GOROVE / SLADE

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TECHNICAL MEMORANDUM

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From:	Katie Wagner, PE, PTOE	
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Date:	January 6, 2020	
Subject:	1101-1125 H Street Map Amendment – Z.C. Case No. 19-25	

Introduction

This memorandum supports the proposed Map Amendment application before the Zoning Commission for the H Street development located at 1101-1125 H Street, NE in northeast Washington, DC, which is shown in Figure 1. To address the impacts of the proposed Map Amendment application, which would modify the zoning designation of the subject site from NC-16/MU-4 to NC-17, this memorandum presents trip generation comparisons between scenarios of the existing condition, the maximum build-out under existing NC-16/MU-4 Zoning, and the maximum build-out under proposed NC-17 Zoning.

The Map Amendment application is for rezoning Square 982, Lots 57, 65, 68, 70 and 823. The site is located in Ward 6 in northeast Washington, D.C. Lot 65 to the west is developed with a single-story brick commercial building occupied by a convenience store use and a rear parking area accessed off 11th Street NE. Lot 70 is developed with a two-story building which occupies 100% of the lot with access to the rear alley. Lots 57 and 68 were each recently redeveloped with a five-story mixed-use apartment building with ground floor retail uses. Lot 823 to the east is developed with a two-story commercial building. Figure 2 presents the location and layout of the subject lots.

The maximum build-out under existing NC-16/MU-4 Zoning presented in this memorandum represents a development scenario that generates the greatest number of vehicle trips resulting from a mix of uses with a maximum FAR (Floor Area Ratio) of 3.0 for Lot 65 and 3.5 for Lots 70 and 823, which would be allowed under the existing zoning. The maximum build-out under the proposed NC-17 Zoning presented in this memorandum represents a development scenario that generates the greatest number of vehicle trips resulting from a mix of uses with a maximum FAR of 4.2 for Lot 65 and 4.7 for Lots 70 and 823, which would be allowed under the proposed Map Amendment zoning action, i.e. modifying the zoning designation from NC-16/MU-4 to NC-17.

This analysis compares the trip generation between the existing conditions, the maximum build-out under existing NC-16/MU-4 Zoning, and the maximum build-out under proposed NC-17 Zoning. The scenario of maximum build-out under existing NC-16/MU-4 Zoning assumes mixed-use residential development with ground floor retail uses for Lots, 65, 70, and 823, while Lots 57 and 68 are assumed to maintain the existing conditions considering they were recently redeveloped. This scenario includes approximately 119 residential units and 22,220 sf of ground floor retail. The scenario of maximum build-out under proposed NC-17 Zoning assumes mixed-use residential development with ground floor retail uses for Lots, 65, 70, and 823 but with greater FAR, while Lots 57 and 68 are assumed to maintain the existing conditions as well. This scenario includes approximately 162 residential units and 22,220 sf of ground floor retail.

