



565 East Swedesford Road, Suite 300  
Wayne, PA 19087

Tel: 610.995.0260  
www.walkerparking.com

September 2, 2016

Ms. Carolyn Murphy  
Director of Planning and Code Compliance  
City of Williamsburg  
401 Lafayette Street  
Williamsburg, Virginia 23185-3617

Re: Downtown Parking Study  
Williamsburg, VA  
Walker Project Number 14-4087.00

Dear Ms. Murphy:

Walker Parking Consultants, in association with EPR, PC, is pleased to present our findings and recommendations related to the referenced project. The attached report contains our analysis, assumptions, conclusions, and recommendations regarding parking in the downtown area. Overall, our observations and ten-year projections suggest that adequate parking is available in the downtown area, but may not be perceived as convenient for some users. We have identified opportunities to increase parking capacity, including surface lot reconfiguration and expansion and multi-story parking structures. We recommend pursuing several of the surface parking lots options and holding off on another parking structure, and instead, focus on parking management strategies that if implemented effectively, can address parking challenges.

We appreciate and thank you for the opportunity to be of service to the City of Williamsburg. Please do call if there are any questions regarding our work.

Sincerely,

WALKER PARKING CONSULTANTS

A handwritten signature in black ink that reads "John W. Dorsett". The signature is written in a cursive style with a large initial "J".

John W. Dorsett, AICP, CPP  
Senior Vice President

A handwritten signature in blue ink that reads "Megan Gardo". The signature is written in a cursive style with a large initial "M".

Megan Gardo  
Parking Analyst



Ahead of the Curve  
in creative parking solutions

DOWNTOWN PARKING STUDY

**CITY OF WILLIAMSBURG**  
WILLIAMSBURG, VA

Prepared for:  
CITY OF WILLIAMSBURG

SEPTEMBER 2, 2016



**WALKER**  
PARKING CONSULTANTS

DOWNTOWN PARKING STUDY

## CITY OF WILLIAMSBURG

WILLIAMSBURG, VA

Prepared for:  
CITY OF WILLIAMSBURG

SEPTEMBER 2, 2016



**WALKER**  
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# Table of Contents

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	<b>V</b>
Conclusions and Recommendations .....	v
Supply and Demand Analysis .....	v
Parking Policies and Practices .....	viii
Alternatives Analysis .....	ix
<b>SUPPLY AND DEMAND ANALYSIS</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
Definition of Terms.....	1
<b>EXISTING CONDITIONS</b> .....	<b>2</b>
Study Area.....	2
Parking Supply.....	5
Effective Parking Supply .....	7
Weekday Conditions.....	9
<i>Parking Occupancy</i> .....	9
<i>Parking Adequacy</i> .....	13
Weekend Conditions .....	14
<i>Parking Occupancy</i> .....	14
<i>Parking Adequacy</i> .....	18
Merchants Square Parking Demand.....	19
Seasonal Parking Occupancy Verification.....	21
<i>Weekday Parking Occupancy</i> .....	21
<i>Weekend Parking Occupancy</i> .....	23
Design Day Conditions.....	24
<b>PARKING SURVEY FINDINGS</b> .....	<b>25</b>
<b>FUTURE CONDITIONS</b> .....	<b>27</b>
Projected Parking Demand .....	27
Future Parking Supply.....	28
2021 Weekday Conditions.....	29
<i>Parking Occupancy</i> .....	29
<i>Parking Adequacy</i> .....	34
2026 Weekday Conditions.....	35
<i>Parking Occupancy</i> .....	35
<i>Parking Adequacy</i> .....	40
<b>FUTURE WEEKEND CONDITIONS</b> .....	<b>41</b>
2021 Weekend Conditions.....	42
<i>Parking Occupancy</i> .....	42
<i>Parking Adequacy</i> .....	46
2026 Weekend Conditions.....	47
<i>Parking Occupancy</i> .....	47
<i>Parking Adequacy</i> .....	51

## Table of Contents

Conclusions/Findings.....	52
<b>PARKING POLICIES AND PRACTICES .....</b>	<b>54</b>
Introduction .....	55
Summary of Program.....	55
Goals and Objectives of Parking System.....	57
Zoning Ordinance .....	57
<i>Recommendation</i> .....	59
Organizational Structure.....	61
<i>Recommendation</i> .....	63
Parking Rates and Fines.....	64
<i>Recommendation</i> .....	66
Parking Enforcement .....	68
<i>Staffing and Hours</i> .....	68
<i>Recommendation</i> .....	68
<i>Enforcement Equipment</i> .....	69
<i>Recommendation</i> .....	70
Parking Permits .....	71
<i>Employee Parking Program</i> .....	71
<i>Student Parking Program</i> .....	72
Communications and public relations .....	72
Williamsburg Mobile Phone App .....	73
<i>Recommendation</i> .....	74
Parking Facility Maintenance.....	75
<i>Recommendation</i> .....	77
Parking System Finances.....	77
<i>Recommendation</i> .....	77
Public Safety Escort Service .....	78
<i>Recommendation</i> .....	78
<b>ALTERNATIVES ANALYSIS .....</b>	<b>79</b>
Walking Distance.....	80
Reconfiguration/Restriping Option .....	83
<i>Block 19 - Lot P6</i> .....	83
<i>Block 19 Entrance Reconfiguration</i> .....	85
<i>Block 15 – Lot P3</i> .....	87
Structured Parking Options.....	88
<i>Block 19 - Lot P6</i> .....	89
<i>Block 25 - CW Employee lot</i> .....	92
<i>Block 9 – Williamsburg Church Lot</i> .....	93
<i>Block 6 – Stryker Center Lot</i> .....	96
Matrix of the Analysis.....	99
<b>APPENDIX A: SCOPE OF SERVICES .....</b>	<b>103</b>
<b>APPENDIX B: SUPPLY AND DEMAND SUPPLEMENT ANALYSIS .....</b>	<b>109</b>

## Table of Contents

<b>APPENDIX C: PARKING OCCUPANCY DATA – MARCH BY FACILITY .....</b>	<b>130</b>
<b>APPENDIX D: PARKING OCCUPANCY DATA – JULY .....</b>	<b>131</b>
<b>APPENDIX E: SHARED PARKING AGREEMENTS .....</b>	<b>132</b>
<b>APPENDIX F: METER ANALYSIS .....</b>	<b>133</b>
<b>APPENDIX G: STRUCTURED PARKING ANALYSIS .....</b>	<b>149</b>

### LIST OF TABLES AND FIGURES

Table 1: Parking Supply Summary .....	6
Table 2: Effective Parking Supply Summary .....	9
Table 3: Parking Occupancy Summary -Weekday .....	10
Table 4: Weekday Parking Adequacy Summary .....	13
Table 5: Parking Occupancy Summary - Weekend .....	14
Table 6: Weekend Parking Adequacy Summary .....	18
Table 7: Weekday Merchants Square Parking Occupancy and Adequacy .....	19
Table 8: Weekend Merchants Square Parking Occupancy and Adequacy .....	20
Table 9: Weekday Parking Occupancy Summary - July .....	22
Table 10: Weekend Parking Occupancy Summary - July .....	23
Table 11: New Development Assumptions .....	28
Table 12: Change to Future Parking Supply .....	29
Table 13: Projected 2021 Parking Adequacy - Weekday .....	34
Table 14: Projected 2026 Parking Occupancy – Weekday .....	35
Table 15: Projected 2026 Weekday Parking Occupancy – by Type .....	36
Table 16: Projected 2026 Parking Adequacy - Weekday .....	40
Table 17: Projected 2021 Parking Occupancy – Weekend .....	42
Table 18: Projected 2021 Parking Occupancy Weekend – by Type .....	43
Table 19: Projected 2021 Parking Adequacy - Weekend .....	46
Table 20: Projected 2026 Parking Occupancy – Weekend .....	47
Table 21: Projected 2026 Parking Occupancy Weekend – by Type .....	48
Table 22: Projected 2026 Parking Adequacy - Weekend .....	51
Table 23: Parking Supply, Demand, and Adequacy Summary .....	53
Table 24: Parking Facilities Owned by Colonial Williamsburg Foundation .....	56
Table 25: Parking Garages Owned by the City of Williamsburg .....	57
Table 26: Community Approach to Parking Planning .....	57
Table 27: Available Parking Supply in Select Lots .....	60
Table 28: Available Parking Supply in Select Lots .....	61
Table 29: Williamsburg Existing Off-Street Parking Rates .....	64
Table 30: Prince George Garage Monthly Parking Rates .....	65
Table 31: Williamsburg Proposed Parking Rates .....	67
Table 32: Recommended City of Williamsburg Parking Violation Rates .....	68
Table 33: LOS Conditions: Walking Distances .....	81
Table 34: Alternatives Matrix .....	101
Table 35: Weekday Parking Occupancy Summary – On-Street .....	110
Table 36: Weekday Morning Parking Occupancy Summary –Off-Street .....	112
Table 37: Weekday Parking Adequacy Summary – by Type .....	113
Table 38: Weekend Parking Occupancy Summary – On-Street .....	114
Table 39: Weekend Parking Occupancy Summary –Off-Street .....	116
Table 40: Weekend Parking Adequacy Summary – by Type .....	117

## Table of Contents

Table 41: Weekday Parking Adequacy Summary - July .....	118
Table 42: Weekday Parking Adequacy Summary – by Type (July).....	119
Table 43: Weekend Parking Adequacy Summary – July .....	120
Table 44: Weekend Parking Adequacy Summary – by Type (July) .....	121
Table 45: Projected 2021 Parking Adequacy Weekday – by Type .....	126
Table 46: Projected 2026 Parking Adequacy Weekday – by Type .....	127
Table 47: Projected 2021 Parking Adequacy Weekend – by Type.....	128
Table 48: Projected 2026 Parking Adequacy Weekend – by Type.....	129
Figure 1: Study Area.....	4
Figure 2: Parking Supply by Type .....	7
Figure 3: Weekday Parking Occupancy Summary.....	10
Figure 4: Weekday Parking Occupancy – Privately-Owned Off-Street .....	11
Figure 5: Weekday Parking Occupancy – Publicly -Owned Off-Street and On-Street .....	12
Figure 6: Weekend Parking Occupancy Summary .....	14
Figure 7: Weekend Parking Occupancy – Privately-Owned Off-Street .....	16
Figure 8: Weekend Parking Occupancy – Publicly -Owned Off-Street and On-Street .....	17
Figure 9: Projected 2021 Weekday Occupancy – Private Off-Street .....	32
Figure 10: Projected 2021 Weekday Occupancy – Public Off-Street and On-Street .....	33
Figure 11: Projected 2026 Weekday Occupancy – Private Off-Street .....	38
Figure 12: Projected 2026 Weekday Occupancy – Public Off-Street and On-Street .....	39
Figure 13: Projected 2021 Weekend Occupancy – Private Off-Street.....	44
Figure 14: Projected 2021 Weekend Occupancy – Public Off-Street and On-Street.....	45
Figure 15: Projected 2026 Weekend Occupancy – Private Off-Street.....	49
Figure 16: Projected 2026 Weekend Occupancy – Public Off-Street and On-Street.....	50
Figure 17: Walking Distances – Blocks 7 & 19.....	82
Figure 18: Block 19 Reconfiguration Option .....	84
Figure 19: Francis Street Reconfiguration for P6 Lot .....	86
Figure 20: Block 15 Restriping Option.....	87
Figure 21: Block 19 Structure Parking Location .....	90
Figure 22: Structured Parking on Block 19.....	91
Figure 23: Block 25 Structure Parking Location .....	92
Figure 24: Structured Parking on Block 25.....	93
Figure 25: Block 9 Structure Parking Location .....	94
Figure 26: Structured Parking on Block 9.....	95
Figure 27: Block 6 Structure Parking Location .....	97
Figure 28: Structured Parking on Block 6.....	98
Figure 29: Minimum Parking Structure Dimensions .....	151

## Executive Summary

### EXECUTIVE SUMMARY

Downtown Williamsburg is a thriving community, uniquely situated between the College of William and Mary and Colonial Williamsburg. While its proximity to both a major tourist destination and a prestigious educational institution offer many economic benefits, balancing the needs of so many constituents also presents several challenges. As such, the City of Williamsburg (“City”) actively plans for and seeks out opportunities to grow and improve the downtown. The continued growth has led to increased demand for parking in the downtown area.

In response to the 2013 Comprehensive Plan, which charges the City with ensuring adequate parking is available for residents and visitors, the City of Williamsburg engaged Walker Parking Consultants and EPR, PC to develop a Parking Master Plan that meets the needs of visitors, downtown merchants and employees, city residents, the Colonial Williamsburg Foundation, and the College of William and Mary. As part of this effort, the team led multiple stakeholder meetings, performed a comprehensive parking supply and demand analysis of the downtown area, identified opportunities to reconfigure existing parking facilities and develop new parking facilities in the downtown area, and recommended options to improve existing parking operations and practices.

### CONCLUSIONS AND RECOMMENDATIONS

Our assessment of parking needs in the downtown area indicates the City’s parking “shortage” is a problem of perception rather than an actual scarcity of parking. While the most desirable parking spaces in the core of the downtown are nearly 100% occupied, parking facilities within one to two blocks of the Merchants Square area have excess capacity. The challenge now becomes effectively utilizing the existing parking resources.

One of the key strategies to achieving a more balanced parking system is to expand the paid parking to include more off-street facilities and also on-street parking spaces. Currently, much of the public parking supply in downtown Williamsburg is provided to users at no cost. In fact, the City only charges in the less convenient parking garages and lot located on the fringes of the downtown core; during this study, Walker observed that several stakeholders commented on how this seemed backward; we agree. Paid parking, and several other parking management strategies are discussed further in the body of this report.

### SUPPLY AND DEMAND ANALYSIS

During the stakeholder meetings, Walker learned from the City and Colonial Williamsburg Foundation (“CW”) that downtown parking occupancy levels reach a typical peak during the March spring break and the summertime. Therefore, the field data collection performed for this study was completed during these typical peak time periods. Parking demand in the downtown area was observed during the typical and representative busy weeks of March 20<sup>th</sup>, 2016, a primary spring break week, and July 10<sup>th</sup>, 2016, a summertime week following Independence Day. A 25-block area was surveyed on both typical busy weekdays and Saturdays with parked car counts performed at 10 a.m., 2 p.m., and 7 p.m.

Peak parking demand was observed during the March weekday survey when 62% of the 4,326 available public and private parking spaces were observed as occupied. Public off-street facilities were more utilized than on-street and private off-street parking facilities. During the evenings and weekends, parking occupancy rates are significantly lower, with only about 40±% of the available supply occupied.

## Executive Summary

While the overall parking system adequately supports peak parking conditions, parking “hot spots” do exist on some blocks for some parking space types. These localized shortages may give parkers the perception of inadequate parking in the downtown, despite plentiful parking within a block or two. Specifically, the lots and on-street spaces closest to the Merchants Square area were observed to experience occupancy rates above 85% of capacity, while the P6 lot and the Prince George Parking Garage had a surplus of spaces.

The following are our key field observations:

- An estimated 4,326 parking spaces were identified within the downtown study area, including 2,419 privately-owned off-street spaces, 1,327 public off-street spaces, and 580 on-street parking spaces.
- The parking supply was reduced by 10 on-street spaces during the spring count when Richmond Road was restriped, resulting in 4,316 available spaces in the study area.
- Peak weekday parking occupancy was observed during the weekday afternoon in March when approximately 2,670 spaces or 62% of the parking supply was occupied.
- During weekend conditions, peak parking demand was also observed around 2 p.m., when 1,927 spaces or 45% of the available parking supply was occupied.
- Typical peak hour weekday parking occupancy during the July field survey was observed to be substantially lower than March (41% vs. 62%), with only 1,756 occupied spaces. Weekend occupancy demand was significantly lower than weekday parking demand in general, and July demand was lower than March 2016 demand.

Future parking demand for 2026 was projected by taking baseline existing conditions and adding incremental growth from the following two sources: a) identified and known proposed redevelopment projects; and b) an assumed baseline demand growth rate of 1% per annum. This methodology results in demand for an additional 476± spaces during a typical weekday to 349± spaces on the weekend.

Additionally, it is our understanding that the majority of the new developments will not provide their own parking supply on site to support their own parking needs, with the exception of the Blayton Building Redevelopment to be located on Block 5, and the residential development to be located on South Henry Street. Future development is also expected to result in the loss of the P3 lot and the Museum lot.

## Executive Summary

### New Development Assumptions

Block	Name	Land Use	Quantity
21	Art Museum Expansion	Museum	55,000 SF
5	Blayton Building Redevelopment	Retail	7,200 SF
		Senior Housing	40 DU
		Residential	50 DU
11	Prince George Commons - vacancy	Restaurant	3,600 SF
		Retail	4,922 SF
5	Cooke Building - Vacancy	Restaurant	3,000 SF
9	Tribe Square - Vacancy	Fast/Casual	1,863 SF
7	Health Evaluation Building - Vacancy	Office	23,332 SF
13	438 Scotland Street	Retail	4,500 SF
		Office	6,750 SF
13	402 Scotland Street	Office	3,372 SF
23	600 South Henry Street	Residential	10 DU
23	622-627 South Henry Street	Residential	14 DU
15	Duke of Gloucester Event Space		
22	516 South Henry Street - Vacancy	Condo	4 DU
		Office	5,441 SF

Assuming both a 1% annual growth in existing background public parking demand and the 349-476 space demand projected as a result of known redevelopment projects, future parking adequacy is projected as follows:

- By 2021, a typical peak weekday parking demand of 2,962 spaces or 70% occupancy is expected when compared to the available supply of 4,235 spaces.
- Over a ten-year planning horizon which extends through 2026, 75% of the available parking spaces are expected to be occupied (3,875 of the 4,205 available spaces) during the busiest of hours.
- During off-peak hours and off-peak months, parking occupancy rates would be measurably less than those observed for this study's design day conditions.

During typical peak weekend conditions, the downtown is expected to experience a 50% parking space occupancy rate in the next five years. The projected parking space occupancy rate is projected to increase to 54% by 2026 during typical peak hours. While most blocks are expected to have an adequate supply to support future demand, parking "hot spots" are expected. This is particularly true in the Merchant's Square area. The table below summarizes current and future parking demand and adequacy by type.

## Executive Summary

		Weekday			Weekend		
		Survey Day	2021	2026	Survey Day	2021	2026
On-Street	Supply	580	576	576	580	576	576
	Effective Supply	494	489	489	494	489	489
	Demand	369	388	405	298	315	328
	Occupancy	64%	67%	70%	51%	55%	57%
	Adequacy	125	101	84	196	174	161
Public Off-Street	Supply	1,327	1,327	1,279	1,327	1,327	1,279
	Effective Supply	1,195	1,195	1,152	1,195	1,195	1,152
	Demand	965	1,064	1,125	901	1,006	1,067
	Occupancy	73%	80%	88%	68%	76%	83%
	Adequacy	230	132	27	294	189	85
Private Off-Street	Supply	2,419	2,332	2,350	2,419	2,332	2,350
	Effective Supply	2,301	2,217	2,234	2,301	2,217	2,234
	Demand	1,336	1,511	1,616	728	801	881
	Occupancy	55%	65%	69%	30%	34%	37%
	Adequacy	965	707	618	1,573	1,416	1,354
Total	Supply	4,326	4,235	4,205	4,326	4,235	4,205
	Effective Supply	3,990	3,901	3,875	3,990	3,901	3,875
	Demand	2,670	2,962	3,146	1,927	2,122	2,276
	Occupancy	62%	70%	75%	45%	50%	54%
	Adequacy	1,320	939	729	2,063	1,779	1,600

### PARKING POLICIES AND PRACTICES

Prior to building any new public parking structures in the downtown, Walker recommends a reconfiguration of existing surface parking lots, the addition of parking lots, and that the City consider changes to current parking policies and practices. The proposed changes are intended to help improve the overall delivery of parking services. These recommendations are based on input from stakeholders directly impacted by public parking policy and practices. In addition, the recommendations reflect Walker’s analysis of current and future parking conditions, and assessment of current operations. The following is a summary of these recommendations:

#### Organization/Communication

- Identify a “parking champion” to serve as a centralized parking resource regarding the management of both on- and off-street facilities in the downtown area.
- With the consent of CW, the City should take over and fund the operation and maintenance of the Colonial Williamsburg lots (P2 through P6)
- Expand the parking functionality of the existing cell phone app to include payment by cell phone, once paid on-street parking is implemented.
- Establish a sinking fund for structural maintenance of the garages.
- Create an auxiliary parking fund for all City-related parking income and expenses. Management of this fund could be provided by the “parking champion.”
- Implement a public safety escort program as a means of ensuring parkers feel secure parking in less convenient lots.

## Executive Summary

### Enforcement

- Maintain the concept of a graduated fine schedule and increase parking fines to discourage repeat offenders. Modify the graduated fine schedule to allow for a warning or “courtesy” ticket for first time offenders. Grace for first-time offenders could help promote the downtown and make it more user friendly. Higher fines for repeat offenders send a clear message to those who might otherwise “game” or try to “game” the system.
- Hire a part time parking enforcement officer on nights and weekends.
- Consider extending enforcement hours to include evenings and weekends to ensure turnover of prime parking spaces.
- Upgrade existing enforcement equipment to create efficiency and better record-keeping; switch from manual ticket-writing to tickets issued through handhelds.

### Demand Management

- Pursue opportunities to increase the public parking supply through shared parking agreements with private property owners. Walker observed as many as 350 vacant spaces spread throughout the downtown in a dozen lots during the evening hours.
- Implement a paid parking system for both on- and off-street parking assets. We recommend an hourly parking rate of \$1.50 at on-street spaces for the first two hours and \$3 per hour for every additional hour. Parking rates in the P2 through P5 lots should also reflect this fee schedule. Public off-street rates should also be increased to keep in line with private facilities.

### ALTERNATIVES ANALYSIS

Walker considered several options to increase the available public parking supply in the downtown area, including restriping and/or reconfiguring existing public lots, developing structured parking, and expanding and implementing shared parking arrangements. While the overall downtown area is not expected to experience a parking shortage over the next ten-year planning horizon, localized “hot spots” in the core area are expected.

Several of the options summarized below highlight opportunities for the City to provide additional parking supply in strategic locations; others, such as the structured parking options, are meant only to be considered in a comparative nature in magnitude and cost. The restriping, reconfiguration, and expansion projects are recommended as these could be readily implemented to gain an estimated 51 spaces for less than \$1,142,500. Walker also recommends that the City facilitate shared parking agreements between private property owners, plus arrangements with the City. We recommend additional agreements as these can cost effectively open up privately-owned parking to public use.

<i>ALTERNATIVE</i>	<i>NET SPACE GAIN</i>	<i>COST</i>
Block 6 (Stryker Center Lot) Structured Parking: Locate a 2-bay, 3-story garage on the existing surface lot serving the public library	Net gain of 227 spaces Existing: 88 Proposed: 315	\$5,255,000 to \$6,930,000**
Block 19 (P6 Lot) Reconfiguration: Improve the efficiency of the lot by reconfiguring the layout in a more uniform manner.	Net gain of 32 spaces Existing: 293 Proposed: 325	\$975,000
Block 15 (P3 Lot) Reconfiguration: Re-orient the parking layout as 2 bays of parking in the north/south direction.	Net gain of 19 spaces Existing: 48 Proposed: 67	\$201,000

## Executive Summary

Reconfigure Francis Street in order to provide better vehicular access to the parking access equipment at the P6 Lot entrance.	No net gain in parking spaces	\$50,000
Pursue shared parking opportunities with existing privately-owned parking facilities to more effectively utilize the existing parking supply	Variable. No new spaces built, but private supply would be officially designated as public	Variable.
Block 19 (P6 Lot) Structured Parking: Locate a 2-bay, 3-story garage in the northeast corner of the existing P6 lot.	Net gain of 193 spaces Existing: 130 Proposed: 323	\$5,491,000 to \$7,106,000**
Block 25 (Colonial Williamsburg Employee Lot) Structured Parking: Locate a 3-bay, 2-story garage on the northern half of the Colonial Williamsburg employee parking lot.	Net gain of 86 spaces Existing: 152 Proposed: 238	\$4,046,000 to \$5,236,000**
Block 9 (Williamsburg Baptist Lot) Structured Parking: Purchase or enter into a public private venture in order to develop a 2-bay, 3-story garage on the existing Williamsburg Presbyterian and Williamsburg Baptist Churches' lots.	Net gain of 239 spaces Existing: 110 Proposed: 349	\$5,933,000 to \$7,678,000**

*\*\*Excludes the cost associated with land/building acquisition, environmental remediation that may or may not be needed, utility relocation costs, geotechnical engineering impacts, demolition costs, and other soft costs such as design or financing fees.*

# SUPPLY AND DEMAND ANALYSIS



**WALKER**  
PARKING CONSULTANTS

## Supply and Demand Analysis

### INTRODUCTION

The City of Williamsburg (the “City”) retained Walker (“Walker”) to evaluate the current parking supply and demand in downtown Williamsburg, project future parking demand, perform a policy assessment to discuss existing and potential parking management and operations improvements, and an alternatives analysis to determine the appropriate location of additional parking, if needed. The purpose of the study is to provide a quantitative evaluation of the current and future parking adequacy that clearly identifies the parking inventory, utilization and availability in downtown Williamsburg while also providing insight on how the existing parking supply may be used more efficiently and whether additional supply is warranted. Through this analysis, Williamsburg hopes to build a roadmap to guide them through the next ten years of growth in its downtown.

### DEFINITION OF TERMS

Several terms or jargon are used in this report that have unique meanings when used in the parking industry. To help clarify these terms and enhance understanding by the reader, the following definitions are presented.

- **Adequacy** - The difference between the effective parking supply and parking space demand.
- **Design Day** - The day that represents the level of parking demand that the parking system is designed to accommodate. In most of the thousands of parking studies that we have conducted, this level of activity is typically equal to the 85<sup>th</sup> to 95<sup>th</sup> percentile of absolute peak activity. Although we will occasionally design to a higher-than-typical design standard, such as one exceeded less than one day per month or even the absolute peak level of demand, we do not typically design to these extreme conditions because the result is an abundance of spaces that remain unused most of the time.
- **Effective Supply** - The total supply of parking spaces, adjusted to reflect the cushion needed to provide for vehicles moving in and out of spaces, spaces unavailable due to maintenance, and to reduce the time necessary for parking patrons to find the last few available spaces. The effective supply varies as to the user group and type of parking, but typically the effective supply is 85 percent to 95 percent of the total number of spaces. The adjustment factor is known as the Effective Supply Factor.
- **Inventory** - The total number of marked parking spaces within the Study Area.
- **Parking Demand** - The number of spaces required by various user groups in the downtown area. Parking demand representing design day conditions is compared with effective supply to determine the adequacy of a parking system.
- **Parking Generation** - The peak accumulation of parked vehicles generated by the land uses present under any given set of conditions.
- **Patron or User** - Any individual parking in a study area.
- **Peak Hour** - The peak hour represents the busiest hour of the day for parking demand.
- **Survey Day** - The day that occupancy counts within a study area are recorded. This day should represent a typical busy day.

## Supply and Demand Analysis

### EXISTING CONDITIONS

The findings of the supply and demand phase of the project are the foundation of an effective parking plan. Before we can identify opportunities to develop or improve parking or recommend changes to existing parking policies, we must first have a solid understanding of existing conditions within the Study Area. Our understanding of existing conditions begins with stakeholder interviews and community surveys to determine the parking habits and preferences of typical users, as well as identify obstacles and opportunities for improvement. These qualitative findings are combined with the parking supply and demand data collected during our field survey to develop a comprehensive picture of parking conditions in the downtown.

Walker and EPR attended stakeholder meetings with multiple community stakeholders, including the College of William and Mary, Williamsburg Baptist and Williamsburg Presbyterian Churches, City Staff, Colonial Williamsburg, Neighborhood Council, the Planning Commission, and many others in order to gather different perspectives on parking within downtown Williamsburg. An electronic survey was also distributed to gather community input from those not in the stakeholder meetings. The survey and stakeholder interviews provided Walker and EPR with a better understanding of where and when people are parking in the downtown area, why they come downtown most often, how long they visit, what issues relative to parking are most important to them, and their willingness to adopt new parking technologies.

Using the data collected by EPR during the weeks of March 20<sup>th</sup> and July 10<sup>th</sup>, 2016, Walker established baseline parking conditions for the 25-block Study Area. Parking demand was compared to the available supply to determine occupancy rates, as well as parking adequacy on a block by block basis. Data from different time periods throughout the day, as well as different types of parking was studied. Overall, there is adequate parking available to support parking demand in the downtown area; however, small parking shortages on a few blocks were observed. These shortages are very localized, with adequate parking within one or two blocks to support any deficits.

Walker next projected parking needs within the Study Area over the next ten years based on known projects, as identified by the City, and a general growth rate. Parking supply was also adjusted over the planning horizon based on known developments, such as the expansion of the Folk Museum or the conversion of the P3 Lot to event space. By 2026, parking occupancy rates within the Study Area are projected to reach 75% of capacity during weekday conditions. During weekend conditions, parking occupancy is expected to be 54%. Overall, parking occupancy rates at these levels do not indicate a parking problem. However, while the overall capacity of the system is sufficient to support demand, parking “hot spots” are expected to occur on some blocks for some parking categories. As stated earlier, these localized shortages can be accommodated within a short walking distance.

An in-depth methodology of our supply and demand analysis is included within the following, with additional supporting analysis in the Appendix.

### STUDY AREA

The City of Williamsburg identified an approximately 25-block Study Area as the focus of this study. The Study Area is generally bounded by the rail line to the north, the intersection of Nassau Street to the east, Mimosa Drive to the south, and Virginia Avenue, Richmond Road, and South Boundary Street to the west. Walker’s analysis also includes the

## Supply and Demand Analysis

Governor's Inn site located across the train tracks to the north, and the Colonial Williamsburg employee parking lot located at the northeast corner of Nassau Street and Newport Avenue.

The Study Area includes the on-street parking supply on both sides of Richmond Road (Block 9), both sides of Virginia Avenue (Block 5), and both sides of South Boundary Street (Block 22).

The following figure depicts the Study Area.

Supply and Demand Analysis

Figure 1: Study Area



Williamsburg Parking Study Base Map

- ① Block Numbers
- Study Area



Source: EPR, 2016

## Supply and Demand Analysis

### PARKING SUPPLY

The foundation of a parking supply and demand study is an inventory of the existing parking supply. Parking in the Study Area is available in several forms. Most on-street parking is free, with time limits on most blocks. Some blocks are restricted to residential parking only, and require the purchase of a residential permit. For the most part, on-street parking is signed and restrictions are clearly marked. Off-street parking is available to the public in privately-owned surface lots and garages, as well as ten publicly-owned parking lots and garages. The public facilities include the City of Williamsburg Government Office Building lot, the Stryker Center lot, the spaces surrounding the Community Building on Block 7, the Parking Terrace and Prince George Parking Garages, and the P2 through P6 lots. Parking in most of the publicly-owned facilities is free, with the exception of the Prince George Street Parking Garage and the P6 Lot.

The effective supply is compared to the parking demand to quantify the existence of a parking surplus or deficit. A surplus exists when the supply exceeds the demand; a deficit exists when the supply is inadequate to meet the demand. We conducted this analysis on a block-by-block basis within the Study Area, segmenting the demand by block and facility.

Based on the data collected, there are a total of 4,326<sup>1±</sup> spaces in the Study Area. The following is a breakdown of these spaces: 580± are on-street and 3,746± are off-street. Of the off-street spaces, 1,327± are located in a publicly-owned lot or garage and 2,419± are located in privately-owned lots.

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<sup>1</sup> Note, after Walker's March survey, this number was reduced to 4,316, a 10-space loss due to restriping on-street parking along Richmond Road.

## Supply and Demand Analysis

Table 1: Parking Supply Summary

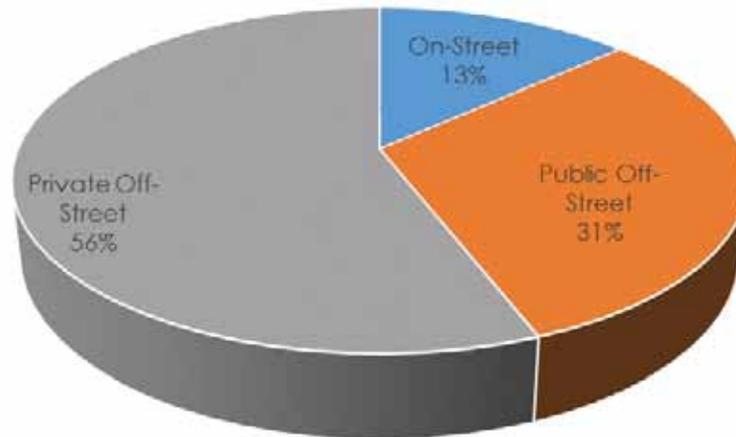
Block	On-Street	Public Off-Street	Private Off-Street	Total
1	0	94	58	152
2	0	0	85	85
3	4	0	49	53
4	0	0	178	178
5	116	0	172	288
6	45	88	26	159
7	15	182	85	282
8	23	0	93	116
9	86	0	245	331
10	19	0	36	55
11	16	0	25	41
12	43	0	21	64
13	12	356	37	405
14	33	0	0	33
15	31	48	5	84
16	14	62	18	94
17	0	69	0	69
18	0	135	0	135
19	0	293	0	293
20	46	0	58	104
21	0	0	158	158
22	52	0	20	72
23	8	0	22	30
24	17	0	702	719
25	0	0	326	326
<b>Total</b>	<b>580</b>	<b>1,327</b>	<b>2,419</b>	<b>4,326</b>

Source: Walker Parking Consultants, 2016

Figure 2 shows the total parking supply by type. The largest percentage of available parking in the Study Area is located in privately-owned off-street surface lots. Privately-owned parking accounts for 56% of the available parking in the downtown area. Some of these include the Governor’s Inn, the Matthew Whaley Elementary School, the College of William and Mary Law School, the Abby Aldrich Rockefeller Folk Art Museum, and the Colonial Williamsburg employee lot.

