

28 Mar 2023

Ms. Christina Moon
 Planning Administrator
 Town of Carrboro
 301 W. Main Street
 Carrboro, NC 27510



Subject: South Green Rezoning
 Trip Generation Estimate

Dear Tina,

We have prepared a trip generation estimate as requested in comment #12 of your recent review of the rezoning application submitted for the referenced project. This estimate is intended to provide a basic comparison between the daily trip generation figures included in the August 13, 2014 letter from Davenport and the trips that we believe can be expected to be generated by the South Green development should the proposed rezoning be approved.

The attached calculations were performed using the 11th edition of the ITE Trip Generation Manual and are based on 1) the actual tenant mix that currently occupies South Green Lots 1 and 2, as provided by Woodhill NC LLC and 2) on the uses we have proposed on Lot 2. Please note that we have not reduced the estimated trips for by-pass, but the results show that the current configuration of South Green will generate fewer unadjusted trips than the adjusted (lower) number of trips estimated by Davenport in their August 13, 2014 letter. The unadjusted estimated daily trips based on 27 Mar 2023 South Green Illustrative Plan are:

Existing Uses – Lots 1 & 3:	1,306 trips
<u>Proposed Uses – Lot 2:</u>	<u>678 trips</u>
Total	1,984 trips

Yours Very Truly,
 BALLENTINE ASSOCIATES, P.A.

George J. Retschle, PE
 President



Attachments: Ballentine Associates' Trip Generation Calculations
 August 13, 2014 Davenport Trip Generation Letter

South Green - Trip Generation Estimate

Latest print date:

3/28/2023


 221 Providence Road
 Chapel Hill, NC 27514

 919.929.0481
 ballentineassociates.com
Existing Uses on Lots 1 & 3*

Lessee	Size (SF)	Carrboro Use Group	ITE Land Use Code	Trip Rate	Average Weekday Trips
Dayna Kelly Law	1,219	3.110	710 - General Office	10.84/1000 sf GFA	
DuFour Law	1,531	3.110	710 - General Office	10.84/1000 sf GFA	
Kumon Learning Center	1,838	3.110	710 - General Office	10.84/1000 sf GFA	
Total 3.110	4,588				50
Noble Orthodontics	3,500	3.130	720 - Medical/Dental Office	36/1000 sf GFA	
Emerge Pediatric	4,340	3.130	720 - Medical/Dental Office	36/1000 sf GFA	
Total 3.130	7,840				282
Carrboro Yoga	1,777	6.110	492 - Health/Fitness Club	16.4/1000 sf GFA**	
Total 6.110	1,777				29
Flying Pierogi	1,040	8.100	932 - High-Turnover Restaurant	107.2/1000 sf GFA	
Craftboro Brewing Depot	2,340	8.100	932 - High-Turnover Restaurant	107.2/1000 sf GFA	
Coronato Pizza	2,277	8.100	932 - High-Turnover Restaurant	107.2/1000 sf GFA	
Oasis Cigar Lounge	1,777	8.100	932 - High-Turnover Restaurant	107.2/1000 sf GFA	
Total 8.100	7,434				797
Kindred Heart Vet	4,294	12.100	640 - Animal Hosp/Vet Clinic	21.5/1000 sf GFA	
Total 12.100	4,294				92
Deluxe Dry Cleaner	1,018	16.200	822 - Strip Retail < 40k	54.5/1000 sf GFA	
Total 16.200	1,018				55
Total Lot 1 & 3	26,951				1,306

* As provided by Woodhill NC LLC

** Based on 1.31/1,000 AM Peak Hour and assuming AM Peak Hour is 8% of ADT

General Office Building (710)

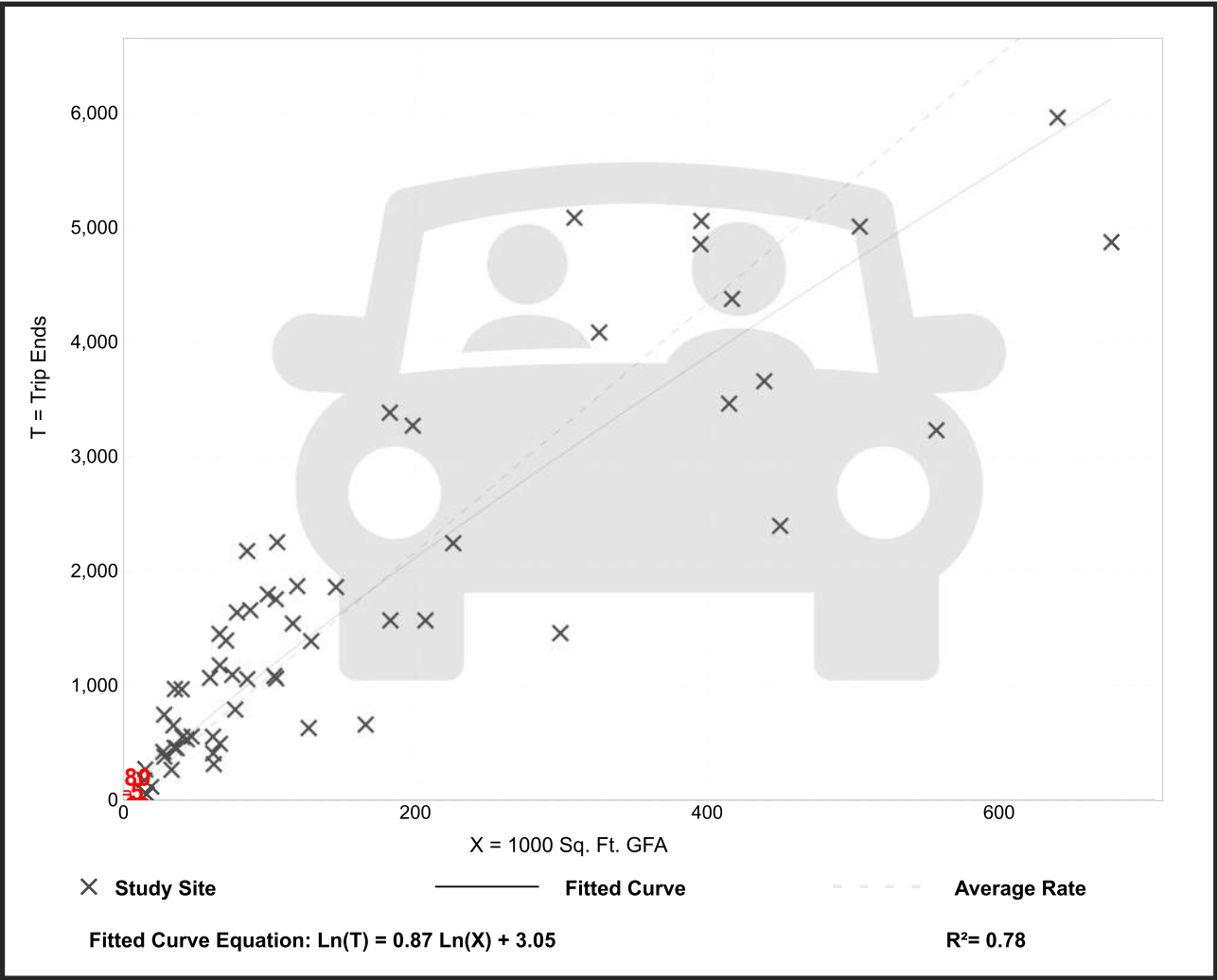
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 59
Avg. 1000 Sq. Ft. GFA: 163
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.84	3.27 - 27.56	4.76

