

**MUNICIPAL PARKING STUDY
TOWN OF BELMONT**

MARCH 2002

Prepared for:

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1.0 Executive Summary

The Belmont Municipal Parking Study has been conducted by The BSC Group to evaluate the existing weekday parking situation in Belmont Center, Cushing Square, and Waverly Square and impacts on parking of proposed fire station consolidation project. The following is a summary of major findings:

Belmont Center

- There are approximately 848 parking spaces (618 off-street spaces and 230 on-street spaces) in Belmont Center.
- Belmont Center, generally, exhibit congested parking characteristics during the weekday.
- All off-street parking lots in Belmont Center operate above their practical capacity on a typical weekday.
- An additional 125 parking spaces will be required to meet current weekday-parking deficit in Belmont Center.
- Parking policies implemented in the study areas discourage commuter parking. Where long-term parking permitted, such as in front of the Lions Club on Royal Road, the parking spaces are fully utilized.
- The use of the Claflin Street parking lot for a fire station would increase the parking deficit to approximately 156 parking spaces.
- There has been an increase in off-street parking utilization in Belmont Center since the 1989 parking study, which indicates an increase in parking demand due to the revitalization of businesses on Leonard Street.

Cushing Square

- Utilization of the parking spaces in Cushing Square is below capacity for a typical weekday, but zoning analysis shows a deficit of 126 parking spaces.
- Local residents park their vehicles in the Cushing Square municipal lot overnight.
- Construction of a fire station in the Cushing Square municipal parking lot would increase in the parking deficit to 136 parking spaces.

Waverly Square

- On street parking in Waverly Square peaked during the midday hours below capacity.
- The Waverly Square municipal lot was over capacity during part of the day indicating a strong demand for long-term parking.

The following is a summary of recommendations, which are organized in the order of magnitude of resources required:

Low Capital Improvements:

- Allow unrestricted parking on the northern side of Royal Road from the Lions Club to Clark Street.
- Investigate the feasibility of providing parking spaces for commuter parking by leasing spaces in the parking lots of nearby churches on a monthly basis.
- Extend existing parking lot behind the former Electric Light building with minimum clearing and grading of town owned land.
- Close Claflin Street to through traffic to provide additional of-street parking spaces to existing parking lot.

High Capital Improvements on Public Land:

- Investigate the feasibility of extending the proposed surface parking lot behind the former Electric Light building on Concord Avenue by the train station beyond the pedestrian tunnel between Concord Avenue and Royal Road.
- Investigate the feasibility of constructing surface parking lot on the vacant land between Royal Road and the railroad.
- Explore the decking of Alexander Street parking lot as replacement of parking to be removed as a result of the fire station consolidation proposal
- Explore construction of a multilevel parking structure at Claflin Street lot as a replacement for parking loss relative the fire station consolidation and also to reduce the current parking deficit in Belmont Center.

High Capital Improvements on Private Land:

- Explore acquisition of property adjacent to the Claflin Street parking lot to expand existing surface parking.
- Investigate the acquisition of properties at 13 and 19 Horne Road as well as the adjacent private parking lot and construct a surface parking lot to replace parking loss at Cushing Square if a fire station is constructed there.

Other recommendations

- Stagger construction schedule of proposed Fire Station and Town Hall Complex renovations to reduce impacts on parking supply.
- Provide replacement parking before parking is removed from the system for construction of municipal buildings.
- Parking policies should reflect parking needs and should be applied uniformly in the study area. It is recommended that a uniform 2-hour parking restriction be applied in the study areas, with the

exception of where 15 or 30 minutes restrictions are justified by the nature of the business, or where unrestricted parking is recommended. One-hour time limits on Leonard Street, Trapelo Road and Common Street should also be maintained to promote parking turnover.

- The parking study provides a snapshot of parking activities in the business districts for a typical weekday and only a Saturday parking study should be conducted to further substantiate findings and recommendations.
- Zoning regulations as they relate to parking should be periodically evaluated in order to ensure that the parking ratios are current and accurately project parking demand.

1.1 Introduction

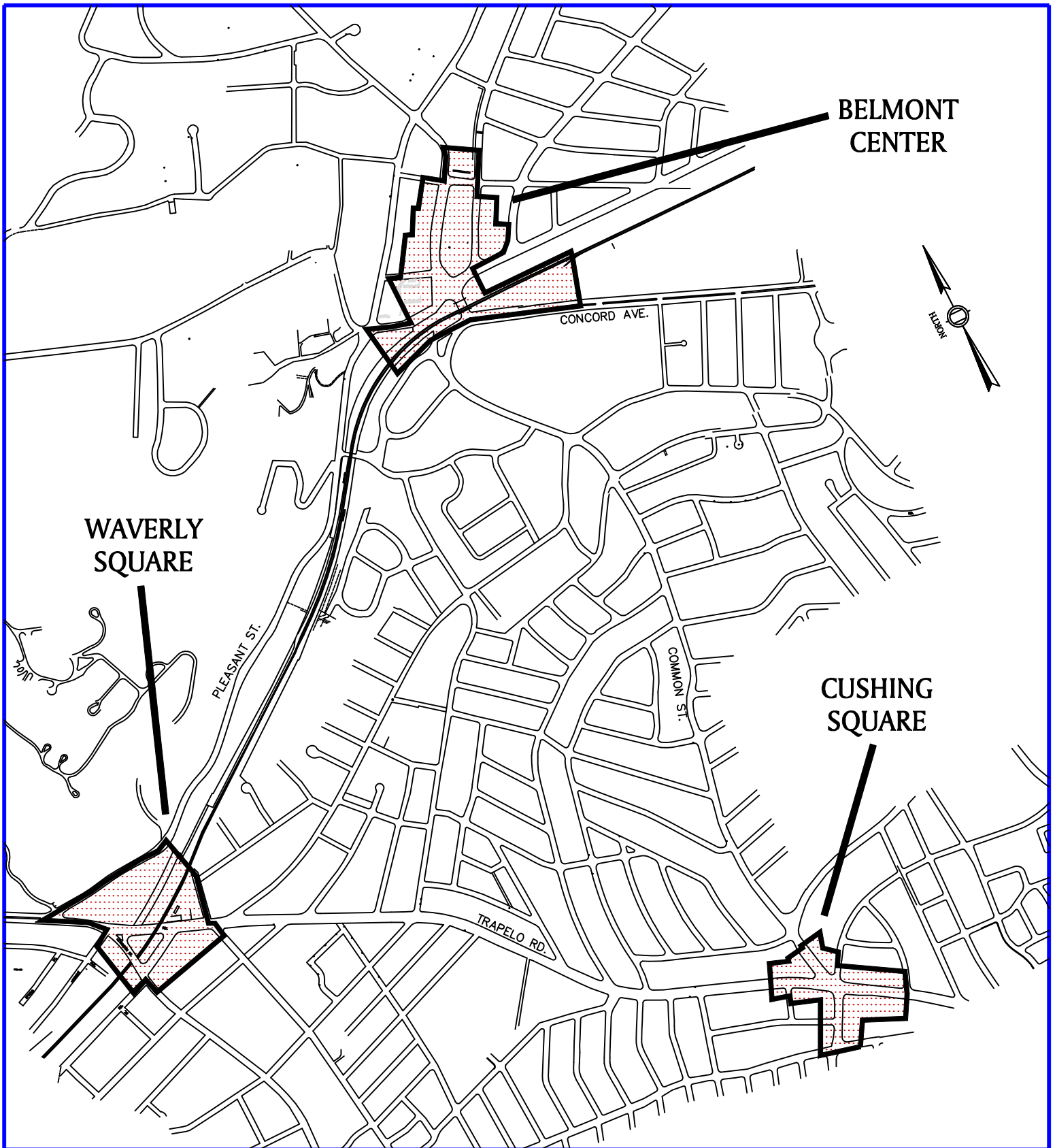
The adequacy and efficient use of parking has always been an issue in commercial business districts because parking is often a key factor in their viability and success. In the past, the Town of Belmont has taken several steps to resolve parking problems in its three major commercial districts. Now, as part of a comprehensive effort by the Town of Belmont to reconstruct and relocate several municipal service buildings, the issue of parking impacts of any proposed changes needs to be addressed.

The Town is currently seeking to consolidate the three existing Fire Stations into two modern facilities and must decide where to site them. These decisions will have an impact on parking supply and demand in two of the three vibrant commercial districts in the town: Belmont Center, Cushing Square, where candidate locations for the fire stations could reduce the number of available parking spaces. The closing of the existing fire station at Waverly Square, the other commercial district is under study. In order to fully understand the existing parking situation and the impacts that proposed changes might have on parking in each of these districts, the Town of Belmont has retained the BSC Group to conduct comprehensive parking studies for each of the business districts. BSC has worked closely with Donham and Sweeney, consultants to the Town on the Fire Consolidation Study, regarding to the impacts that the proposed fire station projects would have on parking in the study area. Shown in Figure 1 is a Locus Map for the study area.

1.2 Study Goals and Objectives

The objectives of the parking study as articulated by the Town of Belmont are as follows:

- Identify and map the location of existing parking supply
- Determine the usage and adequacy of existing parking spaces and identify any areas of inefficiency
- Provide recommendations for commuter and employee parking
- Determine future needs based on the fire station consolidation proposals and identify replacement parking as a result of any potential loss of parking spaces.



2.0 Parking Inventory

A physical inventory of all available parking spaces has been conducted for each of the three study areas: Belmont Center, Cushing Square, and Waverly Square. The purpose of the inventory is to determine the adequacy of existing parking supply in fulfilling the needs of local business customers and employees as well as local residents. In addition, spaces available to Town of Belmont employees have been inventoried in the Belmont Center study area. For this effort, both public and private spaces were included. Data collected during the inventory included the location, type of parking, restrictions on use, and any ancillary uses of parking areas. This information has been used to determine the adequacy of parking supply to meet current and potential future demand in each of the study areas.

Figures 2 through 5 depict the study areas within the business districts, identify the major public and private parking lots, and show the time restrictions associated with on-street parking. It should be noted that the parking inventory represents the number of legal spaces that exist in the study areas. The total number of on street parking spaces is influenced by the location of crosswalks, driveways, parking prohibitions, and intersection clearances. Where on street parking spaces were not marked, the inventory has assumed a parking stall length of 20 feet per space. The inventory is organized into “off-street” and “on-street” categories for each of the three study areas.

2.1 Belmont Center

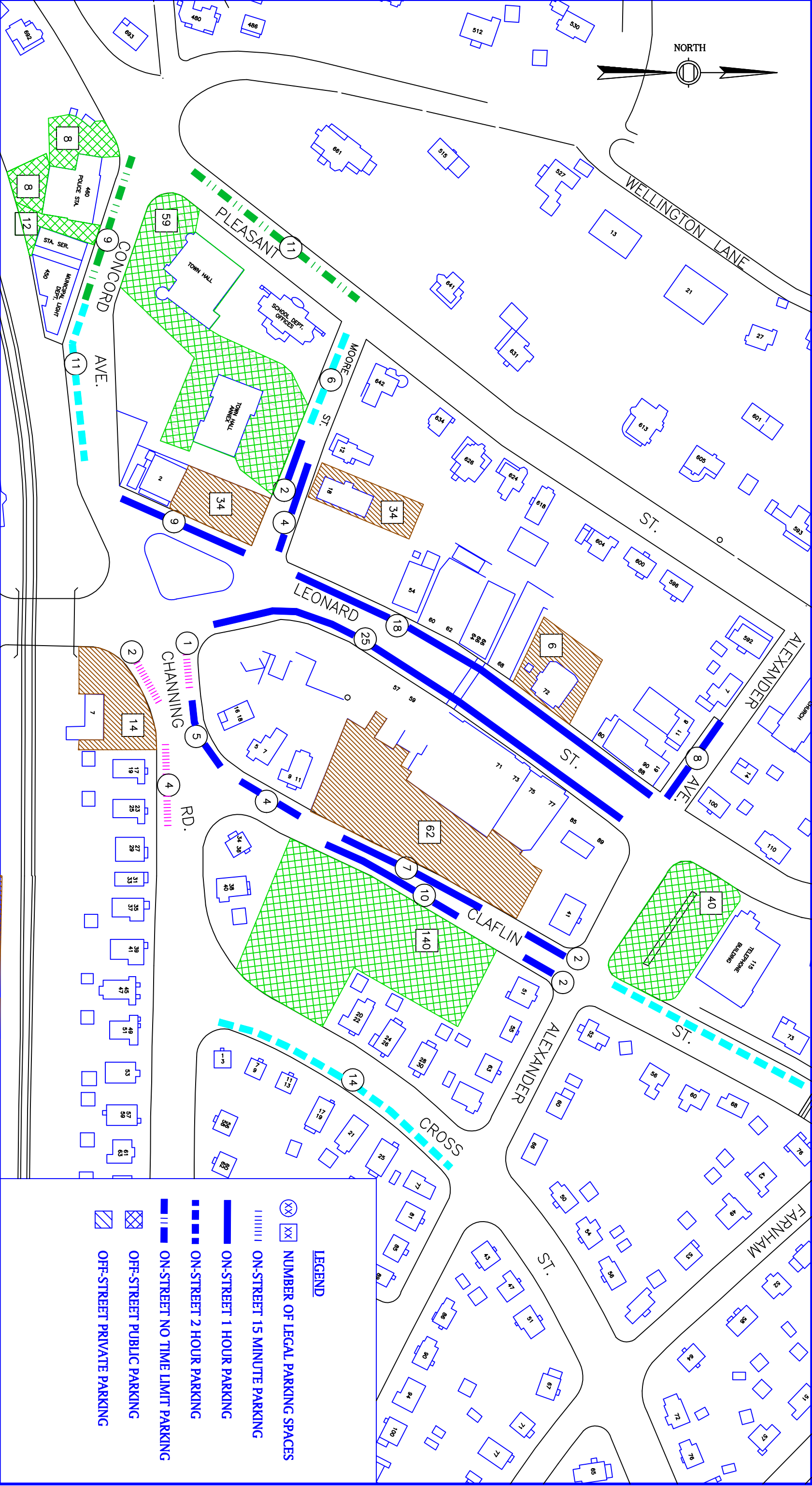
There are total of approximately 848 parking spaces distributed throughout the Center: 618 (73 percent) located off-street and 230 spaces (27 percent) located on-street. The off-street parking is divided into 267 public parking spaces (43 percent) and 351 private parking spaces (57 percent). The public parking spaces at the Town Hall (59 spaces) and the Electric Light building (20 spaces) are restricted to town employees who are issued parking stickers. Police vehicles mostly use parking spaces adjacent to the Police Station. It must also be noted that 211 of the private spaces are located on Concord Avenue, on the south side of the railroad tracks, away from the Center and belong to a number of office buildings and churches.

Table 1 presents a summary of the parking inventory for the Center. The public off-street parking lots consist of 66 spaces with a two-hour time restriction (Alexander – 40 spaces; Claflin – 26 spaces) and 112 metered spaces in the Claflin Street lot. Tickets are available from a centrally located meter and may be purchased at 5 cents for every 15 minutes up to one dollar (\$1.00) for the entire day. Parked vehicles must display the ticket on the dashboard. Permit parking is available for business employees at a cost of \$20 per month. The number of permits sold for the month of January 2002

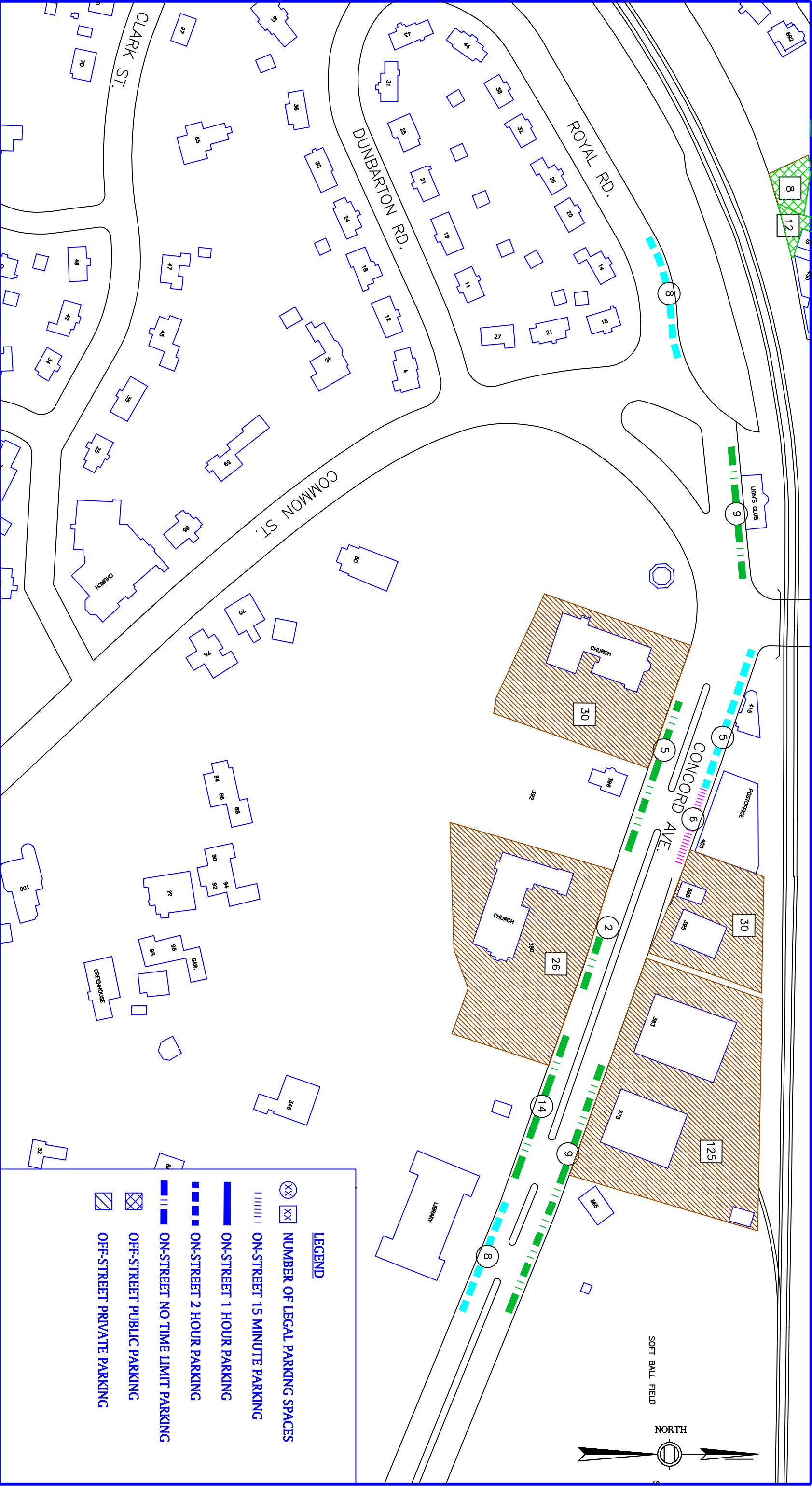
was 64 out of a total number of 70 permits that were for sale through a lottery system operated by the Police Department.

Table 1: Belmont Center Parking Inventory

	Type	Location	Number of Spaces	Comments
Public Parking	Off - Street	Alexander St	40	+8 unmarked spaces
		Claflin St	140	
		Town Hall	59	
		Former Electric Light Bldg/Behind Police Stn.	20	
		Police Station	8	
		Sub - Total	267	
	On - Street	Alexander Street	4	
		Moore Street	12	
		Concord Avenue	69	
		Leonard Street	54	
		Pleasant Street	10	
		Claflin Street	38	
		Channing Street	12	
		Royal Road	17	
Private Parking	Off- Street	Cross Street	14	
		Sub - Total	230	
		Filenes	62	
		2 Leonard Street (Bank)	34	
		72 Leonard Street (Bank)	6	
		115 Leonard Street (Exchange Building)	14	
		18 Moore Street (Medical Bldg)	24	
		375 to 383 Concord Avenue	125	
		380 Concord (Church)	26	
		395 Concord Avenue	30	
		400 Concord Avenue (Church)	30	
		Sub -Total	351	
		Total	848	

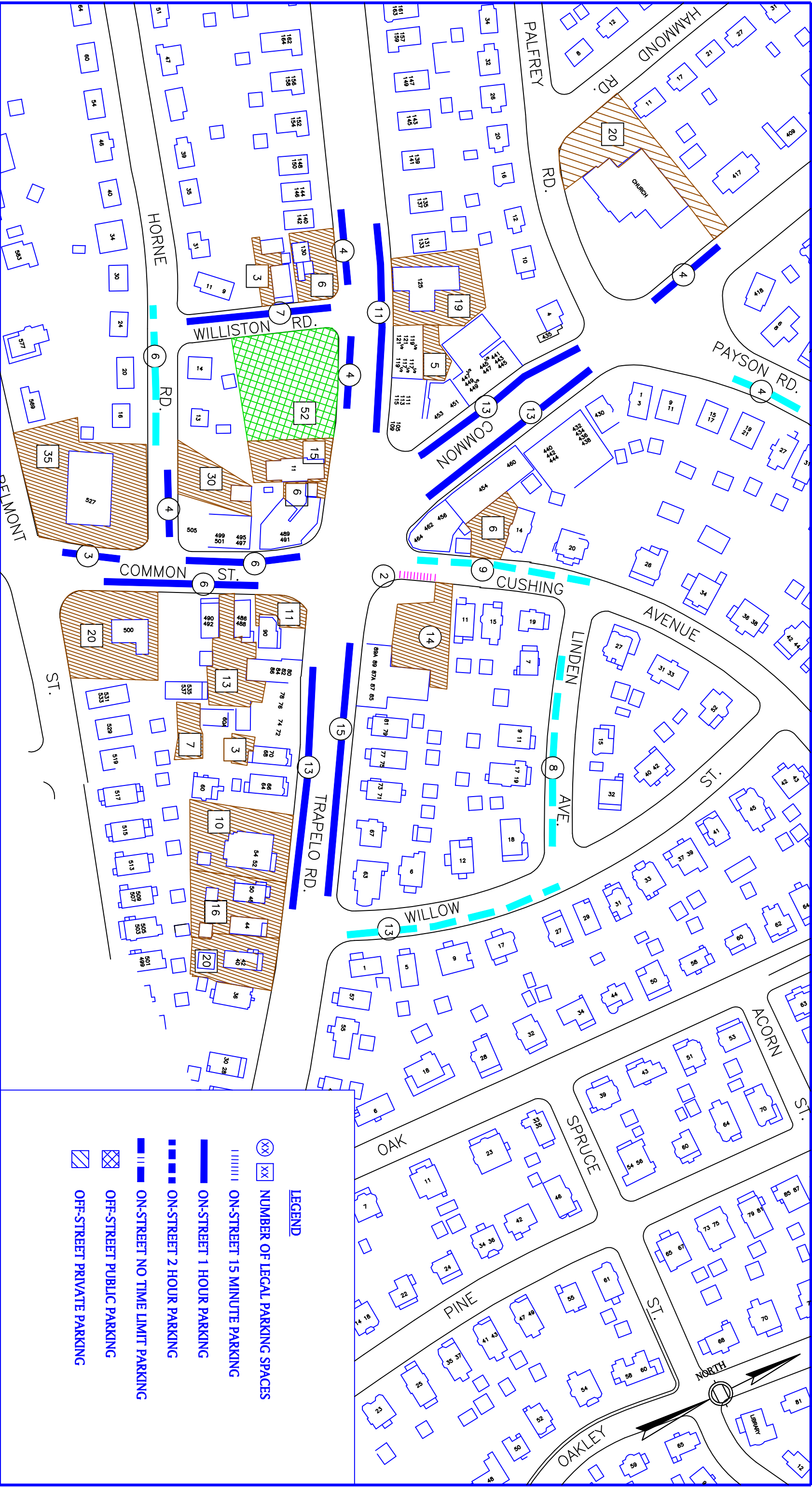


Existing Parking Supply
Belmont Center - North of Railroad
Belmont Parking Study



Existing Parking Supply
Belmont Center - South of Railroad
Belmont Parking Study

Figure 3



Existing Parking Supply
Cushing Square
Belmont Parking Study

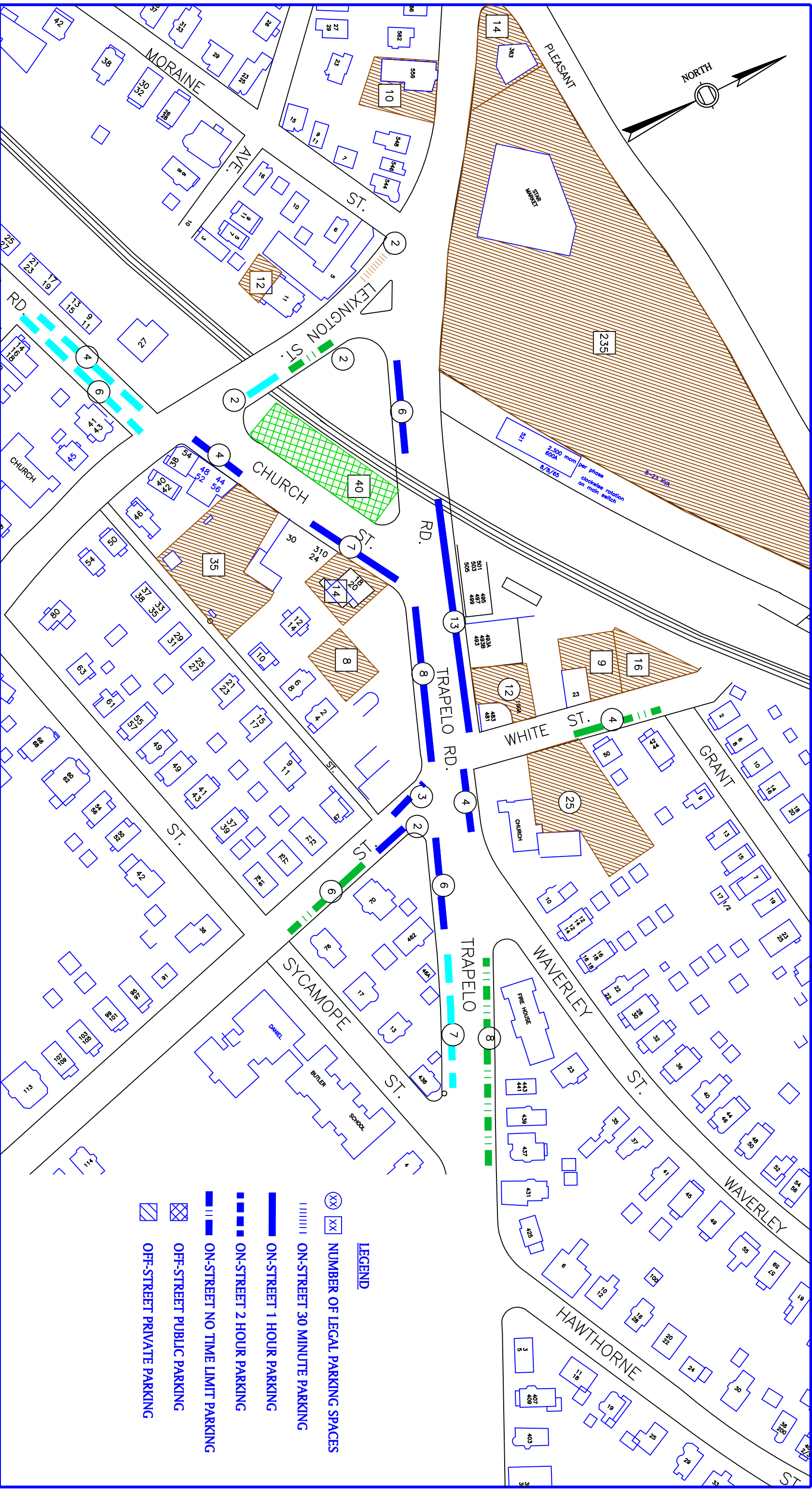


Figure 5

2.2 Cushing Square

A total of 457 parking spaces were surveyed at Cushing Square – 320 (70 percent) located off-street and 137 (30 percent) located on-street. The off-street parking spaces included 52 public parking spaces in the municipal lot, and 268 private off-street parking spaces located in Cushing Square serving the local residents, employees, and business customers. Twenty of the private off-street spaces belonged to a church on Palfrey Road. A breakdown of parking spaces in Cushing Square is summarized in Table 2.