## Supply and Demand Analysis

Figure 2: Parking Supply by Type



Source: Walker Parking Consultants, 2015

### EFFECTIVE PARKING SUPPLY

The inventory of parking within the Study Area is adjusted to allow for a cushion necessary for vehicles moving in and out of spaces, and to reduce the time necessary to find the last few remaining spaces when the parking supply is nearly full. We derive the effective supply by deducting this cushion from the total parking capacity. The cushion allows for vacancies created by restricting parking spaces to certain users (reserved spaces), misparked vehicles, minor construction and debris removal. A parking supply operates at peak efficiency when parking occupancy, including both transient and monthly parking patrons, is 85 percent to 95 percent of the supply. When occupancy exceeds this level, patrons may experience delays and frustration while searching for a space. Therefore, the parking supply may be perceived as inadequate even though there are some spaces available in the parking system.

As a result, the effective supply is used in analyzing the adequacy of the parking system rather than the total supply or inventory of spaces. Following are some factors that affect the efficiency of the parking system:

- Capacity – Large, scattered surface lots operate less efficiently than a more compact facility, such as a parking structure, which offers consolidated parking in which traffic generally, passes more available parking spaces in a more compact area. Moreover, it is more difficult to find the available spaces in a widespread parking area than a centralized parking facility.
- Type of users – Monthly or regular parking patrons can find the available spaces more efficiently than infrequent visitors because they are familiar with the layout of the parking facility and typically know where the spaces will be available when they are parking.

## Supply and Demand Analysis

- On-street vs. off-street – On-street parking spaces are less efficient than off-street spaces due to the time it takes patrons to find the last few vacant spaces. In addition, patrons are sometimes limited to one side of the street at a time and often must parallel park in traffic to use the space.

The size of the cushion is dependent on the type of user and facility. On-Street parking is adjusted by an 85 percent effective supply factor (ESF), because of the relative difficulty of finding an open space while negotiating traffic. Public off-street parking is adjusted by a 90 percent ESF to account for user unfamiliarity and the challenges of safely navigating the area while searching for a space. Privately-owned off-street parking is adjusted by a 95 percent ESF because employees or repeat users are familiar with the area and generally park in the same location each day. The Study Area contains a total of 4,326± spaces before any adjustments are made to account for an effective supply. After the effective supply factor is applied to the overall supply numbers, the Study Area's effective supply is 3,990± spaces, as shown in Table 2.

## Supply and Demand Analysis

Table 2: Effective Parking Supply Summary

Block	On-Street	Public Off-Street	Private Off-Street	Total Effective Supply
1	0	85	55	140
2	0	0	81	81
3	3	0	47	50
4	0	0	169	169
5	99	0	163	262
6	39	79	25	143
7	13	164	81	258
8	20	0	88	108
9	73	0	234	307
10	16	0	34	50
11	13	0	24	37
12	37	0	20	57
13	10	320	35	365
14	28	0	0	28
15	27	43	5	75
16	12	56	17	85
17	0	62	0	62
18	0	122	0	122
19	0	264	0	264
20	39	0	55	94
21	0	0	150	150
22	44	0	19	63
23	7	0	21	28
24	14	0	668	682
25	0	0	310	310
<b>Total</b>	<b>494</b>	<b>1,195</b>	<b>2,301</b>	<b>3,990</b>
<b>ESF</b>	<b>85%</b>	<b>90%</b>	<b>95%</b>	<b>92%</b>

Source: Walker Parking Consultants, 2016

### WEEKDAY CONDITIONS

#### PARKING OCCUPANCY

To determine the parking patterns in the Study Area, the usage of a majority of Study Area parking facilities was evaluated. An understanding of these parking patterns helps define both patron types and parking locations. Occupancy counts were taken for on- and off-street parking spaces on March 22 and 23, 2016. Generally, three counts per day were taken on either March 22 or 23 at 10 a.m., 2 p.m. and 7 p.m.

The following table summarizes the observed weekday occupancy rates for on-street and off-street parking.

## Supply and Demand Analysis

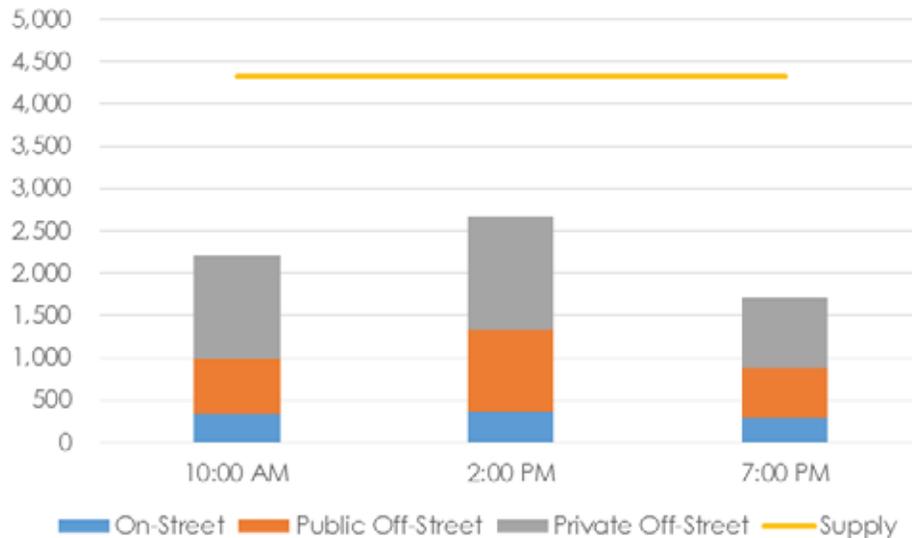
Table 3: Parking Occupancy Summary -Weekday

Type	Supply	10:00 AM	% Occupied	2:00 PM	% Occupied	7:00 PM	% Occupied
On-Street	580	339	58%	369	64%	297	51%
Public Off-Street	1,327	650	49%	965	73%	589	44%
Private Off-Street	2,419	1,222	51%	1,336	55%	823	34%
<b>Total</b>	<b>4,326</b>	<b>2,211</b>	<b>51%</b>	<b>2,670</b>	<b>62%</b>	<b>1,709</b>	<b>40%</b>

Source: Walker Parking Consultants, 2016

Occupancy rates as a whole do not indicate a shortage of parking. Peak parking demand was observed around 2 p.m. with approximately 2,670 occupied spaces, or 62% of the overall supply. Public off-street parking was most utilized (73%), while private off-street parking was less utilized with only 55% of the available supply occupied. Please note, the Governor’s Inn located on Block 4 was closed for restoration during the field visit.

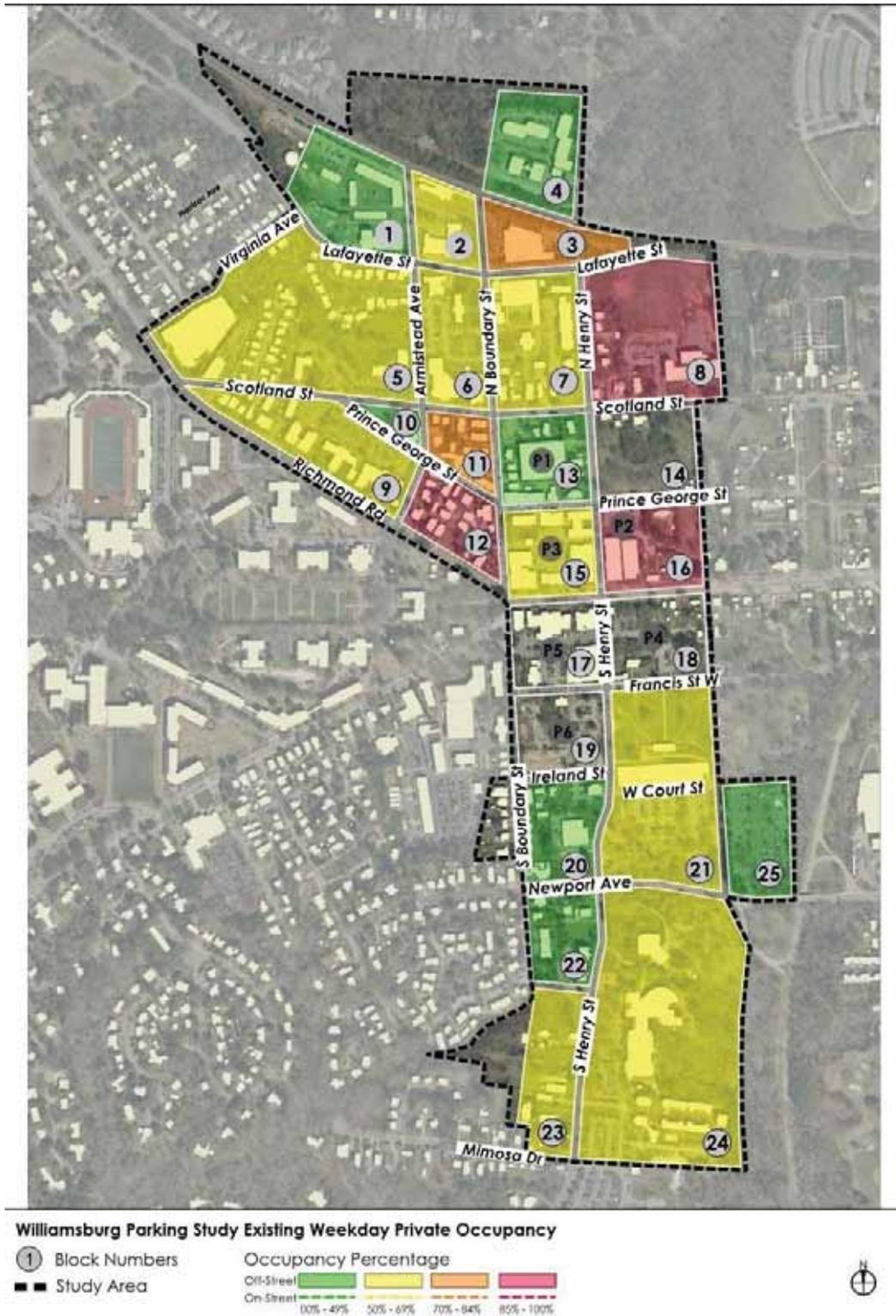
Figure 3: Weekday Parking Occupancy Summary



Source: Walker Parking Consultants, 2016

The figures below show the parking occupancy by block. Additional analysis of the parking occupancy data by block and parking type is located in the Appendix. Note, blocks without on- or off-street parking supplies are not color-coded.

Figure 4: Weekday Parking Occupancy – Privately-Owned Off-Street

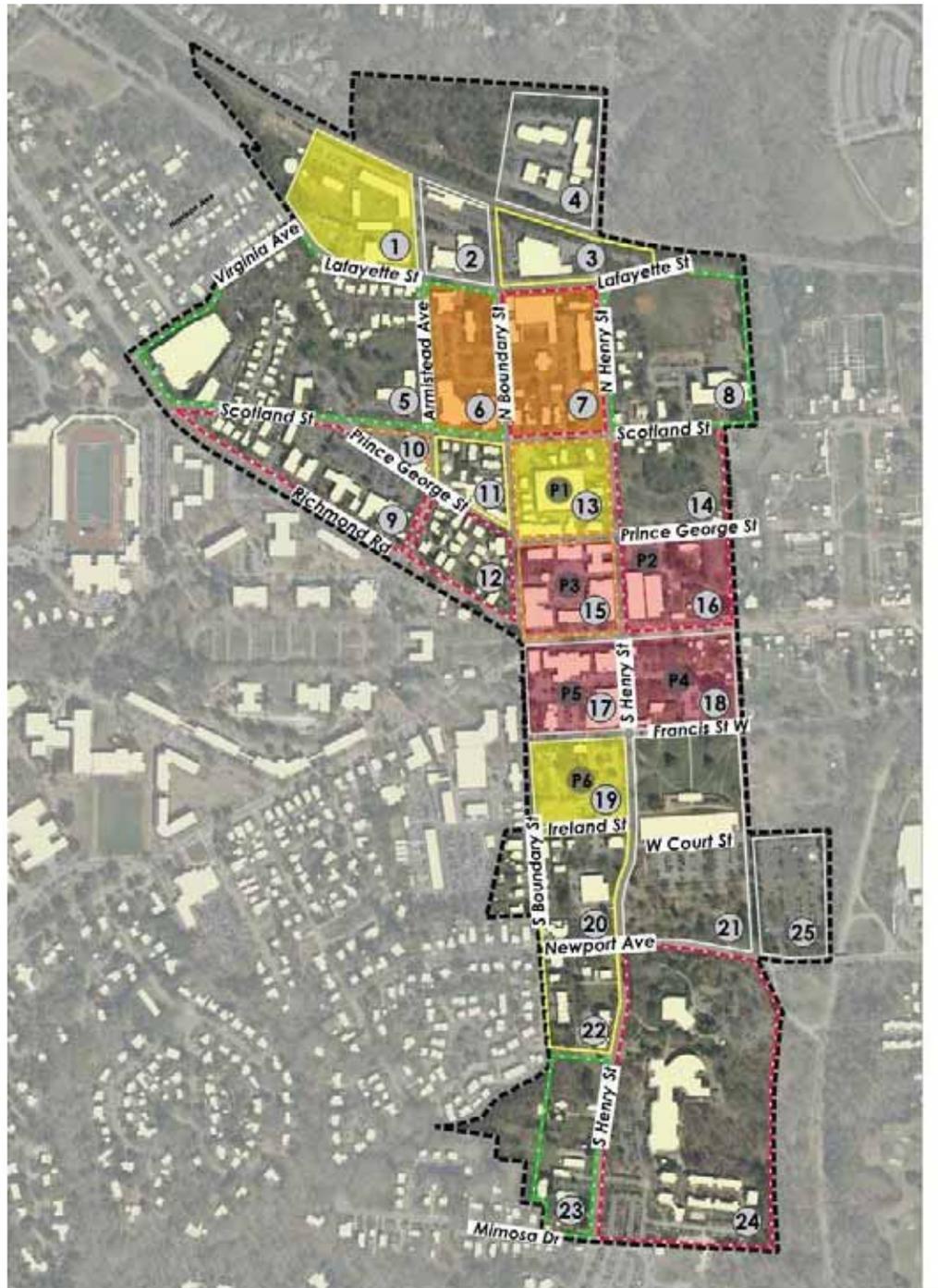


Source: EPR, 2016

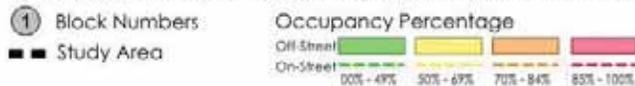
The private parking supplies on Blocks 8, 12, and 16 were observed to experience parking occupancy rates greater than 85% during our weekday survey. The private parking lot on Block 8 supports the Matthew Whaley Elementary School. While it is highly utilized during the weekday, the 90+ space lot was mostly underutilized on nights and weekends. This facility is a prime candidate for a shared parking agreement that could perhaps be negotiated and agreed to by the City and the local school district.

Supply and Demand Analysis

Figure 5: Weekday Parking Occupancy – Publicly -Owned Off-Street and On-Street



**Williamsburg Parking Study Existing Weekday Public & On-Street Occupancy**



Source: EPR, 2016

The four parking facilities in Merchants Square all experienced parking occupancy rates greater than 85%; however, the large surface lot on Block 19 had surplus capacity during the peak hour. Many blocks with on-street supply also experienced high parking occupancy rates during the peak hour, specifically Richmond Road.

## Supply and Demand Analysis

### *PARKING ADEQUACY*

Parking adequacy is the ability of the parking supply to accommodate the parking demand. The Survey Day occupancy was subtracted from the effective supply to determine the adequacy for the Study Area and summarized in the following table.

**Table 4: Weekday Parking Adequacy Summary**

Block	Effective Supply	Demand	Adequacy
1	140	80	60
2	81	45	36
3	50	39	11
4	169	0	169
5	262	134	128
6	143	95	48
7	258	189	69
8	108	85	23
9	307	242	65
10	50	27	23
11	37	29	8
12	57	60	(3)
13	365	248	117
14	28	33	(5)
15	75	76	(1)
16	85	90	(5)
17	62	69	(7)
18	122	135	(13)
19	264	180	84
20	94	47	47
21	150	100	50
22	63	35	28
23	28	17	11
24	682	479	203
25	310	136	174
<b>Total</b>	<b>3,990</b>	<b>2,670</b>	<b>1,320</b>

Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

As a whole, the current parking system has a parking surplus during weekday conditions. However, six blocks, primarily located in the Merchants Square vicinity, experienced parking deficits during the peak hour. For more information regarding adequacy by parking type, see Appendix B.

### WEEKEND CONDITIONS

#### PARKING OCCUPANCY

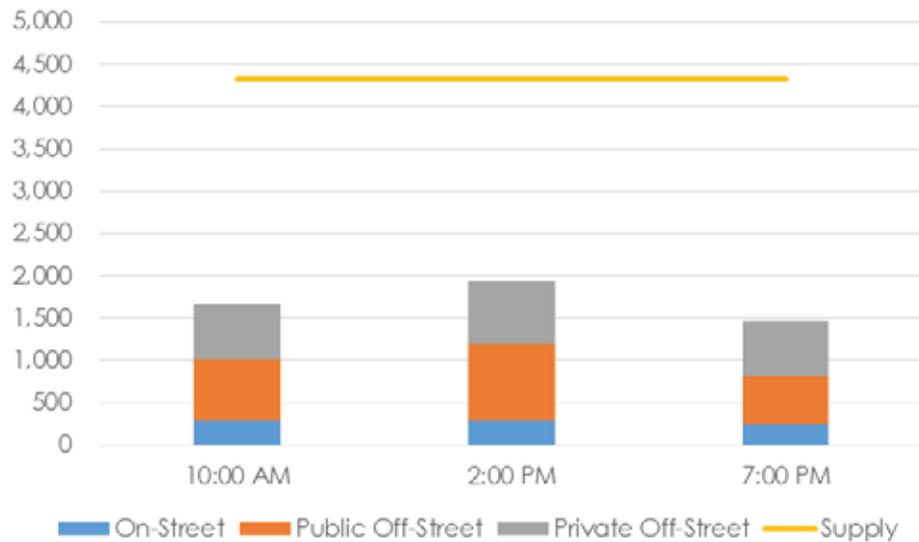
Using the same methodology as stated in the weekday section, EPR collected weekend occupancy counts on March 26, 2016. Three counts were again taken in the morning, afternoon, evening. The following table summarizes the observed occupancy rates for on-street and off-street parking.

Table 5: Parking Occupancy Summary - Weekend

Type	Supply	10:00 AM	% Occupied	2:00 PM	% Occupied	7:00 PM	% Occupied
On-Street	580	290	50%	298	51%	252	43%
Public Off-Street	1,327	727	55%	901	68%	564	43%
Private Off-Street	2,419	649	27%	728	30%	651	27%
<b>Total</b>	<b>4,326</b>	<b>1,666</b>	<b>39%</b>	<b>1,927</b>	<b>45%</b>	<b>1,467</b>	<b>34%</b>

Source: Walker Parking Consultants, 2016

Figure 6: Weekend Parking Occupancy Summary



Source: Walker Parking Consultants, 2016

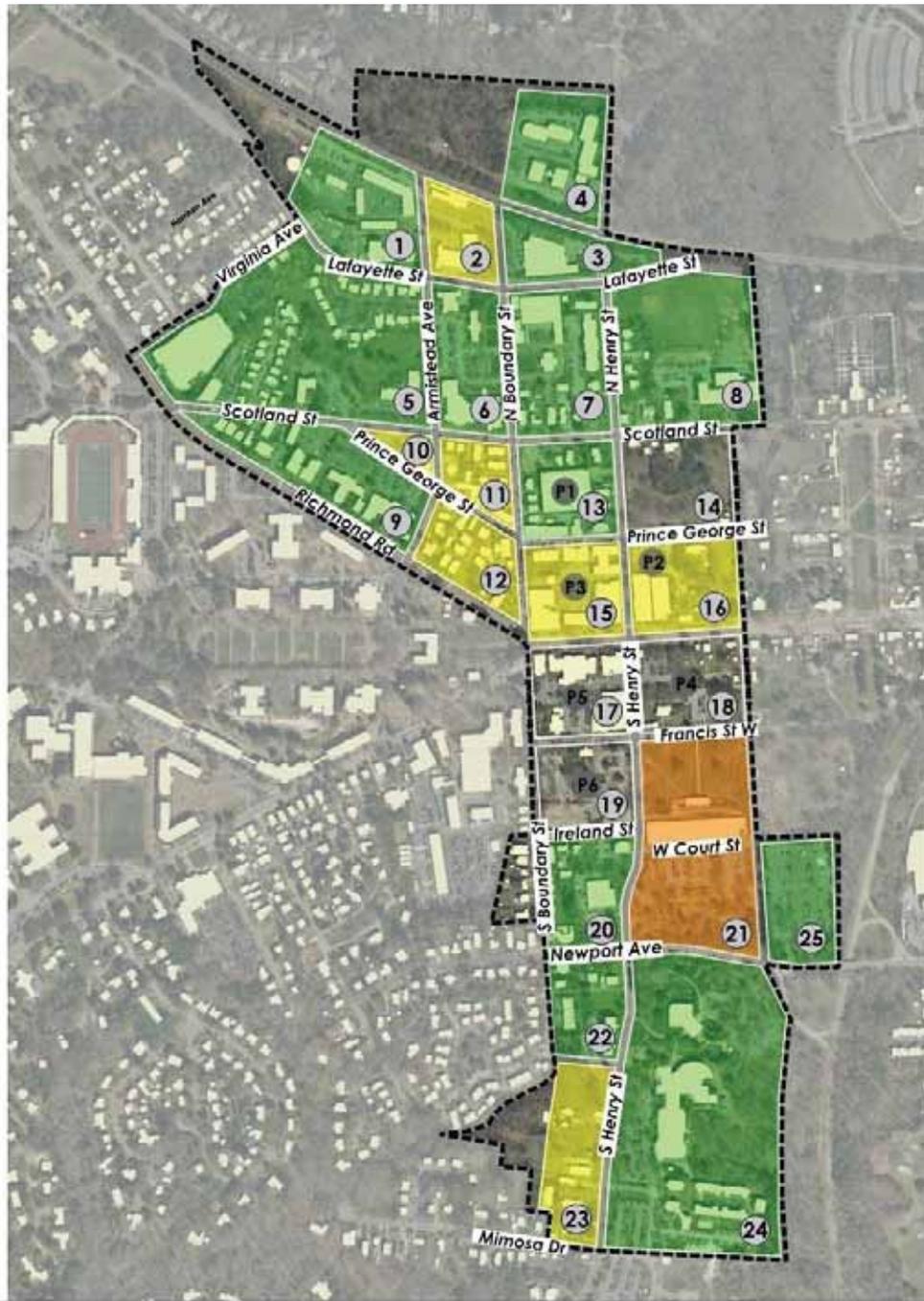
## Supply and Demand Analysis

Occupancy rates as a whole do not indicate a shortage of parking. Peak parking demand was observed around 2 p.m. with approximately 1,927 occupied spaces, or 45% of the overall supply. Public on- and off-street parking was more highly utilized during the peak hour than the private off-street supply

The next two figures show the parking occupancy by block for the observed weekend peak hour. Additional analysis of the parking occupancy data by block and parking type is located in the Appendix.

Supply and Demand Analysis

Figure 7: Weekend Parking Occupancy – Privately-Owned Off-Street



Williamsburg Parking Study Existing Weekend Private Occupancy



Source: EPR, 2016

No blocks were observed to experience parking occupancy rates greater than 85% during peak weekend conditions. Block 21, where the Folk Art Museum is located, experienced a parking occupancy rate of 76%.

Figure 8: Weekend Parking Occupancy – Publicly -Owned Off-Street and On-Street



Source: EPR, 2016

Similar to weekday conditions, the on- and off-street public parking supply experienced parking occupancy rates at or above 85% on multiple blocks, including the four Merchants Square blocks. Blocks located further from the Merchants Square core experienced lower occupancy rates. Note, the public parking facilities on Blocks 19, 13, and 7 had adequate supply available during the peak hour.

## Supply and Demand Analysis

### *PARKING ADEQUACY*

Walker compared the observed parking occupancy to the effective parking supply to determine the parking adequacy during weekend conditions. The parking adequacy for the Study Area is summarized in the following table.

**Table 6: Weekend Parking Adequacy Summary**

Block	Effective Supply	Demand	Adequacy
1	140	23	117
2	81	48	33
3	50	20	30
4	169	0	169
5	262	95	167
6	143	83	60
7	258	123	135
8	108	26	82
9	307	131	176
10	50	32	18
11	37	26	11
12	57	41	16
13	365	270	95
14	28	33	(5)
15	75	82	(7)
16	85	86	(1)
17	62	69	(7)
18	122	131	(9)
19	264	202	62
20	94	28	66
21	150	120	30
22	63	12	51
23	28	15	13
24	682	125	557
25	310	106	204
<b>Total</b>	<b>3,990</b>	<b>1,927</b>	<b>2,063</b>

Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

Again, the current parking system has a parking surplus during weekend conditions as a whole. Five blocks experienced parking shortages during the peak hour. These blocks were located around Merchants Square. Additional analysis of parking adequacy by block and parking type can be found in the Appendix.

### MERCHANTS SQUARE PARKING DEMAND

In addition to assessing parking conditions in the whole of the Study Area, Walker prepared a separate analysis focusing on parking demand on the six blocks where the P1 through P6 public parking facilities are located. These blocks contain a total of 1,080 parking spaces, including 963 public off-street spaces.

During weekday conditions, 74% of the available parking supply is occupied on these blocks. The table below summarizes the available supply, observed 2:00 p.m. occupancy and the occupancy rate by parking type of each block. Lots P2 through P5 were 100% occupied during the peak hour while the P6 lot and the Prince George Parking Garage were only 61% and 63% occupied, respectively. Additionally, while these blocks have an overall adequate supply of parking to support parking demand, public parking shortages are projected in the P2 through P5 lots.

Table 7: Weekday Merchants Square Parking Occupancy and Adequacy

Lot #	Block	Supply				2:00 PM				Occupancy			
		On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Street	Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total
P1	13	12	356	37	405	9	223	16	248	75%	63%	43%	61%
P2	16	14	62	18	94	12	62	16	90	86%	100%	89%	96%
P3	15	31	48	5	84	25	48	3	76	81%	100%	60%	90%
P4	18	0	135	0	135	0	135	0	135	0%	100%	0%	100%
P5	17	0	69	0	69	0	69	0	69	0%	100%	0%	100%
P6	19	0	293	0	293	0	180	0	180	0%	61%	0%	61%
Total		57	963	60	1,080	46	717	35	798	81%	74%	58%	74%

Lot #	Block	Effective Supply				2:00 PM				Adequacy			
		On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Street	Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total
P1	13	10	320	35	365	9	223	16	248	1	97	19	117
P2	16	12	56	17	85	12	62	16	90	0	(6)	1	(5)
P3	15	26	43	5	74	25	48	3	76	1	(5)	2	(2)
P4	18	0	122	0	122	0	135	0	135	0	(13)	0	(13)
P5	17	0	62	0	62	0	69	0	69	0	(7)	0	(7)
P6	19	0	264	0	264	0	180	0	180	0	84	0	84
Total		48	867	57	972	46	717	35	798	2	150	22	174

Source: Walker Parking Consultants, 2016

Walker also analyzed parking demand within these six blocks during peak weekend conditions. During weekend conditions, the overall observed occupancy rate was 67%. Public on- and off-street parking experienced higher parking occupancy rates on Saturday than the observed weekday, with 100% of the on-street supply and 79% of the public off-street supply occupied during the peak hour. Private off-street parking was less utilized during weekend conditions.

## Supply and Demand Analysis

Again, while some parking deficits were observed, the overall six block area had sufficient parking supply to support demand.

**Table 8: Weekend Merchants Square Parking Occupancy and Adequacy**

Lot #	Block	Supply				2:00 PM				Occupancy			
		On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total
P1	13	12	356	37	405	12	244	14	270	100%	69%	38%	67%
P2	16	14	62	18	94	14	62	10	86	100%	100%	56%	91%
P3	15	31	48	5	84	31	48	3	82	100%	100%	60%	98%
P4	18	0	135	0	135	0	131	0	86	0%	97%	0%	64%
P5	17	0	69	0	69	0	69	0	69	0%	100%	0%	100%
P6	19	0	293	0	293	0	202	0	131	0%	45%	0%	45%
<b>Total</b>		<b>57</b>	<b>963</b>	<b>60</b>	<b>1,080</b>	<b>57</b>	<b>756</b>	<b>27</b>	<b>724</b>	<b>100%</b>	<b>79%</b>	<b>45%</b>	<b>67%</b>

Lot #	Block	Effective Supply				2:00 PM				Adequacy			
		On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total	On-Street	Public Off-Street	Private Off-Street	Total
P1	13	10	320	35	365	12	244	14	270	(2)	76	21	95
P2	16	12	56	17	85	14	62	10	86	(2)	(6)	7	(1)
P3	15	26	43	5	74	31	48	3	82	(5)	(5)	2	(8)
P4	18	0	122	0	122	0	131	0	86	0	(9)	0	36
P5	17	0	62	0	62	0	69	0	69	0	(7)	0	(7)
P6	19	0	264	0	264	0	202	0	131	0	133	0	133
<b>Total</b>		<b>48</b>	<b>867</b>	<b>57</b>	<b>972</b>	<b>57</b>	<b>756</b>	<b>27</b>	<b>724</b>	<b>48</b>	<b>665</b>	<b>57</b>	<b>248</b>

Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### SEASONAL PARKING OCCUPANCY VERIFICATION

Parking usage in downtown Williamsburg varies throughout the year, as academic, commercial, residential, and tourism parking needs ebb and flow. The abundant number and capacity of the City parking supply available on the outskirts of the downtown, are designed to handle these peaks and valleys and high volume days. EPR collected data in March, 2016 during spring break. This time period was identified by the City as a high demand period.

A second parking survey was performed by EPR during the week of July 10, 2016 to understand parking needs during summer conditions, which was also identified as a busy period for Williamsburg. The tables and figures on the following pages summarize our July observations. Additional analysis and supporting data can be found in the Appendix.

### *WEEKDAY PARKING OCCUPANCY*

Weekday parking occupancy was observed on Tuesday, July 12, 2016 at 10 am, 2 pm, and 7 p.m. in the 25 block Study Area. Similar to the March survey, peak conditions were observed during the 2 p.m. count, when 1,756 spaces or 41% of the available parking supply was occupied. The public off-street parking supply was more highly occupied than the on-street and private off-street parking supplied. Additional data regarding parking occupancy by type is available in the Appendix.

#### SPOTLIGHT OBSERVATION

Please note, between the March and July survey, on-street parking along Richmond Road was restriped, resulting in 10 fewer parking spaces. The July analysis is based on the new on-street parking supply.

Additionally, Walker adjusted the future parking supply to account for the 10 fewer spaces.

## Supply and Demand Analysis

Table 9: Weekday Parking Occupancy Summary - July

Block	Supply	Demand	Occupancy
1	152	92	61%
2	85	41	48%
3	53	17	32%
4	178	0	0%
5	288	69	24%
6	159	90	57%
7	282	156	55%
8	116	8	7%
9	326	112	34%
10	55	11	20%
11	41	26	63%
12	59	39	66%
13	405	175	43%
14	33	31	94%
15	84	75	89%
16	94	87	93%
17	69	69	100%
18	135	126	93%
19	293	102	35%
20	104	38	37%
21	158	77	49%
22	72	19	26%
23	30	11	37%
24	719	176	24%
25	326	109	33%
<b>Total</b>	<b>4,316</b>	<b>1,756</b>	<b>41%</b>

Source: Walker Parking Consultants, 2016

EPR also noted a change to the operating practices in the public lot of Block 19 (P6 Lot) during the July survey. Access to this lot is free from 8 a.m. to 12 p.m. during the Farmer’s Market. Occupancy rates on Block 19 were lower overall during the July survey, in comparison to the March findings.

