

**Date:** March 22, 2019  
**To:** Cara Seiderman  
**Organization:** City of Cambridge  
**Cc:** Chris Balerna, Kleinfelder  
**From:** Heather Georgallas, EIT  
Ashley Haire, Ph.D., P.E.  
Jesse Boudart, P.E.  
**Project:** Brattle Street – Mason Street and Eliot Street  
(6085.03B)  
**Re:** Brattle Street On-street Parking Study – Post-construction Update

## Introduction

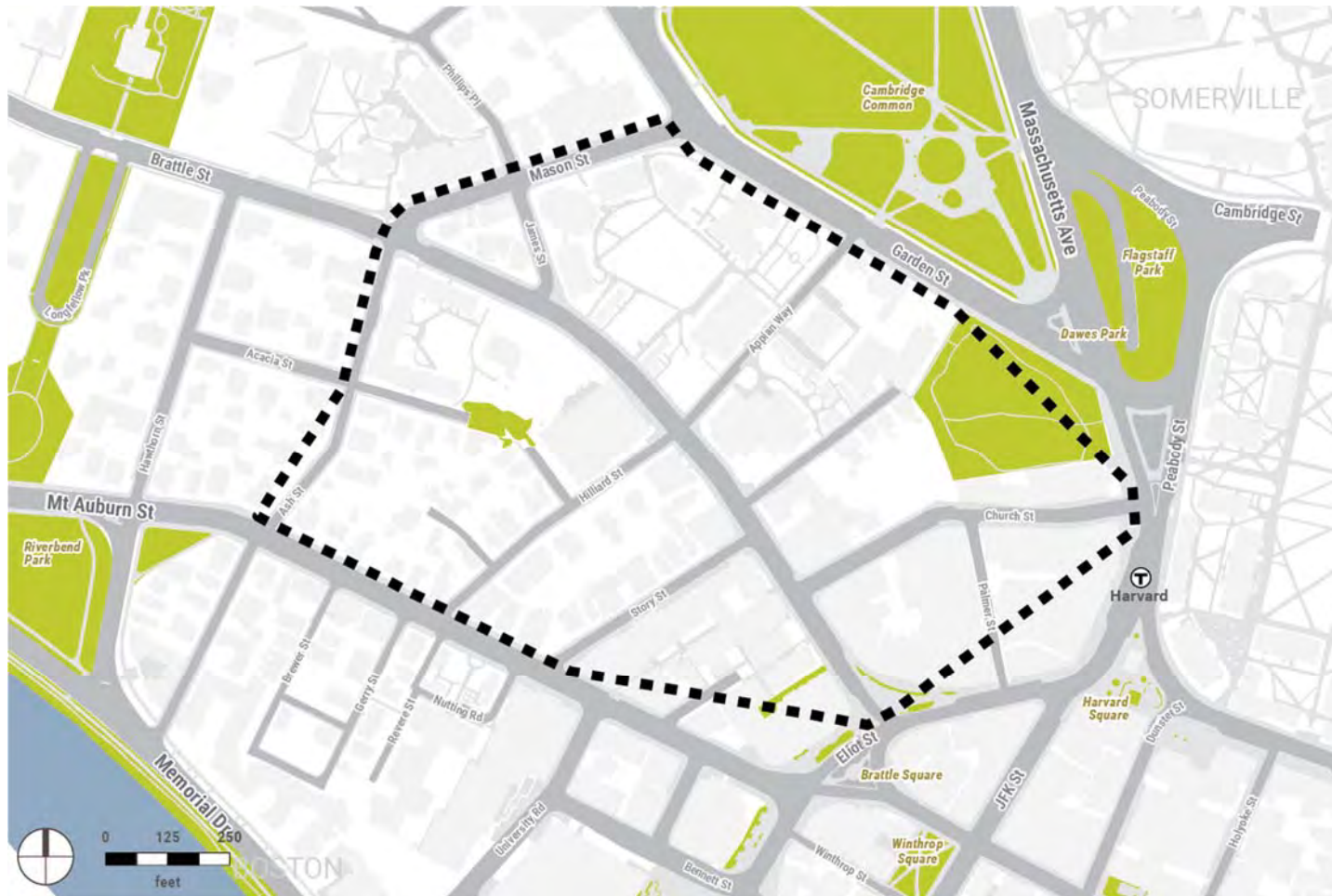
Toole Design (TD) has prepared this memorandum to help the City of Cambridge assess the parking circumstances after adding separated bicycle lanes to Brattle Street between Mason Street and Eliot Street. To conduct the assessment, TD collected parking occupancy data during targeted hours along the corridor and side streets, performed analysis on the data with current and proposed parking demand. City of Cambridge staff modified parking spaces by type to address needs and concerns related to loading of goods and passengers as well as emergency vehicle access.

## Study Area

The study area consists of the following Brattle Street corridor and side streets, shown in Figure 1:

- Brattle Street (Mason Street to Eliot Street);
- Mason Street (Brattle Street to Garden Street);
- James Street (Brattle Street to Garden Street);
- Appian Way (Brattle Street to Garden Street);
- Farwell Place (Brattle Street to end);
- Church Street (Brattle Street to end);
- Palmer Street (Church Street to Eliot Street);
- Eliot Street (Brattle Street to end);
- Ash Street (Brattle Street to Eliot Street);
- Hillard Street (Brattle Street to Eliot Street); and
- Story Street (Brattle Street to Eliot Street).

Figure 1: On-street Parking Study Area



## On-street Parking Methodology

TD performed an on-site analysis to determine parking supply and demand for Brattle Street and surrounding roadways following implementation of the separated bike lanes. TD performed a parking study aimed to determine:

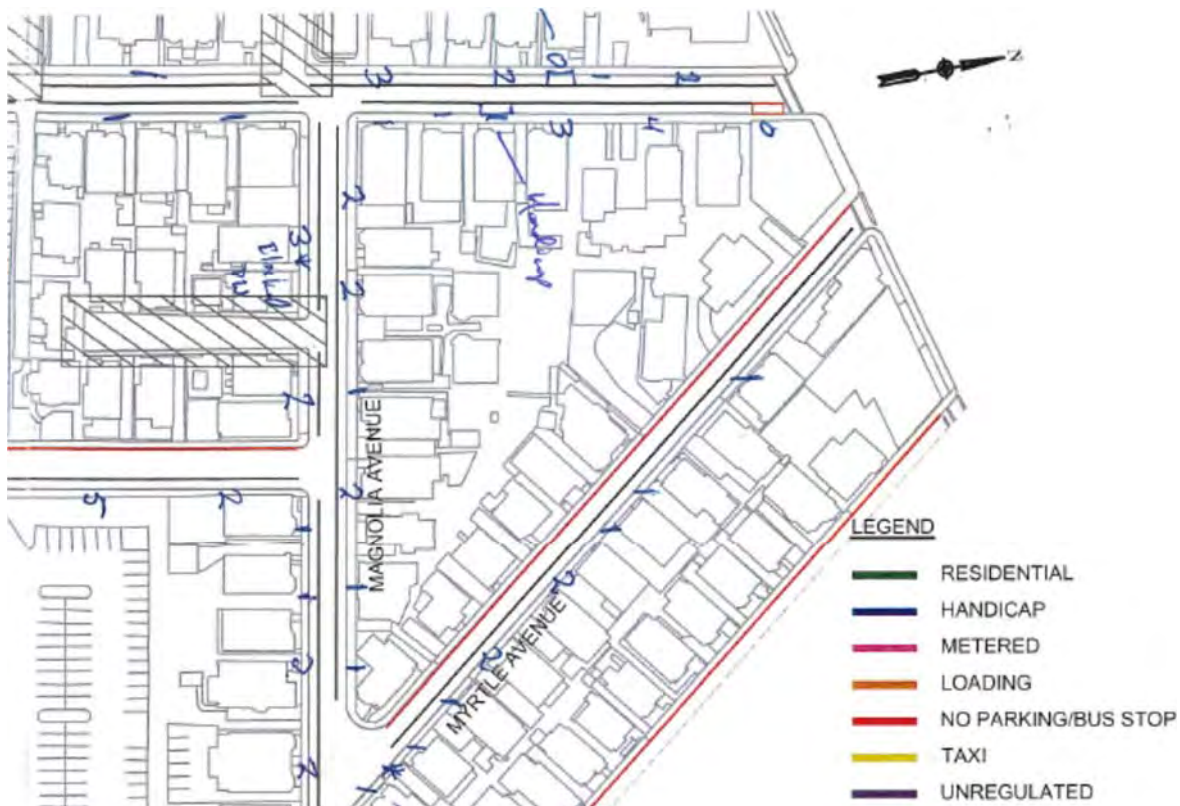
- Curbside uses by type and number of spaces; and
- On-street parking demand on various days and at various times.

Parking spaces were inventoried through a desktop review and verified in the field in late March 2018. No private spaces were included in the inventory. Parking space occupancy, determining if the space is occupied or vacant, was collected on the following days and times within the study area:

- Tuesday, March 27<sup>th</sup>, 2018 at 10am;
- Wednesday, March 28<sup>th</sup>, 2018 at 4pm; and
- Saturday, March 31<sup>st</sup>, 2018 at 1pm and 6pm.

In addition to parking occupancy, any vehicles not adhering to the parking signs were also noted (e.g. double parking, idling). A portion of a sample data collection sheet is shown in **Exhibit 1**.

*Exhibit 1: Sample Data Collection Methodology*



The occupancy data sheets were organized and the data were input into a spreadsheet for analysis. TD reviewed the data to perform utilization analysis for two times during a typical weekday (10am and 4pm), as well as the weekend (1pm and 6pm).

The data were broken down into sections including Brattle Street, streets north of Brattle Street, and streets south of Brattle Street. Further block breakdowns were conducted as necessary to identify where displaced parking spots on Brattle Street can be accommodated. Attachment A contains the typical weekday and weekend data .

## Existing Parking Supply

Based on the inventory, there are approximately 156 parking spaces within the study area. **Figure 2** shows the type of on-street parking and provides an overview of the variety found within the study area. **Exhibit 2** shows the distribution of parking type by percentage within four areas: the entire study area, Brattle Street, side streets north of Brattle Street, and side streets south of Brattle Street.

