CITY OF CAMBRIDGE
Traffic, Parking and Transportation
344 Broadway
Cambridge, Massachusetts 02139

www.cambridgema.gov/traffic

Susan E. Clippinger, Director
Brad Gerratt, Deputy Director

Phone: (617) 349-4700
Fax: (617) 349-4747

December 16, 2010

Mr. Scott Thornton
10 New England Business Center Drive
Suite 314
Andover, MA 01810-1066

RE: Residences at Alewife, Criterion Development Partners

Dear Scott,

We have reviewed your December 2010 Traffic Impact Study (TIS) for the proposed Residences at Alewife and certify it as complete and reliable.

Please call Adam Shulman at 617-349-4745 if you have any questions.

Sincerely,

Susan E. Clippinger
Director

cc: Adam Shulman, TP&T
Susan Glazer, CDD
Susanne Rasmussen, CDD
Stuart Dash, CDD
Heather Boujoulian, Criterion Development Partners

Transportation Impact Study

Proposed Residences at Alewife

Cambridge, MA

Prepared for:

Criterion Development Partners
Bedford, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners
10 New England Business Center Drive
Suite 314
Andover, MA 01810-1066

Vanasse & Associates, Inc.
Transportation Engineers & Planners

10 New England Business Center Drive
Suite 314
Andover, MA 01810-1066
Office 978-474-8800
Fax 978-688-6508

Ref: 5882

December 9, 2010

Ms. Susan Clippinger
Department of Traffic, Parking, and Transportation
City of Cambridge
344 Broadway
Cambridge, MA 02139

Re: Transportation Impact Study Re-submittal
Proposed Residences at Alewife (former Faces site)
Cambridge, Massachusetts

Dear Sue:

Vanasse & Associates, Inc. (VAI) is pleased to submit a compilation of traffic data on behalf of Criterion Development Partners, the developer of the Residences at Alewife, a proposed multi-family development to be located on the grounds of the former Faces nightclub. Based on discussion with Adam Shulman, we are enclosing the following:

- Letter to Ms. Susan Clippinger, dated November 29, 2010, presenting the results of traffic counts comparing 2010 existing conditions to those of 2008, when data for the Transportation Impact Study prepared for the site was collected.
- Transportation Impact Study (TIS), dated December 2010, updated due to changes in site plans and on-site parking facilities.

The November 29, 2010 letter compared the results of traffic counts conducted in November 2010 with those collected for the original TIS in 2008. These data indicated that daily traffic volumes on Route 2 have decreased while daily traffic volumes on Acorn Park Drive and Frontage Road have increased. Due to the higher volume on Route 2, the magnitude of decrease is larger (± 4,600 vehicles per day (vpd)) than the increase on Acorn Park Drive (± 400 vpd) or Frontage Road (± 1,000 vpd). This indicates the decrease on Route 2 is likely a result of the decreased economic activity currently as compared with 2008 conditions, and not just a shifting of traffic volume to other roadways. For these reasons, we suggested that the January 2009 TIS be used to satisfy the requirement of the Article 19 Large Project Review document, a conclusion confirmed with Adam Shulman of your office.

The TIS has been updated from the submittal of January 2009 due to changes in the name of the project, parking facilities, and clarification on the parcel addresses. The January 2009 TIS was reviewed and certified by your office in January 2009. The TIS reviewed impacts associated with a 239-unit multi-family development, although during the course of report preparation the unit count was downsized to 227 units. The current proposal is consistent with 227 units proposed. The only other transportation-

related change of any significance from the January 2009 report is the number of parking spaces, which has been modified from 235 to 227, for a ratio of 1.0 space per unit. Bicycle spaces are consistent at 1.0 bicycle spaces per 2.0 vehicle spaces.

Following this cover letter are the TIS and Planning Board Special Permit Criteria Summary Sheets; the November 29, 2010 letter with summary data; and the updated TIS. As required, a CD containing the electronic data is also included. Feel free to contact me if you have any questions or comments on this material.

Sincerely,

VANASSE & ASSOCIATES, INC.

Scott W. Thornton, P.E.
Project Manager

Attachments

cc: A. Shulman – Cambridge TPT
H. Boujoulian – Criterion Development Partners
R. McKinnon
File

Proposed Residences at Alewife

Special Permit Transportation Impact Study Summary Sheet
Planning Board Special Permit Criteria Summary Sheets
November 29, 2010 Letter to Ms. Susan Clippinger
December 2010 TIS – Residences at Alewife

Special Permit Transportation Impact Study Summary Sheet

CITY OF CAMBRIDGE

Special Permit Transportation Impact Study (TIS) — Summary Sheet

Planning Board Permit Number: _____

Project Name: PROPOSED RESIDENCES AT ALEWIFE

Address: 223, 225, and 231 Concord Turnpike, Cambridge, MA

Owner/Developer Name: Criterion Development Partners

Contact Person: Heather Boujoulian

Contact Address: 1102 Taylor Pond Lane

Bedford, MA 01730

Contact Phone: 781-890-5600

ITE sq. ft.: 227 Apartment Units (239 Units analyzed)

Zoning sq. ft.: _____

Land Use Type: Residential

Existing Parking Spaces: 95 Use: _____

New Parking Spaces: 227 Use: _____

Date of Parking Registration Approval: _____

Trip Generation:	Daily	AM Peak Hour	PM Peak Hour
Total Trips	1,712	131	161
Vehicle	1,226	94	115
Transit	304	24	29
Pedestrian	18	1	2
Bicycle	48	4	5

Mode Split (person trips): (Residential)

Vehicle: 75 %

Transit: 18 %

Pedestrian: 1 %

Bicycle: 3 %

Other: 3 %

Transportation Consultant: Vanasse and Associates, Inc.

Contact Name: Scott W. Thornton, P.E.

Phone: 978-474-8800

Date of Building Permit Approval: _____

Planning Board Special Permit Criteria Summary Sheets

CITY OF CAMBRIDGE — Planning Board Criteria Performance Summary

Special Permit Transportation Impact Study (TIS)

Planning Board Permit Number: _____

Project Name: PROPOSED RESIDENCES AT ALEWIFE

Total Data Entries = 69 Total Number of Criteria Exceedences = 6

1. Project Vehicle Trip Generation

Weekday = 1,226 AM Peak Hour = 94 PM Peak Hour = 115 | Meets Criteria? [Y/N] | Y/Y/Y

2. Level of Service (LOS)

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	Existing	With Project	Meets Criteria?	Existing	With Project	Meets Criteria?
Cambridgepark Drive at Alewife Brook Parkway	D	D	Y	F	F (0.7)	Y
Route 2 at Alewife Brook Parkway	D	D	Y	F	F (0.9)	Y
Alewife Brook Parkway at Rindge Avenue	E	E (0.6)	Y	D	D	Y
Alewife Brook Pkwy at Alewife Station Access Road	B	B	Y	C	C	Y
Acorn Park Drive at Alewife Station Off-Ramp	F	F (2.3)	Y	C	C	Y
Alewife Brook Pkwy at Route 2 WB	F	F (0.4)	Y	F	F (1.2)	Y
Alewife Brook Pkwy at Route 2 EB	C	C	Y	C	C	Y

Note: Percentage Roadway Volume Increases shown in parentheses.

3. Traffic on Residential Streets

No residential streets exist at the study locations. This criterion does not apply to the study.

4. Lane Queue (for Signalized Intersections Critical Lane)

Intersection	No. of Lanes Analyzed	A.M. Peak Hour			P.M. Peak Hour		
		Existing	With Project	Meets Criteria?	Existing	With Project	Meets Criteria?
Alewife Brook Pkwy at Route 2	4						
Route 2 EB LT		8	8	Y	11	11	Y
Alewife Station Road WB TH		2	2	Y	20	20	Y
Alewife Brook Pkwy SB TH		8	8	Y	7	7	Y
Alewife Brook Pkwy NWB TH		18	18	Y	42	43	Y
Alewife Brook Pkwy at Alewife Station Access Road	3						
Alewife Station Off-Ramp WB TH		3	3	Y	23	23	Y
Alewife Station Off-Ramp WB RT		0	0	Y	0	0	Y
Alewife Brook Parkway NB TH		4	4	Y	5	5	Y
Alewife Brook Pkwy at Route 2 WB	2						
Route 2 WB TH		23	23	Y	50	50	Y
Alewife Brook Pkwy SB RT		68	69	Y	42	43	Y
Alewife Brook Pkwy at Route 2 EB							
Route 2 EB RT	2	13	13	Y	7	7	Y
Alewife Brook Parkway SB TH		11	11	Y	8	8	Y
Alewife Brook Pkwy at Cambridgepark Drive	5						
Cambridgepark Drive EB LT/RT		2	3	Y	32	32	Y
Alewife Brook Parkway NB LT		11	12	Y	1	1	Y
Alewife Brook Parkway NB TH		5	5	Y	6	6	Y
Alewife Brook Parkway SB TH		39	40	Y	12	12	Y
Alewife Brook Parkway SB RT		2	2	Y	0	0	Y
Alewife Brook Pkwy at Rindge Ave	4						
Rindge Avenue WB LT		11	11	Y	8	8	Y
Rindge Avenue WB RT		8	8	Y	7	7	Y
Alewife Brook Pkwy NB TH/RT		35	35	Y	29	30	Y
Alewife Brook Pkwy SB TH		44	44	Y	27	27	Y

5. Pedestrian and Bicycle Facilities (for Critical Pedestrian Crossing)

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	Existing PLOS	With Project	Meets Criteria?	Existing PLOS	With Project	Meets Criteria?
Alewife Brook Pkwy at Alewife Station Access Road: Crossing Alewife Station Off-Ramp (East)	A	A	Y	A	A	Y
Alewife Brook Pkwy at Cambridgepark Drive/Rindge Avenue:						
Crossing Rindge Avenue (East)	E	E	N	E	E	N
Crossing Cambridgepark Drive (West)	B	B	Y	A	A	Y
Crossing Alewife Brook Parkway (South)	E	E	N	E	E	N
Alewife Station Off-Ramp at Acorn Park Drive: Crossing Acorn Park Drive (South)	C	C	Y	A	A	Y

6. Pedestrian and Bicycle Facilities (Safe Pedestrian and Bicycle Facilities)

Adjacent Street or Public Right-of-Way	Sidewalks or Walkways Present?	Bicycle Facilities or Right-of-Ways Present?
Route 2	N[a]	N[b]

[a]Sidewalk present but not continuous or ADA compliant.
[b]No bike activities are allowed along Route 2.

Vanasse & Associates, Inc.
Transportation Engineers & Planners

10 New England Business Center Drive
Suite 314
Andover, MA 01810-1066
Office 978-474-8800
Fax 978-688-6508

Ref: 5882

November 29, 2010

Ms. Susan Clippinger
Department of Traffic, Parking, and Transportation
City of Cambridge
344 Broadway
Cambridge, MA 02139

Re: Updated Traffic Counts
Proposed Residences at Cambridge (former Faces site)
Cambridge, Massachusetts

Dear Sue:

As suggested, Vanasse & Associates, Inc. (VAI) has collected new traffic counts on behalf of Criterion Development Partners, the developer of the Residences at Cambridge, a proposed multi-family development to be located on the grounds of the former Faces nightclub. The purpose of these new counts was to compare 2010 existing conditions to those of 2008, when data for the Transportation Impact Study (TIS) prepared for the site was collected. The TIS reviewed impacts associated with the same development program as the current project, and was certified by the Traffic, Parking and Transportation (TPT) Department in January 2009. As we discussed, the new counts were conducted at locations consistent with those of the original TIS to determine traffic growth in these locations providing access to the Project. The counts were conducted on Tuesday November 16 and Wednesday November 17, 2010, while data contained in the initial TIS was from March and September of 2008.

The counts indicate that traffic volumes on Route 2 have decreased on a daily basis, while traffic volumes on Acorn Park Drive and Frontage Road have increased on a daily basis. A closer review of the data indicates that the approximate decreases on Route 2 are larger in magnitude than the increases on the other streets. Looking at averages of the hourly totals for each location indicate an increase in the weekday morning commuting time period (6:00 to 10:00 AM) on both Acorn Park Drive and Frontage Road, but during the rest of the day, similar patterns and volumes exist between the two sets of count data. However, on the Route 2 data plots, a general decrease is observed during each hour of the day.

Reviews of Massachusetts Department of Transportation (MassDOT) permanent count data on Route 2 in Lexington indicate that March is a lower traffic volume month than November, which is lower than September, but the monthly variation is not great enough to result in the changes observed in the count data.

For another data point, the counts conducted for Cambridge Discovery Park in 2004 were reviewed. These indicate that the Route 2 traffic levels have decreased since 2004, while the Acorn Park Drive and Frontage Road traffic levels have increased since 2004. A closer review of the 2010 Frontage Road

directional traffic volumes indicates that the westbound traffic levels (from Route 2) are responsible for approximately 84 percent of the increase when compared to the 2008 counts. This leads us to conclude that the congestion at the intersection of Alewife Brook Parkway and Route 2 has resulted in increasing number of motorists using Frontage Road and Acorn Park Drive as alternate routes, and not that the background traffic growth has increased on area roadways.

For these reasons, our conclusion is that the use of the data compiled and used in 2008 and 2009 to develop the original TIS remains a valid approach and represents an accurate basis from which to identify the Project impacts. The Project had no exceedences of the Special Permit criteria due to its own impacts. Recorded exceedences were a lack of handicap pedestrian access and bicycle accommodations, which are due to the Project location abutting Route 2, and also pedestrian Level of Service (PLOS) for the intersection of Alewife Brook Parkway at Cambridgepark Drive/Rindge Avenue, both of which are exceedences of existing conditions with or without the Project.

We are therefore requesting that the results of the original TIS be used to satisfy the requirement to provide a certified TIS for the Special Permit Application, expected to be filed early in December. This will allow the Project to move forward without delay to redevelop an existing deteriorated site to a new attractively designed development that signifies the entry to Cambridge for millions of motorists each year.

A summary of the count data in tabular format, charts indicating the temporal distribution of volumes on the three roadways, and data from the MassDOT Route 2 permanent counter is provided on the following pages. I will be contacting you to discuss our process for filing the Special Permit, and to confirm that you agree with our conclusions. Feel free to contact me if you have any questions or comments on these data or the conclusions reached.

Sincerely,

VANASSE & ASSOCIATES, INC.

Scott W. Thornton, P.E.
Project Manager

Attachments

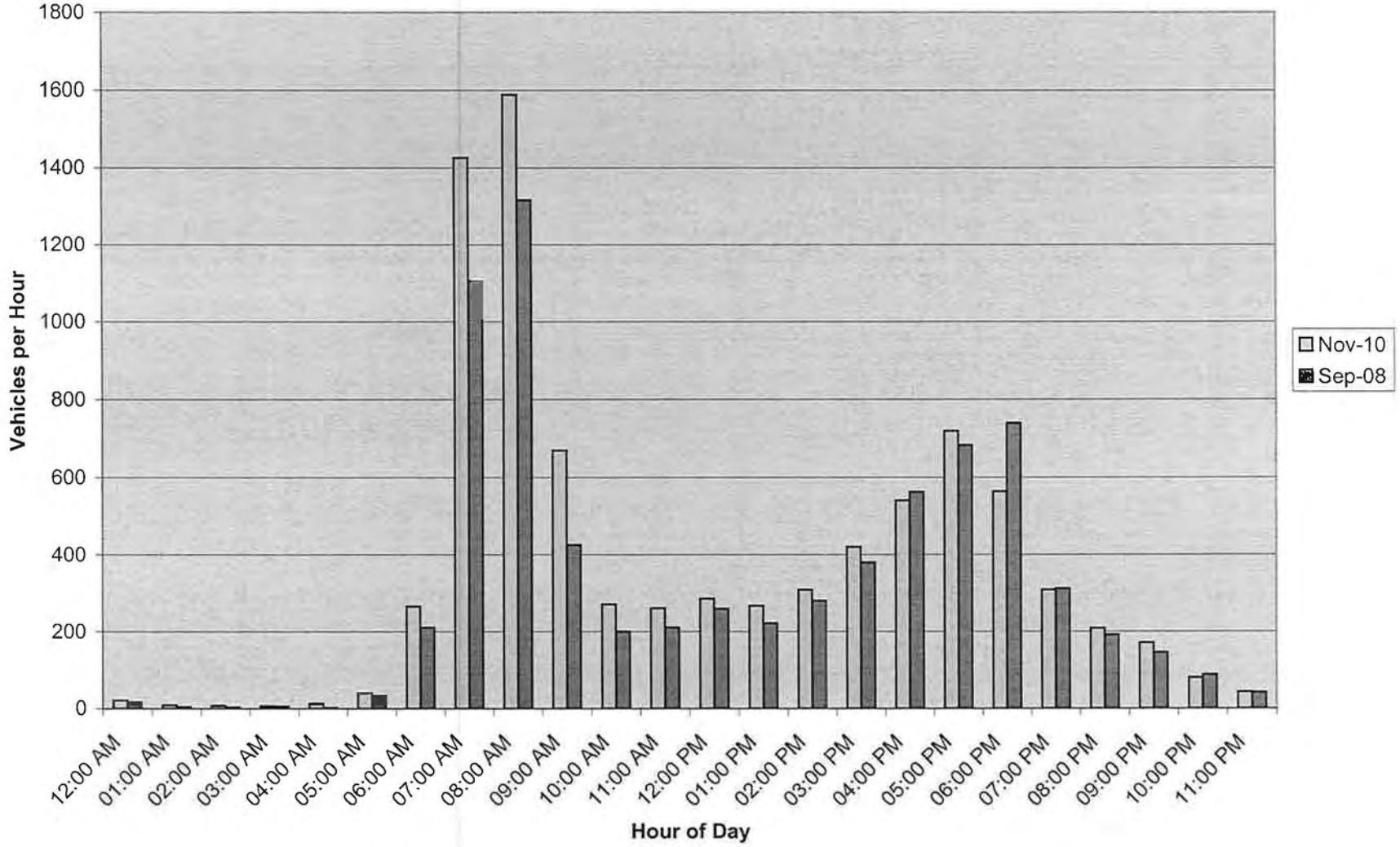
cc: A. Shulman – Cambridge TPT
H. Boujoulian – Criterion Development Partners
R. McKinnon
File

Location : Frontage Road							City/State: Cambridge, MA			
Location : West of Acorn Park										
	11/16/2010		11/17/2010		Average					
Time	EB	WB	EB	WB	EB	EB HOUR	WB	WB HOUR	Total	BOTH DIR. HOUR
12:00 AM	1	3	4	3	2.5		3		6	
12:15 AM	0	13	0	3	0		8		8	
12:30 AM	0	3	1	2	0.5		2.5		3	
12:45 AM	1	2	2	3	1.5	5	2.5	16	9	26
01:00 AM	1	3	0	0	0.5		1.5		2	
01:15 AM	2	2	0	2	1		2		3	
01:30 AM	1	2	0	2	0.5		2		3	
01:45 AM	0	2	0	1	0	2	1.5	7	4	12
02:00 AM	0	1	0	0	0		0.5		1	
02:15 AM	0	3	2	0	1		1.5		3	
02:30 AM	0	1	2	0	1		0.5		2	
02:45 AM	0	1	1	1	0.5	3	1	4	5	11
03:00 AM	0	0	1	1	0.5		0.5		1	
03:15 AM	1	0	0	0	0.5		0		1	
03:30 AM	1	0	0	1	0.5		0.5		1	
03:45 AM	0	0	3	4	1.5	3	2	3	7	10
04:00 AM	0	0	3	0	1.5		0		2	
04:15 AM	0	2	1	0	0.5		1		2	
04:30 AM	1	0	3	5	2		2.5		5	
04:45 AM	2	3	2	2	2	6	2.5	6	11	20
05:00 AM	3	2	3	1	3		1.5		5	
05:15 AM	2	1	2	4	2		2.5		5	
05:30 AM	4	4	7	4	5.5		4		10	
05:45 AM	14	9	12	7	13	24	8	16	45	65
06:00 AM	17	13	16	21	16.5		17		34	
06:15 AM	16	27	24	25	20		26		46	
06:30 AM	26	43	31	47	28.5		45		74	
06:45 AM	35	83	44	62	39.5	105	72.5	161	217	371
07:00 AM	49	102	57	118	53		110		163	
07:15 AM	146	177	139	199	142.5		188		331	
07:30 AM	213	264	192	217	202.5		240.5		443	
07:45 AM	264	294	206	214	235	633	254	793	1122	2059
08:00 AM	241	249	198	186	219.5		217.5		437	
08:15 AM	246	263	204	192	225		227.5		453	
08:30 AM	192	245	166	160	179		202.5		382	
08:45 AM	179	197	126	134	152.5	776	165.5	813	1094	2366
09:00 AM	111	152	74	140	92.5		146		239	
09:15 AM	59	109	65	129	62		119		181	
09:30 AM	42	78	58	106	50		92		142	
09:45 AM	35	55	45	80	40	245	67.5	425	353	915
10:00 AM	29	55	26	56	27.5		55.5		83	
10:15 AM	23	31	26	48	24.5		39.5		64	
10:30 AM	14	35	29	37	21.5		36		58	
10:45 AM	21	42	22	47	21.5	95	44.5	176	161	366
11:00 AM	21	24	22	37	21.5		30.5		52	
11:15 AM	28	43	13	52	20.5		47.5		68	
11:30 AM	22	44	24	50	23		47		70	
11:45 AM	15	55	26	44	20.5	86	49.5	175	156	346

Location : Frontage Road							City/State: Cambridge, MA			
Location : West of Acorn Park										
	11/16/2010		11/17/2010		Average					
Time	EB	WB	EB	WB	EB	EB HOUR	WB	WB HOUR	Total	BOTH DIR. HOUR
12:00 PM	26	39	27	49	26.5		44		71	
12:15 PM	31	42	41	53	36		47.5		84	
12:30 PM	23	42	22	38	22.5		40		63	
12:45 PM	25	47	23	43	24	109	45	177	178	396
01:00 PM	32	31	25	52	28.5		41.5		70	
01:15 PM	21	37	25	34	23		35.5		59	
01:30 PM	25	36	26	40	25.5		38		64	
01:45 PM	33	53	25	39	29	106	46	161	181	374
02:00 PM	20	57	20	59	20		58		78	
02:15 PM	16	42	13	47	14.5		44.5		59	
02:30 PM	17	45	25	51	21		48		69	
02:45 PM	24	71	24	86	24	80	78.5	229	183	389
03:00 PM	12	78	26	74	19		76		95	
03:15 PM	20	75	27	80	23.5		77.5		101	
03:30 PM	21	96	17	88	19		92		111	
03:45 PM	19	98	20	91	19.5	81	94.5	340	195	502
04:00 PM	14	115	19	89	16.5		102		119	
04:15 PM	20	105	20	114	20		109.5		130	
04:30 PM	17	131	22	127	19.5		129		149	
04:45 PM	22	120	22	125	22	78	122.5	463	223	621
05:00 PM	32	142	17	133	24.5		137.5		162	
05:15 PM	28	163	29	172	28.5		167.5		196	
05:30 PM	26	145	28	160	27		152.5		180	
05:45 PM	36	152	28	148	32	112	150	608	294	832
06:00 PM	30	134	25	154	27.5		144		172	
06:15 PM	28	100	19	148	23.5		124		148	
06:30 PM	20	93	23	110	21.5		101.5		123	
06:45 PM	28	98	30	86	29	102	92	462	223	666
07:00 PM	26	72	27	67	26.5		69.5		96	
07:15 PM	22	65	34	62	28		63.5		92	
07:30 PM	26	47	15	49	20.5		48		69	
07:45 PM	14	41	19	31	16.5	92	36	217	145	402
08:00 PM	9	43	10	41	9.5		42		52	
08:15 PM	11	34	16	53	13.5		43.5		57	
08:30 PM	14	32	11	46	12.5		39		52	
08:45 PM	5	43	5	43	5	41	43	168	89	250
09:00 PM	9	33	10	34	9.5		33.5		43	
09:15 PM	9	31	18	32	13.5		31.5		45	
09:30 PM	4	29	9	28	6.5		28.5		35	
09:45 PM	6	25	11	53	8.5	38	39	133	86	209
10:00 PM	1	11	3	24	2		17.5		20	
10:15 PM	7	12	6	19	6.5		15.5		22	
10:30 PM	7	16	13	11	10		13.5		24	
10:45 PM	5	10	2	12	3.5	22	11	58	37	103
11:00 PM	4	9	3	5	3.5		7		11	
11:15 PM	1	8	4	9	2.5		8.5		11	
11:30 PM	1	15	1	9	1		12		13	
11:45 PM	1	5	2	7	1.5	9	6	34	17	52

	Nov-10		Sep-08		Volume Difference		Percent Difference	
	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	5	16	4	12	1	4	25%	33%
01:00 AM	2	7	2	2	0	5	0%	250%
02:00 AM	3	4	1	2	2	2	200%	100%
03:00 AM	3	3	3	2	0	1	0%	50%
04:00 AM	6	6	2	0	4	6	200%	-
05:00 AM	24	16	20	13	4	3	20%	23%
06:00 AM	105	161	77	134	28	27	36%	20%
07:00 AM	633	793	546	560	87	233	16%	42%
08:00 AM	776	813	694	622	82	191	12%	31%
09:00 AM	245	425	184	242	61	183	33%	76%
10:00 AM	95	176	82	118	13	58	16%	49%
11:00 AM	86	175	73	138	13	37	18%	27%
12:00 PM	109	177	102	158	7	19	7%	12%
01:00 PM	106	161	92	130	14	31	15%	24%
02:00 PM	80	229	76	204	4	25	5%	12%
03:00 PM	81	340	86	294	-5	46	-6%	16%
04:00 PM	78	463	92	471	-14	-8	-15%	-2%
05:00 PM	112	608	169	514	-57	94	-34%	18%
06:00 PM	102	462	162	578	-60	-116	-37%	-20%
07:00 PM	92	217	82	230	10	-13	12%	-6%
08:00 PM	41	168	62	130	-21	38	-34%	29%
09:00 PM	38	133	34	112	4	21	12%	19%
10:00 PM	22	58	30	58	-8	0	-27%	0%
11:00 PM	9	34	9	32	0	2	0%	6%
Directional Totals	2853	5645	2684	4756	169	889	6%	19%
Total Flows	8498		7440		1058			
Percent Variation					16%	84%		