## Supply and Demand Analysis

### WEEKEND PARKING OCCUPANCY

The weekend occupancy count was taken on Saturday, July 16, 2016 at 10 a.m., 2 p.m., and 7 p.m. Peak parking demand was observed during the 2 p.m. count with 1,536 spaces or 36% of the available supply occupied.

#### SPOTLIGHT OBSERVATION

In comparison, the peak weekend occupancy rate observed during the March survey 45% (1,927 occupied spaces). Demand was 25% lower during the July survey.

The occupancy rates on the Merchants Square blocks remained consistent during both surveys; however, occupancy rates on most of the other blocks were lower in July.

Table 10: Weekend Parking Occupancy Summary - July

Block	Supply	Demand	Occupancy
1	152	25	16%
2	85	40	47%
3	53	15	28%
4	178	0	0%
5	288	48	17%
6	159	112	70%
7	282	112	40%
8	116	16	14%
9	326	84	26%
10	55	18	33%
11	41	29	71%
12	59	37	63%
13	405	188	46%
14	33	33	100%
15	84	81	96%
16	94	89	95%
17	69	69	100%
18	135	135	100%
19	293	129	44%
20	104	23	22%
21	158	99	63%
22	72	7	10%
23	30	10	33%
24	719	49	7%
25	326	88	27%
<b>Total</b>	<b>4,316</b>	<b>1,536</b>	<b>36%</b>

Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### DESIGN DAY CONDITIONS

Walker frequently recommends designing the parking supply to satisfy at least the 85th percentile level of activity. This level is usually equivalent to a very busy day that may occur once or twice a month. Designing parking to meet the absolute peak level of parking would leave many unused spaces during the majority of the year. Conversely, designing for the average level would mean inadequate parking about half the year.

Typically, we adjust for seasonality using historic occupancy data at public facilities. Some occupancy data was available for the Prince George Parking Garage, as well as attendance figures for Colonial Williamsburg and anecdotal information from the City. Rather than adjust the observed conditions based on the limited available seasonality data, the Walker team took advantage of the extended project schedule and performed a second field survey the week of July 10, 2016.

While the parking occupancy during the July survey was lower than the March count, the downtown experience similar usage patterns (i.e. the Merchants Square area was highly utilized while the facilities further away were less occupied). Walker used the data from the March survey to calibrate and project future parking demand in the downtown area.

## Supply and Demand Analysis

### PARKING SURVEY FINDINGS

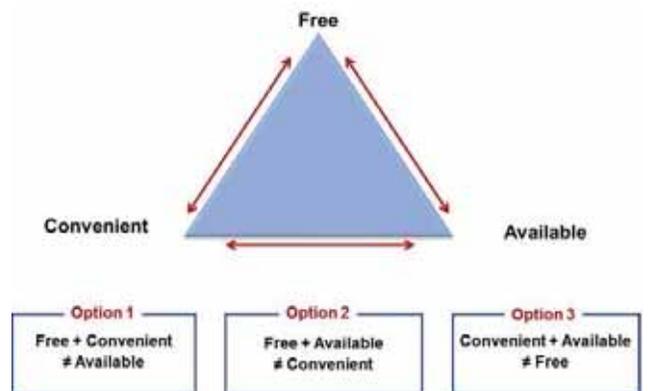
Walker conducted an online survey of downtown businesses, residents, and visitors to better understand the public's experiences with and perceptions of parking in the downtown area. The questions ranged from identifying the respondents age and area of residence, to parking preferences, to open-ended questions regarding positive and negative aspects of the parking system in Downtown Williamsburg. In total, 1,927 responses were collected over a three-week period.

The demographic of the group was well distributed among the six age ranges identified, although 18 to 24 year olds and 55 to 64 year olds were slightly more represented than the other groups. Additionally, with the exception of the 18 to 24-year-old demographic, the principal mode of transportation of a majority of respondents is a single occupancy vehicle (85%). In the 18- to 24-year-old group, approximately 50% drive alone, with 33% identifying walking as their primary mode of transportation. This is likely because this age group more commonly lives on the College campus or in the core downtown area.

When respondents were asked where they prefer to park, approximately 47% identified public surface lots, while 31% selected on-street. This preference is in line with our observations of parking occupancy in the downtown area during spring break. It is interesting to note, however, that while respondents listed these two locations as their preferred parking locations, approximately half of respondents also identified their average length of stay in downtown Williamsburg as more than two hours. Many of the public lots, including the Parking Terrace and Lots P2 through P5 have a time restriction of one or two hours. Additionally, many of the streets in the downtown also have two-hour parking limits. While it is possible respondents who identify as parking longer than two hours are frequenting the long-term parking options, it is more likely that they are overstaying in the time restricted spaces. This practice limits parking turnover and creates congestion in the most sought after spaces.

As expected, respondents identified "proximity to destination" as the most important factor when deciding where to park, with both cost and "possibility of a ticket" identified as the second most important factor. In line with this response, approximately 45% of respondents did not feel it was reasonable to pay to park closer to your destination.

While it is not uncommon for parkers to want free, convenient and plentiful parking, from a planning perspective this combination is not achievable. As shown in the previous figure, parking can be free and convenient, but not plentiful. Conversely, parking can be free and readily available, but not convenient.



## Supply and Demand Analysis

Walker's survey also included open-ended questions giving respondents the opportunity to comment on the best and worst aspects of downtown parking. Their responses were varied but can be summarized under the following categories:

- Best Aspects
  - Parking is free and available, but not necessarily convenient to their destination
  - Garage parking is almost always available
  - The town is very walkable and alternative modes of transit, such as biking, are becoming more accessible
  - Parking is safe, clean and attractive
  - Variety and number of parking options
- Worst Aspects
  - Cruising for a parking spot
  - Watching the clock/time limits, specifically the one-hour time limit
  - Library parking is limited
  - Limited parking during tourist season, events, church, and the Farmer's Market
  - Insufficient handicap parking
  - Poor lighting in some lots
  - Perception of not enough parking
  - Enforcement is inconsistent
  - College students occupying short-term parking in the downtown area
  - The size of the lots and parking stalls cause frequent car dings.

## Supply and Demand Analysis

### FUTURE CONDITIONS

There are basically two different methods for projecting future parking volumes. One method involves the use of historical and projected growth rates. The other method involves the collection of information regarding the proposed development that is likely to occur in terms of land use and square footage changes. This information regarding future developments allows for the projection of vehicular volumes and parking demands for these new uses. However, as the planning horizon goes further and further into the future, the ability to predict these changes becomes more and more difficult and less accurate. In the case of Williamsburg, we will utilize a blended methodology.

### PROJECTED PARKING DEMAND

Parking demand refers to the amount of parking that is estimated to be used at a particular time, place, and price. It is affected by vehicle ownership, trip rates, mode split, length of stay, geographic location, type of trip (work, shopping, special event), the quality of public transportation and factors such as fuel and parking costs. The methodology Walker employs to project future demand combines the baseline demand which is equal to the observed March occupancy levels, and any incremental change or growth in demand resulting from new land uses entering the Study Area. The baseline and incremental increase in demand are added together and then compared to the effective parking supply to determine the overall parking adequacy.

There are several proposed downtown redevelopment projects and vacancies that may directly impact parking in downtown Williamsburg. The analysis uses land use data provided by the City to project future parking demand for the Study Area. We focus on two planning horizons – 2021 and 2026. We assume that most of the known redevelopment projects would be occupied and fully operational by 2026. The residential buildings on Block 23 are assumed to be occupied, but not fully operational until after the ten-year planning horizon. The pictures below show two areas where future changes are expected.



Block 15: Parking Lot Demolition



Block 21: Museum Expansion

The list of proposed developments may not represent all real estate projects or business expansions being considered in the Study Area, but does represent a collection of the most significant and known projects being considered at this time. For the purpose of this study, the following projects are reflected in the calculation of future parking demand.

## Supply and Demand Analysis

Table 11: New Development Assumptions

Block	Name	Land Use	Quantity
21	Art Museum Expansion	Museum	55,000 SF
5	Blayton Building Redevelopment	Retail	7,200 SF
		Senior Housing	40 DU
		Residential	50 DU
11	Prince George Commons - vacancy	Restaurant	3,600 SF
		Retail	4,922 SF
5	Cooke Building - Vacancy	Restaurant	3,000 SF
9	Tribe Square - Vacancy	Fast/Casual	1,863 SF
7	Health Evaluation Building - Vacancy	Office	23,332 SF
13	438 Scotland Street	Retail	4,500 SF
		Office	6,750 SF
13	402 Scotland Street	Office	3,372 SF
23	600 South Henry Street	Residential	10 DU
23	622-627 South Henry Street	Residential	14 DU
15	Duke of Gloucester Event Space		
22	516 South Henry Street - Vacancy	Condo	4 DU
		Office	5,441 SF

Source: City of Williamsburg, 2016

There are two primary variables applied to the calculation of peak accumulation for new developments: 1) the total gross floor area (GFA), number of hotel rooms, seating capacity, etc. for each type of proposed land use (i.e. office, retail, restaurant, etc.), and 2) the appropriate parking demand ratio. The following section provides a discussion on the use of shared parking methodology when calculating the appropriate demand ratio to use for each type of land use in this analysis.

### FUTURE PARKING SUPPLY

Many of the development or backfill projects in the downtown are exempt from providing parking per the Zoning Ordinance; however, two developments are planning to provide on-site parking. The table below summarizes the planned parking changes associated with the known developments and the associated time frame for each change.

## Supply and Demand Analysis

Table 12: Change to Future Parking Supply

Block	Project Name	Spaces Lost	Spaces Gained	Net Change	Planning Horizon
5	Blayton Building	20	91	71	2021
15	Duke of Gloucester Event Space	48	0	(48)	2026
21	Art Museum Expansion	158	0	(158)	2021
23	600 South Henry Street Residential Project	0	18	18	2026
<b>TOTAL</b>		<b>226</b>	<b>109</b>	<b>(117)</b>	

Source: City of Williamsburg, 2016

In addition to the changes in off-street parking supply, Walker reduced the future on-street parking supply by 10 spaces to account for the restriping on Richmond Road this spring. The supply on Blocks 9 and 12 were each reduced by five spaces.

### 2021 WEEKDAY CONDITIONS

Walker projected parking demand within the downtown Study Area for a 2021 planning horizon. The 2021 projections assume all of proposed redevelopment projects, with the exception of the residential projects on Block 23, are open but not fully operational. Additionally, we assumed the public on- and off-street parking demand in the Study Area would grow at 1% compounded annually.

### PARKING OCCUPANCY

Walker is projecting an overall parking space occupancy rate of 70% during weekday conditions by 2021, assuming no new public parking is built with the redevelopment projects<sup>2</sup>. When parking occupancies reach 85% or greater, finding available parking can be difficult. Several of the blocks within the Study Area are expected to experience parking rates above 85%. The following table summarizes the 2021 projected parking demand by block.

<sup>2</sup> The redevelopment projects on Blocks 5 and 23 included planned private parking.

## Supply and Demand Analysis

Table 23: 2021 Parking Occupancy – Weekday

Block	Supply	2016 Demand	2021 Demand	Occupancy
1	152	80	83	55%
2	85	45	45	53%
3	53	39	39	74%
4	178	0	0	0%
5	359	134	187	52%
6	159	95	99	62%
7	282	189	254	90%
8	116	85	85	73%
9	331	242	260	79%
10	55	27	28	51%
11	41	29	69	168%
12	60	60	62	103%
13	405	248	281	69%
14	33	33	35	106%
15	84	76	79	94%
16	94	90	94	100%
17	69	69	73	106%
18	135	135	142	105%
19	293	180	239	81%
20	104	47	48	46%
21	0	100	0	0%
22	72	35	58	81%
23	30	17	17	57%
24	719	479	480	67%
25	326	136	206	63%
<b>Total</b>	<b>4,235</b>	<b>2,670</b>	<b>2,962</b>	<b>70%</b>

### SPOTLIGHT OBSERVATION

The table to the right shows both the parking demand observed during the March survey and the projected 2021 parking demand for comparison.

Please note, changes to the parking demand on any single block may be the result of changes in parking supply or demand on an adjacent block. For example, the parking supply on Block 21 (Museum Lots) will be lost to expansion plans. Walker redistributed museum demand between Blocks 19 and 25.

Source: Walker Parking Consultants, 2016

The table below shows the 2021 parking occupancy by type. On-street parking demand is expected to increase to 388 occupied spaces over the next five years. By 2021, a 67% occupancy rate is projected. Please note that while a few blocks are expected to experience parking rates near or above 85%, the majority of blocks are expected to have available parking supply. These blocks are highlighted in red.

When public off-street parking is considered, Walker anticipates a weekday public parking demand of 1,064 spaces, or an 80% occupancy rate. Public off-street occupancy rates are expected to vary from 61% to 106%, depending on which facility is considered.

## Supply and Demand Analysis

Table 24: 2021 Parking Occupancy Weekday – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	0	0	0%	94	57	61%	58	26	45%
2	0	0	0%	0	0	0%	85	45	53%
3	4	2	50%	0	0	0%	49	37	76%
4	0	0	0%	0	0	0%	178	0	0%
5	116	45	39%	0	0	0%	243	142	58%
6	45	14	31%	88	69	78%	26	16	62%
7	15	14	93%	182	135	74%	85	105	124%
8	23	2	9%	0	0	0%	93	83	89%
9	86	84	98%	0	0	0%	245	176	72%
10	19	15	79%	0	0	0%	36	13	36%
11	16	11	69%	0	0	0%	25	58	232%
12	39	43	110%	0	0	0%	21	19	90%
13	12	9	75%	356	234	66%	37	38	103%
14	33	35	106%	0	0	0%	0	0	0%
15	31	26	84%	48	50	104%	5	3	60%
16	14	13	93%	62	65	105%	18	16	89%
17	0	0	0%	69	73	106%	0	0	0%
18	0	0	0%	135	142	105%	0	0	0%
19	0	0	0%	293	239	81%	0	0	0%
20	46	27	59%	0	0	0%	58	21	36%
21	0	0	0%	0	0	0%	0	0	0%
22	52	28	54%	0	0	0%	20	30	150%
23	8	2	25%	0	0	0%	22	15	68%
24	17	18	106%	0	0	0%	702	462	66%
25	0	0	0%	0	0	0%	326	206	63%
<b>Total</b>	<b>576</b>	<b>388</b>	<b>67%</b>	<b>1,327</b>	<b>1,064</b>	<b>80%</b>	<b>2,332</b>	<b>1,511</b>	<b>65%</b>

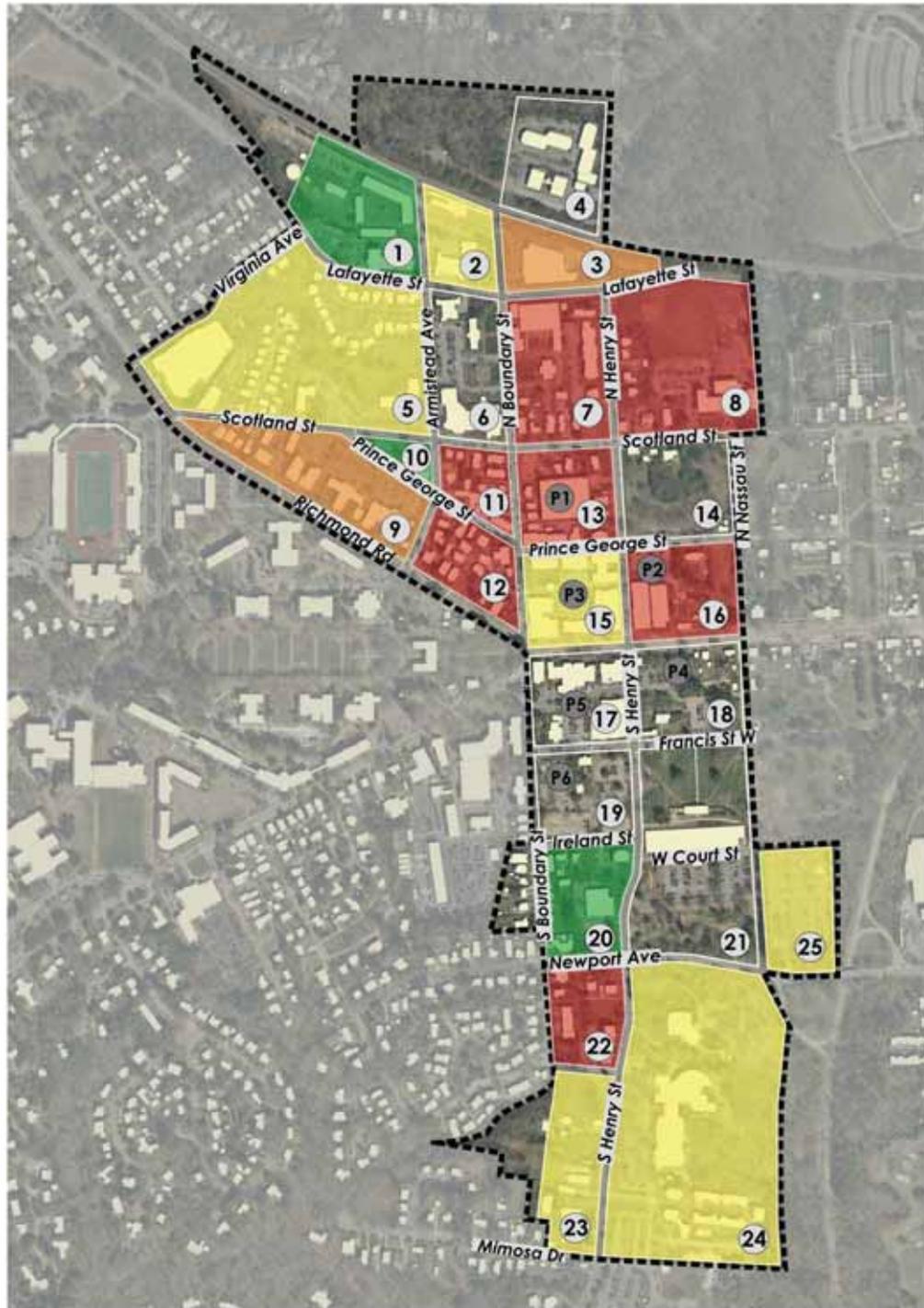
Source: Walker Parking Consultants, 2016

Walker did not apply a growth factor to the existing private parking demand; rather private demand was increased based on the projected demand associated with the known redevelopments and vacancy. By 2021, a parking demand of 1,511 private off-street spaces is expected, resulting in a 65% occupancy rate.

The following figures illustrate the public and private parking occupancy by block.

Supply and Demand Analysis

Figure 9: Projected 2021 Weekday Occupancy – Private Off-Street



Williamsburg Parking Study - Year 2021 Weekday Private Occupancy

① Block Numbers  
 ■ Study Area

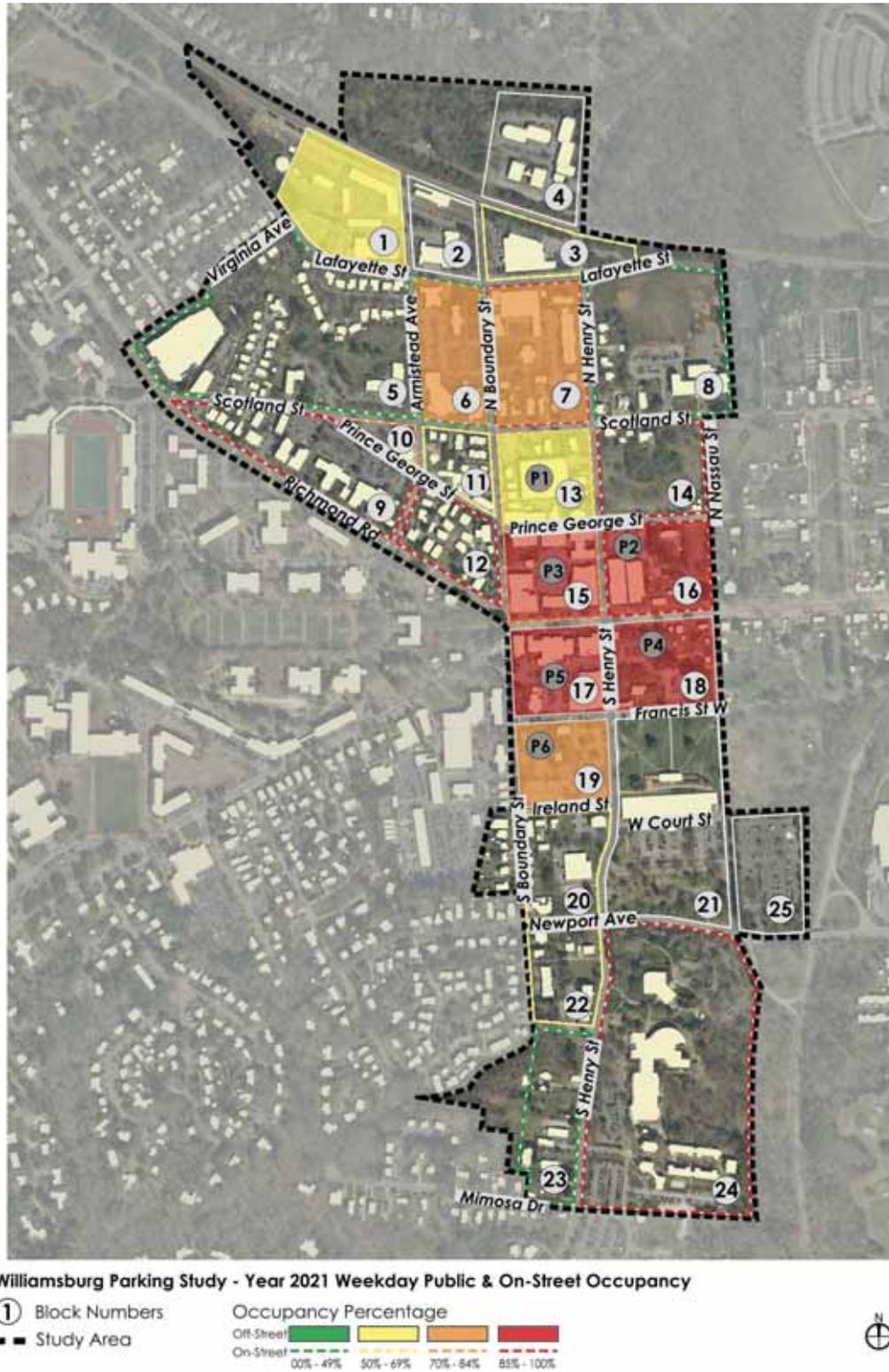
Occupancy Percentage

Off-Street	00% - 49%	50% - 69%	70% - 84%	85% - 100%
On-Street				



Source: Walker Parking Consultants, 2016

Figure 10: Projected 2021 Weekday Occupancy – Public Off-Street and On-Street



Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### *PARKING ADEQUACY*

As discussed earlier, parking adequacy is the ability of the parking supply to accommodate the parking demand. In order to determine the 2021 adequacy, Walker compared the projected parking demand to the effective future parking supply. As shown in Table 13, adequate parking is available within the Study Area on most blocks. Shortages are expected in the Merchants Square area.

**Table 13: Projected 2021 Parking Adequacy - Weekday**

Block	Effective Supply	Demand	Adequacy
1	140	83	57
2	81	45	36
3	50	39	11
4	169	0	169
5	330	187	143
6	142	99	43
7	258	254	4
8	108	85	23
9	306	260	46
10	50	28	22
11	38	69	(31)
12	53	62	(9)
13	365	281	84
14	28	35	(7)
15	74	79	(5)
16	85	94	(9)
17	62	73	(11)
18	122	142	(20)
19	264	239	26
20	94	48	46
21	0	0	0
22	63	58	5
23	28	17	11
24	681	480	201
25	310	206	105
<b>Total</b>	<b>3,901</b>	<b>2,962</b>	<b>939</b>

Source: Walker Parking Consultants, 2016

A more detailed analysis of parking adequacy for on-street, public off-street, and private off-street parking conditions can be found in the Appendix

## Supply and Demand Analysis

### 2026 WEEKDAY CONDITIONS

#### PARKING OCCUPANCY

Walker is projecting an overall occupancy rate of 75% during weekday conditions by 2026. When parking occupancies reach 85% or greater, finding available parking can be difficult. Ten of the blocks within our Study Area are expected to experience parking rates above 85%, with many of these blocks located in the Merchants Square area.

Table 14: Projected 2026 Parking Occupancy – Weekday

**SPOTLIGHT OBSERVATION**

Walker’s 2026 parking projections include the assumption that the P3 lot on Block 15 is demolished by 2026 and replaced with event space.

We assumed the surrounding public parking facilities would absorb the displaced parking demand from Block 15.

Block	Supply	2016 Demand	2026 Demand	Occupancy
1	152	80	86	57%
2	85	45	45	53%
3	53	39	39	74%
4	178	0	0	0%
5	359	134	232	65%
6	159	95	103	65%
7	282	189	279	99%
8	116	85	85	73%
9	331	242	264	80%
10	55	27	28	51%
11	41	29	69	168%
12	60	60	64	107%
13	405	248	343	85%
14	33	33	36	109%
15	36	76	31	86%
16	94	90	97	103%
17	69	69	76	110%
18	135	135	149	110%
19	293	180	285	97%
20	104	47	50	48%
21	0	100	0	0%
22	72	35	60	83%
23	48	17	29	60%
24	719	479	481	67%
25	326	136	215	66%
<b>Total</b>	<b>4,205</b>	<b>2,670</b>	<b>3,146</b>	<b>75%</b>

Source: Walker Parking Consultants, 2016

Table 15 summarizes the 2026 parking demand by block for each parking type.

## Supply and Demand Analysis

Table 15: Projected 2026 Weekday Parking Occupancy – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	0	0	0%	94	60	64%	58	26	45%
2	0	0	0%	0	0	0%	85	45	53%
3	4	2	50%	0	0	0%	49	37	76%
4	0	0	0%	0	0	0%	178	0	0%
5	116	47	41%	0	0	0%	243	185	76%
6	45	14	31%	88	73	83%	26	16	62%
7	15	14	93%	182	141	77%	85	124	146%
8	23	2	9%	0	0	0%	93	83	89%
9	86	88	102%	0	0	0%	245	176	72%
10	19	15	79%	0	0	0%	36	13	36%
11	16	11	69%	0	0	0%	25	58	232%
12	39	45	115%	0	0	0%	21	19	90%
13	12	10	83%	356	273	77%	37	60	162%
14	33	36	109%	0	0	0%	0	0	0%
15	31	28	90%	0	0	0%	5	3	60%
16	14	13	93%	62	68	110%	18	16	89%
17	0	0	0%	69	76	110%	0	0	0%
18	0	0	0%	135	149	110%	0	0	0%
19	0	0	0%	293	285	97%	0	0	0%
20	46	29	63%	0	0	0%	58	21	36%
21	0	0	0%	0	0	0%	0	0	0%
22	52	30	58%	0	0	0%	20	30	150%
23	8	2	25%	0	0	0%	40	27	68%
24	17	19	112%	0	0	0%	702	462	66%
25	0	0	0%	0	0	0%	326	215	66%
<b>Total</b>	<b>576</b>	<b>405</b>	<b>70%</b>	<b>1,279</b>	<b>1,125</b>	<b>88%</b>	<b>2,350</b>	<b>1,616</b>	<b>69%</b>

Source: Walker Parking Consultants, 2016

Blocks experiencing parking occupancy rates above 85% are highlighted in red in the table above. There are several blocks under each category of parking expected to experience parking demand exceeding the available supply. Blocks where the parking occupancy rates exceed 100% of capacity will overflow to adjacent blocks. Private parking shortages will increase the need for public parking.

On-street parking demand is expected to increase to 405 occupied spaces over the next ten years. By 2026, a 70% occupancy rate is projected. Please note that only a few blocks are expected to experience parking rates near or above 85%, the majority of blocks are expected to have available parking supply.

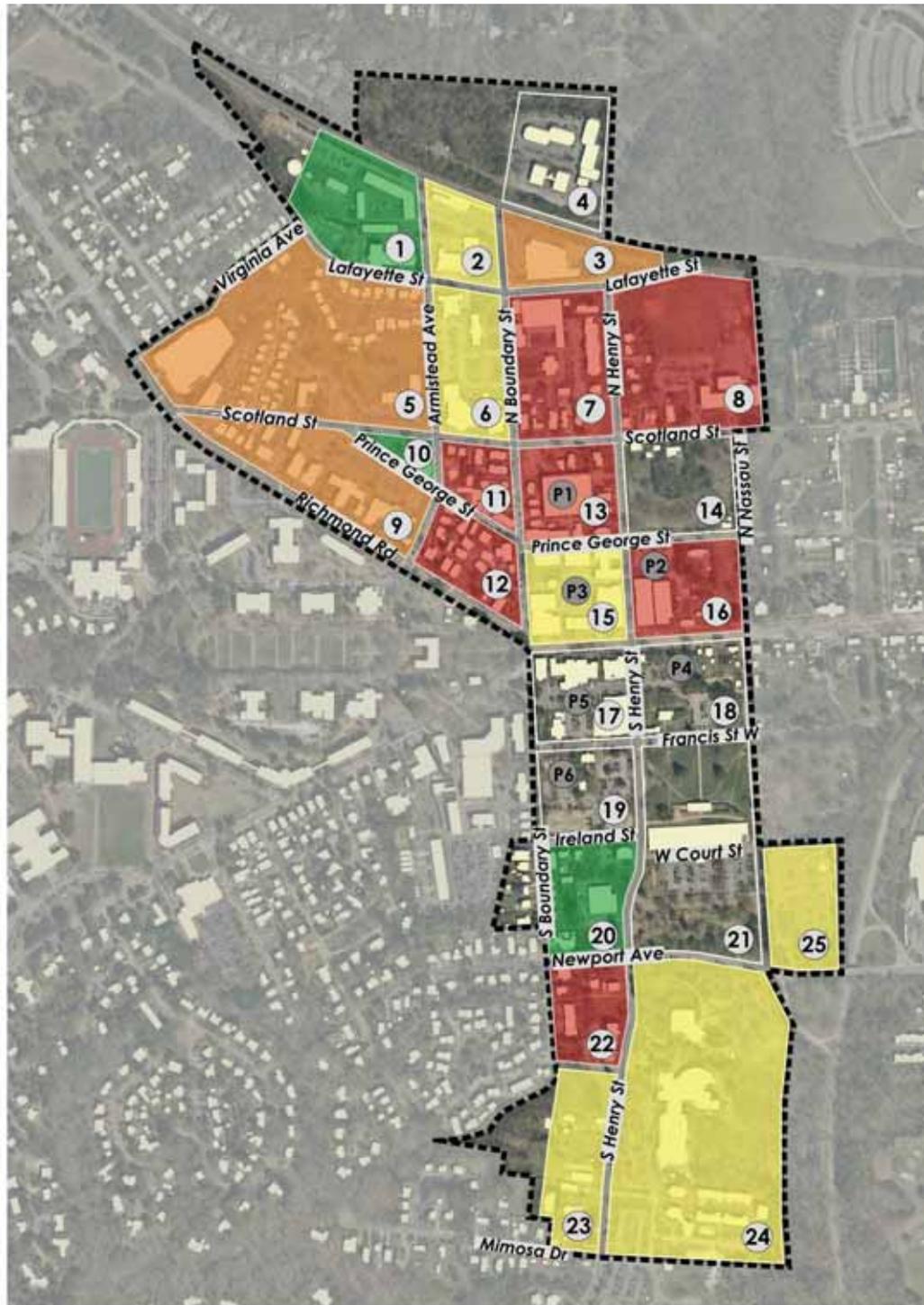
Assuming the observed parking demand in the public lots continues to grow by 1% annually, Walker anticipates a weekday public parking demand of 1,125 spaces, or an 88% occupancy rate.

## Supply and Demand Analysis

Lastly, Walker did not apply a growth factor to the existing private parking demand; rather private demand was increased based on the projected demand associated with the known redevelopments and vacant properties. By 2026, a parking demand of 1,616 spaces is expected, resulting in a 69% occupancy rate.

The figures on the followings pages illustrate the public and private parking occupancy by block.