Data Plot and Equation



Medical-Dental Office Building - Stand-Alone (720)

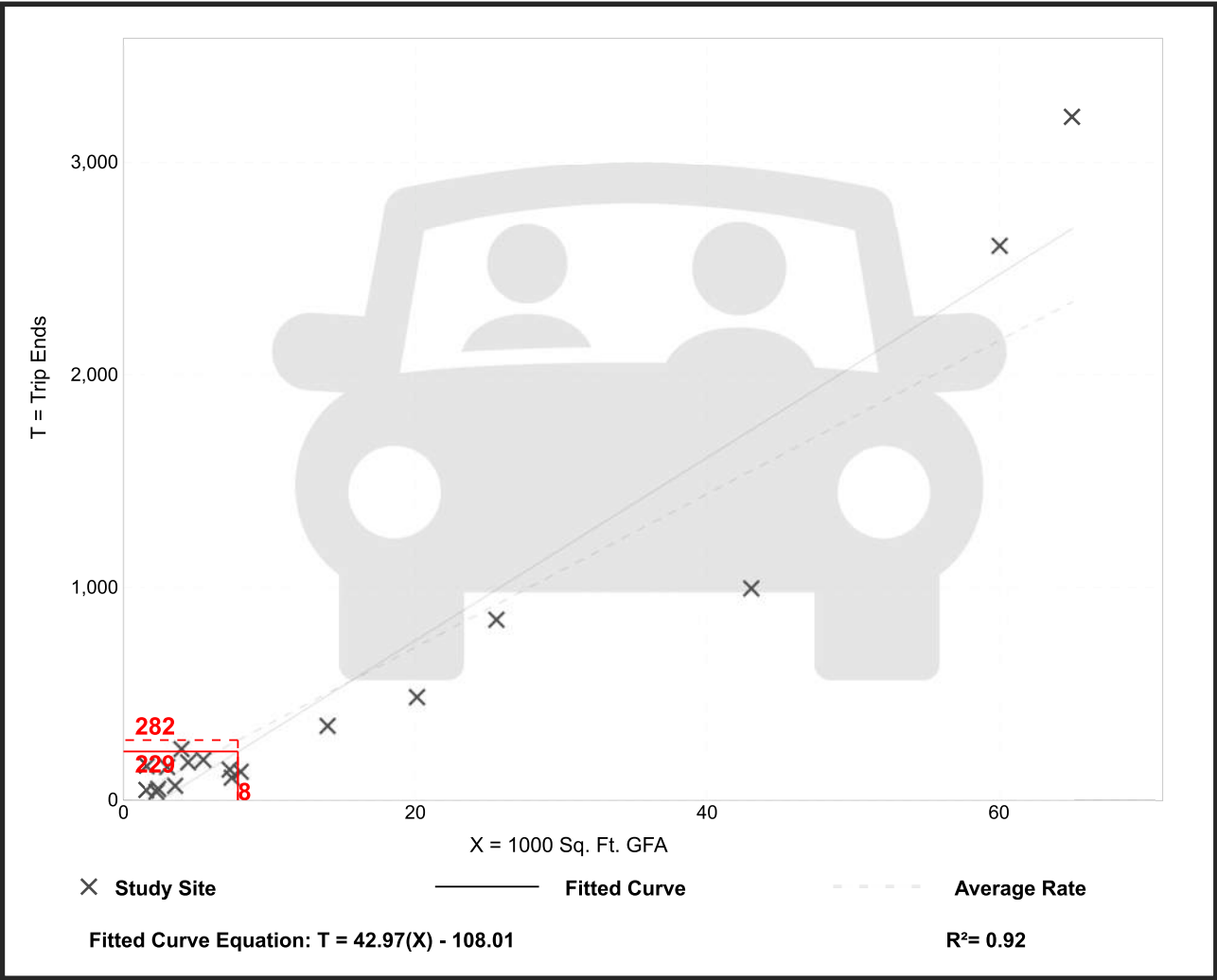
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 18
Avg. 1000 Sq. Ft. GFA: 15
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
36.00	14.52 - 100.75	13.38