Frontage Road Daily Volume

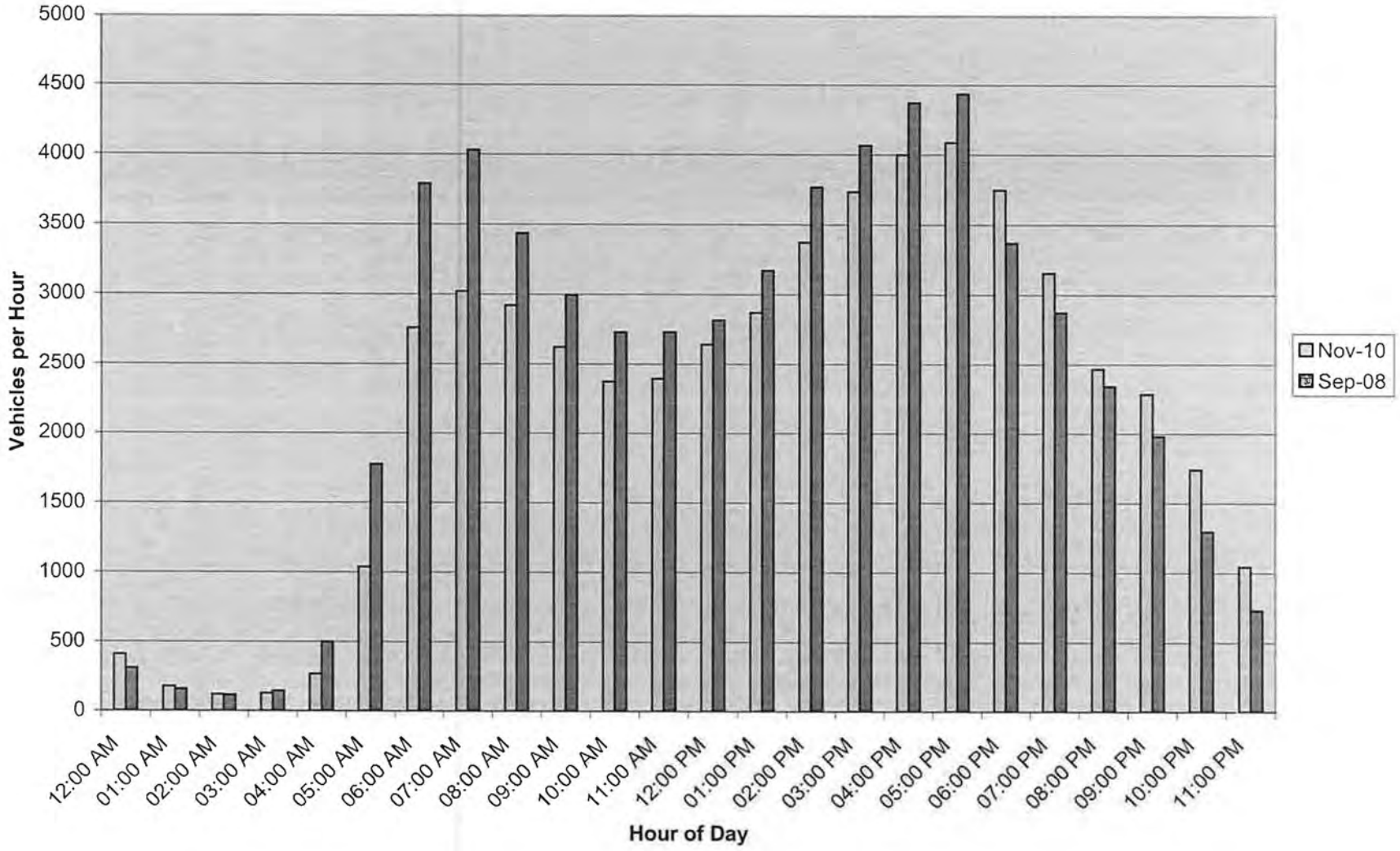


Location 1: Rt 2 inside and Outside Lanes EB & WB														City/State: Cambridge, MA			
Location 2: West of Alewife Brook Pkwy																	
	11/16/2010						11/17/2010						Average				
Time	WB	WB	Total WB	EB	EB	Total EB	WB	WB	Total WB	EB	EB	Total EB	WB	EB	Total	Peak Hour
12:00 AM	53	30	83	16	22	38	50	36	86	10	24	34	84.5	38	121	
12:15 AM	47	27	74	15	24	39	47	31	78	16	29	45	76	42	118	
12:30 AM	39	20	59	13	23	36	40	30	70	6	17	23	64.5	29.5	94	
12:45 AM	32	17	49	10	14	24	26	18	44	11	23	34	46.5	29	76	409
01:00 AM	19	11	30	12	18	30	22	11	33	12	12	24	31.5	27	59	
01:15 AM	20	6	26	5	10	15	22	12	34	4	9	13	30	14	44	
01:30 AM	16	8	24	1	10	11	15	11	26	2	8	10	25	10.5	36	
01:45 AM	11	5	16	6	6	12	12	12	24	7	13	20	20	16	36	175
02:00 AM	14	5	19	2	6	8	14	5	19	3	6	9	19	8.5	28	
02:15 AM	9	4	13	5	5	10	20	11	31	8	10	18	22	14	36	
02:30 AM	11	5	16	4	7	11	10	7	17	8	7	15	16.5	13	30	
02:45 AM	11	2	13	2	12	14	11	2	13	0	6	6	13	10	23	117
03:00 AM	11	7	18	5	5	10	11	4	15	6	11	17	16.5	13.5	30	
03:15 AM	15	6	21	8	5	13	15	6	21	6	12	18	21	15.5	37	
03:30 AM	9	1	10	6	15	21	5	4	9	4	13	17	9.5	19	29	
03:45 AM	5	1	6	7	14	21	10	2	12	6	16	22	9	21.5	31	127
04:00 AM	12	2	14	5	16	21	10	2	12	8	16	24	13	22.5	36	
04:15 AM	13	4	17	10	25	35	20	6	26	9	14	23	21.5	29	51	
04:30 AM	28	11	39	10	29	39	18	7	25	13	38	51	32	45	77	
04:45 AM	24	13	37	15	50	65	26	7	33	13	55	68	35	66.5	102	266
05:00 AM	32	18	50	24	57	81	37	15	52	21	57	78	51	79.5	131	
05:15 AM	54	26	80	41	77	118	50	14	64	36	81	117	72	117.5	190	
05:30 AM	76	46	122	73	147	220	78	37	115	61	112	173	118.5	196.5	315	
05:45 AM	111	35	146	100	161	261	108	44	152	85	159	244	149	252.5	402	1038
06:00 AM	135	54	189	124	233	357	136	47	183	120	221	341	186	349	535	
06:15 AM	201	87	288	166	256	422	198	77	275	140	269	409	281.5	415.5	697	
06:30 AM	241	80	321	185	267	452	242	85	327	141	314	455	324	453.5	778	
06:45 AM	295	77	372	93	230	323	270	100	370	127	309	436	371	379.5	751	2761
07:00 AM	308	104	412	153	210	363	295	110	405	122	213	335	408.5	349	758	
07:15 AM	320	119	439	117	195	312	311	102	413	108	217	325	426	318.5	745	
07:30 AM	330	108	438	91	157	248	340	130	470	104	205	309	454	278.5	733	
07:45 AM	352	167	519	105	201	306	338	114	452	80	213	293	485.5	269.5	765	3021
08:00 AM	294	143	437	68	272	340	330	104	434	92	183	275	435.5	307.5	743	
08:15 AM	351	153	504	68	269	337	290	118	408	93	196	289	456	313	769	
08:30 AM	330	110	440	90	161	251	319	120	439	65	276	341	439.5	296	736	
08:45 AM	324	85	409	50	249	299	341	91	432	79	122	201	420.5	250	671	2919
09:00 AM	253	91	344	65	225	310	266	70	336	79	176	255	340	282.5	623	
09:15 AM	243	107	350	48	265	313	246	83	329	37	198	235	339.5	274	614	
09:30 AM	225	104	329	57	284	341	256	105	361	42	300	342	345	341.5	687	
09:45 AM	275	110	385	71	271	342	226	83	309	69	290	359	347	350.5	698	2622
10:00 AM	213	104	317	106	231	337	211	76	287	126	146	272	302	304.5	607	
10:15 AM	183	114	297	91	262	353	215	71	286	111	98	209	291.5	281	573	
10:30 AM	221	147	368	87	270	357	218	65	283	98	99	197	325.5	277	603	
10:45 AM	183	158	341	102	243	345	188	62	250	108	133	241	295.5	293	589	2372
11:00 AM	185	120	305	83	253	336	171	68	239	102	96	198	272	267	539	
11:15 AM	186	140	326	95	251	346	201	88	289	105	148	253	307.5	299.5	607	
11:30 AM	215	143	358	83	251	334	209	82	291	120	141	261	324.5	297.5	622	
11:45 AM	208	152	359	92	228	320	226	90	316	103	153	256	337	288	625	2393

Location: Rt 2 Inside and Outside Lanes EB & WB														City/State: Cambridge, MA		
Location: West of Alewife Brook Pkwy																
	11/16/2010						11/17/2010						Average			
Time	WB	WB	Total WB	EB	EB	Total EB	WB	WB	Total WB	EB	EB	Total EB	WB	EB	Total	Peak Hour
12:00 PM	204	146	350	81	237	318	224	105	329	99	160	259	339.5	288.5	628	
12:15 PM	203	146	349	92	262	354	233	151	384	81	224	305	366.5	329.5	696	
12:30 PM	217	156	373	97	256	353	242	140	382	100	166	266	377.5	309.5	687	
12:45 PM	229	161	390	96	241	337	250	93	343	109	63	192	366.5	264.5	631	2642
01:00 PM	239	167	406	60	215	295	241	129	370	89	183	272	388	283.5	672	
01:15 PM	238	171	409	82	261	343	230	176	406	89	217	306	407.5	324.5	732	
01:30 PM	248	149	397	95	260	355	219	145	364	82	219	301	380.5	328	709	
01:45 PM	248	172	420	83	221	304	305	166	471	100	221	321	445.5	312.5	758	2871
02:00 PM	279	211	490	83	240	323	283	231	514	83	215	298	502	310.5	813	
02:15 PM	282	210	492	61	243	304	279	199	478	66	225	311	485	307.5	793	
02:30 PM	314	240	554	97	257	354	323	216	539	100	265	365	546.5	359.5	906	
02:45 PM	308	208	516	86	256	342	311	219	530	82	256	338	523	340	863	3375
03:00 PM	332	261	593	89	254	343	317	183	500	81	249	330	546.5	336.5	883	
03:15 PM	323	231	554	87	280	367	328	175	503	73	250	323	528.5	345	874	
03:30 PM	355	245	600	106	272	378	400	258	658	101	278	379	629	378.5	1008	
03:45 PM	370	241	611	87	267	354	360	260	620	89	263	352	615.5	353	969	3734
04:00 PM	359	294	653	91	235	326	382	251	633	88	238	326	643	326	969	
04:15 PM	349	237	586	99	282	381	382	230	612	93	271	364	599	372.5	972	
04:30 PM	422	256	678	95	313	408	413	233	646	97	261	358	662	383	1045	
04:45 PM	423	269	692	99	262	361	405	238	643	85	246	331	667.5	348	1014	4000
05:00 PM	416	311	729	110	312	422	413	200	613	77	226	303	671	382.5	1034	
05:15 PM	406	264	670	65	310	375	417	240	657	98	290	378	663.5	376.5	1040	
05:30 PM	418	226	642	67	323	390	406	268	674	70	224	294	656	342	1000	
05:45 PM	404	220	624	92	290	382	417	277	694	65	262	327	659	354.5	1014	4088
06:00 PM	411	248	659	74	318	392	404	253	657	59	229	288	658	340	998	
06:15 PM	391	177	568	58	271	329	402	260	662	82	212	294	615	311.5	927	
06:30 PM	396	216	612	96	284	380	406	263	669	70	288	358	640.5	369	1010	
06:45 PM	293	150	443	86	282	368	310	146	456	82	278	360	449.5	364	814	3749
07:00 PM	280	156	436	109	305	414	290	205	495	98	252	350	465.5	382	848	
07:15 PM	278	172	450	108	266	374	296	190	486	99	243	342	468	358	826	
07:30 PM	267	176	443	100	212	312	264	192	456	88	212	300	449.5	306	756	
07:45 PM	261	175	436	98	187	285	273	199	472	84	172	256	454	270.5	725	3155
08:00 PM	240	170	410	66	154	220	265	170	435	72	165	237	422.5	228.5	651	
08:15 PM	259	162	412	67	141	208	244	172	416	79	159	238	414	223	637	
08:30 PM	214	156	370	70	136	206	248	136	384	80	141	221	377	213.5	591	
08:45 PM	231	147	378	55	107	162	242	161	403	71	160	231	390.5	196.5	587	2466
09:00 PM	191	138	329	67	123	190	253	162	415	57	138	195	372	192.5	565	
09:15 PM	208	158	366	65	132	197	255	184	439	80	144	224	402.5	210.5	613	
09:30 PM	181	144	325	69	135	204	245	158	403	72	126	198	364	201	565	
09:45 PM	208	131	339	59	104	163	254	159	413	52	114	166	376	164.5	541	2284
10:00 PM	188	129	317	63	108	171	237	157	394	37	89	126	355.5	148.5	504	
10:15 PM	149	112	261	39	79	118	245	131	376	49	92	141	318.5	129.5	448	
10:30 PM	133	95	228	48	71	119	217	157	374	36	84	120	301	119.5	421	
10:45 PM	121	89	210	33	55	88	213	114	327	35	72	107	268.5	97.5	366	1739
11:00 PM	136	92	228	53	49	102	133	104	237	32	50	82	232.5	92	325	
11:15 PM	129	81	210	40	66	106	121	79	200	40	63	103	205	105.5	311	
11:30 PM	109	68	177	27	43	70	100	56	156	23	47	70	166.5	70	237	
11:45 PM	65	49	114	17	27	44	87	42	129	21	34	55	121.5	49.5	171	1044

	Nov-10	Sep-08	Volume Difference	Percent Difference
12:00 AM	409	308	101	33%
01:00 AM	175	156	19	12%
02:00 AM	117	113	4	4%
03:00 AM	127	144	-17	-12%
04:00 AM	266	500	-234	-47%
05:00 AM	1038	1775	-737	-42%
06:00 AM	2761	3791	-1030	-27%
07:00 AM	3021	4030	-1009	-25%
08:00 AM	2919	3438	-519	-15%
09:00 AM	2622	2996	-374	-12%
10:00 AM	2372	2728	-356	-13%
11:00 AM	2393	2731	-338	-12%
12:00 PM	2642	2816	-174	-6%
01:00 PM	2871	3172	-301	-9%
02:00 PM	3375	3767	-392	-10%
03:00 PM	3734	4067	-333	-8%
04:00 PM	4000	4374	-374	-9%
05:00 PM	4088	4438	-350	-8%
06:00 PM	3749	3372	377	11%
07:00 PM	3155	2873	282	10%
08:00 PM	2466	2340	126	5%
09:00 PM	2284	1980	304	15%
10:00 PM	1739	1297	442	34%
11:00 PM	1044	730	314	43%
Totals	53367	57936	-4569	-8%

Route 2 Daily Volume

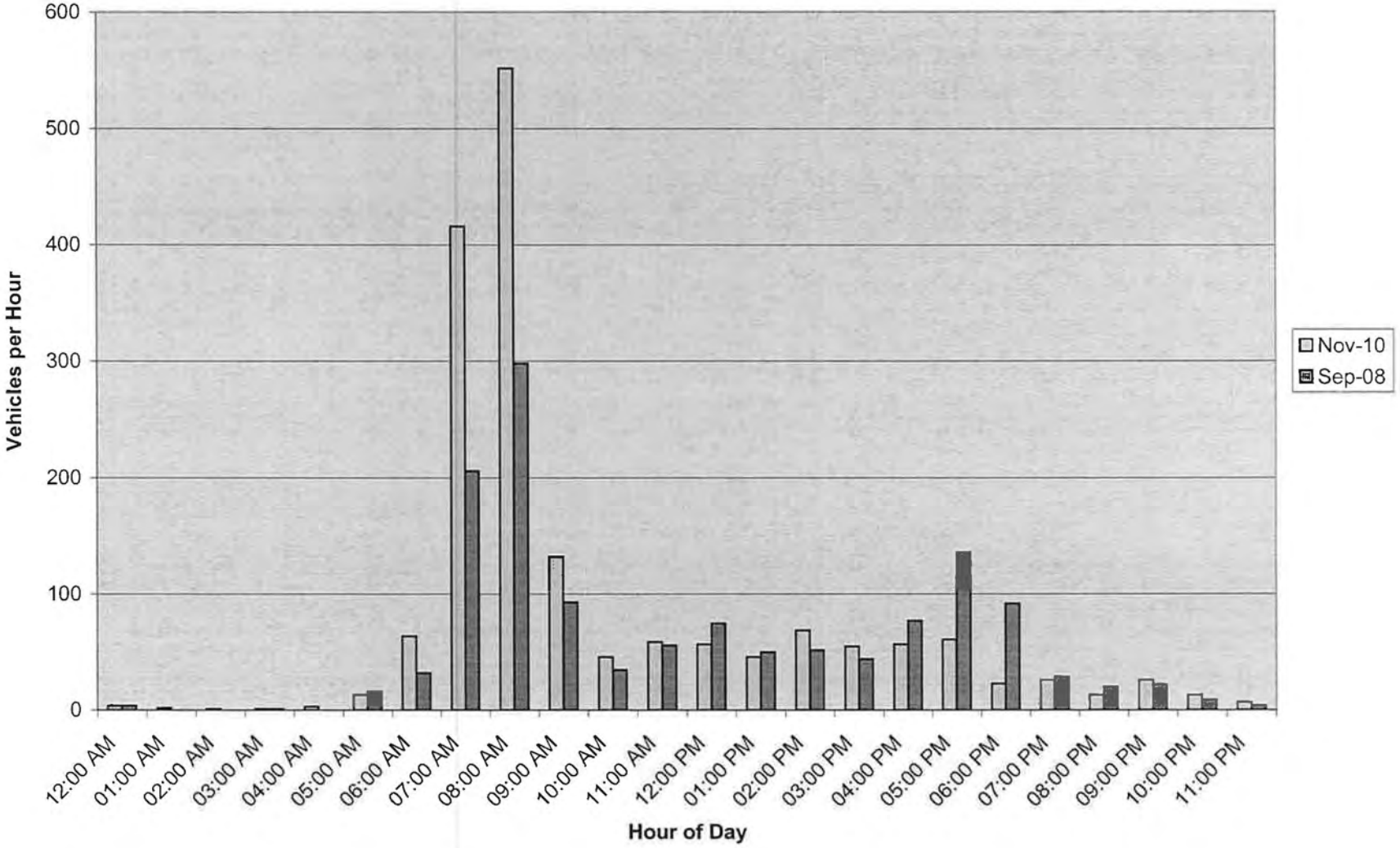


Location : Acorn Park South of						City/State: Cambridge, MA		
Location : Frontage Road								
	11/16/2010			11/17/2010				
Time	NB	SB	TOTAL	NB	SB	TOTAL	AVERAGE	PEAK HOUR
12:00 AM	0	0	0	0	1	1	0.5	
12:15 AM	0	2	2	0	3	3	2.5	
12:30 AM	0	0	0	0	0	0	0	
12:45 AM	0	1	1	0	0	0	0.5	4
01:00 AM	0	0	0	0	0	0	0	
01:15 AM	0	0	0	0	0	0	0	
01:30 AM	0	2	2	0	1	1	1.5	
01:45 AM	0	0	0	0	0	0	0	2
02:00 AM	0	0	0	0	0	0	0	
02:15 AM	0	0	0	0	0	0	0	
02:30 AM	0	0	0	0	0	0	0	
02:45 AM	0	0	0	1	0	1	0.5	1
03:00 AM	0	0	0	0	0	0	0	
03:15 AM	0	0	0	0	0	0	0	
03:30 AM	1	0	1	0	0	0	0.5	
03:45 AM	0	0	0	0	0	0	0	1
04:00 AM	0	0	0	1	0	1	0.5	
04:15 AM	0	1	1	0	0	0	0.5	
04:30 AM	1	0	1	0	0	0	0.5	
04:45 AM	0	0	0	1	1	2	1	3
05:00 AM	3	0	3	1	0	1	2	
05:15 AM	1	0	1	1	1	2	1.5	
05:30 AM	0	0	0	2	0	2	1	
05:45 AM	8	0	8	9	0	9	8.5	13
06:00 AM	10	1	11	11	1	12	11.5	
06:15 AM	9	0	9	15	4	19	14	
06:30 AM	10	0	10	18	4	22	16	
06:45 AM	18	4	22	17	5	22	22	64
07:00 AM	12	2	14	30	2	32	23	
07:15 AM	85	1	86	84	3	87	86.5	
07:30 AM	147	3	150	127	4	131	140.5	
07:45 AM	181	5	186	144	1	145	165.5	416
08:00 AM	163	10	173	135	0	135	154	
08:15 AM	174	21	195	141	1	142	168.5	
08:30 AM	139	3	142	119	0	119	130.5	
08:45 AM	115	1	116	81	0	81	98.5	552
09:00 AM	73	3	76	49	2	51	63.5	
09:15 AM	17	0	17	42	6	48	32.5	
09:30 AM	13	1	14	27	1	28	21	
09:45 AM	13	2	15	12	3	15	15	132
10:00 AM	8	4	12	10	9	19	15.5	
10:15 AM	6	1	7	12	1	13	10	
10:30 AM	5	3	8	9	4	13	10.5	
10:45 AM	5	3	8	6	5	11	9.5	46
11:00 AM	6	3	9	8	4	12	10.5	
11:15 AM	6	8	14	2	11	13	13.5	
11:30 AM	5	16	21	3	14	17	19	
11:45 AM	5	16	21	7	4	11	16	59

Location : Acorn Park South of						City/State: Cambridge, MA		
Location : Frontage Road								
	11/16/2010			11/17/2010				
Time	NB	SB	TOTAL	NB	SB	TOTAL	AVERAGE	PEAK HOUR
12:00 PM	5	5	10	10	8	18	14	
12:15 PM	10	5	15	13	9	22	18.5	
12:30 PM	8	2	10	11	7	18	14	
12:45 PM	7	2	9	6	5	11	10	57
01:00 PM	12	0	12	11	5	16	14	
01:15 PM	1	6	7	6	3	9	8	
01:30 PM	6	3	9	11	5	16	12.5	
01:45 PM	9	6	15	3	5	8	11.5	46
02:00 PM	8	11	19	6	18	24	21.5	
02:15 PM	2	4	6	3	9	12	9	
02:30 PM	5	5	10	6	7	13	11.5	
02:45 PM	2	18	20	9	24	33	26.5	69
03:00 PM	5	11	16	7	13	20	18	
03:15 PM	2	9	11	5	14	19	15	
03:30 PM	1	7	8	5	9	14	11	
03:45 PM	2	6	8	1	12	13	10.5	55
04:00 PM	0	14	14	2	9	11	12.5	
04:15 PM	4	12	16	6	12	18	17	
04:30 PM	6	5	11	3	12	15	13	
04:45 PM	6	9	15	4	9	13	14	57
05:00 PM	1	11	12	1	14	15	13.5	
05:15 PM	1	15	16	3	18	21	18.5	
05:30 PM	2	7	9	7	6	13	11	
05:45 PM	8	14	22	4	9	13	17.5	61
06:00 PM	3	3	6	2	3	5	5.5	
06:15 PM	0	3	3	4	6	10	6.5	
06:30 PM	2	0	2	0	3	3	2.5	
06:45 PM	6	4	10	1	5	6	8	23
07:00 PM	0	4	4	2	6	8	6	
07:15 PM	1	4	5	4	9	13	9	
07:30 PM	2	7	9	1	4	5	7	
07:45 PM	0	4	4	1	3	4	4	26
08:00 PM	0	3	3	1	4	5	4	
08:15 PM	1	3	4	0	4	4	4	
08:30 PM	2	0	2	1	3	4	3	
08:45 PM	0	2	2	0	1	1	1.5	13
09:00 PM	1	3	4	0	0	0	2	
09:15 PM	0	7	7	4	6	10	8.5	
09:30 PM	0	7	7	3	1	4	5.5	
09:45 PM	0	4	4	1	15	16	10	26
10:00 PM	0	1	1	0	6	6	3.5	
10:15 PM	4	1	5	0	3	3	4	
10:30 PM	2	2	4	1	3	4	4	
10:45 PM	1	0	1	0	2	2	1.5	13
11:00 PM	2	2	4	0	1	1	2.5	
11:15 PM	0	0	0	0	3	3	1.5	
11:30 PM	0	3	3	1	0	1	2	
11:45 PM	0	2	2	0	0	0	1	7

		Nov-10	Sep-08	Volume Difference	Percent Difference
	12:00 AM	4	4	0	0%
	01:00 AM	2	0	2	-
	02:00 AM	1	0	1	-
	03:00 AM	1	1	0	0%
	04:00 AM	3	0	3	-
	05:00 AM	13	16	-3	-19%
	06:00 AM	64	32	32	100%
	07:00 AM	416	206	210	102%
	08:00 AM	552	298	254	85%
	09:00 AM	132	93	39	42%
	10:00 AM	46	35	11	31%
	11:00 AM	59	56	3	5%
	12:00 PM	57	75	-18	-24%
	01:00 PM	46	50	-4	-8%
	02:00 PM	69	52	17	33%
	03:00 PM	55	44	11	25%
	04:00 PM	57	77	-20	-26%
	05:00 PM	61	136	-75	-55%
	06:00 PM	23	92	-69	-75%
	07:00 PM	26	29	-3	-10%
	08:00 PM	13	20	-7	-35%
	09:00 PM	26	22	4	18%
	10:00 PM	13	9	4	44%
	11:00 PM	7	4	3	75%
	Totals	1746	1351	395	29%

Acorn Park Drive Daily Volumes



STATION 4798 - LEXINGTON - RTE. 2 - WEST OF PLEASANT ST.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
05	57,027	66,995	72,196	77,189	74,222	74,735	66,931	69,361	77,829	76,238	*75,564*	72,282	71,714
07	*68,000*	68,616	72,673	74,017	78,084	77,591	72,321	*73,150*	*73,355*	79,113	74,842	*67,488*	73,271
Average			72,435						75,592		75,203		72,492
Relationships to Ave. Month			-0.08%						4.28%		3.74%		0.00%
November Relationships			3.82%						-0.51%				

TRANSPORTATION IMPACT STUDY

PROPOSED RESIDENCES AT ALEWIFE
CAMBRIDGE, MASSACHUSETTS

Prepared for:

CRITERION DEVELOPMENT PARTNERS
BEDFORD, MASSACHUSETTS

December 2010

Prepared by:

VANASSE & ASSOCIATES, INC.
Transportation Engineers & Planners
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Suite 314
Andover, MA 01810

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CONTENTS (Continued)

TABLES

TABLES (Continued)

FIGURES

FIGURES (Continued)

EXECUTIVE SUMMARY

PURPOSE OF STUDY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Study (TIS) for the proposed Residences at Alewife to be located at 223, 225, and 231 Concord Turnpike (Route 2) in Cambridge. The property is currently occupied by the former Faces night club. This study reviews the potential transportation impacts, defines site access requirements, and recommends mitigation measures necessary to accommodate redevelopment of the site. The study also reviews the project with respect to the City of Cambridge Special Permit Criteria (SPC) regarding traffic impacts, is in accordance with the City's guidelines for TIS, and follows the scoping determination dated August 22, 2008. The following briefly summarizes the study findings.

PROJECT DESCRIPTION

The proposed project would consist of the demolition of the existing building and the construction of 227 apartment units. Access will be provided through one right-turn only entrance driveway and one right-turn only exit driveway, to and from Route 2 eastbound. Parking will be provided for 227 vehicles and at least 114 bicycles on site. The site is generally bounded by Route 2 in the north, Acorn Park Drive in the west and south, and Discovery Park in the east.

EXISTING CONDITIONS

Existing Traffic Volumes

A field inventory of existing study area roadways was conducted to document traffic conditions in the baseline 2008 analysis year. Items collected regarding the study area roadways and intersections include roadway geometrics, traffic control devices, traffic signal timing plans, traffic volumes, vehicle queues, pedestrian crossing volumes, bicycle volumes, and safety data for the roadways in the vicinity of the site. Transportation information and data used in this study were collected during March, September, and December 2008. Traffic volumes were not seasonally adjusted for this analysis.

The study area included the following locations, identified in the scoping letter from the City of Cambridge dated August 22, 2008:

- Lake Street at Route 2 WB Off-ramp
- Lake Street at Frontage Road
- Frontage Road at Acorn Park Drive
- Frontage Road at Route 2 EB On-ramp
- Acorn Park Drive at Alewife Station Off-Ramp
- Route 2 at Alewife Brook Parkway
- Alewife Brook Parkway at Cambridgepark Drive
- Alewife Brook Parkway at Rindge Avenue

Route 2, in the vicinity of the site, carries approximately 57,840 vehicles per day (vpd) on an average weekday, with 4,030 vehicles per hour (vph) observed during the morning peak hour and approximately 4,440 vph observed during the evening peak hour.

Existing Public Transit

The site is located within ½ mile of the Massachusetts Bay Transportation Authority (MBTA) Alewife Station, where a total of 7 bus routes terminate. From the Red Line, connections to the other subway lines can be made via Park Street, Downtown Crossing, and commuter rail lines can be accessed through the South Station stop, also on the Red Line.

Vehicle Crashes

Crash data for the study area were collected from the Massachusetts Highway Department (MassHighway) for the three most recent calendar years of available data to examine crash trends occurring within the study area.

The intersection of Alewife Brook Parkway at Route 2 has recorded the highest number of crashes of the study area intersections, averaging 30.7 crashes per year. Approximately 70 percent of the reported crashes at this intersection were angle-type or rear-end collisions, which is typical for a busy intersection. The intersection of Alewife Brook Parkway with Rindge Avenue was the next highest frequency location, with 4.3 crashes per year. No crashes were recorded at the intersections of Frontage Road at Acorn Park Drive, Frontage Road at Route 2, and Acorn Park Drive at Alewife Station Off-Ramp. A fatal accident was recorded at the Alewife Brook Parkway intersection with Rindge Avenue on October 6, 2004 around 4:55 AM early morning, when an eastbound vehicle struck a pedestrian. It was noted that no street lights were in operation at the time of the crash.

SITE-GENERATED TRAFFIC VOLUMES

The project was originally proposed for 239 units. The proponent is now proposing to construct 227 apartment units on site. The study reviewed impacts associated with 239 units, which provides a more conservative scenario. Traffic volumes expected to be generated by the proposed project were determined by using the Institute of Transportation Engineers (ITE) *Trip Generation* manual and Land Use Code (LUC) 220, Apartment, for 239 units.

Modal split data from the 2000 Census was obtained for the census tract for the site, and was discussed with City officials. The modal split assumptions for the project are approximately 67 percent drive-alone automobile trips; 7 percent rideshare automobile trips; 18 percent transit; 1

percent pedestrian; 3 percent bicycle; and 4 percent "other" trips, which may include working at home.

On a daily basis, the site is expected to generate 1,226 vehicle trips (613 in and 613 out) on an average weekday. On an hourly basis, the site is expected to generate 94 vehicle trips (19 in and 75 out) and 115 vehicle trips (75 in and 40 out) during the weekday morning and weekday evening commuter peak hours, respectively.

Transit trips are expected to be 304 (152 in and 152 out) on a daily basis, and 24 trips (5 in and 19 out) and 29 trips (19 in and 10 out) during the morning and evening peak hours, respectively.

Pedestrian trips are estimated to be 18 (9 in and 9 out) on a daily basis, and 1 trip (0 in and 1 out) and 2 trips (1 in and 1 out) during the morning and evening peak hours, respectively.

Bicycle trips are estimated to be 48 (24 in and 24 out) on a daily basis, 4 trips (1 in and 3 out), and 5 trips (3 in and 2 out) during the morning and evening peak hours, respectively.

The project is expected to generate an average of 3 to 4 truck trips per day. The vehicle-trip estimates include truck trips, as these are implicitly contained in trip-generation formulae.

SPECIAL PERMIT CRITERIA

As required by the City, the project's impact has been measured against 5 criteria as indicators of the project's impact. Based upon the SPC and study area intersections, there are a total of 69 indicators which were reviewed. None of the criteria were exceeded by any of the Project's impacts. Two of the indicators were not met due to the project's location adjacent to Route 2, and four indicators related to pedestrian operations are not met under Existing conditions. Overall, the project has satisfied 63 indicators with minimal project impact expected.

FUTURE CONDITIONS

A five-year planning horizon was selected to represent future conditions with the proposed project. To represent future traffic-volume conditions within the study area by the 2013 design year, existing traffic flows were adjusted to account for general non-specific traffic growth as well as developments anticipated to be constructed by that time. Based upon the City guidelines for the preparation of TISs, a compounded annual growth rate of 1 percent was applied to 2008 Baseline condition traffic volumes, and then added the projected trips generated by the background site-specific projects identified in the City scoping letter, to develop the 2013 No-Build traffic-volume networks.

PROJECT MITIGATION

The project proponent has committed to a mitigation program designed to minimize the effect of the proposed project on area transportation facilities. It should be noted that the project location adjacent to the Alewife T station will play a significant role in reducing single-occupant vehicle (SOV) traffic. The mitigation program can be divided into the following categories: 1) Pedestrian Improvements; 2) TDM strategies; and 3) parking. The following summarizes the mitigation package.

Pedestrian and Bicyclist Improvements

Currently, a pedestrian sidewalk exists in front of the project site on the south side of Route 2, and connects the sidewalk to the Alewife T Station to the east and the sidewalk to Lake Street to the west. The proponent will reconstruct the sidewalk along the Route 2 site frontage but will also provide a secondary route for pedestrians and bicyclists to access the site.