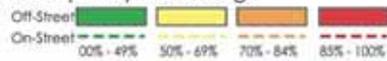
Figure 11: Projected 2026 Weekday Occupancy – Private Off-Street



**Williamsburg Parking Study - Year 2026 Weekday Private Occupancy**

- ① Block Numbers
- Study Area

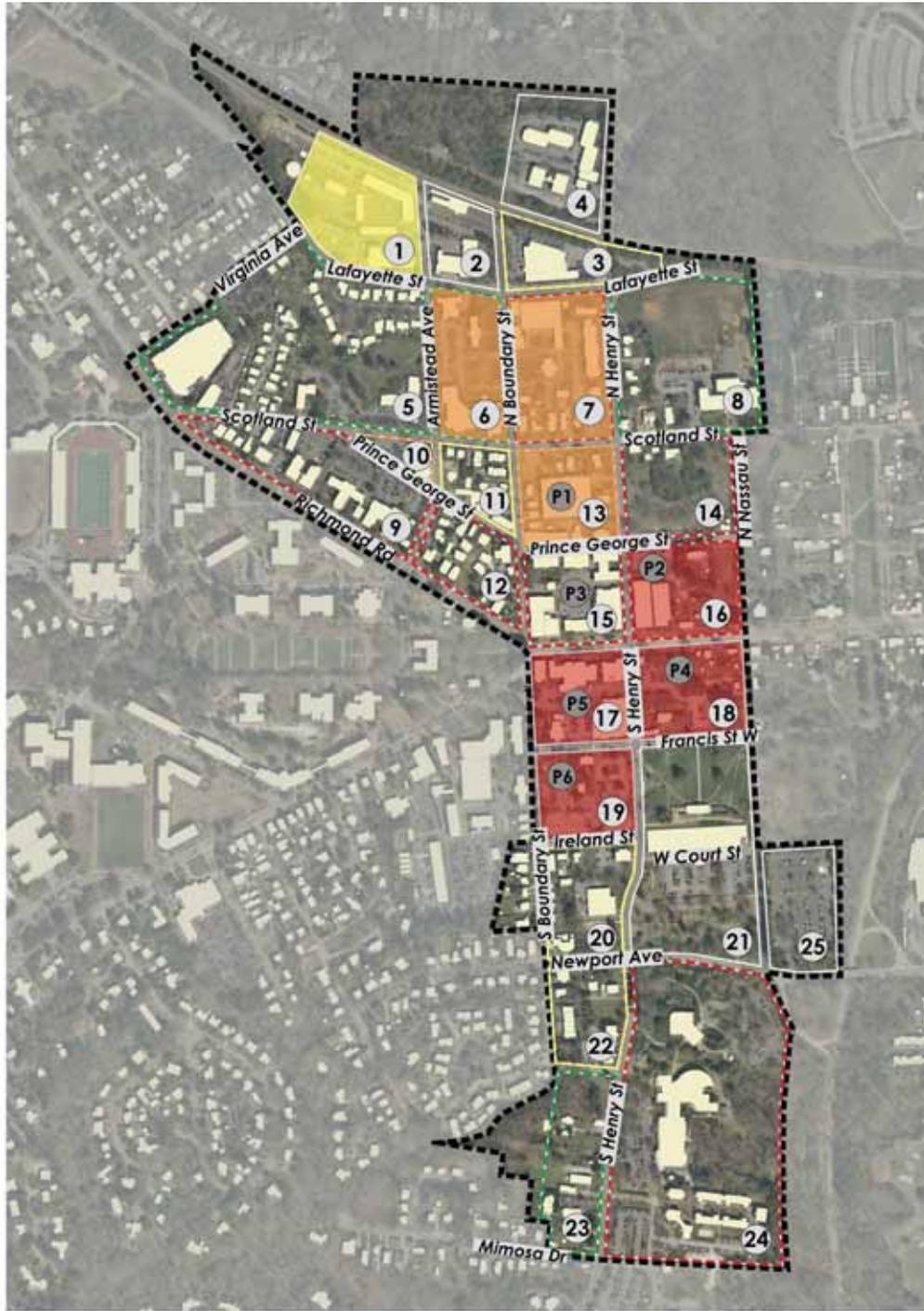
Occupancy Percentage



Source: Walker Parking Consultants, 2016

Supply and Demand Analysis

Figure 12: Projected 2026 Weekday Occupancy – Public Off-Street and On-Street



Williamsburg Parking Study - Year 2026 Weekday Public & On-Street Occupancy

① Block Numbers  
 Study Area



Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### PARKING ADEQUACY

As discussed earlier, parking adequacy is the ability of the parking supply to accommodate the parking demand. Walker compared the projected parking demand to the future effective parking supply in order to determine the 2026 adequacy. As shown in the table below, adequate parking is available within the Study Area on most blocks.

Table 16: Projected 2026 Parking Adequacy - Weekday

**SPOTLIGHT OBSERVATION**

Blocks 7, 11, 12, 14, 16, 17, 18, and 19 are all projected to experience parking shortages by 2026. The shortages on these blocks total 145 spaces. While the surrounding area has excess capacity to support these shortages, the City of Williamsburg must also consider issues such as walking distance. Parking Management issues are discussed in the next section of the report.

Block	Effective Supply	Demand	Adequacy
1	140	86	54
2	81	45	36
3	50	39	11
4	169	0	169
5	330	232	98
6	142	103	39
7	258	279	(21)
8	108	85	23
9	306	264	42
10	50	28	22
11	38	69	(31)
12	53	64	(11)
13	365	343	22
14	28	36	(8)
15	31	31	0
16	85	97	(12)
17	62	76	(14)
18	122	149	(27)
19	264	285	(21)
20	94	50	44
21	0	0	0
22	63	60	3
23	45	29	16
24	681	481	200
25	310	215	95
<b>Total</b>	<b>3,875</b>	<b>3,146</b>	<b>729</b>

Source: Walker Parking Consultants, 2016

Additional analysis by parking type is located in the Appendix.

## Supply and Demand Analysis

### FUTURE WEEKEND CONDITIONS

## Supply and Demand Analysis

### 2021 WEEKEND CONDITIONS

Walker also projected parking demand during peak weekend conditions for the City of Williamsburg based on our observations and the demand associated with the proposed projects. Similar to the weekday analysis, a 1% compound annual growth rate was applied to all public parking demand.

### PARKING OCCUPANCY

Walker is projecting a weekend parking demand of 2,122 vehicles by 2021, which equates to a 195 space increase in five years. The majority of this increase can be contributed to the proposed developments. When compared to the future parking supply, a 50% occupancy rate is projected.

Table 17: Projected 2021 Parking Occupancy – Weekend

Block	Supply	2016 Demand	2021 Demand	Occupancy
1	152	23	24	16%
2	85	48	48	56%
3	53	20	20	38%
4	178	0	0	0%
5	359	95	145	40%
6	159	83	87	55%
7	282	123	131	46%
8	116	26	26	22%
9	326	131	146	45%
10	55	32	32	58%
11	41	26	61	149%
12	59	41	42	71%
13	405	270	290	72%
14	33	33	35	106%
15	84	82	86	102%
16	94	86	90	96%
17	69	69	73	106%
18	135	131	138	102%
19	293	202	271	92%
20	104	28	29	28%
21	0	120	0	0%
22	72	12	18	25%
23	30	15	15	50%
24	719	125	126	18%
25	326	106	189	58%
<b>Total</b>	<b>4,229</b>	<b>1,927</b>	<b>2,122</b>	<b>50%</b>

Source: Walker Parking Consultants, 2016

The 2021 weekend parking demand by block for each parking type is summarized in Table 18 below. Blocks in red are expected to experience parking occupancy rates greater than 85% of capacity.

## Supply and Demand Analysis

Table 18: Projected 2021 Parking Occupancy Weekend – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	0	0	0%	94	12	13%	58	12	21%
2	0	0	0%	0	0	0%	85	48	56%
3	4	1	25%	0	0	0%	49	19	39%
4	0	0	0%	0	0	0%	178	0	0%
5	116	37	32%	0	0	0%	243	108	44%
6	45	19	42%	88	60	68%	26	8	31%
7	15	16	107%	182	81	45%	85	34	40%
8	23	7	30%	0	0	0%	93	19	20%
9	81	45	56%	0	0	0%	245	101	41%
10	19	9	47%	0	0	0%	36	23	64%
11	16	12	75%	0	0	0%	25	49	196%
12	38	28	74%	0	0	0%	21	14	67%
13	12	13	108%	356	256	72%	37	21	57%
14	33	35	106%	0	0	0%	0	0	0%
15	31	33	106%	48	50	104%	5	3	60%
16	14	15	107%	62	65	105%	18	10	56%
17	0	0	0%	69	73	106%	0	0	0%
18	0	0	0%	135	138	102%	0	0	0%
19	0	0	0%	293	271	92%	0	0	0%
20	46	20	43%	0	0	0%	58	9	16%
21	0	0	0%	0	0	0%	0	0	0%
22	52	11	21%	0	0	0%	20	7	35%
23	8	2	25%	0	0	0%	22	13	59%
24	17	12	71%	0	0	0%	702	114	16%
25	0	0	0%	0	0	0%	326	189	58%
<b>Total</b>	<b>570</b>	<b>315</b>	<b>55%</b>	<b>1,327</b>	<b>1,006</b>	<b>76%</b>	<b>2,332</b>	<b>801</b>	<b>34%</b>

Source: Walker Parking Consultants, 2016

On-street parking demand is expected to increase to 315 occupied spaces by 2021 during weekend conditions. A 55% occupancy rate is projected. Additionally, with the exception of Blocks 7, 13, 14, 15, and 16, all of the blocks are expected to have available parking supply.

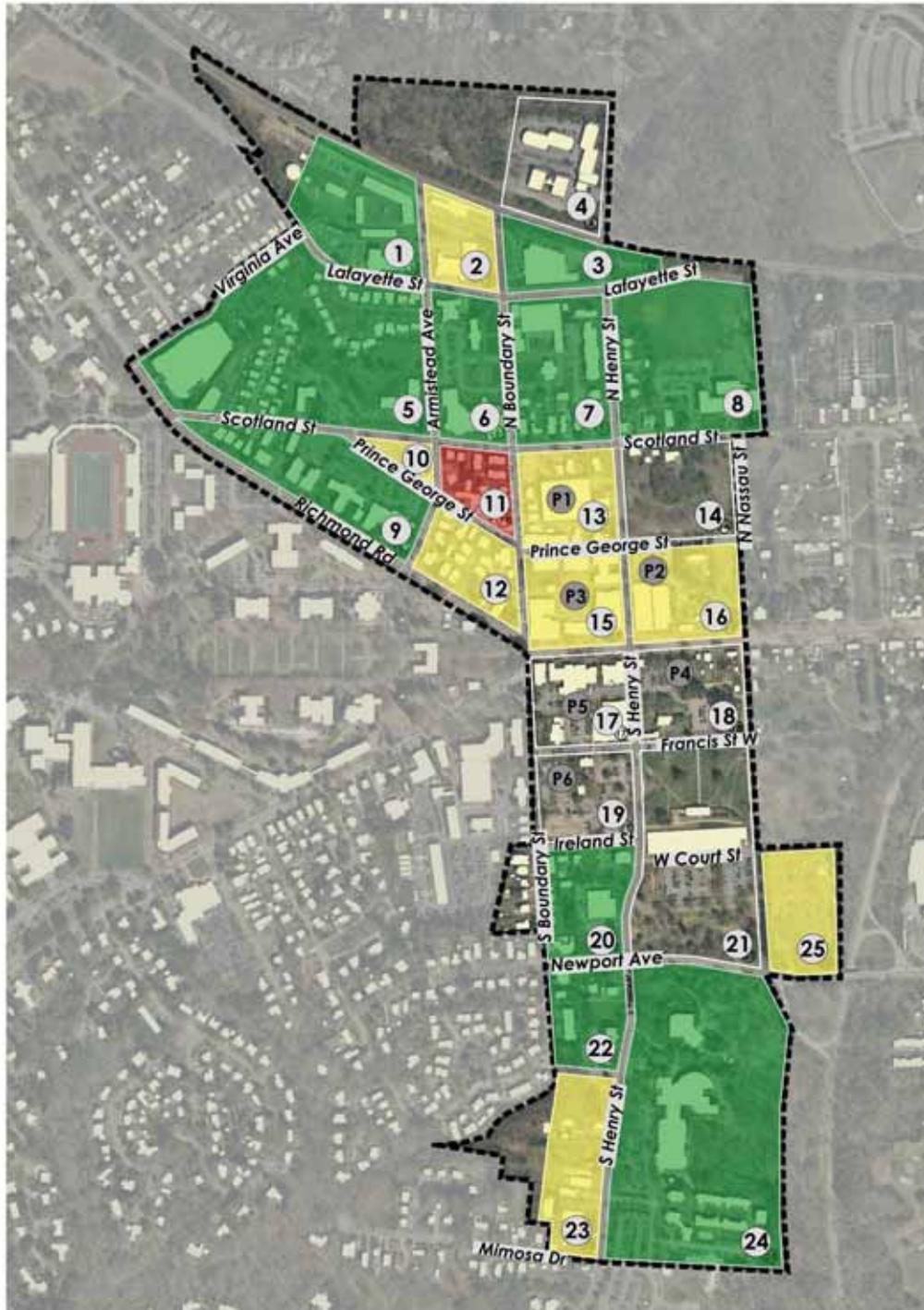
Assuming the observed parking demand in the public lots is increased by a 1% annually compounded rate for five years, Walker anticipates a 76% occupancy rate. A weekend parking demand of approximately 1,006 spaces is projected.

Walker did not apply a growth factor to the existing private parking demand; rather private demand was increased based on the projected demand associated with the known developments. By 2021, a parking demand of 801 spaces is expected, resulting in a 34% occupancy rate.

The following figures illustrate the public and private parking occupancy by block.

Supply and Demand Analysis

Figure 13: Projected 2021 Weekend Occupancy – Private Off-Street



Williamsburg Parking Study - Year 2021 Weekend Private Occupancy

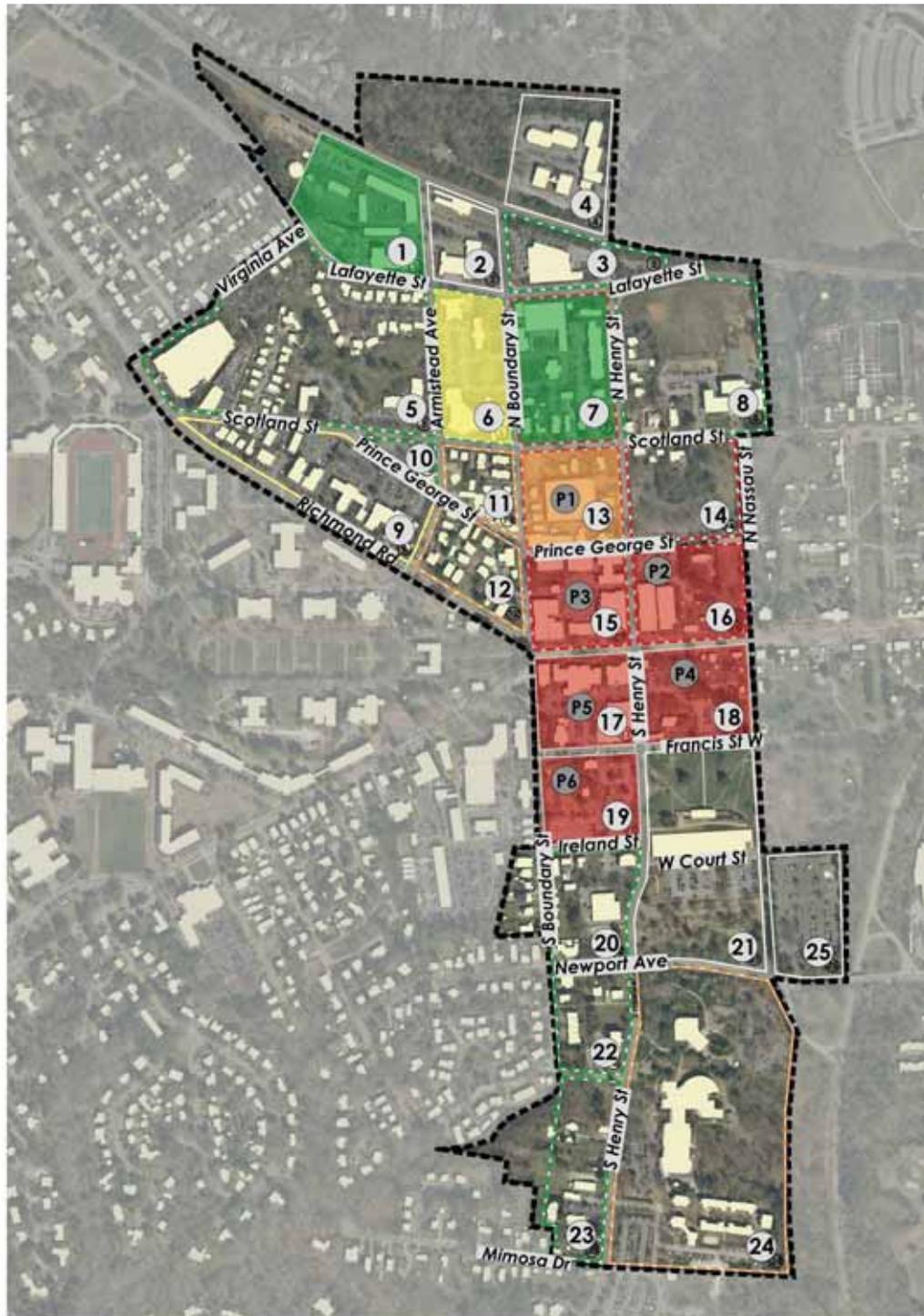
- ① Block Numbers
- Study Area



Source: Walker Parking Consultants, 2016

Supply and Demand Analysis

Figure 14: Projected 2021 Weekend Occupancy – Public Off-Street and On-Street



Williamsburg Parking Study - Year 2021 Weekend Public & On-Street Occupancy



Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### *PARKING ADEQUACY*

In order to determine the 2021 weekend adequacy, Walker compared the projected weekend parking demand to the future effective parking supply. Adequate parking is available within the Study Area on most blocks, as shown in the table below. A surplus of approximately 1,774 spaces is anticipated. The data is also summarized by parking type in the Appendix.

**Table 19: Projected 2021 Parking Adequacy - Weekend**

Block	Effective Supply	Demand	Adequacy
1	140	24	116
2	81	48	33
3	50	20	30
4	169	0	169
5	330	145	185
6	142	87	55
7	258	131	127
8	108	26	82
9	302	146	156
10	50	32	18
11	38	61	(23)
12	52	42	10
13	365	290	75
14	28	35	(7)
15	74	86	(12)
16	85	90	(5)
17	62	73	(11)
18	122	138	(16)
19	264	271	(7)
20	94	29	65
21	0	0	0
22	63	18	45
23	28	15	13
24	681	126	555
25	310	189	121
<b>Total</b>	<b>3,896</b>	<b>2,122</b>	<b>1,774</b>

Source: Walker Parking Consultants, 2016

## Supply and Demand Analysis

### 2026 WEEKEND CONDITIONS

#### *PARKING OCCUPANCY*

A weekend parking demand of 2,276 spaces is expected by 2026. When compared to the future parking supply, a 54% occupancy rate is projected.

When parking occupancies reach 85% or greater, finding available parking can be difficult. While most of the blocks within our Study Area are expected to experience parking rates below 85%, Blocks 11, and 14 through 19 are expected to experience parking rates at or above 100%.

**Table 20: Projected 2026 Parking Occupancy – Weekend**

Block	Supply	2016 Demand	2026 Demand	Occupancy
1	152	23	24	16%
2	85	48	48	56%
3	53	20	20	38%
4	178	0	0	0%
5	359	95	192	53%
6	159	83	91	57%
7	282	123	138	49%
8	116	26	27	23%
9	326	131	148	45%
10	55	32	33	60%
11	41	26	61	149%
12	59	41	44	75%
13	405	270	340	84%
14	33	33	36	109%
15	36	82	37	103%
16	94	86	93	99%
17	69	69	76	110%
18	135	131	145	107%
19	293	202	321	110%
20	104	28	30	29%
21	0	120	0	0%
22	72	12	18	25%
23	48	15	27	56%
24	719	125	126	18%
25	326	106	201	62%
<b>Total</b>	<b>4,199</b>	<b>1,927</b>	<b>2,276</b>	<b>54%</b>

Source: Walker Parking Consultants, 2016

The table below summarizes the 2026 weekend parking demand by block for each parking type.

## Supply and Demand Analysis

Table 21: Projected 2026 Parking Occupancy Weekend – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	0	0	0%	94	12	13%	58	12	21%
2	0	0	0%	0	0	0%	85	48	56%
3	4	1	25%	0	0	0%	49	19	39%
4	0	0	0%	0	0	0%	178	0	0%
5	116	39	34%	0	0	0%	243	153	63%
6	45	20	44%	88	63	72%	26	8	31%
7	15	17	113%	182	85	47%	85	36	42%
8	23	8	35%	0	0	0%	93	19	20%
9	81	47	58%	0	0	0%	245	101	41%
10	19	10	53%	0	0	0%	36	23	64%
11	16	12	75%	0	0	0%	25	49	196%
12	38	30	79%	0	0	0%	21	14	67%
13	12	13	108%	356	297	83%	37	30	81%
14	33	36	109%	0	0	0%	0	0	0%
15	31	34	110%	0	0	0%	5	3	60%
16	14	15	107%	62	68	110%	18	10	56%
17	0	0	0%	69	76	110%	0	0	0%
18	0	0	0%	135	145	107%	0	0	0%
19	0	0	0%	293	321	110%	0	0	0%
20	46	21	46%	0	0	0%	58	9	16%
21	0	0	0%	0	0	0%	0	0	0%
22	52	11	21%	0	0	0%	20	7	35%
23	8	2	25%	0	0	0%	40	25	63%
24	17	12	71%	0	0	0%	702	114	16%
25	0	0	0%	0	0	0%	326	201	62%
<b>Total</b>	<b>570</b>	<b>328</b>	<b>58%</b>	<b>1,279</b>	<b>1,067</b>	<b>83%</b>	<b>2,350</b>	<b>881</b>	<b>37%</b>

Source: Walker Parking Consultants, 2016

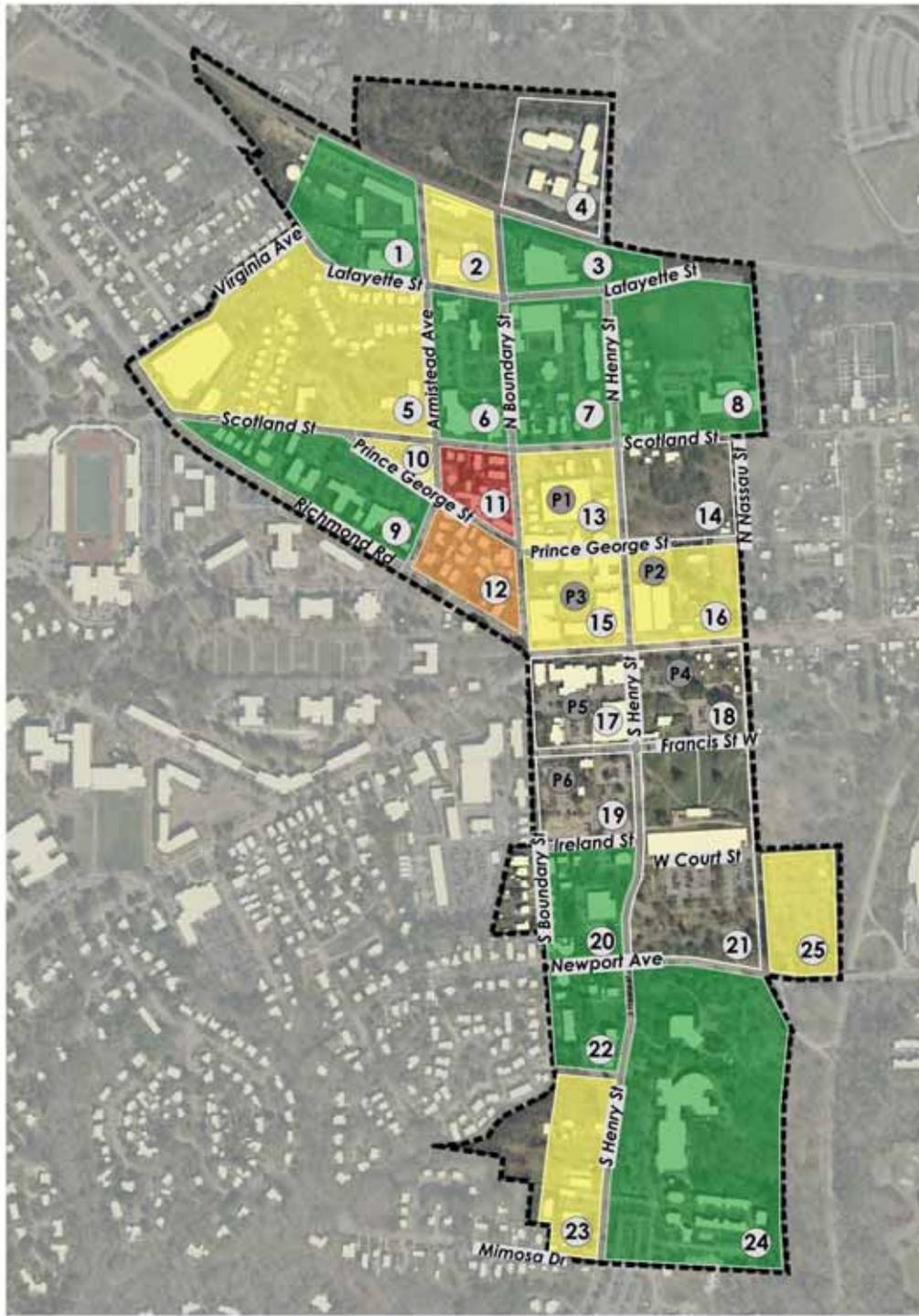
Assuming the observed parking demand on-street is increased by a 1% annually compounded rate for ten years, Walker anticipates a 58% occupancy rate. A weekend parking demand of approximately 328 spaces is projected. The public off-street parking demand was also grown by 1% annual for ten years. An 83% occupancy rate is anticipated during weekend conditions.

Walker did not apply a growth factor to the existing private parking demand; rather private demand was increased based on the projected demand associated with the known developments. As shown in the table above, a parking demand of 881 spaces is expected, resulting in a 37% occupancy rate by 2026.

The figures below illustrate the public and private parking occupancy by block.

Supply and Demand Analysis

Figure 15: Projected 2026 Weekend Occupancy – Private Off-Street



Williamsburg Parking Study - Year 2026 Weekend Private Occupancy

① Block Numbers

■ Study Area

Occupancy Percentage



Source: Walker Parking Consultants, 2016



## Supply and Demand Analysis

### *PARKING ADEQUACY*

The 2026 weekend adequacy was determined by comparing the projected weekend parking demand to the future effective parking supply. Although adequate parking is available within the Study Area on most blocks, some blocks in and around the Merchants Square area are projected to experience deficits. A surplus of approximately 1,595 spaces is anticipated, as shown in the table below.

**Table 22: Projected 2026 Parking Adequacy - Weekend**

Block	Effective Supply	Demand	Adequacy
1	140	24	116
2	81	48	33
3	50	20	30
4	169	0	169
5	330	192	138
6	142	91	51
7	258	138	120
8	108	27	81
9	302	148	154
10	50	33	17
11	38	61	(23)
12	52	44	8
13	365	340	25
14	28	36	(8)
15	31	37	(6)
16	85	93	(8)
17	62	76	(14)
18	122	145	(23)
19	264	321	(57)
20	94	30	64
21	0	0	0
22	63	18	45
23	45	27	18
24	681	126	555
25	310	201	110
<b>Total</b>	<b>3,870</b>	<b>2,276</b>	<b>1,595</b>

Source: Walker Parking Consultants, 2016

The data is also summarized by parking type in the Appendix.

## Supply and Demand Analysis

### CONCLUSIONS/FINDINGS

EPR collected parking occupancy data for the 25-block Study Area in March and July of 2016, periods represented to have typical peak activity levels according to City and CW representatives. During the March survey, approximately 2,670 occupied spaces (62% of the available supply) were observed during the 2 p.m. peak hour on a weekday. The weekend occupancy rate was 45%, with 1,927 of the total available spaces occupied.

Weekday parking demand during the July survey was found to be lower, with only 41% or 1,756 occupied spaces during the weekday peak hour. Similarly, weekend parking demand in July was also lower than that observed during March.

Walker assumes the March findings represent design conditions and bases future projections on these observations. The table below summarizes our findings by parking type during the March Survey Day and 2021 and 2026 planning horizons. Although parking shortages are expected on some blocks, overall adequate parking is available within the Study Area to support demand over the next ten years. The blocks expected to experience parking deficits include the following:

- Block 7, where the Parking Terrace is located.
  - The deficit is likely associated with the projected occupancy of the now vacant Health Evaluation Building.
- Blocks 11 and 12, where the Prince George Commons project is located.
  - Again, we believe leasing out the remaining vacancies within the Prince George Commons project may result in parking shortages on these blocks.
- Blocks 16, 17, 18, and 19, the Merchants Square Area
  - The potential loss of the P3 lot on Block 15, in addition to the loss of the museum lots on Block 21, will put additional stress on the already stressed Merchants Square lots.
- Other blocks within the downtown area are expected to experience small on-street shortages.

## Supply and Demand Analysis

Table 23: Parking Supply, Demand, and Adequacy Summary

		Weekday			Weekend		
		Survey Day	2021	2026	Survey Day	2021	2026
On-Street	Supply	580	576	576	580	576	576
	Effective Supply	494	489	489	494	489	489
	Demand	369	388	405	298	315	328
	Occupancy	64%	67%	70%	51%	55%	57%
	Adequacy	125	101	84	196	174	161
Public Off-Street	Supply	1,327	1,327	1,279	1,327	1,327	1,279
	Effective Supply	1,195	1,195	1,152	1,195	1,195	1,152
	Demand	965	1,064	1,125	901	1,006	1,067
	Occupancy	73%	80%	88%	68%	76%	83%
	Adequacy	230	132	27	294	189	85
Private Off-Street	Supply	2,419	2,332	2,350	2,419	2,332	2,350
	Effective Supply	2,301	2,217	2,234	2,301	2,217	2,234
	Demand	1,336	1,511	1,616	728	801	881
	Occupancy	55%	65%	69%	30%	34%	37%
	Adequacy	965	707	618	1,573	1,416	1,354
Total	Supply	4,326	4,235	4,205	4,326	4,235	4,205
	Effective Supply	3,990	3,901	3,875	3,990	3,901	3,875
	Demand	2,670	2,962	3,146	1,927	2,122	2,276
	Occupancy	62%	70%	75%	45%	50%	54%
	Adequacy	1,320	939	729	2,063	1,779	1,600

Source: Walker Parking Consultants, 2016

# PARKING POLICIES AND PRACTICES



**WALKER**  
PARKING CONSULTANTS

## Parking Policies and Practices

### INTRODUCTION

Prior to building any new public parking in downtown Williamsburg, Walker recommends that the City of Williamsburg (City) consider changes to current parking policies and practices. The proposed changes are intended to help improve the overall delivery of parking services. These recommendations are based on input from stakeholders directly impacted by public parking policy and practices, Walker’s analysis of current and future parking conditions, our assessment of current operations, and our experience with parking in other cities. This section begins with a summary of the existing City parking assets and a review of and recommended changes to a number of existing parking policies and practices.

### SUMMARY OF PROGRAM

Flanked by the College of William and Mary to the west and Colonial Williamsburg to the east, downtown Williamsburg is the retail, commercial, and governmental center of the City. Public parking is provided in numerous off-street parking lots and structures and on street. Stakeholders include tourists; customers of downtown businesses, including Merchants Square; citizens tending to business at the library, post office, city hall, etc.; downtown-based employees and business owners; and university students, faculty, and staff members.

The City owns and operates all of the on-street inventory within the downtown district. Downtown on-street parking is provided free of charge to users, with a two-hour duration of stay limitation on many streets. The parking enforcement division of the Williamsburg Police Department is responsible for the enforcement of posted on-street parking space time limits.

The City of Williamsburg has a unique relationship with the Colonial Williamsburg Foundation (CW) in terms of the overall structure of parking in downtown Williamsburg. These two organizations, along with the Williamsburg Police Department and the City’s Department of Public Works, act as a unit in the management, maintenance and enforcement of all public parking lots and garages. Each facility/lot with which the City has involvement has operating hours of 6:00 a.m. -12:00 a.m., Overnight parking is prohibited in City facilities, with the exception of William and Mary students who have purchased 24-hour parking passes in the Prince George Parking Garage.

The Colonial Williamsburg Foundation owns five separate surface parking lots. The City is contracted to manage the enforcement associated with four of the five lots, with the P6 lot (Boundary and Francis Streets), the only pay-to-park

#### SECTION ORGANIZATION

The recommendations for the public parking system can be scaled to support the various needs of a growing and active downtown market and are organized and presented in the following categories:

- Goals and Objectives
- Zoning Ordinance
- Organizational Structure
- Parking Rates and Fines
- Time Limits
- Parking Enforcement
  - Staffing and Hours
  - Enforcement Equipment
  - Zone-Based Enforcement
- Parking Permits
  - Employee Parking Program
  - Student Parking Program
- Communications and Public Relations
- Williamsburg Mobile Phone App
- Parking Facility Maintenance
- Parking Finances
- Parking Demand Management

## Parking Policies and Practices

surface lot, being the outlier. The following table summarizes the inventory of off-street surface parking lots owned by CW.



