

January 8, 2007

Mr. Kumar Nepalli, E.I.  
Town of Chapel Hill Traffic Engineer  
405 Martin Luther King Jr. Boulevard  
Chapel Hill, NC 27514-5705

**Subject:** Traffic Impact Analysis Report Addendum  
Proposed Orange United Methodist Church Expansion  
Chapel Hill, North Carolina

Dear Mr. Nepalli:

This letter is an addendum to the Traffic Impact Analysis Report for the proposed Orange United Methodist Church Expansion prepared by Ramey Kemp & Associates, Inc. (RKA) in May 2006. The purpose of this addendum is to provide revised analysis needed as a result of updated driveway configurations at the two church driveways.

The original Orange United Methodist Church Expansion TIA prepared in May 2006 studied an overall expansion to the church consisting of a 660 seat expansion to the existing sanctuary, an Administration/Worship Support Building and a Family Life Center. The expansion was proposed to be fully built out in 2018.

Study intersections in the original TIA included NC 86 at Homestead Road / Main Site Driveway (signalized) as well as NC 86 at the Church Exit Driveway (unsignalized). Originally studied lane configurations at the site driveways included two egress lanes at the main site driveway (one left, one shared through-right) and a right-in/right-out/left-out access at the secondary driveway. A revised site plan (attached) proposes changing the main site driveway to include three egress lanes with additional storage as well as limiting access at the secondary driveway to right-in, right-out only.

#### **Future (2019) Traffic Without Expansion**

For this revised analysis, future (2019) traffic was reassigned to the network based on the proposed changes to the site driveway configurations. Refer to Figure 1 for an illustration of future (2019) traffic without the church expansion.

#### **Site Traffic**

Site trips for the proposed expansion were also redistributed on the network based on the new site driveway configurations. Refer to Figure 2 for revised site trip distribution percentages for weekday site trips and Figure 3 for revised site trip distribution percentages

for Sunday site trips. Site trips were assigned to the network based on the distribution percentages in Figures 2 and 3. Refer to Figure 4 for an illustration of the total site trips.

### **Future (2019) Traffic With Expansion**

Total site trips (Figure 4) were added to future (2019) traffic (Figure 1) to determine future (2019) traffic with expansion. Refer to Figure 5 for an illustration of future (2019) traffic including the church expansion

### **Analysis of Future (2019) Traffic Conditions With Expansion**

Study intersections were analyzed with the future (2019) traffic volumes with the proposed expansion using the same methodology discussed in the original TIA. Study intersections were analyzed with existing lane configurations and existing traffic control as well as with any improvements necessary to achieve a desirable level of service, including optimized signal timings. It should be noted that the cycle length for the weekday PM peak hour analysis is longer than the other peak periods in order to provide the best level of service. The site driveways were analyzed with the proposed lane configurations shown in the attached site plan. Capacity analysis results at the study intersections are presented in Table 1. Refer to the technical appendix for printouts of the capacity analysis.

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DATE: 8/29/07  
PROJECT NO. 0704  
DRAWING NO. 0704-01

TOWN OF ORANGE HILL  
ORANGE COUNTY, FL  
ORANGE UNITED METHODIST CHURCH  
11-12-2006

# SITE PLAN

PHILIP POST ASSOCIATES  
401 Providence Road  
Orlando, FL 32809  
Tel: 407-250-1173  
Fax: 407-250-7711

**DEVELOPMENT INFORMATION**

TAX MAP 24-.38; TAX MAP 24E-A-10; AND TAX MAP: 24-.41C  
 9880-30-0704; 9880-30-2036 AND 9880-30-0712

PIN NUMBER: R2/R1  
 EXISTING ZONING: R3C/R1  
 PROPOSED ZONING: R3C/R1  
 PARCEL SIZE: 16.115 AC, 701,952 SF (3LA)  
 EXISTING FLOOR AREA: 19,507 SF  
 PROPOSED FLOOR AREA: 39,088 SF  
 TOTAL FLOOR AREA: 57,690 SF  
 ALLOWABLE FLOOR AREA (R3C/R1): 64,836 SF  
 EXISTING PARKING: 110 SPACES; 154 NEW SPACES  
 PROPOSED TOTAL PARKING: 264 SPACES (INCLUDING 7 HIC SPACES)  
 EXISTING IMPERVIOUS SURFACE: 53,816 SF  
 PROPOSED TOTAL IMPERVIOUS SURFACE: 172,607 SF

