-of-way or the back of the sidewalk, whichever is further from the street centerline) and include at least 2 canopy trees and 17 shrubs per 100 linear feet of required street planting yard, not including allowed driveways.
- Buffer Yard: Adjacent to single family residential: Type A buffer yard, with an average width of 25', a minimum width of 20', and a planting rate of 3 canopy trees, 5 understory trees, & 17 shrubs per 100 linear feet.  
Adjacent to vacant parcel: 5'wide Vehicular Use Area buffer yard (see below).
- Parking lot: Trees for required parking spaces: 1 canopy tree per 12 spaces, in islands or medians within the parking lot.  
Vehicular Use Area Buffer Yard: When adjacent to a vacant lot or a parcel with the same land use code, a planting yard with a minimum width of 5 feet must be provided between the parking lot/vehicular use area and the abutting (interior) property line. This required planting area must be landscaped with at least 2 understory trees and 18 evergreen shrubs per 100 linear feet.

**Tree Conservation**

Acreage	Requirements
Greater than 5 ac.	10% of lot size.

**Transportation**

- Street Classification: Lake Brandt Road – Major Thoroughfare.  
Trospen Road – Local Street.

Site Access:	All access(s) must be designed and constructed to the City of Greensboro standards.
Traffic Counts:	Lake Brandt Road ADT = 9,810 (GDOT, 2015). Trosper Road ADT = 516 (GDOT, 2015).
Trip Generation:	24 Hour = 7,027, AM Peak Hour = 526, PM Peak Hour = 741.
Sidewalks:	Sidewalks are a requirement of the Development Ordinance. 5' sidewalk with a 5' grass strip is required along both sides of thoroughfares. 5' sidewalk with a 3' grass strip is required along one side (at a minimum, collectors may require sidewalk on both sides) of all other street types. Sidewalk does not exist along the frontage of this property.
Transit in Vicinity:	No.
Traffic Impact Study: (TIS)	Yes, required per TIS Ordinance. Please see the end of this staff report for the Executive Summary of the TIS.
Street Connectivity:	N/A.
Other:	N/A.

## **IMPACT ANALYSIS**

### **Land Use Compatibility**

The proposed **CD-C-M (Conditional District – Commercial - Medium)** zoning, as conditioned, would allow land uses that are compatible with the general character of the area.

### **Connections 2025 Comprehensive Plan Policies**

The Generalized Future Land Use Map designates this location as **Interim Residential (generally at or above 3 dwelling units per acre)**. The requested **CD-C-M (Conditional District – Commercial - Medium)** zoning district, as conditioned, is generally consistent with the **Interim Residential (generally at or above 3 dwelling units per acre)** Future Land Use designation.

**Land Use Goal 4.3 – Growth at the Fringe:** Provide a development framework for the fringe that guides sound, sustainable patterns of land use, limits sprawl, protects rural character, evidences sound stewardship of the environment, and provides for efficient provision of public services and facilities as the City expands. Development will increase density and mix land uses at a pedestrian scale with sidewalks, bikeways, and where possible, public transit.

**Policy 4F:** Initiate a fringe area growth management framework comprising the following elements:

- Create a Fringe Area Land Use Plan;
- Establish a “tiered” approach that designates growth areas for staged development, annexation, and extension of public facilities within the water and sewer service boundary;
- Define specific criteria for water and sewer extensions and annexations;
- Initiate designation of the fringe as Greensboro's extraterritorial jurisdiction; and
- Establish a proactive plan to provide infrastructure in advance of development, consistent with the growth “tiers” and Fringe Area Land Use Concept Plan.

**Policy 4G:** Improve the quality and patterns of development through incentives and regulatory guidelines.

**Community Character, Goal 5.2 – Man-Made Environment:** Preserve and enhance the character and visual quality of Greensboro's built environment, including historic resources, private

developments, and public landscapes.

**Policy 5E:** Improve the aesthetic quality of publicly owned and maintained landscapes.

**Policy 5F:** Implement and improve design standards governing the appearance of development from public roadways.

**Economic Development, Goal 7:** Promote a healthy, diversified economy with a strong tax base and opportunities for employment, entrepreneurship and for-profit and non-profit economic development for all segments of the community, including under-served areas such as East Greensboro.

**Policy 7A:** Target city investment and regulatory policies for economic development.

**Policy 7C:** Ensure that city land use policies and regulations allow for an adequate supply of land to accommodate economic development.