To encourage pedestrian and bicyclist use, an easement will be pursued across the adjacent properties (Cambridge Gateway Inn and Cambridge Discovery Park) allowing pedestrians and bicyclists to cross to Acorn Park Drive to access the multi use path constructed by Discovery Park. An easement for utility/access purposes has been obtained across the motel property; negotiations are continuing with the proponent of Cambridge Discovery Park to allow this connection.

This multi-use path provides a more pleasant experience than the sidewalk adjacent to Route 2. The multi-use path connects to the Alewife Station off-ramp sidewalk at the bridge over the Little River, which connects to the Alewife Station sidewalk.

The pedestrian exceedences at the intersection of Alewife Brook Parkway and Cambridgepark Drive and Rindge Avenue are the result of existing signal timing, and not an effect of the project development. Adjusting the signal timing is the only way to reduce these delays to meet the City criteria. If the signal length was shortened to 120 seconds, the delays would reduce to LOS D for pedestrians. This could be addressed through a maintenance procedure with the City traffic department or through another project if improvements are proposed in the future at this location.

Transportation Demand Management

Reducing the amount of traffic generated by the proposed development is an important component of the transportation mitigation plan. The goal of the proposed traffic reduction strategy is to reduce the use of SOVs by encouraging car/vanpooling, bicycle commuting, the use of public transportation and pedestrian travel. In addition, by not providing dedicated parking for the project, residents and visitors will be encouraged to use alternatives to driving to the area. The following measures will be implemented as a part of the proposed project and by the property management team in an effort to reduce the number of vehicle trips generated by the project:

- In order to encourage the use of public transportation, the property management team will provide a MBTA Charlie card of equivalent value of a monthly pass to each adult member of a new household after the household has established residency.

- The property management team will also encourage residents to obtain a free Bike Charlie card, allowing residents the ability to use the bike cages at Alewife Station and other areas free of charge.

- In order to encourage the use of public transportation, the property management team will make available public transportation schedules, which will be posted in a centralized location for residents. The proximity of the Alewife Station will be emphasized in promotional materials for the site.

- The property management team will investigate the use of the Discovery Park shuttle bus for residents of the proposed project.

- In order to encourage car/vanpooling, the property management team will coordinate with MassRIDES and the 128 Business Council or the Charles River Transportation

Management Association (CRTMA) to identify car/vanpool resources that may be available to residents. This information will be posted in a centralized location.

- The property management team will investigate joining the 128 Business Council or Charles River TMA. Either TMA could provide a ridematching program among residents of the project and employers of the area.

- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the project site. This information will be posted in a centralized location.

The project proponent will investigate the implementation of these traffic reduction strategies and will work with the City, the TMA, and area businesses to implement such programs.

Parking

Parking for the proposed development will be accommodated on site. Parking will be provided at an approximate rate of 1.0 space/unit with 227 parking spaces. This ratio meets the minimum parking rate required by zoning. Market rates will be charged for parking spaces, and these will be at an additional charge above monthly housing fees. In addition, parking for at least 114 bicycles will be provided on site.

Site Access

The vehicle site access and egress will be provided via Route 2, with separate right turn only entrance and exit driveways. A One-Way sign and "NO LEFT TURN" sign will be posted on the driveway approach at the Route 2 intersection. Details of this design will be evaluated with the District 6 Office of the Massachusetts Highway Department.

SUMMARY

Overall, the project proponent is committed to the implementation of the above project mitigation strategies to reduce the overall project impact. Of the 69 project indicators reviewed, none were directly exceeded by the project impact. Two indicators were exceeded by virtue of the project location and by the existing lack of handicap accessible routes for pedestrians and bicyclists. Four indicators are exceeded under current conditions with or without the project.

In summary, this project is a redevelopment of a site which has been vacant for over a quarter century. The resulting residential project will have fewer traffic impacts than a commercial use of the same size, and the TDM measures and proposed alternative pedestrian/bicyclist connection will further reduce the project's impacts resulting in a positive change in the area.

INTRODUCTION

VAI has conducted a TIS for a proposed residential development project located at 223, 225, and 231 Concord Turnpike (Route 2) in Cambridge, Massachusetts. This study reviews the potential transportation impacts, defines site access requirements, and recommends mitigation measures necessary to accommodate redevelopment of the site. In addition, the study reviews the project with respect to the SPC ordinance. The study was completed in accordance with the City's guidelines for TIS and follows the scoping determination dated August 22, 2008.

PROJECT DESCRIPTION

The project, as currently planned, will consist of the redevelopment of an existing property into distinct residential uses. This includes the demolition of the existing building (former Faces night club) and construction of a building providing 227 apartment units. Access will be provided through one right-turn only entrance driveway and one right-turn only exit driveway to Route 2 eastbound. Parking will be provided for 227 vehicles and at least 114 bicycles on site. The site is generally bounded by Route 2 in the north, Acorn Park Drive in the west and south, and Discovery Park in the east. The site in relation to area transportation facilities is shown in Figure 1, while a preliminary site plan is depicted in Figure 2. A 20-scale site plan is provided at the end of the report.

Figure 1

Site Location Map

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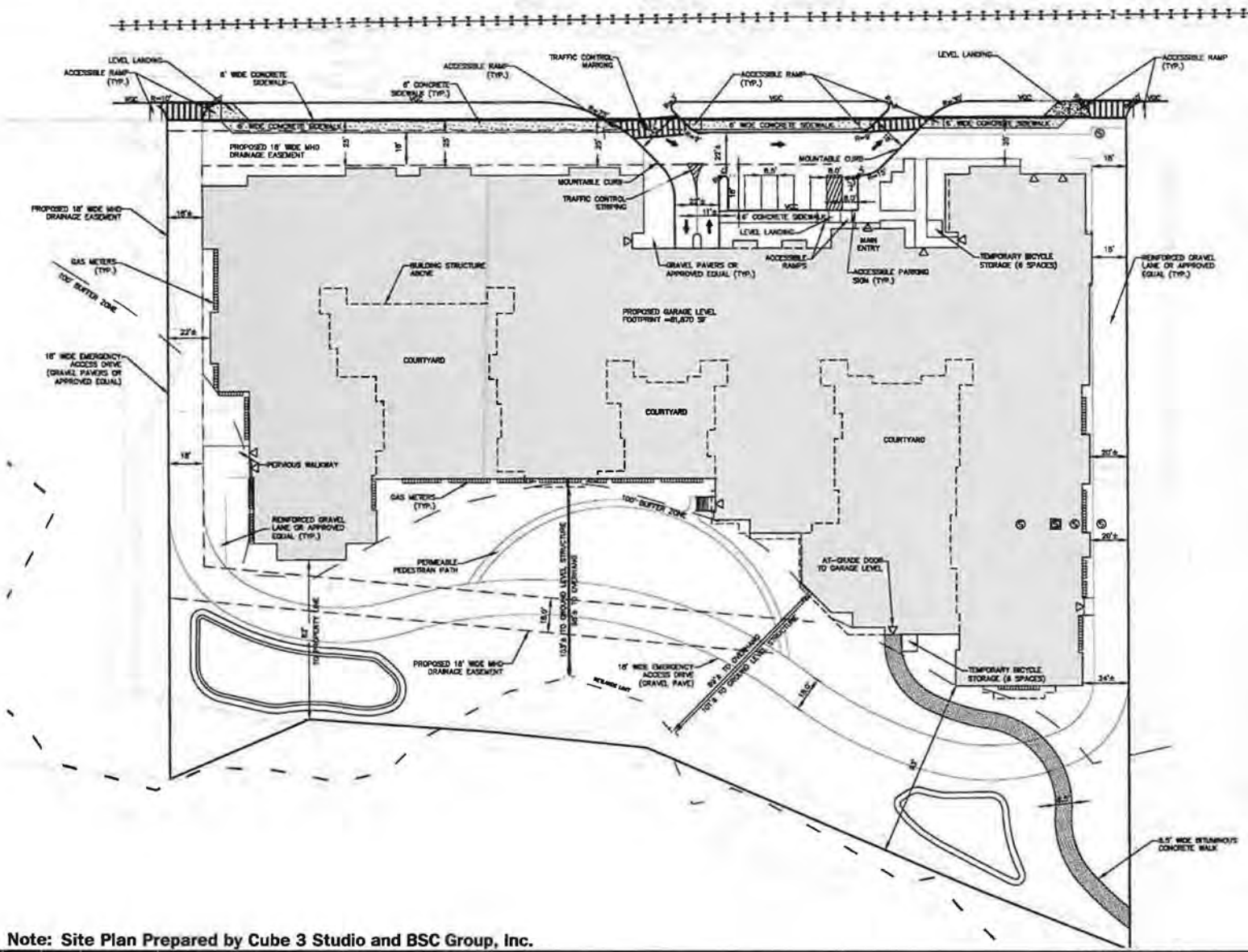

Note: Site Plan Prepared by Cube 3 Studio and BSC Group, Inc.

0 40 80 Scale in Feet

Figure 2

Preliminary Site Plan

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Transportation Engineers & Planners

EXISTING TRAFFIC CONDITIONS

A field inventory of existing study area roadways was conducted to document traffic conditions in the baseline 2008 analysis year. Items collected regarding the study area roadways and intersections include roadway geometrics, traffic control devices, traffic signal timing plans, traffic volumes, vehicle queues, pedestrian crossing volumes, bicycle volumes, and safety data for the roadways in the vicinity of the site. Traffic volumes were measured by means of ATR counts and substantiated by manual intersection turning-movement and vehicle-classification counts. Other transportation-related data inventoried include area parking supply and regulations, transit stop and services, and provision of bicycle and pedestrian facilities.

DESCRIPTION OF PROJECT STUDY AREA

The project study area was determined in consultation with City transportation officials. The study area was confirmed in the August 22, 2008 Scoping Determination from the City to VAI. The study area is listed below:

- Lake Street at Route 2 WB Off-ramp
- Lake Street at Frontage Road
- Frontage Road at Acorn Park Drive
- Frontage Road at Route 2 EB On-ramp
- Acorn Park Drive at Alewife Station Off-Ramp
- Route 2 at Alewife Brook Parkway
- Alewife Brook Parkway at Cambridgepark Drive
- Alewife Brook Parkway at Rindge Avenue

Transportation Network

Regional access to the area is provided via Route 2 to the west and Alewife Parkway to the east, north and south. In the immediate vicinity of the site, local access is provided from Frontage Road and Lake Street.

Geometric and Traffic Control

Intersection geometry and lane usage was obtained from field inventory and observations conducted by VAI in September and December 2008. A graphical depiction of intersection inventory for the study area intersections are shown in Figures 3 through 7.

EXISTING TRAFFIC VOLUMES

Traffic Counts

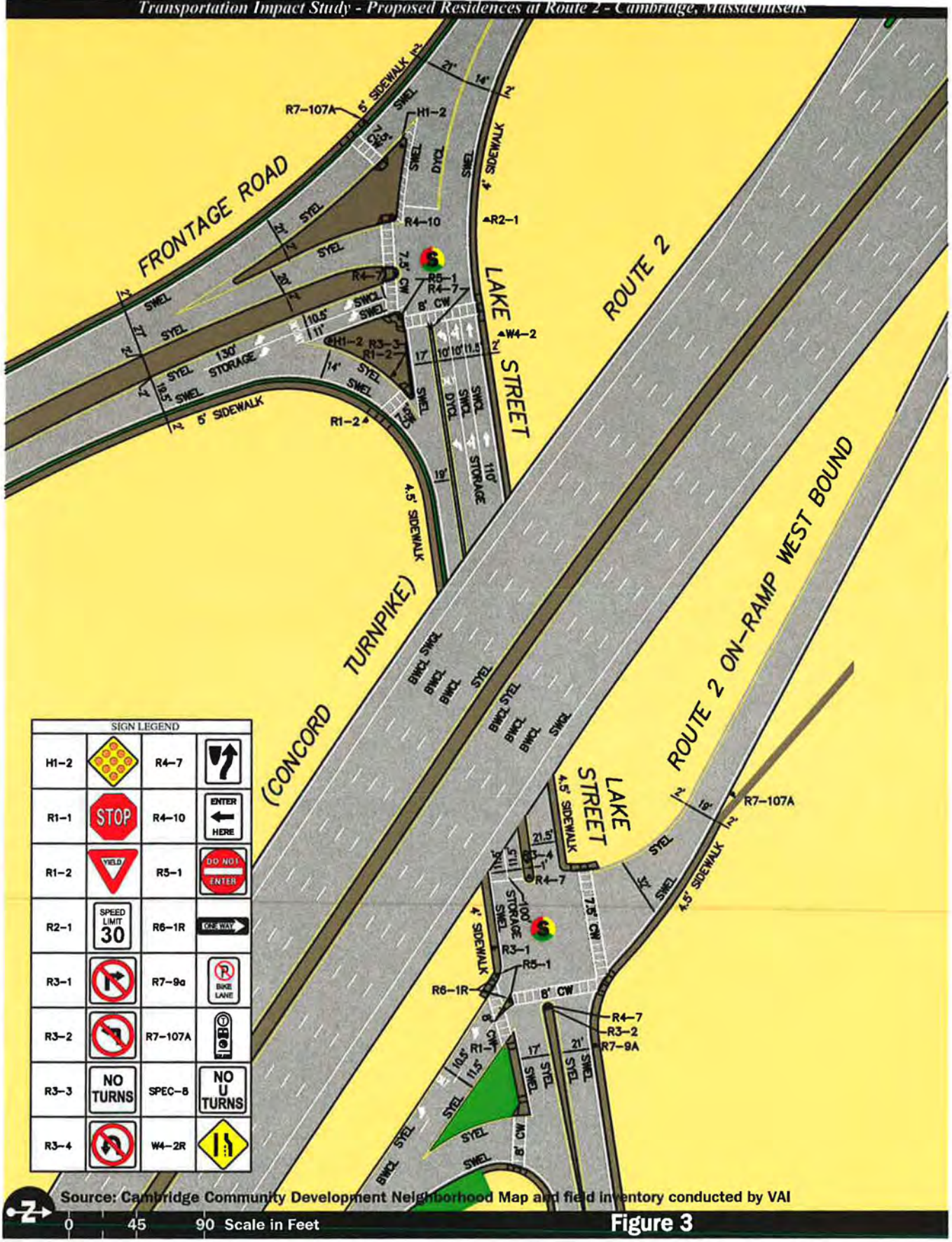
To establish baseline traffic conditions within the study area, ATR counts and manual turning movement and vehicle classification counts were compiled from other TISs and referenced counts conducted in March 2008 which were supplemented with counts conducted by VAI in September 2008. The collected volumes were used without seasonal adjustment.

Inspection of the raw count data indicated that the overall weekday morning and evening peak hours vary. It should be noted, however, that the individual intersection peak hours were used in the analysis to present a "worst case" composite peak-hour condition. The traffic count data sheets are provided in the Appendix. The 2008 Baseline condition weekday morning and evening peak-hour traffic-volume networks are depicted on Figures 8 and 9, and summarized in Table 1. Table 2 summarizes the peak hour occurrence during the weekday morning and evening peak hours at the study intersections. The average hourly volumes recorded at the ATR location are summarized in Table 3.

Table 1
2008 BASELINE TRAFFIC VOLUMES[a]

		Morning Peak Hour			Evening Peak Hour		
Location	ADT[a]	Vehicles Per Hour	K Factor[b]	Directional Distribution[c]	Vehicles per Hour	K Factor	Directional Distribution
Route 2, west of Alewife Brook Parkway	57,940	4,030	7.0	52.9% WB	4,440	7.7	63.1% WB
Acorn Park Drive, south of Frontage Road	1,350	300	22.2	98.3% SB	140	10.4	50.0% SB
Frontage Road, west of Acorn Park Drive	7,440	1,320	17.7	52.7%, EB	740	9.9	78.4% WB

[a]Average daily traffic in vehicles per day, counted by VHB and VAI in March and September 2008, rounded.
[b]Percent of daily volume in peak hour.
[c]Peak-hour traffic basis. EB = eastbound; WB = westbound; NB = northbound; SB = southbound.



Source: Cambridge Community Development Neighborhood Map and field inventory conducted by VAI

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Figure 3

Intersection Inventory
Route 2 / Frontage Road at Lake Street

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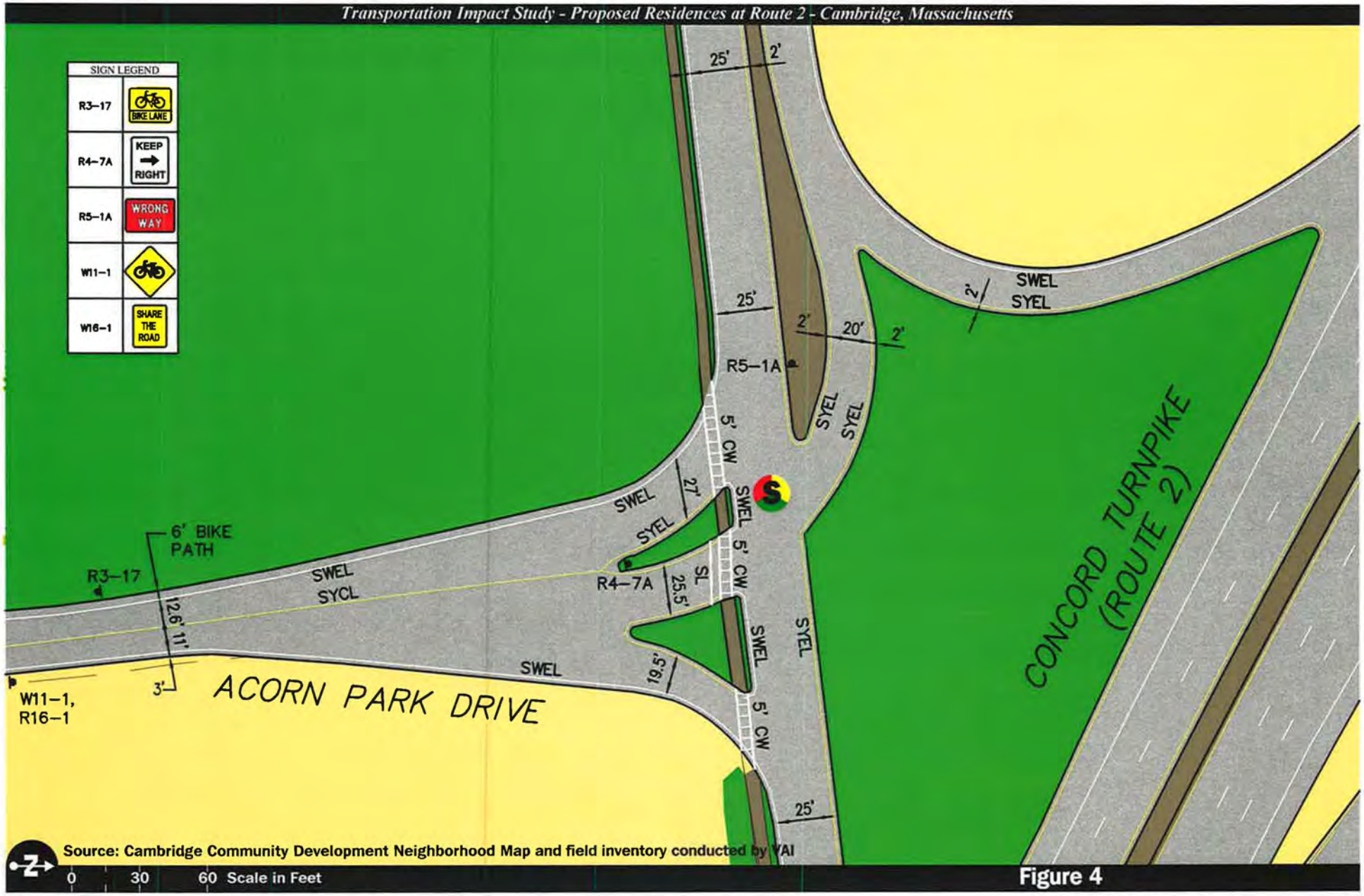

Figure 4

Intersection Inventory
Acorn Park Drive at
Frontage Road

Vanasse & Associates, Inc.
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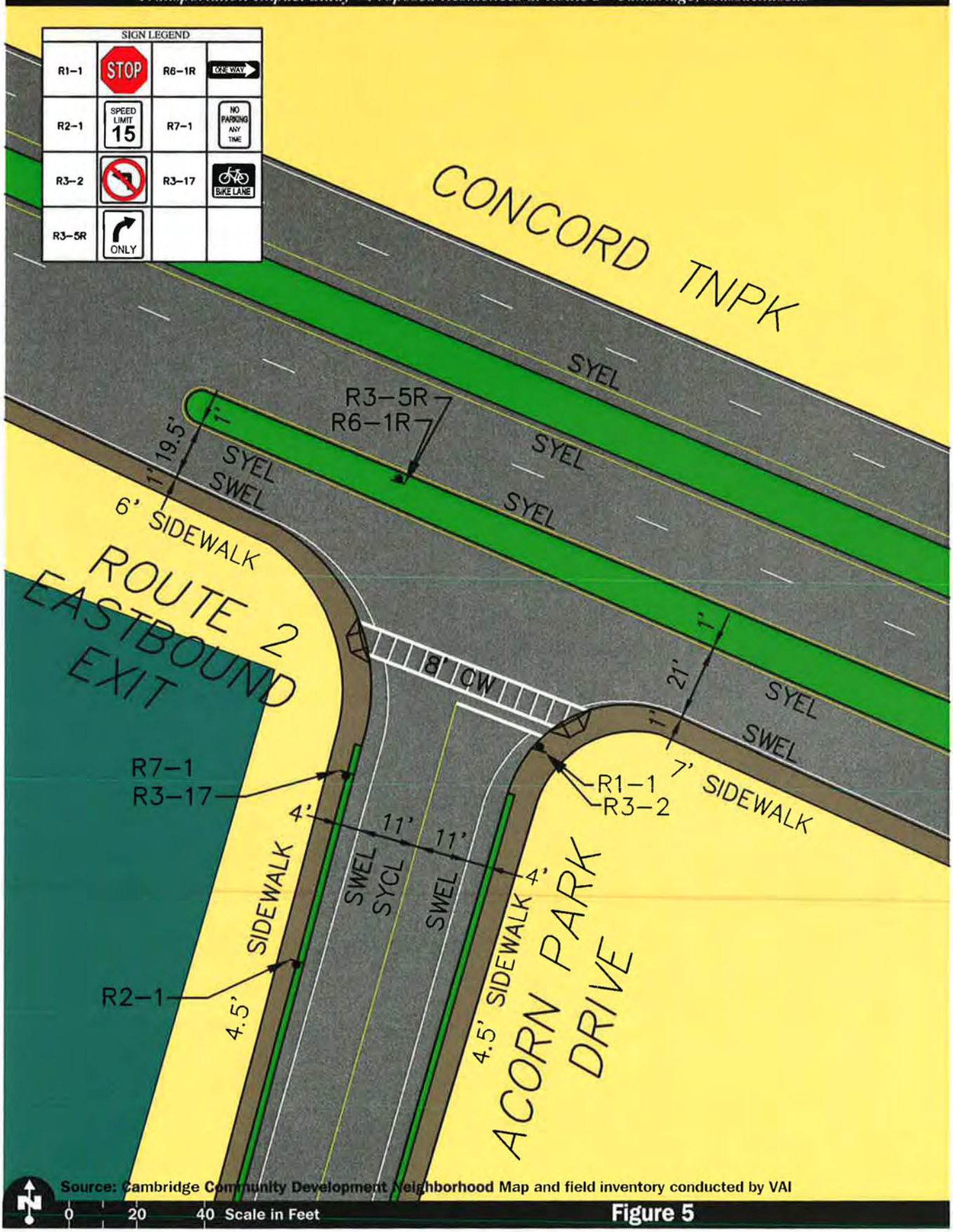

Figure 5

Intersection Inventory
Alewife Station Off-Ramp at
Acorn Park Drive

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Transportation Engineers & Planners

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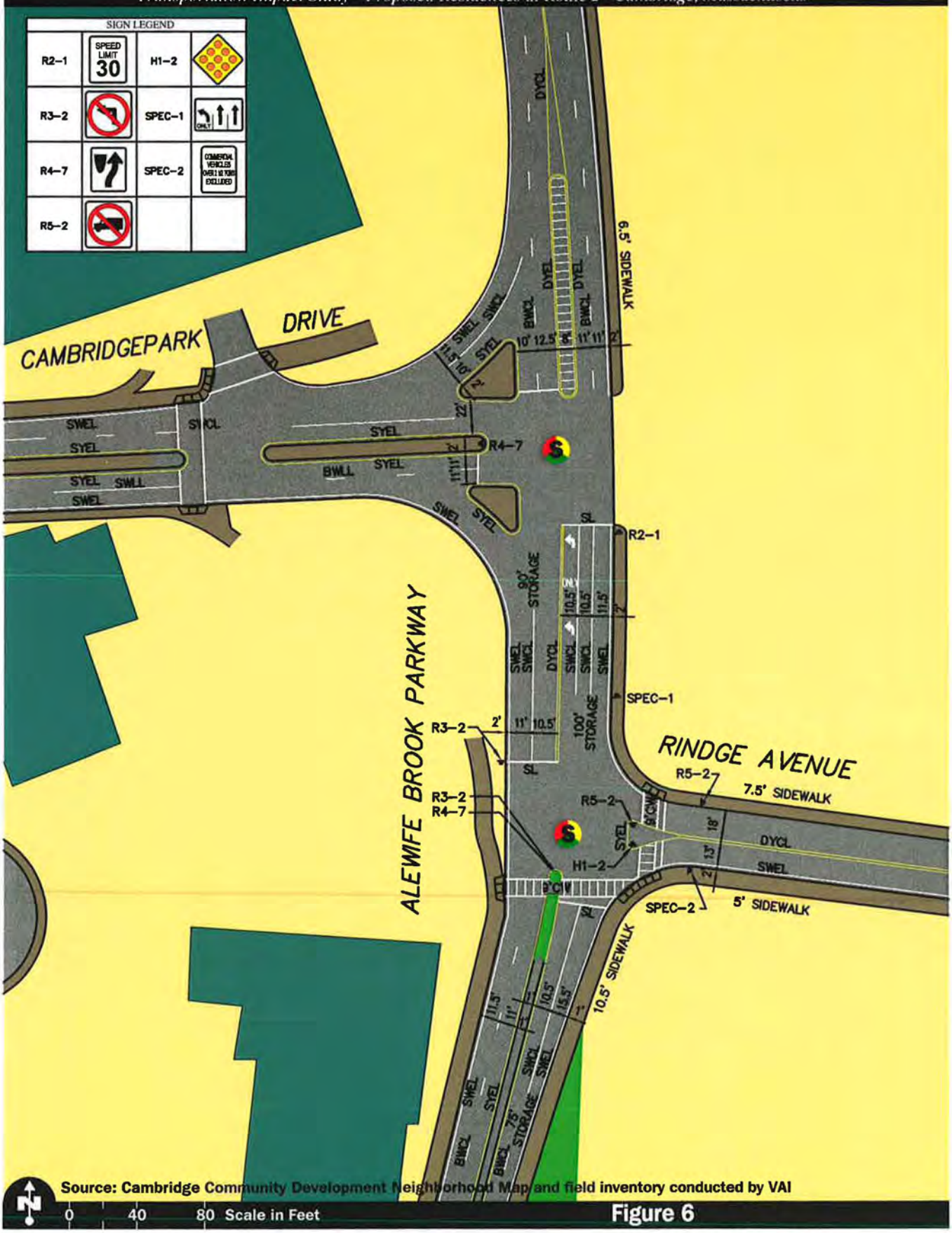

Figure 6

Intersection Inventory
Alewife Brook Parkway at Rindge Avenue and Cambridgepark Drive

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Transportation Engineers & Planners

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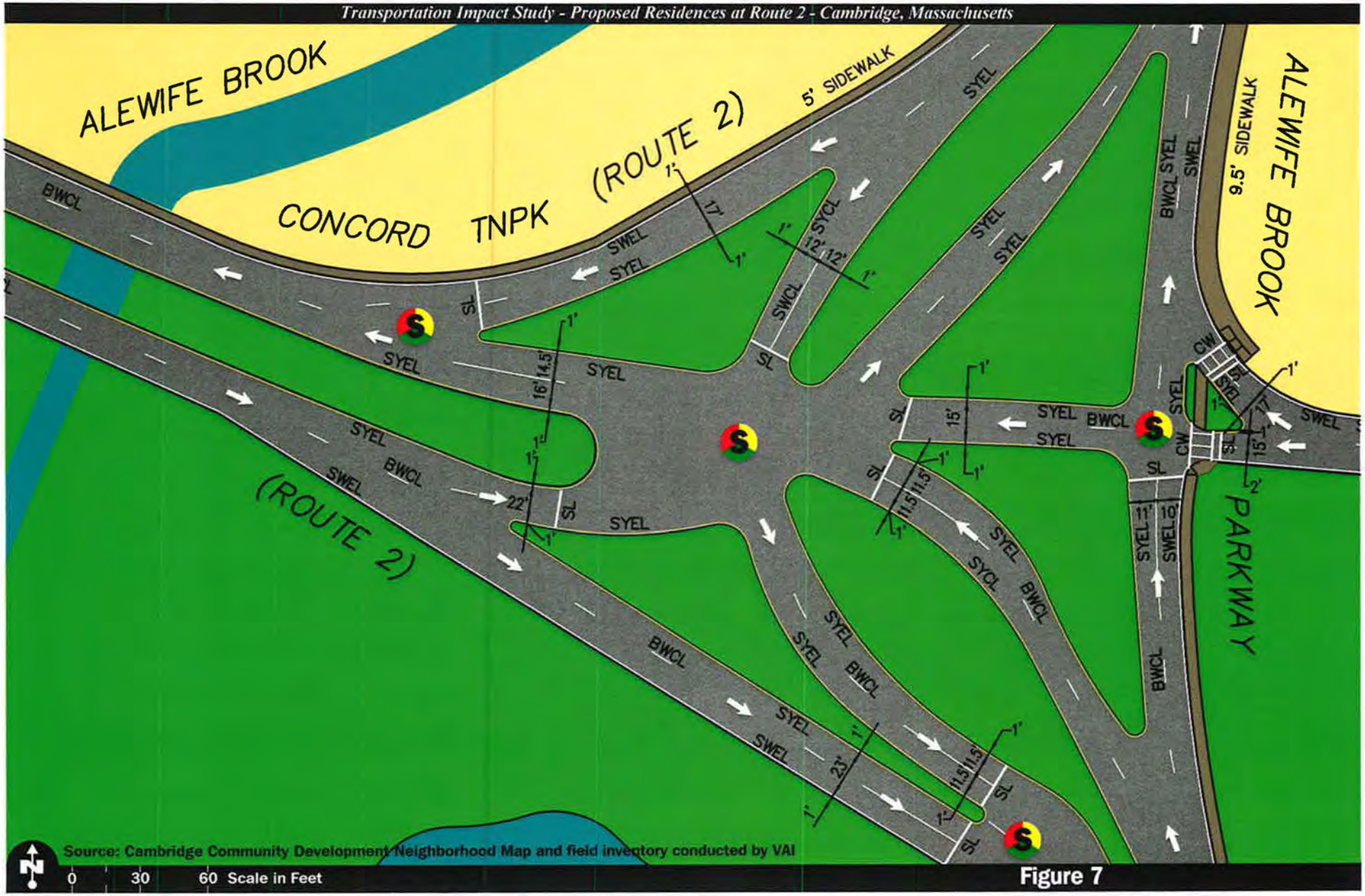