*Exhibit 2: Parking Inventory Type in Study Area (Percentage)*

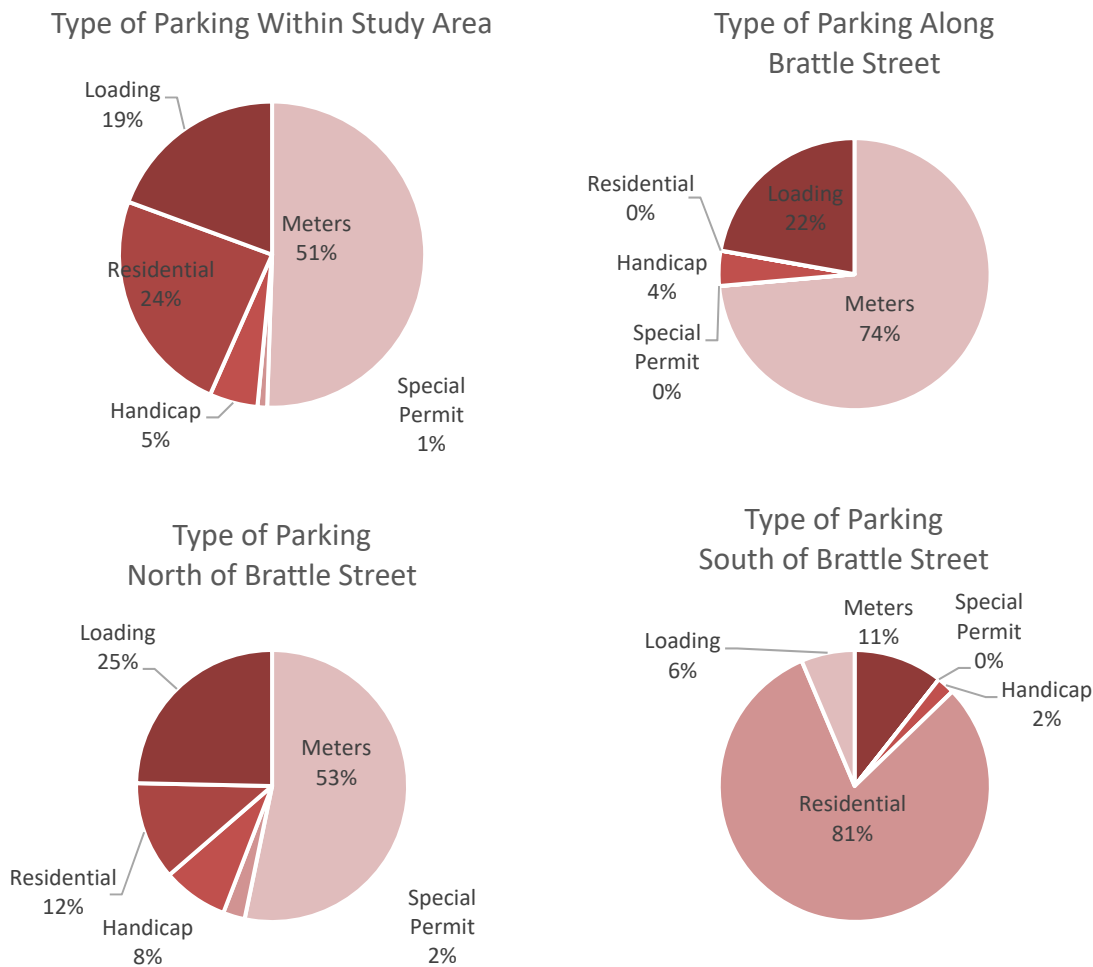
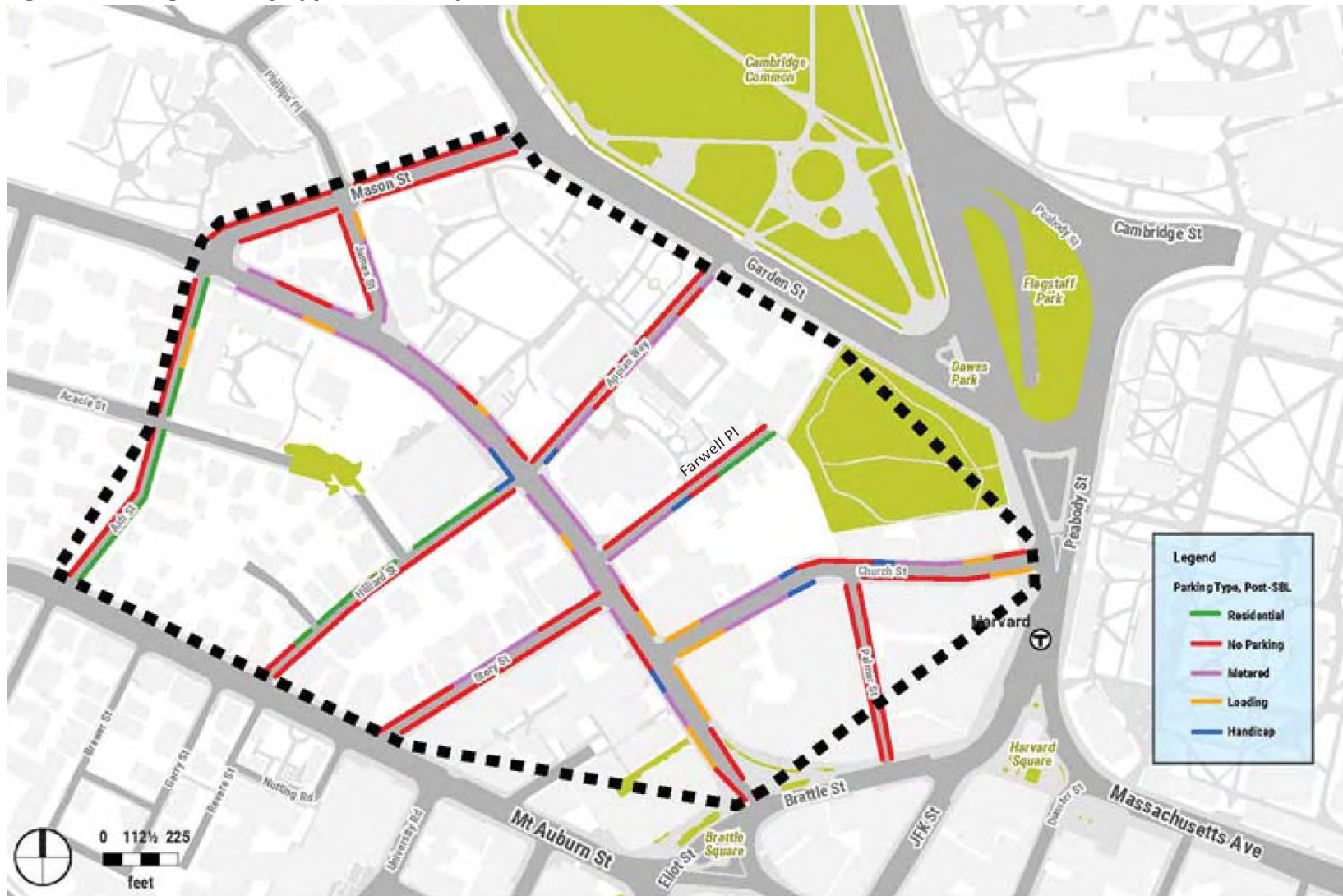


Figure 2: Parking Inventory Type within Study Area



The exhibit and figure show that Brattle Street parking supply primarily provides short-term parking, while the side streets north of Brattle Street have mixed-use functionality, and the side streets south of Brattle Street are heavily residential with 81% of its parking being allotted to resident parking. Overall, the study area is very mixed-use, with 51% of its parking being metered spaces and 24% of its parking being allotted for residents.