**Transportation, Goal 8:** Develop and maintain a safe, efficient, and environmentally sound transportation system that provides convenient choices for accessing destinations throughout Greensboro and the Triad, including a range of well-integrated transit, pedestrian, and bicycle linkages.

**Policy 8A:** Maintain a roadway network that safely and efficiently accommodates vehicular traffic while supporting other community objectives defined in the Comprehensive Plan.

### **Connections 2025 Map Policies**

**Interim Residential (generally at or above 3 dwelling units per acre):** Areas with a mix of all types of residential densities and uses (single family detached, single family attached and multi-family), with some limited local-serving non-residential uses (schools, churches, convenience services). It is assumed that most of the new housing developed in the Water Sewer Service Area would be connected to water and sewer.

**Growth Tier 1, Current Growth Area (2013 – 2019):** Where infrastructure systems are in place, can be economically provided and/or will be proactively extended and where continued annexation and consolidation of the City's development pattern shall be encouraged over the next six years.

## **CONFORMITY WITH OTHER PLANS**

### **City Plans**

#### ***Sustainability Action Plan***

#### **Element 1) Transportation and Land Use:**

**Policy 1)** Encourage increased density, a mix of land uses and more integrated links between transportation and land use through changes to Greensboro's Comprehensive Plan, Development Ordinance and other related plans.

#### **Element 2) Green Jobs and Buildings:**

**Policy 3)** Develop a coordinated City program to provide technical support, energy audits and education and outreach to increase energy efficiency and conservation in commercial and residential buildings.

**Policy 4)** Use a combination of code changes, incentives, partnerships and education to promote green building in Greensboro.

**Policy 6)** Promote more efficient use of water through education, partnerships and pilot projects.

#### **Element 3) Waste Reduction and Recycling:**

**Policy 7)** Employ a combination of expanded recycling infrastructure, regulations and incentives to increase Greensboro's solid waste diversion and recycling rates.

#### **Element 6) Education and Outreach:**

**Policy 11)** Provide technical support, awards and recognition to individuals and organizations furthering Greensboro's energy and sustainability efforts.

### **Other Plans**

n/a

## **STAFF ANALYSIS AND RECOMMENDATION**

### **Community Outreach**

Applicant is strongly encouraged to discuss this proposed rezoning and development with owners of surrounding properties.

Based on the proximity of the subject site to the Nat Greene Trail – Wharton Spur directly to the west, long term safety and accessibility for users and employees the proposed development would be greatly enhanced by provision of secure, convenient bicycle parking for use by employees and patrons.

### **Staff Analysis**

This 14.68-acre subject site is currently a combination of a former convenience store with fuel pumps, single family dwellings and undeveloped property. North of the request is undeveloped property (zoned County AG). East of the request is a combination of single family dwellings and undeveloped property (zoned City CD-RM-5 and County RS-40). South of the request are single family dwellings (zoned County RS-40). West of the request is a combination of Jesse Wharton Elementary school and undeveloped property (zoned PNR) buffering the lake.

The Comprehensive Plan future land use map designates this site as Interim Residential. The Interim Residential designation pertains to areas with a mix of all types of residential densities and uses (single family detached, single family attached and multifamily), with some limited local-serving non-residential uses (schools, churches and convenience services). In conjunction with the zoning application, the applicant filed a Comprehensive Plan amendment to revise the future land use category to Mixed Use Residential. The Mixed Use Residential designation applies to neighborhoods or districts where the predominant use is residential and where substantial, compatible local-serving non-residential uses may be introduced.

This request allows for the introduction of non-residential service uses in immediate proximity to multiple existing single family developments. In addition to restrictions on uses per the offered zoning condition, the standards of the Land Development Ordinance and Tier 3 watershed regulations will further restrict the amount of land that can be developed and further restrict potential impacts on adjacent existing residential neighborhoods. As noted in the TIS, the introduction of nonresidential uses at this intersection triggers public infrastructure improvements that should also provide benefits to the existing residences in the area.

The request as submitted supports the Comprehensive Plan's Economic Development goal to promote a healthy and diversified economy and is consistent with the Growth at the Fringe goal to promote sound and sustainable patterns of land use.

This request is consistent with the intent and purpose of the zoning code, the Comprehensive Plan (Connections 2025) and is generally compatible with the existing development and trend in the surrounding area.

### **Staff Recommendation**

Staff recommends **approval** of the requested **CD-C-M** (Conditional District-Commercial-Medium) zoning district.

## Lake Brandt Neighborhood Village – Transportation Impact Analysis Greensboro, NC

Prepared for Sun Capital, Inc.

