Design Consultants, Inc.

Civil Engineering
Transportation/Traffic
Water/Wastewater
Geotechnical
Land Surveying
Environmental
Planning

MEMORANDUM

DCI JOB NO. 2019-041

TO: Elan Sassoon
346 Somerville LLC
P.O. 610312
Newton, MA 02461

FROM: Wayne Keefner, P.E., PTOE
Design Consultants, Inc.

SUBJECT: **Parking Utilization Study**
346 Somerville Avenue
Somerville, MA

DATE: May 24, 2019

As requested by the client, Design Consultants, Inc. (DCI) has performed a parking utilization study for the proposed Project located at 346 Somerville Avenue ("Project") in Somerville, Massachusetts. It is our understanding that the client is proposing to raze the existing building and construct a multi-story, multi-use building, which will consist of residential and retail space. It is proposed that there will be approximately 94 residential units and approximately 2,490 square feet of retail space.

A unique aspect of this Project is that there will be zero (0) parking spaces provide on-site. Through discussions with the neighbors, the client is proposing to provide a public park space for residents of the area in lieu of on-site vehicle parking spaces. There will be approximately 104 safe, secure bicycle parking spaces on-site for residents to use.

The City of Somerville Zoning Ordinance (SZO) details the parking requirements for various land uses. 346 Somerville Avenue is located in Zoning District CCD 55. As detailed in the subsequent paragraphs, the number of required parking spaces for each site is calculated based on Section 9.17.1 of the Somerville Zoning Ordinance.

The proposed Project will consist of 94 residential units and 2,490 square feet of restaurant space. The SZO requires a minimum of 1.0 parking space per dwelling unit (total of 94 parking spaces) and 1.0 spaces per 400 square feet of eating and drinking space (total of 6 parking spaces) in CCD

zoning districts. Therefore, per Section 9.17.1 of the Somerville Zoning Ordinance, the mixed-use residential and retail building requires a total of 100 parking spaces.

This memorandum serves to demonstrate that when the mixed-use building at 346 Somerville Avenue is built, the available on-street parking in the vicinity of the site will be able to accommodate the parking demand based on the land use context and future multi-modal transportation access in Union Square. The required parking for 346 Somerville Avenue is shown in Table 1.

Table 1: Required Parking Spaces (as per SZO)

	Residential Units	**Restaurant Space**
Size (# of Units or Square Feet)	94	2,490
Minimum # of Required Spaces	1/dwelling unit	1/400 sf
# of Required Spaces for Units/Retail Space in Building	94	6
Total Parking Spaces Required	100	