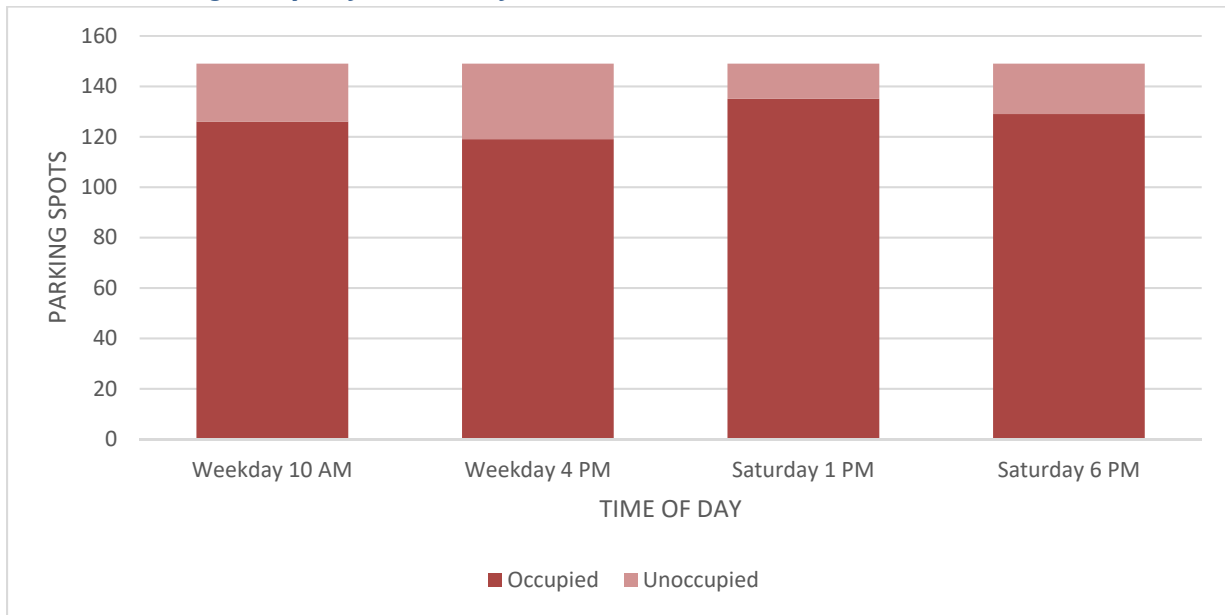
## Existing Parking Demand

The parking demand of the study area was determined for each time period observed. Table 1 and Figures 3 through 6 summarize the occupancy rates during the study time periods for four sections: the entire study area, Brattle Street, north side of Brattle Street, and south side of Brattle Street.

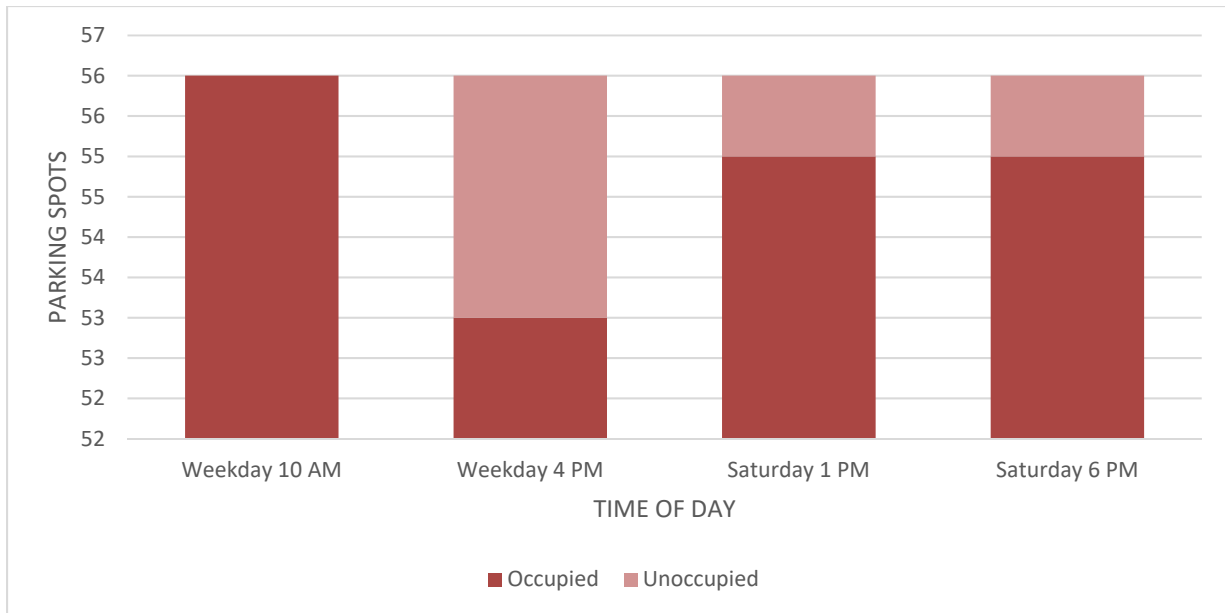
*Table 1: Parking Occupancy Rates*

Street/Area	Time Period	Occupancy
Study Area	Weekday 10AM	81%
	Weekday 4PM	76%
	Saturday 1PM	87%
	Saturday 6PM	83%
Brattle Street	Weekday 10AM	100%
	Weekday 4PM	95%
	Saturday 1PM	98%
	Saturday 6PM	98%
Streets North of Brattle Street	Weekday 10AM	66%
	Weekday 4PM	55%
	Saturday 1PM	73%
	Saturday 6PM	73%
Streets South of Brattle Street	Weekday 10AM	75%
	Weekday 4PM	80%
	Saturday 1PM	87%
	Saturday 6PM	83%

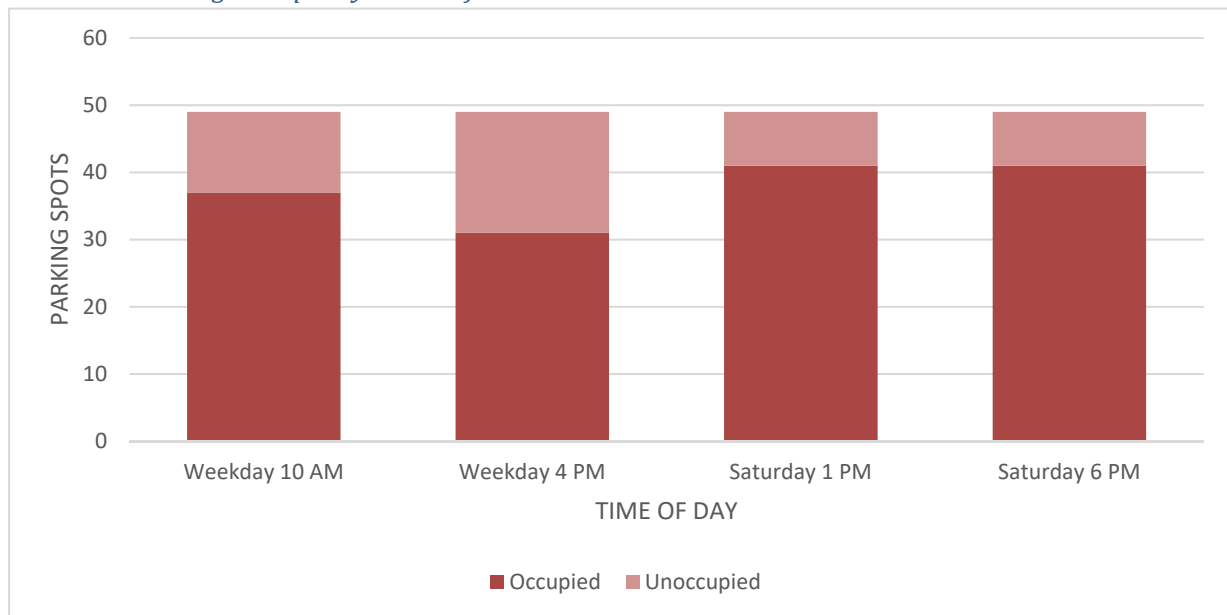
*Exhibit 3: Parking Occupancy in the Study Area*