Original: May 31, 2016

Revised: July 20, 2016

### *Executive Summary*

The proposed Lake Brandt Neighborhood Village is located along the east side of Lake Brandt Road on both sides of Trosper Road in Greensboro, North Carolina. The exact land uses for this mixed development have not been fully determined; for analysis purposes the development was assumed to include 7,000 square feet of office space, 13,500 square feet of shopping center, 15,000 square feet of pharmacy with drive-thru, 13,800 square feet of high-turnover restaurant and 2,200 square feet of coffee shop with drive-thru. The site plan currently shows four (4) full accesses, three (3) on Lake Brandt Road and one (1) on Trosper Road.

DAVENPORT was retained to determine the potential traffic impacts of this development and to identify transportation improvements that may be required to accommodate the impacts of both background traffic and new development traffic. The following intersections were included in the study:

- Lake Brandt Road at Air Harbor Road
- Lake Brandt Road at Trosper Road/ Jesse Wharton Elementary School Entrance
- Lake Brandt Road at Jesse Wharton Elementary School Bus Entrance/ Site Access 2
- Trosper Road at Oak Tree Road
- Lake Brandt Road at Site Access 1
- Lake Brandt Road at Site Access 3
- Trosper Road at Site Access 4

The intersections were analyzed during the AM (7-9 am) and PM (4-6 pm) peaks for the following conditions:

- 2016 Existing Conditions
- 2018 Future No Build Conditions
- 2018 Future Build Conditions
- 2018 Future Build Condition with Mitigation (if necessary)

The Greensboro Department of Transportation (GDOT) and the North Carolina Department of Transportation (NCDOT) were contacted to obtain background information and to ascertain the elements to be covered in this Transportation Impact Analysis (TIA). Information regarding the property was provided by the civil engineer, Stimmel.

### Discussion of Results

The following section discusses level of service for each intersection.

#### **Lake Brandt Road at Air Harbor Road**

This signalized intersection currently operates at LOS E during the AM peak and LOS D in the PM peak. In 2018 future no build conditions, LOS E is expected in the AM peak and LOS D in the PM peak. With the addition of proposed site traffic, LOS E is expected in the AM and PM peaks. It should be noted that

LOS E is expected as a result of background volumes and will be expected if this proposed development is not built in the future. Therefore, no improvements are recommended.

***Lake Brandt Road at Trospen Road/ Jesse Wharton Elementary School Entrance***

This unsignalized intersection currently operates at LOS E during the AM peak and LOS C in the PM peak. In 2018 future no build condition, LOS F is expected in the AM peak and LOS C in the peak. With the addition of proposed site traffic, LOS F is expected in the AM and PM peaks. This intersection was assessed for a signal warrant, discussed in the following section, and it was determined that a signal is warranted. Therefore, to accommodate the site traffic the following is recommended:

- Provide a signal
- Provide a separate northbound through and right lane, with 100 feet of storage and appropriate taper
- Provide separate westbound left and through-right turn lanes with full storage

***Lake Brandt Road at Jesse Wharton Elementary School Bus Entrance/ Site Access 2***

This unsignalized intersection currently operates at LOS C during the AM peak and LOS A in the PM peak. In 2018 future no build condition, LOS C is expected in the AM peak and LOS A in the peak. With the addition of proposed site traffic, LOS C is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would be warranted. Therefore, it is recommended to provide a northbound right turn lane of 100 foot storage with appropriate taper.

***Trospen Road at Oak Tree Road***

This unsignalized intersection currently operates at LOS A during the AM and PM peaks. In 2018 future no build condition, LOS A is expected in the AM and PM peaks. With the addition of proposed site traffic, LOS A is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would not be warranted. Therefore, no improvements are recommended.



**Lake Brandt Road at Site Access 1**

In 2018 future build condition, LOS D is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would not be warranted. Therefore, no improvements are recommended.

**Lake Brandt Road at Site Access 3**

In 2018 future build condition, LOS C is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would not be warranted. Therefore, no improvements are recommended.

**Trosper Road at Site Access 4**

In 2018 future build condition, LOS C is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would not be warranted. Therefore, no improvements are recommended.

The recommended improvements are illustrated in Figure 9 in the report.