Figure 7

Intersection Inventory
Route 2 at Alewife Brook Parkway

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Transportation Engineers & Planners

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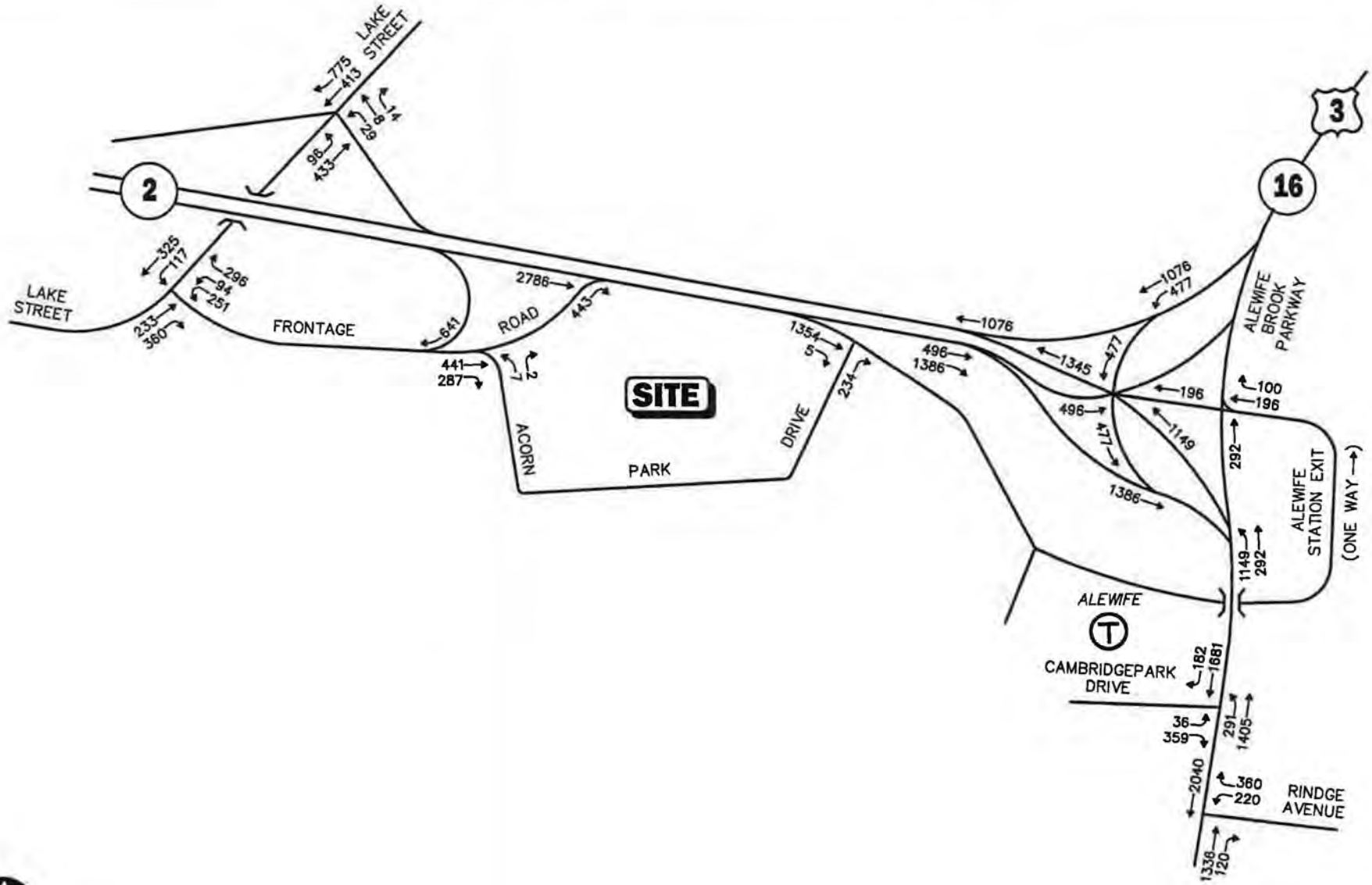

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Figure 8

2008 Existing
Weekday Morning
Peak Hour Traffic Volumes

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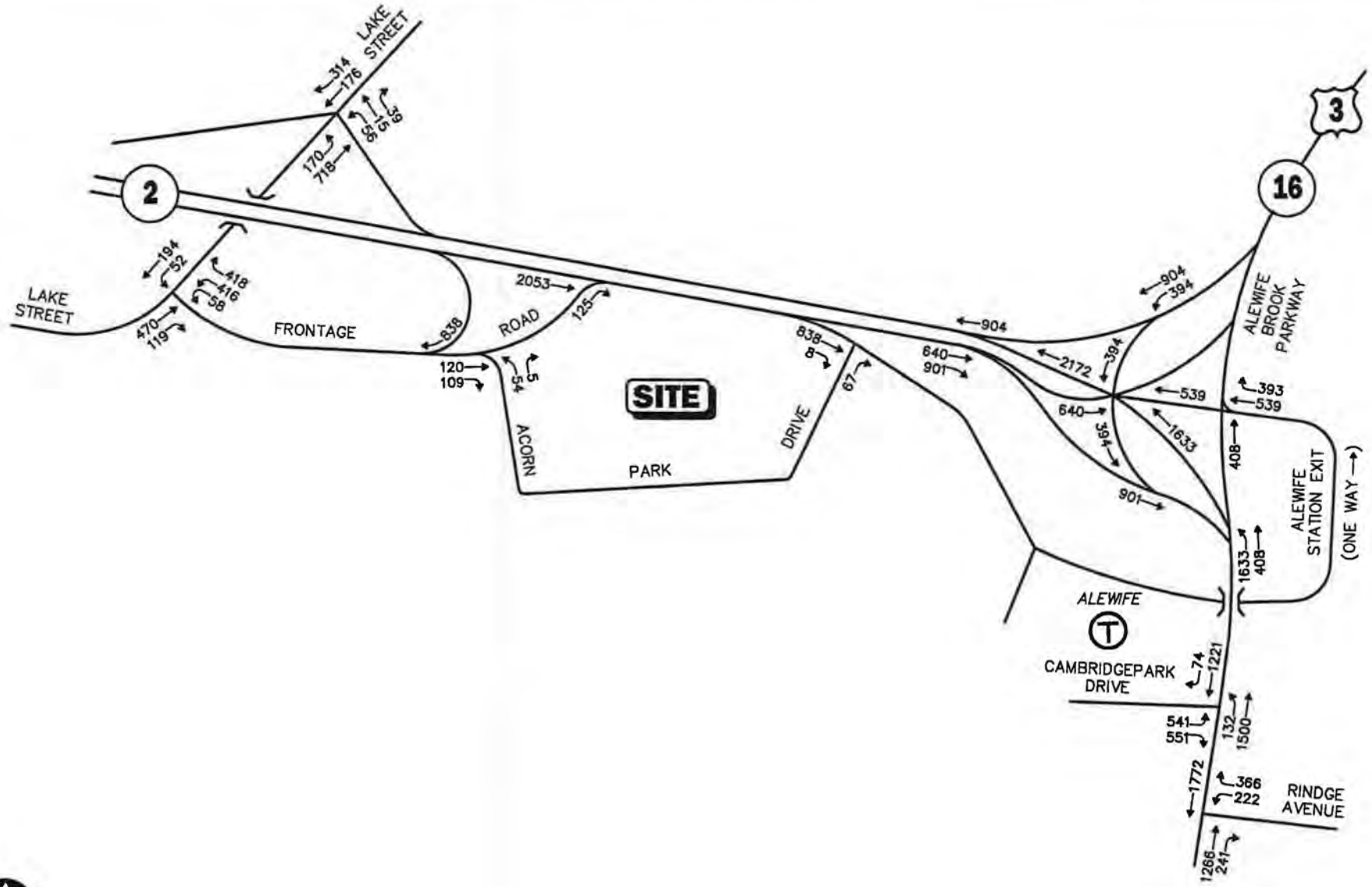

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Figure 9

2008 Existing
Weekday Evening
Peak Hour Traffic Volumes

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Table 2
SUMMARY OF PEAK-HOUR INTERSECTION CHARACTERISTICS[a]

Location	Morning Peak Hour	Evening Peak Hour
Lake Street at		
Route 2 WB Off-ramp	7:45-8:45 AM	4:45-5:45 PM
Frontage Road	7:30-8:30 AM	5:00-6:00 PM
Acorn Park Drive at		
Frontage Road	7:30-8:30 AM	5:15-6:15 PM
Route 2 EB On-ramp	7:30-8:30 AM	5:30-6:30 PM
Alewife Station Off-Ramp	7:30-8:30 AM	4:30-5:30 PM
Alewife Brook Parkway at		
Route 2	7:45-8:45 AM	5:00-6:00 PM
Cambridgepark Drive	8:15-9:15 AM	5:30-6:30 PM
Rindge Avenue	8:00-9:00 AM	5:00-6:00 PM

[a]Counted by VHB and VAI in March and September 2008.

Table 3
AVERAGE HOURLY TRAFFIC VOLUMES AT ATR LOCATIONS[a]

Start Time	Route 2	Acorn Park Drive	Frontage Road
12:00 AM	308	4	16
1:00	156	0	4
2:00	113	0	3
3:00	144	1	5
4:00	500	0	2
5:00	1,775	16	33
6:00	3,791	32	211
7:00	4,030	206	1,106
8:00	3,438	298	1,316
9:00	2,996	93	426
10:00	2,728	35	200
11:00	2,731	56	211
12:00 PM	2,816	75	260
1:00	3,172	50	222
2:00	3,767	52	280
3:00	4,067	44	380
4:00	4,374	77	563
5:00	4,438	136	683
6:00	3,372	92	740
7:00	2,873	29	312
8:00	2,340	20	192
9:00	1,980	22	146
10:00	1,297	9	88
11:00	730	4	41
Total	57,936	1,351	7,440

[a]Volumes based on ATR counts conducted by VHB and VAI in March and September 2008; expressed in vph.

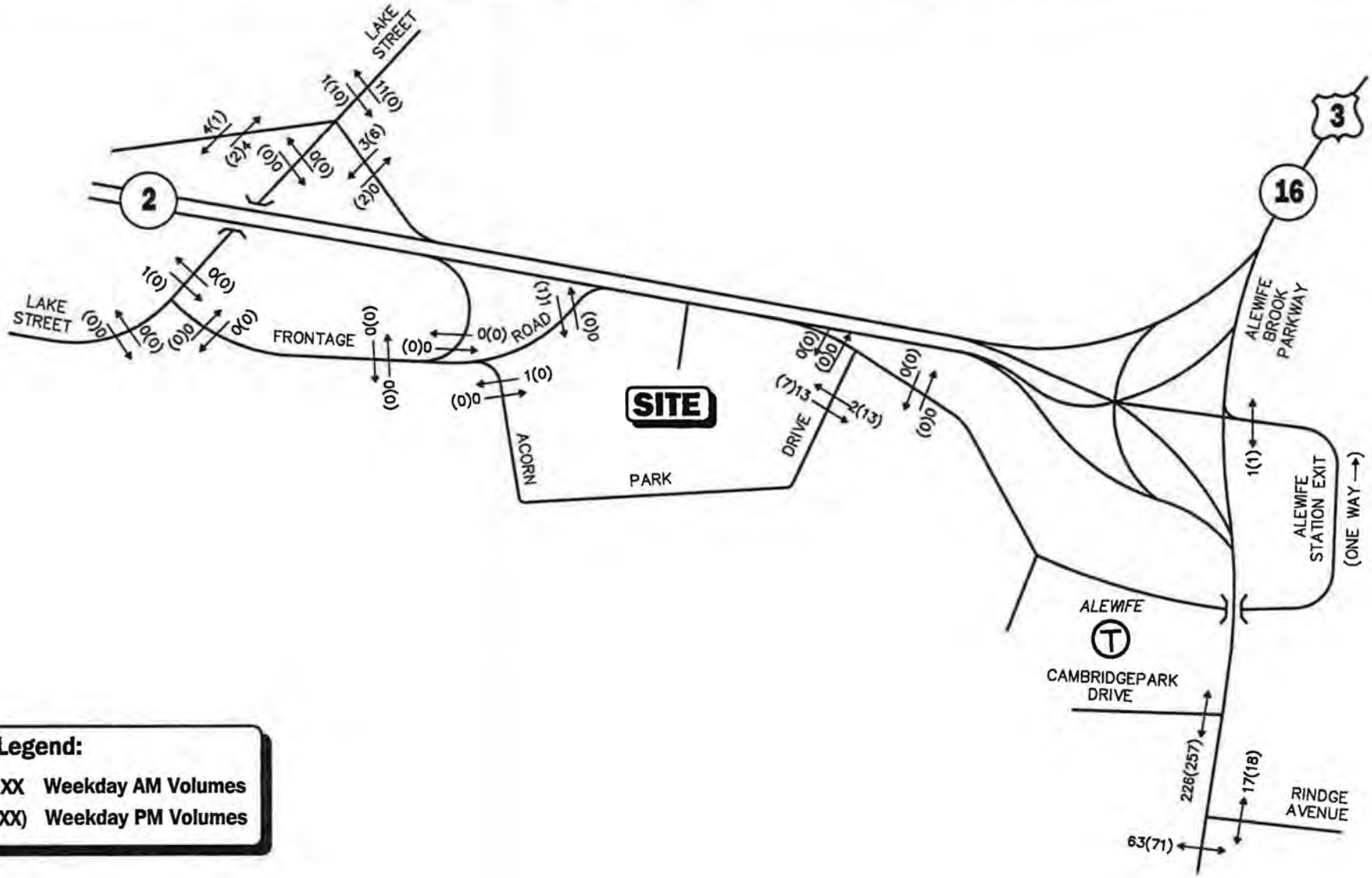
PEDESTRIANS

Pedestrian and bicycle counts for the study area intersections were collected during the vehicle count periods of 2008 described above. The twelve-hour pedestrian counts were performed on Acorn Park Drive, south of Frontage Road, and on Frontage Road, south of Lake Street. The count was conducted in clear weather. The pedestrian volumes are depicted in Figure 10 for the weekday morning and weekday evening peak hours. The twelve-hour average hourly pedestrian summaries are provided in Tables 4 and 5 for the study streets.

Table 4
AVERAGE HOURLY PEDESTRIAN VOLUMES[a]
ACORN PARK DRIVE

	Acorn Park Drive					
	Northbound		Southbound		Eastbound	Westbound
Time	East Side	West Side	East Side	West Side	Crossing Acorn Park Drive	Crossing Acorn Park Drive
7:00 AM	0	0	0	0	0	0
8:00	1	0	0	1	0	0
9:00	0	0	0	1	0	0
10:00	0	0	0	1	0	0
11:00	0	1	0	0	0	0
12:00 PM	0	1	0	0	0	0
1:00	1	1	1	0	0	0
2:00	0	0	0	1	0	0
3:00	0	0	0	0	0	0
4:00	0	0	0	0	0	0
5:00	0	1	0	0	0	0
6:00	1	0	0	0	0	0
Total	3	4	1	4	0	0

[a]Based on counts conducted by VAI in September 2008.



Legend:

XX Weekday AM Volumes
(XX) Weekday PM Volumes

Not To Scale

Figure 10

2008 Existing
Peak Hour Pedestrian Volumes

Vanasse & Associates, Inc.
Transportation Engineers & Planners

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Table 5
AVERAGE HOURLY PEDESTRIAN VOLUMES[a]
FRONTAGE ROAD

	Frontage Road					
	Northbound		Southbound		Eastbound	Westbound
Time	East Side	West Side	East Side	West Side	Crossing Frontage Road	Crossing Frontage Road
7:00 AM	13	0	0	0	0	0
8:00	0	0	1	0	0	0
9:00	2	0	0	0	0	0
10:00	0	0	0	0	0	0
11:00	1	0	2	0	0	1
12:00 PM	3	0	0	0	0	0
1:00	1	0	0	0	0	0
2:00	0	0	0	0	0	0
3:00	0	0	0	0	0	0
4:00	0	0	0	0	0	0
5:00	1	0	1	0	0	0
6:00	0	0	1	0	0	0
Total	21	0	5	0	0	1

[a]Based on counts conducted by VAI in September 2008.

BICYCLES

As with the pedestrian counts, bicycle counts for the study area intersections were collected during the peak-hour vehicle count periods of 2008 described above. Twelve-hour bicycle counts were also collected at Acorn Park Drive and Frontage Road. The counts were conducted in clear weather. Bicycle volumes include both bicycles traveling on and off the sidewalks, and are provided in Figure 11 for the weekday morning and weekday evening peak-hour time periods. The twelve-hour average hourly bicycle summary is provided in Tables 6 and 7.

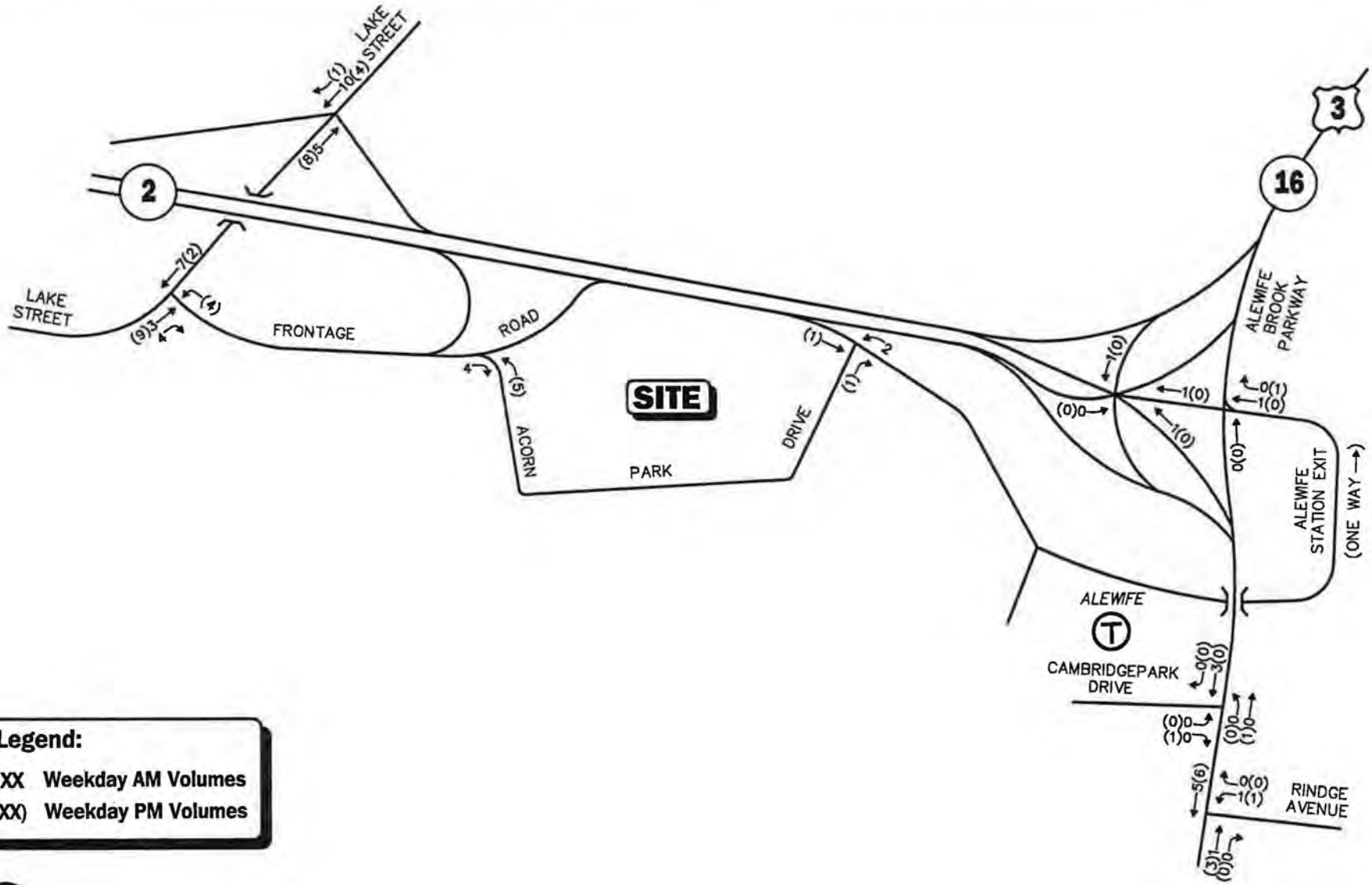

Figure 11

2008 Existing
Peak Hour Bicycle Volumes

Vanasse & Associates, Inc.
Transportation Engineers & Planners

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Table 6
AVERAGE HOURLY BICYCLE VOLUMES[a]
ACORN PARK DRIVE

	Acorn Park Drive					
	Northbound		Southbound		Eastbound	Westbound
Time	East Side	West Side	East Side	West Side	Crossing Acorn Park Drive	Crossing Acorn Park Drive
7:00 AM	0	0	0	4	0	0
8:00	0	0	0	3	0	0
9:00	0	0	0	2	1	0
10:00	0	1	0	1	0	0
11:00	0	1	0	1	0	1
12:00 PM	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2:00	1	1	0	2	0	2
3:00	0	0	0	1	0	0
4:00	0	0	0	0	0	0
5:00	1	0	0	2	0	0
6:00	6	0	0	0	0	0
Total	8	3	0	16	0	0

[a]Based on counts conducted by VAI in September 2008.

Table 7
AVERAGE HOURLY BICYCLE VOLUMES[a]
FRONTAGE ROAD

	Frontage Road					
	Northbound		Southbound		Eastbound	Westbound
Time	East Side	West Side	East Side	West Side	Crossing Frontage Road	Crossing Frontage Road
7:00 AM	6	0	0	0	0	0
8:00	4	0	0	0	0	0
9:00	1	0	0	0	0	0
10:00	1	0	2	0	0	0
11:00	1	0	0	0	0	0
12:00 PM	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2:00	1	0	0	0	0	0
3:00	2	0	0	0	0	0
4:00	0	0	1	0	0	0
5:00	1	0	0	0	0	0
6:00	0	0	2	0	0	0
Total	17	0	5	0	0	0

[a]Based on counts conducted by VAI in September 2008.

EXISTING VEHICLE QUEUES

Vehicle queues were observed at signalized study area intersections, per City guidelines. Table 8 summarizes the vehicle queue calculations by intersection approach and lanes.

Table 8
EXISTING QUEUE OBSERVATIONS

Intersection/Lane[c]	Morning Peak Hour	Evening Peak Hour
Lake Street at Route 2 WB Off-Ramps[a]:		
Lake Street EB LT	3	4
Lake Street EB TH	5	17
Lake Street WB TH	4	3
Lake Street WB TH/RT	4	4
Route 2 WB Off-ramp LT	2	2
Route 2 WB Off-ramp LT/TH	2	3
Route 2 WB Off-ramp RT	0	2
Lake Street at Frontage Road[a]:		
Lake Street EB TH	4	12
Lake Street EB RT	0	0
Lake Street WB LT1	4	3
Lake Street WB LT2	3	5
Lake Street WB TH	2	3
Frontage Road NB LT/UT	5	6
Frontage Road NB LT	3	3
Frontage Road NB RT	3	17
Frontage Road at Acorn Park Drive[a]:		
Frontage Road EB TH/RT	0	0
Acorn Park Drive NB LT	0	0
Acorn Park Drive NB RT	0	0
Alewife Brook Parkway at Route 2[a]:		
Route 2 EB LT	--	--
Alewife Station Off-Ramp WB TH	--	--
Alewife Brook Parkway SB TH	--	--
Alewife Brook Parkway NWB TH	38	50
Alewife Brook Parkway at Route 2[b]:		
Alewife Station Off-Ramp WB TH	2	6
Alewife Station Off-Ramp WB RT	0	0
Alewife Brook Parkway NB LT	38	50
Alewife Brook Parkway NB TH	6	40
Alewife Brook Parkway at Cambridgepark Drive[b]:		
Cambridgepark Drive EB LT	2	15
Cambridgepark Drive EB RT	6	7
Alewife Brook Parkway NB LT	10	4
Alewife Brook Parkway NB TH	6	9
Alewife Brook Parkway SB TH	43	15
Alewife Brook Parkway SB RT	2	0
Alewife Brook Parkway at Rindge Avenue[b]:		
Rindge Avenue WB LT	10	3
Rindge Avenue WB RT	3	15
Alewife Brook Parkway NB TH/RT	45	50
Alewife Brook Parkway SB TH	49	21

[a]Source: Based upon observations conducted by VAI in September 2008.
[b]Source: Obtained from 150/180 Cambridge Drive Traffic Study prepared by VHB in March 2008.
[c]EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

EXISTING PUBLIC TRANSIT SYSTEM

The project site is located within ½ mile of the MBTA Alewife Red Line Station located on Alewife Brook Parkway and Cambridgepark Drive. This station serves as a terminal stop for seven MBTA bus routes and the Red Line rapid rail transit line. Of the seven connecting bus routes at Alewife station, four routes stop near or adjacent to the project site on Route 2 or on Lake Street: Routes 62, 76, 67, and 84. A bus shelter is provided on Lake Street at Frontage Road, and on Alewife Brook Parkway near Rindge Avenue. The bus routes, hours of operation, peak-hour headways and capacity information supplied by the MBTA are tabulated in Table 9. The regional public transportation map is depicted in Figure 12.

Table 9
MBTA BUS SERVICE

Route No.	Route	Hours of Operation	Peak-Hour Headway (minutes)[a]	Peak-Hour Peak-Direction Planning Capacity[b]	Daily Ridership	Estimated Daily Capacity
62	Bedford V.A. Hospital – Alewife Station	5:57 AM to 9:15 PM	30	120	1,193[c]	2,340
67	Turkey Hill – Alewife Station[d]	6:05 AM to 8:26 PM	25	144	493[e]	2,880
76	Hanscom/Lincoln Labs – Alewife Station	5:57 AM to 10:24 PM	30	120	857[c]	2,520
79	Arlington Heights – Alewife Station via Massachusetts Avenue[d]	6:40 AM to 10:07 PM	12	300	1,579[c]	5,820
84	Arlmont Village – Alewife Station via Park Circle[d]	6:44 AM to 6:24 PM	30/17[f]	120/212	221[g]	1,440
350	North Burlington – Alewife Station via Burlington Mall	6:15 AM to 10:59 PM	20	180	1,537[h]	3,240
351	Oak Park/Bedford Woods – Alewife Station via Middlesex Turnpike[d,i]	6:15 AM to 6:51 PM	30	120	238[j]	780

[a]Based on current MBTA schedule.
[b]Planning capacity is 60 passengers per bus.
[c]Source: MBTA Round II Ridechecks, 1997-1998.
[d]Weekday service only.
[e]Source: MBTA Ridecheck Program; fall 1999.
[f]Morning headway/evening headway.
[g]Source: MBTA Ridecheck Program; fall 2001.
[h]Source: MBTA Ridecheck Program; Spring 1999.
[i]Operates during peak periods only; outbound in the morning, inbound in the evening.
[j]Source: MBTA Ridecheck Program; Spring 2000.

LAND USE

Land uses in the vicinity of the site were researched and inventoried in September and December 2008. The study area land uses are shown in Figure 13.