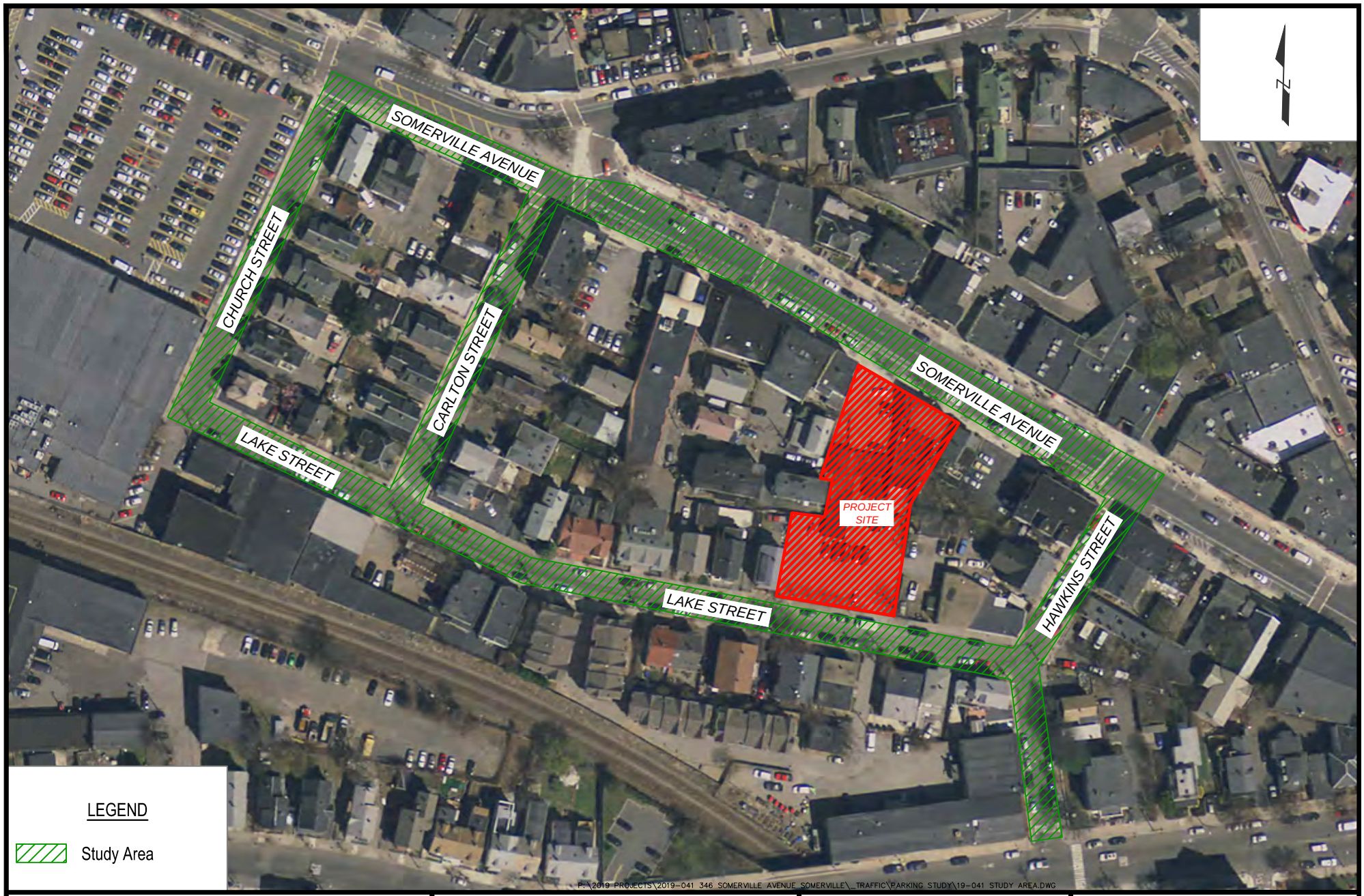
Existing On-Street Parking Utilization

DCI performed a parking survey of all available on-street parking to determine the existing on-street parking utilization. The study area includes all on-street parking in the vicinity of 346 Somerville Avenue along five (5) roadways. Parking on-street in this area of Somerville is mostly permit parking, with metered parking along Somerville Avenue. Residential parking permits can be bought by residents of Somerville at a cost of $40 for the year ($0 for residents 65+ years of age or those with handicap plates/placards) and it allows them to park on-street within Somerville. The study area is shown in Figure 1 and includes the following roadways:

- Somerville Avenue
- Hawkins Street
- Carlton Street
- Church Street
- Lake Street

DCI recorded license plate numbers of vehicles parked in on-street parking spaces in the study area in 30 minute intervals during a typical Thursday and Saturday. The study area was surveyed to determine the total number of vehicles occupying on-street parking spaces. The recorded data was used to determine the number of available on-street parking spaces during each time interval to determine the parking utilization in the study area. The parking data was collected during the following time periods:

- Thursday April 25, 2019 (6pm to 9pm)
- Saturday April 27, 2019 (6am to 8am)
- Saturday April 27, 2019 (12pm to 2pm)



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346 SOMERVILLE AVENUE
SOMERVILLE, MA

ON-STREET PARKING
STUDY AREA

PROJECT NO.: 2019-041

DATE: MAY 2019

SCALE: N.T.S.