Data Plot and Equation



Health/Fitness Club

(492)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 6

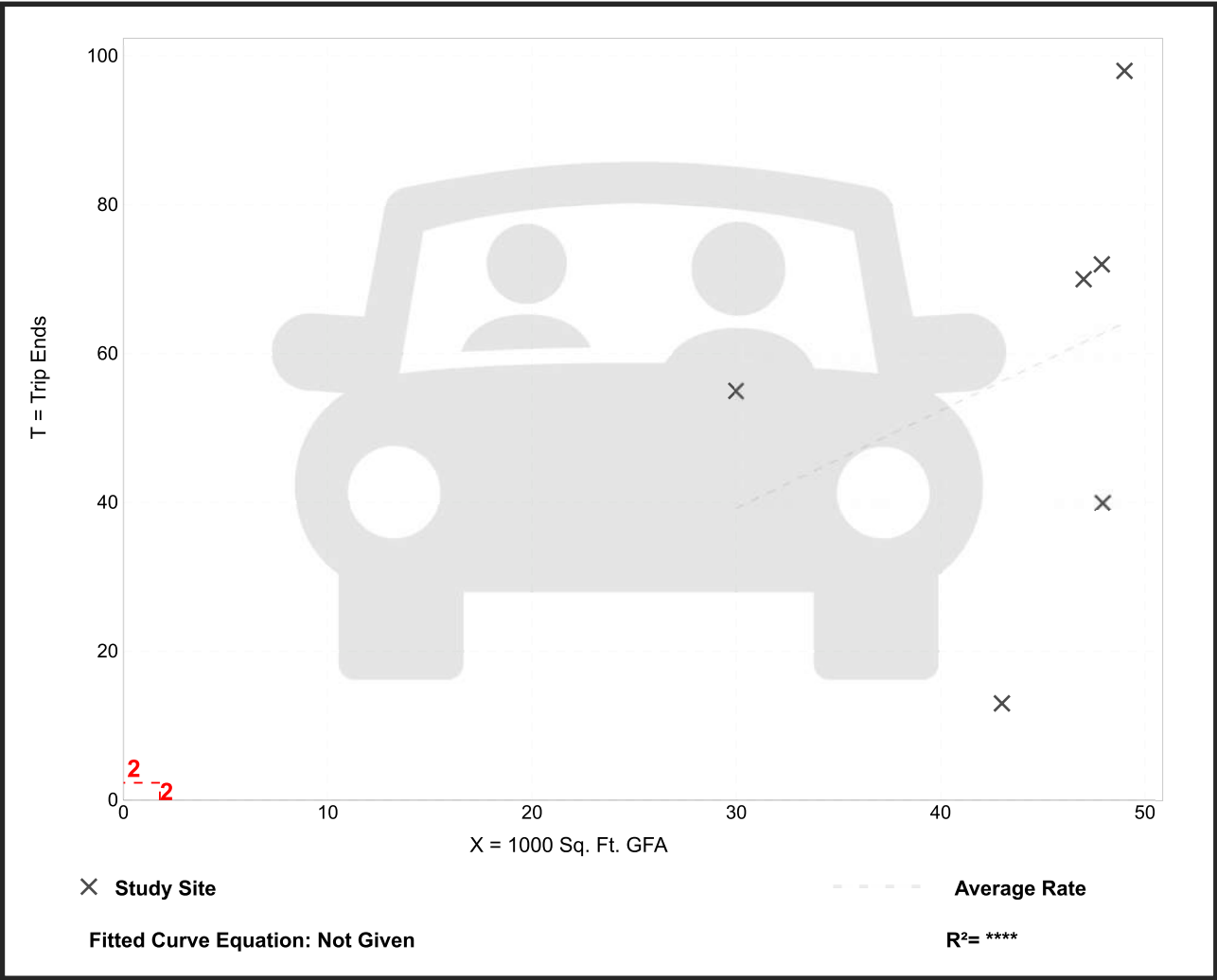
Avg. 1000 Sq. Ft. GFA: 44

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.31	0.30 - 2.00	0.64

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

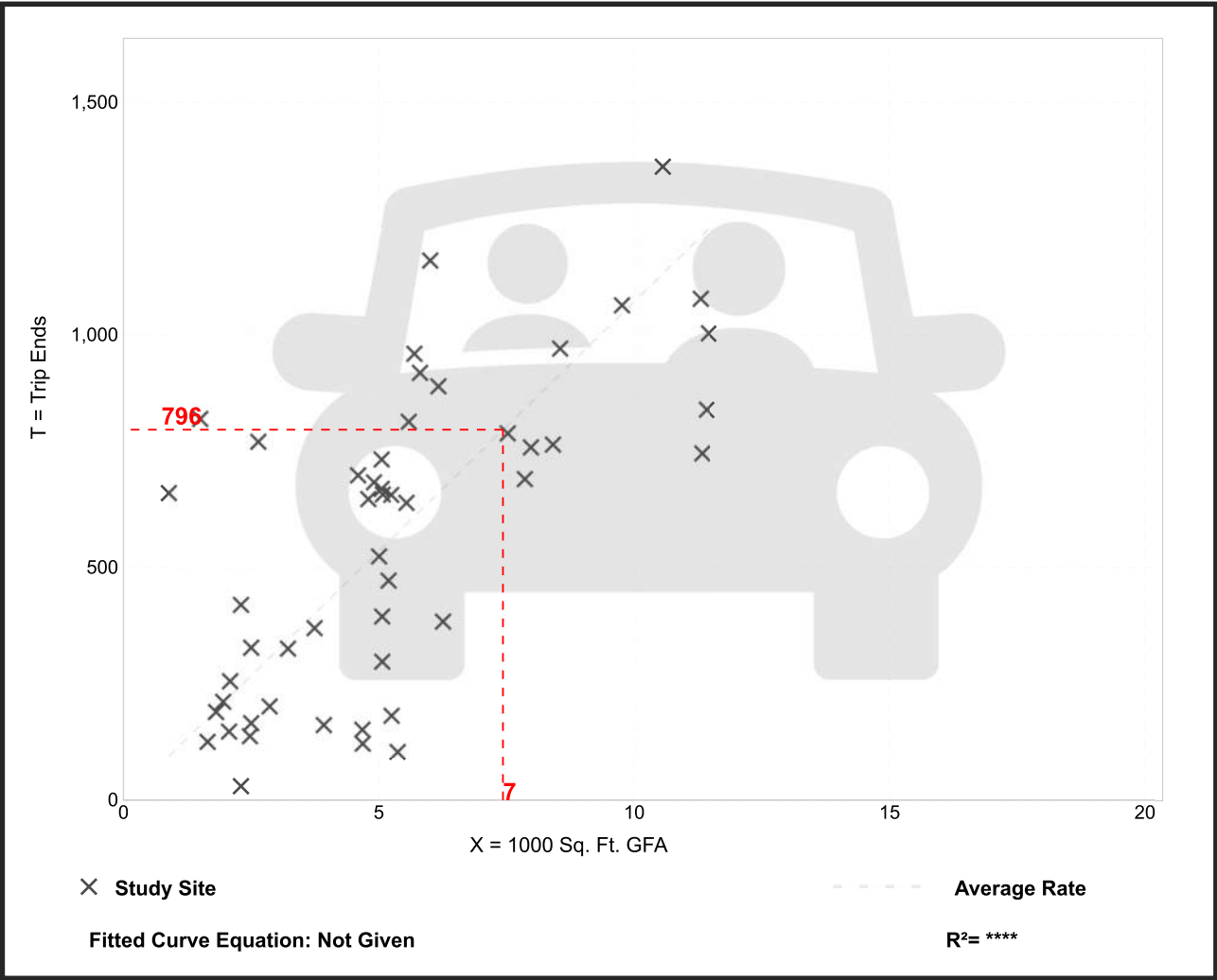
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