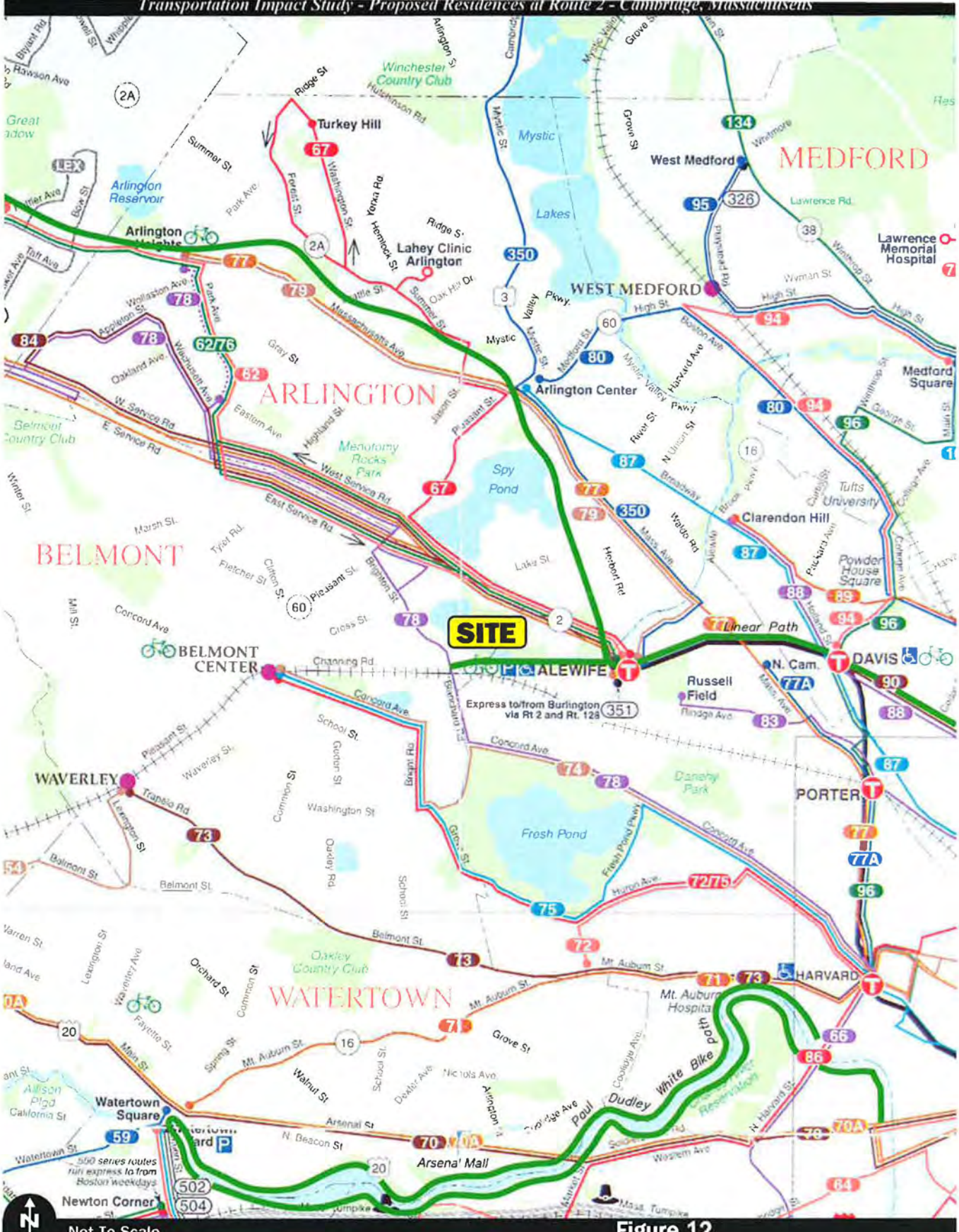

Figure 12

Public Transportation System

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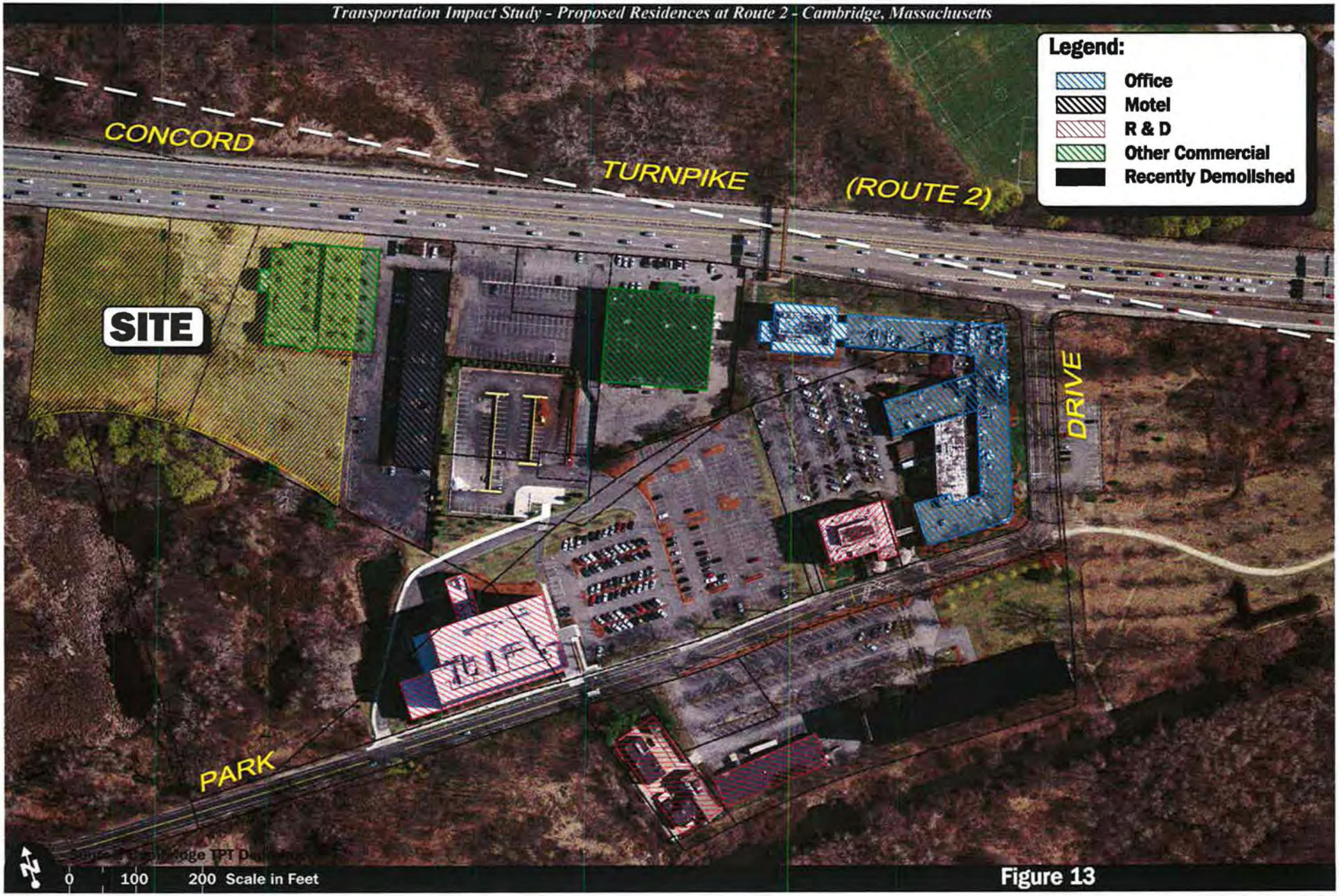

Figure 13

Land Use Map

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VEHICLE CRASH DATA

Crash data for the study area were collected from the Massachusetts Highway Department (MassHighway) for the three most recent calendar years of available data to examine crash trends occurring within the study area. These data are presented in Table 10.

As shown in Table 10, a total of 128 crashes were recorded at the 8 study locations in the reviewing years from 2004 to 2006. The intersection of Alewife Brook Parkway at Route 2 has recorded the highest number of crashes of the study area intersections, averaging 30.7 crashes per year. Approximately 70 percent of the reported crashes at this intersection were angle-type or rear-end collisions, which is typical for a busy intersection. The intersection of Alewife Brook Parkway with Rindge Avenue was the next highest frequency location, with 4.3 crashes per year. No crashes were recorded at the intersections of Frontage Road at Acorn Park Drive, Frontage Road at Route 2, and Acorn Park Drive at Alewife Station Off-Ramp. A fatal accident was recorded at the Alewife Brook Parkway intersection with Rindge Avenue on October 6, 2004 around 4:55 AM early morning, when an eastbound vehicle struck a pedestrian. It was noted that no street lights were in operation at the time of the crash.

Table 10
ACCIDENT SUMMARY TABLE[a]

Signalized Intersection/ Peak Hour/Movement	Lake Street at Frontage Road	Lake Street at Route 2	Alewife Brook Parkway at Route 2	Alewife Brook Parkway at Cambridgepark Drive	Alewife Brook Parkway at Rindge Avenue	Frontage Road at Acorn Park Drive	Frontage Road at Route 2	Acorn Park Drive at Alewife Station Access Road
Year								
2004	2	0	26	0	4	0	0	0
2005	0	3	28	7	6	0	0	0
2006	2	3	38	4	3	0	0	0
Total	4	6	92	11	13	0	0	0
Awerage[b]	1.33	2.00	30.67	3.67	4.33	0.00	0.00	0.00
Type								
Angle	2	0	13	5	4	0	0	0
Rear-End	1	3	51	3	6	0	0	0
Head-On	0	0	2	0	0	0	0	0
Sideswipe	0	2	16	0	0	0	0	0
Run-off-Road/Hit Fixed Object	0	0	1	0	0	0	0	0
Pedestrian	0	0	0	0	1	0	0	0
Unknown	1	1	9	3	2	0	0	0
Total	4	6	92	11	13	0	0	0
Time								
Weekday 7:00 AM to 9:00 AM	1	3	12	2	1	0	0	0
Weekday 4:00 PM to 6:00 PM	0	1	10	1	2	0	0	0
Remainder of Day	3	2	70	8	10	0	0	0
Total	4	6	92	11	13	0	0	0
Pavement Conditions								
Dry	4	4	70	4	12	0	0	0
Wet	0	1	18	6	0	0	0	0
Snow	0	0	0	1	0	0	0	0
Icy	0	1	0	0	0	0	0	0
Other	0	0	2	0	0	0	0	0
Unknown	0	0	2	0	1	0	0	0
Total	4	6	92	11	13	0	0	0
Day of Week								
Monday through Friday	4	6	63	10	10	0	0	0
Saturday and Sunday	0	0	29	1	3	0	0	0
Total	4	6	92	11	13	0	0	0
Severity								
Property Damage Only	2	5	76	9	8	0	0	0
Personal Injuries	2	1	14	1	3	0	0	0
Fatal Accident	0	0	0	0	1	0	0	0
Hit and Run	0	0	0	0	0	0	0	0
Other	0	0	2	1	1	0	0	0
Total	4	6	92	11	13	0	0	0

[a]Source: MassHighway.
[b]Average accident over three-year period.

TRIP GENERATION AND DISTRIBUTION

PROPOSED SITE TRIP GENERATION

The project was originally proposed for 239 units. The proponent is now proposing to construct 227 apartment units on site. The study reviewed impacts associated with 239 units, which provides a more conservative scenario. Traffic volumes expected to be generated by the proposed project were determined by using the Institute of Transportation Engineers (ITE) *Trip Generation* manual and Land Use Code (LUC) 220, Apartment, for 239 units.

Modal split data from the 2000 Census was obtained for the census tract for the site, and was discussed with City officials. The modal split assumptions for the project are approximately 67 percent drive-alone automobile trips; 7 percent rideshare automobile trips; 18 percent transit; 1 percent pedestrian; 3 percent bicycle; and 4 percent "other" trips, which may include working at home.

On a daily basis, the site is expected to generate 1,226 vehicle trips (613 in and 613 out) on an average weekday. On an hourly basis, the site is expected to generate 94 vehicle trips (19 in and 75 out) and 115 vehicle trips (75 in and 40 out) during the weekday morning and weekday evening commuter peak hours, respectively.

Transit trips are expected to be 304 (152 in and 152 out) on a daily basis, and 24 trips (5 in and 19 out) and 29 trips (19 in and 10 out) during the morning and evening peak hours, respectively.

Pedestrian trips are estimated to be 18 (9 in and 9 out) on a daily basis, and 1 trip (0 in and 1 out) and 2 trips (1 in and 1 out) during the morning and evening peak hours, respectively.

Bicycle trips are estimated to be 48 (24 in and 24 out) on a daily basis, 4 trips (1 in and 3 out), and 5 trips (3 in and 2 out) during the morning and evening peak hours, respectively.

The project trip generation is summarized in Table 11. The project is expected to generate an average of 3 to 4 truck trips per day. The vehicle-trip estimates include truck trips, as these are implicitly contained in trip-generation formulae.

Table 11
TRIP GENERATION SUMMARY

Time Period/Direction	ITE Vehicle Trips	Person Trips[a]							Automobile Trips
	Residential[b]	Total[c]	Drive Alone Trips[d]	Ridesharing Trips[e]	Transit Trips[f]	Pedestrian Trips[g]	Bicycle Trips[h]	Other Trips[i]	Proposed Automobile Trips[j]
Average Weekday Daily:									
Entering	793	856	579	59	152	9	24	33	613
Exiting	793	856	579	59	152	9	24	33	613
Total	1,586	1,712	1158	118	304	18	48	66	1,226
Weekday Morning Peak Hour:									
Entering	24	26	18	2	5	0	1	1	19
Exiting	97	105	71	7	19	1	3	4	75
Total	121	131	89	9	24	1	4	5	94
Weekday Evening Peak Hour:									
Entering	97	105	71	7	19	1	3	4	75
Exiting	52	56	38	4	10	1	2	2	40
Total	149	161	109	11	29	2	5	6	115

[a]Mode splits based on 2000 U.S. Census Data and Statistics for Town of Arlington, including Census Tract 3561 for bike and walk modes, as requested by Cambridge TPT.
[b]Based on ITE LUC 220, Apartment; 239 units.
[c]Multiply ITE vehicle trips by vehicle occupancy ratio of 1.08 persons/vehicle per national census data.
[d]Assume 67.6 percent of total person trips.
[e]Assume 6.9 percent of total person trips.
[f]Assume 17.8 percent of total person trips.
[g]Assume 1.1 percent of total person trips.
[h]Assume 2.8 percent of total person trips.
[i]Include working at home, assume 3.8 percent of total person trips.
[j]Drive-alone plus rideshare person trips divided by vehicle occupancy ratio of 1.04 persons per vehicle per local census data.

TRAFFIC DISTRIBUTION AND ASSIGNMENT

Directional distribution of generated trips to and from the proposed development is expected to follow existing traffic patterns which, in turn, are a function of population densities and available travel routes. In developing the travel route, the following was completed:

- Review of existing trip patterns of site
- Review of other available traffic studies
- Review of 2000 Journey-To-Work (JTW) Census Data

Based upon this data, the overall trip-distribution pattern was developed in consultation with City officials and is summarized in Table 12. A graphical depiction appears on Figure 14.

Table 12
TRIP DISTRIBUTION SUMMARY

Roadway	Direction (To/From)	Percent To/From the Site
Route 2	West	40
Lake Street	East	5
Lake Street	West	5
Alewife Brook Parkway	North	24
Alewife Brook Parkway	South	26
TOTAL		100

The peak-hour site-generated traffic volumes were distributed on the roadway network according to the distribution shown in Table 12 and Figure 14. Figures 15 and 16 depict the weekday morning and weekday evening site-generated traffic volume flow networks for 2008 conditions. These volumes were then added to the 2008 Baseline condition traffic flow networks to derive the 2008 Build condition networks, shown as Figure 17 for the weekday morning peak hour and Figure 18 for the weekday evening peak hour. Figure 19 represent the projected 2008 Build weekday morning and weekday evening Peak Hour Pedestrian Volumes. It should be noted that walking and bicycling residents will be directed to use a proposed bikepath from the Project over the adjacent Gateway Motor Inn property to a connection with Cambridge Discovery Park, so these pedestrians/bicyclists do not appear in the traffic flow networks. It is expected that the majority of pedestrians would use this path rather than walk along the existing Route 2 sidewalk, which is in fair to poor condition and does not meet Massachusetts Architectural Access Board (MAAB)/Americans with Disabilities Act (ADA) requirements. The proposed bikepath is discussed in more detail in the following sections.

A summary of the peak-hour projected traffic-volume changes in the vicinity of the site is shown in Table 13. These volumes are based on the expected increases from the project traffic volumes.

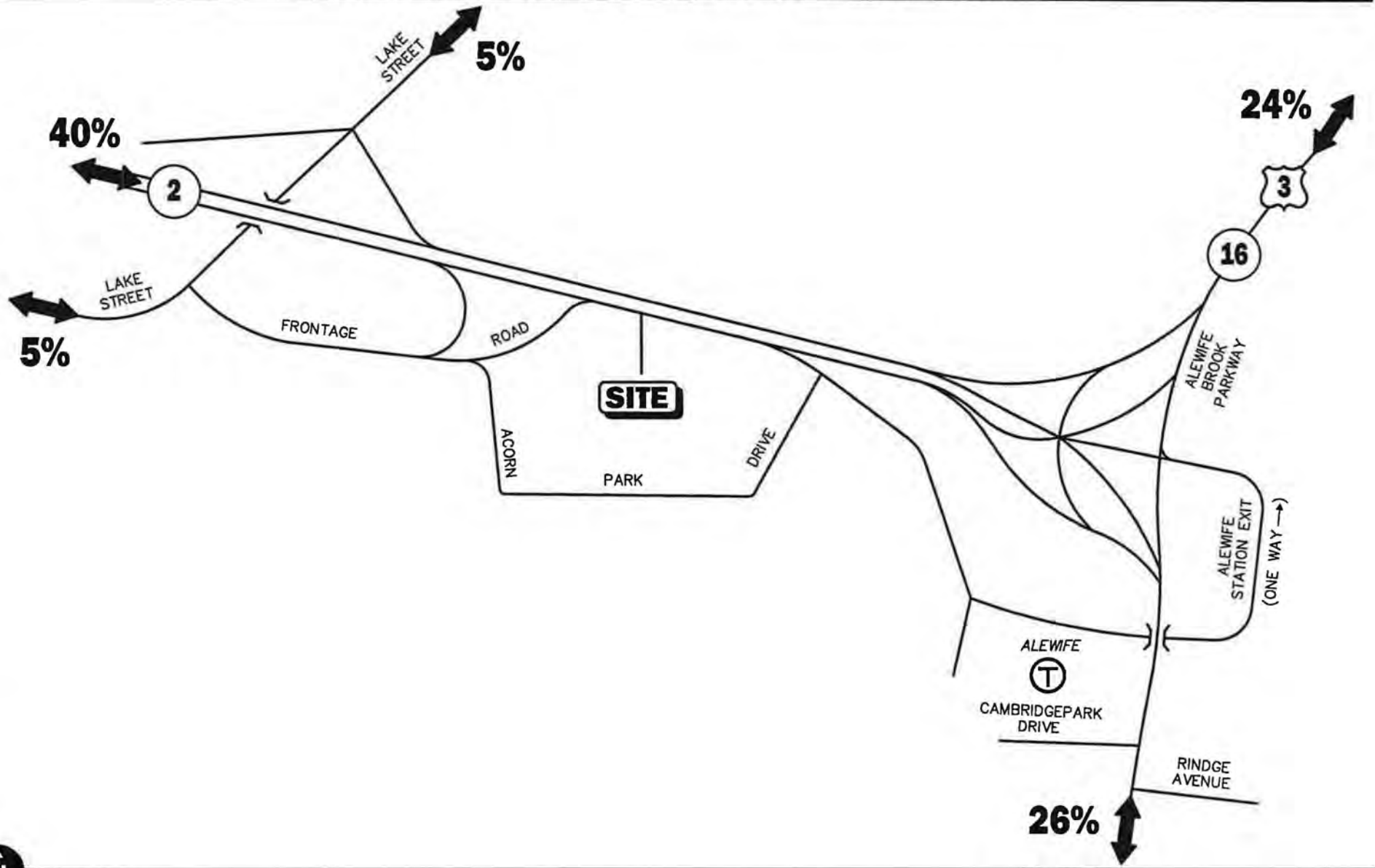

Figure 14

Trip Distribution Map

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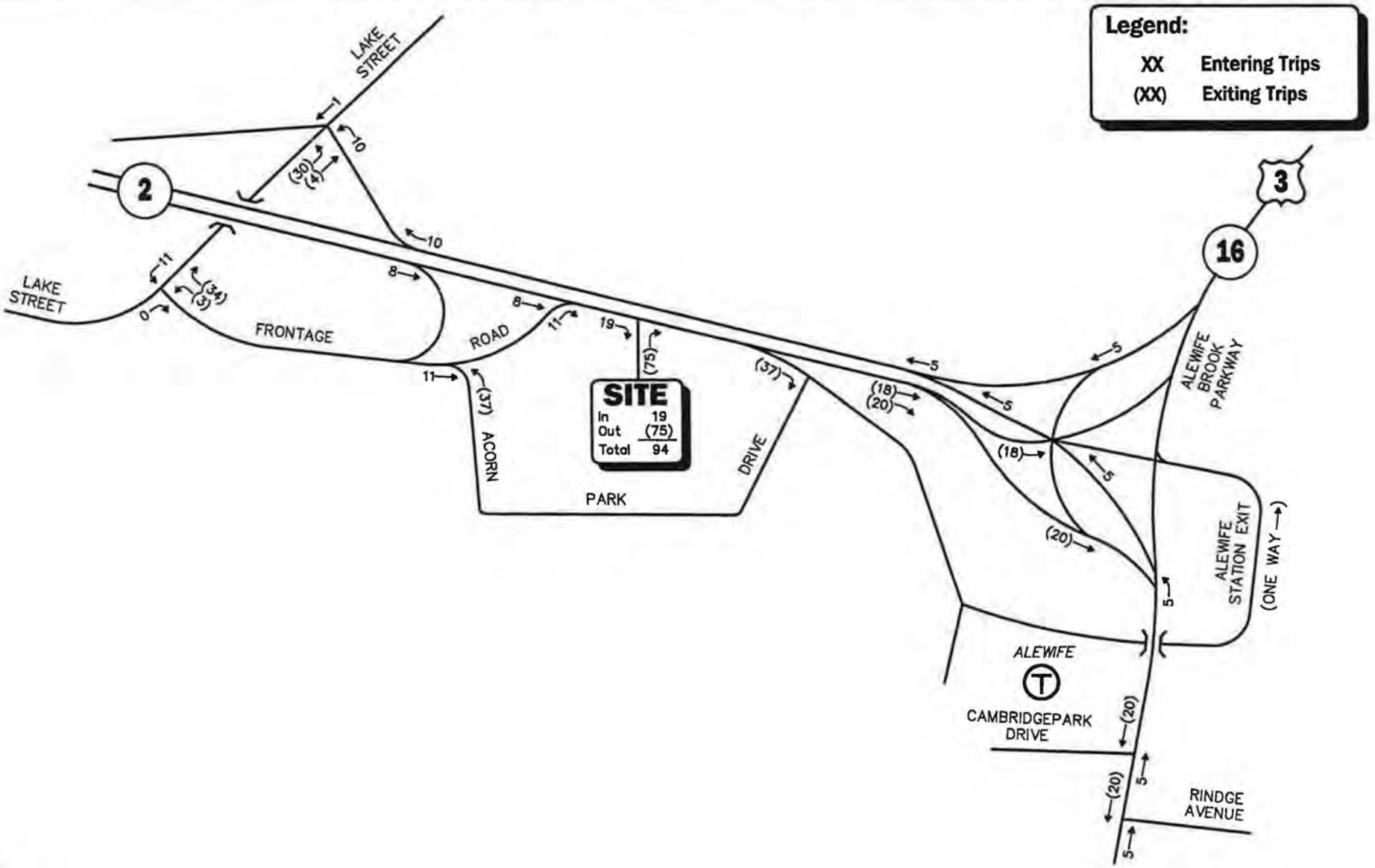

Figure 15

Site Generated
Weekday Morning
Peak Hour Traffic Volumes

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Transportation Engineers & Planners

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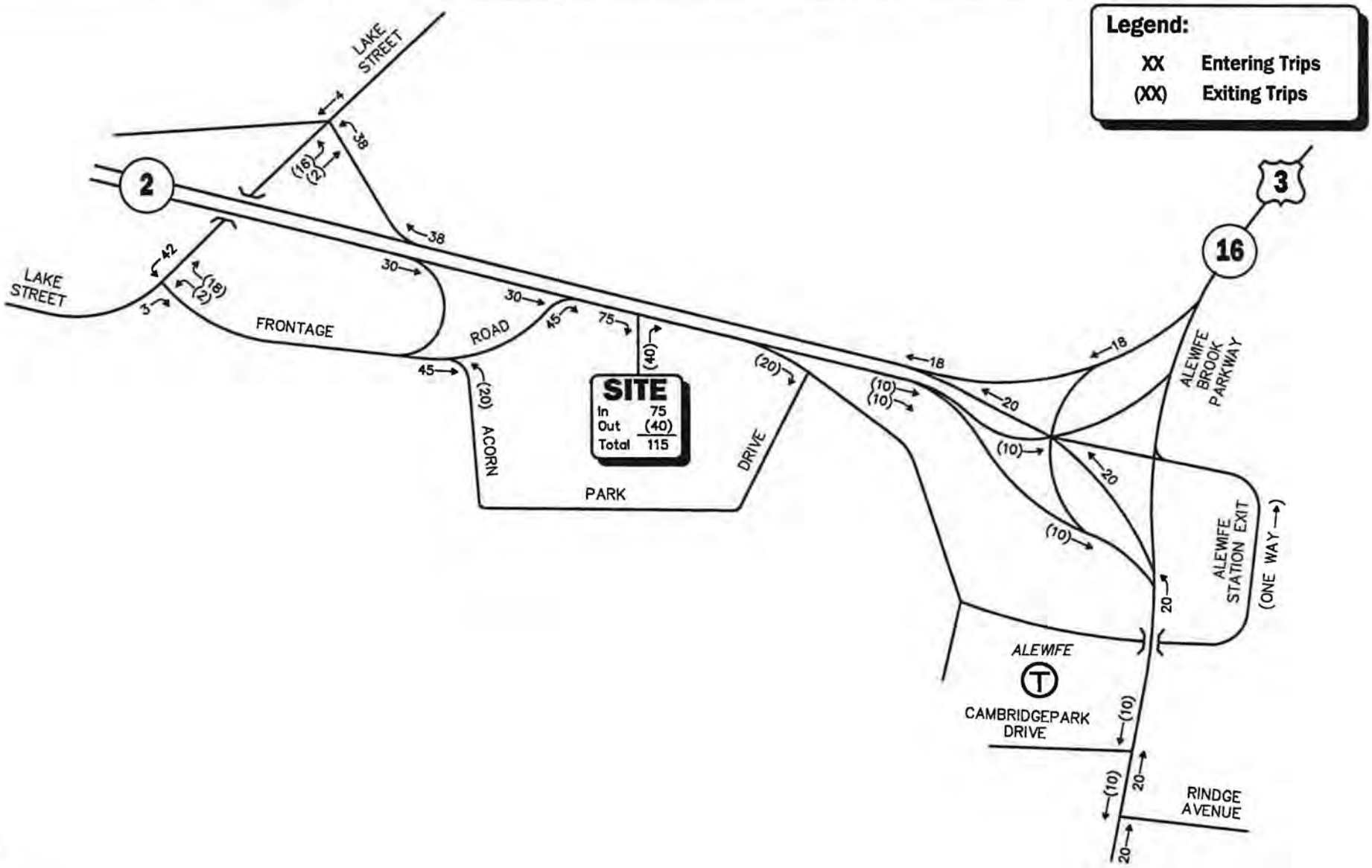

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Figure 16

Site Generated
Weekday Evening
Peak Hour Traffic Volumes

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Transportation Engineers & Planners