FIGURE 1

The average number of parked vehicles in the study area is shown in Table 2 and the minimum parking availability during the weekday and weekend peak parking periods in the study area is shown in Table 3. Table 4 shows the parking availability when residents should be returning home from work.

Table 2: On-Street Parking Utilization Summary - April 2019							Avgerage Number of Cars Parked		
							Thursday	Saturday	Saturday
	Street	Side	From	To	Parking Type	Total No. of Spaces	Evening (6pm to 9pm)	Morning (6am to 8am)	Midday (12pm to 2pm)
1	Somerville Avenue	Northside	Bow Street	Hawkins Street	Metered Parking	12	12	4	12
		Southside	Church Street	Hawkins Street	Metered Parking	16	15	4	16
2	Hawkins Street	Westside	Somerville Avenue	Washington Street	Permit-Only	9	6	5	6
		Westside	Somerville Avenue	Washington Street	30-Minute Parking	4	1	1	1
		Eastside	Washington Street	Somerville Avenue	Permit-Only	12	7	8	8
3	Carlton Street	Westside	Somerville Avenue	Lake Street	Permit-Only	8	6	4	4
		Westside	Somerville Avenue	Lake Street	No Restrictions	3	1	0	1
		Eastside	Lake Street	Somerville Avenue	Permit-Only	8	7	8	7
		Eastside	Lake Street	Somerville Avenue	No Restrictions	4	3	2	2
4	Church Street	Westside	Somerville Avenue	Lake Street	No Parking	--	--	--	--
		Eastside	Lake Street	Somerville Avenue	Permit-Only	10	9	7	6
5	Lake Street	Northside	Hawkins Street	Church Street	Permit-Only	25	16	20	17
		Southside	Church Street	Hawkins Street	Permit-Only	35	19	19	17

Total Metered Parking Spaces	***28***		
Average Vehicles Parked	***27***	***8***	***28***
Average Number of Metered Parking Spaces Available	**1**	**20**	**0**
Average % of Metered Parking Spaces Available	**4%**	**71%**	**0%**
Total Permit-Only Parking Spaces	***107***		
Average Total Vehicles Parked	***70***	***71***	***65***
Average Number of Permit-Only Parking Spaces Available	**37**	**36**	**42**
Average % of Permit-Only Parking Spaces Available	**35%**	**34%**	**39%**
Total 30-Minute Parking Spaces	***4***		
Average Total Vehicles Parked	***1***	***1***	***1***
Average Number of 30-Min Parking Spaces Available	**3**	**3**	**3**
Average % of 30-Min Parking Spaces Available	**75%**	**75%**	**75%**
Total "No Restrictions" Parking Spaces	***7***		
Average Total Vehicles Parked	***4***	***2***	***3***
Average Number of No Restriction Parking Spaces Available	**3**	**5**	**4**
Average % of No-Restriction Parking Spaces Available	**43%**	**71%**	**57%**
Total Parking Spaces	***146***		
Average Total Vehicles Parked	***102***	***82***	***97***
Average Number of Total Parking Spaces Available	**44**	**64**	**49**
Average % of Total Parking Spaces Available	**30%**	**44%**	**34%**

As shown in Table 2, the available on-street parking within the vicinity of the Project is under-utilized during both weekdays and weekend days when averaged over the entire study periods. There are a total of 146 parking spaces available on the five (5) roadways, which consist of metered parking spaces, 30-minute parking spaces, permit-only parking spaces, and parking spaces with no restrictions. With a parking permit, residents can park in any of these available parking spaces for an unlimited amount of time. The salient number in Table 2 is the lowest average number of total parking spaces available between the three study periods. During the weekday evening, there is an average of 44 available parking spaces within the vicinity of the site. During the weekend morning, there is an average of 64 spaces available. During the weekend afternoon, there is an average of 49 spaces available. Therefore, the minimum average available parking spaces during the week is weekdays from 6:00-9:00 PM.

