

MEMORANDUM

To: Rachna Balakrishna
From: Alan H. Simon
Date: December 27, 2018 (Revised January 15, 2019)
Project: 1299 Beacon St. Brookline MA
Subject: Development of Parking Program

Simon Design Engineering (SDE) is pleased to submit the following findings resulting from the Shared Parking Analysis prepared for the proposed age-restricted rental housing development at 1299 Beacon St.

Introduction:

The proposed project is a multi-use development consisting of age-restricted rental housing, a ground floor restaurant, and a second-floor low-density showroom retail. We reviewed the zoning requirements with the Brookline Planning Department and their parking consultant, and were asked to evaluate the proposed parking requirements within the context of the underlying zoning parking requirements. Moreover, we were asked to re-assess the parking demand associated with the proposed restaurant on the ground level.

SDE met with the town's peer reviewer who recommended utilizing the Urban Land Institute's (ULI) Shared Parking¹ approach and supporting rationale for the number of spaces provided. The typical base parking ratios were generated by the ULI by observing hourly parking accumulations at various standalone land-uses over the course of a typical year. We modified the ULI's base parking ratios in consultation with the Town's peer review consultants to accurately represent the unique aspects of this project.

Key Aspects of Development:

- The project combines retail, restaurant and residential components. The mixed-use nature of the proposal lends itself to a shared parking strategy.
- Industry data and parking demand studies indicate that age-restricted housing has a reduced parking demand in comparison to traditional rental housing.
- The project site has ample access to public transit.
- There is available metered on-street parking for daytime use.
- Transportation Network Companies (TNC) providers such as Uber & Lyft are far more prevalent and utilized by all ridership groups (residential and commercial).
- Portions of the parking space provided will be restricted to residents.

Land Uses:

The development programming will consist of the following mixed-uses at full build-out:

- 5,000 square feet of restaurant on the ground level.
- 5,498 square feet of low-density showroom retail on the second level.
- 80 units of age-restricted residential housing (55 and older) on levels three through eleven.

SDE utilized this program information to develop a shared parking demand model that represents the estimated number of parking spaces needed to accommodate the projected peak-hour parking demand for the 1299 Beacon St. development. Grocery land-use is specifically excluded from this analysis.

¹Shared Parking, second edition, ULI-Urban Land Institute and the International Council of Shopping Centers

Zoning Code Required Spaces:

Typically, city planners calculate parking demand assuming that each land-use requires an independent supply of spaces. This method usually results in an oversupply of parking. In reality, and contrary to the estimated code requirement, fluctuating patterns of parking utilization typically allow land-uses to share some of the same parking spaces; thereby, reducing the total parking required to support the development. The following section compares the parking spaces required per local zoning and ULI for the commercial uses without applying any of the adjustments aforementioned.

The Brookline off-street parking regulations require parking spaces per the following ratios:

- Restaurant: 1 space for every 5 seats (0.2 spaces / seat)
- Other Retail: 1 space for every 600 gross square feet (1.67 spaces / 1,000sf)

The ULI recommends parking per the following ratios:

- Restaurant: 18 spaces per 1,000sf on weekdays and 20 per 1,000 on weekends
- Retail: 3.6 spaces per 1,000sf of weekdays and 4 spaces per 1,000 on weekends

The table below depicts the number of spaces required by local regulations compared to the spaces required by the ULI based on the proposed program. We have converted the Brookline restaurant requirements to spaces per seat and retail to spaces per 1,000 square feet for comparison purposes.

| Table-1 Comparison of ULI vs Brookline Retail/Restaurant Parking Requirements | | | | | | | |
|--|-------------------------------------|--------------------------|------------|------------|------------|--------------------------------|-----------|
| Program | | ULI Parking Requirements | | | | Brookline Parking Requirements | |
| Land Use | Quantity | Weekday | | Weekend | | Base Ratio | Spaces |
| | | Base Ratio | Spaces | Base Ratio | Spaces | | |
| 2 nd Level Retail | 5,498sf | 3.6 /ksf | 20 | 4 /ksf | 22 | 1.67 ^a /ksf | 9 |
| Restaurant | 5,000sf (200 seats) ^b | 18 /ksf | 90 | 20 /ksf | 100 | 0.2 /seat | 40 |
| Total Commercial Spaces | | | 110 | | 122 | | 49 |

ksf = thousand square feet of gross floor area

^aBased on Zoning By-Law Article VI sec 6.02 Table of Off-Street Parking

^bEstimated number of restaurant seats based on 60% seating area 40% back-end area and 15sf per person

Per **Table-1** above, the estimated unadjusted parking requirements for retail and restaurant are as follows:

- ULI estimates 110 spaces on a weekday and 122 spaces on weekends are needed for the retail and restaurant uses.
- Town of Brookline requires 49 spaces for retail and restaurant uses.