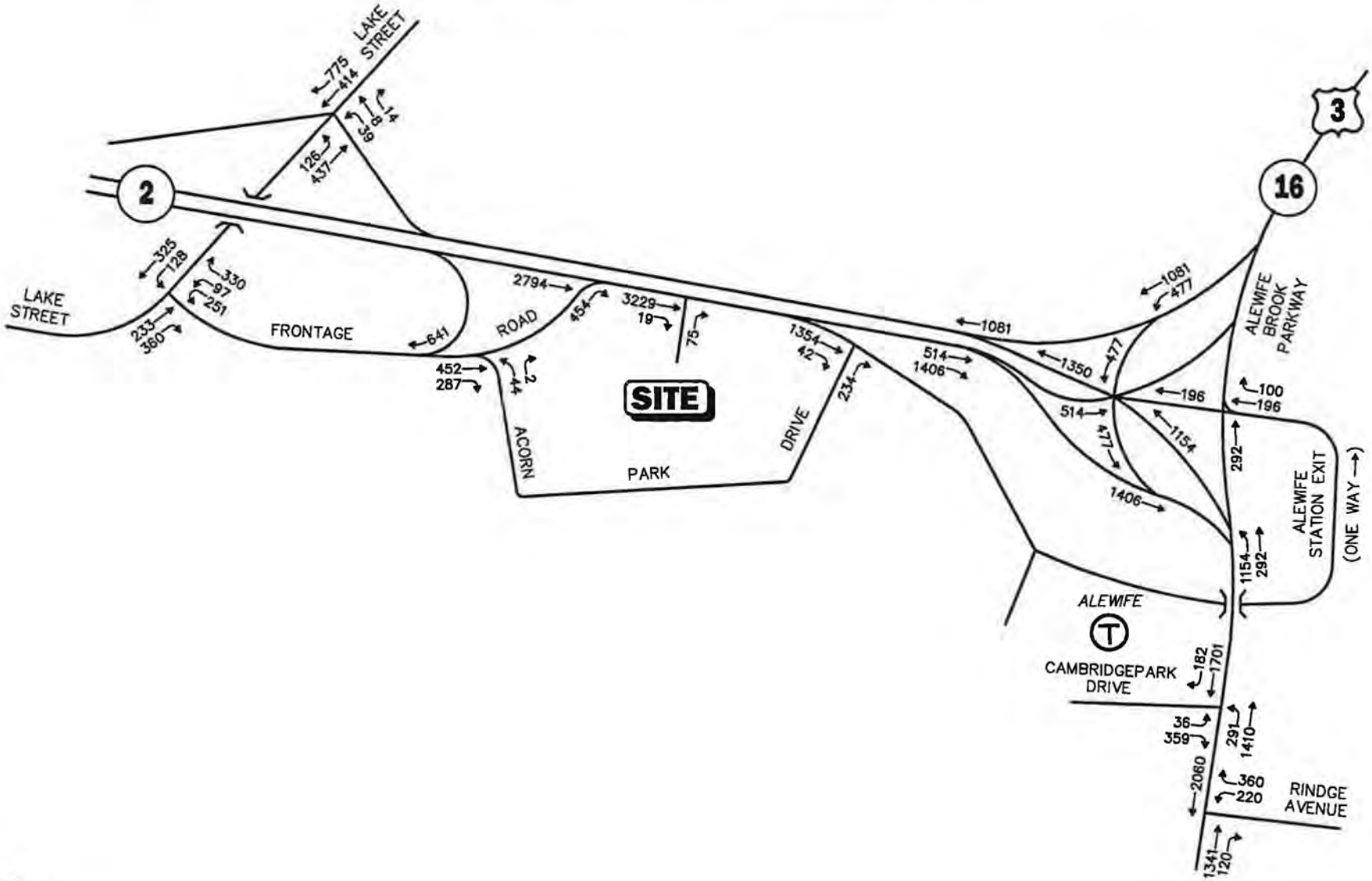

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Figure 17

2008 Build
Weekday Morning
Peak Hour Traffic Volumes

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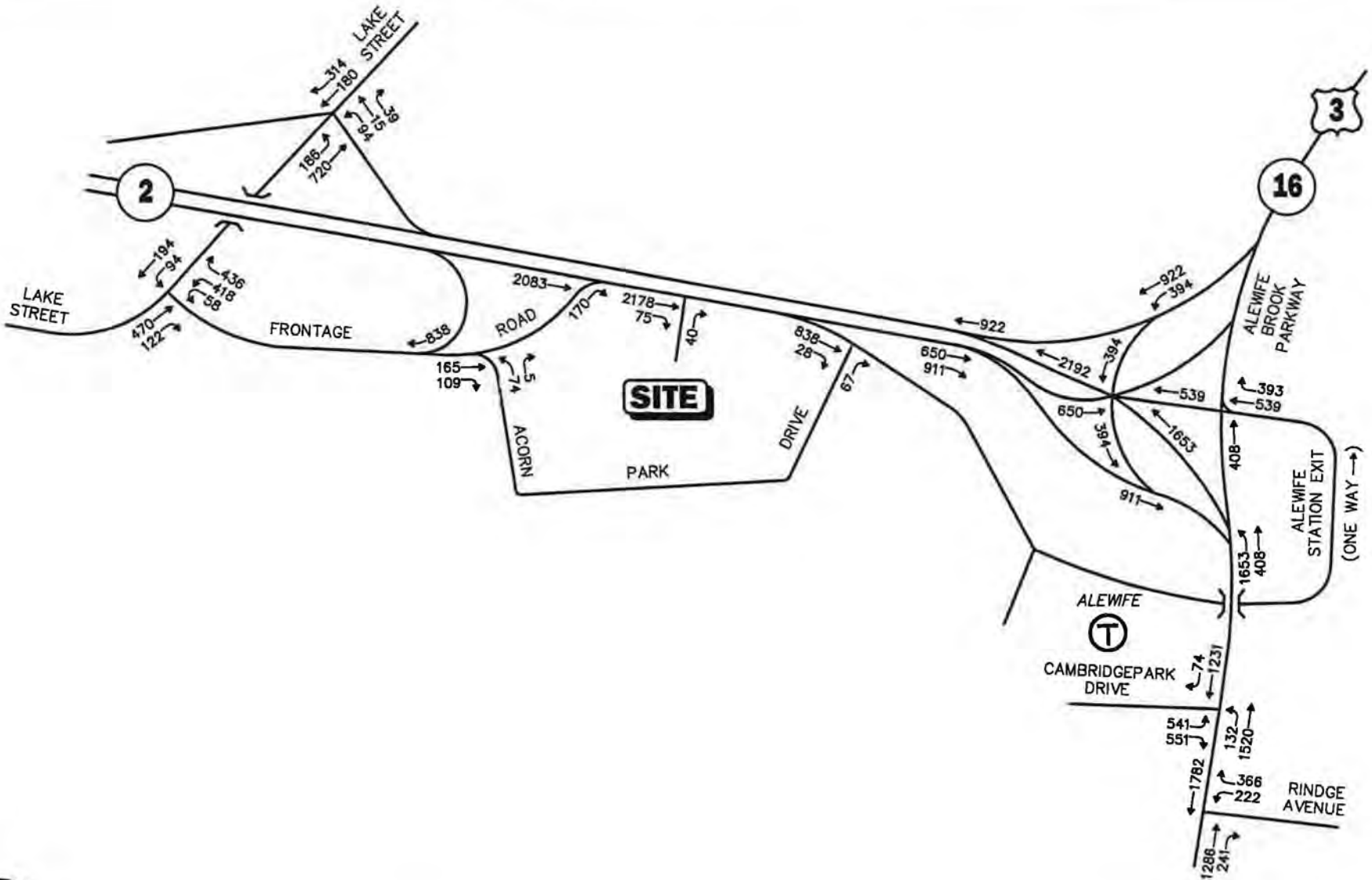

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Figure 18

2008 Build
Weekday Evening
Peak Hour Traffic Volumes

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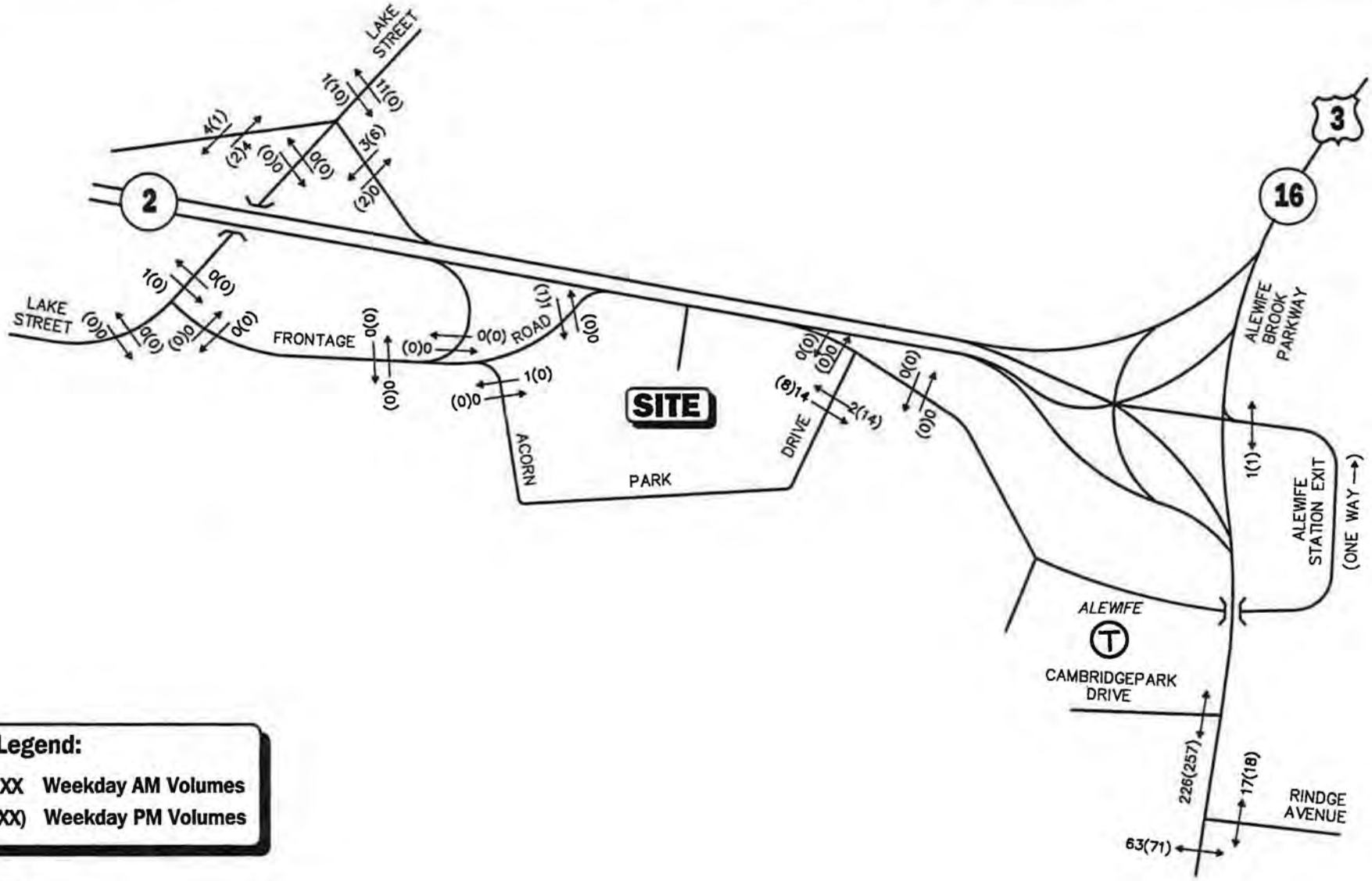
Transportation Engineers & Planners



Legend:

XX **Weekday AM Volumes**
(XX) **Weekday PM Volumes**

Not To Scale

Figure 19

2008 Build
Peak Hour Pedestrian Volumes

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Table 13
2008 PEAK-HOUR TRAFFIC-VOLUME INCREASES[a]

Location	2008 Baseline	2008 Build	Volume Difference	Percent Increase
Lake Street, west of Frontage Road:				
Weekday Morning	1,012	1,015	3	0.3
Weekday Evening	1,199	1,204	5	0.4
Lake Street, east of Route 2 WB Ramps:				
Weekday Morning	1,635	1,639	4	0.2
Weekday Evening	1,247	1,253	6	0.5
Alewife Brook Parkway, south of Rindge Avenue:				
Weekday Morning	3,716	3,741	25	0.7
Weekday Evening	3,501	3,531	30	0.8
Alewife Brook Parkway, north of Route 2:				
Weekday Morning	2,441	2,464	23	0.9
Weekday Evening	2,739	2,767	28	1.0

[a]Two-way volume.

As shown in Table 13, project-related traffic-volume increases at most locations are estimated to range between 0.2 and 0.9 percent during the weekday morning peak hour and between 0.4 and 1.0 percent during the weekday evening peak hour.

YEAR 2013 TRAFFIC VOLUMES

To determine overall traffic conditions in the area and consistent with City guidelines, a future 2013 condition was developed and analyzed. Traffic volumes on the roadway network at that time would include traffic related to specific development by others expected to be completed by 2013 and traffic associated with the proposed development. This analysis is presented below.

FUTURE 2013 CONDITIONS

Traffic growth on area roadways is a function of the expected land development in the immediate area as well as the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This produces a more realistic estimate of growth for local traffic. However, the drawback of this procedure is that the potential growth in population and development external to the study area would not be accounted for in the traffic projections.

To provide a conservative analysis framework, both procedures were used.

Specific Development by Others

The City of Cambridge and the Towns of Arlington and Belmont were consulted to identify specific developments within the area that may bring additional traffic to the study area by the 2013 design year. Based on the discussions, the following projects were identified:

- Archon R & D Project – The proposed development is to be located at 150-180 Cambridgepark Drive and would include two research and development buildings totaling 372 ksf.

- Belmont Uplands – The proposed development is to be located at the southwest quadrant of the Frontage Road intersection with Acorn Park Drive in Belmont and would consist of the construction of 300 residential apartment units.

Background Traffic Growth

To account for general non-specific traffic growth, a compounded annual growth rate of 1 percent was applied to 2008 Baseline condition traffic volumes, in accordance with City scoping determination.

2013 No-Build Traffic Volumes

In accordance with City guidelines for the preparation of TISs, a compounded annual growth rate of 1 percent was applied to 2008 Baseline condition traffic volumes, and then added the projected trips generated by the background site-specific projects, to develop the 2013 No-Build traffic-volume networks. The background site trips assignment was attached in the Appendix.

PLANNED ROADWAY IMPROVEMENTS

The City of Cambridge and Town of Belmont were requested to identify any proposed future roadway changes in the area that might have an effect on traffic conditions. Discussions indicated the following intersection will be affected:

- The Lake Street intersections with Route 2 westbound ramps and Frontage Road will be reconstructed as part of the Massachusetts Avenue reconstruction project. However, the mitigation project is still under conceptual stage and no further information is available. For the purpose of this study, no roadway improvements were assumed at the Lake Street intersections.

Future Traffic Volumes

The 2013 Build condition networks consist of the 2013 No-Build condition volumes plus the project traffic. Figures 20 and 21 depict the 2013 Build weekday morning and evening peak-hour traffic-volume networks.

A summary of the peak-hour future year 2013 traffic-volume changes in the vicinity of the site is shown in Table 14. These volumes are based on the expected increases from the project traffic volumes.

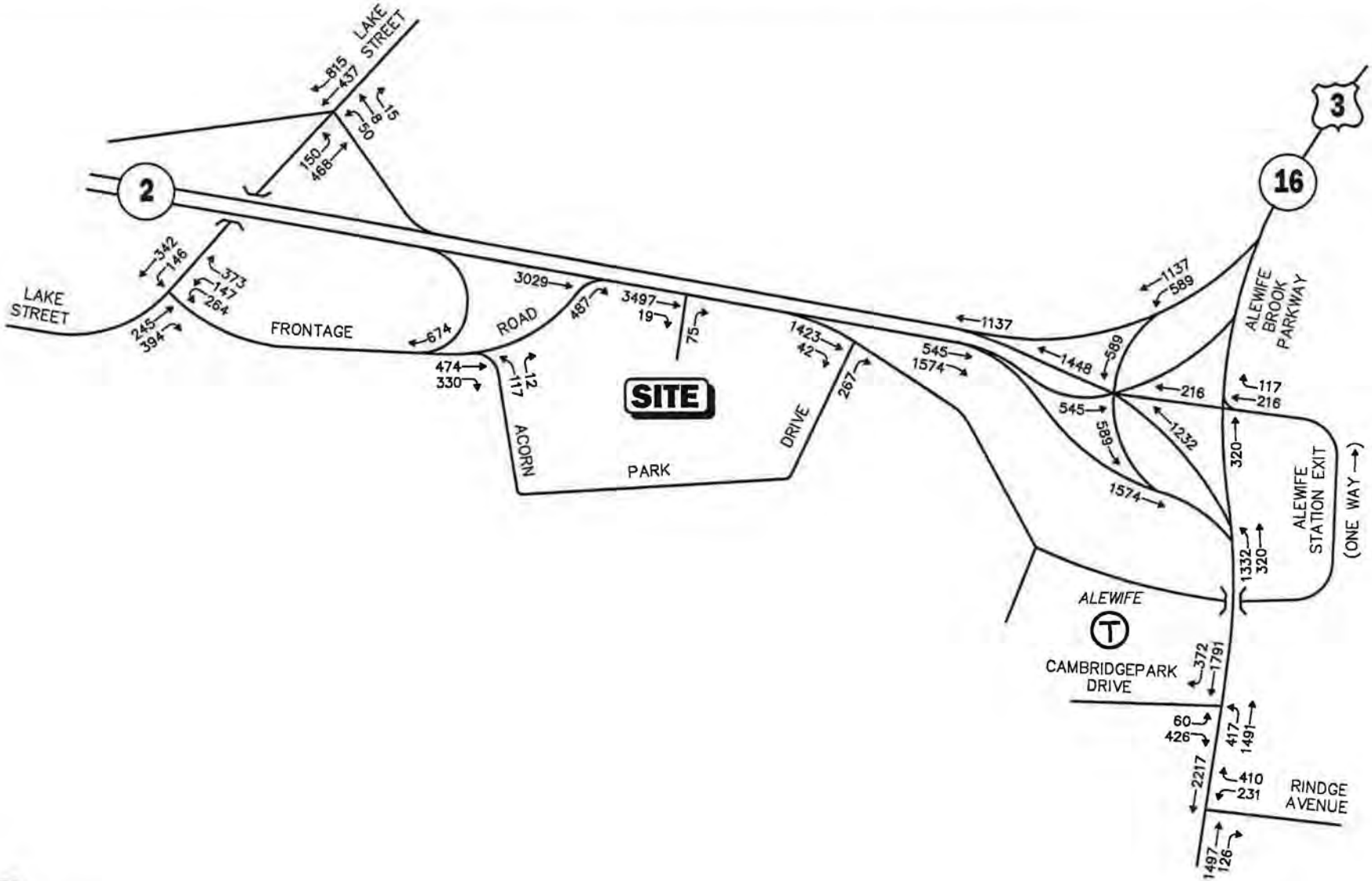

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Figure 20

2013 Build
Weekday Morning
Peak Hour Traffic Volumes

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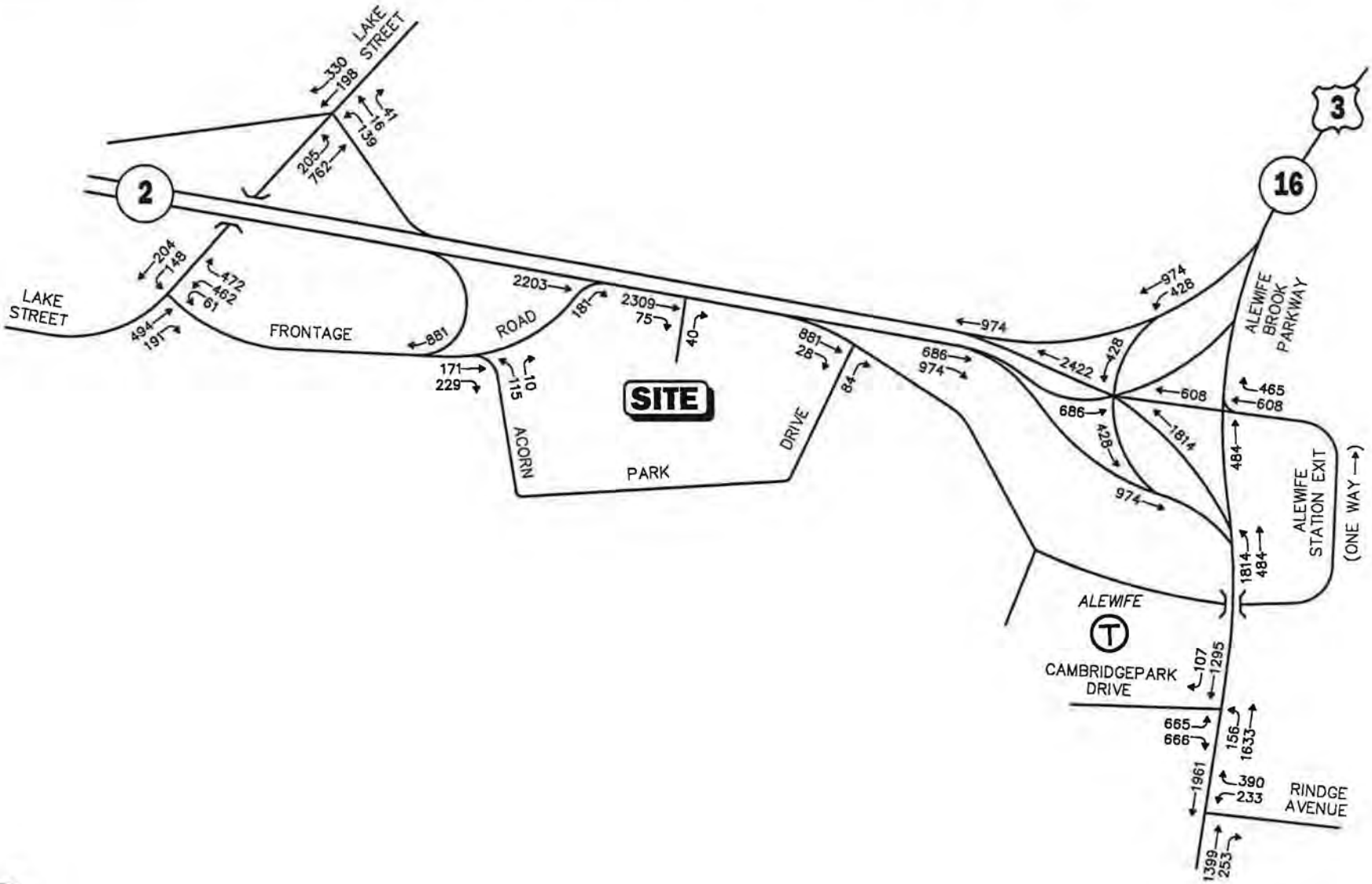

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Figure 21

2013 Build
Weekday Evening
Peak Hour Traffic Volumes

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Transportation Engineers & Planners

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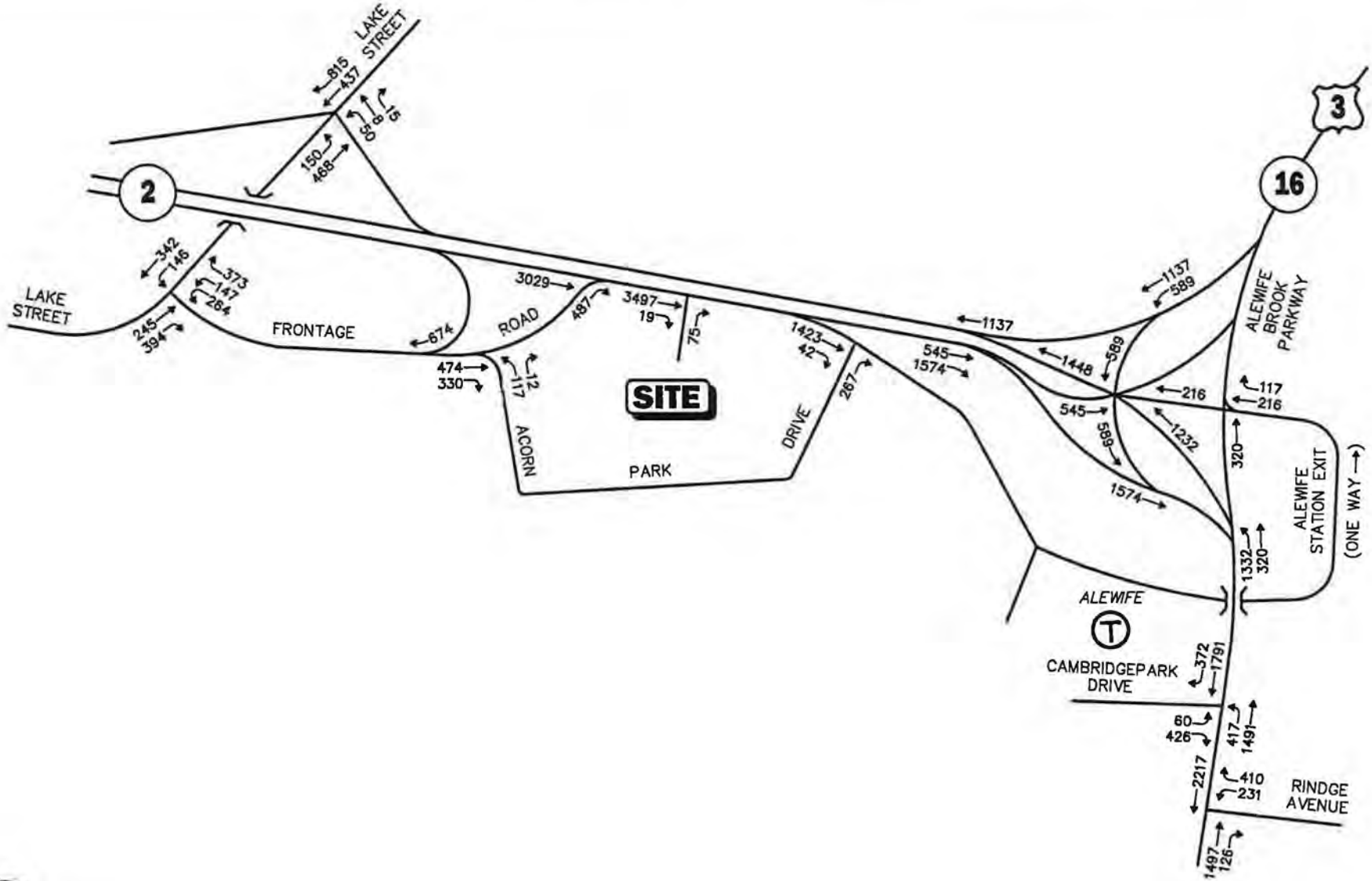

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Figure 20

2013 Build
Weekday Morning
Peak Hour Traffic Volumes

Vanasse & Associates, Inc.
Transportation Engineers & Planners

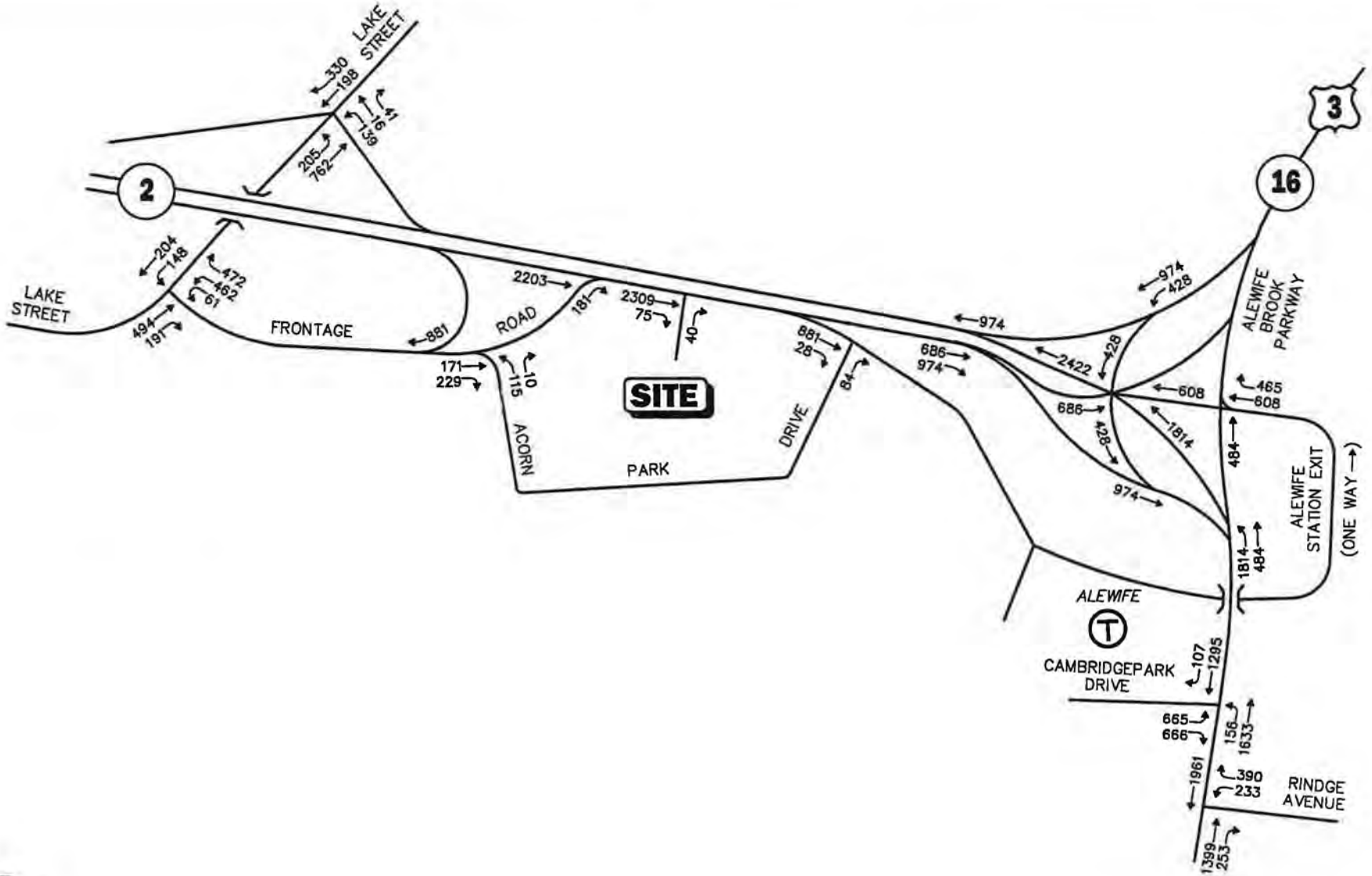

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Figure 21

2013 Build
Weekday Evening
Peak Hour Traffic Volumes

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Table 14
FUTURE YEAR 2013 PEAK-HOUR TRAFFIC-VOLUME INCREASES[a]

Location	2013 No-Build	2013 Build	Volume Difference	Percent Increase
Lake Street, west of Frontage Road:				
Weekday Morning	1,125	1,128	3	0.3
Weekday Evening	1,346	1,351	5	0.4
Lake Street, east of Route 2 WB Ramps:				
Weekday Morning	1,731	1,735	4	0.2
Weekday Evening	1,325	1,331	6	0.5
Alewife Brook Parkway, south of Rindge Avenue:				
Weekday Morning	3,920	3,945	25	0.6
Weekday Evening	3,816	3,846	30	0.8
Alewife Brook Parkway, north of Route 2:				
Weekday Morning	2,685	2,708	23	0.9
Weekday Evening	3,009	3,037	28	0.9

[a]Two-way volume.

As shown in Table 14, project-related traffic-volume increases at most locations are estimated to range between 0.2 and 0.9 percent during the weekday morning peak hour and between 0.4 and 0.9 percent during the weekday evening peak hour.

TRAFFIC OPERATIONS AND ARTICLE 19 SPECIAL PERMIT CRITERIA ANALYSIS

Measuring existing and future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity analyses were conducted under 2008 Baseline, 2008 Build, and 2013 Future Build conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them.

The SPC consist of five measures as indicators to evaluate project impacts. The methodology for the analysis is from the Cambridge "Guidelines for Presenting Information to the Planning Board", approved November 27, 2001, and revised in 2004. Referenced in the guidelines are capacity analysis procedures presented in the *Highway Capacity Manual* (HCM) and summarized in the Appendix. Based upon the SPC and study area intersections, there are a total of 69 indicators that were reviewed. The project does not result in any exceedences. The site's location adjacent to Route 2 results in one exceedence each for pedestrian and bicycle access, while Existing conditions (without the project) analysis indicates four indicators that do not meet the City criteria for pedestrian operations. Overall, 63 indicators are satisfied by the project.

PROJECT VEHICLE – TRIP GENERATION-SPECIAL PERMIT CRITERIA 1

The SPC indicators for vehicle trip-generation are summarized in Table 15. As shown, the 3 indicators are satisfied for the project.

Table 15
SPECIAL PERMIT CRITERIA 1
PROJECT VEHICLE-TRIP GENERATION

Time Period	Threshold	Project	Indicator
Weekday Daily	2,000	1,226	Under
Weekday Morning Peak Hour	240	94	Under
Weekday Evening Peak Hour	240	115	Under

CAPACITY ANALYSIS RESULTS – SPECIAL PERMIT CRITERIA 2

Level-of-service analyses were conducted for the 2008 Existing, 2008 Build, and 2013 Build conditions, in accordance with City direction. Analysis for the signalized intersections is shown in Table 16 and Table 17 for signalized and unsignalized locations, respectively. The analysis worksheets are contained in the Appendix.

