



Date: October 15, 2012

To: Amy Wolff, Durham City County Planning Department
From: Bill Judge PE, City of Durham Department of Transportation
Subject: Covington Hall Mixed Use (Z1200016) 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 Covington Hall Mixed Use development includes 300 apartment units and a 10,000 square-foot health/fitness club. The development is expected to generate 2,271 daily trips with 165 a.m. peak-hour trips (36 entering and 129 exiting) and 218 p.m. peak-hour trips (139 entering and 79 exiting). The proposed development is located on the east side of Page Road, north of Slater Road. The expected completion year is 2013, and the TIA analysis year is 2014. The Covington Hall Mixed Use TIA was prepared by Kimley-Horn and Associates, Inc. in June 2012 with supplemental analysis in June 2012 and August 2012.

Study Area

The study area includes the following intersections:

- NC 54 / Slater Road and S. Miami Boulevard (*Compact Neighborhood Tier*);
- Page Road and Slater Road (*Compact Neighborhood Tier*);
- Page Road and I-40 Eastbound Ramp / Emperor Boulevard (*Compact Neighborhood Tier*);
- Page Road and I-40 Westbound Ramp (*Suburban Tier*);
- Emperor Boulevard and Slater Road / Hotel Entrance (*Suburban Tier*);
- Slater Road and Proposed West Site Driveway / Existing Office Driveway (*Compact Neighborhood Tier*);
- Slater Road and Proposed East Site Driveway / Existing Office Driveway (*Compact Neighborhood Tier*); and
- Page Road and Terrace Pine Drive / Proposed Site Driveway (*Compact Neighborhood Tier*).

Trip Generation

Trip generation numbers are based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 8th Edition*, 2008. By utilizing Land Use Codes 220 (apartments) and 492 (health/fitness club), the site is expected to generate 2,271 daily trips with 165 a.m. peak-hour trips (36 entering and 129 exiting) and 218 p.m. peak-hour trips (139 entering and 79 exiting).

Traffic Data Collection

The peak-hour intersection turning movement counts were taken from 7-9 a.m. and 4-6 p.m. in September 2011, January 2012, June 2012 and July 2012.

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 Southwest via Page Road: 25% of site trips;
- To/From the West via NC 54: 15% of site trips;
- To/From the North via S. Miami Boulevard: 15% of site trips;
- To/From the South via Emperor Boulevard: 10% of site trips;
- To/From the West via I-40: 15% of site trips;
- To/From the East via I-40: 15% of site trips; and
- To/From the Northeast via Page Road: 5% of site trips.

Approved Developments and Background Growth

Approved developments are defined as approved or pending, but not yet constructed, projects within the vicinity of the subject project. The following approved developments were included in the TIA:

- Triangle Metro Center: This proposed mixed use development is located on the north side of Hopson Road and east side of Davis Drive. The proposed development consists of 2,285 apartment units, 75,000 square-feet of office space, and 45,000 square-feet of retail space.
- Creekstone Apartments: This proposed 262 unit apartment development is located on the west side of S. Miami Boulevard, north of Hopson Road.
- Quintiles Hotel: This proposed hotel is located on the east side of Page Road, north of Emperor Boulevard.

In addition to the traffic from these proposed developments, a variable background growth rate of was utilized to provide a minimum annual background growth rate of at least 3% per year for all traffic movements.

TIP Roadway Improvements

There are no significant scheduled transportation improvement projects in the study area vicinity.

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);
- Build (2014) conditions (2012 existing + background growth + site traffic); and
- Build (2014) with pending development conditions (2012 existing + background growth + site traffic + pending development traffic).

This development is located within the Compact Neighborhood Tier where the adopted LOS standard is LOS E. However, two of the study area intersections (Page Road / I-40 Westbound Ramp and Emperor Boulevard / Slater Road) are located within the Suburban Tier where the adopted LOS standard is LOS D. The following table summarizes the average delay for the various Levels of Service (LOS) 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

NC 54 / Slater Road and S. Miami Boulevard

The following table summarizes the Levels of Service at this existing signalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

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

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

Page Road and Slater Road

The following table summarizes the Levels of Service at this existing signalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

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

The intersection currently operates at a LOS C during the both the a.m. peak-hour and 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 for both peak hours. No roadway improvements are required to address the site traffic impacts.

Page Road and I-40 Eastbound Ramp / Emperor Boulevard

The following table summarizes the Levels of Service at this existing signalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

Scenario	a.m. LOS	p.m. LOS
Existing (2012)	C	E
No-Build (2014)	D	E
Build (2014)	D	E

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

Page Road and I-40 Westbound Ramp

The following table summarizes the Levels of Service at this existing signalized intersection in the Suburban Tier with an adopted LOS Standard of LOS D:

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

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 to address the site traffic impacts.

Emperor Boulevard and Slater Road / Hotel Entrance

The following table summarizes the Levels of Service at this existing unsignalized intersection in the Suburban Tier with an adopted LOS Standard of LOS D:

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

* Unsignalized operation, with LOS reported for the worst approach

The intersection currently operates at a LOS B during the a.m. peak-hour and a LOS D during the p.m. peak-hour. With the additional site traffic, the delays will increase slightly, but the intersection will operate at an acceptable LOS B in the a.m. peak-hour and a LOS E in the p.m. peak-hour. Although a LOS E is undesirable at signalized intersections, a LOS E or F is typical at many unsignalized intersections and driveways during the peak hours until such time a traffic signal is warranted since nearly all of the anticipated delay is confined to the side street approach. Given the low side street volumes, a traffic signal is not warranted at this intersection. No roadway improvements are required to address the site traffic impacts.

Slater Road and Proposed West Site Driveway / Existing Office Driveway

The following table summarizes the Levels of Service at this existing unsignalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

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

* Unsignalized operation, with LOS reported for the worst 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 B in both the a.m. and p.m. peak-hour. No roadway improvements are required to address the site traffic impacts.

Slater Road and Proposed East Site Driveway / Existing Office Driveway

The following table summarizes the Levels of Service at this existing unsignalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

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

* Unsignalized operation, with LOS reported for the worst 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 B in both the a.m. and p.m. peak-hour. To address potential safety concerns along Slater Road, the following improvements are required:

- Construct an exclusive eastbound left-turn lane with a minimum of 100 feet of storage plus appropriate tapers on Slater Road at the East Site Driveway; and
- Construct an exclusive westbound left-turn lane with a minimum of 100 feet of storage plus appropriate tapers on Slater Road at the Existing Office Driveway.

Page Road and Terrace Pine Drive / Proposed Site Driveway

The following table summarizes the Levels of Service at this existing unsignalized intersection in the Compact Neighborhood Tier with an adopted LOS Standard of LOS E:

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

* Unsignalized operation, with LOS reported for the worst 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 operate at an acceptable LOS D in the a.m. peak-hour and an acceptable LOS C in the p.m. peak-hour. No roadway improvements are required to address the site traffic impacts.

Summary of Required Improvements:

Slater Road and Proposed East Site Driveway / Existing Office Driveway

1. Construct an exclusive eastbound left-turn lane with adequate storage and appropriate tapers on Slater Road at the East Site Driveway; and
2. Construct an exclusive westbound left-turn lane with adequate storage and appropriate tapers on Slater Road at the Existing Office Driveway.