The use of the municipal parking lot is limited to 2 hours and serviced by a centrally located meter where tickets may be purchased at 5 cents for every 15 minutes up to one dollar (\$1.00) for the entire day and displayed on the dashboard of the parked vehicle. Vehicles with monthly parking permits are allowed to park all day. A total of 64 permits were sold for \$20 per month to Cushing Square businesses for their employees during the month of January 2002. According to the Belmont Police Department, the maximum number of monthly permits available is 65.

On street or curbside parking spaces within the study area have time restrictions ranging from 15 minutes to 2 hours. Portions of Trapelo Road, west of the study area have no time restrictions and vehicles can park all day. The inventory also revealed that the application of time restrictions on the residential streets abutting Cushing Square did not follow any specific pattern. While most of the streets had 1-hour time restrictions, others in the immediate neighborhood had a posted 2-hour parking restriction.

On-street parking in Cushing Square is parallel to the curb, and parking on both sides of the street is permitted where the roadway is wide enough, like on Trapelo Road.

Table 2: Parking Inventory for Cushing Square

	Type	Location	Number of Spaces	Comments
Public Parking	Off - Street	Trapelo Road	52	
	On - Street	Common Street	41	
		Trapelo Road	47	
		Willow Street	13	
		Linden Avenue	8	
		Cushing Avenue	11	
		Horne Road	10	
		Williston Road	7	
		Sub-Total	137	
Private Parking	Off- Street	CVS	39	
		#486 to 492 Common Street	13	
		Church (Palfrey Road)	20	
		#40 and 42 (Trapelo Road)	20	
		#52 and 54 (Trapelo Road)	10	
		#85 to 100 (Trapelo Road)	14	
		Private Lot (Horne Road)	30	
		Miscellaneous Private Parking	122	
		Sub - Total	268	
Total Spaces			457	

2.3 Waverly Square

The Waverly Square inventory indicates that there are a total of 500 parking spaces – 410 spaces (82 percent) are located off-street and 90 spaces (18 percent) are on-street. The off-street parking spaces are comprised of 40 public parking spaces in the municipal parking lot (12 percent) located next to the commuter train station, and 298 private off-street parking spaces (88 percent) located in Waverly Square serving the customers and employees of businesses including 235 parking spaces belonging to the Star Market Supermarket located on Trapelo Road.

The 40 public parking spaces are restricted to a 2-hour time limit and include two handicapped spaces in the municipal lot. There is a centrally located parking meter where parking tickets may be purchased at 5 cents for 15 minutes up to one dollar for the entire day. Like the other municipal parking lots in Belmont, persons with monthly parking permits may park all day at the Waverly parking lot. Thirty-one parking permits out of a total of 33 permits were issued to employees of businesses for the month of January 2002.

A total of 90 on-street parking spaces were inventoried in the Waverly Square study area. On-street parking in the immediate vicinity of Waverly Square is restricted to one-hour time limit with a few exceptions. There are two 30-minute parking spaces on Lexington Street and 2 hour parking limit on southern side Trapelo Road east of Waverly Street, and on Thayer Road. There were no time restrictions on some sections of White Street and the north side of Trapelo Road east of Waverly Street.

Table 3: Parking Inventory for Waverly Square

	Type	Location	Number of Spaces	Comments
Public Parking	Off-Street	Waverly Square	40	
	On-Street	Trapelo Road	51	
		Church Street	14	
		Thayer Road	10	
		White Street	4	
		Lexington Street	11	
		Sub-Total	90	
Private Parking	Off-Street	Star Market	235	
		Church	28	
		Bank	35	
		Miscellaneous	72	
		Private Parking		
		Sub - Total	370	
		Total Spaces	500	

3.0 Parking Activity

Parking activity data indicate how the available parking supply is being used. A detailed weekday hourly parking study for each of the three study areas was conducted on Thursday, February 7, 2002 (Cushing Square), and Friday, February 8, 2002 (Waverly Square and Belmont Center). The parking study on Friday coincided with a one-day sale at the Filenes Department store, the largest single commercial entity located in the Town center. This was beneficial because it reflected parking activities that occurred frequently in the Center. Hourly counts were obtained from 7:00 AM to 6:00 PM. The weather on both days was clear and unseasonably warm.

Each study area was subdivided to make the parking analysis sensitive to the localized parking characteristics and needs based on the perceived or real barriers such as high traffic volumes or structures or by their association to the predominant land use in the area.

The parking activity study was undertaken to determine how demand for parking varies throughout the business day, how long vehicles are parked, and how efficiently existing parking spaces were utilized. With the exception of the Filenes parking lot, the study was limited to public parking spaces. The methodology employed involved the recording of the registration plates (first 3 digits or letters) of every vehicle, legally or illegally, parked within the study area every hour throughout the day. The data obtained were then used to determine the following characteristics for each of the study areas:

- The total number of vehicles parked over a given period of time.
- The number of vehicles parked at any point in time (accumulation).
- The maximum number of vehicles parked at one time (peak accumulation).
- The number of vehicles using a particular space over a given period of time (turnover).
- The extent to which parking space is used (utilization).
- The average length of stay of parked vehicles (duration).

Before proceeding any further, a brief glossary of parking nomenclature is provided here to clearly define the terms used in this report.

Parking supply (theoretical capacity) – the total number of legal spaces available in a given area.

Practical capacity – the actual number of parking spaces, which are likely to be occupied in a given area considering improperly parked vehicles, parking turnovers, and unidentified free space. The practical capacity is usually five to fifteen percent less than the theoretical capacity. For the purpose of this

study, the practical capacity is assumed to be 85 percent for on-street parking and 90 percent for off-street parking lots

Parking demand – the number of vehicles requiring parking space during a specified period of time.

Parking generator – a land use that creates a need for parking space as a result of its activity.

Accumulation – the total number of vehicles parked in a given area at a specific point in time.

Parking turnover – the number of vehicles that parked in a given space over a set period of time.

Parking duration – the length of time a vehicle occupies a specific parking space.

Utilization - the percentage of the total available parking spaces used over a given period of time.

Parking accumulation profiles and duration charts have been developed and are included in this report to demonstrate the use of parking space in the different segments of the three study areas based on the criterion described above. The peaking characteristics of parking accumulation profile therefore reflect the nature of land uses in the study area. Parking turnover estimates were also obtained from the hourly count data. However, since customers to businesses such as banks, shops, and offices, generally, tend to park for less than an hour, they could be missed during the hourly survey. The turnover rates are therefore underestimated.

The survey results and parking characteristics are presented in Table 4. The following trends are evident:

- In Belmont Center, parking related mostly to businesses peaked between 11 AM and 1 PM. The midday peak is the aggregation of parking activities of restaurant patrons, business appointments and employee parking.
- The peak use of the Claflin Street lot and the Town Hall lot was in excess of 100 percent of the total capacity indicative of illegal parking. Approximately 60 percent of parkers in these lots stayed for over 4 hours as would be expected of employee parking.
- The streets around the Town Hall had a peak use of 80 percent and an average duration of 4.2 hours, a reflection of on-street parking by some Town employees with parking permits. Parking on Pleasant Street was not as much as on Concord Street and Moore Street and have reduced the overall peaking characteristics shown in the table.

- At 77 percent, Leonard Street had the highest daily use of all the on-street parking spaces studied. Daily use is a measure of the extent to which a particular parking lot or street segment is utilized for parking over the course of day.
- All the off-street parking lots had a daily use of above 65 percent with the Town Hall Lot having the maximum with 78 percent.
- Royal Road posted the highest average parking duration with 7.8 hours confirming the presence of commuter parking.
- The Cushing Square municipal lot peaked at 50 vehicles at 7 AM before the workday actually started.
- Off-street parking lots and on-street segments that peaked 9 AM and 11 AM experienced the highest average duration.
- In general, on-street parking in Belmont Center and Cushing Square peaked above 75 percent. Leonard Street/Alexander Street had the highest on-street peak use with 92 percent.
- There has been a general increase in off-street parking utilization since 1989 parking study by Connery Associates. For instance, parking utilization of the Claflin Street lot was 43 percent in 1989 compared to 76 percent in 2002. Parking utilization in the Alexander Street lot was 64 percent in 1989 compared to 66 percent in 2002.
- The Waverly Square municipal lot had a daily use of 75 percent and the peak hour utilization was 93 percent.

Parking activities in each of the study areas are discussed in more detail in the following sections.

Table 4 Summary of Parking Characteristics

	Legal Supply (Spaces)	Daily Use (%)	Peak Use (Veh)	Peak Use (%)	Time of Peak	Average Duration (Hours)	Average Turnover (Veh/Sp/Hr)	Total Vehicles Parked (11 Hrs)	Parked More Than Four Hours (Vehicles)	Parked More Than Four Hours (%)
Belmont Center Off-Street										
Alexander Avenue Lot	40	66%	40	100%	1:00 PM	2.1	2.0	79	5	6%
Claflin Street Lot	140	76%	148	106%	11:00 AM	5.9	1.3	193	122	63%
Filene's Lot	62	73%	61	98%	12:00 PM	1.6	1.7	105	3	3%
Town Hall Lot	49*	78%	51	104%	9:00 AM	5.6	1.6	74	43	58%
Total Off-Street	291	(*Excludes 7 reserved spaces and 3 spaces occupied by heating trailer)						457	178	39%
Belmont Center On-Street										
Claflin Street / Channing Road	57	48%	46	81%	12:00 PM	1.6	1.5	84	3	4%
Concord Avenue (From Common Street to Library)	55	49%	43	78%	10:00 AM	2.2	1.6	87	13	15%
Leonard Street / Alexander Avenue	64	77%	59	92%	1:00 PM	1.8	1.7	109	5	5%
Concord Avenue at Pleasant Street / Moore Street / Pleasant Street	56	59%	45	80%	11:00 AM	4.2	1.5	82	36	44%
Royal Road	17	58%	13	77%	9:00 AM	7.8	0.9	15	11	73%
Total On-Street	249							397	78	20%
Cushing Square Lot	52	75%	50	96%	7:00 AM	4.0	1.8	95	34	36%
Cushing Square On-Street										
Common Street North / Payson Road	39	55%	31	80%	4:00 PM	2.1	1.6	61	7	12%
Common Street South / Williston Road	33	52%	25	76%	1:00 PM	1.8	1.4	45	3	7%
Cushing Avenue / Linden Avenue / Willow Street	31	51%	24	77%	9:00 AM	2.9	1.6	50	10	20%
Trapelo Road	52	64%	43	83%	9:00 AM	4.0	1.5	80	5	6%
Total On-Street	155							236	25	11%
Waverly Square Off-Street Lot	40	71%	37	93%	3:00 PM	4.0	1.7	66	23	35%
Waverly Square On-Street	106	44%	60	57%	10:00 AM	2.4	1.3	141	22	16%

3.1 Belmont Center

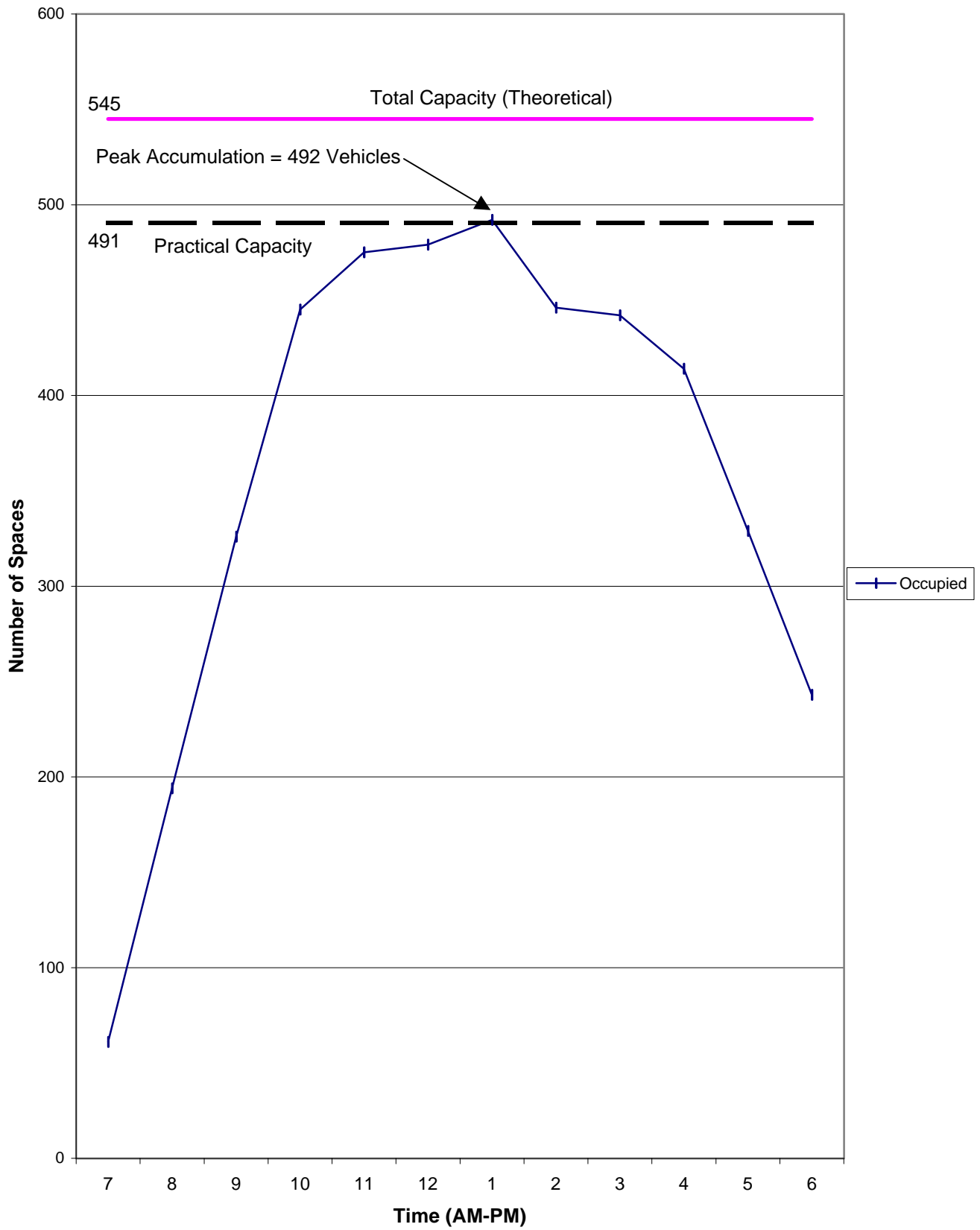
Parking activities in Belmont Center, generally, exhibited very congested characteristics as would be expected for a town center with an active business district and municipal service buildings. The study also showed that trips into the center are highly dependent on the automobile. This may be due to the fact that there is little multi-unit residential development in the vicinity of the Center compared to the other business districts studied for this report. Figures 6 and 7 respectively present a summary of on street parking accumulation profiles and duration for the Belmont Center study area. Parking accumulation rose sharply between 7 and 10 AM from 61 (11 percent) to 445 (80 percent) parked vehicles. Parking activity peaked the Center with 492-parked vehicles at 1:00 PM above the practical capacity of 491 parking spaces. Parking duration data shows that overall, 62 percent of vehicles were parked for two hours or less. Thirty-two percent were parked for four hours or more.

The parking characteristics of several of the on street segments peaked very close to the practical capacity of those segments. (Refer to Figures BC-1 to BC-18 in the Appendix for more detailed information). On Leonard Street, the practical capacity of 54 spaces was exceeded several times between 11 AM and 3 PM with a peak accumulation of 60 vehicles at 3 PM. Claflin Street and Channing Street peaked at 96 percent of the practical capacity at 1PM, and the streets around the Town Hall Complex exceeded their practical capacity also at 1 PM. This indicates that during these time periods parking spaces are not immediately available causing potential customers to circulate around the area searching for a free parking space or leaving the area frustrated. The average parking duration on Leonard Street, Claflin Street and Channing Street was 1.8 hours and reflects the relation between short-term parkers and nature of business activities the Center.

Parking characteristics for the streets around the Town Hall Complex reflects the fact that these streets have become an extension of long-term employee parking with similar characteristics to the Town Hall Complex. Employee long-term parking on Moore Street is permitted by the Town's parking regulations.

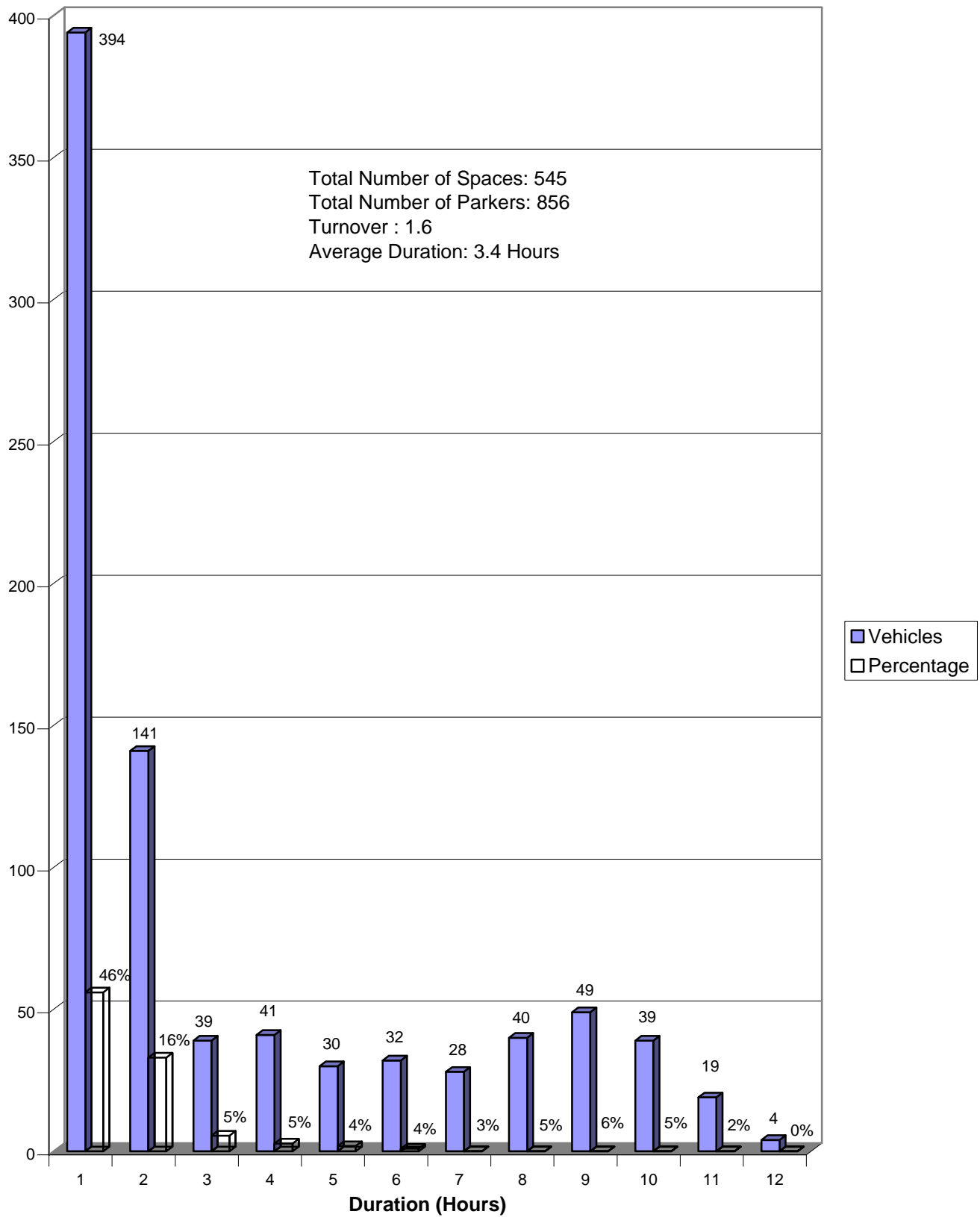
Parking on Royal Road displayed the characteristics of commuter parkers. The segment included the area in front of the Lion's Club used for commuter parking. The short-term parkers who parked for less than two hours temper the average duration of 7.8 hours given the fact that 75 percent of the vehicles were parked on-street for 8 hours or more.

Concord Avenue south of the railroad operated below capacity for the entire study period. This segment is removed from the center due to the longer walking distance to the town center and also the presence of the railroad



Parking Accumulation
Belmont Center

Figure 6



Parking Duration
Belmont Center

Figure 7

acting as a structural barrier. Persons who parked here were mostly patrons of the library and the post office. The average parking duration was 2.2 hours, which is longer than the on-street parking on the north side of the railroad.

By comparison, the parking characteristics of off-street parking lots showed longer duration, experienced very little turnover, and were very close to the theoretical capacity. A case in point is the Claflin Street lot, which combines long-term and short-term parking. The parking accumulation profile for the Claflin Street lot indicates that the practical capacity was exceeded between 9 AM and 3 PM. The actual parking supply in this lot is 140 spaces but the peak accumulation was 148 vehicles, which meant that every single space was taken including the fire lane and other unmarked spaces that the police appear to have permitted to be used due to the great demand for long-term off-street parking.

The use of the Claflin Street lot by commuters has been the subject of much discussion and study by town officials. The present policy whereby the ticket dispenser is only available after 8:30 AM is designed to limit the lot's use by commuters since the first train stops at Belmont Center at 8:30 AM. A review of the accumulation profile indicates that by 8:00 AM, at least 25 percent of available spaces have been filled. This should represent employees in the downtown area who either have parking permits or those who could easily return to their vehicles and purchase the all day ticket. The data also revealed that 69 percent of parkers stayed 4 hours or more during the study period, which is indicative of employee or commuter parking.

By comparison, the Alexander Street lot, which has a 2-hour time limit, had 75 percent of the parkers staying 2 hours or less. The practical capacity was exceeded from 11 AM to 4 PM with a peak accumulation of 40 vehicles equaling the theoretical capacity occurring at 1 PM.

The Town Hall Complex lot is restricted to town employees, and a few parking spaces are reserved for persons on town business. Reserved parking spaces (7 spaces) for town officials and the school department are not included in this analysis, nor are the three parking spaces temporarily occupied by a heating unit trailer. As a result, out of a total legal maximum of 59 parking spaces, 49 parking spaces were included in the survey. It was also observed that the three handicapped spaces were generally unoccupied for the entire study period and are not included in the parking analysis. The parking accumulation profile shows that the parking lot's practical capacity was exceeded from 8 AM to 3 PM, despite the fact that the three handicapped spaces were generally vacant. In fact, only one handicapped space was used for one hour during the entire study period. The peak accumulation was 51 vehicles at 9 AM and 10 AM. This peak in excess of the total capacity is the reflection of illegal parking that occurred in the fire lane along the Town Hall In all, illegal parking occurred at seven spots including

two in front of the Town Hall and five in the fire lane for most of the day. Parking duration for over 4 hours accounted for 69 percent of all parkers, which is very characteristic of employee parking. The average duration was 5.6 hours.

Another off-street parking lot exhibiting high occupancy is the private parking lot behind Filenes on Claflin Street. The practical capacity was exceeded from 10 AM to 1 PM and then at 4 PM. The peak accumulation of 61 vehicles was achieved at midday. The average duration was 1.6 hours, and nearly 90 percent of vehicles were parked for 2 hours or less.

With all the parking lots and the on-street spaces operating at or over capacity in Belmont Center, during peak periods, it is apparent that parking was not readily available causing customers to circulate the streets in the center thereby exacerbating traffic congestion or leave altogether without fulfilling the purpose of the trip.

3.2 Cushing Square

In general, Cushing Square operated below the practical capacity for the duration of the study with an overall peak accumulation of 142 vehicles out of 207 parking spaces. The average parking duration was 3.6 hours with 66 percent of vehicles parked for 2 hours or less. (See Figures 8 and 9).

The peak occupancy of the municipal parking lot occurred at 7 AM when 50 vehicles occupied the parking lot. This is explained by the fact that overnight parking is free and some residents in nearby apartments are parking their vehicles in the lot overnight. The midday peak occurred at noon with 43-parked vehicles. (See Figures CS-1 to CS-10 in the Appendix)

On-street parking accumulation varied for the different roadways surveyed. Combining all the on-street parking, two distinct peaks were observed: one at 9 AM and one at 2 PM. It is important to note that all on-street parking peaked below the practical capacity.

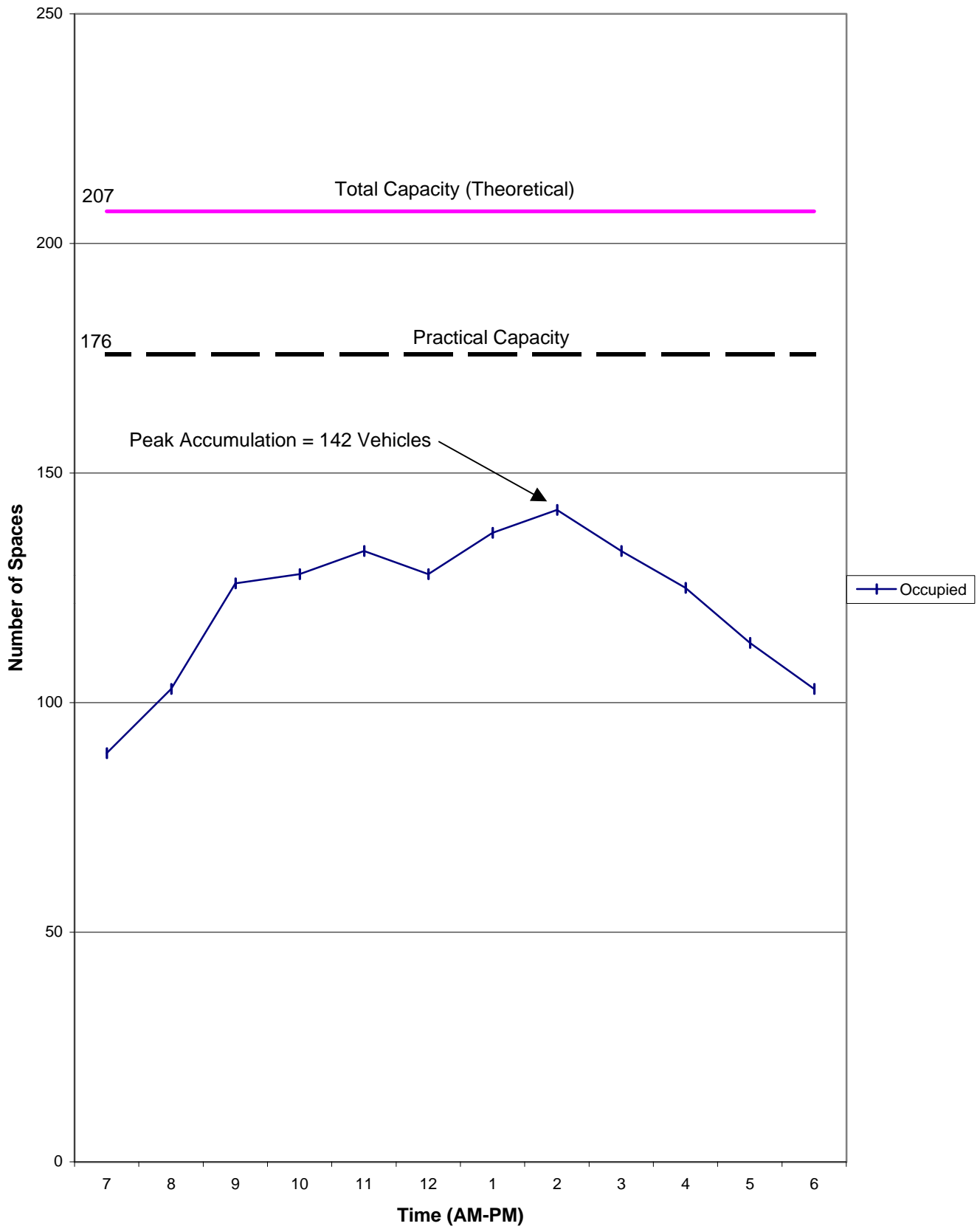
The average duration of vehicles parked in on-street spaces was 4 hours. It must be noted that short-term parkers, those who parked up to two hours, constituted the majority of parkers (65 percent) confirming the business parking characteristics of Cushing Square.