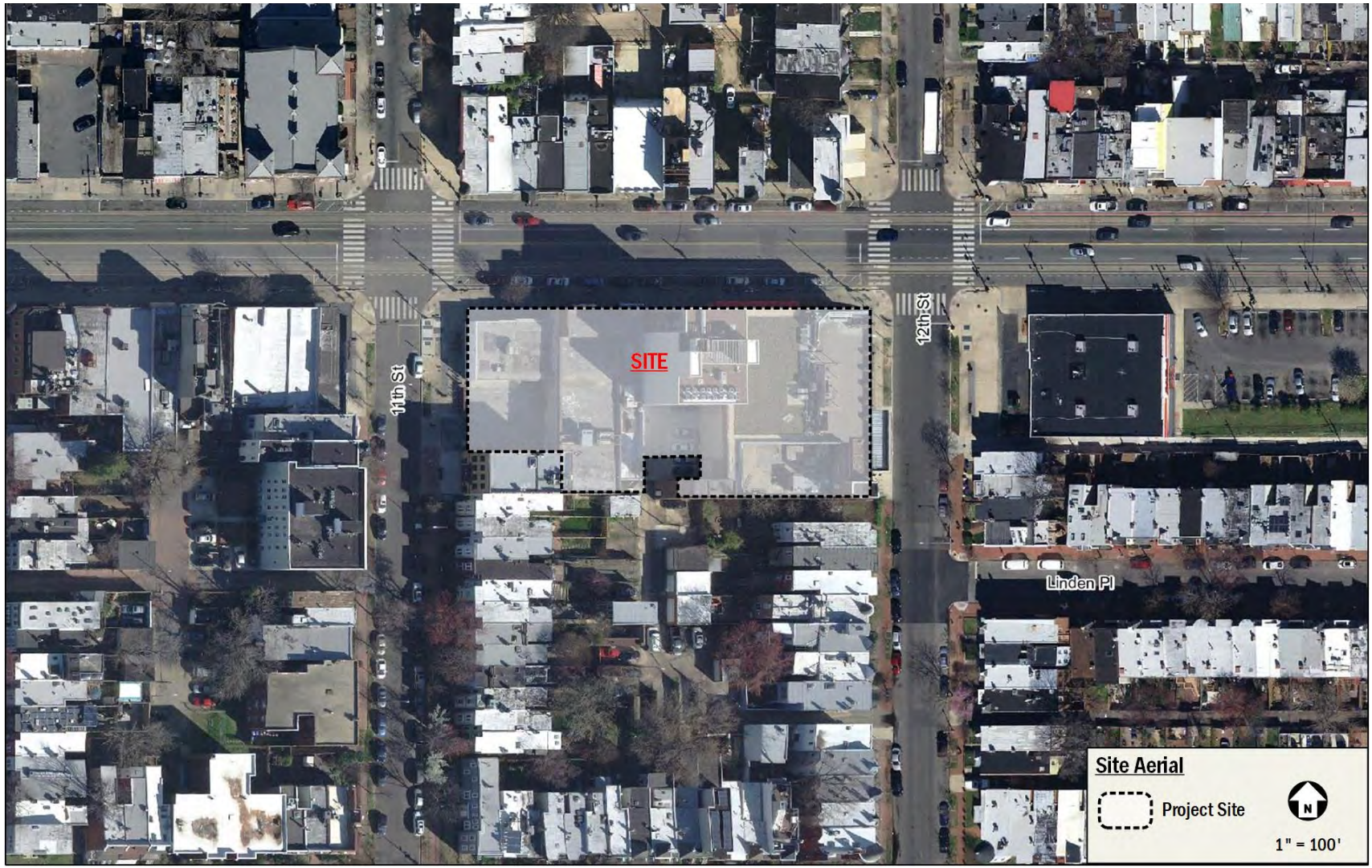

Figure 1: Site Location

Figure 2: Subject Lot Layout

Site Trip Generation Comparison

The site programming information for the Existing Condition, maximum build-out under existing NC-16/MU-4 Zoning, and maximum build-out under proposed NC-17 Zoning is summarized in Table 1. Lots 57 and 68 are assumed to remain the existing condition since they were recently redeveloped. Lots 65, 70, and 823 are assumed to fully utilize the Inclusionary Zoning bonus density and utilize 0.7 FAR for non-residential use on each lot. Lots 70 and 823 are assumed to fully utilize the 0.5 FAR bonus for development that preserves a pre-1958 façade. The residential density for the residential units for Lots 65, 70, and 823 are based on the assumption of 700 sf per residential unit.

Table 1: Development Assumptions for Existing Condition, Max Build-out for Existing Zoning, and Max Build-out for Proposed Zoning

Lot	Existing Condition		Existing Zoning Max Build-out		Proposed Zoning Max Build-out	
	Residential S.F. (DU)	Retail S.F.	Residential S.F. (DU)	Retail S.F.	Residential S.F. (DU)	Retail S.F.
Lot 65	0 (0)	2,255	13,340 (19)*	4,060	20,300 (29)*	4,060
Lot 70	0 (0)	5,376	15,867 (23)*	3,967	22,668 (33)*	3,967
Lot 57	4,485 (6)	1,615	4,485 (6)	1,615	4,485 (6)	1,615
Lot 68	16,320 (16)	2,970	16,320 (16)	2,970	16,320 (16)	2,970
Lot 823	0/0	10,200	38,430 (55)*	9,608	54,900 (78)*	9,608
Total	22 du	22,416 sf	119 du	22,220 sf	162 du	22,220 sf

**Based on 700 sf per unit*

Trip generation for the existing condition and the two development scenarios allowed under the existing and proposed zoning designations was calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition. The mode splits assumed in the trip generation calculations are presented in Table 2. Trip Generation for the existing condition, and two development scenarios are presented in Tables 3a, 3b, and 3c, respectively. Tables 4a, 4b, and 4c present the differences in trip generation between the existing condition and the two development scenarios respectively.

