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MEMORANDUM

DCI JOB NO. 2013-146

TO: Terence Smith, Traffic & Parking
City of Somerville, MA

FROM: Amos Fernandes, P.E., PTOE, AICP
Transportation Manager

SUBJECT: Trip Generation and Parking Study for the Redevelopment of 8 Curtis St and 1119-1133 Broadway St, Somerville, MA

DATE: January 24, 2014 (Updated May 1, 2014)

The purpose of this memorandum is to examine the trip generation and parking impacts from the proposed additional ten (10) residential units at 8 Curtis St and 1119-1133 Broadway in Somerville, Massachusetts. The Curtis Street parcel is currently paved and utilized as off-street parking. The project will add two (2) residential units here and also provide parking for the 2 new units as well for residential units at 1119-1133 Broadway. The right Broadway parcel currently consists 8 residential units. The project proposes to add a third story to a portion of the building with eight new residential units for a total of 16 residential units. The existing commercial units on the ground floor will be maintained. Both sites will be permitted under one filing with the supplemental parking provided on 8 Curtis Street available for the Broadway residential units. A total of 6 off-street parking spaces will be provided. Somerville Zoning requires 17 spaces. The combined project seeks a parking relief of 11 spaces.

This memorandum serves to investigate and identify whether the 8 Curtis St and 1119-1133 Broadway redevelopment project provides adequate parking to satisfy the proposed redevelopment and that the site will not have an adverse impact on the surrounding neighborhood's on-street parking supply. The following characteristics of the Site and the surrounding area serve to justify the parking variance requested for the redevelopment:

- Trip Generation;
- Mode Choice;
- Proximity to Public Transit; and,
- On-Street Parking Utilization.

Figure 1: Project Location

Map Source: Google Maps

Trip Generation

The industry standard used for estimating trip generation for new developments or redevelopments is the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. ITE is an international education and scientific association of transportation professionals that facilitates the application of technology and scientific principles to research, planning, functional design, operations and services for all modes of ground transportation. The most current Trip Generation Manual was used in this analysis – *9th Edition*.

The trip rates from Land Use Code (LUC) 230 Residential Condominium/Townhouse was used to estimate traffic for the new residential units proposed at 8 Curtis St and 1119-1133 Broadway. The ITE LUC describes residential condominiums/townhouses as ownership units that have at least one other owned unit within the same building structure.

The results from the trip generation analysis is shown in Table 1.

Table 1. Trip Generation Analysis

Land Use: 230, Residential Condominium/Townhouse			
number of units:	**10**		
	AM Peak	**PM Peak**	**Weekday Daily**
Average Rate (per num. of dwelling units)	0.44	0.52	5.81
Percent Entering	17%	67%	50%
Percent Exiting	83%	33%	50%
Total Trips	4	5	58
Entering Trips	1	3	29
Exiting Trips	3	2	29

As shown in Table 1, using standard ITE Trip Generation Rates, the proposed ten (10) new residential units are expected to generate 1 entering trip and 3 exiting trips in the weekday AM peak hour. In the weekday PM peak hour, the site is expected to generate 3 entering trips and 2 exiting trips. The total weekday daily traffic expected is 29 entering and 29 exiting trips. Based on these low trip generation numbers, this redevelopment is expected to have no significant impact on the peak hour intersection operations at Teele Square.

Transportation Mode Choice

The Site is located in a residential area that has a relatively high portion of non-vehicular travel to and from work. Non-vehicular modes of transportation includes bicycling, walking, transit, and telecommuting.

The latest data (2008-2012) associated for US Census Tract 3507 (which encompasses 8 Curtis Street and 1119-1133 Broadway) shows that 56.9% of the residents travel to work via modes other than by a single occupant vehicle (SOV). Figure 2 shows the mode choice distributions for residents in the area. Moreover, the Census Data indicates that almost 1 in 4 residents in Census Tract 3507 do not own a vehicle, per the data shown in Figure 3.