Table 24: Parking Facilities Owned by Colonial Williamsburg Foundation

Facility	Address	Gated/ Non Gated	Number of Stalls	Managed by	Free/Paid Parking
P2	Prince George @ N. Henry	Non-Gated	70	Police	Free
P3	Merchant's Square	Non-Gated	46	Police	Free
P4	Francis east of Henry	Non-Gated	138	Police	Free
P5	Francis west of Henry	Non-Gated	66	Police	Free
P6	Boundary @ Francis St	Gated	220	CW	Paid

Source: City of Williamsburg, 2016

The City employs gated, automated pay-on-foot technology at the Prince George garage, its only gated, pay-to-park system. The same technology is employed by CW at P6, CW's only pay-to-park gated surface lot within the downtown district. The City has made mention of upgrading the parking access and revenue control system (PARCS) equipment at paid facilities, however it was noted during stakeholder meetings that the City would wait until after this study was completed to determine the appropriate timing for such an installation.



The Prince George Garage employs one dedicated entry, one dedicated exit, and one reversible lane for ingress and egress. Anecdotal reports from garage management suggested that the reversible lane is used for egress approximately 80% of the time. In addition to the PARCS system, the City has also recently installed two electric vehicle (EV) charging stations within the Prince George Garage, which are available for use at no cost to the customer.

## Parking Policies and Practices

### GOALS AND OBJECTIVES OF PARKING SYSTEM

The goals of any parking system are centered on providing the most efficient and friendly parking experience to patrons and visitors. This is accomplished through various parking policies that promote a positive customer experience while ensuring that supply is available for commercial and civic activity. Management of the parking supply plays a key role in ensuring that visitors and patrons find parking quickly and efficiently while assisting in mitigation of unwanted on-street parking by long-term users, including employees. Walker’s recommendations for the City of Williamsburg incorporate the following strategies that promote effective management of the downtown parking supply:

- Prudent use of available parking technologies;
- Clear, effective on-street parking enforcement;
- Assistive zoning strategies, such as shared parking provisions for new development;
- Clear and understandable signage and wayfinding;
- Management of available on- and off-street parking demand; and

The City owns two parking garages; the Parking Terrace in the Municipal Center as well as the Prince George Garage. The table below summarizes details on the parking garages with which the City is associated.

Table 25: Parking Garages Owned by the City of Williamsburg

Facility	Address	Gated/ Non Gated	Number of Stalls	Managed by	Free/Paid Parking
Prince George Garage	230 N. Henry Street	Gated	354	Police	Paid
Parking Terrace	421 N. Boundary Street	Non-Gated	153	Police	Free 2-hr. parking

Source: City of Williamsburg, 2016

### ZONING ORDINANCE

There are areas of downtown Williamsburg that temporarily experience high levels of demand that strain the local parking supply, while nearby areas experience a substantial parking surplus. Even though available supply may exist within one or two blocks, these localized challenges form perceptions that parking is inadequate. The community can address the parking challenges by building more supply, better managing the existing resources, or a measured combination of both. Many communities are rethinking how best to address the challenges of parking and are pursuing management solutions before committing to long-term capital investments. This course of action has proven to promote positive perceptions and to increase access to available supply.

The following exhibit provides an overview of how communities are starting to think about parking planning.

Table 26: Community Approach to Parking Planning

## Parking Policies and Practices

Old Parking Paradigm	New Parking Paradigm
<ul style="list-style-type: none"> <li>• “Parking Problem” means inadequate parking supply.</li> </ul>	<ul style="list-style-type: none"> <li>✓ There are many types of parking problems (management, pricing, enforcement, etc.)</li> </ul>
<ul style="list-style-type: none"> <li>• Abundant parking supply is always desirable.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Too much supply is as harmful as too little. Public resources should be maximized and sized appropriately.</li> </ul>
<ul style="list-style-type: none"> <li>• Parking should be provided free, funded indirectly, through rents and taxes.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Users should pay directly for parking facilities. A coordinated pricing system should value price parking with on-street parking priced the highest.</li> </ul>
<ul style="list-style-type: none"> <li>• Innovation faces a high burden of proof and should only be applied if proven and widely accepted.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Innovations should be encouraged. Even unsuccessful experiments often provide useful information.</li> </ul>
<ul style="list-style-type: none"> <li>• Parking management is a last resort, to be applied only if increasing supply is infeasible.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Parking management programs should be applied to prevent parking problems.</li> </ul>

As additional development makes its way to downtown Williamsburg, the City should review the zoning code to ensure that parking is available for employees and patrons of new development alike. The downtown district of Williamsburg is exempt from minimum parking requirements in the zoning code.

Employing parking minimums in the downtown district may not be necessary given the existing conditions. However, as conditions change and new demand is created, the City may consider minimum requirements and shared parking provisions within the downtown district, as recommended by the Urban Land Institute. Additionally, absent minimum parking requirements, the City could require developers to submit a parking plan as part of an overall site-development plan. This would, at the very least, encourage developers to consider available public and private parking conditions prior to submission of a site plan.

Shared parking is defined as parking spaces that can be used to serve two or more individual land uses without conflict or encroachment. One of the fundamental principles of downtown planning from the earliest days of the automobile has always been to share parking resources rather than to have each use or building have its own parking. The resurgence of many central cities resulting from the addition of vibrant residential, retail, restaurant and entertainment developments continues to rely heavily on shared parking for economic viability. In addition, mixed-use projects in many different settings have benefited from shared parking. There are numerous benefits of shared parking to a community at large, not the least of which is the environmental benefit of significantly reducing the square feet of parking provided to serve commercial development.

The interplay of land uses in a mixed-use environment produces a reduction in overall parking demand. For example, a substantial percentage of patrons at one business (restaurant) may be employees of another downtown business (office). This is referred to as the “effects of the captive market”. These patrons are already parking and contribute only once to the number of peak hour parkers.

## Parking Policies and Practices

### *RECOMMENDATION*

While there are opportunities to develop structured parking or increase existing parking through restriping, there are many existing spaces in private lots in the downtown area that are vacant for large portions of the day. The single best improvement Williamsburg could make would be to create agreements to share underutilized parking lots between their private owners and the public. There are several reasons why this is such a beneficial approach:

- From an environmental perspective, it is always preferable to make good use of existing parking resources before building additional ones.
- From an aesthetic perspective, adding to the existing checkerboard of surface lots is not desirable and a garage, which would consolidate parking and reduce the surface area devoted to parking, is usually an expensive option and may not be warranted yet.
- From a financial perspective, owners may be relieved of some insurance and other operating costs while the City gets parking without spending the large amount of money needed for a garage.

Several municipalities across the country utilize shared parking, including Cary, NC; Del Ray, FL; San Diego, CA; and the City of San Clemente, CA.

There are already official, and likely unofficial, versions of shared parking in Williamsburg. For example, the Churches along Prince George Street sell parking spaces to visitors during football games. Others park in the City Government Office Building lot during non-business hours or in the lot behind the Health Evaluation Building. Some are lots marked expressly for a given use, but customers are never booted or towed for using these areas. In other cases, lots are divided between spaces marked for the businesses on that site and unmarked or “customer only” spaces that can (informally) be used by anyone despite being associated with a particular building. This is an informal approach to providing more public parking, and one that requires little on the part of the owner. The downside of such an approach is that if the lot is not “advertised” as public, it remains ambiguous and many visitors will avoid using it. Many will drive cars from lot to lot rather than walk around because they aren’t sure whether they will be towed. Basically, the current sharing arrangement is only useful for frequent visitors.

A more thorough approach is to make formal agreements to allow public parking on private lots, and direct cars to these areas. Spaces can be reserved as needed within the lot for the on-site uses, essentially limiting the public parking and guaranteeing that businesses don’t lose their valuable resource. This sends a clearer message to the public that they can use the lot, but it does so without jeopardizing on-site tenants.

In addition to the concern about ensuring that tenants still have spaces, there is a concern about the liability associated with having the general public parking on private lots. Some cities lease the lots from the private owners, which makes the leaseholder liable; the leaseholder carries the insurance for public parking in the lot, as well as paying other expenses such as lighting, cleaning, etc.

Given the low occupancy in some of the surface lots throughout the day, but especially later in the day, evening shared use should be strongly considered even where lot owners are reluctant to allow overflow onto underutilized portions of their lots during their busy daytime hours. Again, a limitation of liability will be important.

## Parking Policies and Practices

Based on our supply and demand analysis, there are several lots within the Study Area with excess parking supply. The following tables show the available parking throughout the day during both weekday and weekend conditions in several lots in the downtown.

Note, the lot on Block 1 is publicly-owned visitor parking for the municipal building.

**Table 27: Available Parking Supply in Select Lots**

Block	Lot	Name	Supply	Weekday			Surplus/Deficit		
				10:00 AM	2:00 PM	7:00 PM			
1*	31	City Municipal Building	94	73	54	17	21	40	77
7	43	Health Evaluation Center	46	13	19	4	33	27	42
8	54	Matthew Whaley Elementary School	93	70	83	3	23	10	90
9	14	Baptist Church	70	8	16	36	62	54	34
9	15	Presbyterian Church	20	19	20	5	1	0	15
9	16	Presbyterian Church	25	24	24	9	1	1	16
20	74	306 S. Henry Street	26	12	12	1	14	14	25
20	75	Verizon Building	32	10	9	4	22	23	28
<b>Total</b>			<b>406</b>	<b>229</b>	<b>237</b>	<b>79</b>	<b>177</b>	<b>169</b>	<b>327</b>

Note: See the Map in Appendix C for further direction as to each lots location.

Source: Walker Parking Consultants, 2016

The cells highlighted in blue identify the mostly private parking lots where a surplus of parking is available and should be further assessed for shared parking. In the case of the public lot on Block 1 (\*), much of the lot is vacant in the late afternoon and evening. The library could direct patrons or employees to this lot on a daily basis, or for special events to mitigate the shortage in their own lot.

Another potential shared parking opportunity exists at the Matthew Whaley Elementary School on Block 8, about 1,000 feet from Merchants Square. The school is supported by a 93-space lot, which is primarily occupied during school hours. On nights, weekends, and during summer break, a shared parking arrangement could be reached between the City and the school.

We understand the Williamsburg Baptist Church and Williamsburg Presbyterian Church on Block 9 already engage in some shared parking arrangements and may be interested in additional opportunities. As shown in the table above, these lots were observed to have as many as 60 vacant spaces throughout the day. While additional analysis of the Churches' existing shared parking commitments is needed to ensure contractual obligations are met, the parking at these churches is ideally situated to support evening demand from the surrounding restaurants.

## Parking Policies and Practices

Table 28: Available Parking Supply in Select Lots

Block	Lot	Name	Supply	Weekend			Surplus/Deficit			Peak Demand	Surplus/Deficit
				10:00 AM	2:00 PM	7:00 PM					
1*	31	City Municipal Building	94	11	11	12	83	83	82	12	82
7	43	Health Evaluation Center	46	13	16	18	33	30	28	18	28
8	3	Matthew Whaley Elementary School	93	5	19	4	88	74	89	19	74
9	14	Baptist Church	70	5	7	4	65	63	66	7	63
9	15	Presbyterian Church	20	5	6	1	15	14	19	6	14
9	16	Presbyterian Church	25	10	4	2	15	21	23	10	15
20	74	306 S. Henry Street	26	0	2	0	26	24	26	2	24
20	75	Verizon Building	32	7	7	7	25	25	25	7	25
<b>Total</b>			<b>406</b>	<b>56</b>	<b>72</b>	<b>48</b>	<b>350</b>	<b>334</b>	<b>358</b>	<b>72</b>	<b>334</b>

Note: See the Map in Appendix C for further direction as to each lot's location.

Source: Walker Parking Consultants, 2016

Although the availability may vary throughout the year, there are potentially 350 or more vacant spaces within 400 to 1,600 feet (a five- to ten-minute walk) of the busiest sections of Williamsburg. Please note, Walker included the City Government Center lot on Block 1.

Additionally, there are upwards of 700 spaces available on the College of William and Mary Law School on nights and weekends. Walker did not include these spaces in the tables above, as they are located more than 1,600 feet from the Merchants Square area. If convenient transit service from these lots to the downtown was made available, in combination with other policy changes in the downtown, the Law School campus could represent a shared parking opportunity.

We recommend, at a minimum, the City consider entering a formal agreement with the Presbyterian and Baptist Churches on Block 9 and the office parking lot on Block 7. Additionally, we recommend advertising the City Government Office parking lot's availability on nights and weekends.

Sample agreements between a City and a private lot owner, and for valet parking, are provided in the Appendix.

### ORGANIZATIONAL STRUCTURE

This parking study has been undertaken in part to more efficiently use the existing supply of public parking in the study area to better meet the needs of the parking public and the downtown as a whole. Improvements to the parking system occur through changes in the parking supply and parking policies, which have been discussed throughout this plan document. However, in studying how parking systems are administered in cities throughout the country, we observe that the ability to effectively execute policy and management changes and, equally important, monitor and respond to the actual results of policy changes, depends in large part on the structure of parking organizational management within City government.

## Parking Policies and Practices

Good policies and competent staff can be hindered by an organizational structure that is inappropriate to manage the parking system. In this section of the report we focus on improvements to the City's parking organizational structure, aimed at making the parking system more effective.

A public parking system consists of a number of different components that interact in order for the parking system to function properly. In Williamsburg, a number of the following components are administered by multiple departments:

- Unmetered spaces
- Off-street parking facilities
- Facility regular and long-term maintenance
- Enforcement/citations
- Financial reporting
- Private parking requirements and zoning
- Parking for special events

There is a need for comprehensive management of Williamsburg's public parking system. A significant challenge observed in Williamsburg is that the City lacks a position solely devoted to parking operations, a parking manager, who both monitors the financial metrics of the system and then is able to address parking operational issues. The management of Williamsburg's parking system is essentially dispersed among a number of departments within the City government structure and the Colonial Williamsburg Foundation. The following are several examples:

- The Police Department is responsible for enforcing parking rules and restrictions;
- The Public Works Department maintains the City's surface parking lots and two parking structures;
- The Finance Department records and tracks parking revenue and expenses;
- The Colonial Williamsburg Foundation operates Lot P6 and is responsible for the maintenance of Lots P2, P3, P4, P5, and P6; and
- The Planning Department enforces the parking element of its zoning ordinance and develops and administers plans related to its parking program.

The existing downtown parking program is managed in a very fragmented manner. And, the City manages various aspects of a portion of the downtown parking program through multiple departments. This organizational structure makes it difficult for any entity to effectively manage the existing on- and off-street parking resources. Conversely, a best practice for parking system administration is the creation and existence of a single source responsibility center that is placed in charge of managing the parking system. This single-source entity makes it easier to coordinate on- and off-street parking management policies and practices. It also allows the program to be operated consistently, in accordance with a stated vision, mission, and objectives for a parking program.

There is no one person responsible for parking, nor is parking the central focus of any of the departments above. The parking operation and its policies are challenged from the lack of a unified vision or policy, which is likely to develop in a patchwork manner rather than in a form that comprehensively addresses the issues. Based on our experience and discussions with staff, much of this administration of parking in Williamsburg appears to have evolved in response to specific issues or events, often effectively, but without the benefit of an overall parking management strategy. At the same time, the community does not know whom to contact when there is a question or problem. Some people call the police department or the enforcement officers. The result is frustration.

## Parking Policies and Practices

### *RECOMMENDATION*

Moving forward we recommend that the City approach the Colonial Williamsburg Foundation and propose to operate and maintain its parking facilities. The City is advised to consider creating a City parking department. We also recommend that the City create a champion of parking. At this point, it may be a part-time position or a responsibility for an existing City employee. One person should have responsibility for leading the City's parking mission, comprehensively overseeing all elements of the parking system, promoting the maintenance and financial soundness of the parking system, and addressing the concerns and requests of the stakeholders who rely on the system. A common reporting structure for a parking manager is to work in a City's public works department and report to the director of public works. The following are potential job responsibilities of this position:

- Orchestrate the consolidation of parking system functions;
- Administer financial responsibilities relating to parking system;
- Review the financial and operational performance of the parking system;
- Review daily revenue, financial and operational incident reports;
- Review monthly financial status reports including revenue trends and newly implemented cash control procedures;
- Review revenue and expense performance, modify operating policies to meet the City's goals, and monitor compliance with contractual obligations;
- Implement new procedures as directed by the director of public works;
- Oversee budgetary responsibilities;
- Determine the financial feasibility of implementing suggested programs to benefit downtown;
- Oversee public parking facilities maintenance;
- Physically inspect off-street parking facilities;
- Review revenue control and occupancy issues;
- Monitor public complaints and respond to the public and adjust procedures as needed;
- Take corrective action, training, or disciplinary actions with parking system staff members, as appropriate;
- Coordinate implementation of policy recommendations concerning demand management between on and off street spaces, reserved and unreserved space mix, oversell factors, and enforcement levels;
- Obtain knowledge of parking industry including trends in parking management and equipment options;
- Maintain ongoing inventory of facilities including rate surveys, available parking for monthly and daily users in all downtown parking facilities. Track demand and occupancies;
- Analyze parking rate structure and make recommendations that improve customer service and increase potential parking revenue;
- Make recommendations on new ways to generate additional demand and revenue for the City and evaluate feasibility of such programs. Present findings and recommendations to City for review;
- Make recommendations on future demand and development programs;
- Administer third party contracts designed to promote the City's parking goals.
- Meet with downtown merchants, CW, and various City departments to coordinate efforts related to on and off street parking; and
- Meet monthly with stakeholder groups to ensure that parking policies and goals complement both the City's and stakeholder interests and greater vision.

## Parking Policies and Practices

### PARKING RATES AND FINES

On-street parking and publicly- and privately-operated off-street parking facilities should work in concert to meet the needs of short-term parkers such as shoppers and diners and longer-term parkers such as tourists and employees. In communities where the supply of spaces is limited, efforts to manage parking demand through signage and enforcement alone have proved to be insufficient. Paid parking should be designed to encourage turnover and parking supply availability, therefore, higher-demand parking spaces should be priced more aggressively than those that experience lower demand. The following, therefore, presents recommendations regarding parking rates and fines for parking violations for the City of Williamsburg’s consideration.

At present, the City does not charge for on-street parking, however, it does charge for off-street parking. The City first began charging for off-street parking when it opened the Prince George Garage in 2002. Rates have remained the same at this facility for 14 years.

The Prince George Garage is the only city-owned facility which requires transient user parking fees. The City also offers value cards at a discounted rate for the Prince George Garage. Lot P6, owned and operated by CW, charges for transient parking, however, monthly parking is not offered at P6. Lots P2, P3, P4, and P5, owned by CW and enforced by the City, do not charge patrons to park.

**Table 29: Williamsburg Existing Off-Street Parking Rates**

Prince George Garage		P6 (Boundary @ Francis)	
Duration of Stay	Rate	Duration of Stay	Rate
0-30 min	\$0	0-30 min	\$0
30min- 1hr	\$1	30min- 1hr	\$1
1hr-2hr	\$2	1hr-2hr	\$2
2hr-3hr	\$3	2hr-3hr	\$3
3hr-4hr	\$4	3hr-4hr	\$4
4hr-5hr	\$5	4hr-5hr	\$5
5hr-6hr	\$6	5hr-6hr	\$6
6hr-7hr	\$7	6hr-7hr	\$7
7hr-8hr	\$8	7hr-8hr	\$8
8hr-9hr	\$9	8hr-9hr	\$9
9hr-10hr	\$10	9hr-10hr	\$10
10hr-11hr	\$11	10hr-11hr	\$11
11hr-24hr	\$12	11hr-24hr	\$12

Source: City of Williamsburg, 2016

## Parking Policies and Practices

The Prince George Garage also offers various monthly rates for students as well as frequent visitors (in the form of value cards). Market monthly passes and value cards can be purchased online, while student and residential passes must be purchased elsewhere. Monthly parking rates and value passes for the Prince George Garage are summarized below.

**Table 30: Prince George Garage Monthly Parking Rates**

Market Rate	Student Rate	Value Pass Rate
\$60/month	\$300/semester	\$30 for 50 hrs

Source: City of Williamsburg, 2016

The Parking Terrace, located north of the Williamsburg Community Building, also offers approximately 30-40 guaranteed parking spaces to various City employees as well as various businesses in the immediate vicinity for approximately \$30/month.

Parking violations rates within the downtown district are penalized on a running 60-day graduated fine system. The table below summarizes the various violation fees.

**City of Williamsburg Parking Violation Rates**

# of Violations	Fee Prior to Notice	*Fee After Notice
1st Violation	\$10	\$30
2nd Violation	\$30	\$50
3+ Violations	\$50	\$70

*\*notice to be issued by City 60 days after receipt of violation*

Source: City of Williamsburg, 2016

Parking rates should be set with the following goals in mind:

- To cover operating expenses and facility maintenance and promote the financial sustainability of a parking system;
- To encourage certain behaviors such as providing central on-street parking spaces to short-term patrons, such as retail customers and visitors, and motivating longer-term patrons, such as employees, to park in off-street parking facilities; and
- To reduce traffic congestion and environmental impacts by discouraging excessive circulation of vehicles searching for an available space.

A majority of U.S. cities fail to set parking rates based on meeting the goals above and therefore, a parking rate benchmarking survey does little to inform Walker’s recommended approach.

## Parking Policies and Practices

Progressive cities are beginning to think about parking differently than established norms. The old parking meter that only accepted payment-by-coin, limited the amount that cities could charge. Historically, it was not reasonable to charge \$3 an hour for on-street parking and expect someone to have 24 quarters on their person for a two-hour stay. Smart parking meters that offer credit card acceptance now make this possible. Therefore, some cities are beginning to charge more for on-street parking than off-street parking.

Pay-by-cell service represents another rapidly expanding technology which improves fee flexibility, compliance with parking regulations, and revenue collection and accountability while also improving the users' experience.

Other cities are beginning to implement progressive rate structures for on-street parking. For example, the first hour or two of parking may cost \$1, but the meter may then jump to \$3 an hour for time beyond the first two hours. This approach is possible through the smart parking meter. The practice encourages patrons to park off street when they require long-term vehicle storage.

### *RECOMMENDATION*

**Parking Rates:** We recommend an hourly parking rate of \$1.50 to park on street in the downtown, up to two hours. This rate is higher than the off-street parking rate posted at the Prince George Garage. For the third and subsequent hours, we recommend a \$3 hourly charge for on-street parking. The \$0.50 per hour rate differential for the first two hours and the \$2 per hour rate differential for the third and subsequent hours will encourage patrons to use long-term parking for long-term use and limit on-street metered parking to short-term use. To implement this recommendation, the City will need to purchase and install smart parking meters. There are a variety of smart parking meters available including single-space units and multi-space kiosks. The City can choose pay-by-space, pay-and-display, or pay-by-license-plate. Appendix F to this report provides information regarding the pros and cons of various meter types. Walker is vendor neutral and has no specific recommendation and can help the City procure a system that best meets its needs.

Currently, P6 is the only surface lot that offers paid parking to customers. It is, however, the furthest CW lot from Merchant's Square, which experiences high levels of on- and off-street demand. A portion of the P6 lot could perhaps be used as employee parking, while the remainder could be used as paid parking, available to visitors. Moreover, paid parking should be considered in the off-street lots of P2, P3, P4, and P5 and these rates should be consistent with parking rates at the Prince George Garage.

## Parking Policies and Practices

Table 31: Williamsburg Proposed Parking Rates

	Prince George Garage	Stryker Center Lot	Parking Terrace	Lots P2-P6	On- Street Parking*
Duration of Stay	Rate	Rate	Rate	Rate	Rate
1hr	\$1	\$1	\$1	\$1	\$1.50
2hrs	\$2	\$2	\$2	\$2	\$3
3hrs	\$3	\$3	\$3	\$3	\$6
4hrs	\$4	\$4	\$4	\$4	\$9
5hrs	\$5	\$5	\$5	\$5	\$12
6hrs	\$6	\$6	\$6	\$6	\$15
7hrs	\$7	\$7	\$7	\$7	\$18
8hrs	\$8	\$8	\$8	\$8	\$21
9hrs	\$9	\$9	\$9	\$9	\$24
10hrs	\$10	\$10	\$10	\$10	\$27
11hrs	\$11	\$11	\$11	\$11	\$30
11hrs+	\$12	\$12	\$12	\$12	

\*Parking rates only apply during enforcement hours

\*\*Rates represent cumulative cost for length of stay, thus a two-hour stay on street is \$3, not \$1.50 plus \$3.

Source: Walker Parking, 2016

The City should discontinue offering a semester rate at the Prince George Garage. If students want to park in a City facility, they can pay the normal monthly rate. The City should not be marketing its parking supply to students, especially those that are prohibited by the College of William and Mary from having a vehicle on the campus.

Other off-street parking rates can remain as is, but should be reviewed annually and adjusted periodically at sensible intervals, which at a minimum, keep pace with the ever increasing and inflationary costs of operations and maintenance.

**Parking Fines:** Parking fines are too low to deter most people from attempting to “game” the parking system and have not changed in at least 13 years. At only \$10 for an expired meter or parking beyond the posted time limit, many people will intentionally take their chances at being cited for a parking violation. The \$10 fine is less than the cost to park all day in the Prince George Garage. Moreover, the parking fine schedule shown previously, does little in the way of discouraging repeat offenses and minimizing the numbers of scofflaws.

The goal of fining violators is not to increase revenues or fill City coffers; it is to influence parking behaviors that are designed to keep parking spaces available for short-term demand. Parking fines, if too low, will encourage abuse by members of the resident and business communities. A graduated fine schedule – which the City of Williamsburg has -- is geared toward repeat offenders, rather than first time violators. Walker recommends higher parking fines for first-time violators and a graduated fine schedule based on the number of violations within a specific time frame.

The following is a recommended schedule for changes to parking fines. Note that this schedule resets annually.

## Parking Policies and Practices

Table 32: Recommended City of Williamsburg Parking Violation Rates

# of Violations	Fee Prior to Notice	*Fee After Notice
1st Violation	Warning	Not Applicable
2nd Violation	\$35	\$50
3rd Violation	\$50	\$100
4 <sup>th</sup> Violation	\$100	\$200

\*notice to be issued by City 60 days after receipt of violation

Source: City of Williamsburg, 2016

We know of one City with a downtown similar in size to Williamsburg, that charges \$500 for a 4th violation.

Although we are recommending higher parking fines, also recommended is the change of a fine for the first violation to a warning. This should be a significant benefit to out-of-town tourists who may not be familiar with Williamsburg and its parking system and therefore may be more likely to inadvertently violate the parking rules. Grace for first-time offenders could help promote the downtown and make it more user friendly. Higher fines for repeat offenders sends a clear message to those who might otherwise “game” the system.

### PARKING ENFORCEMENT

#### STAFFING AND HOURS

Additional parking enforcement is often viewed in a negative light primarily due to the way in which enforcement is presented to the public. Rather than being punitive in nature, the City has designed an enforcement program that is rather inexpensive and serves as a minor punishment when a parking violation occurs. The City collected on 88.78% of its issued violations in 2015, a strong collections rate. Additionally, 59.5% of issued violations, including warning tickets, were written due to “overtime parking” – vehicles parked in excess of the designated parking windows in each zone.

#### RECOMMENDATION

The City should consider adding a part-time PEO to assist with enforcement on evenings and weekends. This time frame is currently covered by uniformed police officers. The disadvantage of uniformed police officers providing parking enforcement occurs when incidents require police response. Uniformed police officers are required to respond to incidents of public safety, which could leave on- and off-street parking unattended at times. Walker estimates the City’s cost per part-time employee without benefits would be \$11 to \$12 per hour or \$17,000 to \$19,000 per year.

We also recommend that the City consider extending its enforcement hours in areas that contain an abundance of restaurants that serve dinner. When a PEO completes their work shift prior to or at 5 p.m. and enforcement is no longer practiced over the typical dinner mealtime, restaurant employees often occupy parking spaces intended to be used by restaurant customers. Extending enforcement hours to 7 or 8 p.m. can address this issue.

## Parking Policies and Practices

To make enforcement a more acceptable program, Walker recommends that the City of Williamsburg adopt the “Ambassador Program” model for the enforcement areas such as that used successfully in many other cities across the United States.

In addition to the hospitality oriented nature of the program, Ambassadors are still required to enforce parking regulations. The mission of an Ambassador Program would be to provide hospitality, tourism and public safety services to local citizens, businesses and visitors, in addition to enforcing parking regulations. The Ambassadors would be required to complete a multi-faceted training program in hospitality and customer service, emergency response and first aid, public transportation and City services. They should be trained to work directly with transportation and parking departments of the City, local businesses, and professional agencies.

A comfortable and weather-appropriate uniform or other method to make Ambassadors clearly identifiable would be necessary. However, it is also important that they are not imposing or seem police oriented. The goal is for them to be identifiable but approachable in both how they look and act.

The primary goals of an Ambassador program are to promote the area, resolve concerns, deter criminal activity, and help make the downtown area a better, safer and friendlier place to live, visit, shop and conduct business. Ambassadors should initiate personal contacts with the parking public (known as “touches”), issue more warnings and slightly fewer citations, and interact with visitors and citizens in a genuinely positive manner. The vision of the program is to help promote a progressive and dynamic downtown experience. The Ambassadors can accomplish this while providing parking management by monitoring public safety, extending a helping hand in emergency situations, and calling on area merchants on a regular basis. Beyond enforcing parking regulations, the following are examples of encouraged behaviors of Ambassadors:

- To greet visitors and offer customer service.
- To give a friendly face to many people’s initial interaction with the City.
- To give accurate directions to visitors and direct visitors to destinations.
- To provide information and explain local traffic and parking regulations to seek voluntary compliance.
- To distribute City brochures and maps.
- To deter criminal activity by their presence.

### *ENFORCEMENT EQUIPMENT*

On-street parking spaces are unmarked and unmetered. Signage exists to identify on-street parking spaces within the downtown as two-hour spaces. Enforcement is performed by individual parking enforcement officers by manually chalking tires.

The purpose for improving enforcement technology is to support compliance with public parking regulations and reduce the time and costs associated with the process.

## Parking Policies and Practices

### RECOMMENDATION

Walker recommends that the City use an electronic citation issuance and parking enforcement management system that allows electronic tire chalking and maintains electronic records of enforcement activity. Systems are available that provide the enforcement officer with information on a “live” or “real-time” basis while in the field via cellular technology, but most require that base data be downloaded to the handheld units from a local or remote application server before departure, and are not networked again until docked at the end of the shift. Citation and configuration data is then transferred to the base application server to be ready for the following business day.



In the past few years, many systems have begun offering “apps” for parking enforcement that can be used with most Android- and Apple-based cellular phones and tablets. The “apps” are downloaded, accessed, and used in very similar ways to most other smart phone apps. This type of system can be a great option for small- to medium-sized operations as it can significantly reduce upfront costs. The traditional electronic handheld ticket-writer can be quite expensive when compared to the cost of a standard smart phone. Most of these applications, both the enforcement software as well as the back-end management system, are stored remotely and accessed through standard web-browsers, thereby significantly reducing the up-front hardware costs for new computers and equipment.

Parking management systems are typically networked to a service provider’s central server computer, which can often be networked to exchange information with the local DMV-directory-license-lookup services. These services supply addresses, facilitating follow-up letters, collection efforts, etc. Some service providers can also perform all of the processing between the citation and the money collection, off-loading the related overhead, for small fees passed on to the payer or for portions of the ultimate collection amounts.



The most significant advantages over the old handwritten systems are as follows:

1. Information is automatically downloaded directly to the system, avoiding data entry errors and transcription errors from sometimes-illegible handwritten citations;
2. Most systems are programmed or modified specifically for the client; and
3. Options such as scofflaw programs are included with a permit database, so no citations will be written on permitted vehicles. Handhelds can record occupancy data with special time intervals so the handheld keeps track of warning time (like chalk marks on tires). Some systems also use bar code reading of licenses or permits.

Recommended hardware features include the following:

1. WLAN 802.11 a/b/g

## Parking Policies and Practices

2. Minimum WWAN (3G minimum) GSM HSDPA (AT&T) or CDMA EVDO (Verizon); or best 4G LTE
3. Expandable memory (SD or microSD expansion slot)
4. Bluetooth
5. 3 mega-pixel camera or better can also perform the functions of a 2D barcode imager
6. 1D barcode scanner
7. Global Positioning System (GPS)
8. Optional integrated or separate printer

Recommended software features include:

1. Electronic tire chalking
2. Real-time data communications
3. GPS location citation tagging
4. Configurable citation text formats
5. Real-time payment checks for multi-space meters and mobile payment applications

Using handhelds for parking enforcement is a best practice that is employed by many cities including Arroyo Grande, CA; Santa Rosa, CA; Pittsburgh, PA; Washington, DC; Baltimore, MD; Chicago, IL; Seattle, WA; Urbana, IL; and Easton, PA, to name a few.

### PARKING PERMITS

#### *EMPLOYEE PARKING PROGRAM*

It is conceivable that, given the current on-street parking policies, employees of local businesses may be occupying valuable on-street parking spaces intended for visitors and patrons. To mitigate this issue, Walker identified two types of policy measures that can help achieve the broader policy goal of a Downtown Employee Parking Program. They can be divided simply between “push” and “pull” efforts applied to long-term parkers parked in spaces designated for visitors or in areas that are not intended for long-term parking.