Signalized Intersections

As shown in Table 16, all 12 indicators are satisfied for the 2008 Build condition. It should be noted that the Lake Street intersections with Route 2 EB ramps and Frontage Road, and the Frontage Road intersection with Acorn Park Drive are located outside of Cambridge. These intersections were not evaluated with respect to the Article 19 criteria.

Unsignalized Intersections

As shown in Table 17, both indicators are satisfied for the 2008 Build condition.

Table 16
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - SIGNALIZED INTERSECTIONS

Signalized Intersection/Peak Hour/Movement	2008 Existing			2008 Build			SPC 2	2013 Build		
	V/C[a]	Delay[b]	LOS[c]	V/C	Delay	LOS	Indicator[d]	V/C	Delay	LOS
Cambridgepark Drive at Alewife Brook Parkway										
Weekday Morning Peak Hour:										
Cambridgepark Drive EB LT/RT	0.58	64.5	E	0.58	64.5	E	--	1.03	>100	F
Alewife Brook Parkway NB LT	>1.2	>100	F	>1.2	>100	F	--	>1.2	>100	F
Alewife Brook Parkway NB TH	0.55	4.1	A	0.56	4.1	A	--	0.59	4.3	A
Alewife Brook Parkway SB TH	1.01	50.1	D	1.02	53.3	D	--	1.07	70.9	E
Alewife Brook Parkway SB RT	0.18	13.4	B	0.18	13.4	B	--	0.38	16.0	B
Overall	**1.10**	**40.6**	**D**	**1.10**	**42.1**	**D**	**No**	**>1.2**	**78.1**	**E**
Weekday Evening Peak Hour:										
Cambridgepark Drive EB LT/RT	>1.2	>100	F	>1.2	>100	F	--	>1.2	>100	F
Alewife Brook Parkway NB LT	0.57	19.6	B	0.58	20.0	B	--	0.75	25.6	C
Alewife Brook Parkway NB TH	0.68	6.8	A	0.66	6.8	A	--	0.74	7.4	A
Alewife Brook Parkway SB TH	0.62	18.0	B	0.63	18.1	B	--	0.66	18.9	B
Alewife Brook Parkway SB RT	0.07	11.0	B	0.07	11.0	B	--	0.10	11.4	B
Overall	**>1.2**	**>100**	F	**>1.2**	**>100**	**F**	**No (0.7)**	**>1.2**	**>100**	**F**
Alewife Brook Parkway at Rindge Avenue										
Weekday Morning Peak Hour:										
Rindge Avenue WB LT	1.20	>100	F	1.20	>100	F	--	>1.2	>100	F
Rindge Avenue WB RT	1.18	>100	F	1.18	>100	F	--	>1.2	>100	F
Alewife Brook Parkway NB TH/RT	1.09	69.7	E	1.09	71.3	E	--	>1.2	>100	F
Alewife Brook Parkway SB TH	0.95	10.7	B	0.95	11.1	B	--	1.03	24.4	C
Overall	**1.10**	**56.9**	**E**	**1.11**	**57.5**	**E**	**No (0.6)**	**>1.2**	**92.3**	**F**
Weekday Evening Peak Hour:										
Rindge Avenue WB LT	0.83	69.8	E	0.83	69.8	E	--	0.87	74.9	E
Rindge Avenue WB RT	0.94	92.4	F	0.94	92.4	F	--	1.04	>100	F
Alewife Brook Parkway NB TH/RT	1.12	86.2	F	1.14	92.1	F	--	>1.2	>100	F
Alewife Brook Parkway SB TH	0.83	14.5	B	0.83	14.5	B	--	0.92	19.0	B
Overall	**1.08**	**52.4**	**D**	**1.10**	**54.7**	**D**	**No**	**1.19**	**73.6**	**E**

See notes at end of table.

Table 16 (Continued)
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - SIGNALIZED INTERSECTIONS

Signalized Intersection/Peak Hour/Movement	2008 Existing			2008 Build			SPC 2	2013 Build		
	V/C[a]	Delay[b]	LOS[c]	V/C	Delay	LOS	Indicator[d]	V/C	Delay	LOS
Route 2 at Alewife Brook Parkway										
Weekday Morning Peak Hour:										
Route 2 EB LT	0.78	52.7	D	0.81	54.5	D	--	0.86	58.3	E
Alewife Station Access Road WB TH	0.47	22.3	C	0.47	22.3	C	--	0.52	23.4	C
Alewife Brook Parkway SB TH	0.78	53.4	D	0.78	53.4	D	--	0.97	74.0	E
Alewife Brook Parkway NWB TH	0.93	43.3	D	0.93	43.9	D	--	0.99	55.6	E
Overall	**0.86**	**45.8**	**D**	**0.86**	**46.5**	**D**	**No**	**0.95**	**57.9**	**E**
Weekday Evening Peak Hour:										
Route 2 EB LT	0.86	54.6	D	0.87	55.9	E	--	0.92	61.4	E
Alewife Station Access Road WB TH	1.18	>100	F	1.18	>100	F	--	>1.2	>100	F
Alewife Brook Parkway SB TH	0.92	76.6	E	0.92	76.6	E	--	1.00	92.1	F
Alewife Brook Parkway NWB TH	1.19	>100	F	>1.2	>100	F	--	>1.2	>100	F
Overall	**1.06**	**>100**	**F**	**1.07**	**>100**	**F**	**No (0.9)**	**1.17**	**>100**	**F**
Alewife Brook Parkway at Alewife Station Access Road										
Weekday Morning Peak Hour:										
Alewife Station Access Road WB TH	0.21	11.2	B	0.21	11.2	B	--	0.23	11.4	C
Alewife Station Access Road WB RT	0.07	0.1	A	0.07	0.1	A	--	0.09	0.1	A
Alewife Brook Parkway NB TH	0.30	31.4	C	0.30	31.4	C	--	0.33	31.8	D
Overall	**0.24**	**19.3**	**B**	**0.24**	**19.3**	**B**	**No**	**0.26**	**19.4**	**D**
Weekday Evening Peak Hour:										
Alewife Station Access Road WB TH	0.83	33.0	C	0.83	33.0	C	--	0.94	46.7	C
Alewife Station Access Road WB RT	0.34	0.8	A	0.34	0.8	A	--	0.40	1.0	D
Alewife Brook Parkway NB TH	0.42	30.0	C	0.42	30.0	C	--	0.50	31.5	F
Overall	**0.67**	**22.6**	**C**	**0.67**	**22.6**	**C**	**No**	**0.76**	**28.3**	**E**

See notes at end of table.

Table 16 (Continued)
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - SIGNALIZED INTERSECTIONS

Signalized Intersection/Peak Hour/Movement	2008 Existing			2008 Build			SPC 2	2013 Build		
	V/C[a]	Delay[b]	LOS[c]	V/C	Delay	LOS	Indicator[d]	V/C	Delay	LOS
Route 2 Eastbound Ramps at Alewife Brook Parkway										
Weekday Morning Peak Hour:										
Route 2 EB RT	0.67	8.7	A	0.68	8.9	A	--	0.76	10.8	B
Alewife Brook Parkway SB TH	1.00	>100	F	1.00	>100	F	--	1.23	>100	F
Overall	**0.72**	**33.4**	**C**	**0.73**	**33.3**	**C**	**No**	**0.84**	**59.4**	**E**
Weekday Evening Peak Hour:										
Route 2 EB RT	0.51	12.3	B	0.52	12.4	B	--	0.56	13.1	B
Alewife Brook Parkway SB TH	0.45	39.8	D	0.45	39.8	D	--	0.48	39.9	D
Overall	**0.49**	**20.4**	**C**	**0.50**	**20.4**	**C**	**No**	**0.54**	**21.1**	**C**
Route 2 Westbound Ramps at Alewife Brook Parkway										
Weekday Morning Peak Hour:										
Route 2 WB TH	0.77	32.1	C	0.77	32.3	C	--	0.82	34.9	C
Alewife Brook Parkway SB RT	>1.2	>100	F	>1.2	>100	F	--	>1.2	>100	F
Overall	**1.19**	**>100**	**F**	**1.2**	**>100**	F	**No (0.4)**	>1.2	**>100**	F
Weekday Evening Peak Hour:										
Route 2 WB TH	>1.2	>100	F	>1.2	>100	F	--	>1.2	>100	F
Alewife Brook Parkway SB RT	>1.2	>100	F	>1.2	>100	F	--	>1.2	>100	F
Overall	**>1.2**	**>100**	**F**	**>1.2**	**>100**	F	**No (1.2)**	**>1.2**	**>100**	F

See notes at end of table.

Table 16 (Continued)
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - SIGNALIZED INTERSECTIONS

Signalized Intersection/Peak Hour/Movement	2008 Existing V/C[a]	2008 Existing Delay[b]	2008 Existing LOS[c]	2008 Build V/C	2008 Build Delay	2008 Build LOS	SPC 2 Indicator[d]	2013 Build V/C	2013 Build Delay	2013 Build LOS
Lake Street at Frontage Road										
Weekday Morning Peak Hour:										
Lake Street EB TH	0.46	13.8	B	0.48	14.9	B	--	0.50	15.9	B
Lake Street EB RT	0.25	0.4	A	0.25	0.4	A	--	0.27	0.4	A
Lake Street WB LT	0.31	18.5	B	0.26	17.6	B	--	0.30	18.9	B
Lake Street WB TH	0.38	9.4	A	0.37	8.9	A	--	0.39	9.6	A
Frontage Road NB LT/UT	0.45	14.9	B	0.48	16.1	B	--	0.53	17.0	B
Frontage Road NB RT	0.22	0.3	A	0.24	0.4	A	--	0.27	0.4	A
Overall	**0.41**	**8.3**	**A**	**0.42**	**8.5**	**A**	--	**0.45**	**9.1**	**A**
Weekday Evening Peak Hour:										
Lake Street EB TH	0.66	16.0	B	0.67	17.7	B	--	0.71	21.0	C
Lake Street EB RT	0.08	0.1	A	0.09	0.1	A	--	0.14	0.2	A
Lake Street WB LT	0.26	26.2	C	0.30	26.2	C	--	0.35	27.7	C
Lake Street WB TH	0.20	9.2	A	0.20	8.9	A	--	0.20	8.9	A
Frontage Road NB LT/UT	0.55	18.5	B	0.57	20.3	C	--	0.64	24.3	C
Frontage Road NB RT	0.28	0.4	A	0.30	0.5	A	--	0.32	0.5	A
Overall	**0.55**	**11.3**	**B**	**0.56**	**12.5**	**B**	--	**0.60**	**14.4**	**B**
Lake Street at Route 2 WB Ramps										
Weekday Morning Peak Hour:										
Lake Street EB LT	0.48	27.5	C	0.59	30.6	C	--	0.54	29.0	C
Lake Street EB TH	0.36	4.2	A	0.36	4.2	A	--	0.39	4.9	A
Lake Street WB TH/RT	0.54	9.2	A	0.54	9.6	A	--	0.62	13.4	B
Route 2 WB Off-Ramp NWB LT	0.25	29.4	C	0.31	30.8	C	--	0.29	31.3	C
Route 2 WB Off-Ramp NWB LT/TH	0.36	31.4	C	0.41	33.1	C	--	0.35	32.4	C
Route 2 WB Off-Ramp NWB RT	0.02	0.0	A	0.02	0.0	A	--	0.02	0.0	A
Overall	**0.51**	**9.5**	**A**	**0.54**	**10.5**	**B**	--	**0.57**	**13.2**	**B**
Weekday Evening Peak Hour:										
Lake Street EB LT	0.49	23.6	C	0.53	24.7	C	--	0.61	29.8	C
Lake Street EB TH	0.56	6.6	A	0.56	6.9	A	--	0.59	7.5	A
Lake Street WB TH/RT	0.28	11.4	B	0.28	12.0	B	--	0.30	12.3	B
Route 2 WB Off-Ramp NWB LT	0.23	26.9	C	0.34	28.0	C	--	0.45	31.4	C
Route 2 WB Off-Ramp NWB LT/TH	0.30	27.8	C	0.40	28.9	C	--	0.51	32.4	C
Route 2 WB Off-Ramp NWB RT	0.03	0.0	A	0.03	0.0	A	--	0.03	0.0	A
Overall	**0.53**	**11.0**	**B**	**0.54**	**12.1**	**B**	--	**0.58**	**13.8**	**B**

See notes at end of table.

Table 16 (Continued)
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - SIGNALIZED INTERSECTIONS

Signalized Intersection/Peak Hour/Movement	2008 Existing			2008 Build			SPC 2	2013 Build		
	V/C[a]	Delay[b]	LOS[c]	V/C	Delay	LOS	Indicator[d]	V/C	Delay	LOS
Frontage Road at Acorn Park Drive										
Weekday Morning Peak Hour:										
Frontage Road EB TH/RT	0.32	4.0	A	0.34	5.1	A	--	0.39	7.3	A
Acorn Park Drive NB LT	0.09	17.8	B	0.42	18.9	B	--	0.80	31.2	C
Acorn Park Drive NB RT	0.00	17.3	B	0.00	16.4	B	--	0.03	15.1	B
Overall	**0.28**	**4.3**	**A**	**0.36**	**6.6**	**A**	--	**0.52**	**12.7**	**B**
Weekday Evening Peak Hour:										
Frontage Road EB TH/RT	0.10	3.4	A	0.13	3.7	A	--	0.17	4.3	A
Acorn Park Drive NB LT	0.24	18.1	B	0.30	18.2	B	--	0.41	18.6	B
Acorn Park Drive NB RT	0.00	17.0	B	0.00	16.8	B	--	0.01	16.4	B
Overall	**0.13**	**6.6**	**A**	**0.16**	**7.1**	**A**	--	**0.23**	**7.9**	**A**

Note: Results not meaningful when V/C ratios are greater than 1.2 or delays exceed 100 seconds. A detailed LOS summary table showing calculated v/c and delay results is provided in the Appendix.
[a]Volume to capacity ratio.
[b]Average control delay per vehicle (in seconds) for the critical movements.
[c]Level of service.
[d]Special Permit Criteria 2 – Level of Service. Percentage volume increases shown in parentheses. Locations outside of Cambridge are not evaluated.

Table 17
SPECIAL PERMIT CRITERIA 2
VEHICLE LEVEL-OF-SERVICE SUMMARY - UNSIGNALIZED INTERSECTIONS

Unsignalized Intersection/ Critical Movement/Peak Hour	2008 Existing			2008 Build			SPC 2	2013 Build		
	Demand[a]	Delay[b]	LOS[c]	Demand	Delay	LOS	Indicator[d]	Demand	Delay	LOS
Frontage Road at Route 2 EB[e]										
Right turn movement from NB Frontage Road:										
Weekday Morning	443	>100	F	454	>100	F	--	487	>100	F
Weekday Evening	125	55.5	F	170	>100	F	--	181	>100	F
Acorn Park Drive at Alewife Station Off-Ramp										
Right turn movements from Acorn Park Drive:										
Weekday Morning	234	>100	F	234	>100	F	No(2.3)	267	>100	F
Weekday Evening	67	20.1	C	67	20.4	C	No	84	23.3	C
Site Drive at Route 2 EB										
Right turn movements from Site Drive:										
Weekday Morning	--	--	--	75	>100	F	--	75	>100	F
Weekday Evening	--	--	--	40	32.5	D	--	40	36.9	E

[a]Demand (in vehicles per hour) for the critical movements.
[b]Average control delay per vehicle (in seconds) for the critical movements.
[c]Level of service.
[d]Special Permit Criteria 2 – Level of Service. Percentage volume increases shown in parentheses. Locations outside of Cambridge are not evaluated.

TRAFFIC VOLUME INCREASE ON RESIDENTIAL STREETS – SPECIAL PERMIT CRITERIA 3

The project is located in an office/hotel/R&D mixed-use area to the west of Alewife Station. No residential uses are present on the adjacent streets. Therefore, Criteria 3 does not apply to the 2008 Build conditions.

QUEUE ANALYSES – SPECIAL PERMIT CRITERIA 4

As required in the City scoping guidelines, vehicle queues were calculated for each approach for all of the signalized study area intersections using Synchro. Table 18 summarizes the 2008 Existing observed, 2008 Existing calculated, 2008 Build calculated, relationship to the SPC indicators, and 2013 Build calculated.

As shown in Table 18, all 40 indicators are satisfied for the 2008 Build condition. As pointed out above, only intersections within the City of Cambridge were evaluated.

Table 18
SPECIAL PERMIT CRITERIA 4 – QUEUE ANALYSIS RESULTS[a]

Intersection/Lane	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
	2008 Observed[b]	2008 Existing Calculated	2008 Build Calculated	SPC 4 Indicator[c]	2013 Build Calculated	2008 Observed[b]	2008 Existing Calculated	2008 Build Calculated	SPC 4 Indicator[c]	2013 Build Calculated
Lake Street at Route 2 WB Ramps:										
Lake Street EB LT	3	2	2	--	3	4	3	3	--	4
Lake Street EB TH	5	2	3	--	3	17	5	5	--	6
Lake Street WB TH/RT	4	3	4	--	5	4	1	1	--	1
Route 2 WB Off-ramp LT	2	0	1	--	1	2	1	1	--	2
Route 2 WB Off-ramp LT/TH	2	0	1	--	1	3	1	1	--	2
Route 2 WB Off-ramp RT	0	0	0	--	0	2	0	0	--	0
Lake Street at Frontage Road:										
Lake Street EB TH	4	2	2	--	3	12	6	6	--	7
Lake Street EB RT	0	0	0	--	0	0	0	0	--	0
Lake Street WB LT	4	1	1	--	1	5	0	0	--	1
Lake Street WB TH	2	2	2	--	2	3	1	1	--	1
Frontage Road NB LT/UT	5	2	2	--	2	6	3	4	--	4
Frontage Road NB RT	3	0	0	--	0	17	0	0	--	0
Frontage Road at Acorn Park Drive:										
Frontage Road EB TH/RT	0	1	1	--	2	0	0	0	--	0
Acorn Park Drive NB LT	0	0	1	--	3	0	1	1	--	1
Acorn Park Drive NB RT	0	0	0	--	0	0	0	0	--	0
Alewife Brook Parkway at Route 2:										
Route 2 EB LT	--	8	8	No	9	--	11	11	No	12
Alewife Station Off-Ramp WB TH	--	2	2	No	3	--	20	20	No	25
Alewife Brook Parkway SB TH	--	8	8	No	11	--	7	7	No	8
Alewife Brook Parkway NWB TH	38	18	18	No	20	50	42	43	No	51
Alewife Station Access Road at Alewife Brook Parkway:										
Alewife Station Off-Ramp WB TH	2	3	3	No	3	6	23	23	No	30
Alewife Station Off-Ramp WB RT	0	0	0	No	0	0	0	0	No	0
Alewife Brook Parkway NB TH	6	4	4	No	4	40	5	5	No	6

See notes at end of table

Table 18 (Continued)
SPECIAL PERMIT CRITERIA 4 – QUEUE ANALYSIS RESULTS[a]

Intersection/Lane	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
	2008 Observed[b]	2008 Existing Calculated	2008 Build Calculated	SPC 4 Indicator[c]	2013 Build Calculated	2008 Observed[b]	2008 Existing Calculated	2008 Build Calculated	SPC 4 Indicator[c]	2013 Build Calculated
Alewife Brook Parkway at Cambridgepark Drive:										
Cambridgepark Drive EB LT/RT	6	2	3	No	9	15	32	32	No	41
Alewife Brook Parkway NB LT	10	11	12	No	21	4	1	1	No	1
Alewife Brook Parkway NB TH	6	5	5	No	5	9	6	6	No	8
Alewife Brook Parkway SB TH	43	39	40	No	40	15	12	12	No	13
Alewife Brook Parkway SB RT	2	2	2	No	2	0	0	0	No	1
Alewife Brook Parkway at Rindge Avenue:										
Rindge Avenue WB LT	10	11	11	No	12	3	8	8	No	9
Rindge Avenue WB LT	3	8	8	No	11	15	7	7	No	8
Alewife Brook Parkway NB TH/RT	45	35	35	No	42	50	29	30	No	35
Alewife Brook Parkway SB TH	49	44	44	No	52	21	27	27	No	33
Route 2 Westbound Ramps at Alewife Brook Parkway:										
Route 2 WB TH	--	23	23	No	26	--	50	50	No	59
Alewife Brook Parkway SB TH	--	69	69	No	74	--	42	43	No	47
Route 2 Eastbound Ramps at Alewife Brook Parkway:										
Route 2 EB TH	--	13	13	No	17	--	7	7	No	8
Alewife Brook Parkway SB TH	--	11	11	No	17	--	8	8	No	8

[a]All queues calculated using Synchro methodology
[b]Average observed queue.
[c]Special Permit Criteria 4 – Lane Queue (Locations outside of Cambridge are not evaluated).

PEDESTRIAN AND BICYCLE FACILITIES – SPECIAL PERMIT CRITERIA 5

Criteria 1 – Pedestrian Level of Service

A pedestrian impact analysis was conducted at all study area intersections under 2008 Existing and 2008 Build conditions, as required in the scoping letter. For signalized intersections, the pedestrian level-of-service (PLOS) calculations measure the adequacy of the pedestrian phases (exclusive or concurrent) for sufficient time to cross major or minor streets. The unsignalized analysis relies on a critical gap procedure. The analysis methodology was based on procedures outlined in the 2000 HCM for signalized and unsignalized intersections, and is provided in the Appendix. Table 19 summarizes the results of the pedestrian analysis at the signalized intersections, while Table 20 presents a summary of the pedestrian analysis at the unsignalized intersections. Existing conditions analysis (without the project) indicate four exceedences of the criteria. Overall, 6 of 10 indicators are satisfied for the 2008 Build condition.

Criteria 2 – Safe Pedestrian Facilities

While Route 2 provides a paved asphalt sidewalk in the vicinity of the site and other buildings between Frontage Road and the Acorn Park Drive intersection, the sidewalk has one location approximately 600 feet east of the site where a curb has been placed across the sidewalk. In addition, there are the remnants of curb cuts along the site frontage that may provide further impediments to pedestrians. In this regard, this criterion is not met, by virtue of existing conditions. Mitigation has been proposed to address this lack of existing facilities.

Table 19
SPECIAL PERMIT CRITERIA 5 – PEDESTRIAN LEVEL-OF-SERVICE SUMMARY
SIGNALIZED INTERSECTIONS

Intersection/Time Period/Crossing Path	2008 Existing			2008 Build			SPC 5[a]		2013 Build		
	Demand[b]	Delay[c]	LOS[d]	Demand	Delay	LOS	Delay Increase	Indicator	Demand	Delay	LOS
Alewife Brook Parkway at Alewife Station Access Road											
Weekday Morning:											
Crossing Alewife Station Access Road (East)	1	4.4	A	1	4.4	A	0.0	No	1	4.4	A
Weekday Evening:											
Crossing Alewife Station Access Road (East)	1	4.0	A	1	4.0	A	0.0	No	1	4.0	A
Alewife Brook Parkway at Cambridgepark Drive/ Rindge Avenue											
Weekday Morning:											
Crossing Rindge Avenue (East)	17	48.6	E	17	48.6	E	0.0	Yes	17	48.6	E
Crossing Alewife Brook Parkway (South)	63	48.6	E	63	48.6	E	0.0	Yes	63	48.6	E
Weekday Evening:											
Crossing Rindge Avenue (East)	18	48.6	E	18	48.6	E	0.0	Yes	18	48.6	E
Crossing Alewife Brook Parkway (South)	71	48.6	E	71	48.6	E	0.0	Yes	71	48.6	E
Frontage Road at Acorn Park Drive											
Weekday Morning:											
Crossing Frontage Road (East)	0	11.1	B	0	11.1	B	0.0	--	0	11.1	B
Crossing Frontage Road (West)	0	11.1	B	0	11.1	B	0.0	--	0	11.1	B
Crossing Acorn Park Drive (South)	1	3.6	A	1	3.6	A	0.0	--	1	3.6	A
Crossing Route 2 EB Off Ramp (North)	0	3.6	A	0	3.6	A	0.0	--	0	3.6	A
Weekday Evening:											
Crossing Frontage Road (East)	0	11.1	B	0	11.1	B	0.0	--	0	11.1	B
Crossing Frontage Road (West)	0	11.1	B	0	11.1	B	0.0	--	0	11.1	B
Crossing Acorn Park Drive (South)	0	3.6	A	0	3.6	A	0.0	--	0	3.6	A
Crossing Route 2 EB Off Ramp (North)	0	3.6	A	0	3.6	A	0.0	--	0	3.6	A

See notes at end of table.

Table 19 (Continued)
SPECIAL PERMIT CRITERIA 5 – PEDESTRIAN LEVEL-OF-SERVICE SUMMARY
SIGNALIZED INTERSECTIONS

	2008 Existing			2008 Build			SPC 5[a]		2013 Build		
Intersection/Time Period/Crossing Path	Demand[b]	Delay[c]	LOS[d]	Demand	Delay	LOS	Delay Increase	Indicator	Demand	Delay	LOS
Lake Street at Frontage Road											
Weekday Morning:											
Crossing Lake Street (East)	1	27.8	C	1	27.8	C	0.0	--	1	27.8	C
Crossing Lake Street (West)	0	27.8	C	0	27.8	C	0.0	--	0	27.8	C
Crossing Frontage Road (South)	0	13.2	B	0	13.2	B	0.0	--	0	13.2	B
Weekday Evening:											
Crossing Lake Street (East)	0	27.8	C	0	27.8	C	0.0	--	0	27.8	C
Crossing Lake Street (West)	0	27.8	C	0	27.8	C	0.0	--	0	27.8	C
Crossing Frontage Road (South)	0	13.2	B	0	13.2	B	0.0	--	0	13.2	B
Lake Street at Route 2 WB Ramps											
Weekday Morning:											
Crossing Lake Street (East)	12	25	C	12	25.0	C	0.0	--	12	25.0	C
Crossing Lake Street (West)	0	25	C	0	25.0	C	0.0	--	0	25.0	C
Crossing Route 2 WB Off-Ramp (South)	3	11.8	B	3	11.8	B	0.0	--	3	11.8	B
Crossing Route 2 WB On-Ramp (North)	8	11.8	B	8	11.8	B	0.0	--	8	11.8	B
Weekday Evening:											
Crossing Lake Street (East)	10	25	C	10	25	C	0.0	--	10	25.0	C
Crossing Lake Street (West)	0	25	C	0	25	C	0.0	--	0	25.0	C
Crossing Route 2 WB Off-Ramp (South)	8	11.8	B	8	11.8	B	0.0	--	8	11.8	B
Crossing Route 2 WB On-Ramp (North)	3	11.8	B	3	11.8	B	0.0	--	3	11.8	B

[a]Special Permit Criteria 5 – Pedestrian Level of Service.
[b]Demand in pedestrians per hour.
[c]Average delay per pedestrian (in seconds).
[d]Pedestrian Level of Service.

Table 20
SPECIAL PERMIT CRITERIA 5 – PEDESTRIAN LEVEL-OF-SERVICE SUMMARY
UNSIGNALIZED INTERSECTIONS

Intersection/Time Period/Crossing Path	2008 Existing			2008 Build			SPC 5[a]		2013 Build		
	Demand[b]	Delay[c]	LOS[d]	Demand	Delay	LOS	Delay Increase	Indicator	Demand	Delay	LOS
Cambridgepark Drive at Alewife Brook Parkway											
Weekday Morning:											
Crossing Cambridgepark Drive[e]	226	6.1	B	226	6.1	B	0.0	No	226	12.0	C
Weekday Evening:											
Crossing Cambridgepark Drive	257	4.5	A	257	4.5	A	0.0	No	257	5.9	B
Acorn Park Drive at Alewife Station Off-Ramp											
Weekday Morning:											
Crossing Acorn Park Drive (South)	15	15.1	C	16	18.8	C	3.7	No	16	22.4	D
Weekday Evening:											
Crossing Acorn Park Drive (South)	20	3.5	A	22	4.6	A	1.1	No	22	5.6	B
Frontage Road at Route 2 EB											
Weekday Morning:											
Crossing Frontage Road (South)	1	10.0	B	1	10.4	C	0.4	--	1	11.6	C
Weekday Evening:											
Crossing Frontage Road (South)	1	2.0	A	1	2.9	A	0.9	--	1	3.1	A

[a]Special Permit Criteria 5 – Pedestrian Level of Service. (Locations outside of Cambridge are not evaluated).
[b]Demand in pedestrians per hour.
[c]Average delay per pedestrian (in seconds).
[d]Pedestrian Level of service.
[e]Vehicle flow rate adjusted to account for platooning due to upstream traffic signals.
NA = No crosswalk present, therefore no exceedence exists.

Criteria 3 – Safe Bicycle Facilities

The site is adjacent to Route 2, where bicycle use is prohibited. Therefore, by virtue of its location, the site does not meet this criterion. Mitigation is proposed to address this lack of existing facilities.

SPECIAL PERMIT CRITERIA SUMMARY

As required by the City, the project's impact has been measured against 5 criteria as indicators of the project's impact. Of the 69 project indicators reviewed, none were directly exceeded by the project impact. Two indicators were exceeded by virtue of the project location and by the existing lack of handicap accessible routes for pedestrians and bicyclists. Four indicators were exceeded under Existing Conditions analysis (without the project). Overall the project has satisfied 63 indicators of impact.

Bicycle Analysis

A review of bicycle conditions was conducted at the affected intersections and street segments. The site is in the vicinity of Discovery Park and the Alewife Reservation, under control of the Department of Conservation and Recreation (DCR). The DCR Master Plan for the Alewife Reservation identified a number of paths and trails to be constructed, one of which includes the multi-use path recently constructed by Discovery Park across a former parking lot. An additional proposed path would lead to a proposed footbridge over the Little River. The improvements proposed by the DCR for the Alewife Reservation are shown on Figure 22.

The DCR plan for the Alewife Brook area includes footpaths paralleling Alewife Brook from the Route 2 and Route 16 intersection area north to connect with the existing paths/sidewalks that continue to the Mystic River. This junction would occur at the Massachusetts Avenue intersection with Alewife Brook Parkway.