Table 3: On-Street Parking Utilization Summary - April 2019							Max Number of Cars Parked		
							Thursday	Saturday	Saturday
	Street	Side	From	To	Parking Type	Total No. of Spaces	Evening (8:30pm to 9pm)	Morning (1:30pm to 2pm)	Midday (1:30pm to 2pm)
1	Somerville Avenue	Northside	Bow Street	Hawkins Street	Metered Parking	12	12	5	12
		Southside	Church Street	Hawkins Street	Metered Parking	16	15	5	16
2	Hawkins Street	Westside	Somerville Avenue	Washington Street	Permit-Only	9	6	7	7
		Westside	Somerville Avenue	Washington Street	30-Minute Parking	4	1	1	2
		Eastside	Washington Street	Somerville Avenue	Permit-Only	12	8	5	7
3	Carlton Street	Westside	Somerville Avenue	Lake Street	Permit-Only	8	7	7	5
		Westside	Somerville Avenue	Lake Street	No Restrictions	3	1	2	0
		Eastside	Lake Street	Somerville Avenue	Permit-Only	8	7	5	8
		Eastside	Lake Street	Somerville Avenue	No Restrictions	4	3	0	2
4	Church Street	Westside	Somerville Avenue	Lake Street	No Parking	--	--	--	--
		Eastside	Lake Street	Somerville Avenue	Permit-Only	10	10	7	7
5	Lake Street	Northside	Hawkins Street	Church Street	Permit-Only	25	18	20	16
		Southside	Church Street	Hawkins Street	Permit-Only	35	19	18	17

Total Metered Parking Spaces	*28*		
Maximum Vehicles Parked	***27***	***10***	***28***
Minimum of Metered Parking Spaces Available	**1**	**18**	**0**
Minimum % of Metered Parking Spaces Available	**4%**	**64%**	**0%**
Total Permit-Only Parking Spaces	*107*		
Maximum Vehicles Parked	***75***	***69***	***67***
Minimum Number of Permit-Only Parking Spaces Available	**32**	**38**	**40**
Minimum % of Permit-Only Parking Spaces Available	**30%**	**36%**	**37%**
Total 30-Minute Parking Spaces	*4*		
Maximum Vehicles Parked	***1***	***1***	***2***
Minimum Number of 30-Min Parking Spaces Available	**3**	**3**	**2**
Minimum % of 30-Min Parking Spaces Available	**75%**	**75%**	**50%**
Total "No Restrictions" Parking Spaces	*7*		
Maximum Vehicles Parked	***4***	***2***	***2***
Minimum Number of No Restriction Parking Spaces Available	**3**	**5**	**5**
Minimum % of No-Restriction Parking Spaces Available	**43%**	**71%**	**71%**
Total Parking Spaces	*146*		
Maximum Vehicles Parked	***107***	***82***	***99***
Minimum Number of Total Parking Spaces Available	**39**	**64**	**47**
Minimum % of Total Parking Spaces Available	**27%**	**44%**	**32%**

As shown in Table 3, the available on-street parking within the vicinity of the Project is under-utilized during the peak demand period on both weekdays and weekend days. As such, the salient number in Table 3 is the minimum number of parking spaces available. During the weekday evening, there is a minimum of 39 available parking spaces within the vicinity of the site. During the weekend morning, there is a minimum of 64 parking spaces available. During the weekend afternoon, there is a minimum of 47 parking spaces available. Therefore, the peak demand period during the week is weekdays 8:30-9:00 PM. However, this time period does not accurately represent parking availability when most residents will be searching for overnight parking. Residents will be returning from work earlier in the evening. In addition, during the 8:30-9:00 PM period, a portion of the vehicles parked in the study area are people accessing the restaurants in Union Square.

Nelson Nygaard studied parking utilization in Union Square in a 2015 study. The maximum parking utilization observed in our study was consistent with the maximum parking utilization observed by the Nelson Nygaard study, which is attached in Appendix B.