As shown in the results above, the ULI’s unadjusted parking requirements are conservative when compared to the Brookline zoning regulations because they are derived from stand-alone suburban land-uses and do not reflect local conditions. The age-restricted residential parking requirements were excluded from the table above as this land-use is not represented in the ULI. The subsequent section provides a rationale based on industry data and local conditions for estimating the parking requirements for the age-restricted housing and the commercial land-uses.

Parking Demand Ratios Utilized:

For this analysis, SDE utilized the parking ratios established in the ULI’s *Shared Parking* publication for retail and restaurants. The ULI splits the parking ratios between customers/employees, residents/visitors to allow for flexibility when applying travel mode factors for each user type. The parking ratio for age-restricted housing was estimated using sources from ITE, the Institute of Transportation Engineers.

Table-2 below depicts how the ULI’s parking ratios are broken down between each user.

| Table-2 | | | | | | | | |
|---|------------------------|-----------------------|------------------------|-----------------------|----------------|-----------------------|------------|-------|
| ULI Parking Ratios Used in this Analysis | | | | | | | | |
| Land Use | Weekday | | Weekend | | Source | Combined Total | | |
| | Customer/ Residents | Employee/ Visitors | Customer/ Residents | Employee/ Visitors | | Weekday | Weekend | |
| ULI Retail | 2.9 | 0.7 | 3.2 | 0.8 | 1 ^a | 3.6 | 4 | /ksf |
| ULI Restaurant | 15.25 | 2.75 | 17 | 3 | 1 ^b | 18 | 20 | /ksf |
| Age-restricted housing | 0.8 | 0.1 | | | 2 | 0.9 | 0.9 | /Unit |

ksf = thousand square feet of gross floor area

Sources:

1. *Shared Parking 2nd edition, Land Uses: ^aCommunity shopping, ^bFine/Casual Dining Restaurant*
2. *ITE Senior housing trip generation and parking demand characteristics technical paper by Stephen B. Corcoran, P.E. recommends 0.4 spaces per unit. The 0.8 ratio proposed provides a safety factor of 50%*

Per Table-2 above, the parking ratios utilized in this analysis are as follows:

- Retail = 3.6 spaces per 1,000 on weekdays and 4 spaces per 1,000 on weekends.
- Restaurant = 18 spaces per 1,000 on weekdays and 20 spaces per 1,000 on weekends.
- Age-restricted housing = 0.9 per unit weekdays and weekends.

Residential Parking – The 0.9 ratio listed in the table above consists of 0.8 spaces per unit for residents plus 0.1 spaces per unit for visitors/tradespeople (10%). The visitor ratio will provide eight additional parking spaces. We believe the combined ratio is more than adequate to supply parking for age-restricted residential. A ratio of 0.9 is more than double that of the findings of ITE research which includes residents, visitors, and employees for stand-alone land use of this type. The peak parking demand at most senior facilities occurs midday, with Mother’s Day having the highest parking demand of the year.

Per the traffic report prepared by VAI, it is estimated that 65% of residential users will arrive at the site by means other than a personal vehicle. Due to this reduction in transportation mode, it is reasonable to conclude fewer residents will own vehicles; thereby, reducing the parking demand. Therefore, we believe a ratio of 0.9 spaces per unit provides a conservative level of safety and will provide flexibility in the development should the residential user type change in the future.