3.3 Waverly Square

The combined on-street and off-street parking accumulation in Waverly Square peaked below capacity at 95 parked vehicles out of a total of 207 parking spaces at 10 AM. The average parking duration was 2.9 hours (see Figures 10 and 11). Separately, the peaking characteristics of off-street parking and on-street parking in Waverly Square were very different (see

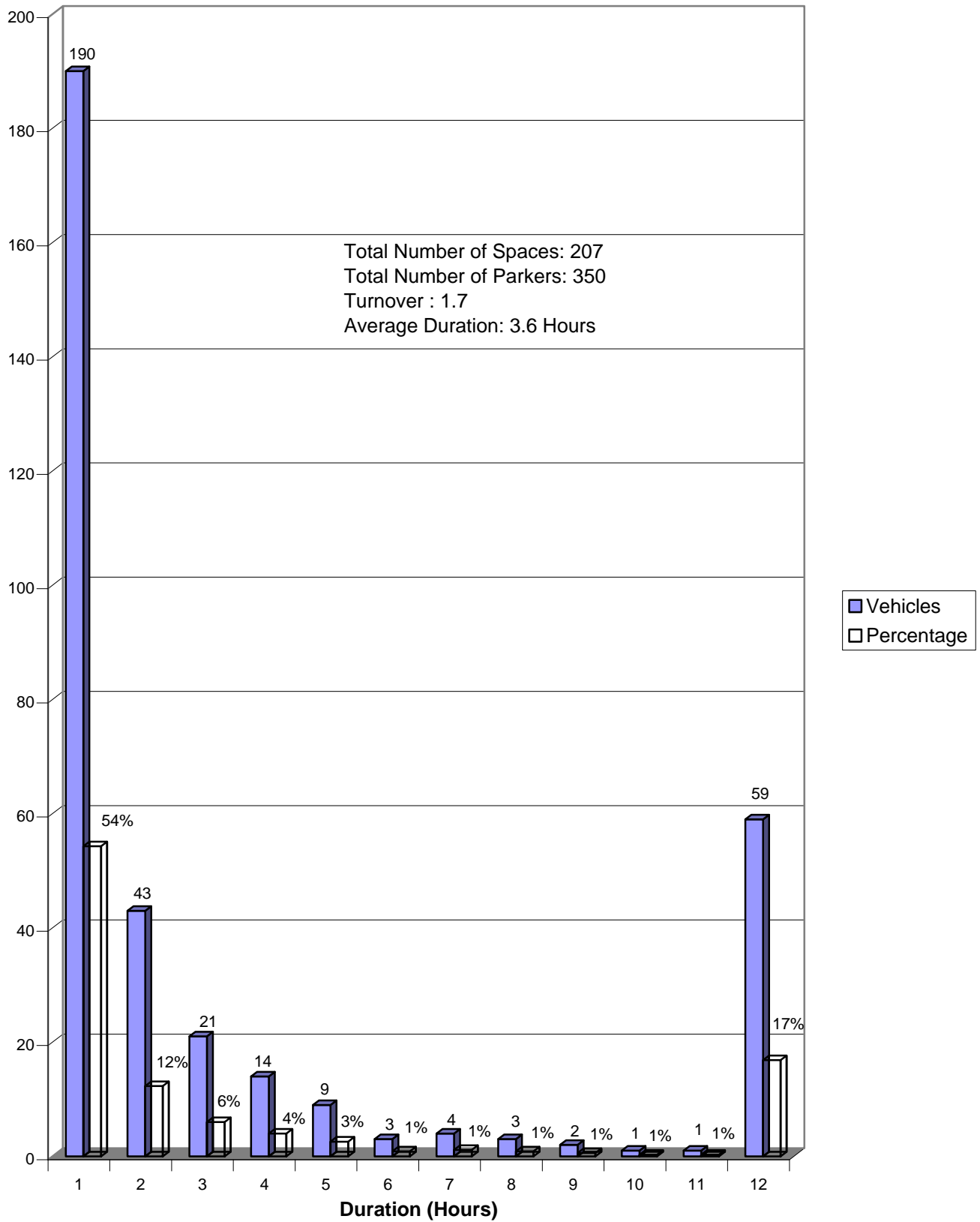
Figures WS-1 to WS-4 in the Appendix). The parking accumulation profile for the municipal parking lot at Waverly Square reveals that the municipal parking lot peaked above its practical capacity with a peak accumulation of 37 vehicles (93 percent) achieved at 3 PM. From a practical perspective, the Waverly Square lot was over capacity given that two of the 40 spaces are designated for handicapped parkers. As a result, potential customers needed to find parking elsewhere, typically on a nearby street, or leave the Square altogether. The Waverly Square parking lot survey indicated that 66 vehicles parked in 40 spaces for the study period. Short-term parkers (up to 2 hours) represented about 55 percent of vehicles observed.

By comparison, the on-street parking data shows that a little over 55 percent of on street parking spaces were utilized at any one time. Parking accumulation ranged between 50 and 60 vehicles from 9 AM to 5 PM. The peak parking accumulation occurred at 10 AM with 60 vehicles. Some violations of the 1-hour parking limit were observed during the study period. A case in point was one vehicle that was parked for four hours on Church Street. Overall, however, more than 70 percent of the vehicles parked on street were parked for 2 hours or less in Waverly Square.



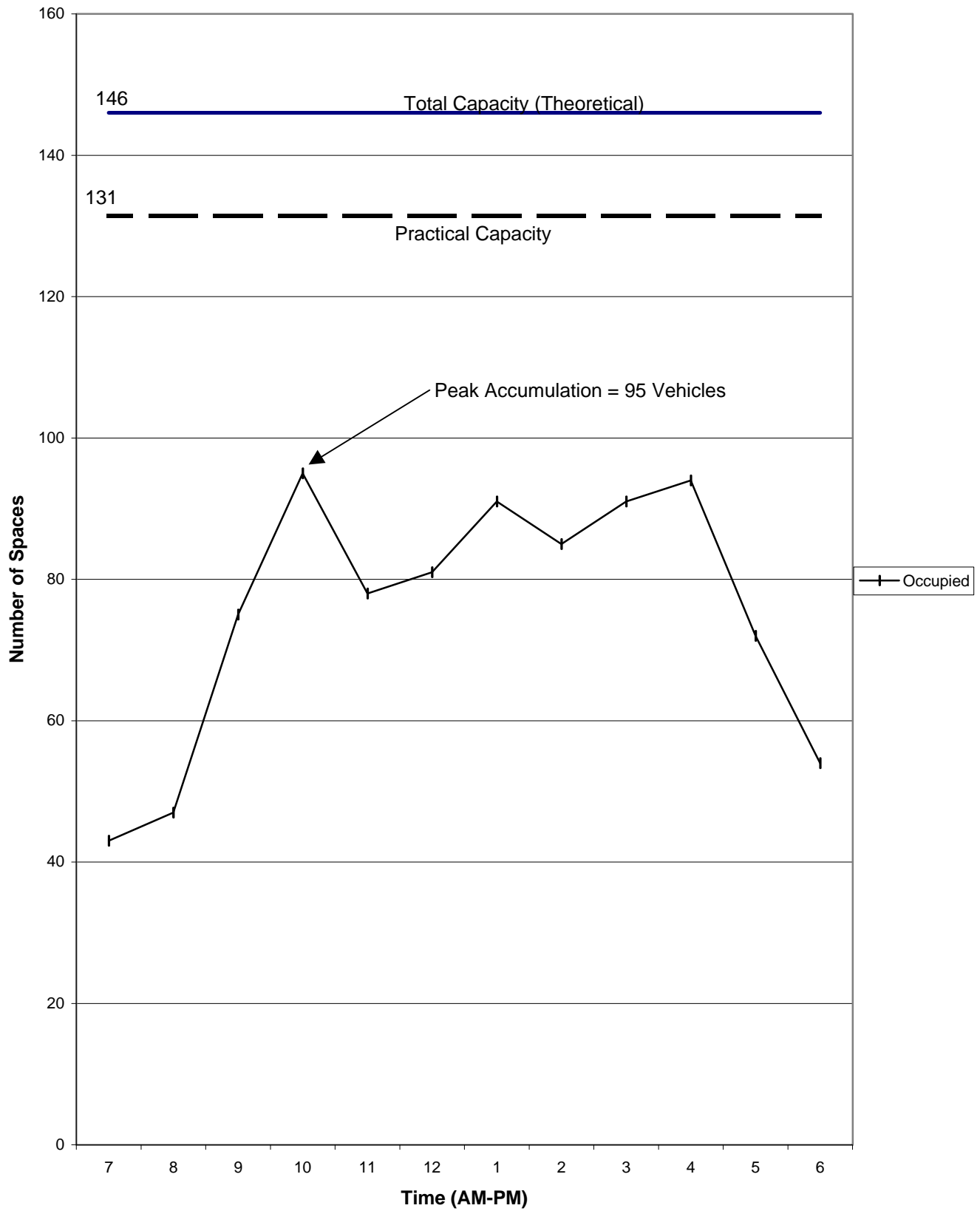
Parking Accumulation
Cushing Square

Figure 8



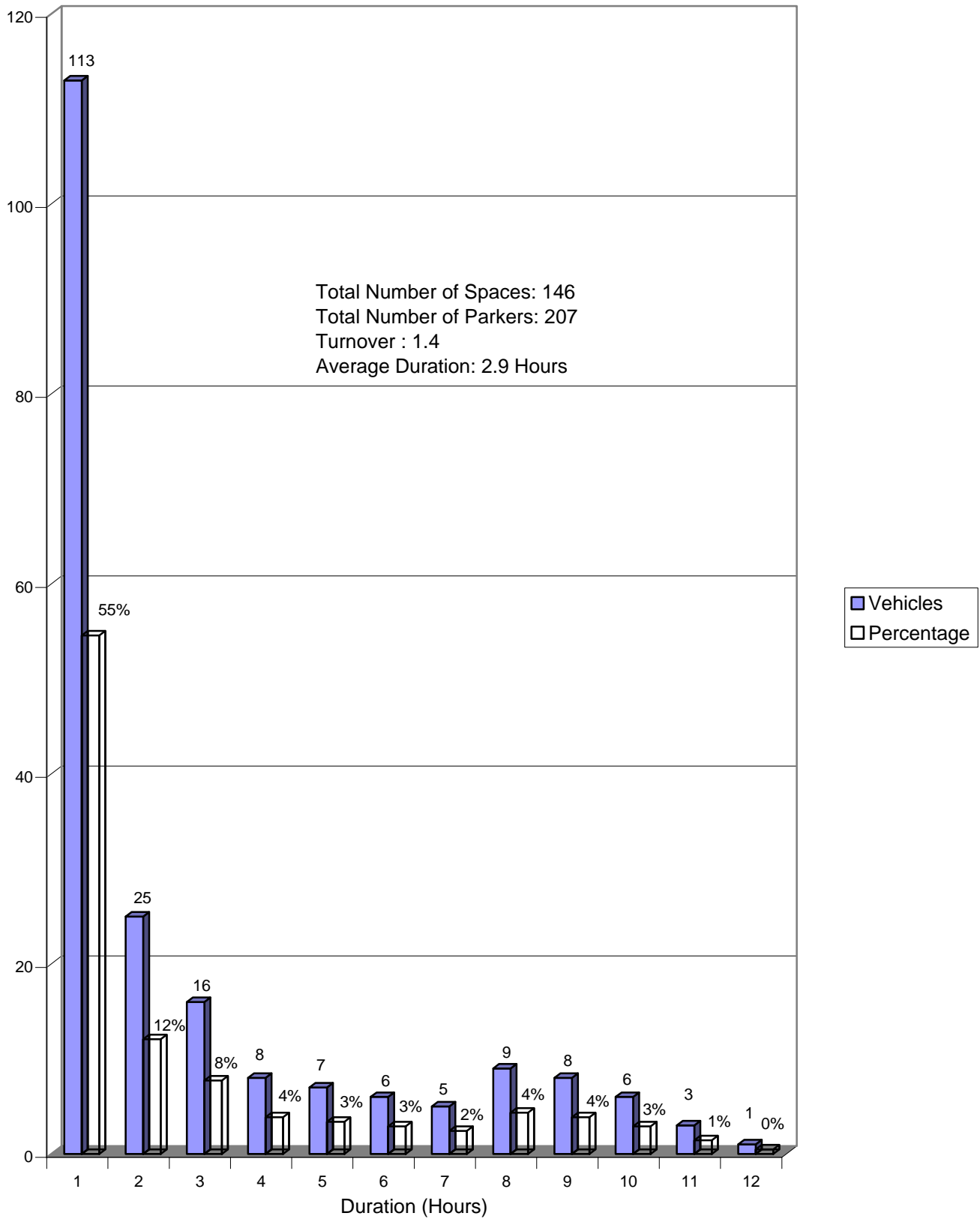
Parking Duration
Cushing Square

Figure 9



Parking Accumulation
Waverly Square

Figure 10



Parking Duration
Waverly Square

Figure 11

4.0 Parking Supply and Demand Analysis

The parking demand analysis was done in two parts. First, the demand based on existing land use and parking supply was analyzed. The parking supply was based on inventory information obtained through field surveys. Parking demand estimates were based on the peak demand criteria as established by the town's current zoning regulations. Excluded from this analysis are the supply and demand for churches and institutions such as the post office and the library. Residential uses, with a few exceptions, are not included in the demand analysis. This is due to the fact that residential parking needs are usually met on site, either on a driveway or in a garage. The exceptions to this assumption include residential units with more than four units. Also the single-family unit at 12 Moore Street in Belmont Center has no driveway and as such it is included in the analysis. Parking demand for commuter parking is also discussed as part of the analysis.

The second part, which is based on future projections, is closely tied to the proposed Fire Station consolidation studies being undertaken on behalf of the town, and the proposed reconstruction of the Town Hall Complex, which has major implications for future parking supply and demand in the study areas. The town's architectural consultants, Donham and Sweeney provided information on the parking supply and demand for the proposed fire stations.

4.1 Existing Parking Demand

Parking needs were estimated on the basis of minimum recommended parking requirements as outlined in Section 5, Subsection 5.1 of the Town of Belmont Zoning By-law for each individual business within the study area. Each land use category generates unique parking needs, which may be impacted by the location and mix of other establishments, availability of public transportation, and the proximity of residential areas to the business districts. In addition, the demand for parking associated with a specific parcel is based on the vibrancy of the land use occupying it.

The methodology used to estimate the demand for parking addresses the needs for each business independently of others; it does not consider the variations in parking demand by time of day or day of week, nor does it account for any interaction between businesses in the same locality such as combining a number of trip purposes to more than one business at the same time. It also is worth noting that the collective needs of businesses within a locality is not necessarily the sum of their individual peak demands.

Parking demand estimates could also be based on measured utilization of the existing parking supply. However, this might underestimate the real demand since some potential parkers may be turned away from areas where practical

capacity is exceeded and drivers might have to circulate several blocks to find a vacant parking space. This unrealized demand is not always measurable directly and as such difficult to account for. For the purpose of this study, therefore, the requirements stipulated by the current zoning by law have been used.

An extensive inventory detailing land use type, building size (gross floor area), number of seats of restaurants, provided by the Town Planning Department Staff has been used to estimate the parking demand. As discussed above, it is assumed that businesses do not share parking spaces and that there is a 100 percent automobile use. The estimated parking demand is compared to existing parking supply by study area to determine if a surplus or deficit exists during the peak periods of business activity. The comparisons are presented in Tables 5 through 7.

Table 5: Parking Demand Analysis – Belmont Center

Zone	Location	Land Use	Area	Required Spaces	Existing Supply	Deficit
1	450 (Light) Concord Ave.	Office	8,766		12	+12
	455 (T.H. Complex) T.H. Annex, School Dept.	Office	25,854	110 ¹	59	-51
	460 (Police) Concord Ave.	Office	8,266	24	16	-8
2	7 Channing Rd.	Retail	2,059	6	0	-6
	16-18 Channing Rd.	Office	1,320	4	0	-4
	16-18 Channing Rd.	Dwelling Unit	1,320	2	2	0
	1 Common St.	Lion's Club	2,712	7	0	-7
	41 Alexander Ave.	MWRA Bldg.	1,584	5	0	-5
	12 Moore St.	Single-Family ²	2,304	2	0	-2
	18 Moore St.	Medical Office	7,674	22	24	+2
	2 Leonard St.	Bank	10,578	30	34	+4
	15-27 Leonard St.	Restaurant	30 seats	15	0	-15
		Retail	3,144	9	0	-9
	31-37 Leonard St.	Retail	5,024	14	0	-14
	30-42 Leonard St.	Restaurant	64 seats	32	0	-32
		Retail	4054	12	0	-12
	39-43 Leonard St.	Retail	3,500	10	0	-10
	41 Leonard St.	Restaurant	50 seats	25	0	-25
	46-48 Leonard St.	Retail	983	3	0	-3
	47 Leonard	Restaurant	50 seats	25	0	-25
	49-63 Leonard St.	Retail	6,042	17	0	-17
	54 Leonard St.	Fire Station ³	4,305	-	1	+1
	60-62 Leonard St.	Retail	6,588	19	0	-19
	61 Leonard	Restaurant	65 seats	33	0	-33
	66 Leonard St.	Office/Retail	9,142	26	0	-26
	65-89 Leonard St.	Restaurant	120 seats	60	0	-60
		Retail	48,470	140	62	-78
	68 Leonard St.	Retail/Office	18,012	52	0	-52
	72 Leonard St.	Bank	2,794	8	6	-2
	80 Leonard St.	Office	794	2	0	-2

Table 5: Parking Demand Analysis – Belmont Center (Contd)

Zone	Location	Land Use	Area	Required Spaces	Existing Supply	Deficit
	88-90 Leonard St.	Retail	8,581	25	0	-25
	115 Leonard St.	Exchange Bldg	8,264	23	14	-9
	Clafin Street Lot			-	140	+140
	Alexander Street Lot			-	40	+40
3	375 Concord Ave.	Office	17,000	49		
	385 Concord Ave.	Office	21,904	63	125	+13
	395 Concord Ave.	Office	11,952	34	30	-4
	405 Concord Ave.	Post Office	9,072	*	*	*
	415 Concord Ave.	Office	2,827	8	0	-8
Off-Street Spaces				916	565	-351

¹Parking for Post Office not included. ¹Based on Town employee population of 125 at 0.8 spaces per employee and 10 spaces for visitor parking ² No driveway present.

³ Fire Station employees included in Town employees.

Table 5B: Demand and Supply Summary – Belmont Center

Zone	Supply			Estimated Demand	Deficit
	Off-Street	On-Street	Total		
1	79	-	87	134	-47
2	323	160	483	628	-145
3	155	66	221	154*	+67
Total	565	226	791	916	-125

* Estimate does not parking demand for Post Office customers and Library patrons who park on-street.

Table 6: Parking Demand Analysis – Cushing Square

Location	Land Use	Area	Required Spaces	Existing Supply	Deficit
Cushing Square	Municipal Lot	-	-	52	+52
48-50 Trapelo Rd.	Office	2,544	8	8	0
52-54 Trapelo Rd.	Funeral Parlor	3,640	10*	10	0
60 Trapelo Rd.	Single-Family	1,852	2	7	+5
63 Trapelo Rd.	Office	2,113	6	0	-6
64-66 Trapelo Rd.	Office	1,264	4	0	-4
64-66 Trapelo Rd.	Dwelling Unit	1,264	2	0	-2
67 Trapelo Rd.	Office	1,967	6	11	+5
68-70 Trapelo Rd.	Medical Office	2,204	7	3	-4
71-73 Trapelo Rd.	Office	1,316	4	5	+1
71-73 Trapelo Rd.	Dwelling Unit	1,316	2	2	0
72-86 Trapelo Rd.	Retail	7,257	21	0	-21
72-86 Trapelo Rd.	Office	7,257	21	7	-14
75-77 Trapelo Rd.	Office	2,392	7	15	+8
79-81 Trapelo Rd.	Office	1,196	4	4	0
79-81 Trapelo Rd.	Dwelling Unit	1,196	2	2	0
85-91 Trapelo Rd.	Retail	3,295	9	0	-9
	Restaurant	20 seats	10	0	-10
90 Trapelo Rd.	Gas Station	2 Bays	9	11	+2
93-97 Trapelo Rd.	Retail	3,484	10	4	-6
	Restaurant	100	50	0	-50
102-104 Trapelo Rd.	Restaurant/Retail	3,988	16	10	-6
105-115 Trapelo Rd.	Restaurant	28 seats	14	0	-14
	Retail	4576	13	0	-13
112 Trapelo Rd.	Restaurant	30 seats	15	15	0
117-121 Trapelo Rd.	Restaurant	49 seats	24	0	-24
	Retail	1,693	5	5	0
125 Trapelo Rd.	41 units ¹	29,274	62	19	-43
130 Trapelo Rd.	Office	1,227	4	4	0
131-133 Trapelo Rd.	Veterinary	1,212	4	2	-2
131-133 Trapelo Rd.	Dwelling Unit	1,212	2	2	0
432-444 Common St.	Retail	8,094	23	0	-23
439 Common St.	Retail	918	3	0	-3
441-444 Common St.	Retail	4,113	12	0	-12
448 Common St.	Office	13,500	39	0	-39
451-453 Common St.	Retail	9,152	26	0	-26
454-464 Common St.	Retail	2,903	8	0	-8
	Restaurant	30 seats	15	0	-15
486-488 Common St.	Retail	1,417	4	4	0
486-488 Common St.	Dwelling Unit	1,417	2	2	0
495-501 Common St.	Retail	3,389	10	0	-10
493 Common St.	Restaurant	20 seats	10	0	-10
494-500 Common St.	Gas Station	4 Bays	15	20	+ 5
505 Common St.	Retail	4,874	14	0	-14
527 Common St.	Retail	6,120	18	39	+19
14 Cushing Ave.	Two-Family	3,148	4	6	+2
6 Willow St.	Two-Family	2,930	4	2	-2
3-5 Williston St.	Retail/Office	1,726	5	3	-2
3-5 Williston St.	Dwelling Unit	863	2	0	-2

Horne Road	Private Lot	-	-	30	+30
Total Off-Street Spaces			567	304	-263

¹ Assumes 20 2-bedrooms and 21 1-bedroom units.

Table 6B: Demand and Supply Summary – Cushing Square

Off-Street	Supply		Estimated Demand	Deficit
	On-Street	Total		
304	137	441	567	-126

Table 7: Parking Demand Analysis – Waverly Square

Location	Land Use	Area	Required Spaces	Existing Supply	Deficit
Waverly Square	Municipal Lot	-	-	40	+40
472-486 Trapelo Rd.	Retail	7785	22	0	-22
481-491 Trapelo Rd.	Bank	2843	8	12	+4
488-494 Trapelo Rd.	Retail	5962	17	0	-17
493 Trapelo Rd.	Retail	4900	14	0	-14
495-505 Trapelo Rd.	Retail	4032	12	0	-12
521 Trapelo Rd.	Car Wash	6480	19	19	0
535 Trapelo Rd.	Retail	42405	121	235	+114
563 Trapelo Rd.	Gas Station	2012	6	14	+8
23 White St.	Auto Repair	2310	7	16	+9
43 White St.	Service	3857	11	9	-2
43 White St.	Dwelling Unit	7716	2	0	-2
63-65A White St.	Restaurant	50 seats	25	0	-25
	Retail	1667	5	0	-5
5,7,9 Lexington St.	Hardware Store	11181	32	0	-32
11 Lexington St.	4-8 Units	4300	16	12	-4
29 Lexington St.	Gas Station	3 Bays	12	6	-6
12-20 Church St.	Office	4075	12	12	0
24(22-26) Church St.	Retail	2348	7	0	-7
30 Church St.	Bank	23313	67	35	-32
52 Church St.	Restaurant	28 seats	14	0	-14
44-54 Church St.	Office	4965	14	0	-14
Total Off-Street Spaces			443	410	-33

Table 7B: Demand and Supply Summary – Waverly Square

Off-Street	Supply		Estimated Demand	Deficit
	On-Street	Total		
410 ¹	90	500	443	+57
235 ²	90	325	322	+3

¹ With Star Market Parking, ² Without Star Market

To reflect the localized nature of parking demand on account of the location of parking generators and walking distances, Belmont Center has been divided into three supply and demand zones. Zone 1 comprises of the Town Hall Complex; Zone 2 represents the core of the business district including all the on street areas north of the railroad; and Zone 3 is the area south of the railroad. Cushing Square and Waverly Square are not divided up because they are smaller areas.

The results of the analysis indicate that there is a net deficit of 125 spaces in Belmont Center. As shown in Table 5B, the Town Office Complex has a deficit of 47 spaces, the business district north of the railroad has a deficit of 145 spaces. Without considering the demand for the Post Office and the on-street parking by Library patrons, the area south of the railroad has a surplus of 67 vehicles. Cushing Square has a deficit of 126 parking spaces, and Waverley Square, without counting the Star Market parking lot, has a surplus of 3 parking spaces. This analysis as discussed above reflects the upper range of parking demand based on the sum of the demand of each individual land use.

Compared to the observed parking utilization, demand estimates based on zoning regulations appeared to have over estimated parking needs for Cushing Square. A number of factors including the vibrancy of businesses and land uses such as restaurants with different peaking characteristics may have contributed to these differences. Another major factor could be the fact that Cushing Square is within walking distance from several multi-unit residential buildings. In any case it is imperative that zoning regulations accurately project parking demand, which in turn reflects the reality on the ground. This requires the periodic evaluation of zoning regulations as pertain to parking requirements. Data on parking utilization should also be collected for comparison.

It must be noted that these figures do not take into consideration commuter parking needs, which are present because of the location of the Commuter Rail Stations in Belmont Center and Waverly Square and MBTA bus stops in all the three study areas.

4.2 Commuter Parking Demand

Public transportation facilities in Belmont include two commuter rail stations and MBTA bus services. The commuter rail stations are located in Belmont Center and at Waverly Square. At each of the locations there is no dedicated commuter parking area as there is in the case of similar towns such as Winchester, Reading and Wakefield. The shortage of parking spaces in Belmont necessitates that the Town prioritize the parking supply, and this clearly puts parking requirements for customers and employees of the local businesses ahead of commuter parking. As a matter of fact, in Belmont Center long-term parking is permitted in the Claflin Street parking lot after 8:30 AM to discourage the use of the parking spaces by commuters who need to board the train before that time. This parking study and others conducted by the Belmont Police Department in the past was not able to capture the full demand of commuter parking given restrictions such as these. Ridership information obtained from the Central Transportation Planning Staff in Boston shows that a survey conducted on a weekday in October of 2001 indicated that 148 and 146 passengers boarded the train in Belmont Center and Waverly Square respectively. The on-street parking in front of the Lion's Club is currently being utilized as commuter parking in Belmont Center. Commuters currently using the MBTA trains may either be walking, or dropped off, or parking on certain neighborhood streets during the day. However, without adequate and convenient parking the full extent of the demand cannot be realized.

It is our recommendation that the Town investigate the possibility of leasing parking spaces for long term parking from the parking lots of nearby churches on Concord Avenue and Common Street. The Town of Lexington is currently practicing this type of arrangement whereby it leases parking spaces from a church and issues permits to long-term parkers at cost. This approach in Belmont could make about 70 spaces available for commuter parking. Conflicts such as the need of the parking spaces for funeral services or other church related functions that might occur on a typical weekday could be addressed by replacing the loss of space due to commuter parking with on-street spaces during the event. Similarly, leasing parking spaces from the church near Waverly Square could make about 25 spaces available to commuters.

