

Memorandum

To: Andrew Vinisky
From: Alexander Wells
Carlos G. Garcia, P.E.
Date: 6/10/2016
Re: Mintbrook Development - Trip Generation Analysis/Comparison

As requested, Bowman Consulting Group (BCG) completed a trip generation analysis/comparison for the proposed Mintbrook Development. This document is in support of the land development plan submission for the project.

Background

The Mintbrook Development is located on Cheatham Farm in Fauquier County, Virginia (Lee magisterial district). The proposed development is generally situated on the west side of Marsh Road (US17) and north of Catlett Road (Route 28).

The original traffic impact analysis (TIA) was prepared/submitted in February 16, 2011 and was completed by Gorove/Slade Associates. The TIA was approved by VDOT and the County on November 29, 2011.

Purpose

The land uses for the proposed Mintbrook development have been slightly revised since 2011. Therefore, the purpose of this memorandum is to provide an analysis comparison of the projected trips from the approved 2011 TIA against the projected trips for the 2016 proposed Mintbrook development.

Approved Traffic Impact Analysis (TIA) Discussion

The 2011 TIA report was prepared based on the development of the following land uses;

- Residential (475 units)
- Commercial (387 KSF)

The trips projected for these land uses were summarized as follow:

- 661 trips during the weekday morning peak period,
- 2,060 trips during the weekday afternoon peak period, and

- 2,430 trips during the Saturday peak period.

The trip generation tables from the 2011 TIA report are attached to this document for reference in Appendix A.

Proposed 2016 Mintbrook Development

The land uses for the proposed Mintbrook development have been slightly revised since 2011. The proposed land uses for the Mintbrook development are summarized as follow:

- Residential (645 units)
- Commercial (269,700 KSF)

PROPOSED - MU-B AND PRD DISTRICTS:						
NEIGHBORHOOD	OVERALL	MU-B (CORE)		PRD		
		A	B	A	C	D
ACREAGE	236.16	11.03	26.77	50.09	47.51	100.76
RESIDENTIAL	156.28	3.58	8.65	30.98	16.20	96.87
COMMERCIAL	23.85	7.45	16.40	0.00	0.00	0.00
INSTITUTIONAL	16.30	0.00	0.00	0.00	16.30	0.00
GREENWAY CORRIDOR	39.73	0.00	1.72	19.11	15.01	3.89
TOTAL COMMERCIAL/OFFICE SF	269,700	75,000	194,700	0.00	0.00	0.00
SINGLE FAMILY DETACHED - FRONT LOAD	228	0	0	38	13	177
SINGLE FAMILY DETACHED - ALLEY LOAD	75	0	0	33	19	23
ATTACHED SINGLE FAMILY - ALLEY LOAD	160	0	60	53	19	28
WORKFORCE HOUSING	102	0	102	0	0	0
MULTI-FAMILY AGE RESTRICTED	80	80	0	0	0	0
TOTAL UNITS	645	80	162	124	51	228
NET RESIDENTIAL DENSITY (DU/ACRE)	4.13	22.35	18.73	4.00	3.15	2.35
GROSS RESIDENTIAL DENSITY (DU/ACRE)	2.73	7.25	6.05	2.48	1.07	2.26

The land use adjustments represent a decrease in commercial development and an increase in residential development.

Trip Generation (Proposed 2016 Mintbrook Development)

The trips for the revised land uses were calculated based on the ITE trip generation manual. The pass by and internal capture rates were taken directly from the approved 2011 TIA to maintain a consistent approach and methodology. The new trip rates were then calculated using the same methodology from the 2011 approved TIA. The detailed trip generation calculations can be found in Appendix B.

The proposed 2016 Mintbrook development is expected to generate approximately 511 trips during the weekday morning peak hour, 1,134 trips during the weekday afternoon peak hour, and 1,285 trips during the Saturday peak hour. The site would generate approximately 11,514 weekday and 13,230 Saturday daily trips.

Comparison

The adjustment/revisions of the land uses for the Mintbrook Development can be further summarized and compared in the table below:

Land Use	Approved 2011 TIA	Proposed 2016	Difference
Residential	475 Units	645 Units	+170 Units
Commercial	387KSF	270 KSF	-117 KSF

As observed, the proposed 2016 Minbrook development is proposing to increase the number of residential units while decreasing the number of square footage of commercial development.

Based on the land use adjustment/revisions, a comparison summary table of the trip generation adjustments was prepared and is depicted below:

	Weekday							Saturday			
	AM Peak Hour			PM Peak Hour			Average Daily	Midday Peak Hour			Average Daily
	In	Out	Total	In	Out	Total		In	Out	Total	
2011 Approved TIA - Trip Totals	305	356	661	1,038	1,023	2,060	20,844	1,275	1,154	2,430	25,952
Proposed 2016 - Trip Totals	236	276	511	560	574	1,134	11,514	673	612	1,285	13,230
Difference (-)	69	80	150	478	449	926	9,330	602	542	1,145	12,722

The table above indicates that the land use adjustments/revisions to the land uses for the 2016 proposed Mintbrook Development will result in a total decrease of trips from the trips projected in the approved 2011 approved TIA.