Table 2: Mode Splits

Land Use	Mode			
	Drive	*Transit*	*Bike*	*Walk*
Residential Mode Split	30%	40%	15%	15%
Retail Mode Split	35%	35%	15%	15%

Table 3a: Trip Generation for Existing Condition

Mode	Land Use	AM Peak Hour			PM Peak Hour			Weekday
		In	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Auto	Residential	1 veh/hr	2 veh/hr	3 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	36 veh
	Retail	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	296 veh
	Total	**5 veh/hr**	**5 veh/hr**	**10 veh/hr**	**16 veh/hr**	**17 veh/hr**	**33 veh/hr**	**332 veh**
Transit	Residential	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	2 ppl/hr	5 ppl/hr	56 ppl
	Retail	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	539 ppl
	Total	**9 ppl/hr**	**8 ppl/hr**	**17 ppl/hr**	**29 ppl/hr**	**30 ppl/hr**	**59 ppl/hr**	**595 ppl**
Bike	Residential	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl
	Total	**4 veh/hr**	**3 veh/hr**	**7 veh/hr**	**12 veh/hr**	**13 veh/hr**	**25 veh/hr**	**252 ppl**
Walk	Residential	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl
	Total	**4 ppl/hr**	**3 ppl/hr**	**7 ppl/hr**	**12 ppl/hr**	**13 ppl/hr**	**25 ppl/hr**	**252 ppl**

Table 3b: Trip Generation for Max Build-out for Existing Zoning (NC-16/MU-4)

Mode	Land Use	AM Peak Hour			PM Peak Hour			Weekday
		In	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Auto	Residential	3 veh/hr	10 veh/hr	13 veh/hr	9 veh/hr	6 veh/hr	15 veh/hr	194 veh
	Retail	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh
	Total	**7 veh/hr**	**13 veh/hr**	**20 veh/hr**	**23 veh/hr**	**22 veh/hr**	**45 veh/hr**	**487 veh**
Transit	Residential	5 ppl/hr	15 ppl/hr	20 ppl/hr	15 ppl/hr	9 ppl/hr	24 ppl/hr	305 ppl
	Retail	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
	Total	**13 ppl/hr**	**20 ppl/hr**	**33 ppl/hr**	**41 ppl/hr**	**37 ppl/hr**	**78 ppl/hr**	**839 ppl**
Bike	Residential	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
	Total	**6 ppl/hr**	**8 ppl/hr**	**14 ppl/hr**	**17 ppl/hr**	**15 ppl/hr**	**32 ppl/hr**	**343 ppl**
Walk	Residential	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
	Total	**6 ppl/hr**	**8 ppl/hr**	**14 ppl/hr**	**17 ppl/hr**	**15 ppl/hr**	**32 ppl/hr**	**343 ppl**

Table 3c: Trip Generation for Max Build-out for Proposed Zoning (NC-17)

Mode	Land Use	AM Peak Hour			PM Peak Hour			Weekday
		In	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Auto	Residential	4 veh/hr	13 veh/hr	17 veh/hr	13 veh/hr	8 veh/hr	21 veh/hr	264 veh
	Retail	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh
	Total	**8 veh/hr**	**16 veh/hr**	**24 veh/hr**	**27 veh/hr**	**24 veh/hr**	**51 veh/hr**	**557 veh**
Transit	Residential	7 ppl/hr	20 ppl/hr	27 ppl/hr	20 ppl/hr	14 ppl/hr	34 ppl/hr	416 ppl
	Retail	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
	Total	**15 ppl/hr**	**25 ppl/hr**	**40 ppl/hr**	**46 ppl/hr**	**42 ppl/hr**	**88 ppl/hr**	**950 ppl**
Bike	Residential	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
	Total	**7 ppl/hr**	**9 ppl/hr**	**16 ppl/hr**	**19 ppl/hr**	**17 ppl/hr**	**36 ppl/hr**	**385 ppl**
Walk	Residential	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl
	Retail	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
	Total	**7 ppl/hr**	**9 ppl/hr**	**16 ppl/hr**	**19 ppl/hr**	**17 ppl/hr**	**36 ppl/hr**	**385 ppl**