With the exception of the section of Royal Road in front of the Lions Club, on-street parking on Royal Road is time restricted or prohibited. Given the shortage of parking in Belmont Center, there is a critical need to provide on-street parking within short walking distance of the Center where feasible. We recommend that the existing restriction on parking on the north side of Royal Road be removed allowing for commuter parking. This will result in the availability of approximately 35 additional parking spaces.

4.3 Impacts of Municipal Construction Programs

The Town of Belmont is seriously considering the consolidation of the three existing fire stations into two modern stations and also to embark on a major rebuilding effort of the Town Hall Complex.

4.3.1 Impacts of Fire Station Consolidation

In the case of the fire station consolidation the Town has retained the services of Donham and Sweeney Architects Inc, to recommend several sites appropriate for the construction of a new Fire Headquarters and a new sub station. The recommendations in the Fire Station Consolidation Study dated September 2001 prepared by Donham and Sweeney are based on a series of criteria such as lot size, emergency response time, vehicular access, and local traffic conditions. The municipal parking lots on Claflin Street at Belmont Center and on Trapelo Road at Cushing Square ranked at the top of potential fire station locations. The impacts of the relocation of fire stations to any of these parking lots have been discussed and reviewed with Donham and Sweeney and are discussed here. Table 8 below summarizes the loss of parking and demand as a result of the construction of the proposed Fire Headquarters at the Claflin Street Lot and a Sub Station at the Cushing Square municipal parking lot. Also shown is the replacement parking proposed by Donham and Sweeney. The summary shows that additional 31 spaces and 10 spaces are required for Belmont Center and Cushing Square respectively as a result of the proposed Fire Station consolidation.

Table 8: Additional Parking Requirements

Parking Loss/Demand		Proposed Additional Supply	
<i>Belmont Center – Claflin Street Lot</i>			
Parking Loss due to Fire Station	(50)	Alexander Street Lot (Deck)	40
Demand by Fire Station	(2*)	Added spaces on Leonard	6
Demand by Reuse of Fire Station	(25)		
Total	(77)		46
Net Deficit	(31)		
<i>Cushing Square</i>			
Parking Loss due to Fire Station	(52)	New Cushing Square Lot	70
Private Parking Loss	(27**)	Added spaces on Horne Road	6
Demand by Fire Station	(7)		
Total	(86)		76
Net Deficit	(10**)		

* Nine out of the required 11 fire personnel currently park in the Town Hall parking lot

** The use of the private lot for public parking could result in higher level of utilization and thereby reduce or eliminate the parking deficit.

The future demand for parking by the proposed fire stations is the minimum required and may require parking variances. This is because zoning analysis performed by Donham and Sweeney indicated that 83 and 48 spaces were required for the Headquarters and the Sub Station respectively (*Fire Consolidation Study, Belmont Massachusetts, 13 September 2001, Appendix E, Page E-26*).

It worth noting that there is a potential re-use of the existing Fire Station on Leonard Street that could generate its own parking demand. Assuming the reuse of the Fire Station site as a 50-seat restaurant results in a parking demand of 25 parking spaces. An office or retail (two levels) on the same site requires approximately 20 parking spaces.

Belmont Center, as has been documented in this parking study, has an existing parking deficit on approximately 125 spaces during a typical weekday. Combining the minimum number of spaces required with existing parking deficit, it becomes apparent that parking conditions in Belmont Center would only worsen. A total deficit of approximately 156 parking spaces (assuming a restaurant replaces the existing fire station) would occur if the Claflin Street parking lot becomes the site for the building of the headquarters for the fire station.

In the same manner, Cushing Square currently has a parking deficit of about 126 spaces. The use of the municipal parking lot site as a Fire Sub Station will result in a deficit of approximately 136 parking spaces. Local residents who use the municipal lot for overnight parking, as evident by the 50 vehicles parked in the lot at 7 AM, will also be impacted

These impacts are of a magnitude that could adversely affect the viability of the business districts and the town's revenue from property taxes as a result. It is therefore necessary to provide replacement parking spaces.

4.3.1.1 Recommendations for Increasing Parking Supply in Belmont Center

Additional parking in Belmont Center is required to address the existing deficit and also to replace the potential loss of parking as a result of the proposed fire station consolidation. Providing the required parking could be a very costly proposition, especially since the town is unlikely to receive funding from the state or federal government sources for such an undertaking. Also given the magnitude of the parking needs, no single solution would be able to sufficiently address the entire parking deficit in the Center. Therefore, the following recommendations to add parking supply are incremental in nature. Some of these recommendations require policy changes to some on-street parking locations, while others address a more intensive use of existing off-street facilities

The primary function of Claflin Street parking lot is to service employees and customers in the Belmont Center. Replacement of the parking loss as a result of the fire station should be in the vicinity of the center otherwise it would not be efficiently utilized. The following options are therefore recommended for consideration

- *On-Street parking on Royal Road.* As was mentioned earlier, removing on-street restrictions on the north side of Royal Road will result in the addition of approximately 35 parking spaces.
- *Extend Claflin Street Lot.* Close Claflin Street to through traffic to provide 10 additional of-street parking spaces to existing parking lot.
- *Provide surface parking between Concord Avenue and the commuter rail station.* This area was considered under the Town Hall Complex Feasibility Study by Donham and Sweeney as a possible location of additional parking for town employees. The area is very constrained and issues with the railroad right of way and topography need to be addressed. Two phases may be considered under this option.
 - Extend the parking lot behind the former Electric Light Building with minimum clearing and grading. It is estimated that additional 10 spaces could be provided.
 - Further extend the parking lot behind the Electric Light Building to beyond the pedestrian tunnel between Concord Avenue and Royal Road. This option will involve creating an additional curb cut on Concord Avenue and will also involve substantial earth works and demolition of some underground concrete structures. An additional 20 to 25 spaces could be provided.
- *Acquire property adjacent to the Claflin Street Lot.* The Town should investigate the possibility of acquiring property near the Claflin Street lot for additional surface parking. Up to 40 additional parking spaces could be provided depending on the properties acquired.
- *Provide a deck at Alexander Street lot.* Build a parking deck at the Alexander Street lot as suggested by Donham and Sweeney in the Fire Consolidation Report at a cost of \$600,000. It appears that the topography of the Alexander Street parking lot lends itself to a parking deck. Without considering the ramps, 40 additional parking spaces may be provided if only one level is constructed. This will not be an adequate replacement for all the needed spaces especially if the reuse of the existing fire station on Leonard Street is considered.
- *Provide a multi level parking for the remainder of Claflin Street lot.* This will take advantage of the existing connection to the Filenes Department Store building. This option will be effective if Claflin Street is closed to through traffic or made a one way to improve the circulation into the parking lot. It is anticipated that a total of 300 parking spaces (100 spaces per level and three levels) could be

provided at this location (an additional 160 spaces), making up for the loss of space due to the fire station construction and also addressing the existing parking shortfall in the center. The estimated cost would be approximately \$4 million. Since this will be of direct benefit to local businesses, the town should explore the possibility of the businesses constructing the structure and leasing it from the Town. Parking rates may be set to recoup any operational cost of the structure.

- *Surface parking between Royal Road and Pleasant Street and Clark Street.* This area is wooded with potential wetland issues. Parking at this location is a bit removed from the center and will be more suited to commuter parking. It is anticipated that 30 to 45 additional parking spaces could be provided at this location.

4.3.1.2 Recommendations for Increasing Parking Supply in Cushing Square

Based on the demand analysis documented in this report, Cushing Square has a parking deficit of 126 parking spaces based on zoning requirements. Loss of parking and parking demand as a result of the proposed Fire Sub Station is 10 spaces.

- Acquire properties at 13 and 19 Horne Road and use for surface parking. In a memorandum dated February 1, 2002 to the Belmont Board of Selectmen, Mr. Mel Kleckner, the Town Administrator, stated that the parcels of land may be available for the Fire Station consolidation project. He also made reference to the commercial lot adjacent to the 13 Horne Road. (Copy of memo is in the Appendix). These properties are located directly behind the Cushing Square lot and could accommodate parking for a total of 63 vehicles based on a parking layout provided by Donham and Sweeney. Since the private lot with 24 parking spaces has already been included in the existing parking supply for Cushing Square, it is not considered as a source of new parking. However, the conversion of the private lot into a public lot could result in a higher level of utilization than it is currently being used. Six additional on street parking spaces could be added on Horne Road, in front of the proposed parking lot.

4.3.2 Impacts from Town Hall Complex Reconstruction

The Town Hall Annex and the School Department buildings in Belmont Center are scheduled to be reconstructed in the near future. Construction is expected to last for approximately two years. During this time, town employees are expected to be relocated to the now vacant Electric Light building and the Town Hall. The school department employees will move off

site. Limited parking will be permitted on the premises of the Town Hall Complex because of construction activities, and will result in the loss of approximately 50 parking spaces. Due to the existing parking deficit in the center, we recommend that any replacement parking should not be at the expense of existing parking supply. We agree with Donham and Sweeney's recommendation to construct the parking lot between Concord Avenue and the railroad tracks as discussed above. We also recommend that the Town should approach the nearby churches on Concord Avenue or Common Street to use their parking spaces for the duration of the construction. This could facilitate the leasing off-street parking of spaces at a later date for commuter parking. Unrestricted parking on Royal Road can initially be limited to Town employees with parking stickers for the duration of the construction. Commuter parking may then be permitted afterwards.

5.0 Parking Regulations

In general, on street parking restrictions in municipalities are implemented to promote vehicle turnover, prevent employee and commuter parking on certain residential streets. These restrictions are usually implemented based on complaints from residents or at the request of business owners. Long-term use (over 2 hours) of on-street parking spaces in an active business district, either by employees or by commuters, is inefficient, and denies the use of those spaces by customers who are mostly short-term parkers (1-2 hours). Where adequate off-street parking spaces exist, no on-street restriction may be imposed. Given the current parking shortages and the latent commuter parking demand, some on street restrictions are necessary as well as the recognition that there is a need for some overflow parking onto some residential streets. The following recommendations reflect this need.

- *Belmont Center:*
 - Retain existing 15-minute parking restrictions to promote rapid turnover.
 - Maintain the 1-hour parking limit on Leonard Street.
 - Allow unrestricted parking on the northern side of Royal Road.
 - Apply a uniform 2-hour parking limit on all other streets in the LB-I zone in the Center
 - Following the reconstruction of the Town Hall Complex, eliminate employee permit parking on Moore Street and Concord Avenue. This will result in a higher turnover and the efficient use of these spaces by customers of businesses in the Center.
- *Cushing Square:*
 - Retain existing 15-minute parking restrictions in Cushing Square
 - Retain 1-hour parking limit on Trapelo Road and Common Street in the LB I zone in Cushing Square
 - Permit unrestricted parking on Horne Road.
 - Apply a uniform 2-hour parking restriction on all other streets within the LB-I zone.
- *Waverly Square:*
 - Retain existing 30-minute parking restriction on a section of Lexington Street in Waverly Square.
 - Retain 1-hour parking restriction on Trapelo Road and Church Street in the study area to promote high turnover of existing spaces.

Table 10 provides a comparison on pricing policies between Belmont and several neighboring towns. Permit parking for employee parking is available in all the towns, and in Winchester the permits are made available to

commuters on a first come first served basis. Metered parking is only available in Lexington. Rates charged for all day parking varied from one dollar in Belmont to two dollars in Winchester. Long-term parking in Arlington Center is by permit only.

Table 10: Comparison of Parking Pricing

Town	Parking permit	Town Employee parking	Parking Violation - Handicap Space	Time Limit	Long Term Parking
Arlington	\$25 per month	Free- Town Hall and side streets	\$100	2 hrs in Central Business Area	NA; permit
Belmont	\$20 per month	Free- Town Hall and side streets	\$200	Varies 15 min to 2 Hours	\$1 per day; permit
Lexington	\$225 per year	Free - with permit	\$50	Metered; Varies	Varies; permit
Winchester	\$30 per 3 months	Free- Town parking lot	\$50	Varies	\$2 per day; permit

6.0 Conclusions and Recommendations

The following conclusions have been reached in the course of the study of parking in the three business districts in the Town of Belmont:

- There is parking shortage in Belmont Center as evidenced by the parking accumulation studies and confirmed by the supply and demand analysis.
- Peak utilization of all public off-street parking lots and the Filene's parking lot in Belmont Center ranged from 98% to 106% of the total capacity, an indication of illegal parking activity.
- Commuter parking needs are not currently being met due to the time of day restrictions imposed at the Claflin Street lot and on Royal Road. Meeting these needs at this time will only make the parking shortage more acute.
- The Cushing Square municipal lot is used overnight by nearby apartments without adequate parking on their premises.
- Utilization of parking spaces in Cushing Square is below the practical capacity. However, the demand analysis based on zoning requirements indicates a shortage in parking. The high number of restaurants at Cushing Square appears to be contributing to the high demand for parking based current on zoning regulations.
- On-street parking restrictions are not uniform throughout the study area.
- Parking regulations are generally enforced very well throughout the study area
- The fire station consolidation study recommendation to use Claflin Street lot and Cushing Square lot would exacerbate current parking shortage without replacement of the spaces removed.
- During the period of construction for the Town Hall Complex, replacement parking should be provided, independent of existing public supply.

The following recommendations, organized by the level of resources required, are summarized here to address some of the issues raised in the report:

Low Capital Improvements:

- Allow unrestricted parking on the northern side of Royal Road from the Lions Club to Clark Street.
- Investigate the feasibility of providing parking spaces for commuter parking by leasing spaces in the parking lots of nearby churches on a monthly basis.
- Extend existing parking lot behind the former Electric Light building with minimum grading.

- Close Claflin Street to through traffic to provide additional of-street parking spaces to existing parking lot.

High Capital on Public Land:

- Investigate the feasibility of extending the proposed surface parking lots behind the former Electric Light building on Concord Avenue by the train station beyond the pedestrian tunnel between Concord Avenue and Royal Road.
- Investigate the feasibility of constructing surface parking lot on the vacant land between Royal Road and the railroad.
- Explore the decking of Alexander Street parking lot as partial replacement of parking to be removed as a result of the fire station consolidation proposal
- Explore construction of a multilevel parking structure at Claflin Street lot as a replacement for parking loss relative the fire station consolidation and also to reduce the current parking deficit in Belmont Center.

High Capital on Private Land:

- Explore acquisition of property adjacent to the Claflin Street parking lot to expand existing surface parking.
- Investigate the acquisition of properties at 13 and 19 Horne Road as well as the adjacent private parking lot and construct a surface parking lot to replace parking loss at Cushing Square if a fire station is constructed there.

Other recommendations

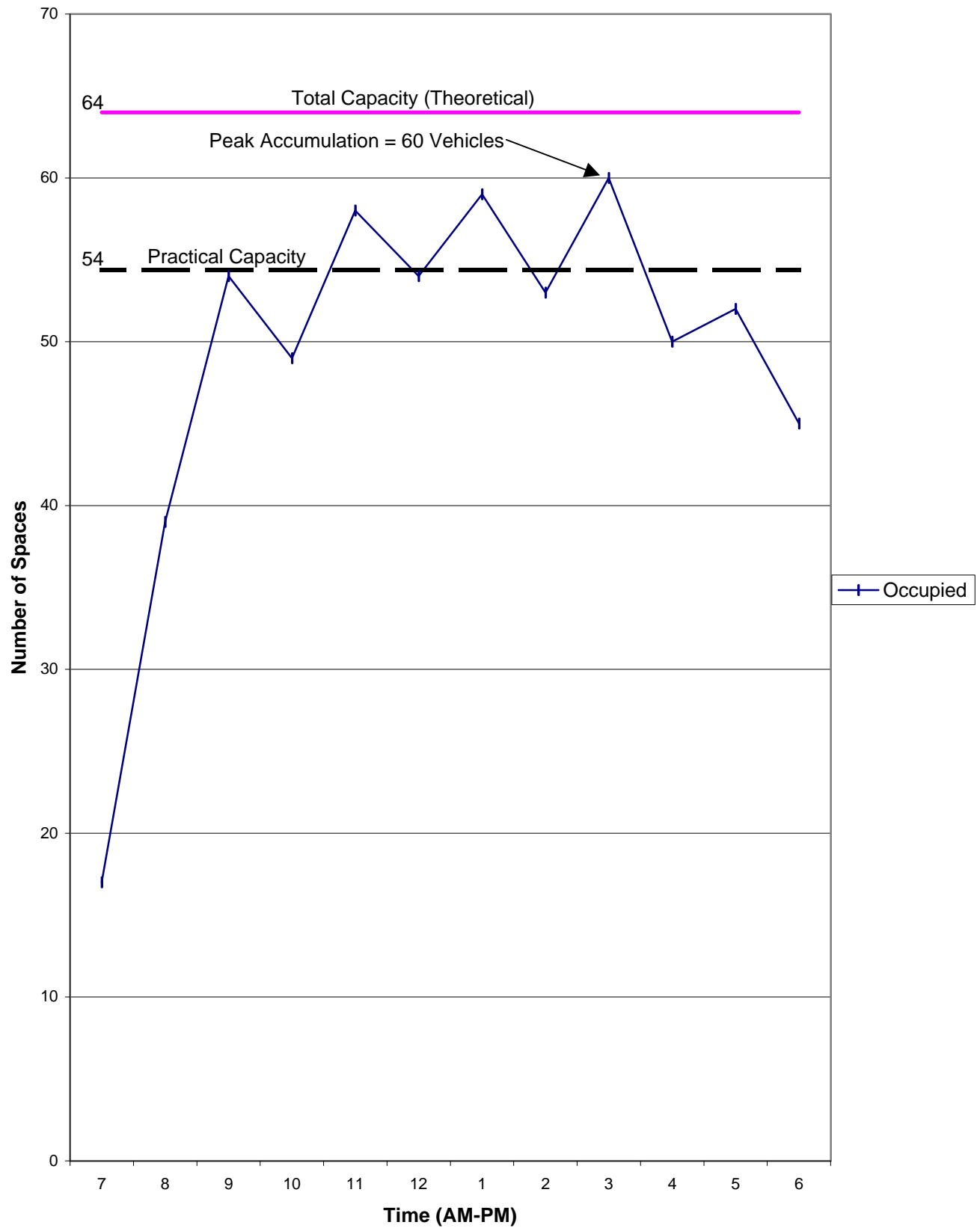
- Stagger construction schedule of proposed Fire Station and Town Hall Complex renovations to reduce impacts on parking supply.
- Provide replacement parking before parking is removed from the system for construction of municipal buildings.
- Parking policies should reflect parking needs and should be applied uniformly in the study area. It is recommended that a uniform 2-hour parking restriction be applied in the study areas, with the exception of where 15 or 30 minutes restrictions are justified by the nature of the business, or where unrestricted parking is recommended. One-hour time limit on Leonard Street, Trapelo Road and Common Street should also be maintained to promote parking turnover.
- The parking study provides a snapshot of parking activities in the business districts. We recommend that additional weekday and Saturday parking studies should be conducted to further substantiate our observations.

- Zoning regulations as they relate to parking should be periodically evaluated in order to ensure that the parking ratios are current and accurately project parking demand.

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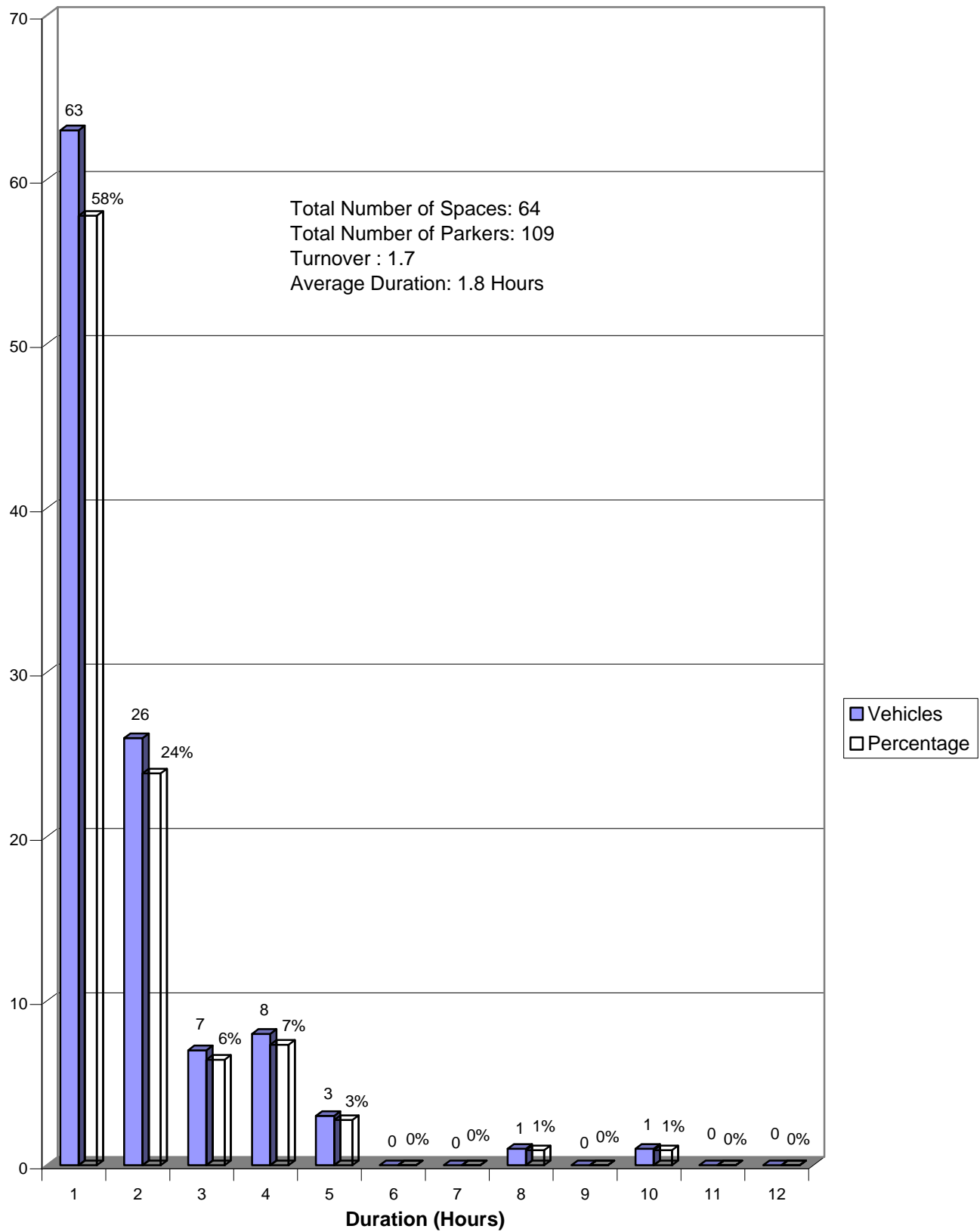
APPENDIX

Parking Utilization and Duration Charts



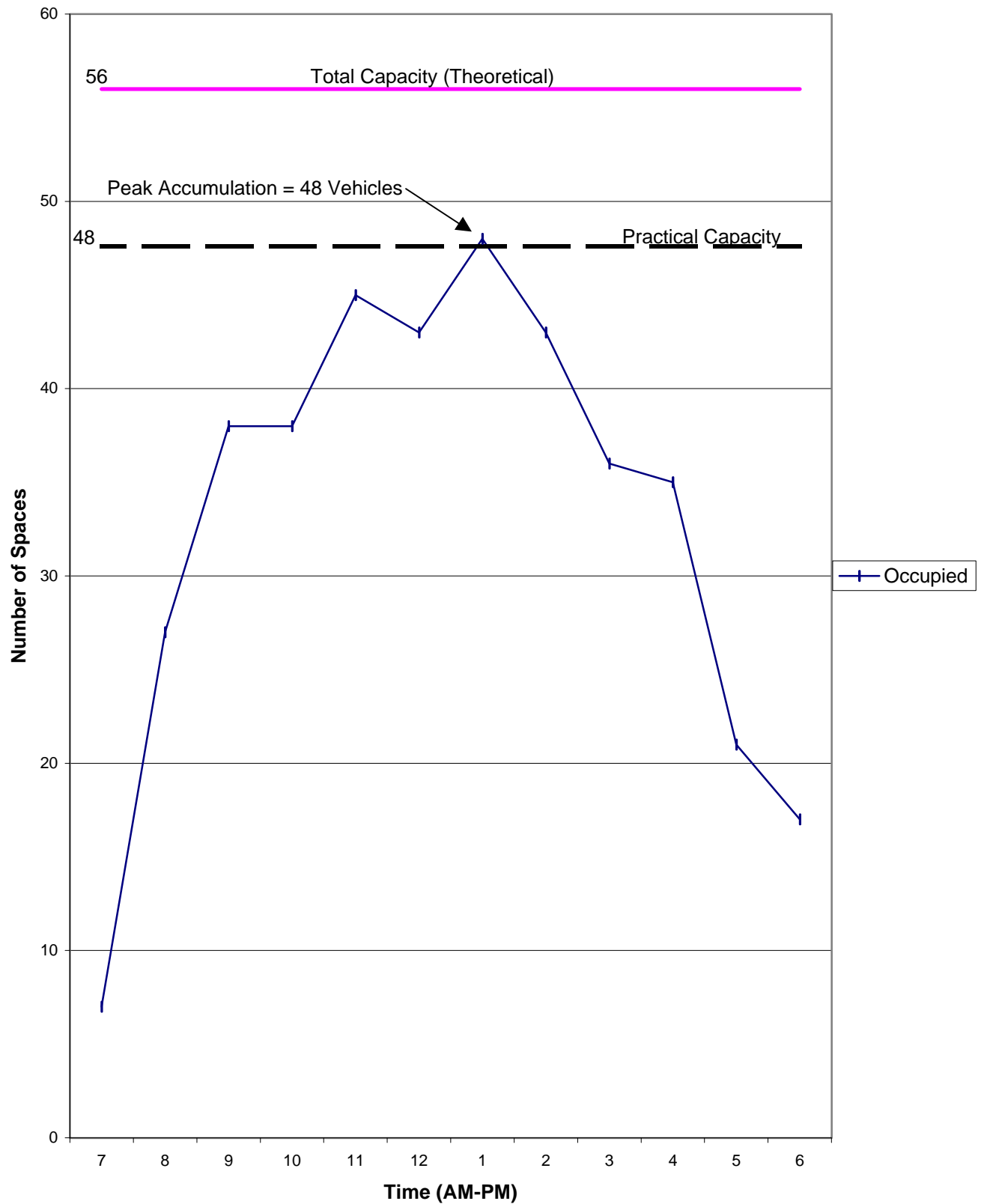
Parking Accumulation
Leonard Street / Alexander Avenue On-
Street Parking