Level of Service Summary

Table A summarizes the level of service analysis at the study intersections:

<b>Table A - Level of Service Summary</b>				
AM Peak	2016 Existing	2018 No Build	2018 Build	2018 Build with Improvements
Lake Brandt Road at Air Harbor Road	E (65.8)	E (67.8)	E (73.2)	
Lake Brandt Road at School Entrance/ Trospen Road	E (43.1) WB Approach	F (56.4) WB Approach	F (Err) WB Approach	C (32.7) Signalized
Lake Brandt Road at School Bus Entrance/ Site Access 2	C (17.6) EB Approach	C (18.3) EB Approach	C (20.5) WB Approach	C (20.3) EB Approach
Trospen Road at Oak Tree Road	A (9.1) NB Approach	A (9.1) NB Approach	A (9.3) NB Approach	
Lake Brandt Road at Site Access 1			D (28.2) WB Approach	
Lake Brandt Road at Site Access 3			C (19.6) WB Approach	
Trospen Road at Site Access 4			C (15.9) NB Approach	
PM Peak	2016 Existing	2018 No Build	2018 Build	2018 Build with Improvements
Lake Brandt Road at Air Harbor Road	D (41.6)	D (46.9)	E (70.0)	
Lake Brandt Road at School Entrance/ Trospen Road	C (19.4) WB Approach	C (20.3) WB Approach	F (178.8) WB Approach	B (12.5) Signalized
Lake Brandt Road at School Bus Entrance/ Site Access 2	A (0) EB Approach	A (0) EB Approach	C (21.4) WB Approach	C (22.3) WB Approach
Trospen Road at Oak Tree Road	A (8.7) NB Approach	A (8.7) NB Approach	A (9.1) NB Approach	
Lake Brandt Road at Site Access 1			D (31.7) WB Approach	
Lake Brandt Road at Site Access 3			C (23.5) WB Approach	
Trospen Road at Site Access 4			C (21.6) NB Approach	

LOS (delay in seconds)

Note for unsignalized conditions, LOS and delay indicates only minor street approach with longest delay

Proposed Site Access Throat Distances

The internal throat distances for the site accesses were reviewed using the GDOT Driveway Manual, which states that the distance from the adjacent street right of way to the near side of any internal service drive or parking aisle should be 25 feet, or greater than the expected inbound queue at the location. To determine the inbound queues, internal intersections were modeled for each access and queue reports generated using SimTraffic 9. Based on the number of vehicles entering Site Access 1 during the AM and PM peaks (34 and 26 vehicles, respectively), a minimum throat distance of 50 feet will be required. For Site Access 2, with 52 vehicles entering in the AM peak and 52 vehicles entering in the PM peak, a minimum throat distance of 60 feet will be required. For Site Access 3, with 5 vehicles entering in the AM peak and 13 vehicles entering in the PM peak, a minimum throat distance of 35 feet will be required. For Site Access 4 northside of Trosper Road, with 173 vehicles entering in the AM peak and 185 vehicles entering in the PM peak, a minimum throat distance of 65 feet will be required. For Site Access 4 southside of Trosper Road, with 22 vehicles entering in the AM peak and 61 vehicles entering in the PM peak, a minimum throat distance of 45 feet will be required. Table B lists the 95<sup>th</sup> percentile queues for the AM and PM peaks. The queuing reports can be found in the Appendix. The access points should be designed according to the GDOT Driveway Manual.

<b>Table B – Site Access Throat Queuing</b>			
Intersection Movement	SimTraffic 95th Percentile Queue (feet)		Minimum Recommended Throat Distance (Feet)
	AM Peak	PM Peak	
Site Access 1 EB Left-Through-Right	44	46	50
Site Access 2 EB Left-Through-Right	57	56	60
Site Access 3 EB Left-Through	14	34	35
Site Access 4 SB Through-Right	56	65	65
Site Access 4 NB Left-Through-Right	20	42	45

*Signal Warrant Analysis*

The signal warrant analysis was conducted for the intersection of Lake Brandt Road at Trospen Road/Jesse Wharton Elementary School Entrance. This intersection is currently an unsignalized intersection. The analysis was conducted using PC-Warrants software. The Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition), has established nine criteria that can be used to justify the installation of a Traffic signal, which are the following:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

The applicable warrants were measured for existing conditions, and future build conditions. Warrants 4, 5, 6, 7, 8 and 9 were not applicable for this analysis.

***Existing Conditions***

*Warrants 1-3, Traffic Volumes*

Warrants 1-3 are related to traffic volumes and were considered for existing conditions. The 85<sup>th</sup> percentile speed on Lake Brandt Road was assumed to be greater than 40 mph for this analysis; therefore, the 70% volumes were utilized for the warrants.