Animal Hospital/Veterinary Clinic (640)

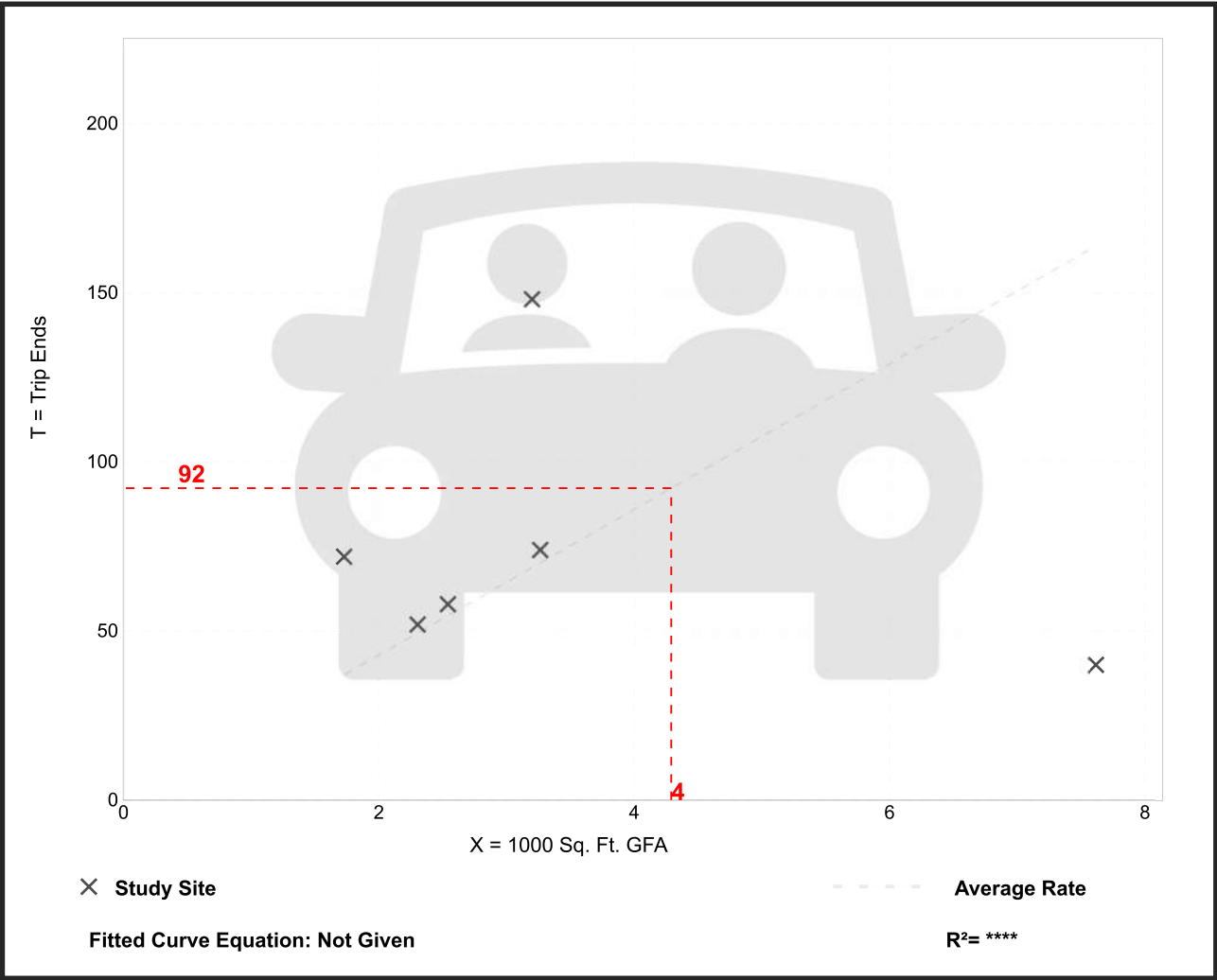
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
21.50	5.25 - 46.25	16.50

Data Plot and Equation



Strip Retail Plaza (<40k)