Figure BC-1



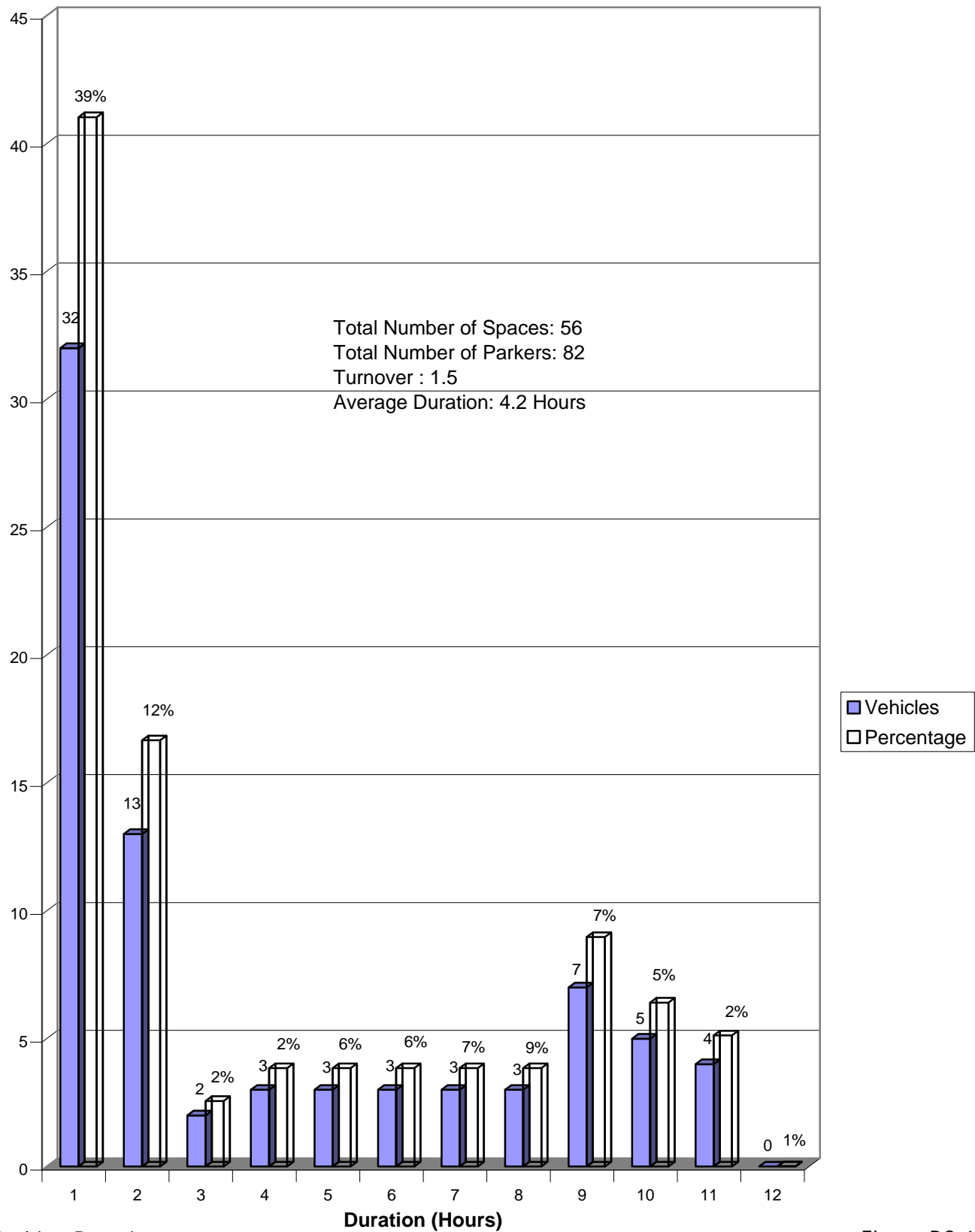
Parking Duration
Leonard Street / Alexander Avenue On-
Street Parking

Figure BC-2



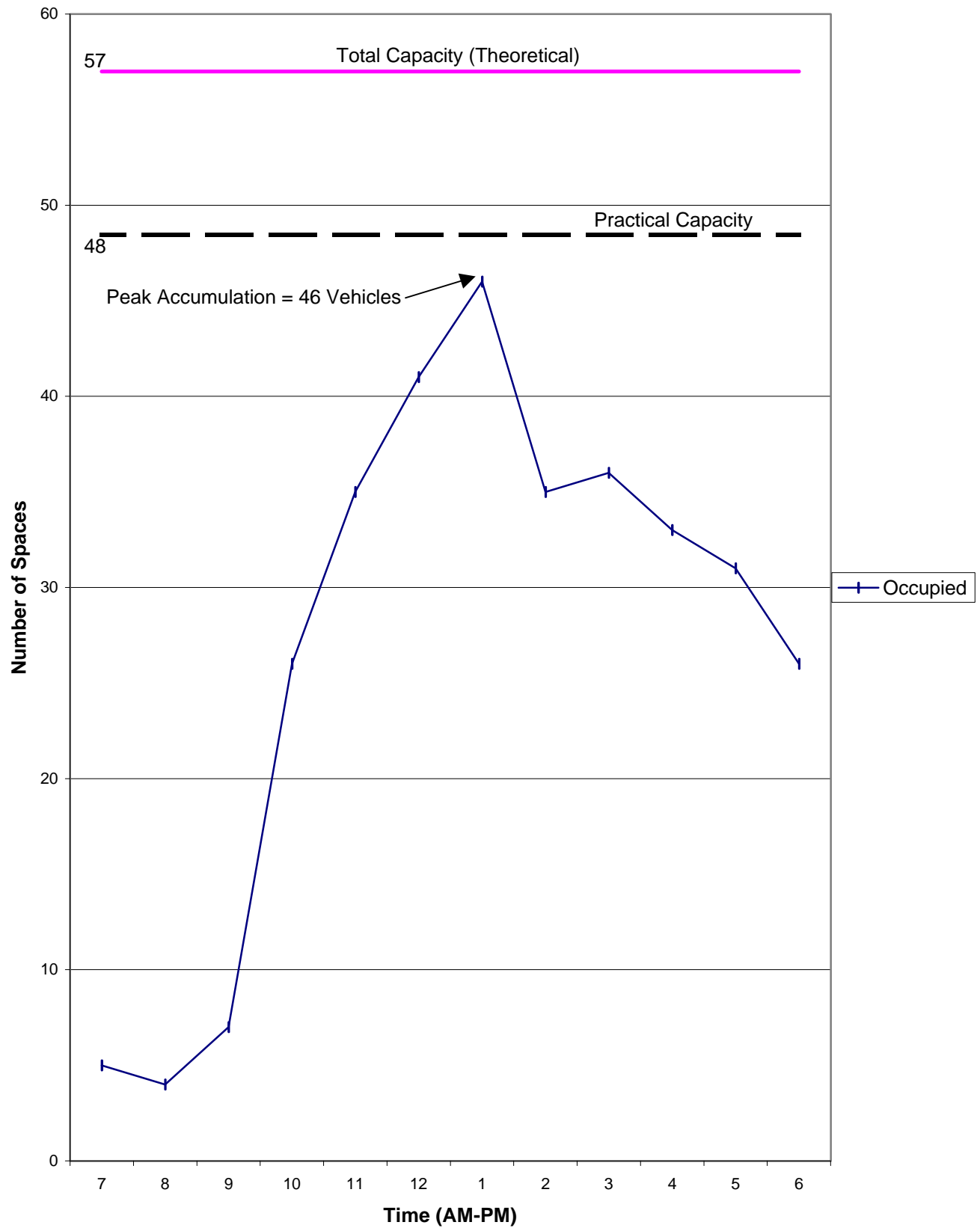
Parking Accumulation
Concord Avenue at Pleasant Street /
Moore Street / Pleasant Street
On-Street Parking

Figure BC-3



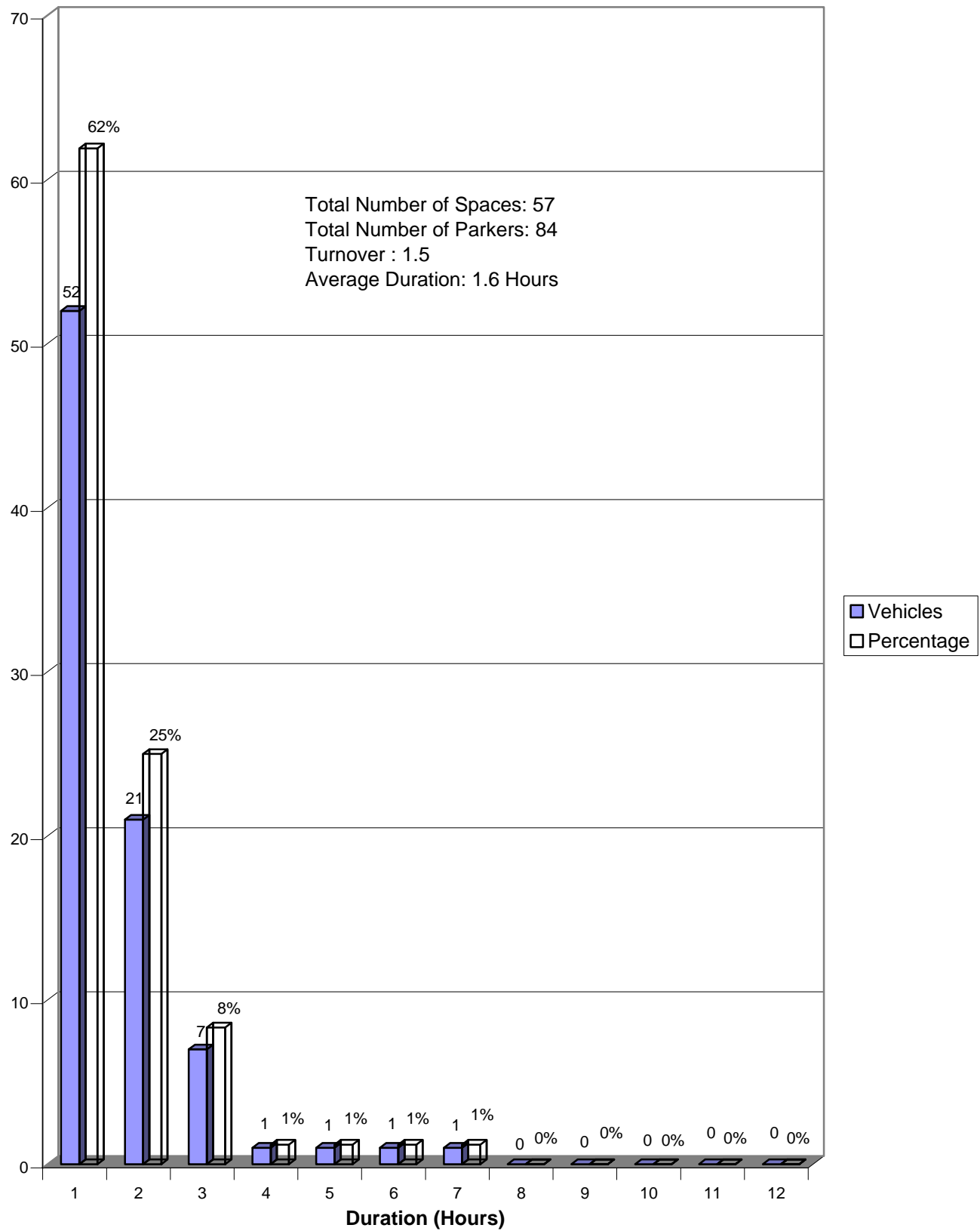
Parking Duration
 Concord Avenue at Pleasant Street /
 Moore Street / Pleasant Street
 On-Street Parking

Figure BC-4



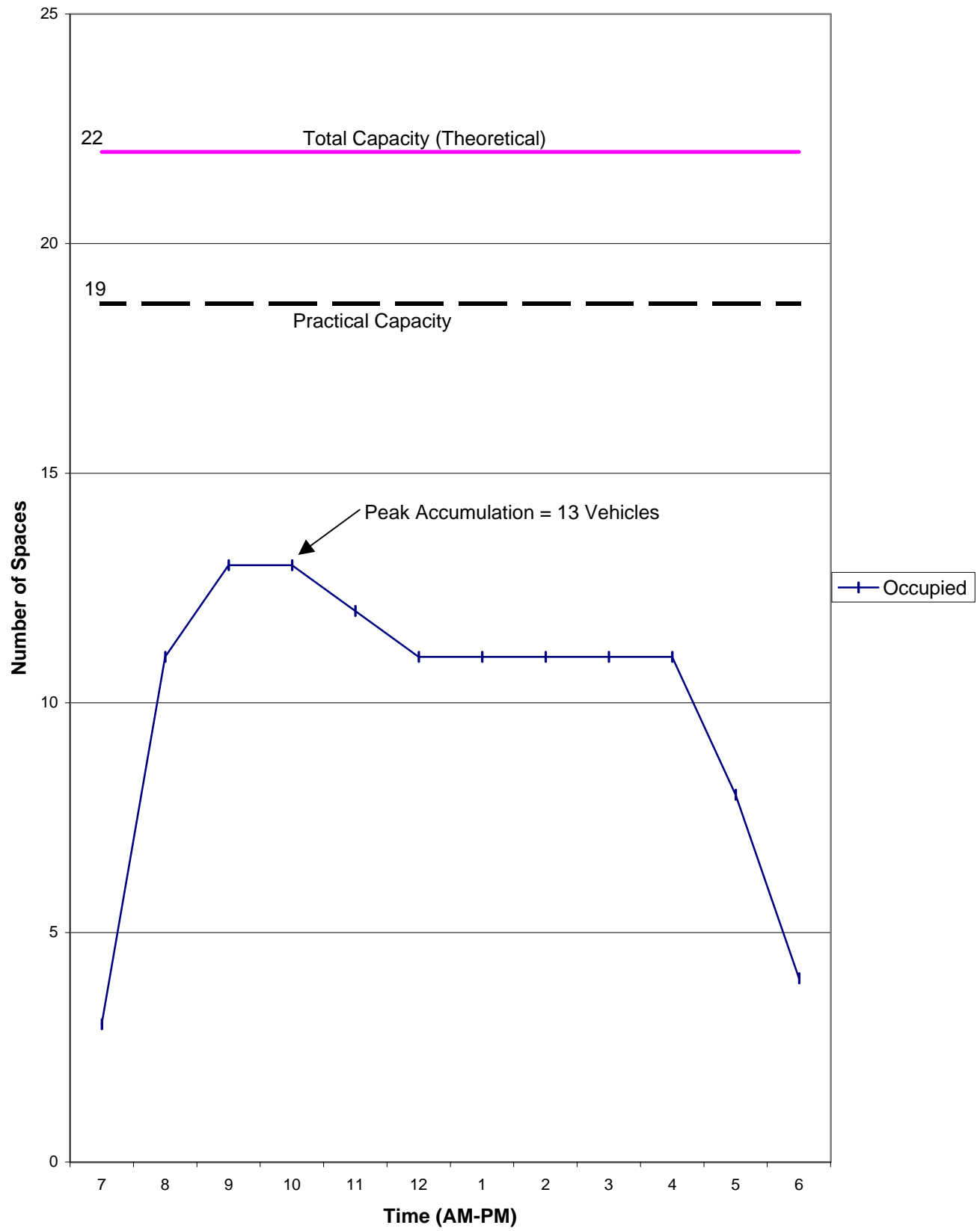
Parking Accumulation
Claflin Street / Channing Road
On-Street Parking

Figure BC-5



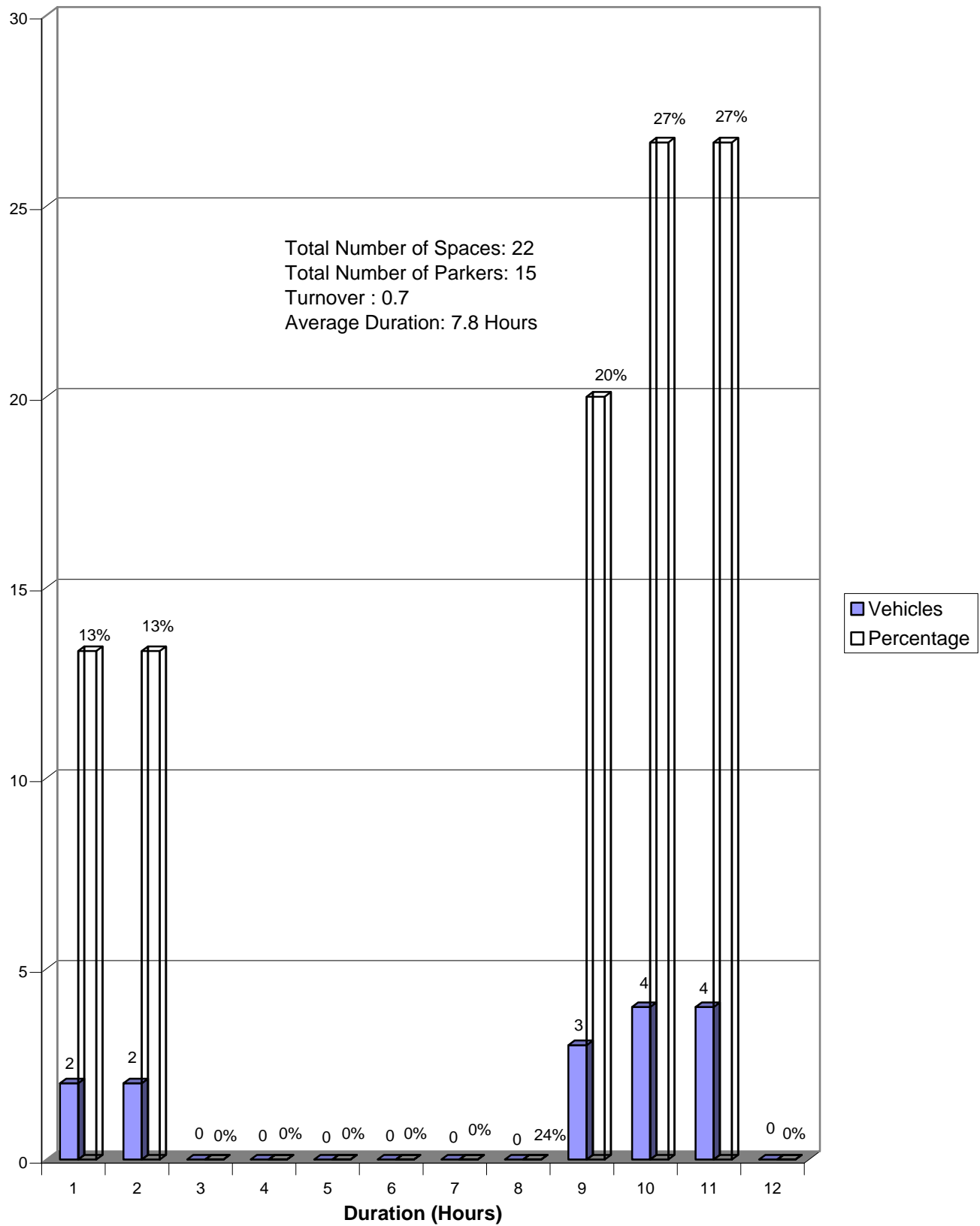
Parking Duration
 Claflin Street / Channing Road
 On-Street Parking

Figure BC-6



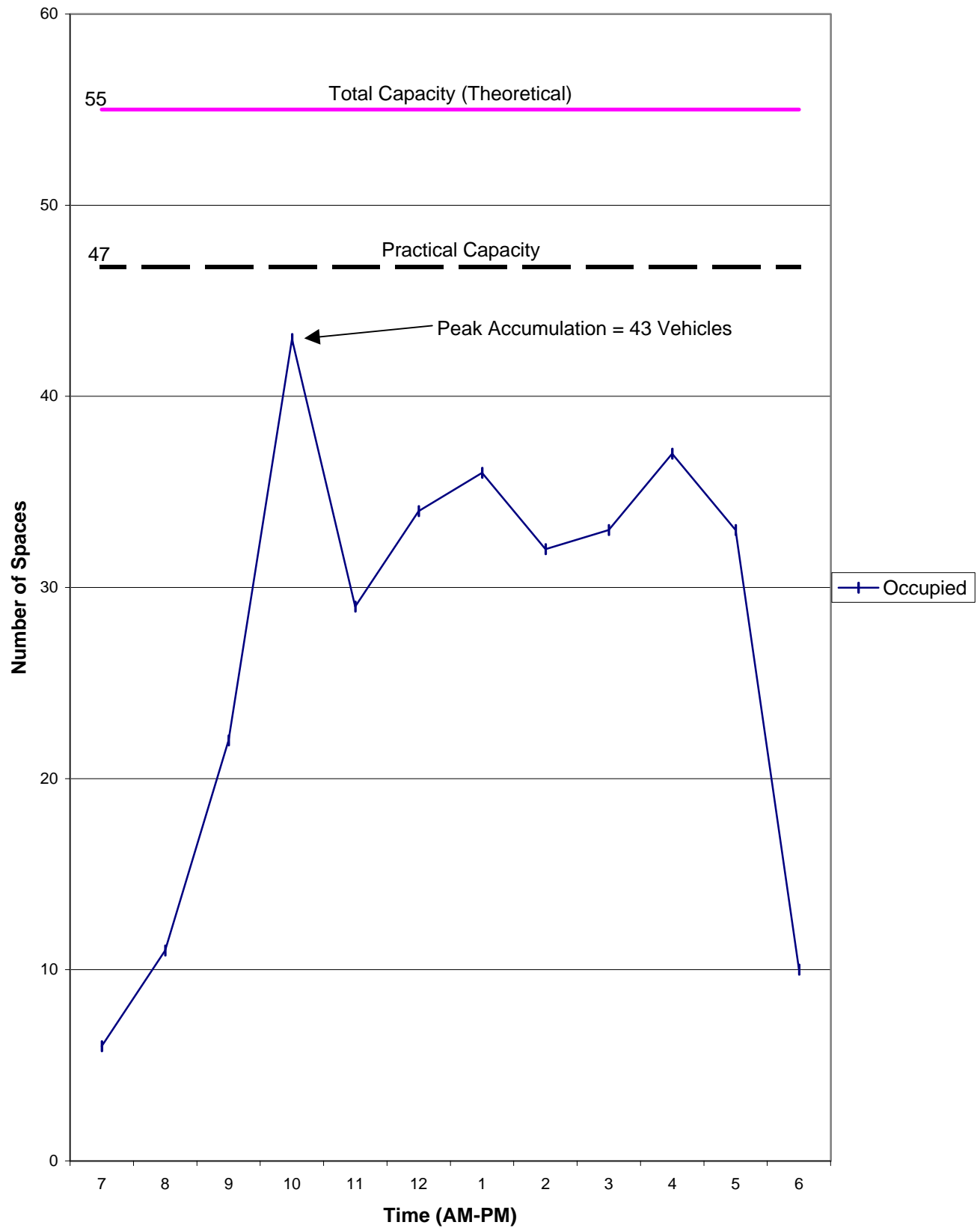
Parking Accumulation
Royal Road On-Street Parking

Figure BC-7



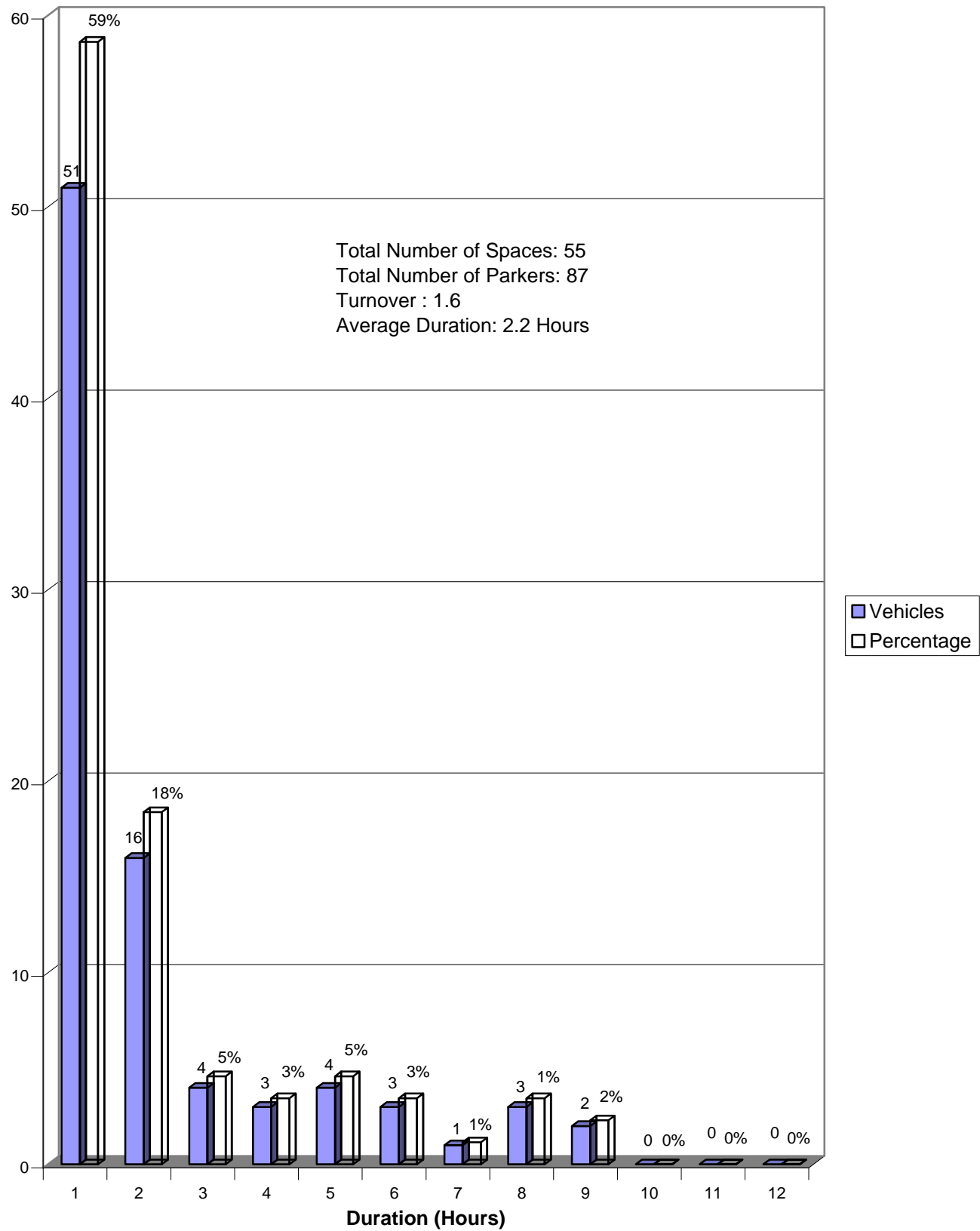
Parking Duration
 Royal Road On-Street Parking

Figure BC-8



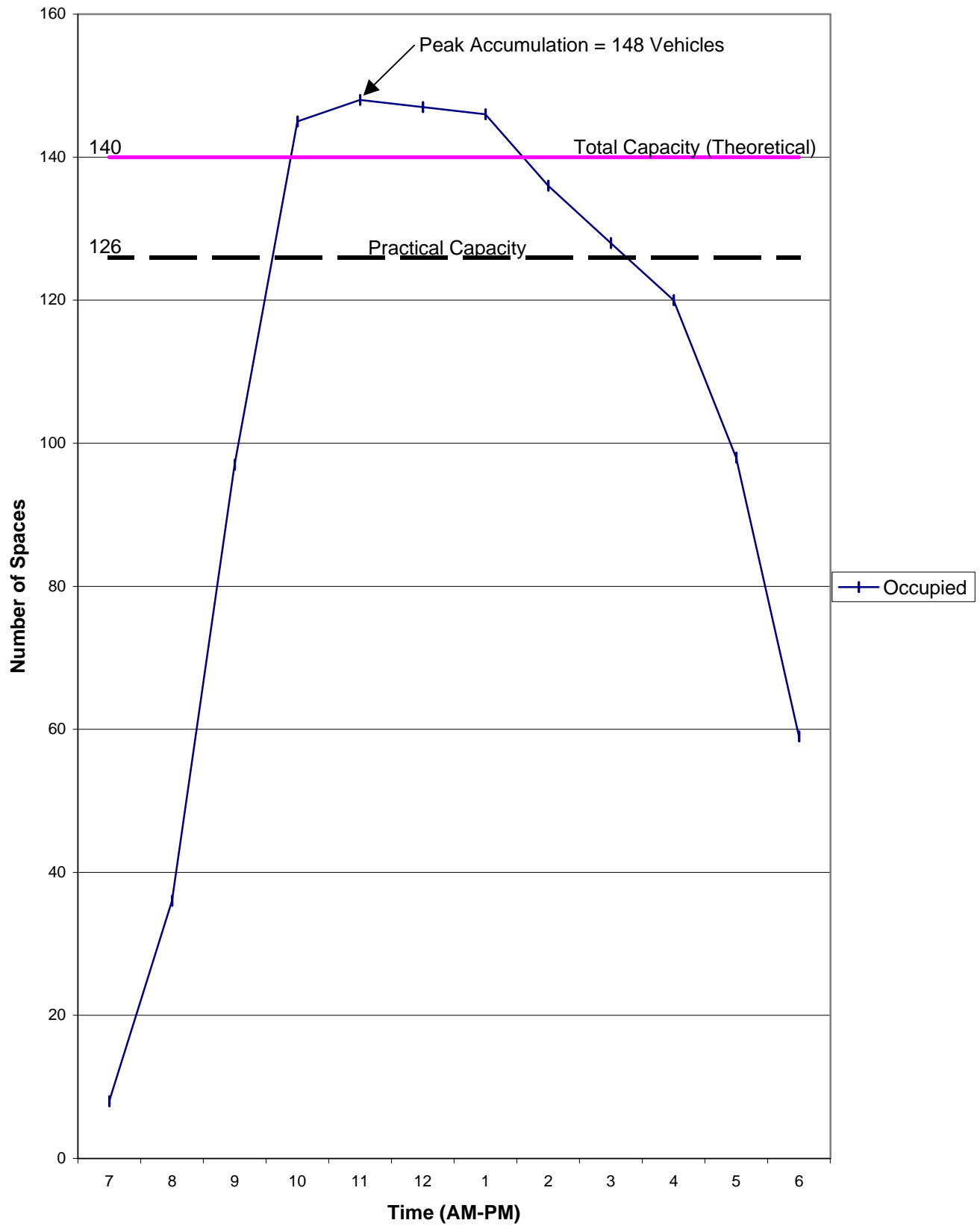
Parking Accumulation
Concord Avenue from Common Street
to Library On-Street Parking

