



**Date:** October 18, 2013

**To:** Amy Wolff, Durham City County Planning Department  
**From:** Bill Judge PE, City of Durham Department of Transportation  
**Subject:** S. Miami Boulevard Commercial (Z1300021) Traffic Impact Analysis

The Unified Development Ordinance (UDO) requires that a Traffic Impact Analysis (TIA) be prepared for proposed developments estimated to generate 150 or more peak-hour vehicle trips. The proposed S. Miami Boulevard Commercial development includes 25,000 square-feet of retail space and a 4,000 square-foot high-turnover sit-down restaurant. The development is expected to generate 3,466 daily trips with 114 a.m. peak-hour trips (65 entering and 49 exiting) and 296 p.m. peak-hour trips (150 entering and 146 exiting). The proposed development is located on the west side of S. Miami Boulevard (NC 54), south of Emperor Boulevard and north of Surles Court. The applicant proposes one full-access driveway to S. Miami Boulevard and a second ingress-only access to S. Miami Boulevard (opposite the existing driveway to the Bradford Office building). The applicant’s expected completion year is 2013, and the TIA analysis year is 2014. The S. Miami Boulevard Commercial TIA was prepared by Kimley-Horn and Associates, Inc. in January 2013.

**Study Area**

The study area includes the following intersections:

- S. Miami Boulevard (NC 54) and Emperor Boulevard;
- S. Miami Boulevard (NC 54) and Bradford Office Driveway / North Site Driveway (entrance only);
- S. Miami Boulevard (NC 54) and South Site Driveway (full-access);
- S. Miami Boulevard (NC 54) and Berrington Office Driveway; and
- S. Miami Boulevard (NC 54) and Surles Court / Church Street.

**Trip Generation**

Trip generation numbers are based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 8<sup>th</sup> Edition*, 2008. The TIA used the following ITE trip generation uses for the proposed development:

USE	SIZE	ITE CODE
Retail Space (Shopping Center)	25,000 square-feet	820
High-Turnover Sit-Down Restaurant	4,000 square-feet	932

These proposed uses will generate 3,466 daily trips with 114 a.m. peak-hour and 296 p.m. peak-hour trips.

### Traffic Data Collection

The peak-hour intersection turning movement counts were taken from 7-9 a.m. and 4-6 p.m. in October 2012. The data utilized was collected within the 12-month timeline prior to submission as required under the City's TIA guidelines.

### Trip Distribution and Assignment

The assignment of site traffic on the study area roadway network was based on the following trip distribution percentages:

- To/From the North via S. Miami Boulevard (NC 54): 40% of site trips;
- To/From the East via Emperor Boulevard: 10% of site trips; and
- To/From the South via S. Miami Boulevard (NC 54): 50% of site trips.

### Approved Developments and Background Growth

There are no approved projects in the vicinity. A uniform annual compounded growth rate of 3% was utilized to determine the background traffic projections.

### TIP Roadway Improvements

NCDOT project (U-4716) will close the existing Church Street railroad crossing and construct a grade separation of the crossing on Hopson Road. The project is currently under construction and is expected to be complete in late 2015.

### Capacity Analysis

Capacity analyses were performed using the a.m. and p.m. peak-hour for the following scenarios:

- Existing (2012) conditions;
- No-Build (2014) conditions (2012 existing + background growth); and
- Build (2014) conditions (2012 existing + background growth + site traffic).

The development is located within the Suburban Tier where the adopted Level of Service (LOS) standard is LOS D. The following table summarizes the average delay for the various Levels of Service for unsignalized and signalized intersections:

	Signalized Intersections	Unsignalized Intersections
Level of Service	Average Vehicle Delay (Seconds)	Average Vehicle Delay (Seconds)
A	0-10	0-10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	>80	>50

S. Miami Boulevard (NC 54) and Emperor Boulevard

The following table summarizes the Levels of Service at this existing signalized intersection:

Scenario	a.m. LOS	p.m. LOS
Existing (2012)	A	B
No-Build (2014)	A	B
Build (2014)	A	B

The intersection currently operates at a LOS A during the a.m. peak-hour and a LOS B during the p.m. peak-hour. With the additional site traffic, the delays will increase slightly, but the intersection will remain at an acceptable LOS B or better for both peak hours. No roadway improvements are required.

S. Miami Boulevard (NC 54) and Bradford Office Driveway / North Site Driveway (entrance only)

The following table summarizes the Levels of Service at this proposed unsignalized intersection:

Scenario	a.m. LOS	p.m. LOS
Existing (2012)	B*	B*
No-Build (2014)	B*	C*
Build (2014)	B*	C*

\* Unsignalized operation, with LOS reported for the worst (WB) approach

The intersection currently operates at a LOS B during both the a.m. and p.m. peak-hour. With the additional site traffic, the delays will increase slightly, but the intersection will remain at an acceptable LOS C or better for both peak hours. To address potential safety concerns along NC 54 associated with the additional site traffic, NCDOT requires the following improvements at this intersection:

- Construct a southbound right-turn lane with adequate storage and appropriate tapers on S. Miami Boulevard (NC 54) at the North Site Driveway; and
- Construct the North Site Driveway with one ingress lane.

S. Miami Boulevard (NC 54) and South Site Driveway (full-access)

The following table summarizes the Levels of Service at this proposed unsignalized intersection:

Scenario	a.m. LOS	p.m. LOS
Build (2014)	B*	C*

\* Unsignalized operation, with LOS reported for the worst (EB) approach

The TIA recommends the following improvement to accommodate site traffic:

- Construct the South Site Driveway with one ingress and two egress lanes.

With the improvement listed above, the intersection will operate at an acceptable LOS C or better for both the a.m. and p.m. peak hours.

S. Miami Boulevard (NC 54) and Berrington Office Driveway

The following table summarizes the Levels of Service at this existing unsignalized intersection:

Scenario	a.m. LOS	p.m. LOS
Existing (2012)	C*	B*
No-Build (2014)	C*	B*
Build (2014)	C*	B*

\* Unsignalized operation, with LOS reported for the worst (WB) approach

The intersection currently operates at a LOS C during the a.m. peak-hour and a LOS B during the p.m. peak-hour. With the additional site traffic, the delays will increase slightly, but the intersection will remain at an acceptable LOS C or better for both peak hours. No roadway improvements are required.

S. Miami Boulevard (NC 54) and Surles Court / Church Street

The following table summarizes the Levels of Service at this existing signalized intersection:

Scenario	a.m. LOS	p.m. LOS
Existing (2012)	A	A
No-Build (2014)	A	A
Build (2014)	A	A

The intersection currently operates at a LOS A during both the a.m. and p.m. peak hours. With the additional site traffic, the delays will increase slightly, but the intersection will remain at an acceptable LOS A for both peak hours. No roadway improvements are required.

**Summary of required improvements:**

S. Miami Boulevard (NC 54) and Bradford Office Driveway / North Site Driveway (entrance only)

1. Construct a southbound right-turn lane with adequate storage and appropriate tapers on S. Miami Boulevard (NC 54) at the North Site Driveway.
2. Construct the North Site Driveway with one ingress lane.

S. Miami Boulevard (NC 54) and South Site Driveway (full-access)

1. Construct the South Site Driveway with one ingress and two egress lanes.