Figure 2: Modesplit in US Census Tract 3507

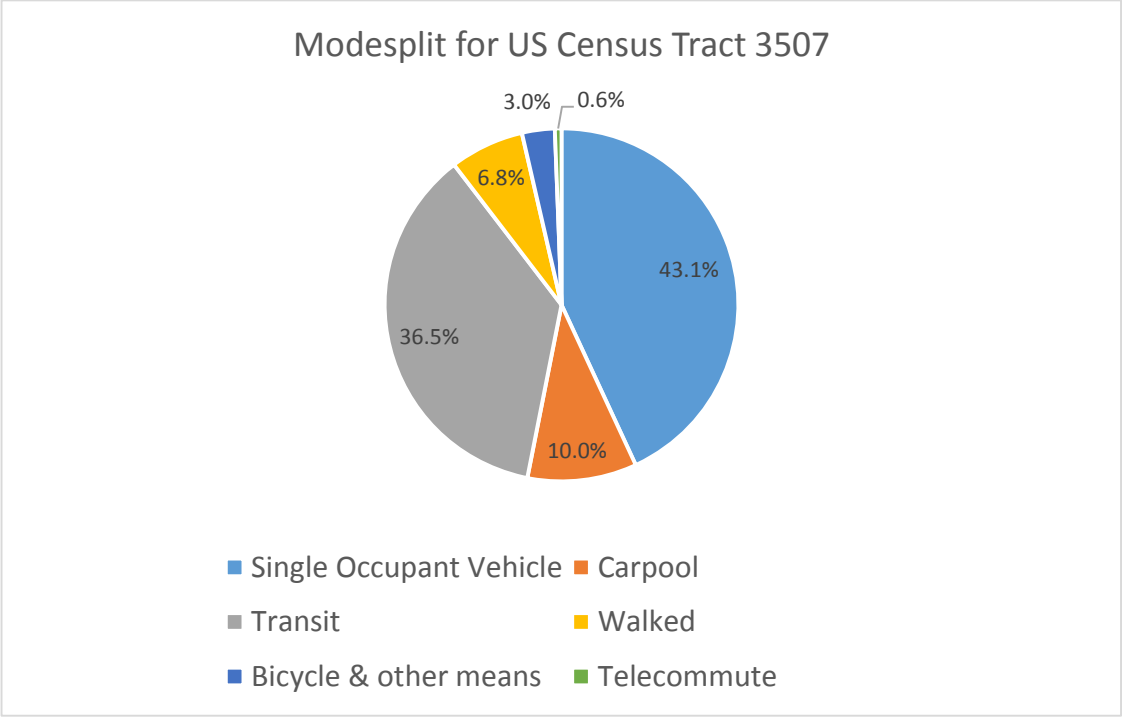
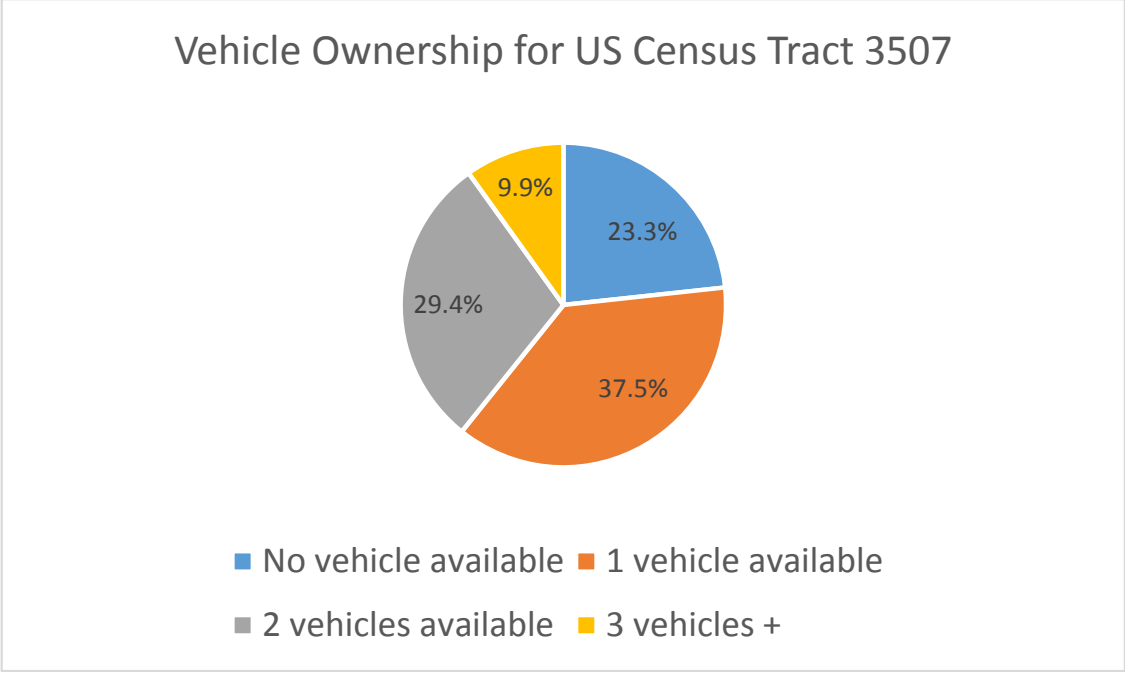