“Push” policies are focused directly on the behavior of drivers parked in the on-street spaces. They include time restrictions on parkers, pricing on-street parking spaces, and related measures used to enforce compliance of these policies and restrictions. “Pull” policies are essentially policies put in place in locations away from the on-street spaces, which encourage long-term parkers not to park in the coveted visitor spaces, or not park at all, but instead use other means to access the downtown, such as the Williamsburg Area Transit Authority (WATA). “Pull” policies may take the form of incentives to park in certain locations, such as relaxed or eliminated time limits and inexpensive or free parking.

“Push” policies tend to be punitive in nature while “pull” policies are incentives to change behavior. “Pull” policies attempt to make what initially may be an inconvenient choice into a more attractive choice. “Push” policies therefore address the issue at the source whereas “pull” policies tend to work in a more indirect fashion. Because “push” policies

## Parking Policies and Practices

are more targeted, they are nearly always more effective than “pull” policies though they require often more effort to implement. “Pull” policies are generally easier or more attractive to implement than “push” policies, primarily because they rely on incentives rather than punishment of drivers who do not follow the desired policies. The most effective policies to improve parking system performance in the study area will combine “push” and “pull” policies. The strategic implementation of such policies is not only desirable, but often necessary in order to achieve the desired parking management goals. Relocating long-term vehicles is a tool. Our goal is to make spaces available for customers and other visitors; not simply relocate vehicles parked in the long term. We therefore note that we are not necessarily focusing on all employee parkers with these policies.

A possible location for employee parking is in the Prince George Parking Garage, which has observed vacancy during peak times. This location offers employees covered parking within a very close walking distance of Merchant’s Square. The City could benefit from seeing increased usage of the Prince George Parking Garage, which in-turn would benefit local businesses since their patrons would have available parking nearer to their destinations. Another potential employee parking location is a portion of Lot P6.

Currently the Stryker Center lot does not charge for parking or enforce time limits. With the changes in enforcement occurring around the library we have a cause for concern that parking will become overcrowded by individuals looking for free-parking. To address this concern, we have created options for the city to consider:

- Create a 1,2, or 3-hour time limit for the entire Stryker Center lot
- Offer a discounted monthly parking option for employees to park all-day in the Terrace Garage
- Create a parking rate for the Stryker Center lot

These options can be used in isolation or collaboratively to create the optimal parking solution.

### *STUDENT PARKING PROGRAM*

Various stakeholder conversations indicated concern with students from the College of William and Mary occupying valuable on-street spaces, particularly along Richmond Road between Boundary and Scotland Streets. This is a two-hour parking zone, which offers students the opportunity to park their vehicle, attend class, and return to their vehicle either to relocate it or leave campus. Given the proximity to campus of this location, it is easy to understand why students use this area to park their vehicles. This condition does, however, put a strain on businesses near the “Deli Corner” area, as they rely on these parking spaces for their patrons.

Additionally, to further ensure convenient parking for visitors of area businesses, the City should discontinue the practice of encouraging students to park in the Prince George Garage. Semester parking rates should not be advertised or offered at this facility. Instead, the City is advised to make arrangements with CW to offer semester parking rates at vacant spaces located at the CW Visitors Center.

### COMMUNICATIONS AND PUBLIC RELATIONS

The City’s website contains significant information regarding parking; however, there is no City parking website that demonstrates a coordinated management approach of this asset. Williamsburg’s parking system public relations and communications program should meet the following criteria:

## Parking Policies and Practices

- Continue to include a comprehensive “Downtown Parking” City web site. This web-site can share data and links with the current site in order to reduce duplication and overall cost and effort.
- Respond to questions and requests from the general public for locations of parking facilities, pricing, and availability.
- Maintain the integrity of downtown parking promotional materials, and provide parking maps, business development packets, and fact sheets.
- Provide day-to-day media relations, and generate press releases as needed.
- Provide public relations assistance to other downtown events as needed.

This information should be distributed through the following:

- A comprehensive “Downtown Parking” City web site.
- A quarterly newsletter for the downtown parking community with news of economic developments in parking, development and construction projects, upcoming downtown events and profiles of downtown newsmakers.
- Newspaper items or articles and media releases.
- Brochures and maps both distributed and posted.
- Direct mailings / email when appropriate.
- Downtown meetings and presentations about downtown parking to City business and civic groups upon request.

Local businesses are often willing to provide parking information and links to additional parking resources from their web-site’s home page. This can be very helpful in catering specific location data to their customers, while also providing a free portal to market parking services to potential patrons. If patrons are armed with parking availability and location information prior to arriving at their destination their overall Downtown experience will be greatly improved.

Examples of Municipal Parking web pages:

- <http://www.downtownsouthbend.com/parking-and-maps>
- <http://downtownlincoln.org/get-there/car.html>
- <http://www.pittsburghparking.com/>
- <http://www.miamiparking.com/en/home.aspx>
- <https://springfieldparkingauthority.com/>
- <http://archive.baltimoreCity.gov/Government/QuasiAgencies/ParkingAuthority.aspx>
- <http://www.downtownkalamazoo.org/>
- [http://bloomington.in.gov/sections/viewSection.php?section\\_id=132](http://bloomington.in.gov/sections/viewSection.php?section_id=132)
- <http://www.traverseCitymi.gov/publicparking.asp>
- <https://cantonohio.gov/engineering/?pg=112>

WILLIAMSBURG MOBILE PHONE APP

## Parking Policies and Practices

The city has a mobile phone application that provides cell phone users with access to information regarding shopping, dining, how to locate City of Williamsburg shops, restaurants, and landmarks; City walks, GPS -guided maps of local walking trails, and information regarding City facilities, parks, rental locations, and recreational activities. Parking is also a featured item and includes linkage to ParkMe, a smartphone parking application that provides information regarding parking space availability including address, distance from current location, and parking rates. There is no other information provided relating to capacity, operating hours, or occupancy levels, etc.

### *RECOMMENDATION*

Expand the parking functionality of the cell phone app to include payment by cell phone, once paid parking is implemented.

The City or Client Services Manager (CSM) can set up a mobile application (app) or separate apps to enable motorists to pay for parking without going to the meter. The app vendor will set up the application at no charge to the City/CSM. The vendor charges transaction fees, which are negotiable, based on parking rates. The transaction fees can be subsidized by the City/CSM or passed on to the motorist.

Motorists can pay via credit and debit cards, smart cards, wallet applications, PayPal or Apple Watch. Note that the City/CSM is responsible for merchant credit card processing fees, and that these fees are avoided when wallet applications are utilized.

Mobile apps also allow for the use of validations via merchant validation codes. When a motorist uses the app, the credit card isn't charged until the 'end' of the session. If the motorist purchases one hour of parking, then enters a store and the merchant wishes to validate the motorist's parking, the merchant can do so by giving a validation code to the motorist, which the motorist would enter in the app. Bluetooth beacons can also be installed in stores or restaurants that automatically identify a mobile phone that has paid for parking, and can automatically validate the motorist's parking fee. The motorist would be notified via the app.

Note that when motorists open the app, merchant validation programs would be displayed, serving to promote the merchant and the validation. Also note that the merchant would set the validation programs up with the app vendor directly. The City/CSM will not need to administer these programs. Some app vendors provide these services (and beacons) at no charge, as these programs increase the number of transactions.

Motorists can also extend the time of a parking session through the app (if allowed by the City/CSM), and since the credit card is not charged until after the session, merchant credit card processing fees are not assessed twice.

The app can bring motorists to the app vendor's site (at no charge to the City/CSM) or the app vendor can set up a 'private label' for the City/CSM (for development fees). In this scenario, the City/CSM would own the app, even if they decide to contract with another app vendor.

The apps provide excellent transaction data, including the time and amount of the transaction, as well as the zone, and the frequency of transactions by the motorist. The app can be used for hourly, daily, permit and event parking.

## Parking Policies and Practices

The app vendor will integrate with the mobile LPR system to download paid license plate data into the mobile LPR system's enforcement software.

The City and CSM can set up one account or individual accounts, as different parking areas will be defined as zones. The app vendor is able to segregate the parking payments by zone when assessing credit card processing fees and depositing parking payments into the respective bank accounts. Walker assumes the City and CSM will prefer to set up individual accounts, to assure there is no inadvertent comingling of funds; and because there are little to no set-up fees; however, it may be easier for users to download one payment app, rather than needing to determine which app to utilize.

The app can be embedded in the City's app, with a link to the payment app.

Cell Phone Payments: Technological improvements in the cell phone industry have extended to the parking industry; however, pay-by-cell (PbC) actually bypasses the meter completely. Here's how it works:

1. The cell-by-phone vendor sets up an account with the City, identifying all parking spaces and/or zones.
2. Motorists register their cellphones and provide credit card payment information for the pay-by-cell vendor via their cell phone.
3. Upon parking, the motorist calls the pay-by-cell vendor's automated payment line.
4. The motorist enters the appropriate location codes for the City, zone, meter number, space number, etc., or enters their license plate. The motorist enters the desired parking time.
5. The pay-by-cell vendor charges a convenience fee, typically \$0.35 per transaction.
6. Enforcement is done by viewing a web-based report of paid transactions provided by the pay-by-cell vendor.
7. The pay-by-cell vendor deposits the parking fees into the City's established bank account, keeping the convenience fees.

### PARKING FACILITY MAINTENANCE

The industry standard expected service life for a parking structure at initial construction is 30 to 50 years. As parking structures do represent a significant capital investment, there are numerous facilities that have reached that age and are still in operation with the expectation that they will be in operation for years to follow. To have the opportunity to reach the end of the industry-standard, expected service life and perhaps extend the life of the parking structure, it is necessary to keep up with ongoing maintenance. The Prince George Garage and the Parking Terrace are more than a decade old and to optimize the life of these facilities, regular maintenance and repairs are recommended.

Separate from routine maintenance which is considered an operating expense, Walker highly recommends that funds be set-aside on a regular basis to cover structural maintenance costs. We suggest that a minimum of 1% of initial parking structure construction costs be placed in a sinking fund on an annual basis and that this amount be adjusted annually for inflationary expenses. Once a sinking fund is established, contributions to this fund accumulate and grow over time, can earn investment income (or losses), and are available to cover structural maintenance and structural repairs. This set-aside amount is not intended to be a predictor of actual capital repair expenses incurred; however, it could provide a substantial fund to offset all or a portion of normal structural maintenance costs.

Maintenance budgets include items from three general categories – aesthetic, operational, and structural:

## Parking Policies and Practices

1. Cost of periodic repairs and or routine corrective actions that are necessary to maintain serviceability and facility operations (trash removal, sweeping, power washing, lightbulb replacements, elevator service, etc.);
2. Cost of preventive maintenance actions to extend the life of a paved lot or the parking structure;
3. Major structural repairs of operational elements throughout the estimated service life, which can distort an annual maintenance budget predicated on historical annual expenses. It is more appropriate that such items be budgeted separately and expensed through a reserve sinking fund account.

Anticipated regular periodic maintenance and repair expenses fall into the first category and are usually included in the annual operating budget. Sinking funds are intended to provide at least a cushion toward operational maintenance and structural repairs, which includes major expenses that exceed annual maintenance type items, such as the following:

- Expansion joint replacements
- Major structural repairs to “Ts,” columns and beams
- Elevator replacement
- Equipment replacement
- Lighting replacement
- Parking access and revenue control system replacement
- Lot resurfacing
- Repairing and/or replacing topping membranes
- Routing and sealing of joints and cracks
- Repair and/or replacement of expansion/construction joints

These structural repair items can amount to millions of dollars. It is impossible to determine in advance when such major repairs will be necessary, the amount, or if enough time has transpired to reserve sufficient funding to cover the expense. The factors that will impact the maintenance cost include but are not limited to the value the owner places on the maintenance of the facility, the local climate, and the age of the structure. Many owners do not reserve any funds, and are blind-sided. Some owners grossly underestimate the structural maintenance cost and budget inadequately for timely corrective actions that must be performed to cost-effectively extend the service life of the facility.

Even the best-designed and constructed parking facility requires structural maintenance. For example, expansion joints need to be replaced and concrete invariably deteriorates over time and needs to be repaired to ensure safety and to prevent further deterioration. The structural maintenance cost typically represents the largest portion of the total maintenance budget. Also, the adverse impact of ineffective structure maintenance is deferred. Therefore, it is difficult for most owners to recognize or realize the long-term benefits of timely corrective and preventive maintenance actions. The cost of structure maintenance is relatively small considering the potential liability associated with the neglect to properly maintain the facility.

A review by a restoration specialist is usually necessary to identify the preventive maintenance needs of a facility. In addition to the annual or other periodic inspections, material testing and examinations may also be necessary to determine and recommend maintenance measures. The results of the periodic inspections may also indicate the need for other material examinations and laboratory testing.

## Parking Policies and Practices

We also observed that it has been years since significant improvements have been made to the CW surface parking lots. These lots would benefit from a complete reconstruction including new foundations and asphalt pavement, line striping, landscaping, lighting, signage and parking access and revenue control equipment.

All parking spaces should be striped and restriped on a regular basis so that painted lines are fresh and highly visible. This includes on-street spaces.

### *RECOMMENDATION*

The City should set aside monies that can be used for structural maintenance of its parking facilities. We recommend 1% of initial construction costs, inflated annually. Condition appraisals of City-owned parking structures are recommended every five years; these should be performed by a licensed, professional engineer with the qualifications and experience with parking structures. The CW lots should be rebuilt and as stated previously within this report, we recommend that the City approach CW and work out an agreement that includes the City making these improvements and perhaps operating the lots as part of a coordinated downtown parking program that meets CW needs.

### **PARKING SYSTEM FINANCES**

The City's parking assets generate income from Parking Terrace monthly permit sales, Prince George Garage permit sales and transient parking income, and fines from parking violations. All funds flow into the City's general fund. Operating expenses associated with the City's parking assets are covered through various City departments including public works, police, etc. Like the City, CW does not have a dedicated parking fund and therefore, parking competes with other CW priorities for funding.

### *RECOMMENDATION*

The City should consider creating an auxiliary parking fund that acts as a depository for all City-related parking income and covers operating and capital expenses associated with the City's parking program. This fund could be managed by the newly-created position of City parking director and feature an annual budget.

Municipalities often create auxiliary enterprise funds. These resources are then used to fund parking system operating expenses and capital improvements. By definition, an auxiliary enterprise fund is self-sustaining. This means that the auxiliary enterprise fund generates a revenue stream that is sufficient to cover ongoing operating expenses and outstanding debt service obligations. Examples of cities that have created parking auxiliary enterprise funds include the following:

- City of Cedar Rapids, Iowa
- City of Lincoln, Nebraska
- City of Detroit, Michigan
- City of Tampa, Florida
- City of Denver, Colorado

## Parking Policies and Practices

Auxiliary enterprise funds have their own operating budgets. This operating budget is separate from a municipality's general fund. These operating budgets include a stream of revenues collected from a variety of sources, including the following:

- Monthly leases
- Parking meter revenues
- Transient parking revenues
- Parking violations revenues

Although revenues generated by a new structured parking facility may not be sufficient to fund both the operating expenses and debt service of that particular improvement, revenues from other facilities and sources are pooled together. This revenue pool is sufficient to generate an income stream that permits the solvency of the auxiliary enterprise.

Budgeted expenses include the operating costs associated with ongoing parking operations. This may include the labor costs associated with maintenance, security, parking enforcement, revenue collection, management, and administration. Other operating costs may include utilities, supplies, and equipment.

### PUBLIC SAFETY ESCORT SERVICE

During the stakeholder meetings for this project, we heard concern expressed about a few employees not feeling safe walking back to their cars at night, after dark. This fear is likely motivating certain numbers of employees to park near their place of employment and perhaps occupy parking spaces that are intended to be short-term spaces to be used by customers.

### *RECOMMENDATION*

One particular tool that we believe Williamsburg should emphasize is a public safety escort program. We recommend this in response to some of the things that we heard during the stakeholder intake process associated with this study effort. Many cities and universities offer this type of service. See the weblinks below for examples:

<https://safety.indiana.edu/>

<https://web.iit.edu/public-safety/safety-awareness/public-safety-escorts>

<http://academicdepartments.musc.edu/vpfa/publicsafety/services/escort.htm>

<http://www.ohiocity.org/MDICservices>

<http://uwgkc.bowmansystems.com/index.php/component/cpx/?task=services.code&code=FN-1500.7700>

<http://www.charmcitycirculator.com/content/safety>

<http://www.phillymag.com/news/2012/05/22/walking-escort-penn/>

# ALTERNATIVES ANALYSIS



**WALKER**  
PARKING CONSULTANTS

## Alternatives Analysis

There are cases where parking management alone is not the solution. While an organized parking system provides the framework for future growth, additional supply in the form of a parking structure or lot may be required to support new development. It is rare that a community would build a fully subsidized, stand-alone parking facility without clear plans for new commercial development. The preferred approach is to develop new parking in coordination with highly dense mixed-use projects. This approach maximizes development space by integrating parking into the development program.

Based on discussions with the City, there are several development projects planned, but no dense, mixed-use projects in the planning horizon. Additionally, while Walker's analysis of existing and future conditions identified potential shortages on several blocks within the downtown area, surplus parking is available to support overall needs. Furthermore, while tourism is a major industry for Colonial Williamsburg, historic attendance figures show a decline in annual attendance, which equates to fewer days where parking needs stress the available supply.

Should the City choose to develop additional parking in the downtown area, be it a lot or garage, the cost associated with the project could be financed in one of several ways. One method is to make the cost of the facility the responsibility of the taxpayers. However, a common alternative for financing new parking is to use the parking revenues generated by the parking system to facilitate bonds. Unfortunately, with the exception of the existing Parking Terrace and Prince George Parking Garage, with City does not currently charge for on- or off-street parking.

At this time, Walker recommends the City monitor the need for a new facility and consider alternatives to developing new parking, such as the restriping/reconfiguration of existing lots and shared parking with under-utilized private facilities, before pursuing a structured parking solution. While monitoring the need for new parking facilities, we also recommend the City implement paid parking both on-street and in its off-street lots and garages. Should the need for additional parking be realized, a potential revenue source will have already have been established.

This section provides a general overview of basic parking economics that must be considered when planning for a new parking structure or lot. Additional information on capital costs, operating expenses, breakeven pricing, structural repair budget, and minimum parking dimensions can be found in the Appendix. In addition, the advantages and disadvantages of structured and surface parking options available to downtown Williamsburg are discussed in detail.

### WALKING DISTANCE

Pedestrian safety and comfort involves two factors: the ability of vehicles to move to and from the area without or with limited pedestrian conflict and, the ease of use by pedestrians with consideration of the walking path and distances to and from the facility.

Walking distance varies based on the patron user group as well as the environment of the surrounding area in which the patron must walk. To aid in estimating the appropriate walking distance, a Level of Service (LOS) rating system is used for evaluating appropriate walking distances based on specific criteria. Several factors impact the walking distance that a typical person will consider reasonable. These include climate, perceived security, lighting, and whether it is through a surface lot or inside a parking structure. LOS "A" is considered the best or ideal, LOS "B" is good, LOS "C" is average and LOS "D" is below average but minimally acceptable.

## Alternatives Analysis

The following table includes the level of service walking distances for various parking environments. Walker applies the level of service for outdoor/uncovered parking when considering shared parking opportunities in Downtown Williamsburg.

**Table 33: LOS Conditions: Walking Distances**

Level of Service Conditions	A	B	C	D
Outdoor/Uncovered	400 ft.	800 ft.	1,200 ft.	1,600 ft.
Through Surface Lot	350	700	1,050	1,400
Outdoor/Covered	500	1,000	1,500	2,000
Climate Controlled	1,000	2,400	3,800	5,200
Inside Parking Facility	300	600	900	1,200

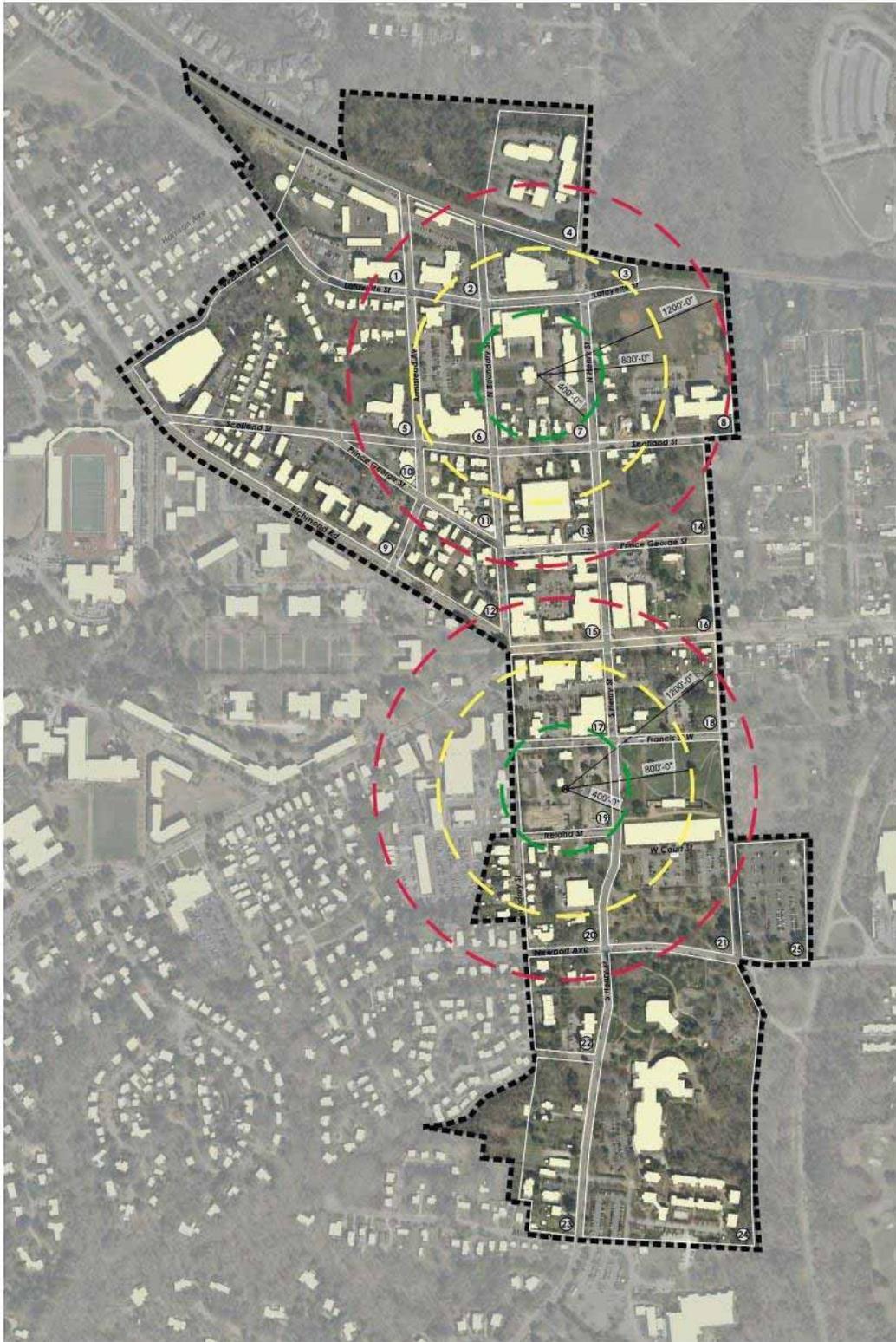
Source: Walker Parking Consultants, 2016

For purposes of comparison or frame of reference, the parking used during typical days at shopping centers is designed to provide LOS A and B, while the parking that only gets used for a few hours on the busiest days of the year might be designed for LOS C. Additionally, employee parking at a shopping mall is most often provided at LOS C or D, due to the willingness of employees to walk farther than customers and the desire to provide customers with the most proximate parking options.

In a downtown setting, it is not unreasonable to expect someone to walk a block or two for most short-term activity (i.e. running into the drug store, dropping off dry cleaning, etc.) and further for long-term activities like dinner and a movie or going to working. We recommend striving to provide adequate parking to specific user groups using the following LOS guidelines.

For example, the following figures show 400, 800, and 1,200 foot radii (LOS A through C) from the public parking facilities on Blocks 7 (Lot P3, Merchants Square) and 19 (Lot P6). These two public parking facilities are located the furthest distances from Merchants Square; however, most of the downtown is within 1,200 feet of one of these two parking facilities. And, nearly the entire Study Area is located within 1,600 feet of these facilities. Since the average walking speed is three miles per hour, much of the Study Area is located within an approximately five-minute walk of either public facility.

Figure 17: Walking Distances – Blocks 7 & 19



Source: Walker Parking Consultants, 2016

## Alternatives Analysis

### RECONFIGURATION/RESTRIPING OPTION

Typically, the quickest and least expensive way to increase parking supply is by maximizing the existing space through restriping. Costs of a parking structure can run anywhere from \$15,000 to \$25,000 per space and upwards<sup>3</sup>. Surface parking lot construction costs typically range from \$2,500 to \$6,000 or more per space. By comparison, simple line restriping costs for an asphalt parking lot range from \$21 to \$35 per space depending on several variables including the number of coats of sealer used. Therefore, restriping a parking facility to increase capacity represents a substantial savings over building new parking facilities. How and why an existing lot is restriped is dependent on the situation. In some cases, stall widths can be reduced to 8'-6" to increase the parking supply. In other cases, drive aisles may be reduced; moreover, converting from 90-degree to angled parking or vice versa can result in increased capacity.

#### *BLOCK 19 - LOT P6*

Walker reviewed the existing parking layout in the P6 lot on Block 19 in order to identify a more efficient plan for the lot. The current lot occupies the majority of Block 19; however, it appears to be laid out in a piece-meal fashion, with some parking aisles oriented east/west and others north/south. There are also multiple trees and other landscaping features within the lot.

In the figure on the following page we have prepared an alternate layout for the P6 lot. This alternate layout would increase the capacity of the facility from 293 space to approximately 325 spaces. This layout, while likely requiring the demolition of existing landscaping, should meet the landscaping requirements of the Williamsburg Zoning Ordinance.

The cost to restripe, resurface, and modify the existing curb cuts is estimated at \$975,000<sup>4</sup>.

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<sup>3</sup> Cost per space based on a free-standing, multi-level parking structure built at- and above-grade, using long-span construction, located on a site that allows for an efficient geometric layout, and that exhibits modest architectural treatments. Note, the cost per space can vary significantly depending on the architectural "look" of the garage. A simple structure could be constructed for less than our estimated range; however, extensive façade work could increase the price substantially.

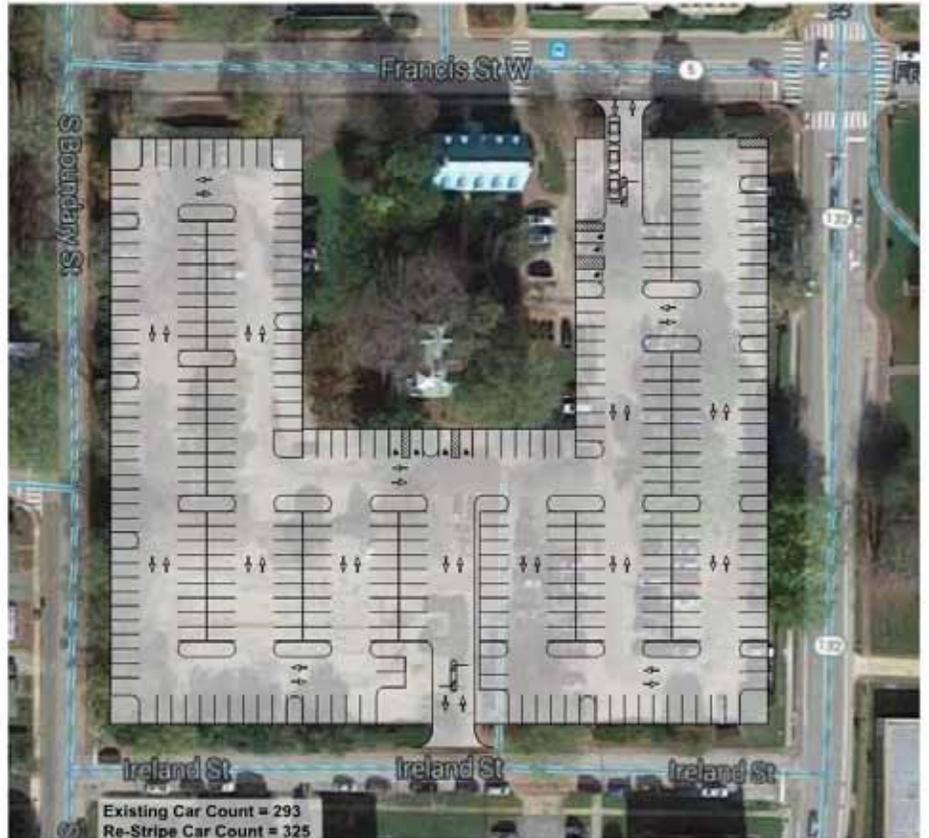
<sup>4</sup> 325 spaces at \$3,000 per space to reconfigure.

## Alternatives Analysis

Figure 18: Block 19 Reconfiguration Option



**Key Plan**



### **City of Williamsburg Block 19 - New Surface Lot Parking Option**



Source: Walker, 2016

In addition to increasing the capacity of the lot, this layout improves efficiency, making the lot easier to search. Additionally, while Walker removed one of the entrances to the lot, we also pushed the Parking Access and Revenue Control System (PARCS) equipment further into the lot. Relocating the PARCS allows for more queuing space and more time for drivers to line up properly. This was an issue identified by the City and many other stakeholders as a current problem.

## Alternatives Analysis

There are several advantages and disadvantages associated with reconfiguring the P6 lot on Block 19 including the following:

**Pros:**

- There are no capital costs associated with purchasing the property
- Minimal construction is required to reconfigure the existing lot
- Improves efficiency of the parcel
- It is located within walking distance of major demand generators
- Potential improves queuing issues

**Cons:**

- When the lot is restriped/reconfigured, one of the entrance/exit locations is lost
- Reconfiguring the lot only results in a net increase of 32 spaces
- The cost per net space gained is approximately \$30,500
- Will require the demolition of existing landscaping, including trees.

### *BLOCK 19 ENTRANCE RECONFIGURATION*

Based on discussions with multiple stakeholder groups, we understand the entrance to the P6 lot from Francis Street is difficult to navigate. Due to the tight radius, drivers have trouble lining up with the PARCS equipment, which makes it difficult to pull a ticket. Some drivers have to park to pull a ticket, increasing the queuing time and restricting traffic flow on street at this entrance.

A potential improvement for this situation is to construct curb extensions in advance of the right turn into the parking entrance. This has the benefit of moving the vehicle over away from the curb which results in the vehicle being more parallel to the ticket machine after making the turn. This configuration is also beneficial as it gives pedestrians accessing the parking lot a mid-block location to cross with a shorter crossing distance. The curb extensions function to improve pedestrian visibility and sets up a condition where motorists will expect to see pedestrians crossing, hence a safer and more convenient pedestrian crossing opportunity. Per observations of traffic it appears that the curb extensions will not adversely impact traffic operations at the adjacent intersections.

However, as an alternative to restriping/reconfiguring the entire existing P6 lot on Block 19 and relocating the PARCS equipment, EPR prepared an option to modify Francis Street. The figure below shows to reconfiguration.

## Alternatives Analysis

Figure 19: Francis Street Reconfiguration for P6 Lot



Source: EPR, 2016

The conceptual level design and construction cost associated with this option is \$50,000.

### Pros:

- Improved vehicular access to P6 lot
- Improved pedestrian safety crossing Francis Street at mid-block
- Relatively low construction cost, which could be further reduced if advertised with other curb improvements

### Cons:

- Reconfiguration of the street does not increase parking supply

## Alternatives Analysis

### *BLOCK 15 – LOT P3*

Walker considered restriping/reconfiguration alternatives for the four public lots on Blocks 15 through 18 (Lots P2 through P5). Unfortunately, many of the lots are oddly shaped and reconfiguration would not gain any significant increase in the parking supply. However, on Block 15 (P3 lot), Walker developed a reconfiguration plan that both increases the capacity of the lot and improves traffic flow.

The existing P3 lot contains approximately 48 spaces. Walker reconfigured the lot, gaining 19 parking spaces while also maintaining the existing entry/exits to the lot from N. Boundary Street, Prince George Street, and N. Henry Street.

Figure 20: Block 15 Restriping Option



**Key Plan**



Existing Car Count = 48  
Re-Stripe Car Count = 67

### **City of Williamsburg Block 15 - New Surface Lot Parking Option**



Source: Walker, 2016

## Alternatives Analysis

The cost to restripe and modify the existing curb cuts is estimated at \$201,000<sup>5</sup>. Should other curb work be needed, the cost may be slightly higher. It is important to note that Walker's future parking supply and demand analysis is based on the assumption that this lot is demolished and repurposed as green space/event space by 2026. The choice to outlay capital to both restripe and potentially install PARCS equipment or meters in this lot should be weighed against the timeframe to transition the parking lot to event space.