Figure BC-9



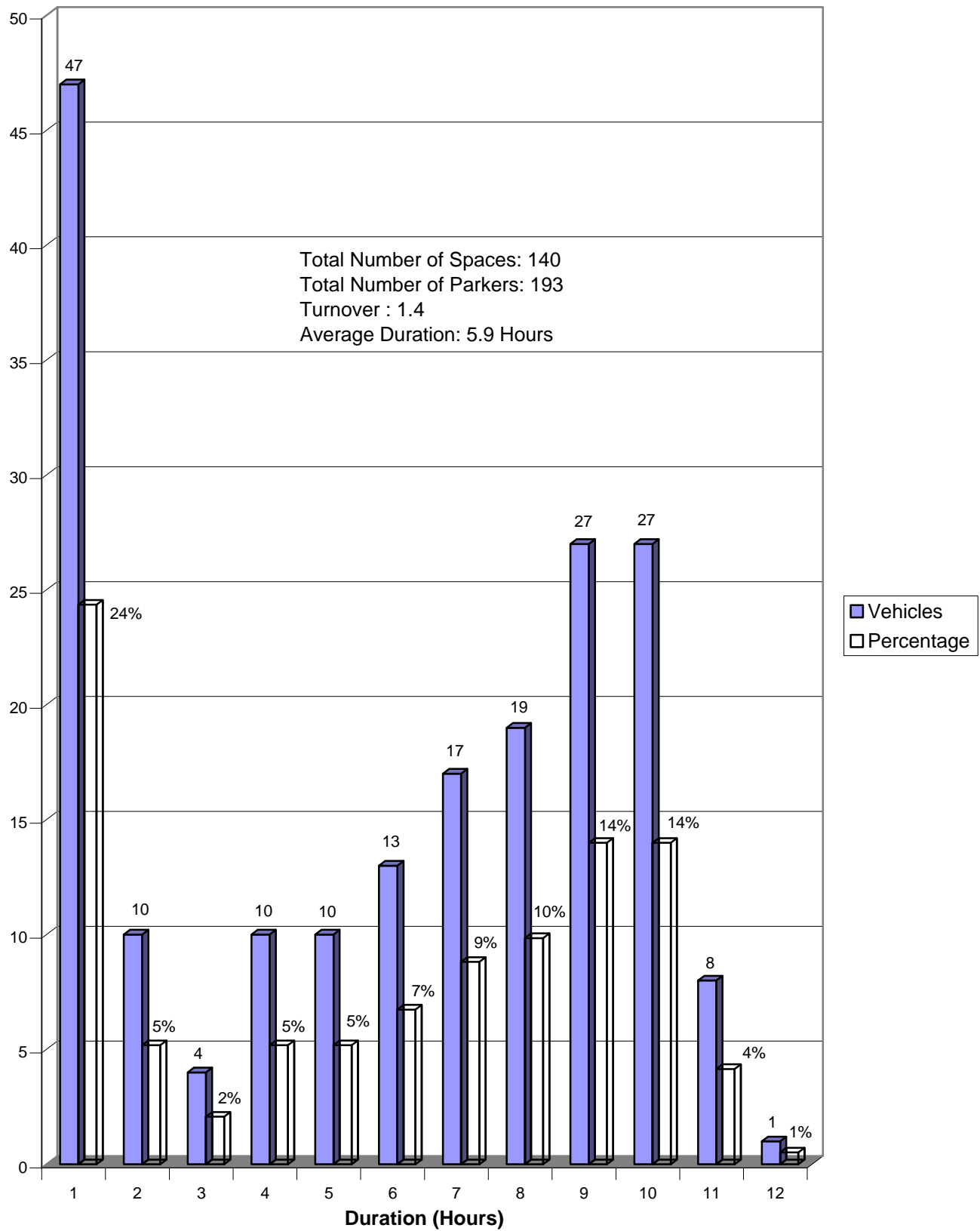
Parking Duration
Concord Avenue from Common Street
to Library On-Street Parking

Figure BC-10



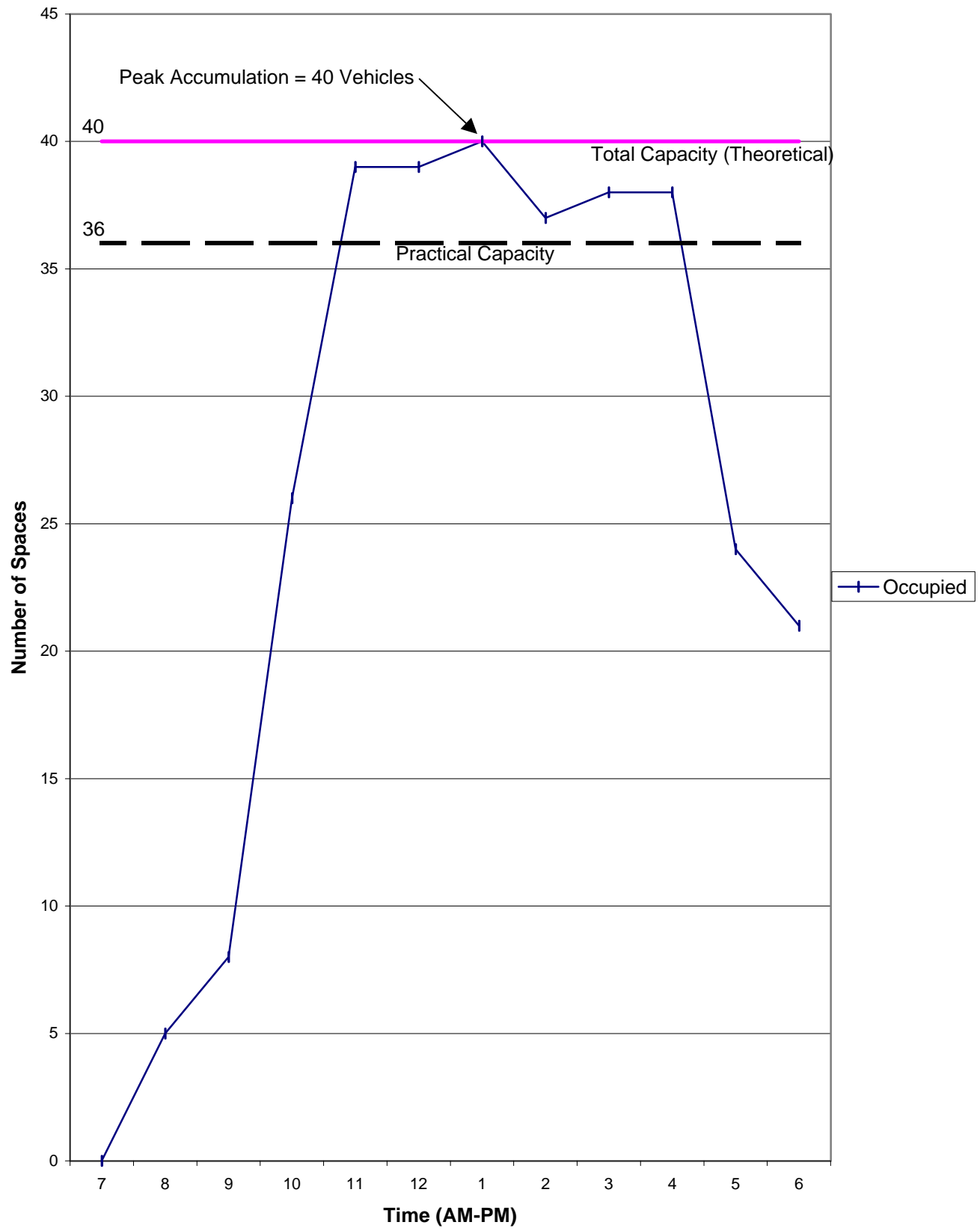
Parking Accumulation
Claflin Street Municipal Parking Lot

Figure BC-11



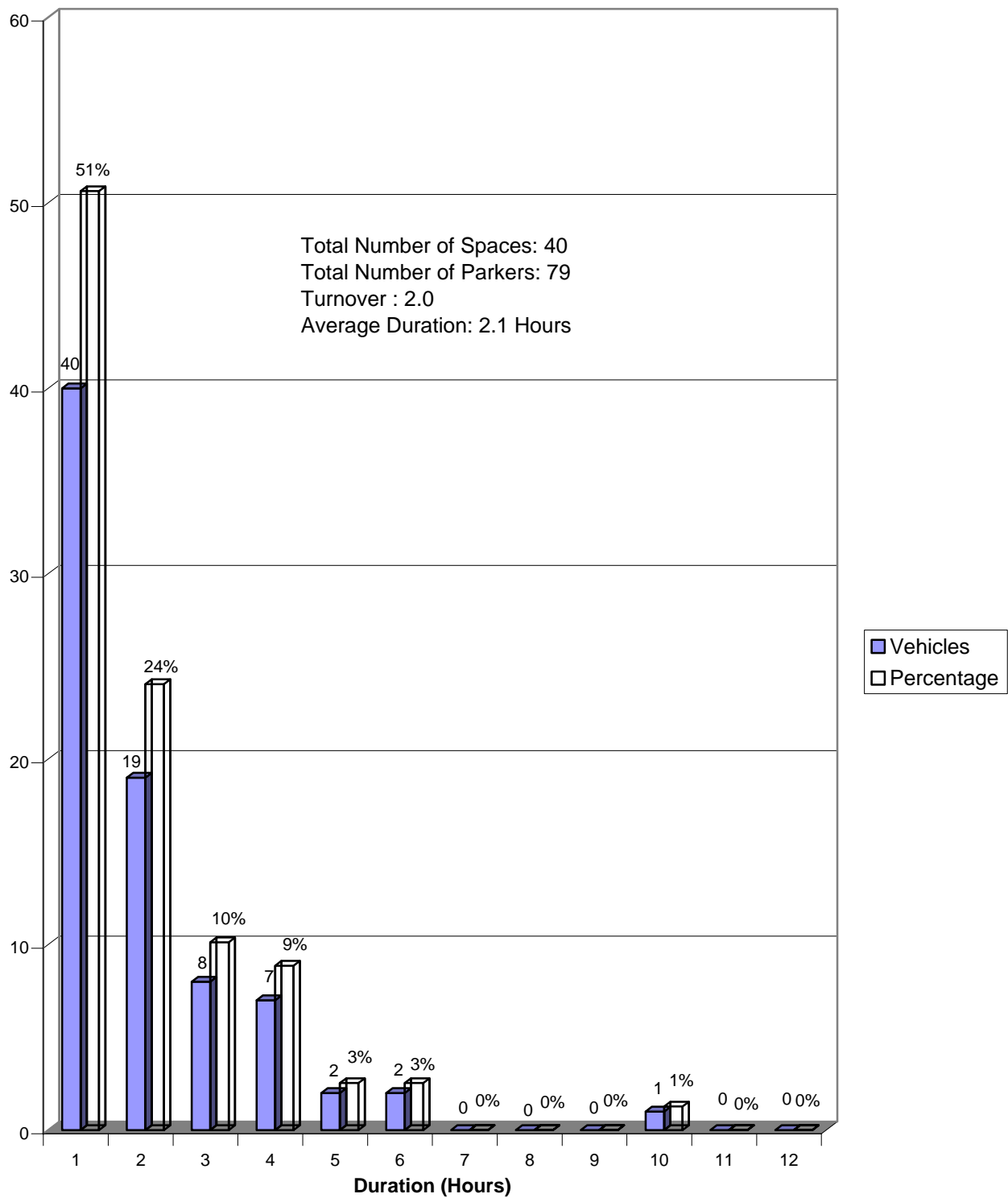
Parking Duration
 Claflin Street Municipal Parking Lot

Figure BC-12



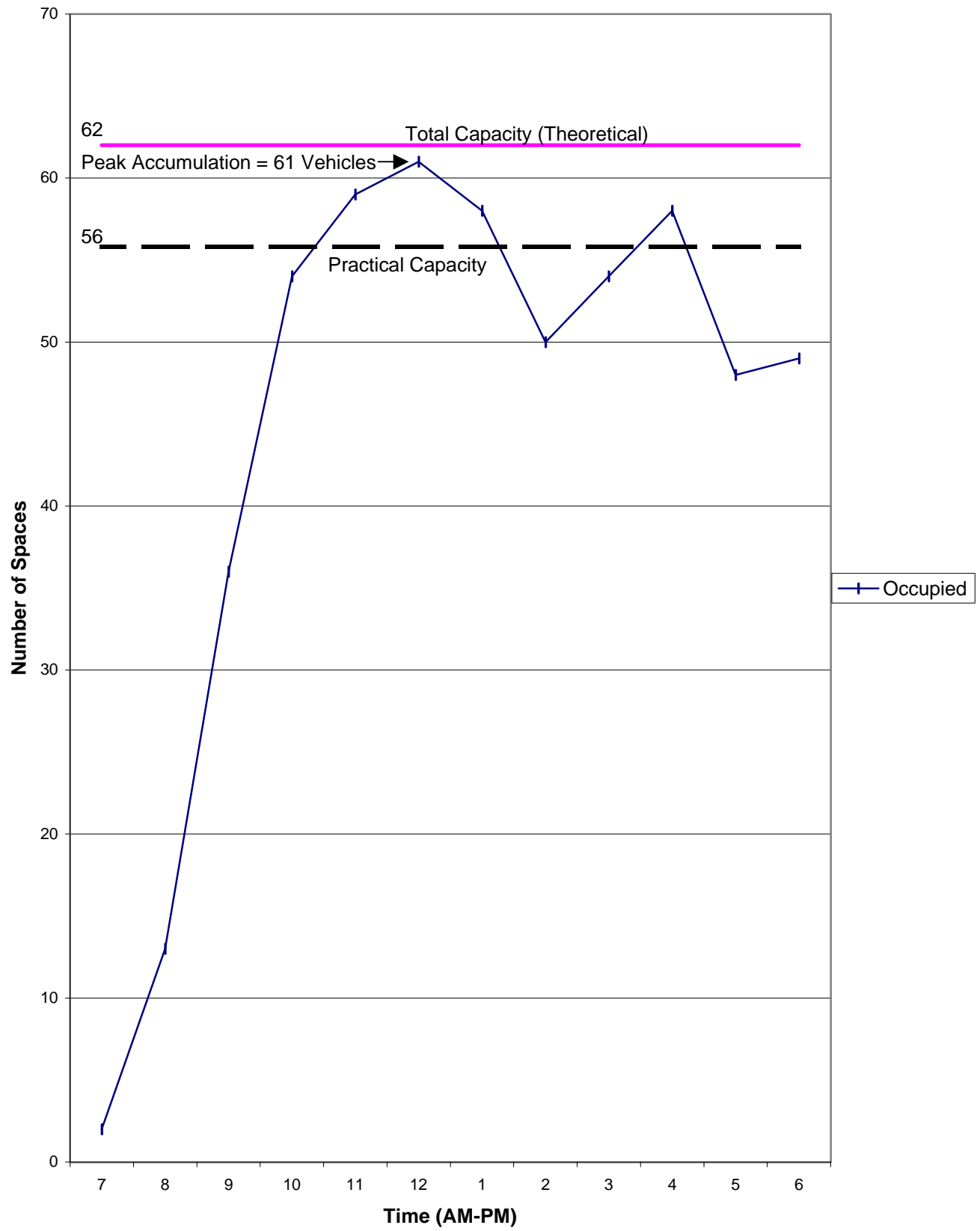
Parking Accumulation
Alexander Avenue Municipal Parking Lot

Figure BC-13



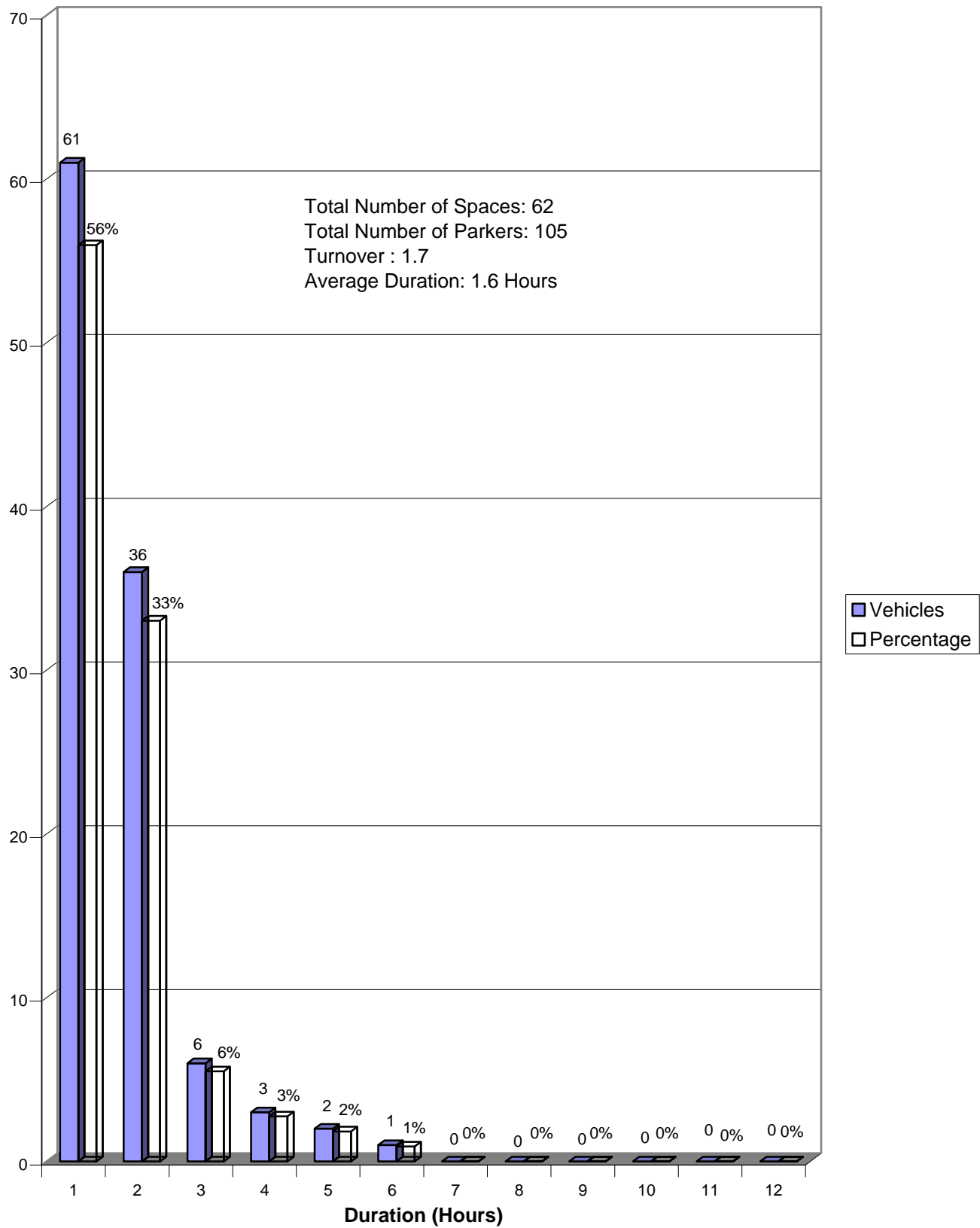
Parking Duration
Alexander Avenue Municipal Parking Lot

Figure BC-14



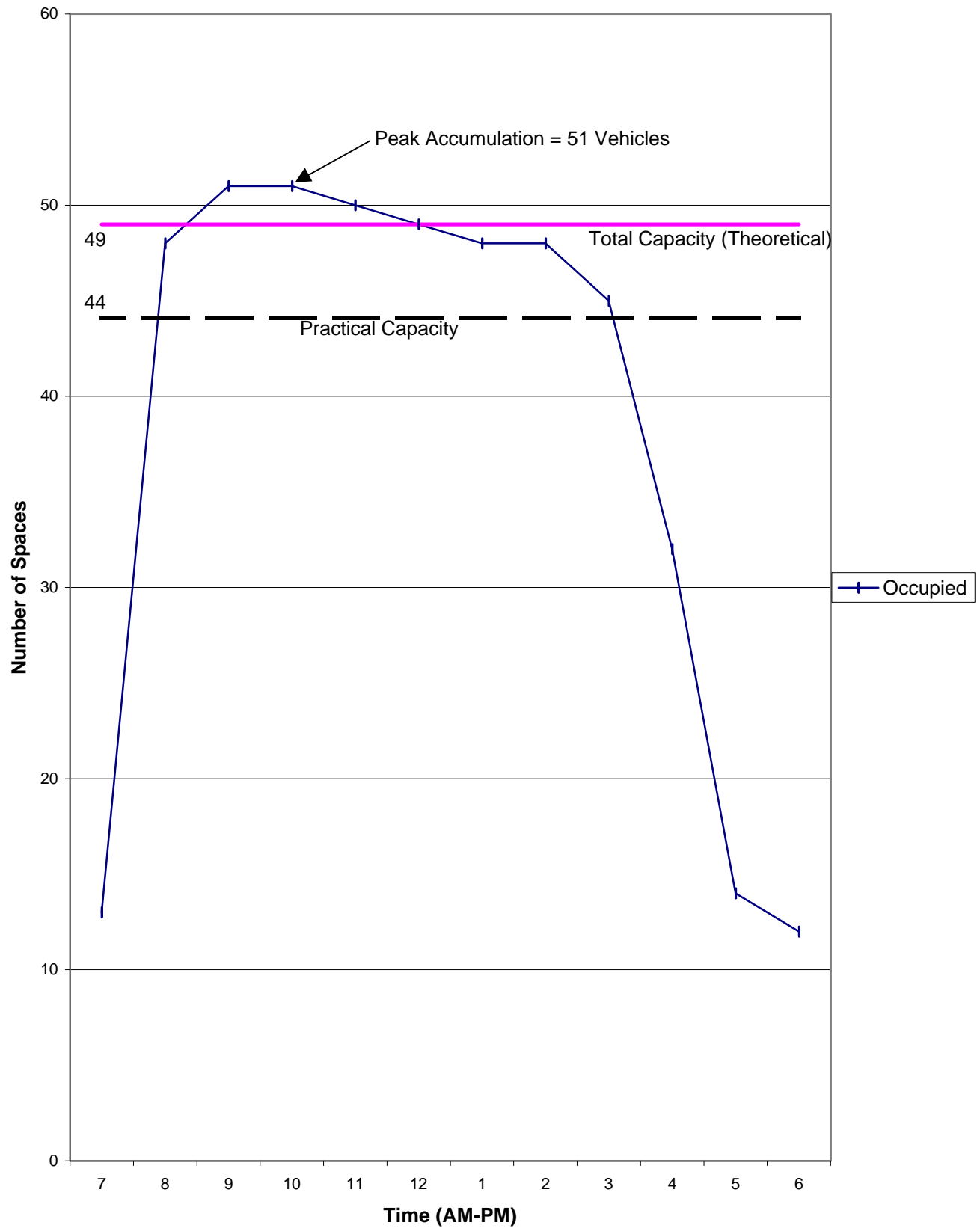
Parking Accumulation
Filene's Parking Lot