Table 4: On-Street Parking Utilization When Residents Return From Work - April 2019							Number of Cars Parked
							Thursday
	Street	Side	From	To	Parking Type	Total No. of Spaces	Evening (6:00pm to 6:30pm)
1	Somerville Avenue	Northside	Bow Street	Hawkins Street	Metered Parking	12	12
		Southside	Church Street	Hawkins Street	Metered Parking	16	15
2	Hawkins Street	Westside	Somerville Avenue	Washington Street	Permit-Only	9	7
		Westside	Somerville Avenue	Washington Street	30-Minute Parking	4	2
		Eastside	Washington Street	Somerville Avenue	Permit-Only	12	4
3	Carlton Street	Westside	Somerville Avenue	Lake Street	Permit-Only	8	5
		Westside	Somerville Avenue	Lake Street	No Restrictions	3	1
		Eastside	Lake Street	Somerville Avenue	Permit-Only	8	7
		Eastside	Lake Street	Somerville Avenue	No Restrictions	4	2
4	Church Street	Westside	Somerville Avenue	Lake Street	No Parking	--	--
		Eastside	Lake Street	Somerville Avenue	Permit-Only	10	9
5	Lake Street	Northside	Hawkins Street	Church Street	Permit-Only	25	16
		Southside	Church Street	Hawkins Street	Permit-Only	35	20

Total Metered Parking Spaces	***28***	
Total Vehicles Parked		***27***
Metered Parking Spaces Available		**1**
% of Metered Parking Spaces Available		**4%**
Total Permit-Only Parking Spaces	***107***	
Total Vehicles Parked		***68***
Number of Permit-Only Parking Spaces Available		**39**
% of Permit-Only Parking Spaces Available		**36%**
Total 30-Minute Parking Spaces	***4***	
Total Vehicles Parked		***2***
Number of 30-Min Parking Spaces Available		**2**
% of 30-Min Parking Spaces Available		**50%**
Total "No Restrictions" Parking Spaces	***7***	
Total Vehicles Parked		***3***
Number of No Restriction Parking Spaces Available		**4**
% of No-Restriction Parking Spaces Available		**57%**
Total Parking Spaces	***146***	
Total Vehicles Parked		***100***
Number of Total Parking Spaces Available		**46**
% of Total Parking Spaces Available		**32%**

Based on the primarily residential use of the Project site, the most important time period for residents to find overnight parking will be when most residents are returning home from work. The average commute to work time in Somerville is approximately 30 minutes and the typical work day ends at 5 PM. Therefore, most residents should arrive home by 5:30 PM. Therefore the most important time period during our study for residents to find overnight parking in the study area was considered to be the 6:00-6:30 PM Weekday period. At this time there were 46 parking spaces available in the study area.

Complimentary Parking

According to the SZO, six (6) parking spaces are required for the proposed retail space that will be a restaurant. However, the peak parking demand hours of residential and retail complement each other. Most residents who use a motor vehicle to commute to work will leave the area before business hours and the majority of vehicle trips to the restaurant should not overlap with

residents returning from work. Therefore no additional parking availability should be needed for the proposed retail space.

Proximity to Public Transportation and Pedestrian/Bicycle Infrastructure

In the vicinity of the Project, access to rail transit will increase as part of the Green Line Extension Project. A station is planned near the intersection of Prospect Avenue and Webster Avenue, approximately a 0.4 mile walk from the Project. This station will provide rail transit to downtown Boston. Another station is planned near the intersection of Washington Street at Joy Street, approximately a 0.6 mile walk from the Project. This station will provide access to downtown Boston as well as Medford. Currently, there are also five bus routes, the 85, 86, 87, 91 and CT2, which all stop at bus stops located less than 0.25 miles from the Project site. Detailed schedules and maps are attached in Appendix A.