There are several advantages and disadvantages associated with restriping/reconfiguring the P3 lot on Block 15 including the following:

### Pros:

- There are no capital costs associated with purchasing the property
- Minimal construction is required to reconfigure the existing lot
- Improves efficiency of the parcel
- It is located within walking distance of major demand generators
- A center island with green space would break-up the lot, providing a pedestrian walkway through the lot
- All existing access points to the lot are maintained
- The cost per net space gained is approximately \$10,600

### Cons:

- Short-term disruption of highly sought-after parking lot
- Reconfiguring the lot only results in a net increase of 19 spaces
- Lot could be demolished within 10 years

## STRUCTURED PARKING OPTIONS

As stated earlier, our observation and projections do not indicate a parking shortage on the whole. However, there are areas experiencing parking demand at or above 85% of supply. As such, the Study Area was evaluated to determine the optimum location(s) to provide additional parking. Walker's observations and projections indicate the highest occupancies are expected to occur on Blocks 7, 11-13, and 16-19 (Merchants Square).

There are limited opportunities available in the downtown area to develop new parking. While there are a few locations available, such as Blocks 19 and 25, most of the blocks in the downtown area do not have adequate surface area available to build structured parking or rather efficient structured parking.

Additionally, it is equally important to maintain a cohesive, connected, and walkable central business district, where parking does not break up the block and disrupt pedestrian flow.

Based on our analysis, a deficit of approximately 145 spaces may be realized on some blocks in the downtown area, with approximately half of this deficit located in the Merchants Square area. When developing parking structure options, Walker's options focus on achieving a net gain of 145 spaces.

<sup>5</sup> 67 spaces at \$3,000 per space to restripe/reconfigure lot

## Alternatives Analysis

### *BLOCK 19 - LOT P6*

The Block 19 garage is a two-bay, two-way traffic flow, single-threaded structure with a footprint of 124' by 290'. The overall structure could consist of 3 levels (grade plus two supported tiers) of parking, and provide approximately 323 parking spaces. The net gain of parking associated with this option is approximately 193 spaces.

The estimated order-of-magnitude construction cost per-space is between \$17,000 and \$22,000, excluding the cost associated with land/building acquisition, environmental remediation that may or may not be needed, utility relocation costs, geotechnical engineering impacts, demolition costs, and other soft costs such as design or financing fees<sup>6</sup>. Based on a 323-space facility, the total estimated construction cost is believed to range between \$5,491,000 and \$7,106,000 and could be higher, especially with elaborate architectural treatments.

The following figure shows where the garage is located within the Study Area, as well as the potential location on Block 19.

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<sup>6</sup> Note, the cost per space can vary significantly depending on the architectural “look” of the garage. A simple structure could be constructed for less than our estimated range; however, extensive façade work could increase the price.

## Alternatives Analysis

Figure 21: Block 19 Structure Parking Location



**Key Plan**

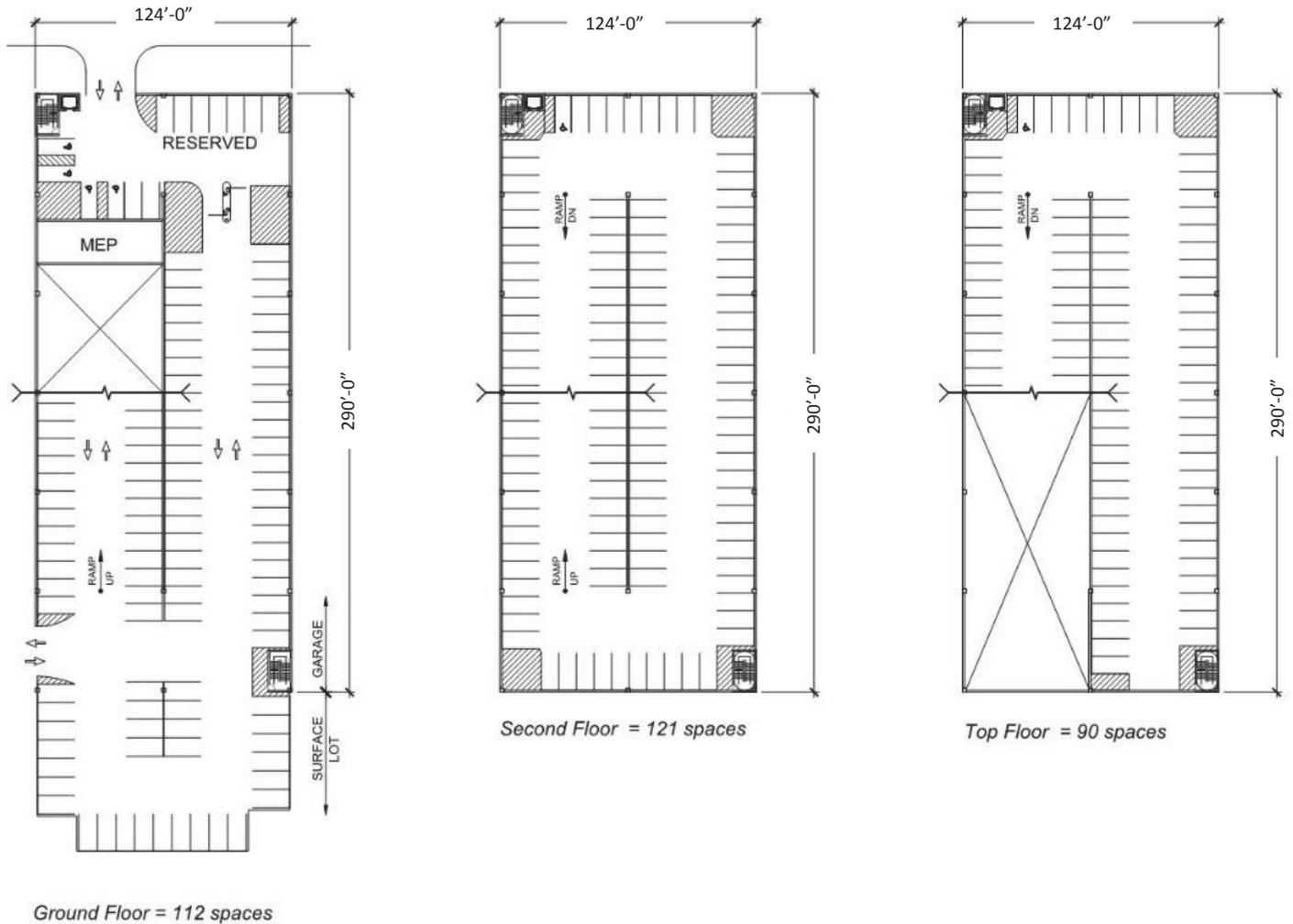


Source: Walker, 2016

The conceptual layout of a garage on Block 19 is shown in the next figure.

## Alternatives Analysis

Figure 22: Structured Parking on Block 19



Source: Walker, 2016

There are several advantages and disadvantages associated with the Block 19 garage including the following:

### Pros:

- The garage is ideally located within a short walking distance to major demand generators including Merchants Square, the College of William and Mary, and the Abby Aldrich Rockefeller Folk Art Museum
- The land parcel is of sufficient size to develop an efficient parking structure
- A three-level garage (grade plus two supported tier) meets the 35-foot height limitation per zoning
- More than half of the existing P6 surface lot on Block 19 remains available for events

### Cons:

- It is located south of much of the commercial downtown area in Williamsburg

## Alternatives Analysis

- The capacity of the existing lot needs to be added to the projected parking deficit/design capacity of the new garage.
- The entrance to the existing P6 lot on Block 19 will need to be relocated
- A three-level (two supported tiers) building is located adjacent to the “Colonial Williamsburg” property
- The cost per net space gained is approximately \$28,000 to \$37,000 per space

### *BLOCK 25 - CW EMPLOYEE LOT*

A three-bay, two-way traffic flow, single-threaded structure with a footprint of 182' by 230' could be located on Block 25. The overall structure could consist of 2 levels of parking (grade plus one supported level), and provide approximately 238 parking spaces. The net gain of parking associated with this option is approximately 86 spaces.

The estimated order-of-magnitude construction cost per-space is between \$17,000 and \$22,000, excluding the cost associated with land/building acquisition, environmental remediation that may or may not be needed, utility relocation costs, geotechnical engineering impacts, demolition costs, and other soft costs such as design or financing fees. Based on a 238-space facility, the total estimated construction cost is between \$4,046,000 and \$5,236,000. The figure below shows the location of the garage within the Study Area, as well as the location on Block 25.

**Figure 23: Block 25 Structure Parking Location**



Key Plan

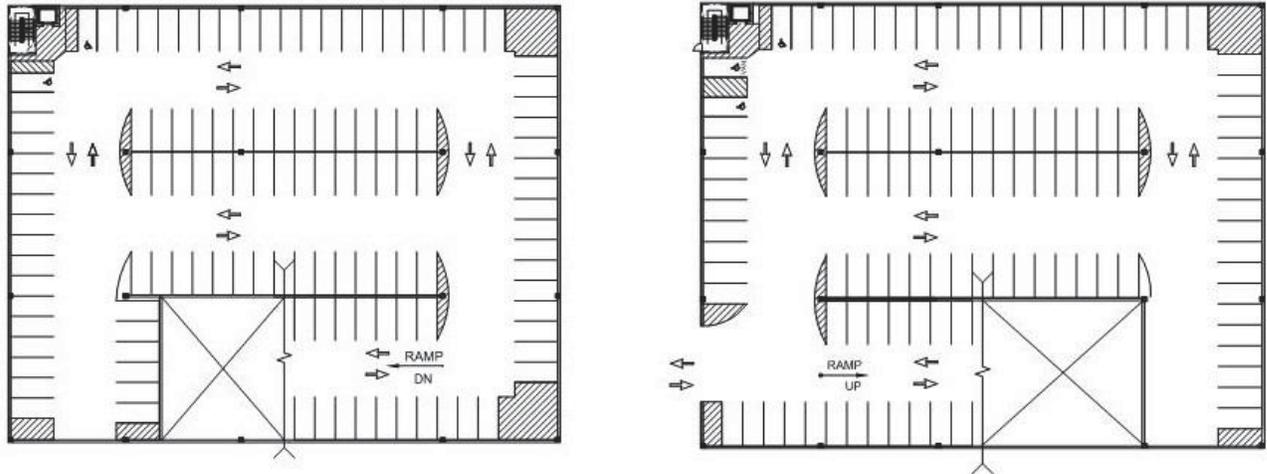


Source: Walker, 2016

The conceptual layout of a garage on Block 25 is shown in the next figure.

## Alternatives Analysis

Figure 24: Structured Parking on Block 25



Top Floor = 124 spaces

Ground Floor = 114 spaces

City of Williamsburg Block 25 - Garage Option



Source: Walker, 2016

There are several advantages and disadvantages associated with the Block 25 garage including the following:

**Pros:**

- The structure could support overflow parking (both employee and visitor) from the adjacent museum
- The land parcel is of sufficient size to develop an efficient parking structure
- A two-level garage (grade plus one supported tier) meets the 35-foot height limitation per zoning

**Cons:**

- The structure is not convenient for much of the downtown area (2,000+/- feet from Merchants Square).
- The capacity, or a portion of the capacity, of the existing lot needs to be added to the projected parking deficit/design capacity of the new garage.
- The existing lot is only used for Colonial Williamsburg employees. The garage would likely be employee only.
- The cost per net space gained is approximately \$47,000 to \$61,000 per space

### *BLOCK 9 – WILLIAMSBURG CHURCH LOT*

Walker understands that a joint venture garage to be located on the church lots on Block 9 has been considered in the past. A structure on this site could be used by the churches primarily on Sundays, while providing additional parking during the weekday and Saturday for Tribe Square, the Triangle, and many of the other retail and restaurant venues in

## Alternatives Analysis

the area. The Block 9 garage is a potential two-bay, two-way traffic flow, single-threaded structure with a footprint of 124' by 302'. The overall structure could consist of 3 levels of parking (grade plus two supported levels), and provide approximately 349 parking spaces. The net gain of parking associated with this option is approximately 239 spaces.

The estimated order-of-magnitude construction cost per-space is between \$17,000 and \$22,000, excluding the cost associated with land/building acquisition, environmental remediation that may or may not be needed, utility relocation costs, geotechnical engineering impacts, demolition costs, and other soft costs such as design or financing fees. Based on a 349-space facility, the total estimated construction cost is between \$5,933,000 and \$7,678,000.

The figure on the following page shows the location of the garage within the Study Area, as well as the location of the garage on Block 19.

Figure 25: Block 9 Structure Parking Location

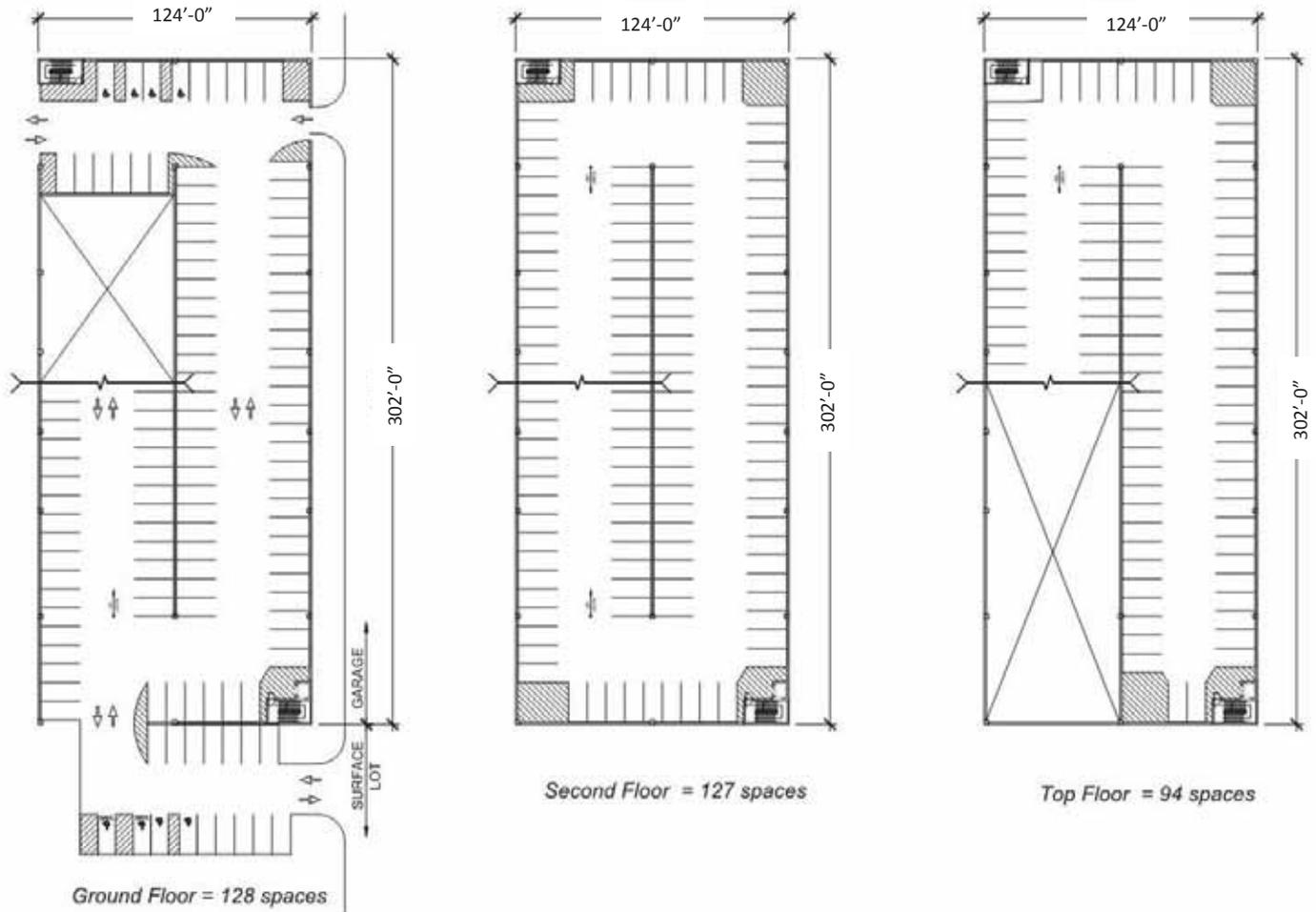


Source: Walker, 2016

The conceptual layout of a garage on Block 9 is shown in the next figure.

## Alternatives Analysis

Figure 26: Structured Parking on Block 9



Source: Walker, 2016

There are several advantages and disadvantages associated with a garage on Block 9 including the following:

### Pros:

- The garage is ideally located within a short walking distance to major demand generators including Merchants Square, the College of William and Mary, Tribe Square and other commercial land uses
- The land parcel is of sufficient size to develop an efficient parking structure
- Shared parking between the churches and the other retail/restaurant uses within walking distance should ensure the garage is consistently utilized

### Cons:

- The capacity of the existing lot needs to be added to the projected parking deficit/design capacity of the new garage

## Alternatives Analysis

- The City does not own the property and must either purchase the properties or enter a public-private partnership with multiple property owners to gain access to the property
- A prime parcel of land that could be used for commercial redevelopment will be converted to structured parking
- The cost per net space gained is approximately \$24,000 to \$32,000 per space

### *BLOCK 6 – STRYKER CENTER LOT*

Walker also considered a structured parking option on Block 6. This site could accommodate a two-bay, two-way traffic flow, single-threaded structure with a footprint of 124' by 290'. The overall structure could consist of 3 levels (grade plus two supported tiers) of parking, and provide approximately 315 parking spaces. The net gain of parking associated with this option is approximately 227 spaces.

The estimated order-of-magnitude construction cost per-space is between \$17,000 and \$22,000<sup>7</sup>, excluding the cost associated with land/building acquisition, environmental remediation that may or may not be needed, utility relocation costs, geotechnical engineering impacts, demolition costs, and other soft costs such as design or financing fees. Based on a 323-space facility, the total estimated construction cost is between \$5,355,000 and \$6,930,000.

The figure on the following page shows where the garage is located within the Study Area, as well as the located on the garage on Block 6.

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<sup>7</sup> Note, the cost per space can vary significantly depending on the architectural “look” of the garage. A simple structure could be constructed for less than our estimated range; however, extensive façade work could increase the price.

## Alternatives Analysis

Figure 27: Block 6 Structure Parking Location



**Key Plan**



**City of Williamsburg Block 6 - Garage Option**

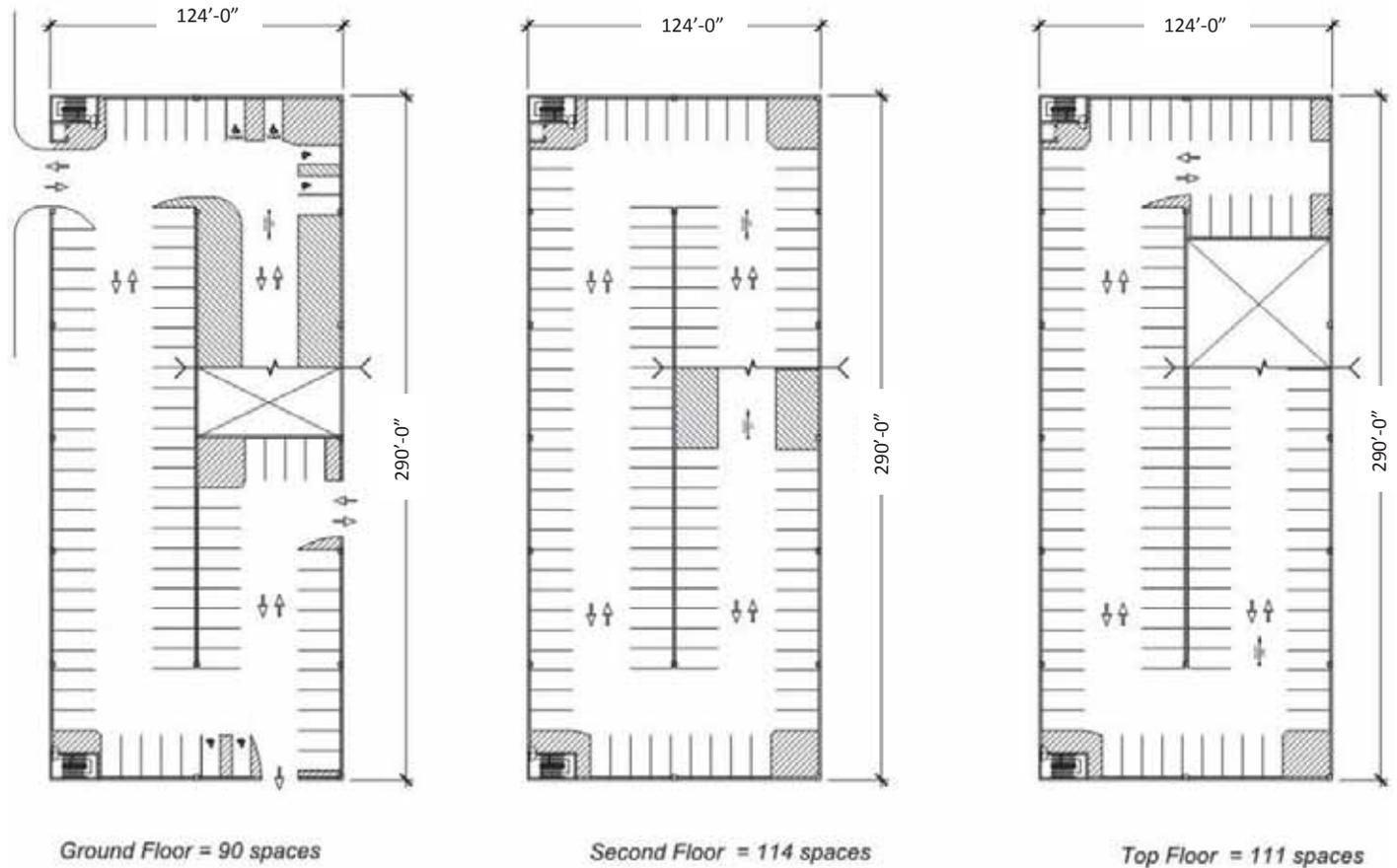


Source: Walker, 2016

The conceptual layout of a garage on Block 6 is shown in the next figure.

## Alternatives Analysis

Figure 28: Structured Parking on Block 6



Source: Walker, 2016

There are several advantages and disadvantages associated with a garage on the existing Stryker Center lot on Block 6 including the following:

### Pros:

- The garage is ideally located within a short walking distance to major demand generators including the library and other retail and restaurants
- The land parcel is of sufficient size to develop an efficient parking structure
- A garage on this site could provide a net gain of 227± spaces
- Drive access around the existing public assembly space, as well as short-term library spaces could be maintained
- A three-level garage (grade plus two supported tier) meets the 35-foot height limitation per zoning

## Alternatives Analysis

### Cons:

- Like the Parking Terrace, a garage on this site could be perceived as too far for Merchants Square
- The capacity of the existing lot needs to be added to the projected parking deficit/design capacity of the new garage
- The cost per net space gained is approximately \$23,600 to \$30,500 per space

### MATRIX OF THE ANALYSIS

To help prioritize the criteria to consider when judging the various sites, we use a matrix analysis. As agreed upon with the City, we list all the criteria that we want to consider during the evaluation process and assign each a weight (i.e. importance). The alternative's score for the criteria is the weight multiplied by the rating. The summation of scores gives us a final number such that theoretically the highest number is the most preferred scheme and the lowest number is the least preferred. Small variations in the totals can be ignored. The City should review the weights and ratings because it could easily affect the final recommendation.

**Proximity to Demand** – The location of each potential development site in relation to commercial buildings that are occupied and generate demand for parking during traditional business hours. The representation of land use near each site is considered and the level of reliance a site may have on one or multiple sources of demand.

**Construction Cost** – The construction cost associated with each potential development site does not include things such as property acquisition, tenant relocation, and demolition.

**Cost per Net Space Gained** – The cost associated with building an additional parking space.

**Land Availability** – The land availability associated with each potential development site considers the existing use of the land, whether or not property acquisition is required, and the need for tenant relocation, zoning compliance, and whether or not identified redevelopment plans exist.

**Future Development** – The assessment of future development includes whether parking is the highest and best use of the land and if future development is planned on or adjacent to the site that may benefit or hinder the parking operation.

**Traffic Impact** – The traffic impact on the existing traffic patterns and the impact that peak period loading and unloading may have on the surrounding street system.

**Mixed-Use Potential** – The potential of each site to integrate at grade level retail, restaurant and/or office space. Whether or not potential for a mixed-use parking facility exists is dependent on the type of land uses that surround the site and the existing market conditions for each type.

**Increased Capacity of System** – Does the new garage or expansion eliminate existing public parking? Can the displaced parking be absorbed back into the garage's capacity?

**Aesthetic Value** – The structure will need to blend in with the buildings adjacent to it. What kind of façade will be needed?

## Alternatives Analysis

**Temporary Displacement of Close-In Parking** – A new garage or the expansion of an existing facility may require the exiting lot or a part of the existing parking be shut down for a period of time. How disruptive will this be to the current parking situation?

**Site Wayfinding** – The ability of a driver or pedestrian to locate the parking facility. Many of these sites already contain public or private parking. Is the site already easily located? Can signage be added to the downtown area to aid drivers in locating parking?

Alternatives Analysis

Table 34: Alternatives Matrix

CRITERIA	Weight	Block 19 Garage		Block 25 Garage		Block 9 Garage		Block 6 Garage		Block 19 Restriping/ Reconfiguration of Lot		Block 15 Restriping/ Reconfiguration of Lot	
		Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
Proximity to Demand	5	5	25	2	10	4	20	3	15	5	25	5	25
Construction Cost	4	2	8	1	4	3	12	3	12	4	16	5	20
Parking Efficiency	3	2	6	1	3	3	9	3	9	5	15	5	15
Demolition	3	3	9	5	15	4	12	4	12	4	12	5	15
Land Availability	4	4	16	5	20	3	12	3	12	5	20	5	20
Future Development	3	3	9	5	15	3	9	3	9	3	9	2	6
Traffic Impact	3	3	9	4	12	2	6	2	6	5	15	5	15
Mixed-Use Potential	3	5	15	3	9	2	6	2	6	1	3	1	3
Increased Capacity of System	5	4	20	2	10	5	25	5	25	1	5	1	5
Aesthetic Value	2	3	6	3	6	4	8	4	8	5	10	5	10
Temporary Displacement of Close-In Parking	3	3	9	4	12	1	3	2	6	4	12	2	6
Site Wayfinding	3	4	12	1	3	4	12	3	9	4	12	5	15
Expansion Opportunity	2	3	6	5	10	1	2	1	2	3	6	1	2
<b>Total</b>			150		129		136		131		160		157
<b>Rating:</b>	<b>5 = Most Important, Best</b>											<b>1 = Less</b>	

Source: Walker Parking Consultants, 2016

## Alternatives Analysis

The final determination of the relative attractiveness of the alternative solutions must rest with the City of Williamsburg. However, this site analysis provides a reasonable and supportable look at the criteria upon which to base such a decision. Based on this analysis, restriping/reconfiguring the lot on Block 19 was identified to be the highest-ranking solution, followed by restriping/reconfiguring the lot on Block 15. These options together offer the City the opportunity to add approximately 50 spaces within walking distance of Merchants Square for the least capital cost.

As stated earlier, while the downtown area is projected to have sufficient capacity to support future parking demand, it may not be located in the areas most desired by customers and employees alike. As such, we do not anticipate the need for a significant increase in parking capacity through the development of structured parking. Rather, the parking management strategies discussed in the earlier section may offer the City the best opportunity to improve parking conditions in the downtown area.

APPENDIX A  
SCOPE OF SERVICES



**WALKER**  
PARKING CONSULTANTS

## Appendix A – Scope of Services

- A. Analysis of existing downtown parking facilities.
  - 1. Meet with the City, including representatives from the City Manager’s office, Planning Department, Public Works Department, Police Department, and the Purchasing Agent, as well as Walker’s team members to discuss background issues and materials, key stakeholder concerns, and define project lines of communication and work session dates.
    - a. Consider applicable recommendations for future land use in the Downtown Planning Area contained in the current Comprehensive Plan and existing zoning regulations.
    - b. Consult with the Colonial Williamsburg Foundation and the College of William and Mary to determine current and future parking needs and expansion plans.
    - c. Obtain and review the following information (as available) from City representatives:
      - 1) Employment – The most recent and accurate data the Borough can provide for the study area.
      - 2) Number of residents living within the study area;
      - 3) Possible Future developments – This includes type of land use, square footage or other relevant units, development location and timeline, and whether any existing parking spaces will be displaced;
      - 4) Forecasted growth rates for employment and residential populations;
      - 5) Copies of any previous parking studies, community master plans or downtown market studies;
      - 6) Local zoning ordinance;
      - 7) Aerial photographs and AutoCAD base maps of the study area.
      - 8) Transaction and revenue data for the parking system, including permit sales and meter revenue by month for the last five years.
      - 9) Historic public parking occupancy data for the last three years.
  - 2. Inventory existing downtown parking facilities and parking management solutions including: the Prince George Parking Garage, Parking Terrace, on- and off-street parking regulations, bus stops and transit facilities, and outlying surface parking lots.
    - a. Confirm the inventory of on-street and off-street parking spaces in the study area. Inventory will be tabulated and summarized on a block-by-block and/or zone-by-zone basis. Tabulation will include block identification, capacity, public vs. private, parking rates, and time restrictions. Our survey will include all public spaces, and private lots greater than 5 spaces.
    - b. Perform a parking space occupancy count survey for all public and private on-street and surface lot parking facilities located within the study area on a typical weekday and Saturday. Counts will include late morning, mid-day, and evening counts; specific times will be established.
  - 3. Survey existing users including businesses and employees, institutions, customers in the downtown area, and William and Mary student representatives.
    - a. Conduct meetings over the course of one (1) day with up to 12 stakeholder interviews to obtain input on existing parking conditions. Stakeholders will be designated by City representatives. City representatives will coordinate this meeting with the project start-up meeting so that they occur during the same visit. The meeting will take place during Walker’s first site visit.

## Appendix A – Scope of Services

4. Analyze seasonal competition for space in public parking facilities between college students, visitors to Colonial Williamsburg, local merchant customers and employees; and recommend solutions to alleviate and/or manage that conflict effectively.
5. Analyze patterns of use of the existing downtown parking facilities.
  - a. Extrapolate parking occupancy counts to reflect conditions that would occur during the busiest season, based on historical data, Urban Land Institute recommended presence factors, or other means.
  - b. Analyze the existing parking demand and break down into sub-areas within the study area, taking into consideration current parking counts, additional demand, and likely changes to the parking supply.
6. Inventory bicycle parking facilities and needs.
7. Analyze current enforcement systems, practices, and fees.
  - a. Develop an understanding of the following:
    - 1) On- and off-street parking policies;
    - 2) Parking enforcement policies;
    - 3) Rate and fines structures;
    - 4) Parking system financial statements;
    - 5) Parking system strategic and business plans;
    - 6) Logistical problems;
    - 7) Parking permits;
    - 8) Program administration; and
    - 9) Departmental organization and staffing.
  - b. Develop recommendations regarding:
    - 1) Customer service;
    - 2) Parking policies and objectives;
    - 3) Parking rates and fines;
    - 4) Methods of designating parking areas;
    - 5) Strategies for controlling the use of parking facilities;
    - 6) Staffing;
    - 7) Shared parking;
    - 8) Proper function of a department to handle on-street and off-street parking; and
    - 9) Enforcement policies.
- B. Evaluation of various parking strategies which could be used in the downtown area.
  1. Evaluate free parking versus paid parking options and the impact of paid parking on local businesses. Evaluation should include fiscal impact analysis comparing parking revenue lost to potential business generated from a free parking system, as well as impacts on employee parking. **Identify the pros and cons of both options.**
  2. Evaluate current parking management in off-street parking areas (ex. time limits on parking; meter versus ticket; ticket validation by downtown merchants, etc.).
  3. Evaluate state-of-the-art parking management systems for both on-and off- street parking.