(822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

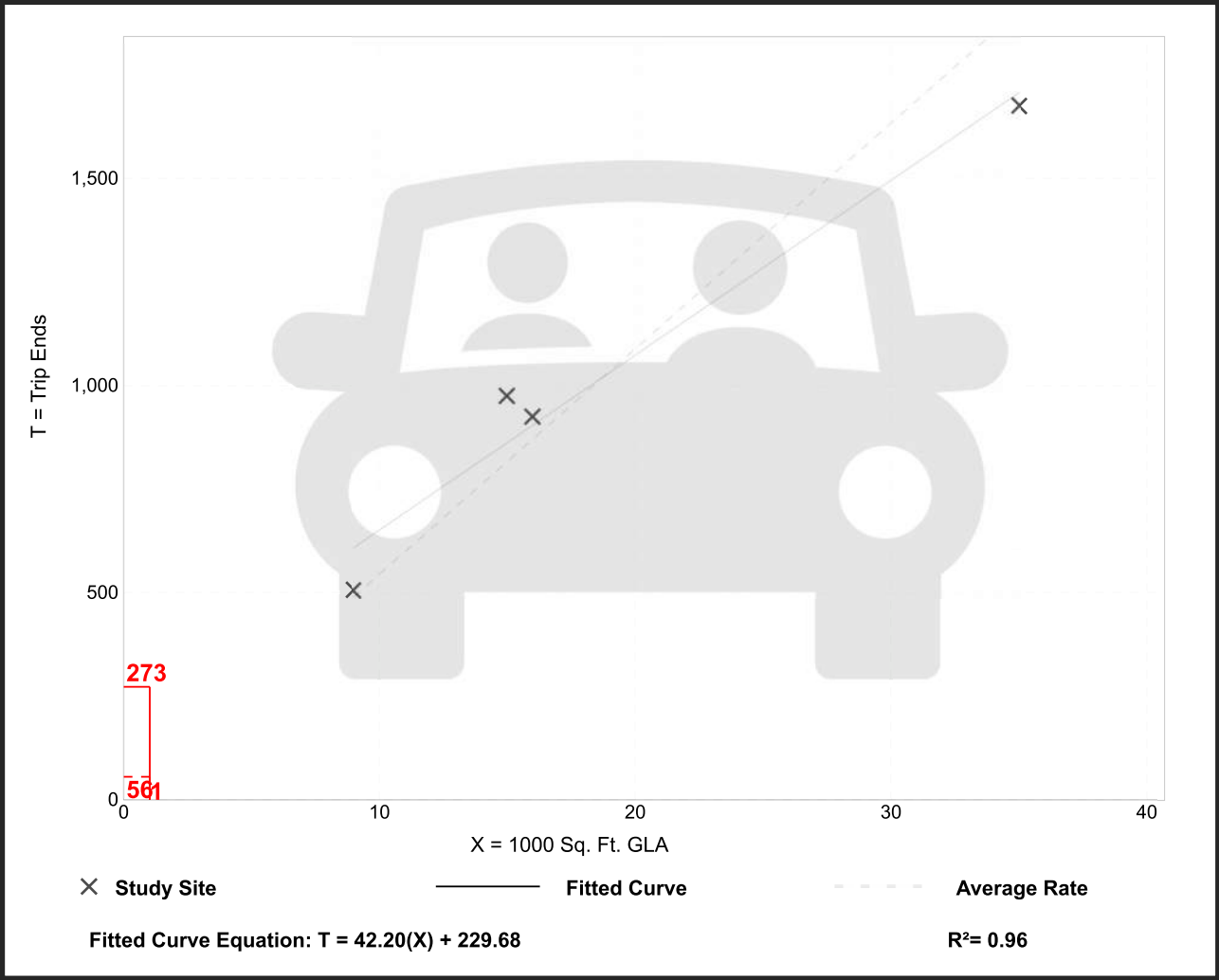
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 19
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

Data Plot and Equation

Caution – Small Sample Size



South Green - Trip Generation Estimate

Latest print date: 3/28/2023

**Proposed Uses on Lot 2***

Use	Size (SF)	Dwelling Units	Carrboro Use Group	ITE Land Use Code	Trip Rate	Average Weekday Trips
Multi-family Apartments	68,000	57	1.331	221 - Multifamily (Mid-Rise)	4.54/dwelling unit	
Total 1.331	68,000					259
Commercial**	7,700		3.110	822 - Strip Retail <40k	54.45/1000 sf GFA	
Total 3.130	7,700					419
Total Lot 2	75,700					678

* Per 27 Mar 2023 Illustrative Plan

** Includes 1,200 sf of indoor amenity space associated with multifamily

Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

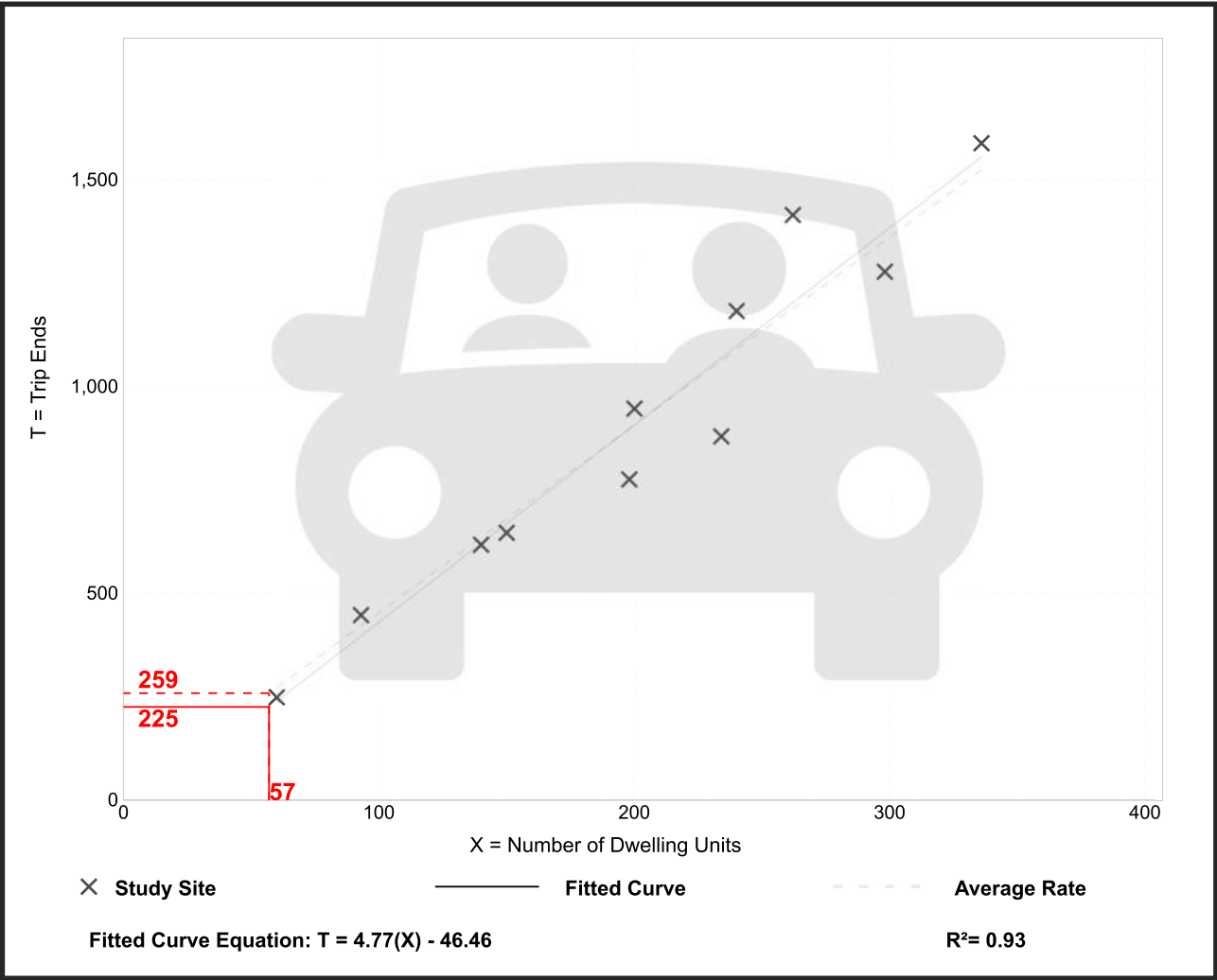
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 201
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