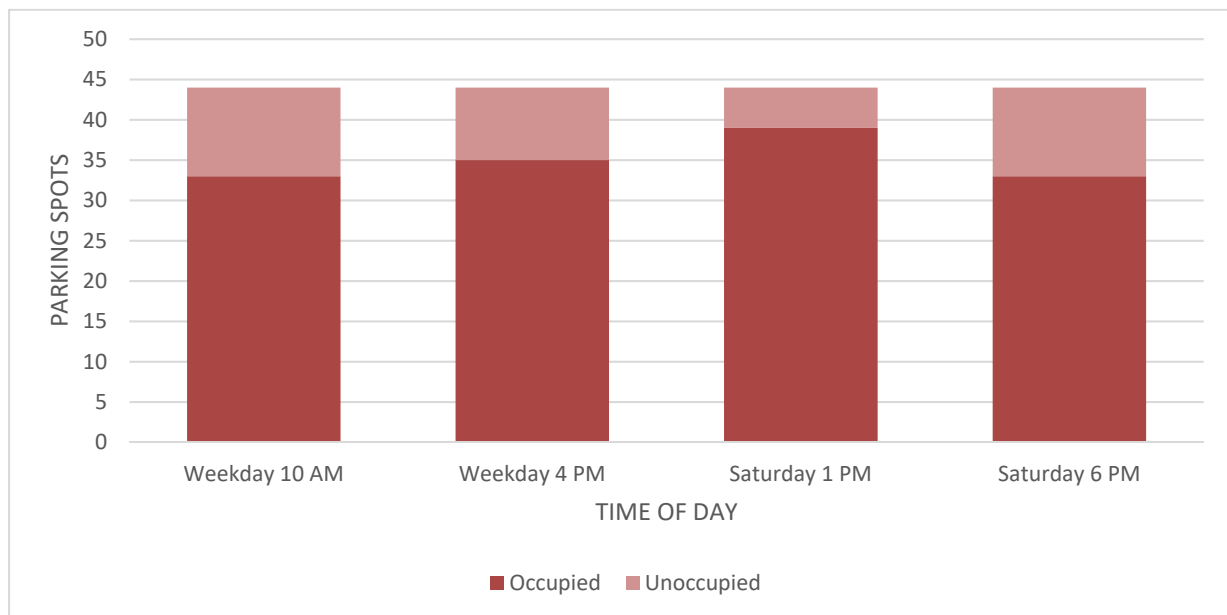
*Exhibit 4: Parking Occupancy Along Brattle Street*



*Exhibit 5: Parking Occupancy North of Brattle Street*



*Exhibit 6: Parking Occupancy South of Brattle Street*



Figures 3 through 6 illustrate parking utilization rates for each segment of the streets in the study area.