Figure 3: Vehicle Ownership in US Census Tract 3507



Transit Supply

The Site is conveniently situated close to public transportation. As indicated in mode split data for the area, 36% of the residents in the direct vicinity of the Site use Transit to commute to work. The Site is approximately ½ mile from the Davis Square Transit Station. Moreover, the Site has access to four MBTA Bus Routes – 87, 88, 89, 93.

In the future, the Green Line Extension (GLX) project will have a proposed transit stations at Ball Square and College Avenue Station – both approximately 1-mile away. The anticipated completion date for these stations are Year 2019. This project will extend the existing MBTA Green Line service from a relocated Lechmere Station in East Cambridge to Union Square in Somerville and College Avenue in Medford. This project is a major transportation priority of the Commonwealth and will offer a "one-seat" ride along the project corridor to downtown Boston, (eliminating the need for transfers at Lechmere Station and at Orange and Red Line stations) improving travel times within the project corridor. The new transit station will meet or exceed the Americans with Disabilities Act (ADA) standards. Mitigation measures during construction will reduce existing noise and vibration impacts from area railroads. Once completed, trains will operate every five to six minutes in the peak periods, providing fast and efficient service to downtown Boston.

Existing On-Street Parking Utilization

The study area included all on-street parking in the vicinity of 8 Curtis Street and 1119-1133 Broadway within 500 linear feet. DCI performed a parking survey of all available on-street parking areas to determine the existing parking utilization. The study area included the following roadways:

- Electric Ave between Curtis St and Westminster St;
- Fairmount Ave between Curtis St and Dickson St;
- Broadway (East) between Curtis St and Lowell St;
- Broadway (West) between Curtis St and Weston Ave;
- Holland St between Broadway and Moore St;
- Westminster St between Broadway and Electric Ave;
- Curtis St between Broadway and Ossipee Rd;
- Hill St between Broadway and Fairmount Ave;
- Newbury St between Holland St and #16 Newbury St; and,
- Clarendon Ave between Broadway and Weston Ave.

This study area is shown in Figure 4.

Figure 4: Project Study Area

Map Source: Google Maps

On-Street Parking Inventory

DCI recorded the number of available parking spaces in the study area streets during a typical weekday and during a typical Saturday. The parking data were collected during the following time periods:

- Wednesday, January 15, 2014 (12:00PM – 7:00 PM)
- Friday, January 17, 2014 (5:00PM – 7:00 PM)
- Saturday, January 18, 2014 (11:00AM – 2:00 PM)
- Tuesday, January 21, 2014 (9:00AM – 1:00 PM)
- Wednesday, January 22, 2014 (7:00PM – 9:00 PM)

The results of the parking surveys are summarized in Table 2. The findings only relate to the on-street permit parking spaces. Detailed tables with the complete parking survey data are contained in the attached Appendix.

As indicated by the parking survey summary, an average total of 94 permit parking spaces were available during the weekday morning period. An average total of 93 permit parking spaces were available during the weekday mid-day period. An average of 77 of permit parking spaces were available during the weekday evening period. On Saturday, during the mid-day observation period, an average of 73 permit parking spaces were available. The results of this parking survey indicate that there is currently existing under-utilized permit parking spaces spread amongst the study area streets.