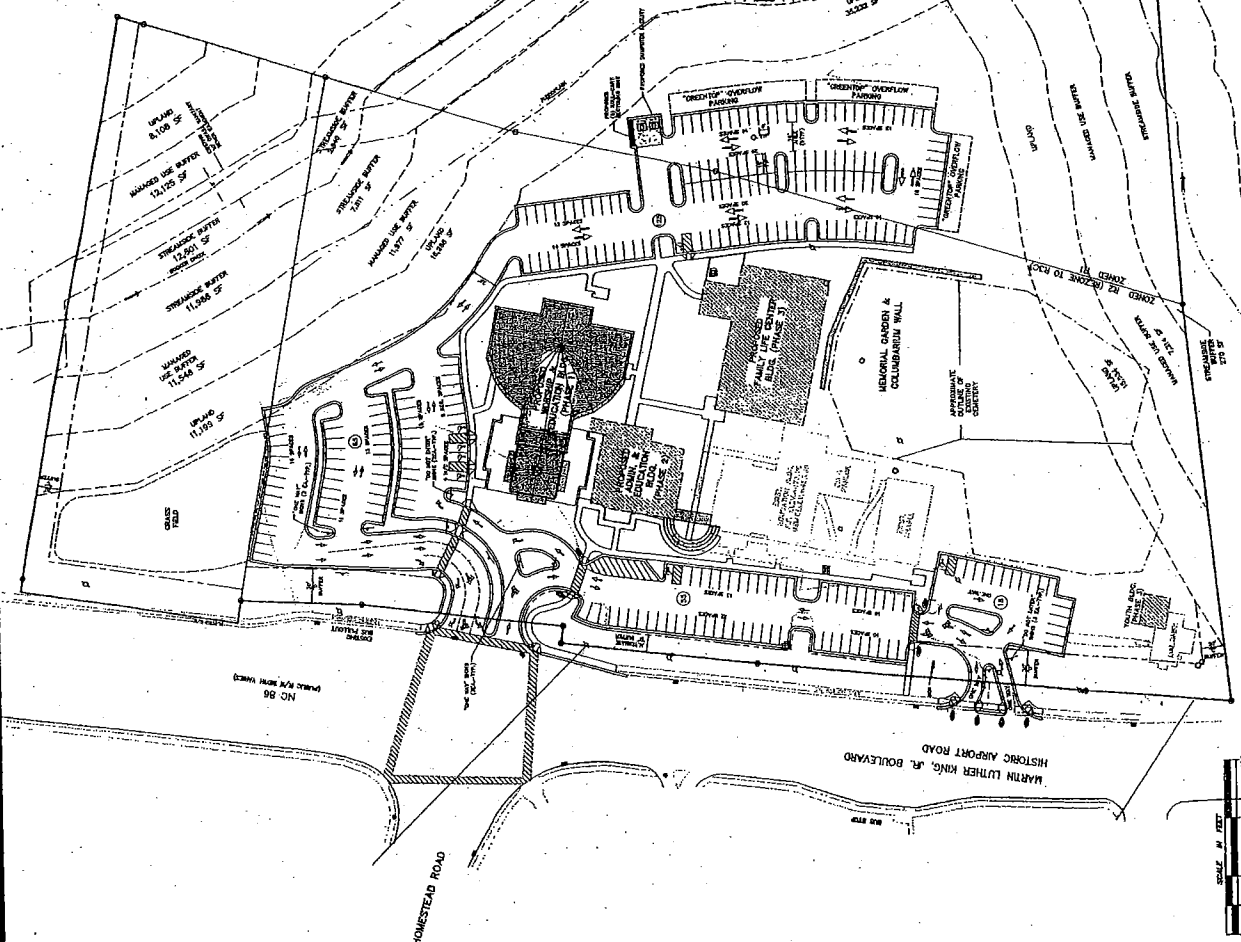
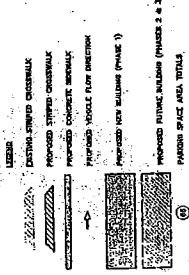