Figure BC-15



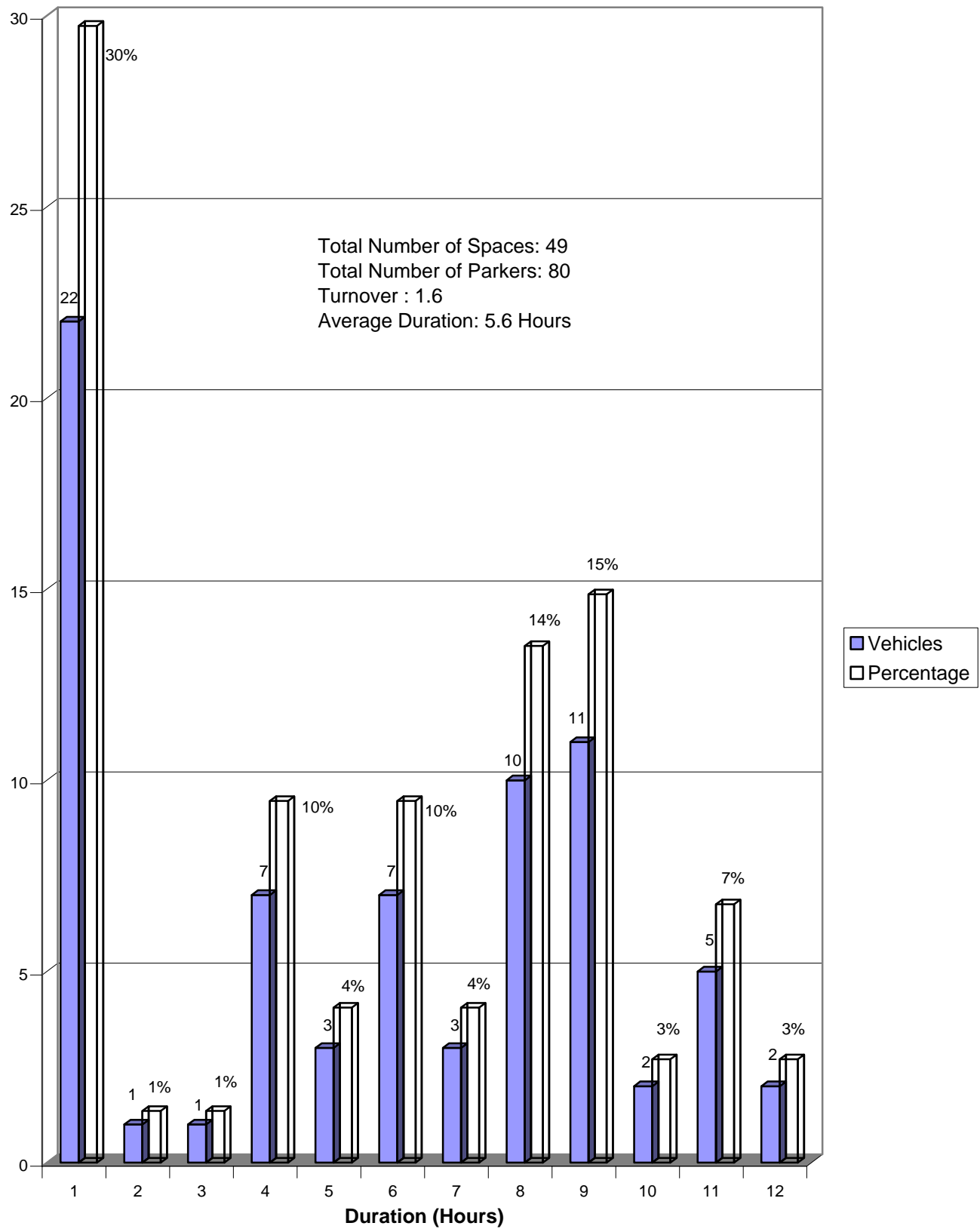
Parking Duration
Filene's Parking Lot

Figure BC-16



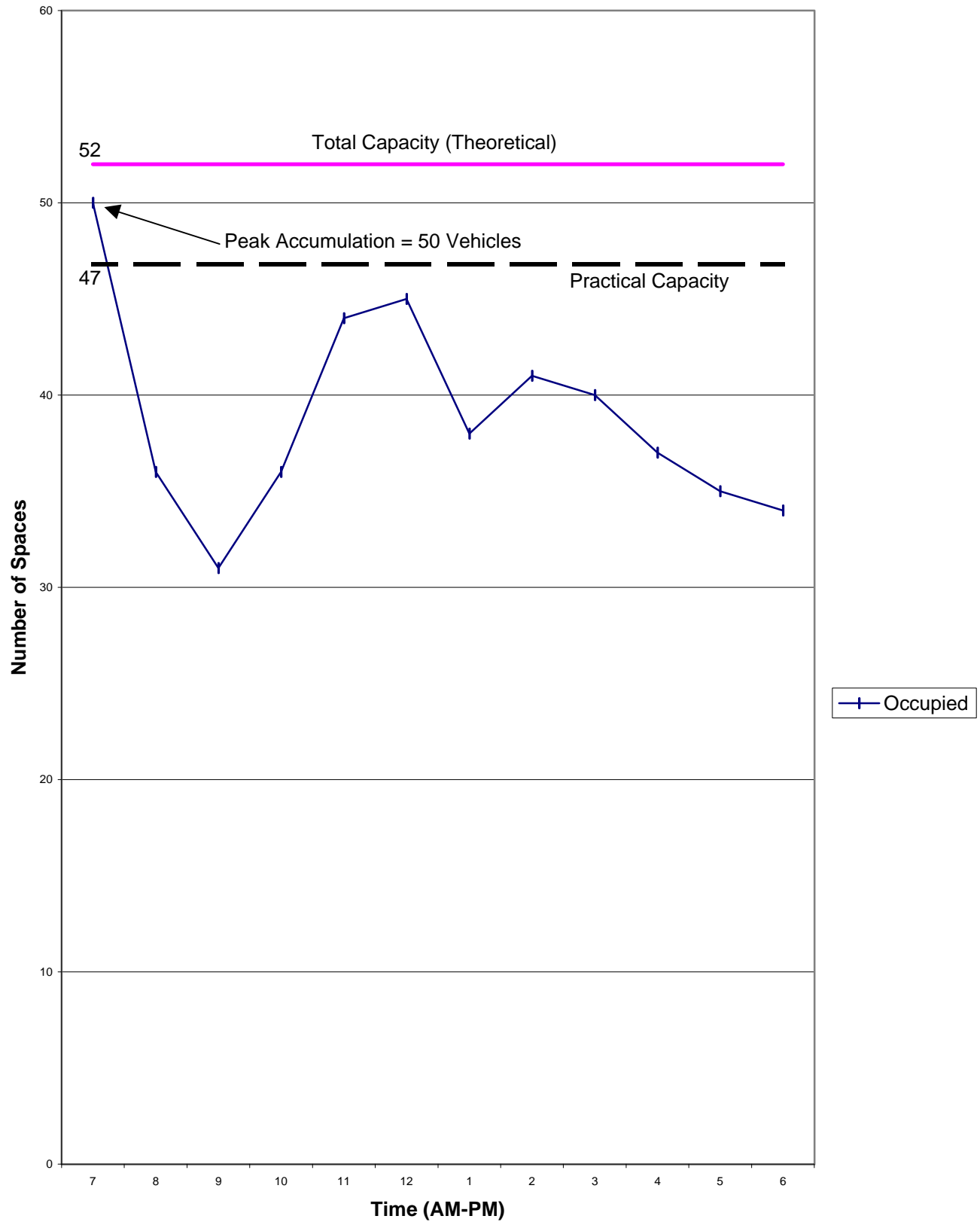
Parking Accumulation
Town Hall Municipal Parking Lot

Figure BC-17



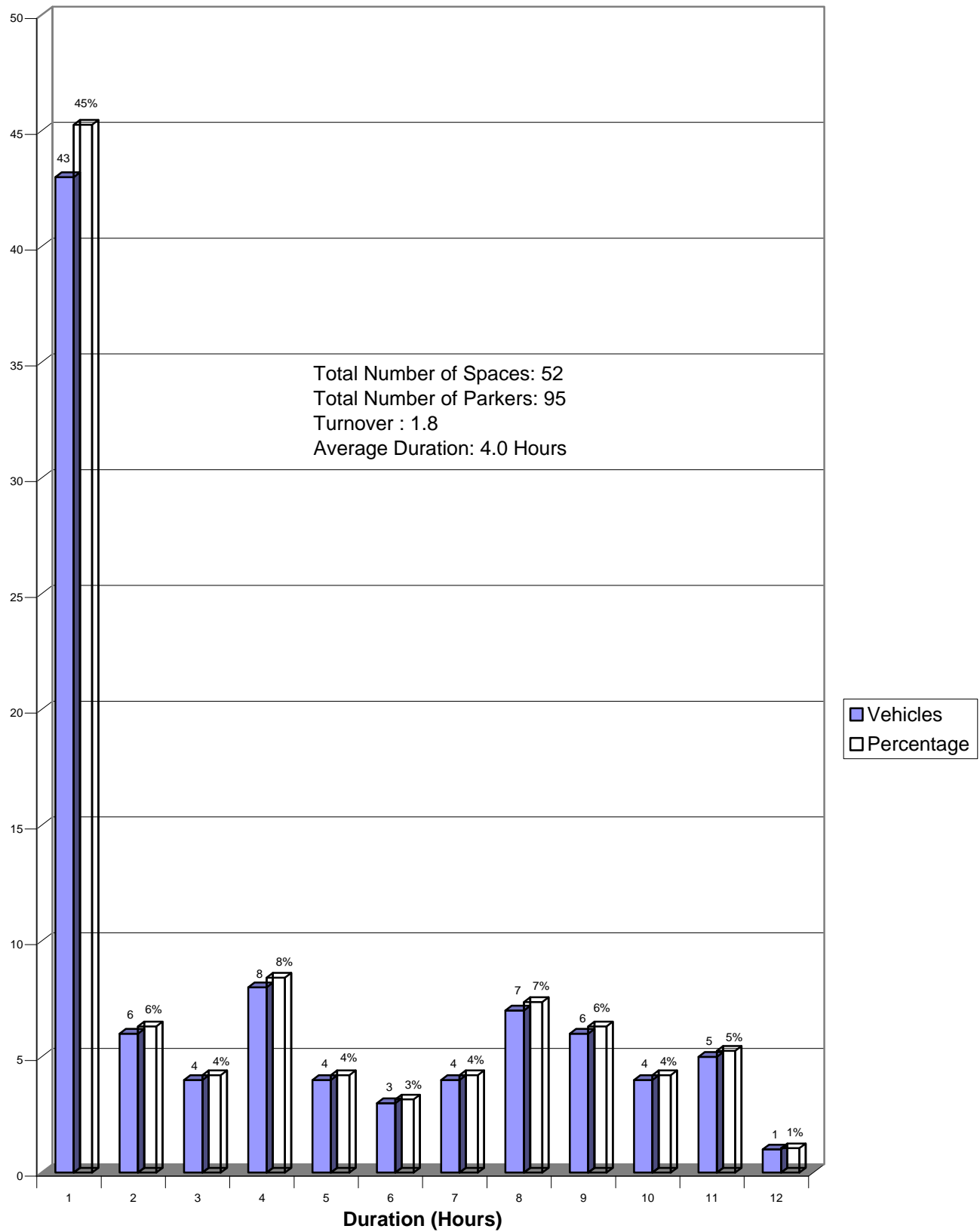
Parking Duration
Town Hall Municipal Parking Lot

Figure BC-18



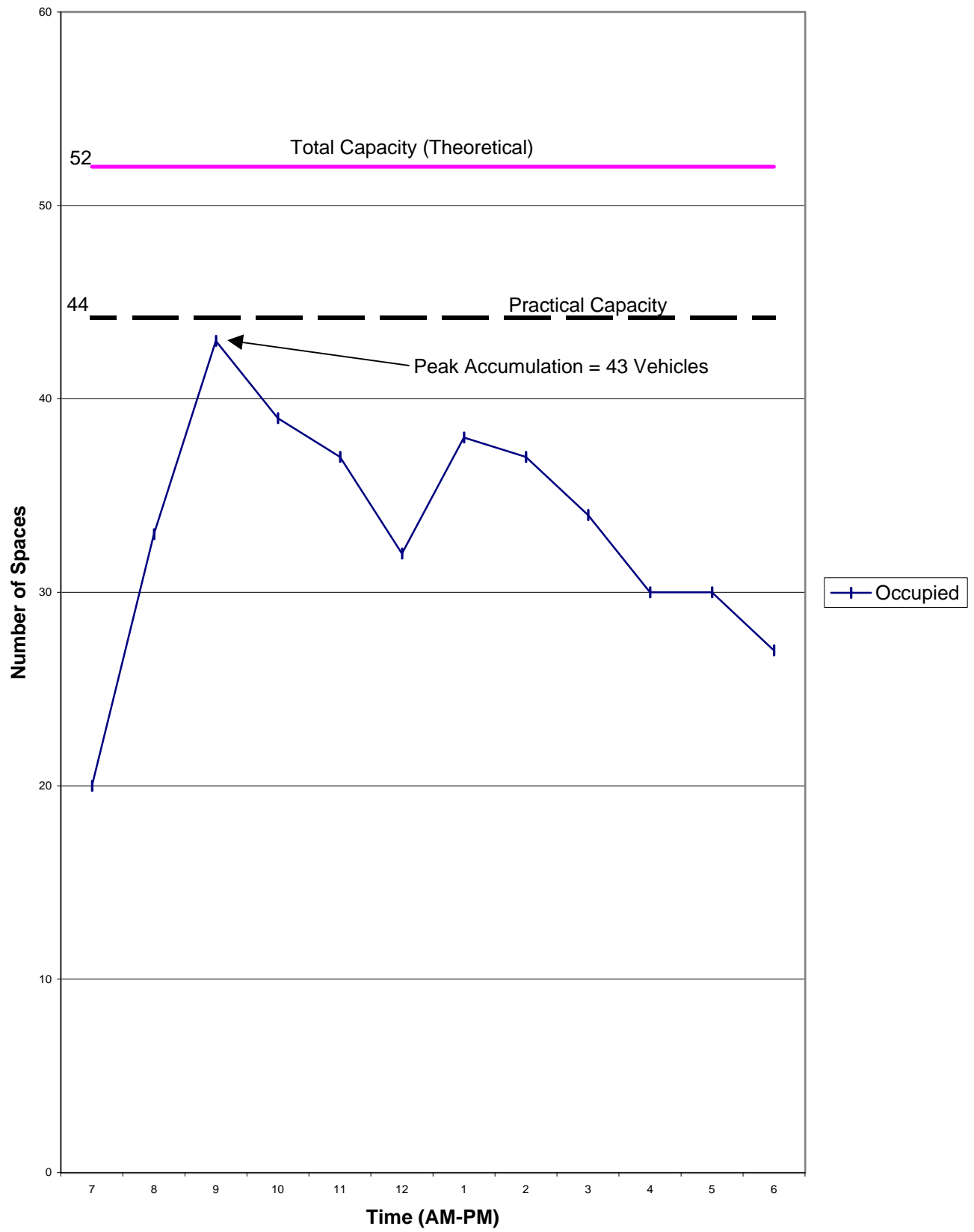
Parking Accumulation
Cushing Square Municipal Parking Lot

Figure CS-1



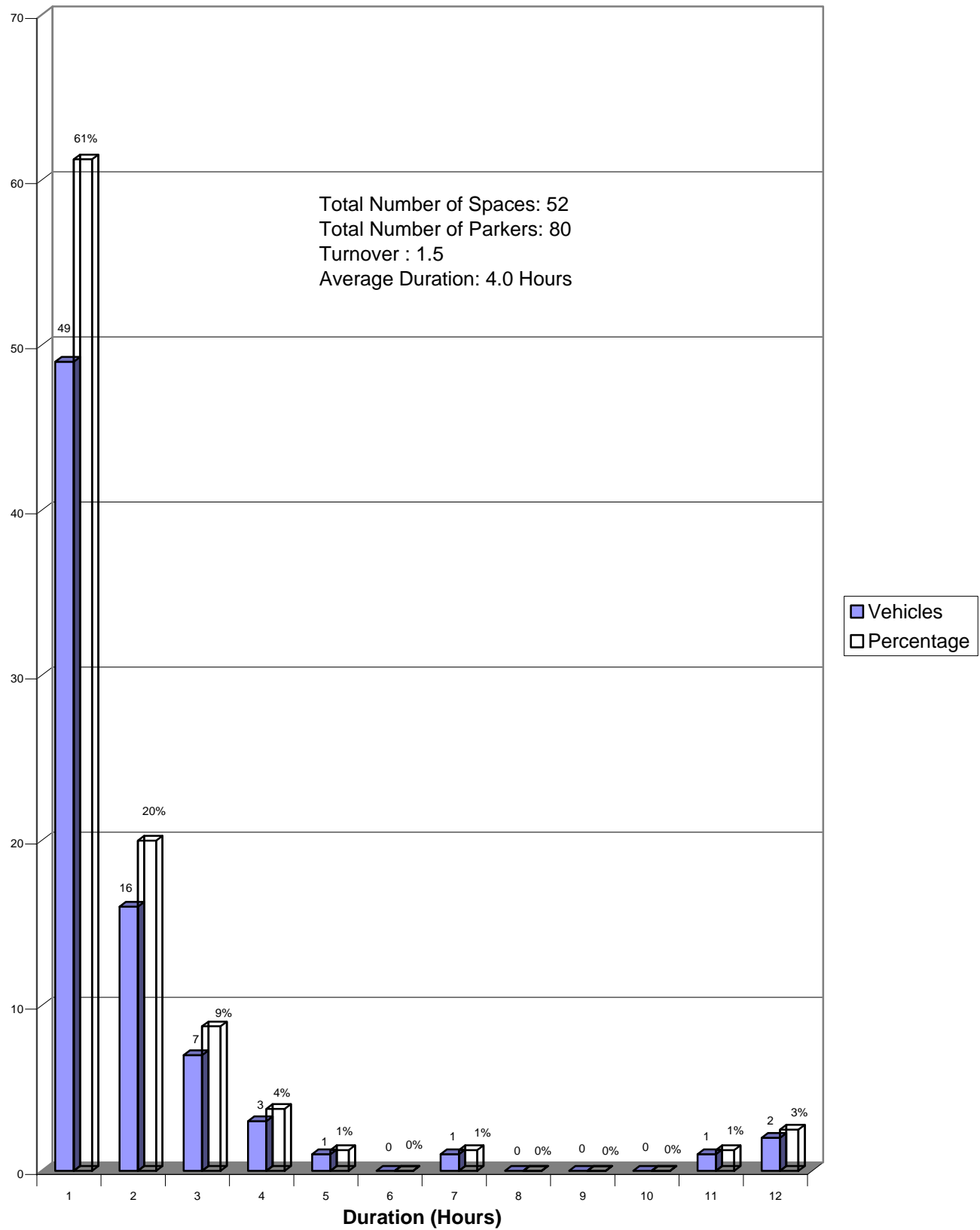
Parking Duration
Cushing Square Municipal Parking Lot

Figure CS-2



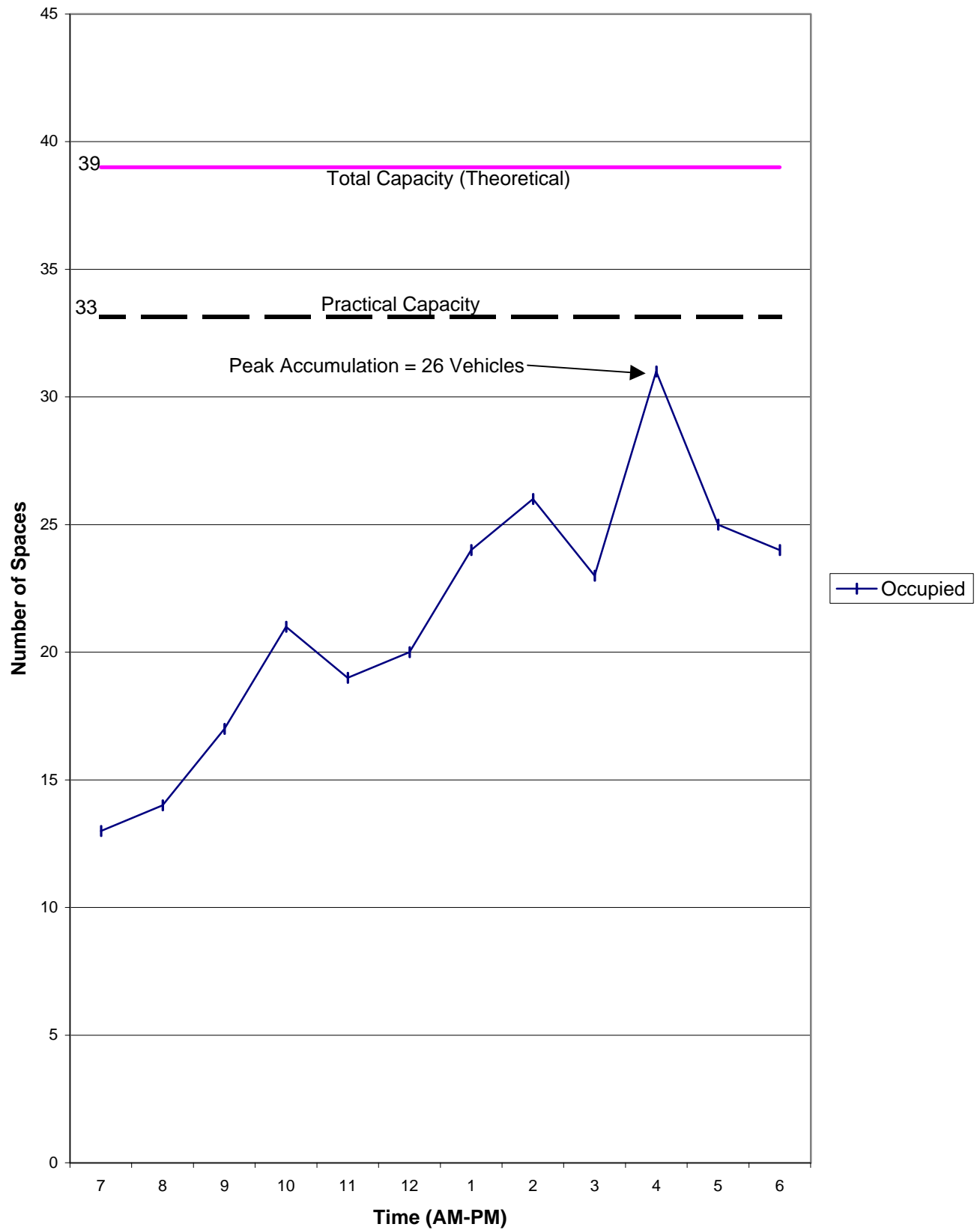
Parking Accumulation
Trapelo Road On-Street Parking

Figure CS-3



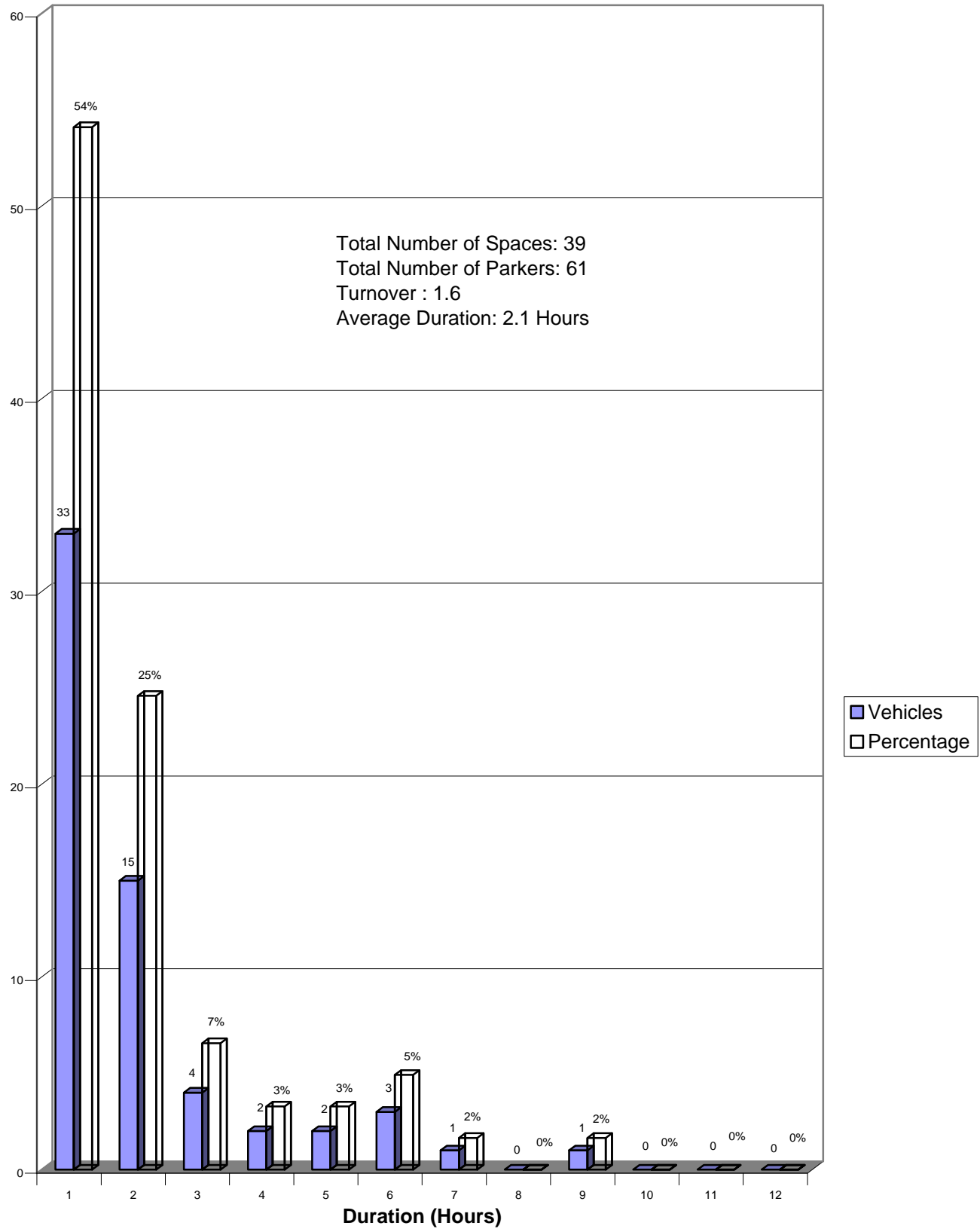
Parking Duration
Trapelo Road On-Street Parking

Figure CS-4



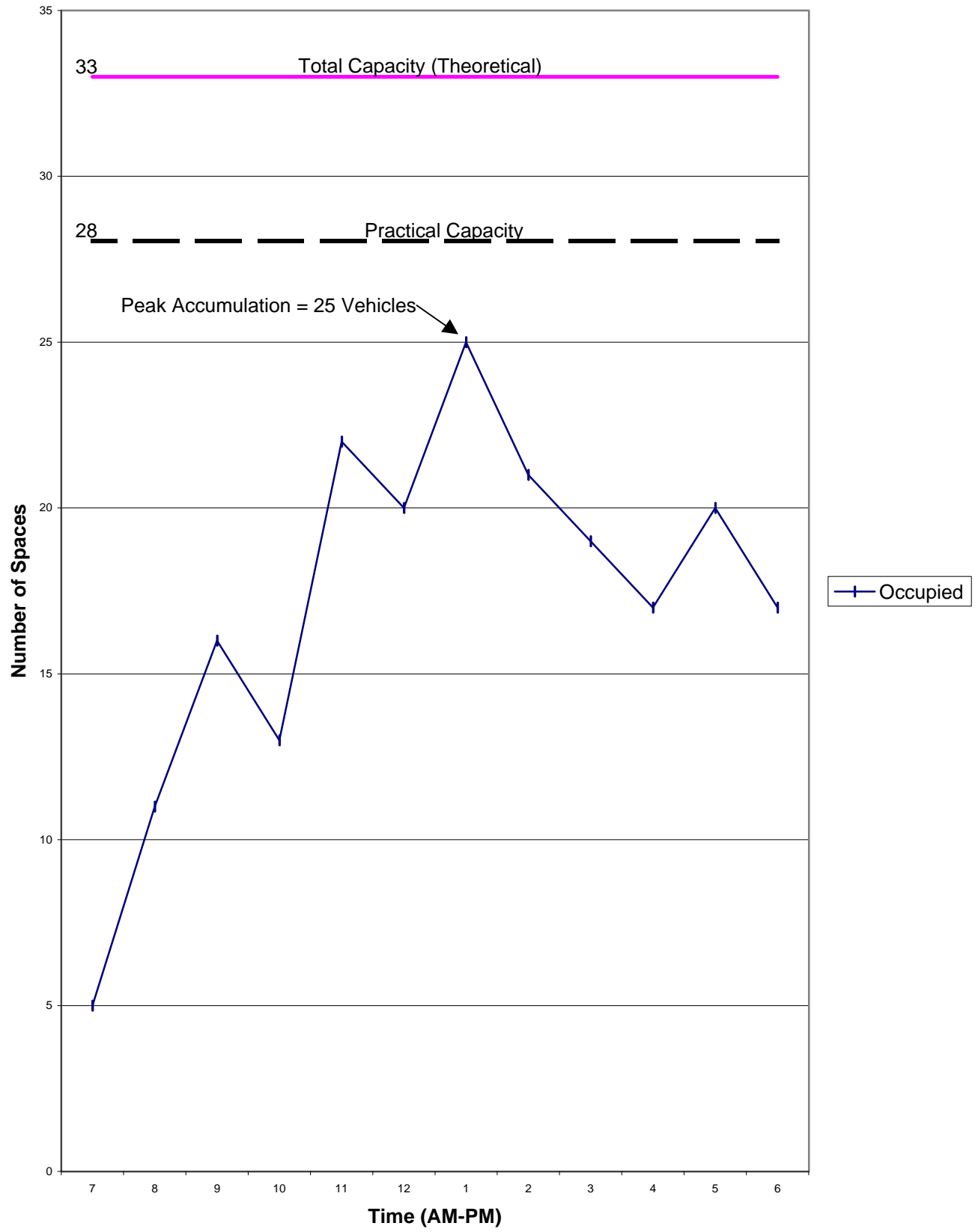
Parking Accumulation
Common Street North / Payson Road
On-Street Parking