Table 2: Parking Survey Summary

Street	Section From	Section to	Subsection	Weekday Morning Average	Weekday Afternoon Average	Weekday Evening Average	Saturday Afternoon Average
Electric Ave	Curtis St	Westminster St	North Side	5	4	3	4
			South Side	2	4	5	5
Fairmount Ave	Curtis St	Dickson St	North Side	4	5	10	9
			South Side	4	3	7	8
Broadway (East)	Curtis St	Lovell St	North Side	4	7	9	10
			South Side	5	4	5	5
Broadway (West)	Curtis St	Weston Ave	North Side	7	4	3	7
			South Side	1	2	3	4
Holland St	Broadway	Moore St	North Side	4	4	3	4
			South Side	1	1	1	1
Westminster St	Broadway	Electric Ave	East Side	7	6	9	8
			West Side	7	5	6	6
Curtis St	Broadway	Ossipee Rd	East Side	5	2	3	3
			West Side	5	8	10	10
Hill St	Broadway	Fairmount Ave	East Side	7	5	6	4
			West Side	4	5	5	4
Newbury St	Holland St	#16 Newbury St	East Side	3	3	3	2
			West Side	5	5	7	7
Clarendon Ave	Broadway	Weston Ave	East Side	6	6	2	4
			West Side	6	6	7	4
			Total Parking Permit Parking Capacity	182	182	182	182
			Total Parking Permit Parking Occupied	89	89	105	109
			Total Parking Permit Parking Available	**94**	**93**	**77**	**73**

Additionally, the existing surface lot at 8 Curtis Street was counted for parking occupancy during the same time periods for the on-street parking survey. It should be noted that the City indicated that the current use of the surface lot isn't permitted to serve as a vehicular parking lot under its current zoning. In any case, the parking counts for the surface lots are summarized below:

- Saturday (11AM-2PM): Average of 13 parked cars
- Weekday (9AM-10AM): Average of 9 parked cars
- Weekday (11AM-1PM): Average of 13 parked cars
- Weekday (5PM-7PM): Average of 12 parked cars

Conclusions

This memorandum has determined that the residential redevelopment project at 8 Curtis Street and 1119-1133 Broadway will have negligible impact on the surrounding area's permit parking supply. A total of 6 off-street parking spaces will be provided. Somerville Zoning requires 17 spaces. The combined project seeks a parking relief of 11 spaces. The following characteristics of the Site and the surrounding area serve to justify the parking variance for the redevelopment:

- Trip Generation;
- Mode Choice;
- Proximity to Public Transit; and,
- On-Street Parking Utilization.

Using standard ITE Trip Generation Rates, the proposed redevelopment is expected to generate 1 entering trip and 3 exiting trips in the weekday AM peak hour. In the weekday PM peak hour, the site is expected to generate 3 entering trips and 2 exiting trips. The total weekday daily traffic expected is 29 entering and 29 exiting trips. Based on these low trip generation numbers, this redevelopment is expected to have no significant impact on the peak hour intersection operations at Teele Square.

The Site is located in a residential area that has a relatively high portion of non-vehicular travel to and from employment. The latest data (2008-2012) associated for US Census Tract 3507 shows that 56.9% of the residents travel to work via modes other than by a single occupant vehicle (SOV). Moreover, almost 1 in 4 residents in Census Tract 3507 do not own a vehicle.

From the parking analysis, over 70 permit parking on street spaces were available during the peak periods of the morning, afternoon, evening weekday and afternoon weekend. The results of this parking survey indicate that there is currently existing under-utilized permit parking spaces spread amongst the study area streets.

Additionally, the existing surface lot at 8 Curtis Street was counted for parking occupancy during the same time periods for the on-street parking survey. It should be noted that the City indicated that the current use of the surface lot isn't permitted to serve as a vehicular

parking lot under its current zoning. In any case, the parking counts for the surface lots are summarized below:

- Saturday (11AM-2PM): Average of 13 parked cars
- Weekday (9AM-10AM): Average of 9 parked cars
- Weekday (11AM-1PM): Average of 13 parked cars
- Weekday (5PM-7PM): Average of 12 parked cars

Under an extreme scenario, if all parked cars in the subject lot have - or can obtain - Somerville permit parking stickers, the displacement of these surface lot parked vehicles could be absorbed by the surrounding availability of on-street parking within 500 linear feet of the site. However, a more realistic expectation would be transit use for these vehicles based local and regional travel characteristics from the US Census data. The Site is approximately ½ mile from the Davis Square Transit Station which serves the Red Line Rapid Transit subway route.