Conclusions

- The proposed 2016 Mintbrook development is expected to generate less trips (less impacts) than expected from the 2011 approved TIA.
- Since the proposed 2016 Mintbrook development is not expected to generate as many impacts in the existing roadway system as the ones recorded in the 2011 approved TIA; it is our opinion that a new TIA is not required for the proposed 2016 Mintbrook Development.

**APPENDIX A-
2011 APPROVED TRAFFIC IMPACT ANALYSIS
TRIP GENERATION TABLE**

Traffic Impact Study

Mintbrook

Fauquier County, Virginia

February 16, 2011

Prepared For:

Bealeton Gateway, LLC
8230 Leesburg Pike, Suite 620
Vienna, Virginia 22182

Prepared By:

Gorove/Slade
Associates, Inc.





TRIP GENERATION

In order to calculate the trip generation for the proposed development, the Institute of Transportation Engineers' (ITE's) Trip Generation, 8th Edition was used to determine the trips into and out of the subject study site for the morning, afternoon, and Saturday peak hours, as well as the typical weekday and Saturday daily trips to the site. Mintbrook's trip generation is shown in Table 3. The trip generation numbers in this report are conservative and may not meet the numbers noted on the development plan exactly.

Table 3: Site Trip Generation

Land Use	ITE Code	Size	----- Weekday -----						----- Saturday -----				
			AM Peak Hour			PM Peak Hour			Daily	Midday Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total	In	Out	Total	Total
Residential Block 1													
Single-Family Detached Housing	210	60 DU	13	39	52	43	24	67	650	34	29	63	652
Residential Condominium/Townhouse	230	112 DU	13	59	72	57	28	85	896	46	39	85	896
<i>Subtotal (Residential without reduction)</i>		172 DU	26	98	124	100	52	152	1,546	80	68	148	1,548
<i>Internal Trips Reduction - 15%</i>		15%	-4	-15	-19	-15	-8	-23	-232	-12	-10	-22	-232
<i>New External Trips</i>			22	83	105	85	44	129	1,314	68	58	126	1,316
Residential Block 2													
Single-Family Detached Housing	210	190 DU	36	107	143	119	69	188	1,877	95	84	179	1,949
<i>Subtotal (Residential without reduction)</i>		190 DU	36	107	143	119	69	188	1,877	95	84	179	1,949
<i>Internal Trips Reduction - 15%</i>		15%	-5	-16	-21	-18	-10	-28	-282	-14	-13	-27	-292
<i>New External Trips</i>			31	91	122	101	59	160	1,595	81	71	152	1,657
Residential Block 3													
Single-Family Detached Housing	210	88 DU	18	54	72	60	34	94	925	47	41	88	938
<i>Subtotal (Residential without reduction)</i>		88 DU	18	54	72	60	34	94	925	47	41	88	938
<i>Internal Trips Reduction - 15%</i>		15%	-3	-8	-11	-9	-5	-14	-139	-7	-6	-13	-141
<i>New External Trips</i>			15	46	61	51	29	80	786	40	35	75	797
Mintbrook Village													
Residential Condominium/Townhouse	230	25 DU	3	14	17	13	6	19	200	11	8	19	200
<i>Subtotal (Residential without reduction)</i>		25 DU	3	14	17	13	6	19	200	11	8	19	200
<i>Internal Trips Reduction - 15%</i>		15%	0	-2	-3	-2	-1	-3	-30	-2	-1	-3	-30
<i>New External Trips</i>			3	12	14	11	5	16	170	9	7	16	170
Day Care Center	565	4.00 kSF	27	23	50	24	26	50	318	5	2	7	25
General Office Building	710	39.00 kSF	79	10	89	21	102	123	647	9	7	16	93
<i>Subtotal (Office and Daycare)</i>		43.00 kSF	106	33	139	45	128	173	965	14	9	23	118
Shopping Center	820	147.30 kSF	91	57	148	405	420	825	8,736	574	529	1,103	11,793
<i>Subtotal (Retail without reduction)</i>		147.30 kSF	91	57	148	405	420	825	8,736	574	529	1,103	11,793
<i>Internal Trips Reduction</i>			-18	-5	-23	-10	-19	-29	-293	-13	-15	-28	-298
<i>Pass by Trips Reduction - 25%</i>		25%	-18	-13	-31	-99	-100	-199	-2,111	-140	-129	-269	-2,874
<i>New External Trips</i>		147.30 kSF	55	39	94	296	301	597	6,333	421	386	806	8,621
<i>Subtotal (Commercial with reduction)</i>		190.30 kSF	161	72	233	341	429	770	7,298	435	395	829	8,739