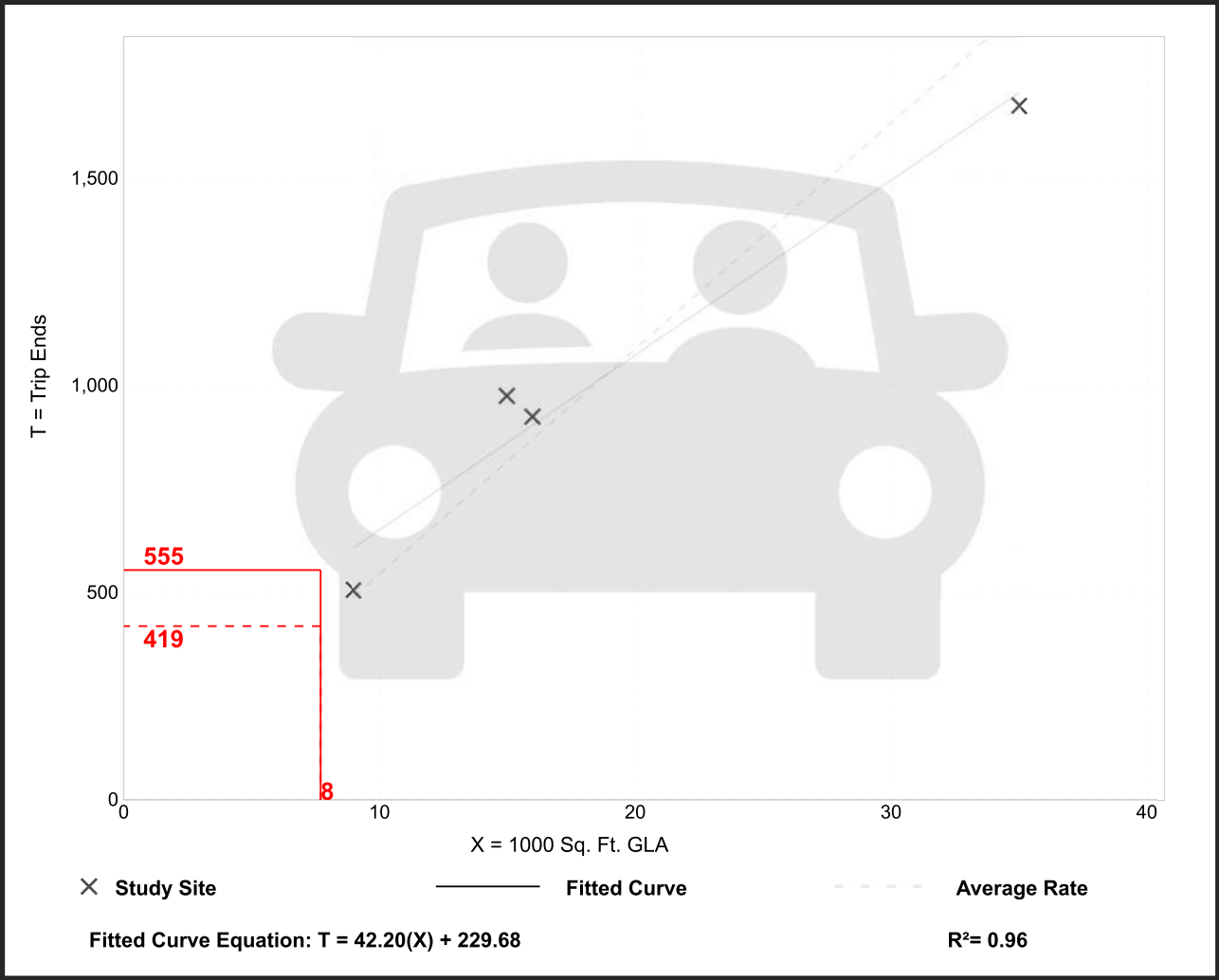
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 19
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

Data Plot and Equation

Caution – Small Sample Size





August 13, 2014

Mr. Chuck Edwards, PE
District Engineer
NC Department of Transportation
127 East Crescent Square Dr.
Graham, NC 27253

RE: Revised Trip Generation for 501 S. Greensboro Street in Carrboro, NC – (DAVENPORT Project Number **13-414**)

Dear Mr. Edwards:

In August 2013, DAVENPORT submitted a Transportation Impact Analysis (TIA) to NCDOT for the project stated above. The project is located at the intersection with Old Pittsboro Road on the east side of South Greensboro Street. The development was studied to consist of 30,350 square feet of retail and a 3,000 square foot bank with 2 drive-thru lanes. After pass-by reductions, this development would generate 2,213 daily trips and 95 AM peak hour net trips and 218 PM peak hour net trips.