Figure 3: Parking Occupancy in the Study Area – Weekday 10AM

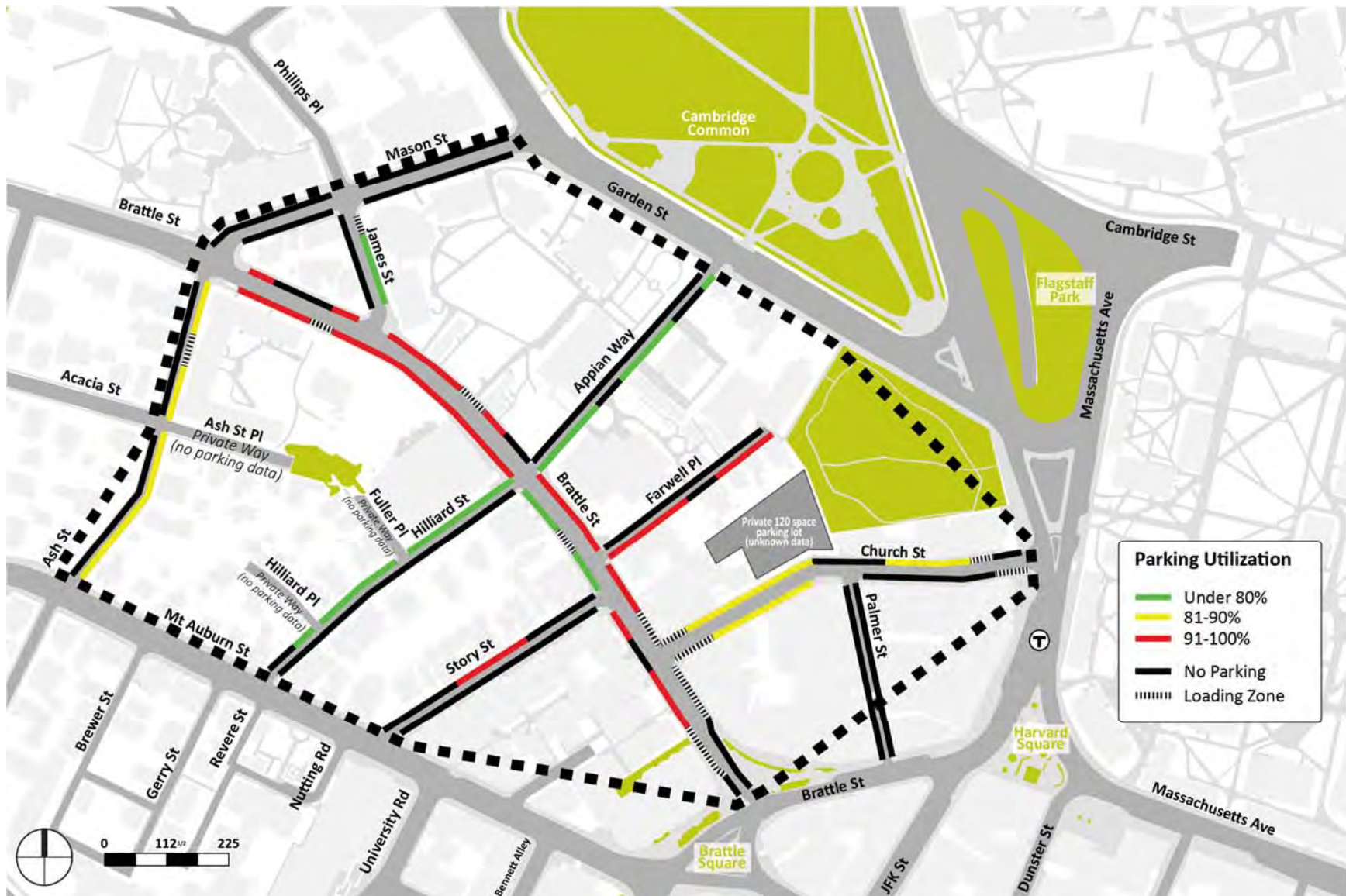


Figure 4: Parking Occupancy in the Study Area – Weekday 4PM