In addition, Somerville Avenue currently serves as a bike corridor between Union Square and Porter Square in Cambridge with bike lanes on both sides of the roadway. A redesign of Somerville Avenue east of the Project, from Prospect Street to McGrath Highway, is also underway. This Project will construct fully protected bike lanes that are separated from the travel lanes in both directions of travel. A robust bike corridor should encourage higher bicycle mode share in the future. There will be approximately 104 safe, secure bicycle parking spaces on-site for residents to use. Union Square is also a highly walkable neighborhood with a mix of land uses. The combination of walkability and mixed use allows residents to make a majority of their daily trips by walking. The Somerville Ave streetscape cross-section and plans, as prepared by WSP, are attached in Appendix A.

Supporting Information

In order to understand the relationship between provided on-site parking and parking demand in the vicinity of rail and bus transit, several studies were reviewed. Vanasse & Associates, Inc. undertook a parking study in 2010 that documents the on-site parking demand at several Cambridge residential complexes. The study analyzes eight (8) different residential complexes with an average of 205 residential units. The observed parking demand at these locations resulted in a weighted average of 0.71 leased parking spaces/occupied unit. Of the eight (8) Cambridge study locations, four (4) locations with similar proximity to rail and bus transit as the Project were selected to compare parking demand. The weighted average parking demand at these residential complexes is 0.65 leased parking spaces/occupied unit. Given the proposed Project at 346 Somerville Avenue will have 94 residential units, this would result in a demand of approximately 61 residential parking spaces. The observed parking demand at each location and the corresponding averages is shown in Table 5. Supporting documents are attached in Appendix B.

Table 5: Observed On-Site Parking Demand at Similar Sites

Cambridge Parking Study by Vanasse & Associates, Inc					
Location	**Walking Distance to Subway Stop (mi)**	**Walking Distance to Closest Bus Stop (mi)**	**# Occuppied Units**	**Leased Parking Spaces**	**Utilization Ratio (Leased Spaces/Occupied Unit)**
23 Sidney	0.3	0.1	50	21	0.42
91 Sidney	0.4	0.05	132	76	0.58
ArchStone Kendall Square	0.4	0.1	180	144	0.80
100 Landsdowne	0.5	0.05	198	124	0.63
Project: 346 Somerville Ave	0.4	0.07	94 (Available)		--

Weighted Utilization Ratio =	0.65

The data in Table 5 represents the parking demand when there are on-site parking spaces provided. It is assumed that providing zero parking on-site will influence the vehicle ownership of tenants that choose to move into the residential development. With the knowledge that a dedicated parking space is not provided, tenants that do not own a vehicle are more likely to live at this development.

DCI was unable to locate any pre/post occupancy studies of developments with zero on-site parking in Somerville or adjacent cities. Therefore, we extended our study review to areas outside of Massachusetts. A study in Calgary surveyed mode choice of residents and non-residents at three urban developments that provide zero (0) on-site parking spaces. The survey found that 28% of residents traveled by motor vehicle while 72% traveled by alternative modes. If it is assumed that 28% of residents will travel by automobile, then the expected parking demand for 94 dwelling units would be reduced to 26 parking spaces. Supporting documents are attached in Appendix B.

With zero parking provided on-site, on-street parking will function as unbundled parking spaces at the Project. A study in San Francisco observed parking demand at a development which unbundles parking from rented dwelling units and is located a 0.6 mile walk from a subway station. The mixed-use development was permitted and built with 0.65 spaces per dwelling unit, however, the actual demand is approximately 0.33 spaces per unit. If a parking demand of 0.33 spaces per unit is assumed, then the expected parking demand for 94 dwelling units would be reduced to 31 parking spaces. Supporting documents are attached in Appendix B.

The on-site parking demand at similar sites in Cambridge compared to the Project is 0.65 leased spaces per occupied unit. This would result in a demand for 61 parking spaces. Based on the Calgary study, when a reserved parking space is not available off-street, 28% of people will travel by motor vehicle. This would result in a demand for 26 parking spaces. Based on the San Francisco development with unbundled parking, the parking demand is 0.33 spaces per dwelling unit. This would result in a demand for 31 parking spaces. Due to the proposed Project's proximity to transit and lack of on-site parking condition we believe the San Francisco Project

most closely matches this Project, so a demand of 0.33 parking spaces per dwelling unit was assumed.