Table 4a: Trip Generation Comparison (Existing versus Max Build-out for Existing Zoning (NC-16/MU-4))

Scenario	AM Peak Hour (veh/hr)			PM Peak Hour (veh/hr)		
	In	Out	Total	In	Out	Total
Existing Condition	5	5	10	16	17	33
Existing Zoning Max build-out	7	13	20	23	22	45
Difference	**2**	**8**	**10**	**7**	**5**	**12**

Table 4b: Trip Generation Comparison (Existing versus Max Build-out for Proposed Zoning (NC-17))

Scenario	AM Peak Hour (veh/hr)			PM Peak Hour (veh/hr)		
	In	Out	Total	In	Out	Total
Existing Condition	5	5	10	16	17	33
Proposed Zoning Max build-out	8	16	24	27	24	51
Difference	**3**	**11**	**14**	**11**	**7**	**18**

Table 4c: Trip Generation Comparison (Max Build-out for Existing Zoning (NC-16/MU-4) versus Max Build-out for Proposed Zoning (NC-17))

Scenario	AM Peak Hour (veh/hr)			PM Peak Hour (veh/hr)		
	In	Out	Total	In	Out	Total
Existing Zoning Max build-out	7	13	20	23	22	45
Proposed Zoning Max build-out	8	16	24	27	24	51
Difference	**1**	**3**	**4**	**4**	**2**	**6**

As presented in Table 4a, the development scenario under existing zoning (NC-16/MU-4) will generate 10 more vehicular AM peak hour trips and 12 more vehicular PM peak hour trips compared to the existing condition. Similarly, as presented in Table 4b, the development scenario under proposed zoning (NC-17) will generate 14 more vehicular AM peak hour trips and 18 more vehicular PM peak hour trips compared to the existing condition. As presented in Table 4c, the development scenario under proposed zoning (NC-17) will generate 4 more vehicular AM peak hour trips and 6 more vehicular PM peak hour trips compared to the development scenario under existing zoning (NC-16/MU-4). Given that the net new trip generation is less than 25 vehicle trips in the peak direction during critical peak hours, no further vehicular or multimodal analysis is required, and the maximum development program under the Map Amendment application would be accommodated without adverse impact to the surrounding roadway network.

TRANSPORTATION TECHNICAL ATTACHMENTS

1101-1125 H STREET NW

MAP AMENDMENT

WASHINGTON, DC

January 6, 2020

GOROVE / SLADE
Transportation Planners and Engineers

Contents

(Note: Click on heading to navigate directly to each section of the technical attachments)

A: Detailed Trip Generation

Mode Split Assumptions

Residential Component

Pertinent Mode Split data from other sources:

Information Source	Mode						
	SOV	Carpool	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (TAZ 10275 & 10279)	30%	3%	34%	11%	13%	7%	1%
Census Tract - Residents (CT 84.02)	19%	6%	39%	16%	14%	5%	1%
State of the Commute 2016 (of District residents)	35%	4%	42%	16%		3%	
WMATA Ridership Survey Table 9 (average for *Friendship Heights Station Area*)	55%		35%	10%		---	
WMATA Ridership Survey Table 10 (average for CBD)	18%		56%	26%		---	

Mode Split assumed in TIS:

Land Use	Mode				
	Drive	Transit	Bike	Walk	Telecommute/Other
Residential Mode Split	30%	40%	15%	15%	---

Notes: Mode split based primarily on census data, parking supply, and its vicinity to transit/streetcar routes.