Currently, CambridgePark Place and Acorn Park Drive provide dedicated lanes for bicyclists. In addition, there are bike paths in the area that provide regional bicycle access into the area from the west and east. The Minuteman Bikepath is a 12-foot wide multi-use path providing an approximately 11 mile connection between Depot Park/South Street in Bedford, Massachusetts to Alewife Station in Cambridge. Within the study area, the Bikepath passes under Route 2 and runs parallel to the Route 2 eastbound exit ramp to Alewife Station. The Linear Park Bike Path follows the Red Line tracks into Somerville starting at Alewife Station, connecting to the Minuteman Bikepath. There is an at-grade crossing of the Route 2 westbound on-ramp, with a crosswalk provided across the ramp, and a crossing under Alewife Brook Parkway. Also in the vicinity of the site is the Fitchburg Cutoff Bikepath. This bike path is approximately one mile long, connecting the northwest corner of the Alewife Station to Brighton Street in Cambridge, near the Belmont town line. The Somerville-Belmont Bikepath involves a new crossing of the Alewife Brook, and would link the Fitchburg Cutoff Bicycle Trail with the Minuteman Linear Park bikeways.

Although these bike paths provide regional bicycle access, the majority of bicycle traffic from the site is expected to end in Cambridge, Belmont, Arlington, Lexington, Somerville and Boston. These locations have good access to the Minuteman Bikeway, Linear Path, and other connecting multi-use paths, and also have bicycle facilities on local streets. Since major roadways can be traversed through grade-separated crossings (with the exception of Massachusetts Avenue in Somerville) bicyclists can travel on surface streets or on dedicated bicycle facilities. The relatively low (3 percent) bicycle mode split assigned to site traffic should easily be realized by

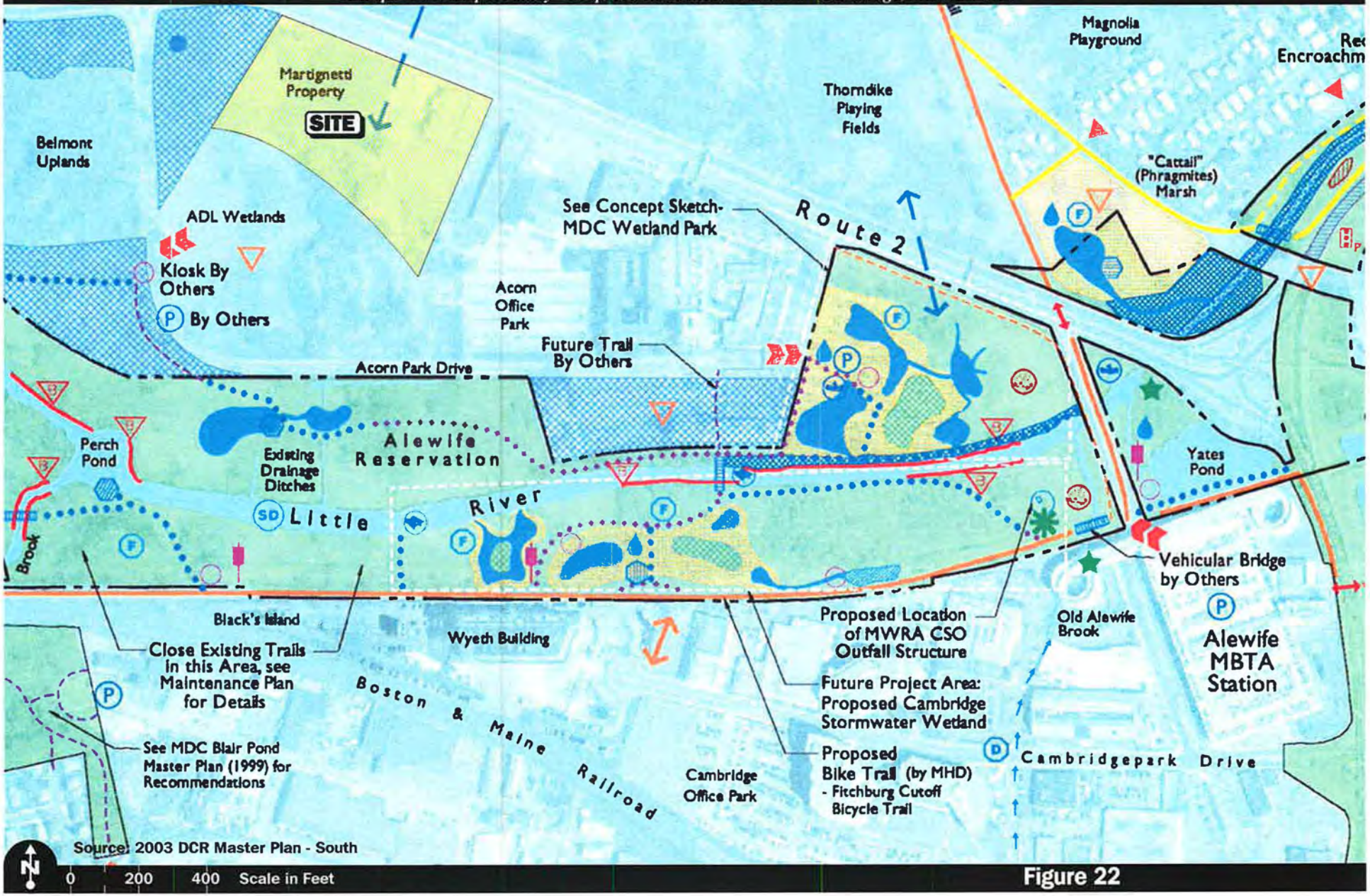

Figure 22

Future DCR Alewife Reservation Improvements

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commuters in these areas. Bicyclists from the site are expected to travel to these bikepaths using the multi-use path through the Alewife Reservation, rather than local streets. Figure 23 depicts the bicycle paths and facilities in the area adjacent to the project.

City guidelines require identification of conflicting vehicle-turning volume at intersections impacted by the project where bicycle facilities are present or where peak-hour bicycle volumes exceed 10 bicycles on any approach. It can be seen from Table 21 that there are several locations in the study area that meets these criteria during both the weekday morning and weekday evening peak hour. It can be seen from Table 21 that there were not significant bicycle volumes at the study locations. No mitigation measures are proposed at the study locations that would impact the ability of bicyclists to safely traverse the study area roadways or intersections.

Table 21
BICYCLE-VEHICLE VOLUME CONFLICTS

Roadway/ Intersecting Street/ Time Period	Approach Bicycle Volume	2008 Build Conflicting Vehicles Turning Volume	
		Advanced Volume	Opposing Volume
Alewife Brook Parkway			
At Cambridgepark Drive			
Weekday Morning	<10	473	395
Weekday Evening	<10	206	1,092
At Rindge Avenue:			
Weekday Morning	<10	120	580
Weekday Evening	<10	241	588
Alewife Brook Parkway			
At Alewife Station Off-Ramp			
Weekday Morning	<10	100	292
Weekday Evening	<10	393	408
Rindge Avenue			
At Alewife Brook Parkway			
Weekday Morning	<10	395	3,401
Weekday Evening	<10	1,092	3,068
Acorn Park Drive			
At Alewife Station Off-Ramp			
Weekday Morning	<10	--	1,396
Weekday Evening	<10	28	67

Bicycle parking for at least 114 bicycles for the project residents will be provided on the project site. The on-site bicycle parking facilities are shown on Figures 24 and 25. It is acknowledged that additional efforts will be required to encourage use of bicycles by residents. The Alewife Station was upgraded with new bicycle parking cages, allowing up to 500 bicycles to be parked in a secure environment at the station. The existence of these facilities will be promoted in literature for the new residents.

Figure 23

Bicycle Facilities Map

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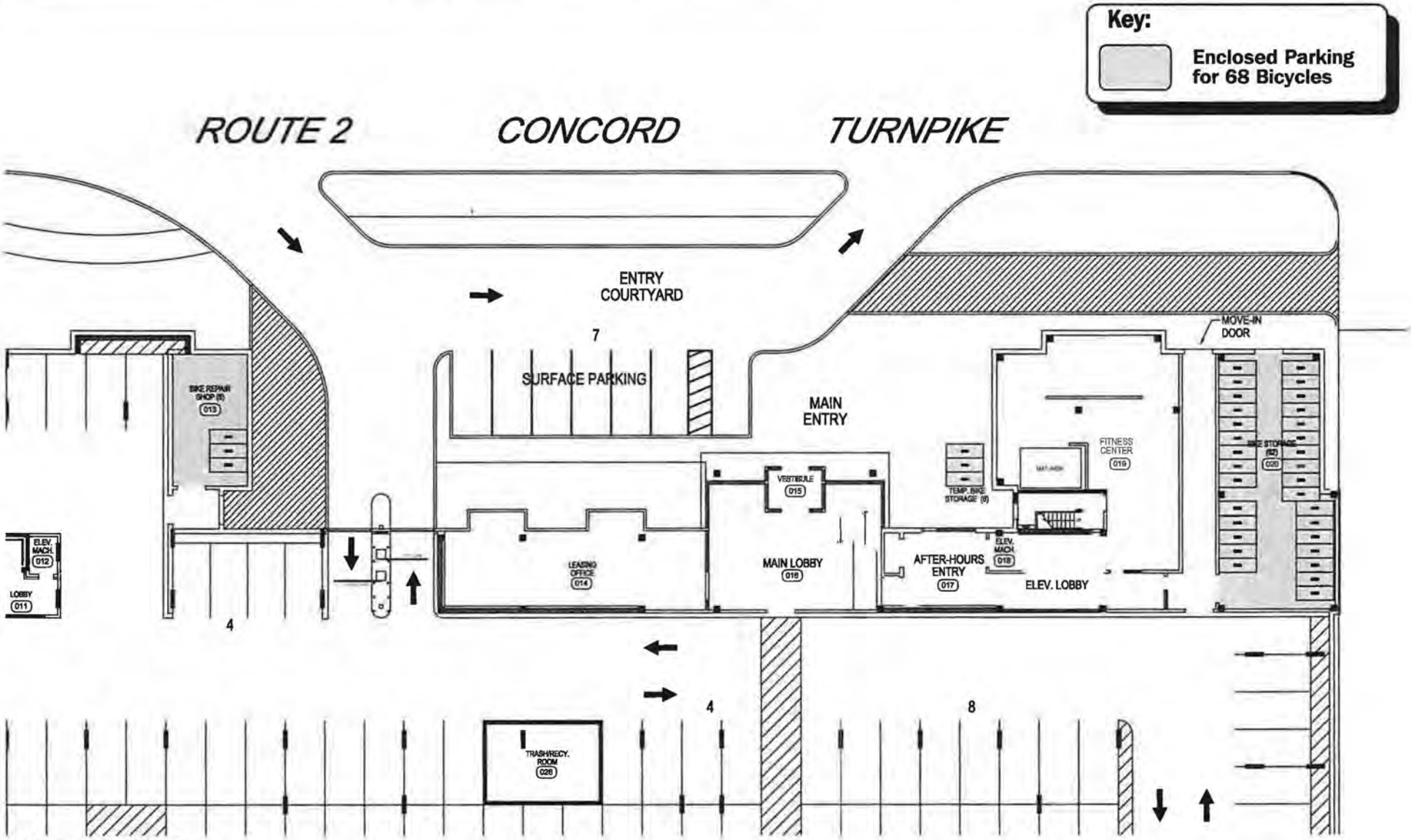

Source: Cube 3 Studio

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Figure 24

Main Bicycle Parking

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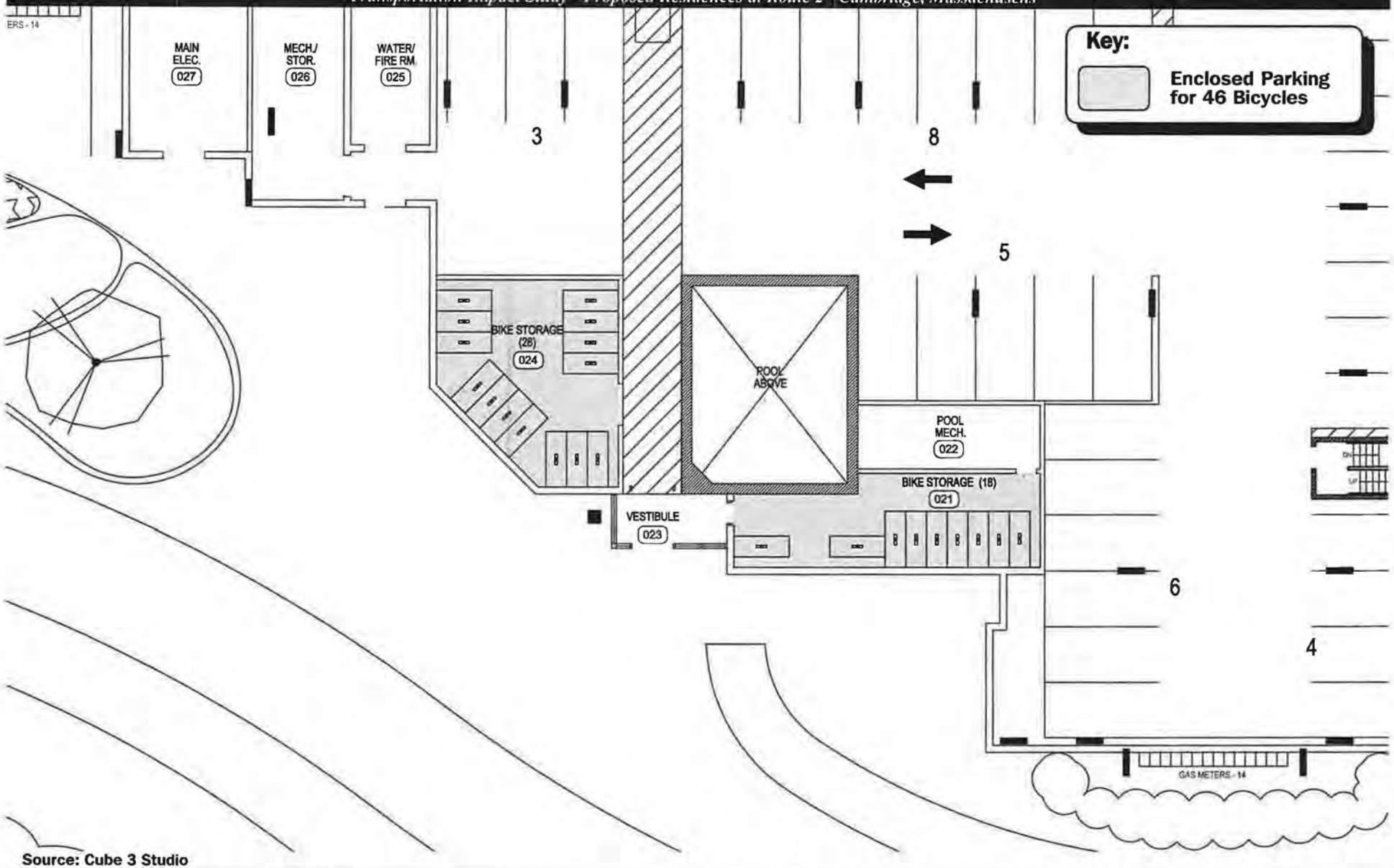

Source: Cube 3 Studio

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Figure 25

Secondary Bicycle Parking

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PARKING ANALYSIS

As required in the City guidelines, a parking analysis was conducted to determine future parking demand consistent with vehicle-trip generation assumptions and modal split assumptions for project traffic. The analysis is based upon US Census data for the tract the project is located in, and is summarized in Table 22. The Census data is provided in the Appendix.

Table 22
PROJECT PARKING DEMAND

Type of Use	Vehicles per Household[a]		No. of Apartment Units[b]		Parking Demand (spaces)
Apartment	0.88	x	239	=	210

[a]Based on 2000 census tract data for Tract 3549.
[b]Current proposal is for 227 units requiring a demand of 200 parking spaces.

The census data indicate 0.88 vehicles per household is typical for this area. Parking for the proposed development will be accommodated on site with approximately 227 non-dedicated spaces provided. Therefore, the project will provide parking at an approximate rate of one space per unit. Parking fees will be charged at market rates, and these will be an additional cost above monthly housing costs. Residents will have the option to opt out of leasing a parking space.

TRANSIT ANALYSIS

An analysis of transit usage was conducted to determine impacts that might be recognized under Build conditions. There are seven bus routes (62, 67, 76, 79, 84, 350, and 351) that stop at the Alewife Station. Bus headways are 12 to 30 minutes during the rush hours, depending on route. Due to the number of bus routes that stop at the Alewife Station, each route is expected to experience only a minor effect of the additional commuters from the proposed development. Ridership on the Red Line rapid transit train is also expected to experience minor increases due to the project. Rush-hour headways are six minutes, which would result in only a few commuters riding each train during the peak hours. The distribution on the transit routes are shown in Table 23.

Table 23
TRANSIT SYSTEM TRIP DISTRIBUTION

	Project Transit Trips	Subway Distribution[a]	Bus Route Distribution		
			79[b]	84[c]	350[d]
Daily:					
Entering	152	122	15	7	8
Exiting	152	122	15	7	8
Total	304	244	30	14	16
Peak-Hour Headways (Minutes)		4-9	12	30/17	20
Weekday Morning:					
Entering	5	4	1	0	0
Exiting	19	15	2	1	1
Total	24	19	3	1	1
Weekday Evening:					
Entering	19	15	2	1	1
Exiting	10	8	1	1	0
Total	29	23	3	2	1

Based on proportional peak-hour capacity among routes and overall trip distribution for project.
[a]80 percent assignment.
[b]10 percent assignment.
[c]5 percent assignment.
[d]5 percent assignment.

Tables 24 through 26 indicate the impacts on the various transit modes as a result of the project.

Table 24
MBTA SUBWAY (RED LINE) RIDERSHIP IMPACTS

Time Period	Train Headway[a]	No. of Trains	No. of Cars per Train	Max. Load per Car[b]	Hourly Capacity	Existing		Proposed with Project		Ridership Increase	
						Ridership[c]	V/C[d]	Ridership	V/C	Percent	V/C
Weekday Morning:	8 minutes[e]	16	6	260	24,960	2,645	0.11	2,664	0.11	0.7	0.0
Weekday Evening:	8 minutes[e]	16	6	260	24,960	2,844	0.11	2,867	0.11	0.8	0.0

[a]Based on current MBTA schedule.
[b]Defined on the basis of MBTA design standards.
[c]From the most recent MBTA and CTPS ridership surveys at Alewife Station for the Red Line.
[d]Volume-to-capacity ratio.
[e]Scheduled rush-hour headway values per direction.

Table 25
MBTA BUS ROUTE RIDERSHIP IMPACTS – WEEKDAY MORNING PEAK HOUR

Route No.	Route Headway[a]	Maximum Load[b]	Hourly Capacity	Existing		Proposed with Project		Ridership Increase	
				Ridership[c]	V/C[d]	Ridership	V/C	Percent	V/C
79	12	60	600	540	0.90	543	0.91	0.6	0.01
84	30	60	240	116	0.48	117	0.49	0.9	0.01
350	20	60	360	334	0.93	335	0.93	0.3	0.00

[a]Based on current MBTA schedule.
[b]Defined on the basis of MBTA design standards.
[c]Based on ratio of peak hour to daily ridership levels of several Cambridge area bus routes.
[d]Volume-to-capacity ratio.

Table 26
MBTA BUS ROUTE RIDERSHIP IMPACTS – WEEKDAY EVENING PEAK HOUR

				Existing		Proposed with Project		Ridership Increase	
Route No.	Route Headway[a]	Maximum Load[b]	Hourly Capacity	Ridership[c]	V/C[d]	Ridership	V/C	Percent	V/C
79	12	60	600	290	0.48	293	0.49	0.5	0.01
84	17	60	424	NA	NA	NA	NA	NA	NA
350	20	60	360	346	0.96	347	0.96	0.3	0.00

[a]Based on current MBTA schedule.
[b]Defined on the basis of MBTA design standards.
[c]Based on ratio of peak hour to daily ridership levels of several Cambridge area bus routes.
[d]Volume-to-capacity ratio.

As shown in Tables 24 through 26, sufficient capacity exists on the bus routes and subway lines to accommodate the expected ridership increases due to the project. Increases in volume-to-capacity (v/c) ratios pertaining to line volume are at or below 0.9 percent for all affected bus routes, with the highest v/c ratio of the Red Line at 0.11 including the project volume.

Given the above transit characteristics and projected ridership information, the existing transit services available to residents and visitors of the proposed project are sufficient to address the expected slight increase in demand.

Provision of Transit Amenities

The nature of the subway facilities allow higher levels of customer amenities to be offered than do the bus stops. The Alewife Station is one of the larger MBTA subway stations, and provides seating and lighted shelters as well as support retail shops and the aforementioned bicycle cages. Bus shelters were observed on Lake Street at Frontage Road, and on Alewife Brook Parkway near Rindge Avenue.

SUMMARY OF PROJECT MITIGATION AND CONCLUSION

PROJECT MITIGATION

The project proponent has committed to a mitigation program designed to minimize the effect of the proposed project on area transportation facilities. It should be noted that the project location adjacent to the Alewife T station will play a significant role in reducing single-occupant vehicle (SOV) traffic. The mitigation program can be divided into the following categories: 1) Pedestrian Improvements; 2) TDM strategies; and 3) parking. The following summarizes the mitigation package.

Pedestrian and Bicyclist Improvements

Currently, a pedestrian sidewalk exists in front of the project site on the south side of Route 2, and connects the sidewalk to the Alewife T Station to the east and the sidewalk to Lake Street to the west. The proponent will reconstruct the sidewalk along the Route 2 site frontage but will also provide a secondary route for pedestrians and bicyclists to access the site.

To encourage pedestrian and bicyclist use, an easement will be pursued across the adjacent properties (Cambridge Gateway Inn and Cambridge Discovery Park) allowing pedestrians and bicyclists to cross to Acorn Park Drive to access the multi use path constructed by Discovery Park. An easement for utility/access purposes has been obtained across the motel property; negotiations are continuing with the proponent of Cambridge Discovery Park to allow this connection. Figure 26 depicts the facilities that would be used by residents to travel between the site and Alewife Station using the proposed Discovery Park Connection, the existing Acorn Park Drive sidewalk, and the existing Multi-Use Path that connects to the Alewife Station Off-Ramp sidewalk. Figure 27 provides a more detailed view of the utility/bike-path easement over the Cambridge Gateway Inn property, with property owners as of October 2008. Figure 28 provides a cross sectional view of the path.

This multi-use path provides a more pleasant experience than the sidewalk adjacent to Route 2. The multi-use path connects to the Alewife Station Off-Ramp sidewalk at the bridge over the Little River, which connects to the Alewife Station sidewalk.

The pedestrian exceedences at the intersection of Alewife Brook Parkway and Cambridgepark Drive and Rindge Avenue are the result of existing signal timing, and not an effect of the project development. Adjusting the signal timing is the only way to reduce these delays to meet the City criteria. If the signal length was shortened to 120 seconds, the delays would reduce to LOS D for

Figure 26

Pedestrian and Bicycle Connection to Alewife Station

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Figure 27

Proposed Pedestrian Access to Discovery Park

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Figure 28

Proposed Multi-Use Path

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pedestrians. This could be addressed through a maintenance procedure with the City traffic department or through another project if improvements are proposed in the future at this location.

Transportation Demand Management

Reducing the amount of traffic generated by the proposed development is an important component of the transportation mitigation plan. The goal of the proposed traffic reduction strategy is to reduce the use of SOVs by encouraging car/vanpooling, bicycle commuting, the use of public transportation and pedestrian travel. In addition, by not providing dedicated parking for the project, residents and visitors will be encouraged to use alternatives to driving to the area. The following measures will be implemented as a part of the proposed project and by the property management team in an effort to reduce the number of vehicle trips generated by the project:

- In order to encourage the use of public transportation, the property management team will provide a MBTA Charlie card of equivalent value of a monthly pass to each adult member of a new household after the household has established residency.

- The property management team will also encourage residents to obtain a free Bike Charlie card, allowing residents the ability to use the bike cages at Alewife Station and other areas free of charge.

- In order to encourage the use of public transportation, the property management team will make available public transportation schedules, which will be posted in a centralized location for residents. The proximity of the Alewife Station will be emphasized in promotional materials for the site.

- The property management team will investigate the use of the Discovery Park shuttle bus for residents of the proposed project.

- In order to encourage car/vanpooling, the property management team will coordinate with MassRIDES and 128 Business Council or the Charles River Transportation Management Association (CRTMA) to identify car/vanpool resources that may be available to residents. This information will be posted in a centralized location.

- The property management team will investigate joining either the 128 Business Council or the Charles River TMA. Either TMA could provide a ridematching program among residents of the project and employers of the area.

- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the project site. This information will be posted in a centralized location.

The project proponent will investigate the implementation of these traffic reduction strategies and will work with the City, the TMA, and area businesses to implement such programs.

Parking

Parking for the proposed development will be accommodated on site. Parking will be provided at an approximate rate of 1.0 space/unit with 227 parking spaces. This ratio meets the minimum parking rate required by zoning. Market rates will be charged for parking spaces, and these will be at an additional charge above monthly housing fees. In addition, parking for at least 114 bicycles will also be provided on site.

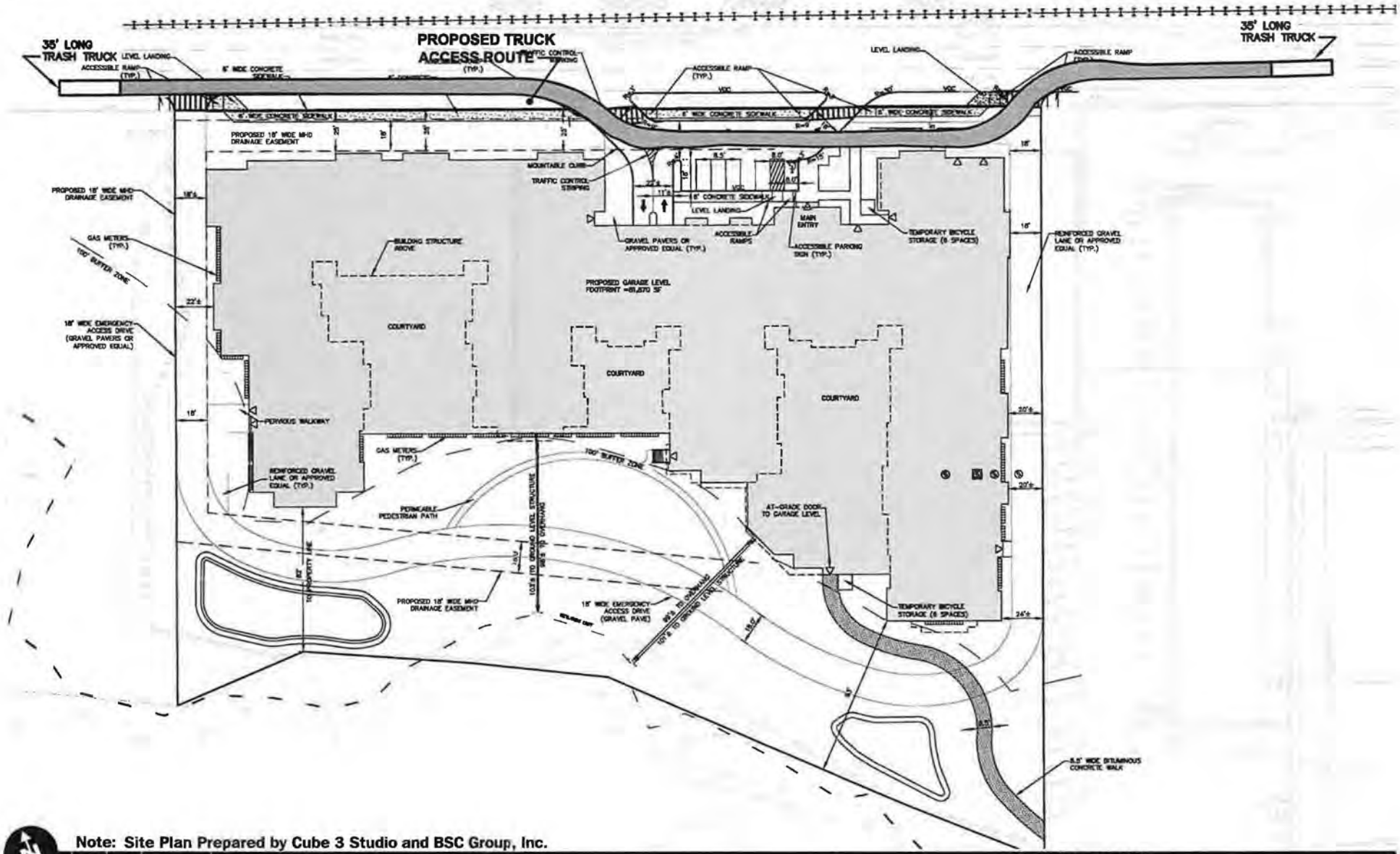
Site Access

The vehicle site access and egress will be provided via Route 2, with separate right turn only entrance and exit driveways. A One-Way sign and "NO LEFT TURN" sign will be posted on the driveway approach at the Route 2 intersection. Details of this design will be evaluated with the District 6 Office of the Massachusetts Highway Department. Figure 29 depicts the truck routing for the project, with trash/loading operations conducted at the northeast corner of the building.

SUMMARY

Overall, the project proponent is committed to the implementation of the above project mitigation strategies to reduce the overall project impact. Of the 69 project indicators reviewed, none were directly exceeded by the project impact. Two indicators were exceeded by virtue of the project location and by the existing lack of handicap accessible routes for pedestrians and bicyclists. Four indicators are exceeded by Existing conditions, and not as a result of the project development.

In summary, this project is a redevelopment of a site which has been vacant for over a quarter century. The resulting residential project will have fewer traffic impacts than a commercial use of the same size, and the TDM measures and proposed alternative pedestrian/bicyclist connection will further reduce the project's impacts resulting in a positive change in the area.



Note: Site Plan Prepared by Cube 3 Studio and BSC Group, Inc.

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Figure 29

Truck Access Plan

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