Utilizing the parking ratios established in this section the estimated unadjusted total project parking demand is indicated in Table-3 below:

| Table – 3 | | | | | |
|--------------------------------------|-----------------|---------------------------------|---------------|-------------------|---------------|
| Unadjusted Parking Demand | | | | | |
| Program | | ULI Parking Requirements | | | |
| Land Use | Quantity | Weekday | | Weekend | |
| | | Base Ratio | Spaces | Base Ratio | Spaces |
| 2 nd Level Retail | 5,498sf | 3.6 /ksf | 20 | 4 /ksf | 22 |
| Restaurant | 5,000sf | 18 /ksf | 90 | 20 /ksf | 100 |
| Age-restricted housing | 80 Units | 0.9 /unit | 72 | 0.9 /unit | 72 |
| Total Parking Spaces Required | | | 182 | | 194 |

In summary the combination of the ULI and ITE requirements results in an unadjusted parking demand of:

- 182 spaces during the weekday
- 194 spaces during the weekend

Shared Parking

The recommended ratios from ULI and ITE reflect stand-alone conditions in suburban settings with little to no transit, minimal ridesharing, and no TNCs. To capture the unique aspects of this project, we applied the following factors when developing the shared parking model.

Transportation Mode – This represents the percentage of users arriving at the site by means other than a personal vehicle which would require on-site parking. According to the approved traffic study prepared by Vanasse & Associates, Inc. (VAI) for this project, it is projected that 38% of restaurant customers and 50% of retail customers will arrive at the site by other means. The 38% reduction was provided by request of the town’s traffic peer reviewer based on professional judgment, other local studies, and familiarity with local conditions. The retail adjustment is based on survey data of percentage of auto-use of the existing retail. These factors were applied in the shared parking analysis for the respective uses. Residential parking was not adjusted.

These reductions are due to direct access to the Coolidge Corner Green-Line stop and two Bus-Line 66 stops at Harvard St. along with the increased use of ride-hailing services. We have also applied adjustments to employee parking due to the service nature of the proposed land-uses. In most urban environments service employees are more likely to utilize public transportation rather than drive. In addition, we applied adjustments to the second level retail to reflect the operating hours of 10 am to 6 pm, typically after hours only lingering customers and employees assigned to closing remain. The second level retail parking needed during the evening is minimal. A mode adjustment was also applied for restaurant employees in the evening. It is assumed some employees will work late hours when public transit is no longer operating; thereby, requiring additional employee spots in the evening.

The following mode reductions were applied to the analysis:

- Second Level Retail:
 - 50% reduction for customers/employees' daytime hours 10am-6pm
 - 90% reduction for customers during evening hours 6pm-12am
 - 75% reduction for employees during evening hours 6pm-12am
- Restaurant:
 - 38% reduction for customers during daytime and evening hours 10am-12am
 - 38% reduction for employees during daytime hours 10am-6pm
 - 10% reduction for employees during evening hours 6pm-12am

No adjustments were applied to the residential parking as it is assumed these spaces will be reserved and not available for sharing with the general public. However, the eight visitor parking spaces were included in the overall total of shareable parking spaces and adjusted accordingly.

The factors indicated above were applied to the base parking ratios to provide project-specific projections. Please refer to the **Shared Parking Demand Summary** table and **Peak Month Daily Demand by Hour** table in the **appendix** for the peak projected parking demand and hourly parking demand.

Shared Parking Conclusion

Parking demand is influenced by the time-of-year, time-of-day and the availability of alternative transportation, building occupancy rates, and many other factors. After utilizing effects of shared parking, transportation mode adjustments, monthly factor, and time-of-day factor the projected weekend peak-hour parking demand for the site is **131±** spaces on the busiest weekend of the year. The retail/restaurant peak-hour demand is projected to occur in December at 8:00 PM.

In conclusion, the projected peak-hour weekend demand represents a **32%** reduction from the unadjusted weekend parking demand projected for this project. Refer to the **Shared Parking Demand Summary** table and **Peak Month Daily Demand by Hour** table in the **appendix** to view the calculations from the *Shared Parking* model.