Retail Component

Pertinent Mode Split data from other sources:

Information Source	Mode						
	SOV	Carpool	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (TAZ 10275 & 10279)	30%	3%	34%	11%	13%	7%	1%
Census Tract - Residents (CT 84.02)	19%	6%	39%	16%	14%	5%	1%
WMATA Ridership Survey Table 15 (average for *Retail Sites*)	36%		37%	27%		---	

Mode Split assumed in TIS:

Use	Mode				
	Drive	Transit	Bike	Walk	Telecommute/Other
Neighborhood Retail Mode Split	35%	35%	15%	15%	---

Notes: Mode split based primarily on census data, parking supply, and its vicinity to transit/streetcar routes.

Residential Trip Generation (Existing Condition)

Lot 57: 6 units; Lot 68: 16 units (condo), 16320 sf

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	221	22 du	2 veh/hr	6 veh/hr	8 veh/hr	6 veh/hr	4 veh/hr	10 veh/hr	118 veh
		Calculation Details:	*26%*	*74%*	*=0.36X*	*61%*	*39%*	*=0.44X*	*=5.45X/1000-1.7*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	2 ppl/hr	7 ppl/hr	9 ppl/hr	7 ppl/hr	5 ppl/hr	12 ppl/hr	139 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	30%	1 ppl/hr	2 ppl/hr	3 ppl/hr	2 ppl/hr	2 ppl/hr	4 ppl/hr	42 ppl
Apartments	Transit	40%	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	2 ppl/hr	5 ppl/hr	56 ppl
Apartments	Bike	15%	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl
Apartments	Walk	15%	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	1 veh/hr	2 veh/hr	3 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	36 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	1 veh/hr	2 veh/hr	3 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	36 veh
Transit	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	2 ppl/hr	5 ppl/hr	56 ppl
Bike	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl
Walk	0 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

Retail Trip Generation (Existing Condition)

Lot 65: one-story retail, 2255 SF; Lot 70: two-story retail, 5376 SF; Lot 823: one-story retail, (5000+6400+9000)/2 SF; Lot 57: 1615 SF retail; Lot 68: 2970 SF retail

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	820	22,416 sf	13 veh/hr	8 veh/hr	21 veh/hr	41 veh/hr	44 veh/hr	85 veh/hr	846 veh
		Calculation Details:	*62%*	*38%*	*=0.94(X/1000)*	*48%*	*52%*	*=3.81(X/1000)*	*=37.75(X/1000)*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	24 ppl/hr	14 ppl/hr	38 ppl/hr	75 ppl/hr	80 ppl/hr	155 ppl/hr	1540 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	Auto	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	539 ppl
Retail	Transit	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	539 ppl
Retail	Bike	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl
Retail	Walk	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	296 veh

Trip Gen Summary for Retail

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	296 veh
Transit	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	539 ppl
Bike	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl
Walk	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	231 ppl

Residential Trip Generation (Under Existing Zoning NC-16/MU-4)

Max build-out: 13340 (L65) + 15867 (L70)+ 38430 (L823) + 6 units (L57 Ex) + 16 units (L68 Ex) = 119 units (assuming an average 700 sq.ft. per apartment unit)

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	221	119 du	11 veh/hr	32 veh/hr	43 veh/hr	32 veh/hr	20 veh/hr	52 veh/hr	647 veh
		Calculation Details:	*26%*	*74%*	*=0.36X*	*61%*	*39%*	*=0.44X*	*=5.45X/1000-1.7*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	13 ppl/hr	38 ppl/hr	51 ppl/hr	38 ppl/hr	23 ppl/hr	61 ppl/hr	763 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	30%	4 ppl/hr	11 ppl/hr	15 ppl/hr	11 ppl/hr	7 ppl/hr	18 ppl/hr	229 ppl
Apartments	Transit	40%	5 ppl/hr	15 ppl/hr	20 ppl/hr	15 ppl/hr	9 ppl/hr	24 ppl/hr	305 ppl
Apartments	Bike	15%	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl
Apartments	Walk	15%	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	3 veh/hr	10 veh/hr	13 veh/hr	9 veh/hr	6 veh/hr	15 veh/hr	194 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	3 veh/hr	10 veh/hr	13 veh/hr	9 veh/hr	6 veh/hr	15 veh/hr	194 veh
Transit	5 ppl/hr	15 ppl/hr	20 ppl/hr	15 ppl/hr	9 ppl/hr	24 ppl/hr	305 ppl
Bike	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl
Walk	2 ppl/hr	6 ppl/hr	8 ppl/hr	6 ppl/hr	3 ppl/hr	9 ppl/hr	114 ppl