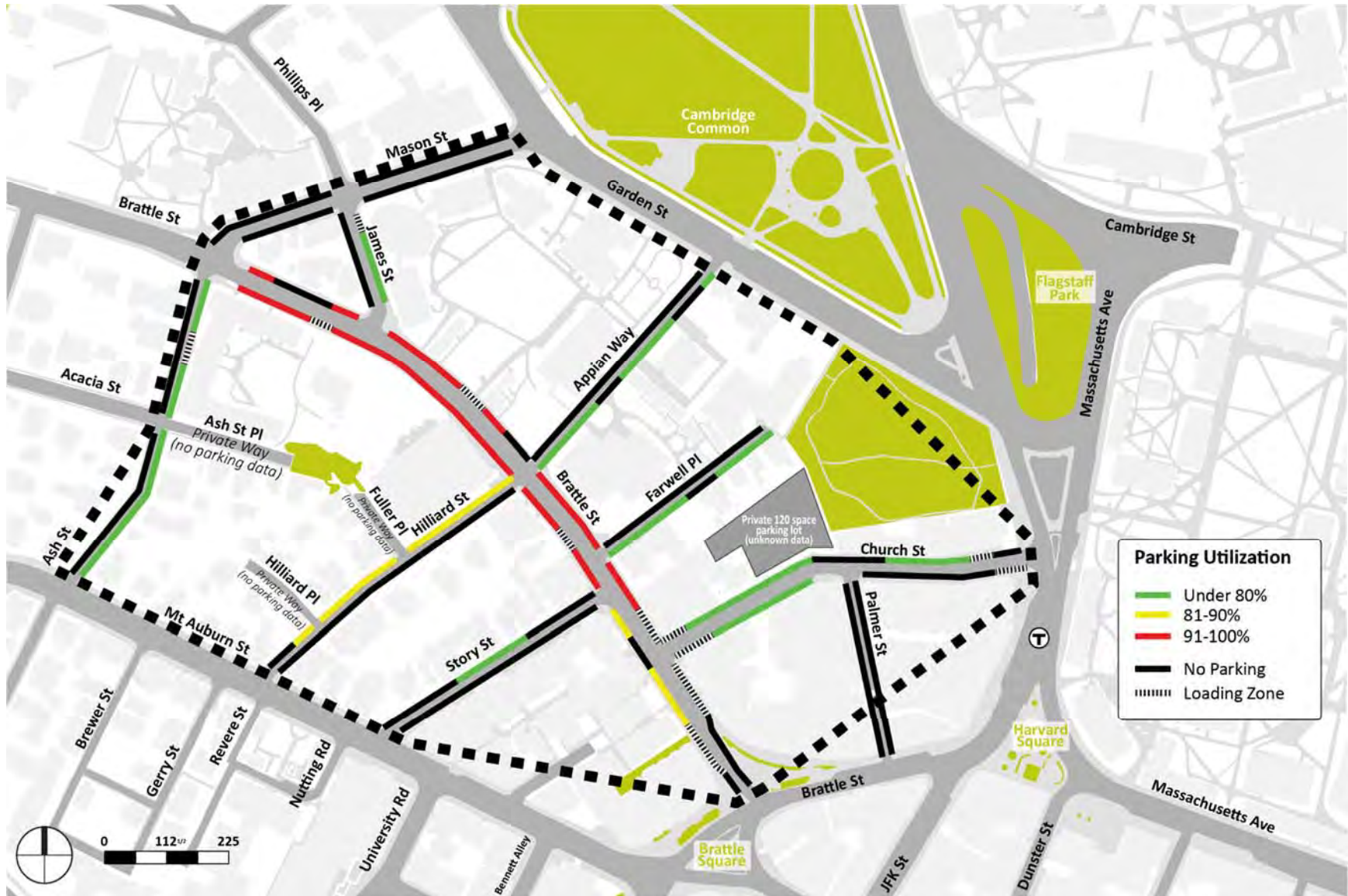


Figure 5: Parking Occupancy in the Study Area – Saturday 1PM

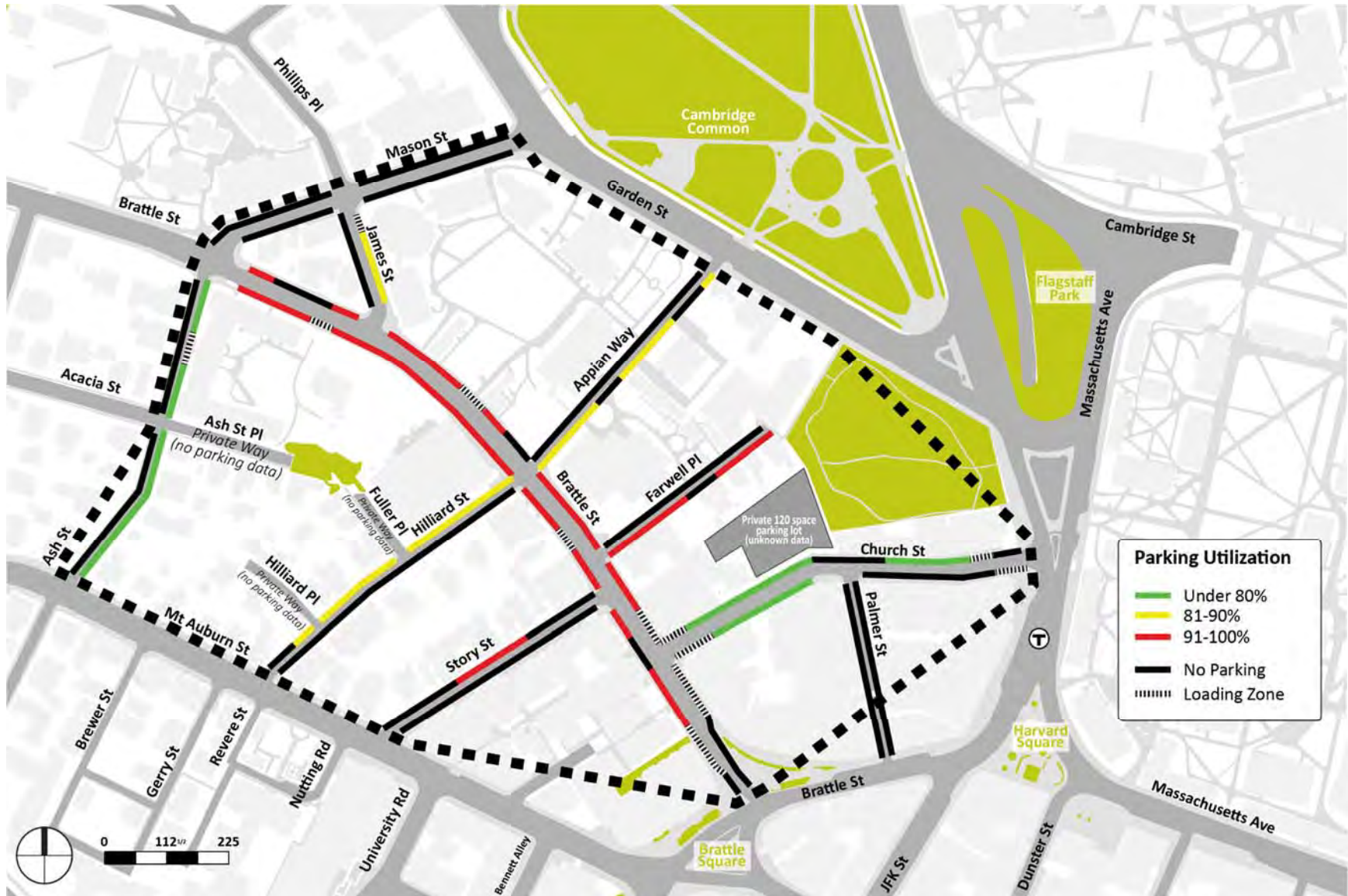
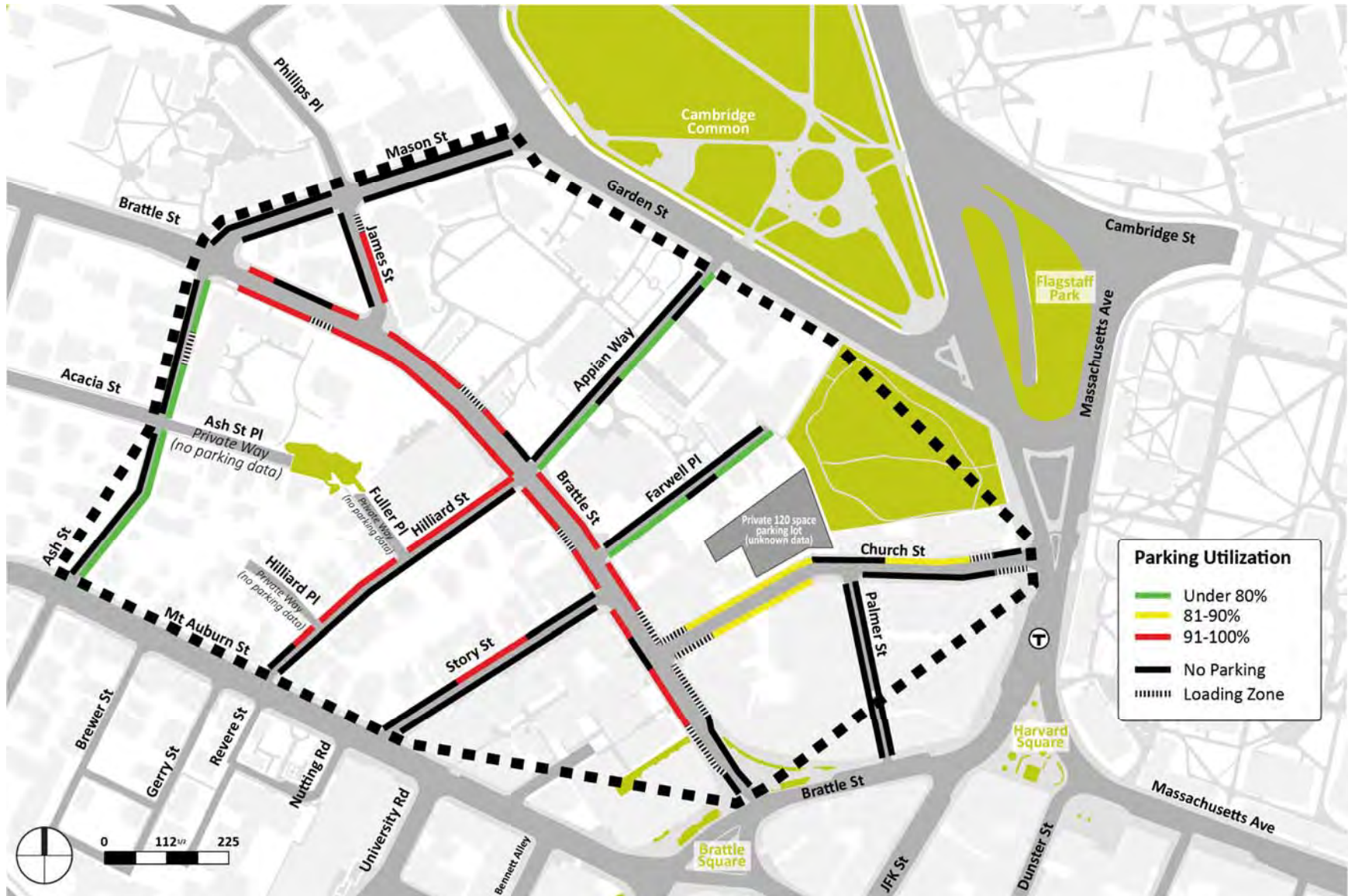