APPENDIX

SHARED PARKING DEMAND SUMMARY
PEAK MONTH DAILY PARKING DEMAND BY HOUR
GRAPH DEPICTING PEAK MONTH DAILY PARKING DEMAND BY HOUR

SHARED PARKING DEMAND SUMMARY

PEAK MONTH: DECEMBER -- PEAK PERIOD: 8 PM, WEEKEND

| Land Use | Project Data Quantity Unit | | Weekday | | | | Weekend | | | | Weekday | | | Weekend | | |
|--|-------------------------------|---------|-----------|----------|--------------|----------|-----------|----------|--------------|----------|--------------|-------------|--------------------------|-------------|-------------|--------------------------|
| | | | Base Rate | Mode Adj | Project Rate | Unit | Base Rate | Mode Adj | Project Rate | Unit | Peak Hr Adj | Peak Mo Adj | Estimated Parking Demand | Peak Hr Adj | Peak Mo Adj | Estimated Parking Demand |
| | | | | | | | | | | | 7 PM | December | | 8 PM | December | |
| Restaurant Employee | 5,000 | sf GLA | 15.25 | 0.50 | 7.63 | /ksf GLA | 17.00 | 0.50 | 8.50 | /ksf GLA | 1.00 | 1.00 | 38 | 1.00 | 1.00 | 43 |
| Second Floor Retail Employee | 5,498 | sf GLA | 2.75 | 0.90 | 2.48 | /ksf GLA | 3.00 | 0.90 | 2.70 | /ksf GLA | 1.00 | 1.00 | 13 | 1.00 | 1.00 | 14 |
| Age-Restricted Rental Housing Reserved Guest | 80 | units | 2.90 | 0.10 | 0.29 | /ksf GLA | 3.20 | 0.10 | 0.32 | /ksf GLA | 0.95 | 1.00 | 2 | 0.50 | 1.00 | 1 |
| | 80 | units | 0.70 | 0.50 | 0.35 | /ksf GLA | 0.80 | 0.50 | 0.40 | /ksf GLA | 0.95 | 1.00 | 2 | 0.50 | 1.00 | 1 |
| | 80 | units | 0.00 | 0.35 | 0.00 | /unit | 0.00 | 0.35 | 0.00 | /unit | 0.97 | 1.00 | 0 | 0.98 | 1.00 | 0 |
| | 0.8 | sp/unit | 1 | 1.00 | 1 | /unit | 1 | 1.00 | 1 | /unit | 1.00 | 1.00 | 64 | 1.00 | 1.00 | 64 |
| | 80 | units | 0 | 1.00 | 0 | /unit | 0 | 1.00 | 0 | /unit | 1.00 | 1.00 | 8 | 1.00 | 1.00 | 8 |
| | | | | | | | | | | | Customer | 48 | Customer | 52 | | |
| | | | | | | | | | | | Employee | 15 | Employee | 15 | | |
| | | | | | | | | | | | Reserved | 64 | Reserved | 64 | | |
| | | | | | | | | | | | Total | 127 | Total | 131 | | |

Shared Parking Reduction

35%

32%

Conclusion:

The table above represents the summary calculation from the ULI's Shared Parking Model. After applying monthly factors, time-of-day factors, and mode adjustments, the ULI parking model estimates that the proposed project will require:

1. 127 spaces during the peak weekday hour that will occur in December at 7:00 pm
2. 131 spaces during the peak weekend hour that will occur in December at 8:00 pm

In conclusion the estimated number of parking spaces for this project is 131, this represents a 32% reduction from the unadjusted parking calculation indicated in Table-3 of the report.

Table
Project: 1299 Beacon Street Brookline MA
Description: Shared Parking Model v5