Retail Trip Generation (Under Existing Zoning NC-16/MU-4)

Max build-out: 4060 (Lot 65) + 3967 (Lot 70) + 9608 (Lot 823) + 1615 (Lot 57 Ex) + 2970 (Lot 68 Ex) = 22,220 SF

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	820	22,220 sf	13 veh/hr	8 veh/hr	21 veh/hr	41 veh/hr	44 veh/hr	85 veh/hr	839 veh
		Calculation Details:	*62%*	*38%*	*=0.94(X/1000)*	*48%*	*52%*	*=3.81(X/1000)*	*=37.75(X/1000)*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	24 ppl/hr	14 ppl/hr	38 ppl/hr	75 ppl/hr	80 ppl/hr	155 ppl/hr	1527 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	Auto	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Retail	Transit	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Retail	Bike	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
Retail	Walk	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh

Trip Gen Summary for Retail

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh
Transit	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Bike	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
Walk	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl

Residential Trip Generation (Under Proposed Zoning NC-17)

Max build-out: 20300 (L65) + 22668 (L70) + 54900 (L823) + 6 units (Lot 57 Ex) + 16 units (Lot 68 Ex) = 162 units (assuming an average 700 sq.ft. per apartment unit)

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	221	162 du	15 veh/hr	43 veh/hr	58 veh/hr	43 veh/hr	28 veh/hr	71 veh/hr	881 veh
		Calculation Details:	*26%*	*74%*	*=0.36X*	*61%*	*39%*	*=0.44X*	*=5.45X/1000-1.7*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	18 ppl/hr	50 ppl/hr	68 ppl/hr	51 ppl/hr	33 ppl/hr	84 ppl/hr	1040 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	30%	5 ppl/hr	15 ppl/hr	20 ppl/hr	15 ppl/hr	10 ppl/hr	25 ppl/hr	312 ppl
Apartments	Transit	40%	7 ppl/hr	20 ppl/hr	27 ppl/hr	20 ppl/hr	14 ppl/hr	34 ppl/hr	416 ppl
Apartments	Bike	15%	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl
Apartments	Walk	15%	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	4 veh/hr	13 veh/hr	17 veh/hr	13 veh/hr	8 veh/hr	21 veh/hr	264 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	4 veh/hr	13 veh/hr	17 veh/hr	13 veh/hr	8 veh/hr	21 veh/hr	264 veh
Transit	7 ppl/hr	20 ppl/hr	27 ppl/hr	20 ppl/hr	14 ppl/hr	34 ppl/hr	416 ppl
Bike	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl
Walk	3 ppl/hr	7 ppl/hr	10 ppl/hr	8 ppl/hr	5 ppl/hr	13 ppl/hr	156 ppl

Retail Trip Generation (Under Proposed Zoning NC-17)

Max build-out: 4060 (Lot 65) + 3967 (Lot 70) + 9608 (Lot 823) + 1615 (Lot 57 Ex) + 2970 (Lot 68 Ex) = 22,220 SF

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	820	22,220 sf	13 veh/hr	8 veh/hr	21 veh/hr	41 veh/hr	44 veh/hr	85 veh/hr	839 veh
		Calculation Details:	*62%*	*38%*	*=0.94(X/1000)*	*48%*	*52%*	*=3.81(X/1000)*	*=37.75(X/1000)*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	24 ppl/hr	14 ppl/hr	38 ppl/hr	75 ppl/hr	80 ppl/hr	155 ppl/hr	1527 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	Auto	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Retail	Transit	35%	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Retail	Bike	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
Retail	Walk	15%	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh

Trip Gen Summary for Retail

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	4 veh/hr	3 veh/hr	7 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	293 veh
Transit	8 ppl/hr	5 ppl/hr	13 ppl/hr	26 ppl/hr	28 ppl/hr	54 ppl/hr	534 ppl
Bike	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl
Walk	4 ppl/hr	2 ppl/hr	6 ppl/hr	11 ppl/hr	12 ppl/hr	23 ppl/hr	229 ppl