Since the submittal, the client has made some changes to the site plan that would affect the land use and intensities. Attached are the site plans (two options are being studied) along with the trip generation comparison table of the original and the revised site plans.

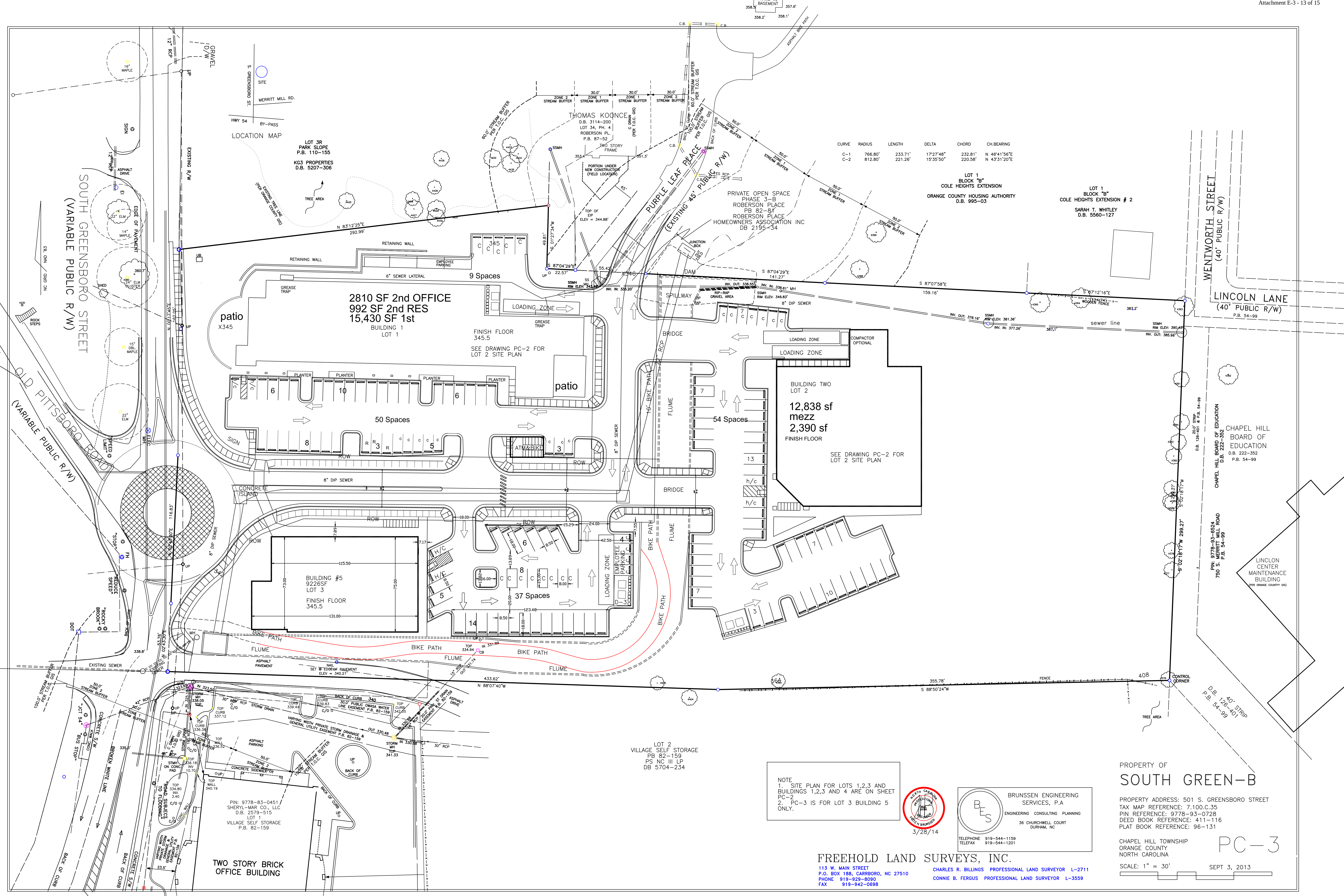
Please let know if a revised TIA is needed to reflect these changes or if this trip generation letter would suffice.

Please feel free to contact me with any questions at 336-744-1636.

Sincerely,

Dionne C. Brown

Dionne C. Brown, PE



CURVE	RADIUS	LENGTH	DELTA	CHORD	CH.BEARING
C-1	766.80'	233.71'	17°27'48"	232.81'	N 46°41'56"E
C-2	812.80'	221.26'	15°35'50"	220.58'	N 43°31'20"E

NOTE
1. SITE PLAN FOR LOTS 1,2,3 AND 4 ARE ON SHEET PC-2
2. PC-3 IS FOR LOT 3 BUILDING 5 ONLY.



BRUNSEN ENGINEERING SERVICES, P.A.
ENGINEERING CONSULTING PLANNING
36 CHURCHWELL COURT
DURHAM, NC
TELEPHONE 919-544-1159
TELEFAX 919-544-1201

FREEHOLD LAND SURVEYS, INC.

113 W. MAIN STREET
P.O. BOX 188, CARRBORO, NC 27510
PHONE 919-923-8090
FAX 919-942-0698

CHARLES R. BILLINGS PROFESSIONAL LAND SURVEYOR L-2711
CONNIE B. FERGUS PROFESSIONAL LAND SURVEYOR L-3559

PROPERTY OF
SOUTH GREEN-B

PROPERTY ADDRESS: 501 S. GREENSBORO STREET
TAX MAP REFERENCE: 7.100.C.35
PIN REFERENCE: 9778-93-0728
DEED BOOK REFERENCE: 411-116
PLAT BOOK REFERENCE: 96-131