Conclusion

The Project located at 346 Somerville Avenue currently has one building on-site that serves as a commercial property, as well as a parking area on the south and west of the site. The proposed building will contain approximately 94 residential units and approximately 2,490 square feet of restaurant space. The property is located in Zoning District CCD 55 and according to the SZO, a residential space requires 1.0 parking space per unit and an eating and drinking space requires 1.0 parking space per 400 sf. Combined the proposed building will require 100 spaces. Therefore, the Applicant is seeking a parking variance of 100 parking spaces for the 346 Somerville Avenue site.

DCI performed a parking utilization study of available on-street parking along five (5) roadways in the vicinity of the site: Somerville Avenue, Hawkins Street, Carlton Street, Church Street and Lake Street. The data was collected during a typical Thursday from 6:00pm to 9:00pm and a typical Saturday from 6:00am to 8:00am and 12:00pm to 2:00pm during April 2019. In total, there are 146 parking spaces along those five roadways in the vicinity of the site. There are 4 30-Minute parking spaces, 28 metered parking spaces and 114 permit parking spaces.

During the data collection period, there was an average of 102 parked vehicles during the Weekday PM period, 82 parked vehicles during the Weekend AM period and 99 parked vehicles during the Weekend PM period. Consequently, there is an average of 44 available parking spaces during the Weekday PM period, 64 available parking spaces during the Weekend AM period and 47 available parking spaces during the Weekend PM period.

During the data collection period, there was a maximum of 107 parked vehicles during the Weekday PM peak period and 99 parked vehicles during the Weekend peak period. Consequently, there is a minimum of 39 available parking spaces during the Weekday PM peak period and 47 available parking spaces during the Weekend peak period.

The most important time period for residents to secure an overnight parking space was determined to be 6:00-6:30 PM on Weekday evenings. During this time period there were 100 parked vehicles and 46 parking spaces available in the study area.

As mentioned previously, the actual demand for parking should be significantly below the Somerville Zoning requirements. The six (6) required restaurant parking spaces should be available during business hours since most car owning residents will not be parked in the area during the day. In addition there is a planned MBTA Subway Station at Union Square to be located approximately 0.4 miles away from the Project site. There are also five bus lines that have stops less than 0.25 miles from the Project site, which further reduces the need for parking on-site. At residential developments with on-site parking and similar proximity to public transit

in Cambridge, the actual parking demand is .65 spaces per unit. Additionally, a Calgary study demonstrated that only 28% of surveyed residents at developments with zero on-site parking traveled by motor vehicle. This should reduce the parking demand to approximately .28 parking spaces per unit. Therefore, the projected number of parking spaces needed for the Project would be 26 parking spaces. A San Francisco study indicated that when parking spaces are unbundled from dwelling units, the parking demand is 0.33 spaces per unit. In this case 31 parking spaces would be needed.

The Weekday PM period had the lowest average number of available parking spaces with 44. When the minimum number of parking spaces in the study area were available during Weekdays from 8:30-9:00 PM, there were 39 parking spaces available. During the time period when most residents will be searching for overnight parking, there were 46 parking spaces available.

Even if actual parking demand exceeds the parking supply in the study area, it is important to note that a Somerville parking permit allows residents to park on any street in Somerville with permit parking. This would allow residents to park outside our study area. As demonstrated in the 2015 study by Nelson Nygaard, permit parking in Union Square is underutilized on several nearby streets. When residents cannot find parking in the area immediately surrounding their dwelling, they will expand their parking radius. Lastly, the existing walkability and mix of uses in Union Square allows residents of the area to make many daily trips without a vehicle. As the development in Union Square becomes denser and scheduled improvements to bicycle infrastructure and public transportation are made, it should become easier for residents to not own a vehicle or reduce vehicle ownership.

Based on these facts and the results of this study, DCI believes the actual parking demand for the Project will be approximately 31 spaces, which can be accommodated via the existing on-street parking supply in the area.