Figure 6: Parking Occupancy in the Study Area – Saturday 6PM



In the overall study area, the parking occupancy remained steady during the time periods observed. During the time periods observed, the amount of unoccupied spaces fluctuated from as low as approximately 9%, or 14 spaces, to approximately 19%, or 30 spaces, during the Saturday afternoon and weekday afternoon periods, respectively. However, focusing only on Brattle Street, few unoccupied spaces were observed with nearly full occupation during all time periods. On the side streets, unoccupied parking spaces were more readily available on the north side with approximately 10% more unoccupied spots than the south side in all time periods. Parking on the side streets peaked at approximately 89% on Saturday afternoon on the north side, but side street parking was typically at least 25% unoccupied in all time periods. Handicap parking within the study area were observed to be approximately 60% occupied during both Weekday observed time periods; 10AM and 4PM. Handicap parking on Saturday was observed to be approximately 30% occupied at 1PM and 70% occupied at 6PM.

It should be noted that there was construction underway on Ash Street and Church Street during the times of the parking data collection. It was observed that three (3) on-street parking spaces were blocked due to construction on Ash Street between Acacia Street and Mount Auburn Street. Similarly, it was observed that two (2) on-street parking spaces were blocked due to construction on Church Street between Brattle Street and Palmer Street. The construction vehicles that were occupying on-street parking spaces were counted as part of this analysis, which represents a conservative approach. Vehicles doing short deliveries (e.g., USPS mail trucks) were not included in the occupancy rate due to the short time period the vehicles were illegally parked and because the vehicles were observed to be attended. On the other hand, all other illegally parked vehicles were included in the analysis. Illegally parked vehicles were noted to be observed at the following locations:

- South side of Appian Way – Wednesday 4PM
- East side of Brattle Street between Eliot Street and Church Street – Wednesday 4PM
- West side of Brattle Street between Hillard Street and Story Street – Wednesday 4PM
- West side of Brattle Street between Hillard Street and Story Street – Saturday 6PM
- West side of Brattle Street between Story Street and Eliot Street – Saturday 6PM
- North side of Story Street – Saturday 6PM
- East side of James Street – Saturday 1PM
- 2 along East Side of Brattle Street between Farwell Place and Church Street – Saturday 1PM
- West side of Brattle Street between Story Street and Eliot Street – Tuesday 10AM
- West side of Brattle Street between Hillard Street and Story Street – Tuesday 10AM
- South side of Church Street between Brattle Street and Palmer Street – Saturday 6PM
- Approximately 10 of the 156 parking spaces were observed to be utilized for snow storage, which is recognized as a more constrained situation than a typical day.

Where pick-up and drop-off activity by ride hail companies (Uber, Lyft, and Taxi) took place on the side of Brattle Street with the bike lane, ride hail drivers were observed to service passengers within the striped buffer spaces, but were not observed encroaching into the bike lane.

## Conclusion

The post-construction parking supply within the study area was 156 parking spaces, with an occupancy rate ranging from 76% to 87% during the time periods studied. Standard best practices for parking management suggest that 85% utilization represents an ideal balance of parking supply and demand. For all time periods studied, the streets north of Brattle Street and south of Brattle Street had parking occupancy rates between 55% and 87%; Brattle Street itself, however, had a parking occupancy rate exceeding 95%. Factors contributing to the relatively high parking utilization during the observation time included construction vehicles and snow storage, which constrained the parking supply. The weekday 4PM time was observed to have the lowest occupancy rates, while Saturday at 1PM had the highest occupancy rates.

## Attachments

Attachment A: Parking Occupancy Summarizes for Weekday and Saturday

## Attachment A

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Parking Occupancy Summarizes for Weekday and Saturday

### Comparison of Parking Occupancy Rates Along Brattle Street

Brattle Street Segment	Time Period	Utilization
Mason Street to James Street	Weekday 10AM	100%
	Weekday 1PM	100%
	Saturday 4PM	100%
	Saturday 6PM	100%
James Street to Appian Way	Weekday 10AM	100%
	Weekday 1PM	100%
	Saturday 4PM	100%
	Saturday 6PM	100%
Appian Way to Farwell Place	Weekday 10AM	100%
	Weekday 1PM	100%
	Saturday 4PM	100%
	Saturday 6PM	100%
Farewell Place to Church Street	Weekday 10AM	300%
	Weekday 1PM	100%
	Saturday 4PM	100%
	Saturday 6PM	100%
Ash Street to Hillard Street	Weekday 10AM	100%
	Weekday 1PM	95%
	Saturday 4PM	91%
	Saturday 6PM	95%
Hillard Street to Story Street	Weekday 10AM	71%
	Weekday 1PM	100%
	Saturday 4PM	100%
	Saturday 6PM	100%
Story Street to Eliot Street	Weekday 10AM	100%
	Weekday 1PM	100%
	Saturday 4PM	88%
	Saturday 6PM	100%

*Comparison of Parking Occupancy Rates North of Brattle Street*

Side Street	Time Period	Utilization
James Street	Weekday 10AM	57%
	Weekday 1PM	86%
	Saturday 4PM	71%
	Saturday 6PM	100%
Appian Way	Weekday 10AM	40%
	Weekday 1PM	87%
	Saturday 4PM	40%
	Saturday 6PM	80%
Farwell Place	Weekday 10AM	100%
	Weekday 1PM	93%
	Saturday 4PM	67%
	Saturday 6PM	80%
Church Street	Weekday 10AM	84%
	Weekday 1PM	74%
	Saturday 4PM	79%
	Saturday 6PM	89%

*Comparison of Parking Occupancy Rates South of Brattle Street*

Side Street	Time Period	Utilization
Ash Street	Weekday 10AM	81%
	Weekday 1PM	76%
	Saturday 4PM	71%
	Saturday 6PM	62%
Hillard Street	Weekday 10AM	61%
	Weekday 1PM	89%
	Saturday 4PM	89%
	Saturday 6PM	77%
Story Street	Weekday 10AM	100%
	Weekday 1PM	140%
	Saturday 4PM	80%
	Saturday 6PM	120%