| December | | | | | | | | | | | | | | | | | | | | | Weekday Estimated Peak-Hour Parking Demand | | | |
|---------------------|--------------|------|------|------|------|-------|-------|-------|------|------|------|------|------|------|------|------|------|-------|-------|-------|--|------------|------------|-------------|
| | Monthly Adj. | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 PM | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | 8 PM | 9 PM | 10 PM | 11 PM | 12 AM | Overall Pk | AM Peak Hr | PM Peak Hr | Eve Peak Hr |
| | | | | | | | | | | | | | | | | | | | | | 7 PM | 11 AM | 5 PM | 7 PM |
| Restaurant | 100% | - | - | - | - | 6 | 15 | 29 | 29 | 25 | 15 | 19 | 29 | 36 | 38 | 38 | 38 | 36 | 29 | 10 | 38 | 15 | 29 | 38 |
| Employee | 100% | - | 1 | 4 | 5 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 7 | 13 | 13 | 13 | 13 | 11 | 4 | 13 | 6 | 7 | 13 | |
| Second Floor Retail | 100% | - | 1 | 2 | 6 | 10 | 14 | 15 | 16 | 15 | 14 | 14 | 15 | 2 | 2 | 1 | 1 | - | - | 2 | 14 | 15 | 2 | |
| Employee | 100% | - | 1 | 2 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 1 | - | 2 | 4 | 4 | 2 | |
| Reserved | 100% | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | |
| Guest | 100% | - | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 8 | 8 | 8 | 8 | 6 | 4 | 8 | 2 | 3 | 8 |
| TOTAL DEMAND | Customer | - | 2 | 4 | 8 | 18 | 31 | 46 | 47 | 42 | 31 | 35 | 47 | 43 | 48 | 47 | 47 | 44 | 35 | 14 | 48 | 31 | 47 | 48 |
| | Employee | - | 2 | 6 | 8 | 9 | 10 | 10 | 10 | 10 | 9 | 9 | 11 | 15 | 15 | 15 | 15 | 14 | 11 | 4 | 15 | 10 | 11 | 15 |
| | Reserved | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| | | 64 | 68 | 74 | 80 | 91 | 105 | 120 | 121 | 116 | 104 | 108 | 122 | 122 | 127 | 126 | 126 | 122 | 110 | 82 | 127 | 105 | 122 | 127 |

| December | | | | | | | | | | | | | | | | | | | | | Weekend Estimated Peak-Hour Parking Demand | | | |
|---------------------|--------------|------|------|------|------|-------|-------|-------|------|------|------|------|------|------|------|------|------|-------|-------|-------|--|------------|------------|-------------|
| | Monthly Adj. | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 PM | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | 8 PM | 9 PM | 10 PM | 11 PM | 12 AM | Overall Pk | AM Peak Hr | PM Peak Hr | Eve Peak Hr |
| | | | | | | | | | | | | | | | | | | | | | 8 PM | 11 AM | 1 PM | 8 PM |
| Restaurant | 100% | - | - | - | - | - | 6 | 21 | 23 | 19 | 19 | 19 | 26 | 38 | 40 | 43 | 38 | 38 | 38 | 21 | 43 | 6 | 23 | 43 |
| Employee | 100% | - | 2 | 2 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 8 | 14 | 14 | 14 | 14 | 14 | 11 | 7 | 14 | 6 | 6 | 14 |
| Second Floor Retail | 100% | 1 | 2 | 4 | 5 | 10 | 15 | 18 | 18 | 16 | 11 | 10 | 11 | 2 | 1 | 1 | 1 | - | - | - | 1 | 15 | 18 | 1 |
| Employee | 100% | - | - | - | 1 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 3 | 1 | 1 | 1 | 1 | - | - | - | 1 | 2 | 4 | 1 |
| Reserved | 100% | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| Guest | 100% | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 8 | 8 | 8 | 8 | 6 | 4 | 8 | 2 | 2 | 8 |
| TOTAL DEMAND | Customer | 1 | 4 | 6 | 7 | 12 | 23 | 41 | 43 | 37 | 32 | 31 | 40 | 45 | 49 | 52 | 47 | 46 | 44 | 25 | 52 | 23 | 43 | 52 |
| | Employee | - | 2 | 2 | 6 | 8 | 8 | 9 | 10 | 10 | 10 | 10 | 11 | 15 | 15 | 15 | 15 | 14 | 11 | 7 | 15 | 8 | 10 | 15 |
| | Reserved | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| | | 65 | 70 | 72 | 77 | 84 | 95 | 114 | 117 | 111 | 106 | 105 | 115 | 124 | 128 | 131 | 126 | 124 | 119 | 96 | 131 | 95 | 117 | 131 |

Conclusion:

The table above represents the parking required during the peak month of the year along with the peak number of vehicles on site on an hour by hour basis. The table provides the following results:

1. 127 spaces during the peak weekday hour that will occur in December at 7:00 pm
2. 131 spaces during the peak weekend hour that will occur in December at 8:00 pm

Peak Month Daily Parking Demand by Hour