Synthesizing the characteristics of this redevelopment, transit opportunities and local travel behavior characteristics, the proposed site will not negatively impact on-street neighborhood permit parking and is expected to fit the local community texture and the City of Somerville.

Appendix

Parking Survey Data Sheets & Calculations

Parking Survey

City: Somerville, MA
Proj. No.: 2013-146
Street: 8 Curtis St.
Sheet No.: 5
Date: 1/22/2014 Wednesday
Field by: Steve Wen
Weather: cold
Notes:

Weekday Occupied Parking Spaces

Street	Section		Subsection	7:00 PM to 7:40 PM	7:40 PM to 8:20 PM	8:20 PM to 9:00 PM
	From	to				
Electric Ave	Curtis St	Westminster St	North Side	4	4	4
			South Side	3	4	4
Fairmount Ave	Curtis St	Dickson St	North Side	12	13	12
			South Side	6	7	9
Broadway (East)	Curtis St	Lovell St	North Side	9	8	8
			South Side	5	5	4
Broadway (West)	Curtis St	Weston Ave	North Side	3	5	3
			South Side	4	4	3
Holland St	Broadway	Moore St	North Side	4	4	3
			South Side	1	1	1
Parking Lot at 10 Curtis St	---	---	North Side	3	3	3
			South Side	9	8	8
Westminster St	Broadway	Electric Ave	East Side	9	9	9
			West Side	6	6	5
Curtis St	Broadway	Ossipee Rd	East Side	3	4	4
			West Side	11	13	13
Hill St	Broadway	Fairmount Ave	East Side	7	7	6
			West Side	3	4	6
Newbury St	Holland St	#16 Newbury St	East Side	3	4	4
			West Side	8	8	8
Clarendon Ave	Broadway	Weston Ave	East Side	1	2	3
			West Side	7	7	7
			TOTAL:	121	130	127

Parking Survey

City: Somerville, MA
Proj. No.: 2013-146
Street: 8 Curtis St.
Sheet No.: 4
Date: 1/21/2014 Tuesday
Field by: Steve Wen
Weather: sunny
Notes:

Weekday Occupied Parking Spaces

Street	Section From	Section to	Subsection	9:00 AM to 9:30 AM	9:30 AM to 10:00 AM	11:00 AM to 11:40 AM	11:40 AM to 12:20 PM	12:20 PM to 1:00 PM
Electric Ave	Curtis St	Westminster St	North Side	5	4	5	5	5
			South Side	1	2	3	4	3
Fairmount Ave	Curtis St	Dickson St	North Side	4	3	4	5	7
			South Side	4	4	2	4	4
Broadway (East)	Curtis St	Lovell St	North Side	3	5	6	9	8
			South Side	5	5	4	5	3
Broadway (West)	Curtis St	Weston Ave	North Side	7	7	3	4	3
			South Side	0	2	3	3	1
Holland St	Broadway	Moore St	North Side	4	3	3	4	3
			South Side	1	1	1	1	0
Parking Lot at 10 Curtis St	---	---	North Side	3	3	5	5	5
			South Side	6	6	8	7	7
Westminster St	Broadway	Electric Ave	East Side	9	5	6	6	5
			West Side	7	6	4	4	6
Curtis St	Broadway	Ossipee Rd	East Side	2	7	3	2	2
			West Side	2	8	7	9	9
Hill St	Broadway	Fairmount Ave	East Side	7	7	6	6	7
			West Side	3	4	4	5	5
Newbury St	Holland St	#16 Newbury St	East Side	2	4	1	2	3
			West Side	5	5	5	5	5
Clarendon Ave	Broadway	Weston Ave	East Side	6	6	6	6	5
			West Side	6	6	6	7	4
			TOTAL:	92	103	95	108	100

Parking Survey

City: Somerville, MA
Proj. No.: 2013-146
Street: 8 Curtis St.
Sheet No.: 3
Date: 1/18/2014 Saturday
Field by: Steve Wen
Weather: snow
Notes:

Saturday Occupied Parking Spaces

Street	Section		Subsection	11:00 AM to 12:00 PM	12:00 PM to 1:00 PM	2:00 PM 2:00 PM
	From	to				
Electric Ave	Curtis St	Westminster St	North Side	5	4	3
			South Side	6	5	5
Fairmount Ave	Curtis St	Dickson St	North Side	10	10	6
			South Side	9	8	8
Broadway (East)	Curtis St	Lovell St	North Side	12	9	10
			South Side	6	5	5
Broadway (West)	Curtis St	Weston Ave	North Side	6	7	8
			South Side	5	3	4
Holland St	Broadway	Moore St	North Side	4	3	4
			South Side	1	1	1
Parking Lot at 10 Curtis St	---	---	North Side	3	3	4
			South Side	10	9	8
Westminster St	Broadway	Electric Ave	East Side	10	8	6
			West Side	8	6	5
Curtis St	Broadway	Ossipee Rd	East Side	2	3	4
			West Side	10	10	9
Hill St	Broadway	Fairmount Ave	East Side	3	4	5
			West Side	5	4	4
Newbury St	Holland St	#16 Newbury St	East Side	2	2	3
			West Side	8	7	5
Clarendon Ave	Broadway	Weston Ave	East Side	4	4	5
			West Side	3	4	6
			TOTAL:	132	119	118

Parking Survey

City: Somerville, MA
Proj. No.: 2013-146
Street: 8 Curtis St.
Sheet No.: 2
Date: 1/15/2014 Wednesday
Field by: Steve Wen
Weather: sunny
Notes:

Weekday Occupied Parking Spaces

Street	Section		Subsection	12:00 PM to 1:00 PM	1:00 PM to 2:00 PM	5:00 PM to 6:00 PM	6:00 PM to 7:00 PM
	From	to					
Electric Ave	Curtis St	Westminster St	North Side	3	4	2	2
			South Side	5	5	6	6
Fairmount Ave	Curtis St	Dickson St	North Side	5	5	6	7
			South Side	3	3	6	5
Broadway (East)	Curtis St	Lovell St	North Side	4	6	7	12
			South Side	5	5	6	4
Broadway (West)	Curtis St	Weston Ave	North Side	6	5	2	3
			South Side	2	2	1	1
Holland St	Broadway	Moore St	North Side	4	4	2	4
			South Side	1	1	0	0
Parking Lot at 10 Curtis St	---	---	North Side				
			South Side				
Westminster St	Broadway	Electric Ave	East Side	7	7	8	9
			West Side	4	5	7	4
Curtis St	Broadway	Ossipee Rd	East Side	1	1	3	2
			West Side	8	7	8	7
Hill St	Broadway	Fairmount Ave	East Side	3	3	4	5
			West Side	4	7	5	5
Newbury St	Holland St	#16 Newbury St	East Side	4	3	1	1
			West Side	5	4	6	7
Clarendon Ave	Broadway	Weston Ave	East Side	6	6	3	3
			West Side	7	7	5	7
			TOTAL:	87	90	88	94

Parking Survey

City: Somerville, MA
Street: 8 Curtis St.
Date: 1/15/2014 Wednesday
Weather: sunny

Proj. No.: 2013-146
Sheet No.: 1
Field by: Steve Wen
Notes:

Total Available Parking Spaces

Street	Section		Subsection	Total Available Spaces
	From	to		
Electric Ave	Curtis St	Westminster St	North Side	6
			South Side	7
Fairmount Ave	Curtis St	Dickson St	North Side	19
			South Side	15
Broadway (East)	Curtis St	Lovell St	North Side	12
			South Side	7
Broadway (West)	Curtis St	Weston Ave	North Side	9
			South Side	7
Holland St	Broadway	Moore St	North Side	4
			South Side	1
Westminster St	Broadway	Electric Ave	East Side	10
			West Side	13
Curtis St	Broadway	Ossipee Rd	East Side	5
			West Side	19
Hill St	Broadway	Fairmount Ave	East Side	7
			West Side	9
Newbury St	Holland St	#16 Newbury St	East Side	8
			West Side	8
Clarendon Ave	Broadway	Weston Ave	East Side	8
			West Side	8
			TOTAL:	182