Figure CS-5



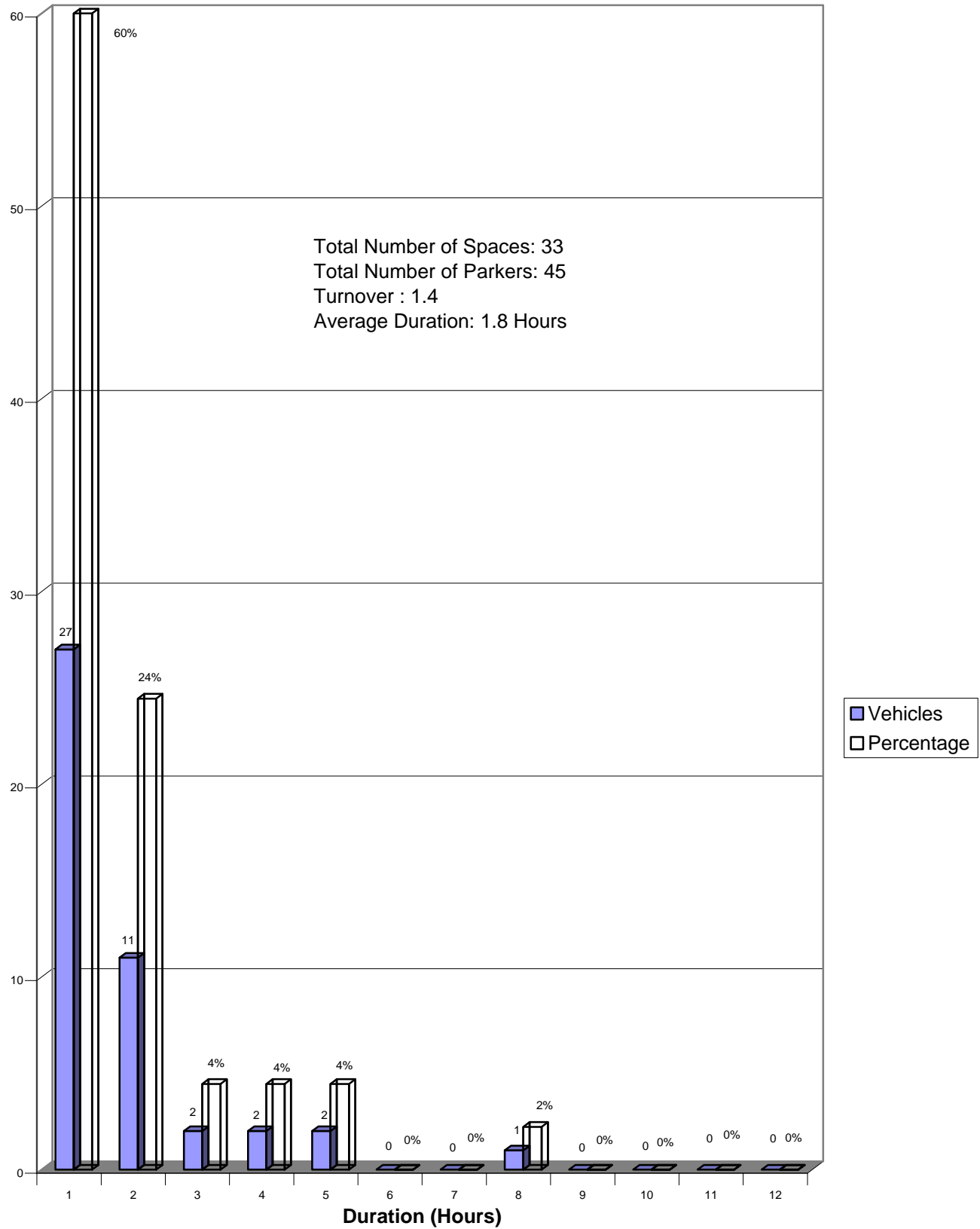
Parking Duration
 Common Street North / Payson Road
 On-Street Parking

Figure CS-6



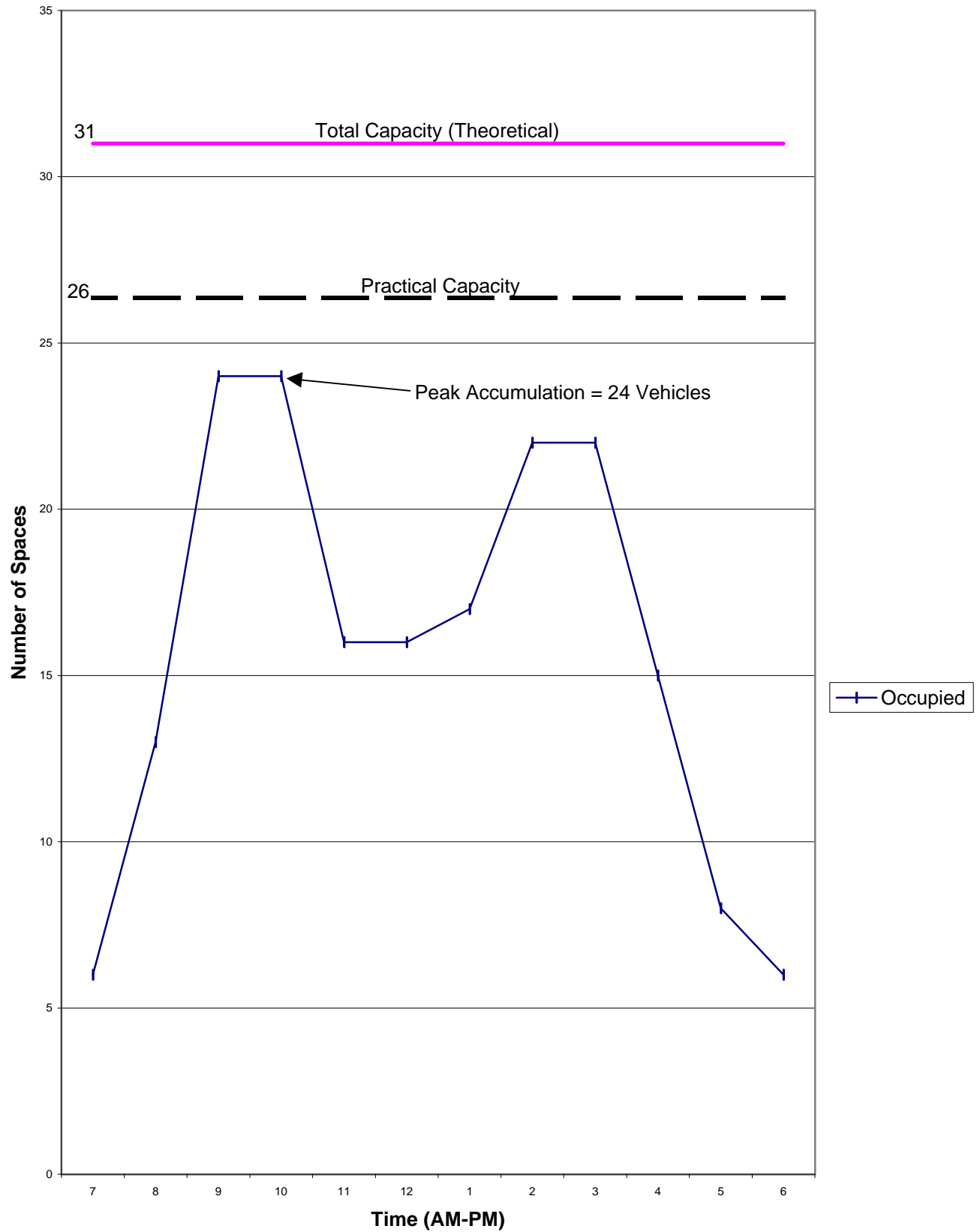
Parking Accumulation
Common Street South / Williston Road
On-Street Parking

Figure CS-7



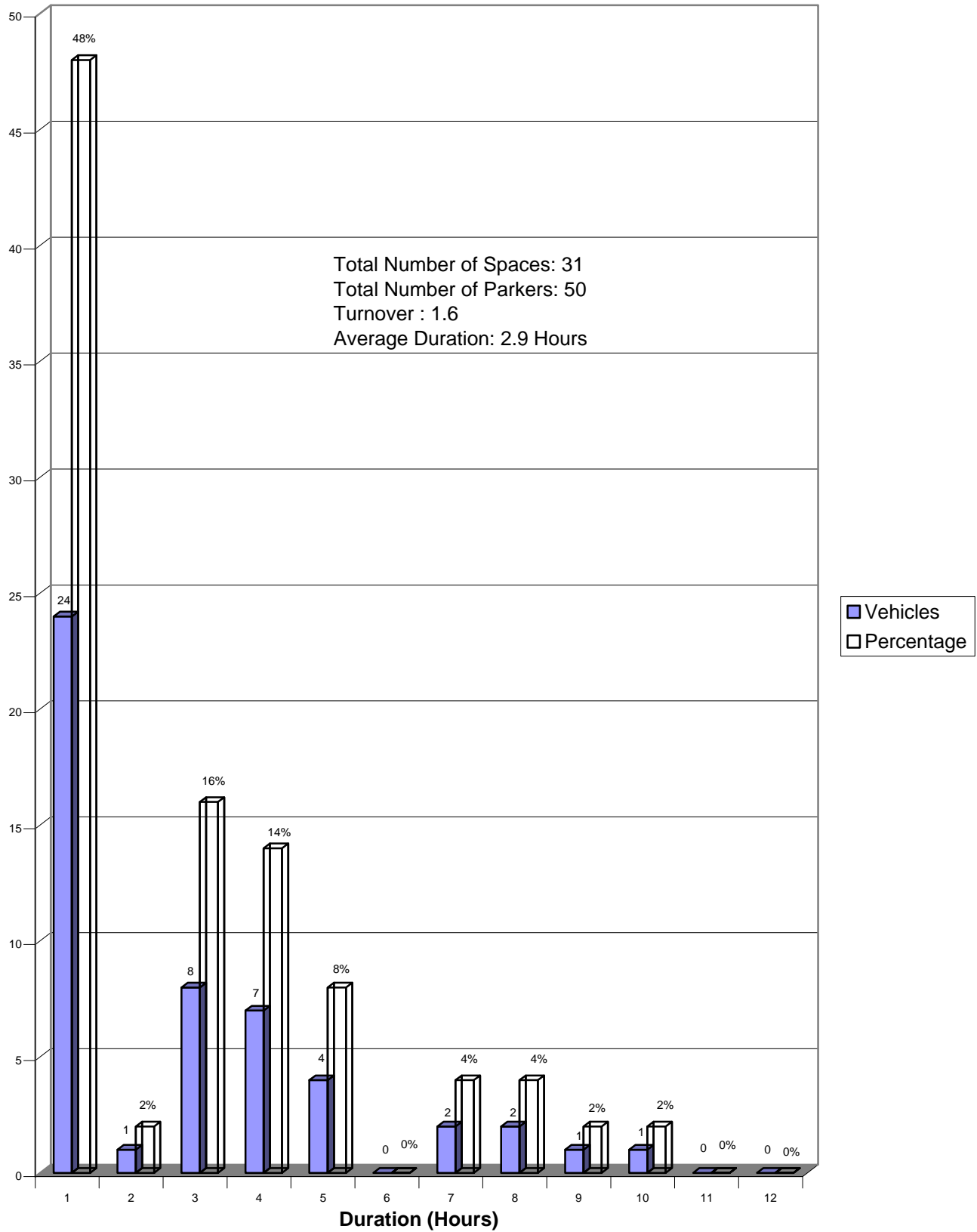
Parking Duration
 Common Street South / Williston Road
 On-Street Parking

Figure CS-8



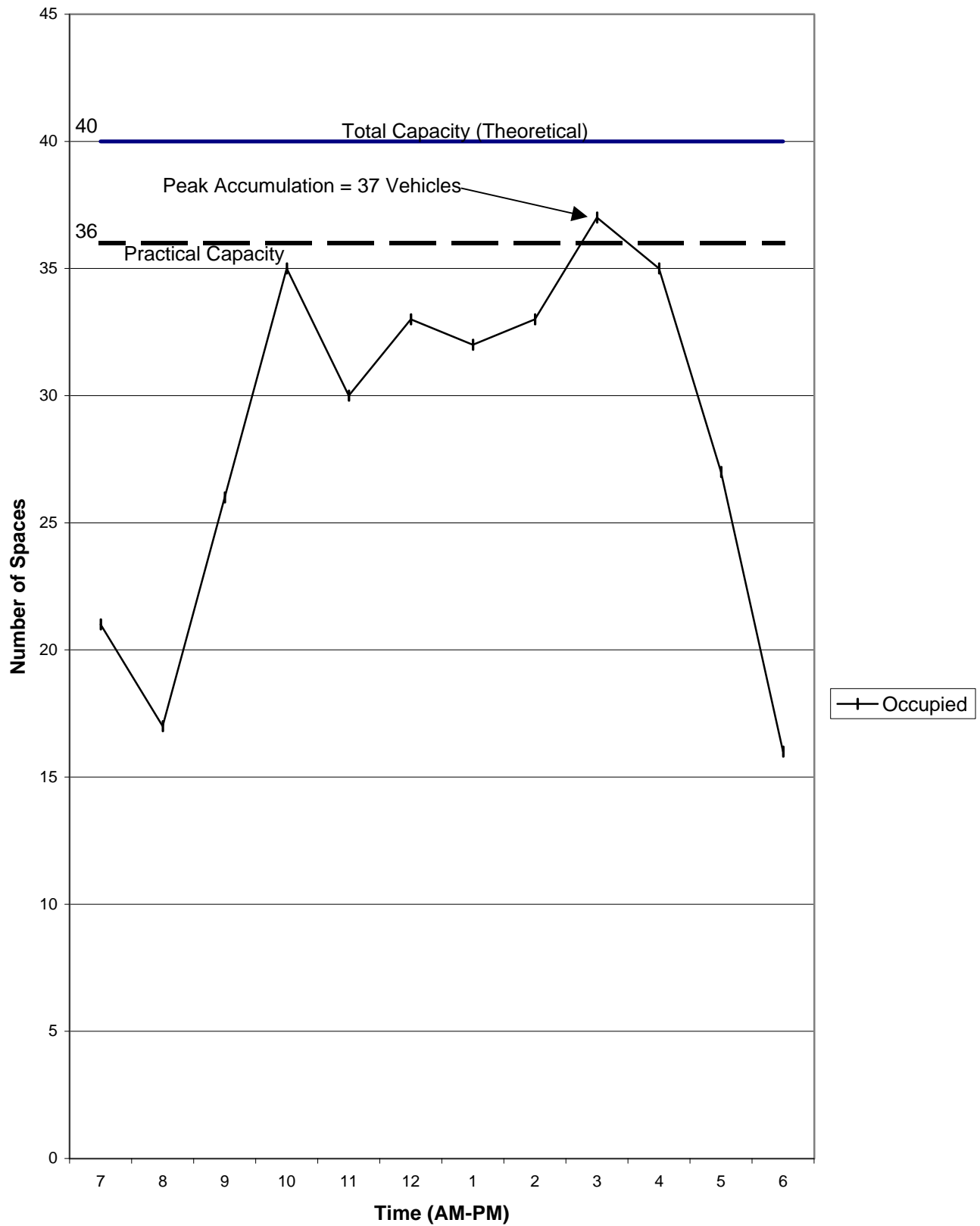
Parking Accumulation
Cushing Avenue / Linden Avenue /
Willow Street On-Street Parking

Figure CS-9



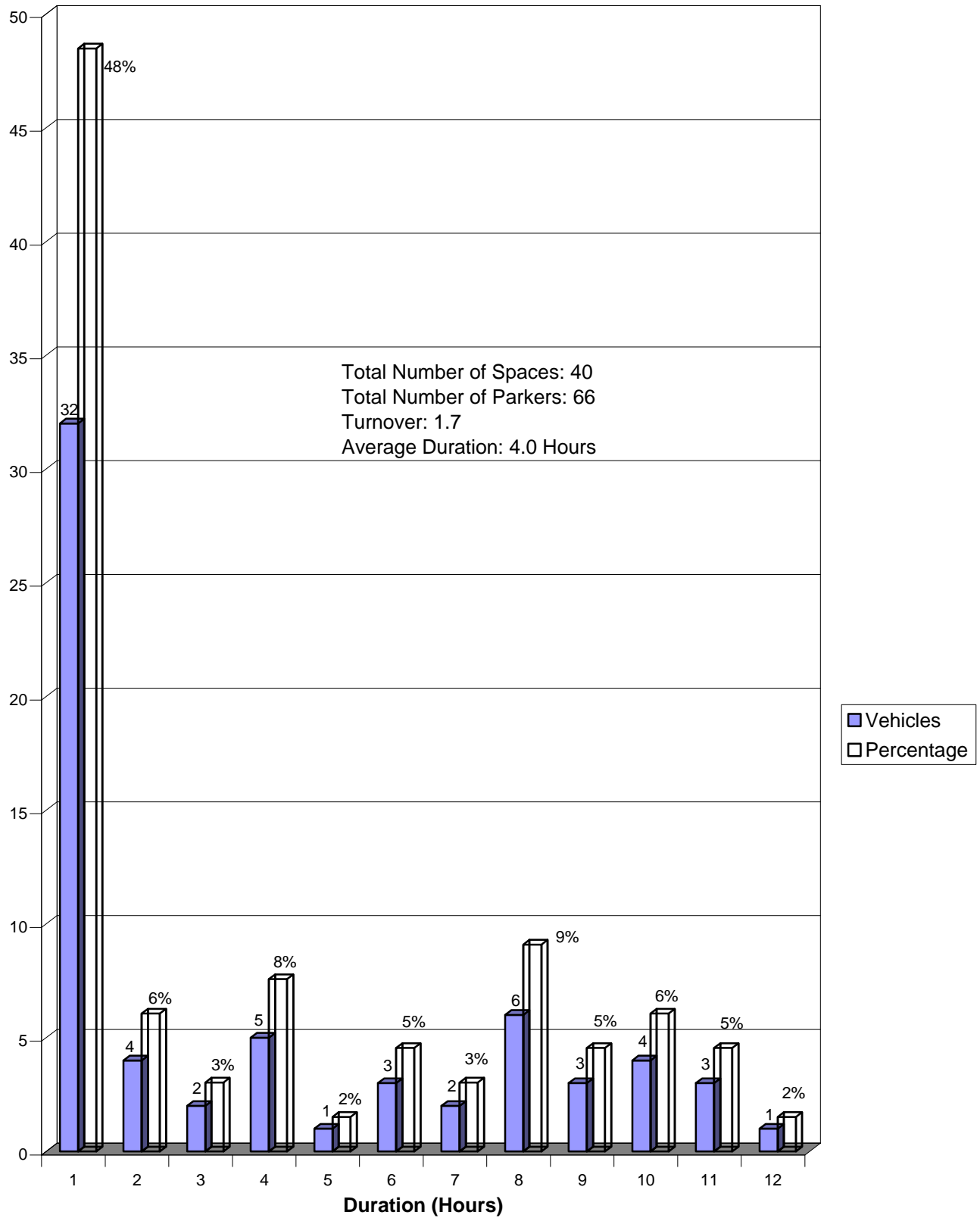
Parking Duration
Cushing Avenue / Linden Avenue /
Willow Street On-Street Parking

Figure CS-10



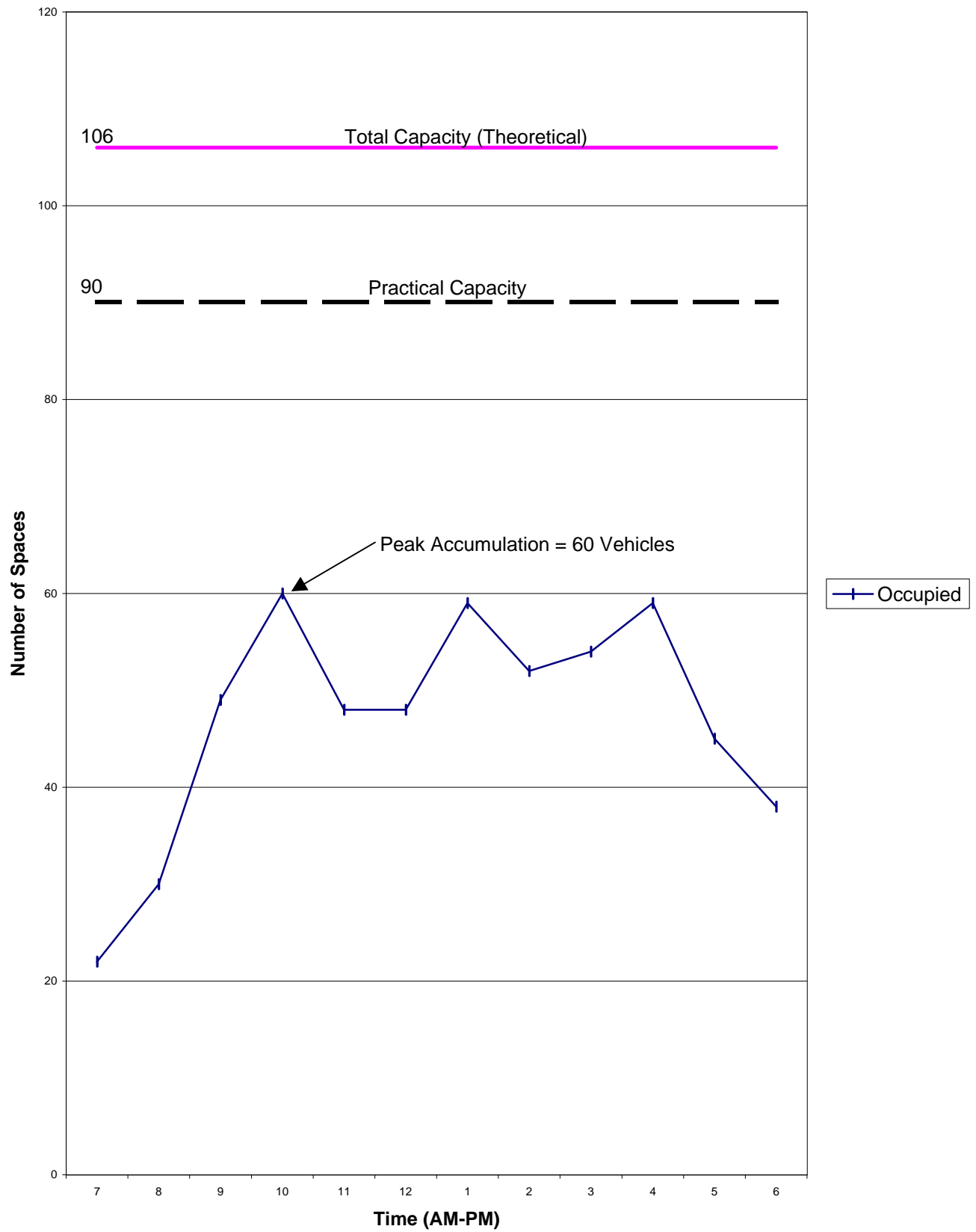
Parking Accumulation
Waverly Square Municipal Parking Lot

Figure WS-1



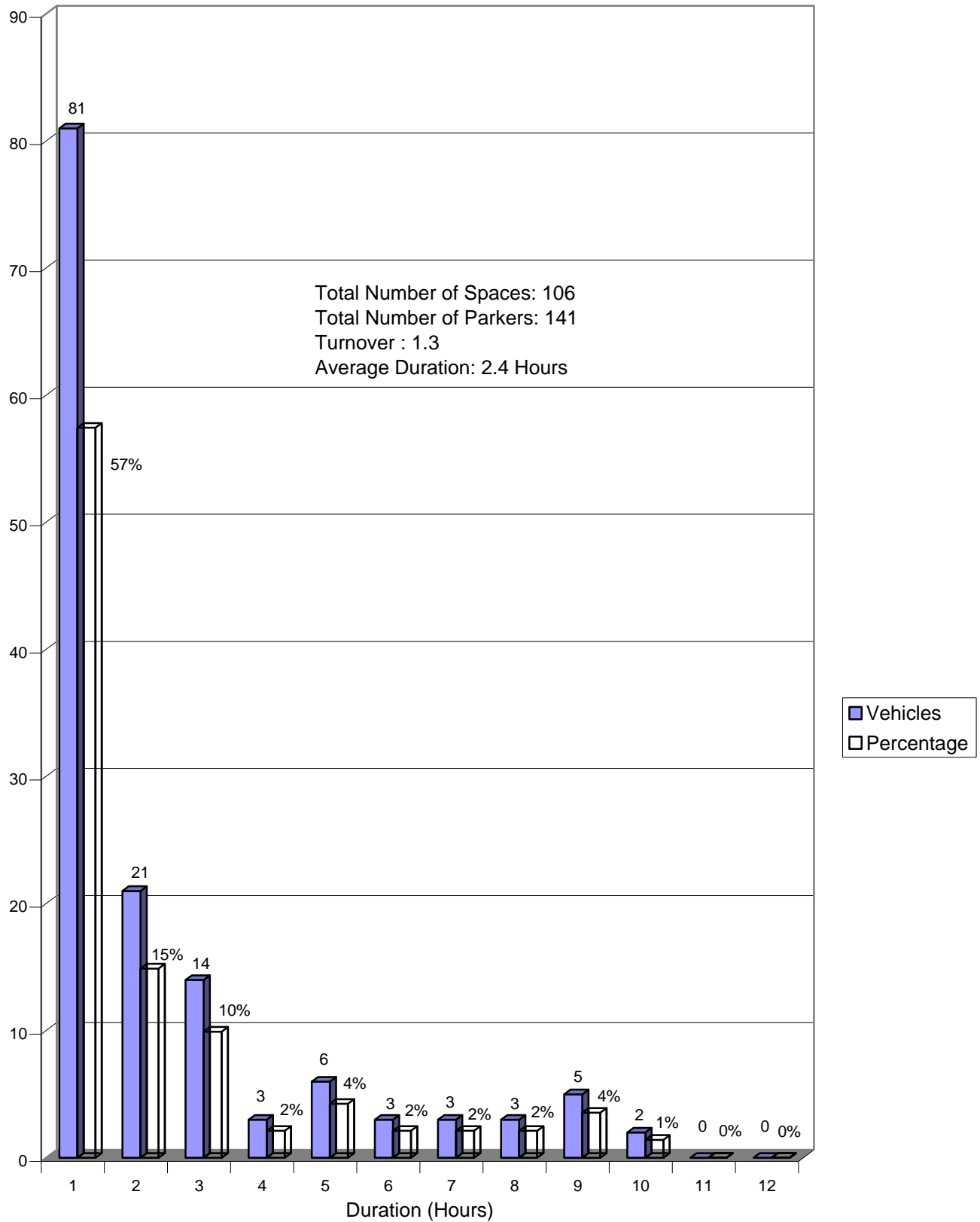
Parking Duration
Waverly Square Municipal Parking Lot

Figure WS-2



Parking Accumulation
Waverly Square On-Street Parking

Figure WS-3



Parking Duration
Waverly Square On-Street Parking

Figure WS-4

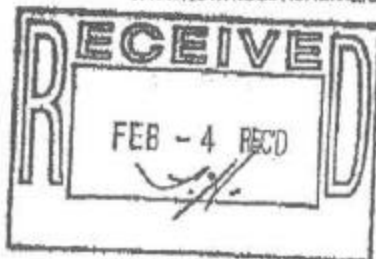
Memorandum from Town Administrator



*Office of the Board of Selectmen
Town of Belmont, Massachusetts*

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CHAIR
WILLIAM P. MONAHAN
VICE CHAIR
WILLIAM N. BROWNSBERGER
ANNE MARIE S. MAHONEY
TOWN ADMINISTRATOR
MELVIN A. KLECKNER

TO: Board of Selectmen
FROM: Melvin A. Kleckner, Town Administrator
DATE: February 1, 2002
RE: Parking Study Issue

At their meeting on Tuesday evening, the Fire Station Consolidation Committee was visited by the owner of the house adjacent to the Cushing Square Municipal Parking Lot (19 Home Road). While it wasn't fully clear, the owner seemed to be letting the Town know that they wouldn't object for their property to be taken to accommodate a fire station. They indicated that their neighboring property at 13 Home is owned by a very elderly man. The Committee inquired whether these two properties could be incorporated into the parking study currently underway.

As you can see from the attached map, these two properties in question would create a natural expansion of the site. A third adjacent parcel is the undeveloped property on Home Road, utilized commercially for parking. I believe it is prudent to consider these properties when planning expansion of the lot for parking and/or siting a fire station at this location. If you concur, I will advise the Senior Planner, who is managing the study, and provide appropriate notice to the property owners.

cc: Timothy Higgins, Senior Planner
Michael Egan, Chair, Fire Station Consolidation Committee