Table 1  
 Analysis of Future (2019) Traffic With Expansion

INTERSECTION	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY MIDDAY PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE		WEEKEND PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall	Approach	Overall	Approach	Overall	Approach	Overall
NC 86 (NB/SB) And Homestead Rd. / Church Site Drive (EB/WB) (Signalized)	EB	1 LT, 1 LT-TH, 1 RT 1 LT, 1 LT-TH, 1 RT 2 LT, 1 TH, 1 TH-RT 1 LT, 2 TH, 1 RT	D	C	C	C	D	C	C	C
	WB		D	D	D	D	D	D	D	D
	NB		B	C	C	F	F	F	F	F
	SB		C	B	B	F	F	F	F	F
NC 86 (NB/SB) And Homestead Rd. / Church Site Drive (EB/WB) (Signalized) W/ Improvements	EB	2 LT, 1 TH-RT 1 LT, 1 LT-TH, 1 RT 2 LT, 2 TH, 1 TH-RT 1 LT, 3 TH, 1 RT	D	C	C	C	D	C	D	C
	WB		D	D	D	D	D	D	D	D
	NB		B	C	C	E	E	E	E	E
	SB		B	B	B	D	D	D	D	D
NC 86 (NB/SB) And Church Driveway (WB) (Unsignalized)	WB	1 RT 1 TH, 1 TH-RT 2 TH	A <sup>1</sup>	N/A	B <sup>1</sup>	N/A	E <sup>1</sup>	N/A	B <sup>1</sup>	N/A
	NB		--	--	--	--	--	--	--	--
	SB		--	--	--	--	--	--	--	--

NOTE: Improvements indicated in **BOLD** print  
 1. Level of service for minor approach.

Analysis indicates the intersection of NC 86 and Homestead Road / Main Site Driveway is expected to operate at LOS C during the weekday AM, weekday midday and the Sunday mid-day peak hours and at LOS F during the weekday PM peak hour under future (2019) conditions with the traffic generated by the proposed expansion. Analysis indicates that although the westbound approach of the site driveway is expected to operate at LOS E during the weekday PM peak hour, the updated lane configurations should provide adequate storage to accommodate expected queues. It should also be noted that traffic volumes along this approach during the weekday PM peak hour are expected to be low.

Analysis indicates that at the intersection of NC 86 and the Church exit drive, the minor street approach is expected to operate at LOS B or better during all peak hours except the PM peak hour when it is expected to operate at LOS E. With the elimination of left turning traffic at this site drive, queues are not expected to be significant during any peak hour.

In order to determine the improvements necessary to mitigate the unacceptable Levels of Service in both the Future (2019) with Adjacent Development scenario and the Future (2019) with the Church Expansion scenario, the analysis was run for the intersection of NC 86 and Homestead Road for the weekday AM, mid-day, and PM peak hours and the Sunday mid-day peak hour. In order to attain a LOS D in the weekday PM peak hour for both scenarios, the following improvements would be necessary: add one through lane in both the northbound and southbound directions, re-stripe the eastbound approach to dual left turns and a shared through/right-turn movement, and remove the pedestrian phases from the eastbound and westbound approaches.

### **Conclusions**

The purpose of this addendum is to provide revised analysis needed as a result of updated driveway configurations at the two church driveways. To do this, both future (2019) traffic and site traffic were redistributed on the network based upon changes to the site driveway lane configuration. The two study intersections were then analyzed with the new traffic volumes and lane configurations.

Based on this analysis, the proposed site driveway lane configurations are expected to accommodate projected queues as well as provide adequate levels of service for church traffic.

### **Recommendations**

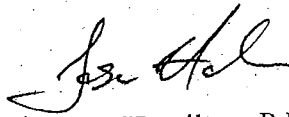
It is recommended to construct the westbound approach of the main site driveway with three egress lanes (one left, one left-through, and one right turn lane). The left turn lane should provide 145 feet of storage and the right turn lane should provide 190 feet of storage. In addition, the center shared through/left-turn lane should provide approximately 120 feet of storage. The secondary site driveway should be constructed as a right-in / right-out only intersection. Also, from the original TIA, a northbound right turn taper

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should be constructed at the Main Site Driveway. Refer to Figure 6 for an illustration of the recommended lane configurations.

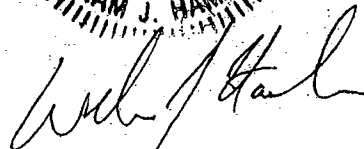
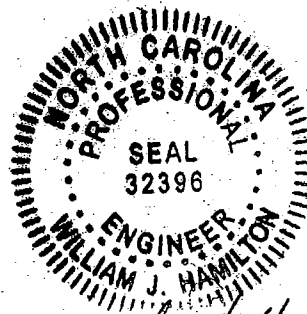
If you should have any questions or comments regarding this traffic impact analysis addendum, please feel free to contact me at (919) 872-5115.

Sincerely,  
*Ramey Kemp and Associates, Inc.*



Jason Hamilton, P.E., PTOE

Attachments



1/8/07