Based on the existing traffic volumes at this intersection, Warrants 1-3 are currently not satisfied.

**Future Build Conditions**

*Warrants 1-3, Traffic Volumes*

Warrants 1-3 are related to traffic volumes and were considered for future build conditions. The 85<sup>th</sup> percentile speed on Lake Brandt Road was assumed to be greater than 40 mph for this analysis; therefore, the 70% volumes were utilized for the warrants. The site trips were distributed over the 13-hour time period based on ITE Trip Generation Manual *Hourly Variation in Shopping Center Traffic* table.

Based on the future build traffic volumes at this intersection, Warrants 1-3 are satisfied.

*Signal Warrant Analysis Results*

The results of the signal warrant analysis are summarized in Table C, below. As shown, none of the MUTCD signal warrants are currently met under existing conditions. Additional information and reports from PC-Warrants can be found in the Appendix.

<b>Table C – Signal Warrant Analysis</b>						
<b>Warrant</b>	<b>Existing Conditions</b>			<b>Future Build Conditions</b>		
	Status			Status		
	N/A	Not Met	Met	N/A	Not Met	Met
Warrant 1: Eight-Hour Vehicular Volume		X				X
Warrant 1A – Minimum Vehicular Volume		X				X
Warrant 1B – Interruption of Continuous Traffic		X			X	
Warrant 1C – Combination of Warrants		X				X
Warrant 2: Four-Hour Vehicular Volume		X				X
Warrant 3: Peak Hour		X				X
Warrant 4: Pedestrian Volume	X			X		
Warrant 5: School Crossing	X			X		
Warrant 6: Coordinated Signal System	X			X		
Warrant 7: Crash Experience	X			X		
Warrant 8: Roadway Network	X			X		
Warrant 9: Intersection Near a Grade Crossing	X			X		

*Summary and Conclusion*

The proposed Lake Brandt Neighborhood Village is located along the east side of Lake Brandt Road on both sides of Trosper Road in Greensboro, North Carolina. The exact land uses for this mixed development have not been fully determined; for analysis purposes the development was assumed to include 7,000 square feet of office space, 13,500 square feet of shopping center, 15,000 square feet of pharmacy with drive-thru, 13,800 square feet of high-turnover restaurant and 2,200 square feet of coffee shop with drive-thru. The site plan currently shows four (4) full accesses, three (3) on Lake Brandt Road and one (1) on Trosper Road.

Based on trip generation rates and equations published in Trip Generation (Institute of Transportation Engineers, 9th Edition), this development has a trip generation potential of 526 gross trips in the AM peak and 717 gross trips in the PM peak. After the reductions, 526 net trips in the AM peak and 552 net trips in the PM peak are expected.

Based on the analysis, it is expected that each study intersection is to operate at LOS D or better in the AM and PM peaks with recommended improvements with the exception of Lake Brandt Road at Air Harbor Road. This intersection is expected to operate at LOS E regardless of the proposed development.

A signal warrant analysis was conducted on the intersection of Lake Brandt Road and Trosper Road/ School Entrance for a 13-hour time period. It was determined that Warrants 1, 2 and 3 were met in the future build conditions. These are significant in decision making to install a signal. Since three volume based warrants are met, it is recommended to install a signal at the intersection of Lake Brandt Road and Trosper Road/ School Entrance.

The recommended improvements are summarized in Table D on the following page.

Table D – Recommended Improvement Summary	
Lake Brandt Road at Air Harbor Road	No improvements recommended
Lake Brandt Road at School Entrance/ Trospen Road	<ul style="list-style-type: none"> <li>• Provide a signal</li> <li>• Provide a separate northbound through and right turn lane with 100 feet of storage and appropriate taper</li> <li>• Provide a separate westbound left and through-right turn lane with full storage</li> </ul>
Lake Brandt Road at School Bus Entrance/ Site Access 2	<ul style="list-style-type: none"> <li>• Provide a northbound right turn lane with 100 feet of storage and appropriate taper</li> </ul>
Trospen Road at Oak Tree Road	No improvements recommended
Lake Brandt Road at Site Access 1	No improvements recommended
Lake Brandt Road at Site Access 3	No improvements recommended
Trospen Road at Site Access 4	No improvements recommended

In conclusion, this study has reviewed the impacts of both background traffic and this development traffic, and has determined that with the recommended improvements in place, there will be adequate capacity to accommodate future traffic. The final design of these improvements will need to be coordinated during the site plan approval process. Please note that all accesses to the site are required to be constructed to GDOT standards.