Land Use	ITE Code	Size	----- Weekday -----						----- Saturday -----					
			AM Peak Hour			PM Peak Hour			Daily Total	Midday Peak Hour			Daily Total	
			In	Out	Total	In	Out	Total		In	Out	Total		
Lafayette Avenue Out-Parcel Block														
Shopping Center	820	125.017	kSF	77	49	126	363	376	739	7,852	516	475	991	10,636
<i>Subtotal (Retail without reduction)</i>		125.017	kSF	77	49	126	363	376	739	7,852	516	475	991	10,636
<i>Internal Trips Reduction</i>				-15	-5	-19	-9	-16	-25	-248	-11	-13	-24	-253
<i>Pass by Trips Reduction - 25%</i>		25%		-16	-11	-27	-89	-90	-179	-1,901	-126	-116	-242	-2,596
<i>New External Trips</i>		125.017	kSF	47	33	80	266	270	536	5,703	379	347	725	7,787
Steffey/Weaver Parcel Block														
Shopping Center	820	71.177	kSF	44	28	72	249	258	507	5,445	358	330	688	7,459
<i>Subtotal (Retail without reduction)</i>		71.177	kSF	44	28	72	249	258	507	5,445	358	330	688	7,459
<i>Internal Trips Reduction</i>				-8	-3	-11	-5	-9	-14	-141	-6	-7	-13	-144
<i>Pass by Trips Reduction - 25%</i>		25%		-9	-6	-15	-61	-62	-123	-1,326	-88	-81	-169	-1,829
<i>New External Trips</i>		71.177	kSF	27	19	46	183	187	370	3,978	264	242	506	5,486
Overall Total				305	356	661	1,038	1,023	2,060	20,844	1,275	1,154	2,430	25,952

The proposed development will generate approximately 661 trips during the weekday morning peak hour, 2,060 trips during the weekday afternoon peak hour, and 2,430 trips during the Saturday peak hour. The site would generate approximately 20,844 weekday and 25,952 Saturday daily trips.

SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Site Access

The following four intersections provide access to the subject property:

- Marsh Road and Independence Avenue/Jefferson Street
- Marsh Road and Liberty Avenue/Lafayette Avenue
- Marsh Road and White Marsh Avenue/Site Right-in/Right-out Entrance
- Catlett Road and Lafayette Avenue

Distribution and Assignment

The distribution of site trips was based on previous studies performed in the area, existing traffic patterns, and the nature of the proposed development were considered in determining the distribution of the site trips. Trips generated from the site were assigned based on the abovementioned factors. The inbound and outbound trips calculated for the morning, afternoon, and Saturday peak hours were routed in the roadway network to the site. The site direction of approach and trip distribution for all three peak hours is illustrated in Figure 8. The site traffic assignment for the weekday and Saturday peak hours and average daily trips are illustrated in Figure 9, Figure 10, and Figure 11 for the residential, commercial, and pass-by trips respectively.

**APPENDIX B-
2016 PROPOSED MINTBROOK DEVELOPMENT
TRIP GENERATION TABLE**

Land Use	Size	Units	Land Use Code	Weekday						Saturday				
				AM Peak Hour			PM Peak Hour			Average Daily	Midday Peak Hour			Average Daily
				In	Out	Total	In	Out	Total		In	Out	Total	
Residential														
Single Family Detached	303	D.U.	210	56	167	222	180	105	285	2912	150	128	278	2846
Apartment	80	D.U.	220	9	34	43	40	22	62	608	26	26	52	372
Townhomes	262	D.U.	230	19	93	112	88	44	132	1487	64	55	119	1376
Residential Subtotal	645	D.U.		84	294	377	308	171	479	5007	240	209	449	4594
Commercial														
Shopping Center	239,000	S.F.	820	164	101	265	516	558	1074	11965	801	739	1540	15997
Commercial Subtotal	239000			164	101	265	516	558	1074	11965	801	739	1540	15997
Residential + Commercial Subtotal				248	395	642	824	729	1553	16972	1041	948	1989	20591
Day Care Center	2800	S.F.	565	18	16	34	16	19	35	207	3	2	5	17
Office	27,200	S.F.	710	60	8	68	19	90	109	488	6	6	12	87
Internal Trips														
Total ITE Generated Trips (Mintbrook)				248	395	642	824	729	1553	16972	1041	948	1989	20591
Total Internal Trips (15%)				37	59	96	124	109	233	2546	156	142	298	3089
Subtotal				211	336	546	700	620	1320	14426	885	806	1691	17502
Pass-By (25%)				53	84	137	175	155	330	3607	221	202	423	4376
Total Internal/Pass-by Trips				158	252	409	525	465	990	10819	664	604	1268	13126
Totals														
Overall Total				236	276	511	560	574	1134	11514	673	612	1285	13230

**Proposed 2016 Mintbrook Development
 Trip generation**