CHAPEL HILL TOWNSHIP
ORANGE COUNTY
NORTH CAROLINA
SCALE: 1" = 30'
SEPT 3, 2013

PC-3

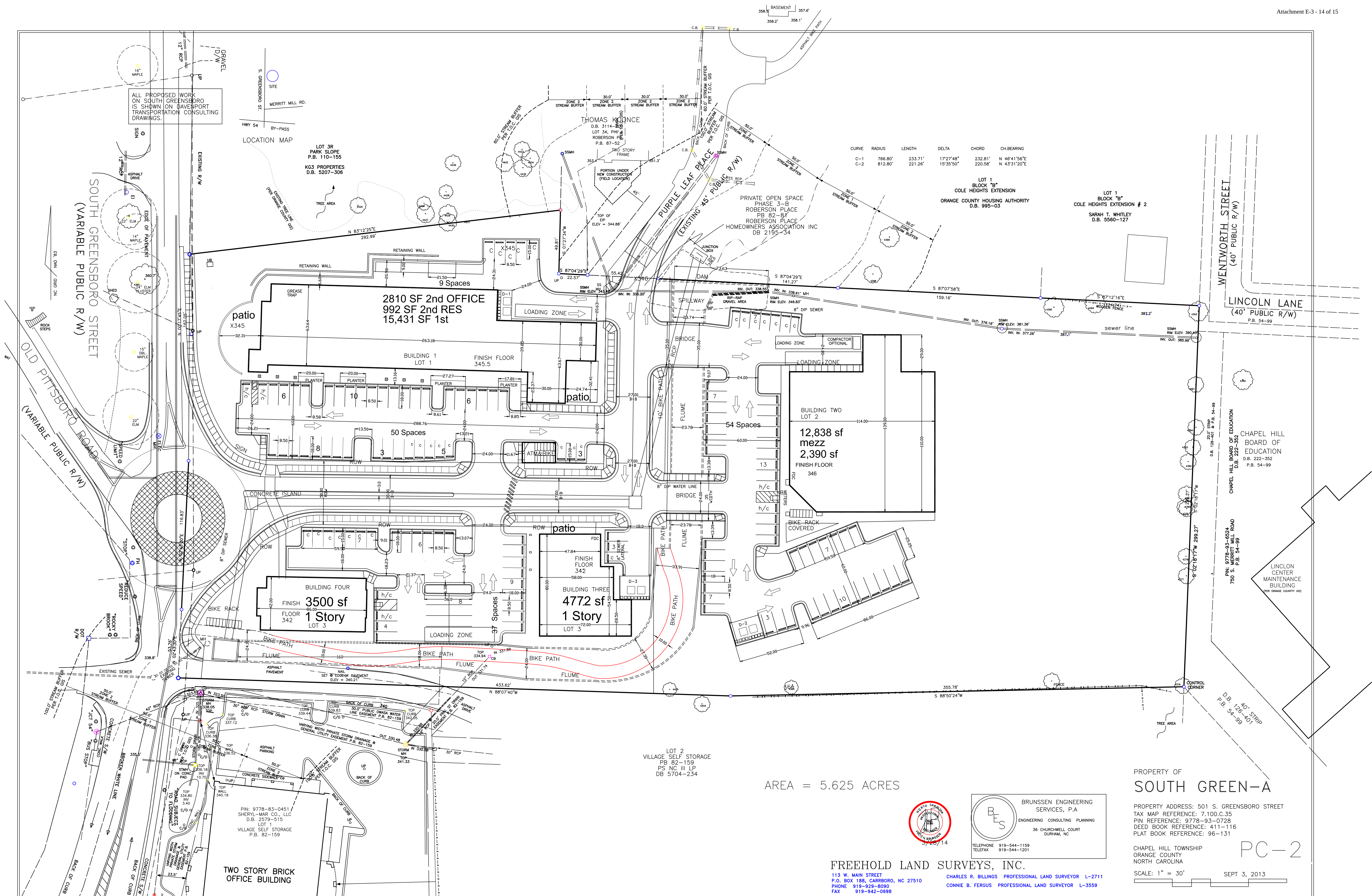


Table XX.X - ITE Trip Generation - Original

Average Weekday Driveway Volumes				24 Hour	AM Peak		PM Peak	
				Two-Way	Hour		Hour	
<u>Land Use</u>	<u>ITE Land Code</u>	<u>Size</u>		<u>Volume</u>	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
Shopping Center	820	30.350	Th.Sq.Ft.GLA	3,129	46	30	140	146
Bank with Drive-Thru	912	2	Lanes	279	11	8	27	28
Total Unadjusted Trips				3,408	57	38	167	174
Shopping Center Pass-by Reduction (34% PM)				-1,064	0	0	-48	-50
Bank Pass-by Reduction (47% PM)				-131	0	0	-13	-13
Total Adjusted Trips				2,213	57	38	107	111

Table XX.X - ITE Trip Generation - CP3

Average Weekday Driveway Volumes				24 Hour	AM Peak		PM Peak	
				Two-Way	Hour		Hour	
<u>Land Use</u>	<u>ITE Land Code</u>	<u>Size</u>		<u>Volume</u>	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
Shopping Center	820	34.5	Th.Sq.Ft.GLA	3,400	50	31	141	153
General Office Space	710	2.8	Th.Sq.Ft.GLA	87	10	1	14	68
Sit-down Restaurant	932	5.4	Th.Sq.Ft.GLA	687	32	26	32	21
Total Unadjusted Trips				4,174	92	58	187	242
Shopping Center Pass-by Reduction (34% PM)				-1,156	0	0	-48	-52
Restaurant Pass-by Reduction (43% PM)				-295	0	0	-14	-9
Total Adjusted Trips				2,723	92	58	125	181

Table XX.X - ITE Trip Generation - CP2

Average Weekday Driveway Volumes				24 Hour	AM Peak		PM Peak	
				Two-Way	Hour		Hour	
<u>Land Use</u>	<u>ITE Land Code</u>	<u>Size</u>		<u>Volume</u>	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
Shopping Center	820	32.1	Th.Sq.Ft.GLA	3,245	48	30	134	146
General Office Space	710	2.8	Th.Sq.Ft.GLA	87	10	1	14	68
Sit-down Restaurant	932	5.4	Th.Sq.Ft.GLA	687	32	26	32	21
Total Unadjusted Trips				4,019	90	57	180	235
Shopping Center Pass-by Reduction (34% PM)				-1,103	0	0	-46	-50
Restaurant Pass-by Reduction (43% PM)				-295	0	0	-14	-9
Total Adjusted Trips				2,620	90	57	121	176