## Appendix A – Scope of Services

- a. Walker will comment on the pros and cons of various parking management strategies, technologies, equipment and processes. Participating in the solicitation and bidding process for any new systems can be provided as an additional service.
4. Evaluate parking information systems, wayfinding signage, and marketing efforts.
  - a. Develop recommendations regarding:
    - 1) Parking meters;
    - 2) Ticket validation;
    - 3) Shared parking;
    - 4) Time limits;
    - 5) Wayfinding/signage;
    - 6) Marketing efforts;
    - 7) Use of technology;
    - 8) Use of internet/website; and
    - 9) Zoning Ordinance.
5. Evaluate parking and site plan standards contained in the Zoning Ordinance.
  - a. Consider parking minimums and maximums, shared parking provisions, parking geometrics, landscaping requirements, and payments in lieu of parking
6. Identify options for new agreement structures between City, Colonial Williamsburg, the College of William and Mary, and other downtown uses to accomplish recommended actions.
7. Evaluate the impact of any future conversion of the mid-block parking area north of Duke of Gloucester Street at Merchants Square to other non-parking uses.
  - a. Create a shared parking model for projected future developments.
  - b. Analyze the future parking demand within the study area, taking into consideration current parking counts, additional demand, and likely changes to the parking supply. Projection will be phased over the ten-year planning horizon and will segment short-term visitor needs from long-term employee needs.
  - c. Identify any parking shortages during current, future and long-term future conditions.
8. Meet with City representatives and project team to review preliminary findings and recommendations before development of an overall parking master plan begins.
- C. Development of an overall master plan for on- and off-street parking facilities in the downtown area.
  1. Recommend how current parking facilities in the Downtown Planning Area can be more effectively managed (time limits, pay versus free, metering, etc.). If more parking is needed, recommend locations for future surface and/or structure facilities in the Downtown Planning Area.
    - a. Develop options for expanding the parking supply. Determine if there is a need for new parking facilities in the Downtown.
    - b. For each new parking concept, estimate out-to-out dimensions (lot and structure), probable building height, and parking capacity. Detailed floor plans and isometrics will not be provided.
    - c. Review existing vehicular and pedestrian access and circulation patterns for their relationship to existing and proposed parking generators and the parking supply, especially with respect to walking distances.

## Appendix A – Scope of Services

- d. Determine possibilities of expanding existing parking facilities to meet parking needs previously identified.
  - e. Determine possibility of expanding existing parking through re-striping existing lots.
  - f. Determine the possibility of increasing future parking supply through shared use of parking locations.
  - g. Develop an opinion of probable construction or project cost for each alternative on a conceptual basis without the benefit of design drawings.
  - h. Evaluate the various alternatives on the basis of qualitative criteria to be mutually agreed upon with the City using a weighted matrix. Evaluation criteria may include items such as cost, location, visibility, pedestrian access, vehicular access, traffic impact, aesthetics, and future versatility.
  - i. Recommend the most feasible solution(s) to meet existing and future parking needs.
2. Recommend any new agreements that are needed with Colonial Williamsburg, the College of William and Mary, and/or other institutional uses in the Downtown Planning Area.
  3. Recommend any needed changes to the parking and site plan standards contained in the Zoning Ordinance.
  4. Recommend any appropriate wayfinding or other strategies to improve the use of parking facilities.
- D. Report Writing
1. Prepare a detailed implementation plan for the City including a matrix of recommended parking and transportation implementation items for the City, a timeframe for implementation; conceptual costs for all proposed parking and transportation solutions; a Master Plan map identifying key developments; and a discussion of the various methods to fund the proposed solutions.
  2. Present first draft of the master plan to City staff and Study Work Group for review.
  3. Review the submittal with City staff and incorporate feedback.
  4. Prepare and submit five (5) hard copies of final Parking Master Plan report in word and PDF format.
- E. Meetings/Presentations
1. Meetings/Site Visits
    - a. Walker will attend up to three (3) trips in the City of Williamsburg, including:
      - 1) Project Kick-Off Meeting/Stakeholder Interviews. During this trip, Walker will kick-off the project, survey the study area, and conduct two days of stakeholder interviews with key community representatives as selected by the City.
      - 2) Progress Meeting to discuss preliminary findings and recommendations.
      - 3) First Draft Meeting to discuss the Parking Master Plan recommendations, discuss the goals and objectives of the two (2) public meetings, and other end of project related issues.
    - b. It is assumed all other progress meetings between Walker, the City and the team will be held via conference call. Additional on-site meetings can be provided for an additional fee.
  2. Presentations
    - a. Per the RFP, Walker will present our formal findings and recommendations at one public meeting for the City Council, E.D.A., and the Planning Commission.

## Appendix A – Scope of Services

- b. Attendance at additional public meetings can be provided on a per meeting basis for an additional fee.
- F. Additional Services (If Authorized)
- 1. Please note, Walker’s fee proposal does not include the cost to provide the additional services. Walker can perform the additional services on an hourly basis in accordance with the attached hourly rates.

APPENDIX B  
SUPPLY AND DEMAND SUPPLEMENT ANALYSIS



**WALKER**  
PARKING CONSULTANTS

## Appendix B – Supply and Demand Supplement Analysis

### WEEKDAY PARKING OCCUPANCY – ON-STREET

Generally, on-street parking occupancy during the peak hour ranges from 9% on Block 8 to 100% on Blocks 14 and 24. Six blocks have parking occupancies at or above 85% of supply (highlighted red). When parking occupancies reach 85% or greater, finding available parking can be difficult.

Table 35: Weekday Parking Occupancy Summary – On-Street

Block	On-Street		
	Supply	Demand	Occupancy
1	0	0	0%
2	0	0	0%
3	4	2	50%
4	0	0	0%
5	116	43	37%
6	45	13	29%
7	15	13	87%
8	23	2	9%
9	86	80	93%
10	19	14	74%
11	16	10	63%
12	43	41	95%
13	12	9	75%
14	33	33	100%
15	31	25	81%
16	14	12	86%
17	0	0	0%
18	0	0	0%
19	0	0	0%
20	46	26	57%
21	0	0	0%
22	52	27	52%
23	8	2	25%
24	17	17	100%
25	0	0	0%
<b>Total</b>	<b>580</b>	<b>369</b>	<b>64%</b>

Source: Walker Parking Consultants, 2016

## Appendix B – Supply and Demand Supplement Analysis

Please note, the inventory on Block 5 includes both of the streets located interior to the block. Additionally, much of the on-street parking supply on Block 5 is residential permit only. Parking occupancy rates on Block 5 were not observed to exceed 50% during the survey. We recommend additional analysis of the on-street parking demand in the residential permit areas to determine if changes to the residential permit zone are needed.

Additional discussion of residential zones can be found in the Parking Policy section.

### WEEKDAY PARKING OCCUPANCY – OFF-STREET

During the peak hour, approximately 73% of the available publicly-owned parking supply was occupied; however, all four public surface lots in Merchants Square (P2 – P4) were 100% occupied.

Private off-street parking was less utilized, with only 55% of the available supply occupied during the peak hour. However, there were three blocks where parking occupancy rates exceeded 85%. As discussed earlier, the elementary school is located on one of these blocks and could be an opportunity for shared parking. Additional data on a facility-by-facility level is available in the Appendix.

The public lots P2-P5 were 100% occupied during the 2:00 p.m. peak hour and remained highly utilized throughout the afternoon and evening. However, during our 10:00 a.m. survey, the occupancy rate in these four lots averaged 50%. Many of the stores in Merchant Square do not open until 10:00 a.m., indicating a high probability of employees parking in these short term parking lots.

Additional analysis, such as a turnover study, would help confirm this assumption. Walker addresses the misallocation of short and long term parkers and methods to address the issue in the Parking Policy Section.

## Appendix B – Supply and Demand Supplement Analysis

Table 36: Weekday Morning Parking Occupancy Summary –Off-Street

Block	Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	94	54	57%	58	26	45%
2	0	0	0%	85	45	53%
3	0	0	0%	49	37	76%
4	0	0	0%	178	0	0%
5	0	0	0%	172	91	53%
6	88	66	75%	26	16	62%
7	182	128	70%	85	48	56%
8	0	0	0%	93	83	89%
9	0	0	0%	245	162	66%
10	0	0	0%	36	13	36%
11	0	0	0%	25	19	76%
12	0	0	0%	21	19	90%
13	356	223	63%	37	16	43%
14	0	0	0%	0	0	0%
15	48	48	100%	5	3	60%
16	62	62	100%	18	16	89%
17	69	69	100%	0	0	0%
18	135	135	100%	0	0	0%
19	293	180	61%	0	0	0%
20	0	0	0%	58	21	36%
21	0	0	0%	158	100	63%
22	0	0	0%	20	8	40%
23	0	0	0%	22	15	68%
24	0	0	0%	702	462	66%
25	0	0	0%	326	136	42%
<b>Total</b>	<b>1,327</b>	<b>965</b>	<b>73%</b>	<b>2,419</b>	<b>1,336</b>	<b>55%</b>

Source: Walker Parking Consultants, 2016

### WEEKDAY PARKING ADEQUACY

Walker also analyzed the adequacy of the parking system by parking type – on-street, publicly-owned off-street, and privately-owned off-street parking. Based on existing conditions, there is a surplus of both on- and off-street parking spaces within the Study Area. Small deficits occurred on-street and in the public off-street parking areas. Again, these shortages occur primarily in the Merchants Square area of the downtown.

## Appendix B – Supply and Demand Supplement Analysis

Table 37: Weekday Parking Adequacy Summary – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	54	31	55	26	29
2	0	0	0	0	0	0	81	45	36
3	3	2	1	0	0	0	47	37	10
4	0	0	0	0	0	0	169	0	169
5	99	43	56	0	0	0	163	91	72
6	39	13	26	79	66	13	25	16	9
7	13	13	0	164	128	36	81	48	33
8	20	2	18	0	0	0	88	83	5
9	73	80	(7)	0	0	0	234	162	72
10	16	14	2	0	0	0	34	13	21
11	13	10	3	0	0	0	24	19	5
12	37	41	(4)	0	0	0	20	19	1
13	10	9	1	320	223	97	35	16	19
14	28	33	(5)	0	0	0	0	0	0
15	27	25	2	43	48	(5)	5	3	2
16	12	12	0	56	62	(6)	17	16	1
17	0	0	0	62	69	(7)	0	0	0
18	0	0	0	122	135	(13)	0	0	0
19	0	0	0	264	180	84	0	0	0
20	39	26	13	0	0	0	55	21	34
21	0	0	0	0	0	0	150	100	50
22	44	27	17	0	0	0	19	8	11
23	7	2	5	0	0	0	21	15	6
24	14	17	(3)	0	0	0	668	462	206
25	0	0	0	0	0	0	310	136	174
<b>Total</b>	<b>494</b>	<b>369</b>	<b>125</b>	<b>1,195</b>	<b>965</b>	<b>230</b>	<b>2,301</b>	<b>1,336</b>	<b>965</b>

Source: Walker Parking Consultants, 2016

Generally, there is adequate parking on all blocks for all three types of parking. There are small shortages anticipated on Blocks 19, 12, 14, 15 - 18, and 24, but adequate parking in the surrounding area to support overflow.

### WEEKEND PARKING OCCUPANCY – ON-STREET

The tables below illustrate the observed occupancy for on-street, publicly-owned off-street, and privately-owned off-street parking by block around 2 pm.

Generally, on-street parking occupancy during the peak hour ranges from 19% on Block 22 to 100% on several blocks. Walker highlighted the blocks experiencing parking rates above 85% in red. When parking occupancies

## Appendix B – Supply and Demand Supplement Analysis

reach 85% or greater, finding available parking can be difficult. Most of the blocks experience high on-street occupancy rates are located in Merchants Square.

**Table 38: Weekend Parking Occupancy Summary – On-Street**

Block	On-Street		
	Supply	Demand	Occupancy
1	0	0	0%
2	0	0	0%
3	4	1	25%
4	0	0	0%
5	116	35	30%
6	45	18	40%
7	15	15	100%
8	23	7	30%
9	86	43	50%
10	19	9	47%
11	16	11	69%
12	43	27	63%
13	12	12	100%
14	33	33	100%
15	31	31	100%
16	14	14	100%
17	0	0	0%
18	0	0	0%
19	0	0	0%
20	46	19	41%
21	0	0	0%
22	52	10	19%
23	8	2	25%
24	17	11	65%
25	0	0	0%
<b>Total</b>	<b>580</b>	<b>298</b>	<b>51%</b>

Source: Walker Parking Consultants, 2016

Of the 580 on-street parking spaces in the Study Area, 176 are residential permit only. The remaining 404 spaces are generally restricted by time limits.

The residential permit parking spaces experienced a 21% occupancy rate during the peak hour. The time restricted spaces were 64% utilized during the peak hour.

## Appendix B – Supply and Demand Supplement Analysis

We recommend further study of the residential parking demand, specifically on Block 5. Reintroducing some reserved spaces for general use on this block could mitigate some shortages associated with the Tribe Square area.

### WEEKEND PARKING OCCUPANCY – OFF-STREET

During the peak hour, approximately 68% of the available publicly-owned parking supply is occupied. All four public surface lots in Merchants Square (P2 – P5) were nearly 100% occupied.

Private off-street parking was less utilized, with only 30% of the available supply occupied during the peak hour. With the exception of Block 21, no blocks experienced parking occupancy rates above 75%. Additional data on a facility-by-facility level is available in the Appendix

## Appendix B – Supply and Demand Supplement Analysis

Table 39: Weekend Parking Occupancy Summary –Off-Street

Block	Public Off-Street			Private Off-Street		
	Supply	Demand	Occupancy	Supply	Demand	Occupancy
1	94	11	12%	58	12	21%
2	0	0	0%	85	48	56%
3	0	0	0%	49	19	39%
4	0	0	0%	178	0	0%
5	0	0	0%	172	60	35%
6	88	57	65%	26	8	31%
7	182	77	42%	85	31	36%
8	0	0	0%	93	19	20%
9	0	0	0%	245	88	36%
10	0	0	0%	36	23	64%
11	0	0	0%	25	15	60%
12	0	0	0%	21	14	67%
13	356	244	69%	37	14	38%
14	0	0	0%	0	0	0%
15	48	48	100%	5	3	60%
16	62	62	100%	18	10	56%
17	69	69	100%	0	0	0%
18	135	131	97%	0	0	0%
19	293	202	69%	0	0	0%
20	0	0	0%	58	9	16%
21	0	0	0%	158	120	76%
22	0	0	0%	20	2	10%
23	0	0	0%	22	13	59%
24	0	0	0%	702	114	16%
25	0	0	0%	326	106	33%
<b>Total</b>	<b>1,327</b>	<b>901</b>	<b>68%</b>	<b>2,419</b>	<b>728</b>	<b>30%</b>

Source: Walker Parking Consultants, 2016

Similar to weekday conditions, the parking occupancy rates in the four public lots at Merchant Square were nearly 100% utilized throughout the day, including during our 10:00 a.m. survey.

Because parking demand was observed during spring break, it is possible a large number of tourists parked in Merchants Square prior to the stores opening. However, it is more likely that many retail employees were parked in these lots. Walker addresses this issue in the Parking Policy Section.

## Appendix B – Supply and Demand Supplement Analysis

### WEEKEND PARKING ADEQUACY

Walker also analyzed the adequacy of the parking system by parking type. Based on existing conditions, there is a surplus of both on- and off-street parking spaces within the Study Area. Small deficits occurred on-street and in the public off-street parking areas. Again, these shortages occur primarily in the Merchants Square area of the downtown.

Table 40: Weekend Parking Adequacy Summary – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	11	74	55	12	43
2	0	0	0	0	0	0	81	48	33
3	3	1	2	0	0	0	47	19	28
4	0	0	0	0	0	0	169	0	169
5	99	35	64	0	0	0	163	60	103
6	39	18	21	79	57	22	25	8	17
7	13	15	(2)	164	77	87	81	31	50
8	20	7	13	0	0	0	88	19	69
9	73	43	30	0	0	0	234	88	146
10	16	9	7	0	0	0	34	23	11
11	13	11	2	0	0	0	24	15	9
12	37	27	10	0	0	0	20	14	6
13	10	12	(2)	320	244	76	35	14	21
14	28	33	(5)	0	0	0	0	0	0
15	27	31	(4)	43	48	(5)	5	3	2
16	12	14	(2)	56	62	(6)	17	10	7
17	0	0	0	62	69	(7)	0	0	0
18	0	0	0	122	131	(9)	0	0	0
19	0	0	0	264	202	62	0	0	0
20	39	19	20	0	0	0	55	9	46
21	0	0	0	0	0	0	150	120	30
22	44	10	34	0	0	0	19	2	17
23	7	2	5	0	0	0	21	13	8
24	14	11	3	0	0	0	668	114	554
25	0	0	0	0	0	0	310	106	204
<b>Total</b>	<b>494</b>	<b>298</b>	<b>196</b>	<b>1,195</b>	<b>901</b>	<b>294</b>	<b>2,301</b>	<b>728</b>	<b>1,573</b>

Source: Walker Parking Consultants, 2016

## Appendix B – Supply and Demand Supplement Analysis

### SEASONAL PARKING CONDITIONS

#### WEEKDAY PARKING ADEQUACY

Parking adequacy is the ability of the parking supply to accommodate the parking demand. The July occupancy was subtracted from the effective supply to determine the adequacy for the Study Area. The parking adequacy for the Study Area is summarized in the following table.

Table 41: Weekday Parking Adequacy Summary - July

Block	Effective Supply	Demand	Adequacy
1	140	92	48
2	81	41	40
3	50	17	33
4	169	0	169
5	262	69	193
6	143	90	53
7	258	156	102
8	108	8	100
9	304	112	192
10	50	11	39
11	37	26	11
12	53	39	14
13	365	175	190
14	28	31	(3)
15	75	75	0
16	85	87	(2)
17	62	69	(7)
18	122	126	(4)
19	264	102	162
20	94	38	56
21	150	77	73
22	63	19	44
23	28	11	17
24	682	176	506
25	310	109	201
<b>Total</b>	<b>3,983</b>	<b>1,756</b>	<b>2,227</b>

Source: Walker Parking Consultants, 2016

## Appendix B – Supply and Demand Supplement Analysis

As a whole, the current parking system had a parking surplus during the July weekday survey, with all but four block showing a parking surplus. The blocks experience shortages were located in or around the Merchants Square area.

Walker also analyzed the adequacy of the parking system by parking type. Based on July conditions, there is a surplus of both on- and off-street parking spaces within the Study Area.

Table 42: Weekday Parking Adequacy Summary – by Type (July)

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	63	22	55	29	26
2	0	0	0	0	0	0	81	41	40
3	3	0	3	0	0	0	47	17	30
4	0	0	0	0	0	0	169	0	169
5	99	31	68	0	0	0	163	38	125
6	39	15	24	79	61	18	25	14	11
7	13	13	0	164	99	65	81	44	37
8	20	2	18	0	0	0	88	6	82
9	70	45	25	0	0	0	234	67	167
10	16	1	15	0	0	0	34	10	24
11	13	8	5	0	0	0	24	18	6
12	33	22	11	0	0	0	20	17	3
13	10	10	0	320	146	174	35	19	16
14	28	31	(3)	0	0	0	0	0	0
15	27	27	0	43	45	(2)	5	3	2
16	12	11	1	56	59	(3)	17	17	0
17	0	0	0	62	69	(7)	0	0	0
18	0	0	0	122	126	(4)	0	0	0
19	0	0	0	264	102	162	0	0	0
20	39	18	21	0	0	0	55	20	35
21	0	0	0	0	0	0	150	77	73
22	44	13	31	0	0	0	19	6	13
23	7	1	6	0	0	0	21	10	11
24	14	7	7	0	0	0	668	169	499
25	0	0	0	0	0	0	310	109	201
<b>Total</b>	<b>487</b>	<b>255</b>	<b>232</b>	<b>1,195</b>	<b>770</b>	<b>425</b>	<b>2,301</b>	<b>731</b>	<b>1,570</b>

Source: Walker Parking Consultants, 2016

Generally, there is adequate parking on all blocks for all three types of parking. There were small shortages observed on Blocks 14 through 18, but adequate parking in the surrounding area to support overflow.

## Appendix B – Supply and Demand Supplement Analysis

### WEEKEND PARKING ADEQUACY

Parking adequacy is the ability of the parking supply to accommodate the parking demand. The occupancy observed during the July survey was subtracted from the effective supply to determine the adequacy for the Study Area. The parking adequacy for the Study Area is summarized in the following table.

Table 43: Weekend Parking Adequacy Summary – July

Block	Effective Supply	Demand	Adequacy
1	140	25	115
2	81	40	41
3	50	15	35
4	169	0	169
5	262	48	214
6	143	112	31
7	258	112	146
8	108	16	92
9	304	84	220
10	50	18	32
11	37	29	8
12	53	37	16
13	365	188	177
14	28	33	(5)
15	75	81	(6)
16	85	89	(4)
17	62	69	(7)
18	122	135	(13)
19	264	129	135
20	94	23	71
21	150	99	51
22	63	7	56
23	28	10	18
24	682	49	633
25	310	88	222
<b>Total</b>	<b>3,983</b>	<b>1,536</b>	<b>2,447</b>

Source: Walker Parking Consultants, 2016

As a whole, the current parking system had a parking surplus during the July survey, with all but five block showing a parking surplus. Again, the deficit was observed in the Merchants Square area.

## Appendix B – Supply and Demand Supplement Analysis

Walker also analyzed the adequacy of the parking system by parking type. There was a surplus of both on- and off-street parking spaces within the Study Area during the July Survey Day.

Table 44: Weekend Parking Adequacy Summary – by Type (July)

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	14	71	55	11	44
2	0	0	0	0	0	0	81	40	41
3	3	1	2	0	0	0	47	14	33
4	0	0	0	0	0	0	169	0	169
5	99	22	77	0	0	0	163	26	137
6	39	21	18	79	79	0	25	12	13
7	13	13	0	164	67	97	81	32	49
8	20	8	12	0	0	0	88	8	80
9	70	35	35	0	0	0	234	49	185
10	16	1	15	0	0	0	34	17	17
11	13	12	1	0	0	0	24	17	7
12	33	26	7	0	0	0	20	11	9
13	10	12	(2)	320	166	154	35	10	25
14	28	33	(5)	0	0	0	0	0	0
15	27	30	(3)	43	48	(5)	5	3	2
16	12	14	(2)	56	61	(5)	17	14	3
17	0	0	0	62	69	(7)	0	0	0
18	0	0	0	122	135	(13)	0	0	0
19	0	0	0	264	129	135	0	0	0
20	39	17	22	0	0	0	55	6	49
21	0	0	0	0	0	0	150	99	51
22	44	5	39	0	0	0	19	2	17
23	7	0	7	0	0	0	21	10	11
24	14	2	12	0	0	0	668	47	621
25	0	0	0	0	0	0	310	88	222
<b>Total</b>	<b>487</b>	<b>252</b>	<b>235</b>	<b>1,195</b>	<b>768</b>	<b>427</b>	<b>2,301</b>	<b>516</b>	<b>1,785</b>

Source: Walker Parking Consultants, 2016

Generally, there is adequate parking on all blocks for all three types of parking. There are small shortages anticipated on Blocks 13 through 18, but adequate parking in the surrounding area to support overflow.

## Appendix B – Supply and Demand Supplement Analysis

### FUTURE CONDITIONS

## Appendix B – Supply and Demand Supplement Analysis

Walker projected the parking demand associated with the new developments in downtown Williamsburg using the shared parking methodology. The demand generated by the new projects is added to the demand observed during peak weekday and weekend conditions to project future parking demand over the next ten years.

### SHARED PARKING DEMAND

Shared parking is defined as parking spaces that can be used to serve two or more individual land uses without conflict or encroachment. One of the fundamental principles of downtown planning from the earliest days of the automobile has always been to share parking resources rather than to have each use or building have its own parking. The resurgence of many central cities resulting from the addition of vibrant residential, retail, restaurant and entertainment developments continues to rely heavily on shared parking for economic viability. In addition, mixed-use projects in many different settings have benefited from shared parking. Shared parking provides numerous benefits to a community at large, not the least of which is the environmental benefit of significantly reducing the square feet of parking provided to serve commercial development.

The interplay of land uses in a mixed-use environment produces a reduction in overall parking demand. For example, a substantial percentage of patrons at one business (restaurant) may be employees of another downtown business (office). This is referred to as the “effects of the captive market”. These patrons are already parking and contribute only once to the number of peak hour parkers. In other words, the parking demand ratio for individual land uses should be factored downward in proportion to the captive market support received from neighboring land uses.

Adjustments are also made to account for the number of patrons who arrive at the subject property by means other than personal vehicle. Based on data collected by the U.S. Census Bureau, Walker applied a drive ratio, or modal split factor, to each land use. Per current census data, approximately 85%<sup>8</sup> of employees arrive via personal vehicle in Williamsburg, VA, depending on proximity to public transit and their type of occupation. The remaining 15% utilize another means of transportation such as mass transit, bicycle, or walking.

The base parking demand ratio for each land use is adjusted to represent the project ratio. Project ratios are calculated by multiplying the base ratio by the drive ratio (portion of transportation modal split represented by single occupancy, motorized car or truck), non-captive ratio (one minus the percent captive) and an hourly adjustment.

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<sup>8</sup> Walker used the 2010-2014 American Community Survey, as well as the electronic parking survey distributed as part of this engagement, to determine modal split.

Appendix B – Supply and Demand Supplement Analysis

Table 21: Shared Parking Ratios - Weekday

Land Use	Base Demand Ratio <sup>1</sup>	Time of Day Adj <sup>2</sup>	Drive Ratio <sup>3</sup>	Captive Ratio <sup>4</sup>
Museum	1.03 /KSF	90%	93%	80%
Retail	3.6 /KSF	95%	90%	80%
Fine/Casual Restaurant	18 /KSF	65%	90%	70%
Fast Food	15 /KSF	90%	90%	60%
Office	3.8 /KSF	100%	85%	100%
Residential/Rental	1.5 /DU	70%	100%	100%
Residential/Condo	1.5 /DU	70%	100%	100%
Senior Housing	1 /DU	70%	50%	100%

Note: <sup>1</sup>ULI recommended base parking ratios

<sup>2</sup>Walker assumed peak demand occurred around 2:00 p.m.

<sup>3</sup>The US Census data indicated an 85% drive ratio for employees in Williamsburg, VA. The principal mode of transportation for customer/visitors is also expected to be a personal vehicle.

<sup>4</sup>Captive ratio adjustment accounts for long terms parkers from one land use visiting a second land use during the same visit without re-parking their vehicle. i.e. office employees visiting a restaurant for lunch.

Source: Walker Parking Consultants, 2016

Walker also applied an absorption factor to each new project identified by the City. This factor accounts for the time it takes a project to be fully leased and operational after opening. For example, the Blayton Building is projected to be completed in 2021; however, it may not be fully leased upon opening.

Both the base demand ratio and time of day adjustment factors change for the various land uses projected, sometimes significantly affecting the project ratio. For example, on a weekday, the base demand ratio for the office land use is 3.8 spaces per 1,000 square feet. However, during weekend conditions, the base demand ratio decreases to 0.38 spaces per 1,000 square feet. Additionally, during the 2:00 p.m. hour on a weekday, demand is 100% of a typical peak, but on the weekend at 2:00 p.m., demand is 60% of peak.

## Appendix B – Supply and Demand Supplement Analysis

Table 22: Shared Parking Ratios – Weekend

Land Use	Base Demand	Time of Day		Captive
	Ratio <sup>1</sup>	Adj <sup>2</sup>	Drive Ratio <sup>3</sup>	Ratio <sup>4</sup>
Museum	1.22 /KSF	90%	93%	80%
Retail	4 /KSF	100%	90%	80%
Fine/Casual Restaurant	20 /KSF	45%	90%	70%
Fast Food	14 /KSF	90%	90%	60%
Office	0.38 /KSF	60%	85%	100%
Residential/Rental	1.5 /DU	70%	100%	100%
Residential/Condo	1.5 /DU	70%	100%	100%
Senior Housing	1 /DU	70%	50%	100%

Note: <sup>1</sup>ULI recommended base parking ratios

<sup>2</sup>Walker assumed peak demand occurred around 2:00 p.m.

<sup>3</sup>The US Census data indicated an 85% drive ratio for employees in Williamsburg, VA. The principal mode of transportation for customer/visitors is also expected to be a personal vehicle.

<sup>4</sup>Captive ratio adjustment accounts for long terms parkers from one land use visiting a second land use during the same visit without re-parking their vehicle. i.e. office employees visiting a restaurant for lunch.

Source: Walker Parking Consultants, 2016

### 2021 WEEKDAY ADEQUACY

In addition to projecting the overall adequacy for each block, Walker also considered the adequacy of each type of parking supply to support demand.

## Appendix B – Supply and Demand Supplement Analysis

Table 45: Projected 2021 Parking Adequacy Weekday – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	57	28	55	26	29
2	0	0	0	0	0	0	81	45	36
3	3	2	1	0	0	0	47	37	10
4	0	0	0	0	0	0	169	0	169
5	99	45	54	0	0	0	231	142	89
6	38	14	24	79	69	10	25	16	9
7	13	14	(1)	164	135	29	81	105	(24)
8	20	2	18	0	0	0	88	83	5
9	73	84	(11)	0	0	0	233	176	57
10	16	15	1	0	0	0	34	13	21
11	14	11	3	0	0	0	24	58	(34)
12	33	43	(10)	0	0	0	20	19	1
13	10	9	1	320	234	86	35	38	(3)
14	28	35	(7)	0	0	0	0	0	0
15	26	26	0	43	50	(7)	5	3	2
16	12	13	(1)	56	65	(9)	17	16	1
17	0	0	0	62	73	(11)	0	0	0
18	0	0	0	122	142	(20)	0	0	0
19	0	0	0	264	239	26	0	0	0
20	39	27	12	0	0	0	55	21	34
21	0	0	0	0	0	0	0	0	0
22	44	28	16	0	0	0	19	30	(11)
23	7	2	5	0	0	0	21	15	6
24	14	18	(4)	0	0	0	667	462	205
25	0	0	0	0	0	0	310	206	105
<b>Total</b>	<b>489</b>	<b>388</b>	<b>101</b>	<b>1,195</b>	<b>1,064</b>	<b>132</b>	<b>2,217</b>	<b>1,511</b>	<b>707</b>

Source: Walker Parking Consultants, 2016

A parking surplus of approximately 700 spaces is expected for private parking within the Study Area. Private parking shortages are anticipated on Blocks 7, 11, 13, and 22.

When the public off-street parking demand is projected, a surplus of 132 spaces is projected, while on-street parking is expected to experience a 101-space surplus. Again, parking deficits are expected on some blocks.

### 2026 WEEKDAY ADEQUACY

In addition to projecting the overall adequacy for each block, Walker also considered the adequacy of each type of parking supply to support demand in the table below.

Appendix B – Supply and Demand Supplement Analysis

Table 46: Projected 2026 Parking Adequacy Weekday – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	60	25	55	26	29
2	0	0	0	0	0	0	81	45	36
3	3	2	1	0	0	0	47	37	10
4	0	0	0	0	0	0	169	0	169
5	99	47	52	0	0	0	231	185	46
6	38	14	24	79	73	6	25	16	9
7	13	14	(1)	164	141	23	81	124	(43)
8	20	2	18	0	0	0	88	83	5
9	73	88	(15)	0	0	0	233	176	57
10	16	15	1	0	0	0	34	13	21
11	14	11	3	0	0	0	24	58	(34)
12	33	45	(12)	0	0	0	20	19	1
13	10	10	0	320	273	47	35	60	(25)
14	28	36	(8)	0	0	0	0	0	0
15	26	28	(2)	0	0	0	5	3	2
16	12	13	(1)	56	68	(12)	17	16	1
17	0	0	0	62	76	(14)	0	0	0
18	0	0	0	122	149	(27)	0	0	0
19	0	0	0	264	285	(21)	0	0	0
20	39	29	10	0	0	0	55	21	34
21	0	0	0	0	0	0	0	0	0
22	44	30	14	0	0	0	19	30	(11)
23	7	2	5	0	0	0	38	27	11
24	14	19	(5)	0	0	0	667	462	205
25	0	0	0	0	0	0	310	215	95
Total	489	405	84	1,152	1,125	27	2,234	1,616	618

Source: Walker Parking Consultants, 2016

While parking surpluses are anticipated in all three parking categories, several blocks are expected to experience shortages in one or more parking categories.

It is important to note that parking adequacy is based on effective parking supply, not the total capacity of a parking facility. A parking facility is perceived as “full” before it reaches capacity. While there may be more parking available within the downtown area, these spaces will be difficult to find.

2021 WEEKEND ADEQUACY

In addition to projecting the overall adequacy for each block, Walker also considered the adequacy of each type of parking supply to support demand. The table below summarizes our findings.

## Appendix B – Supply and Demand Supplement Analysis

Table 47: Projected 2021 Parking Adequacy Weekend – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	12	73	55	12	43
2	0	0	0	0	0	0	81	48	33
3	3	1	2	0	0	0	47	19	28
4	0	0	0	0	0	0	169	0	169
5	99	37	62	0	0	0	231	108	123
6	38	19	19	79	60	19	25	8	17
7	13	16	(3)	164	81	83	81	34	47
8	20	7	13	0	0	0	88	19	69
9	69	45	24	0	0	0	233	101	132
10	16	9	7	0	0	0	34	23	11
11	14	12	2	0	0	0	24	49	(25)
12	32	28	4	0	0	0	20	14	6
13	10	13	(3)	320	256	64	35	21	14
14	28	35	(7)	0	0	0	0	0	0
15	26	33	(7)	43	50	(7)	5	3	2
16	12	15	(3)	56	65	(9)	17	10	7
17	0	0	0	62	73	(11)	0	0	0
18	0	0	0	122	138	(16)	0	0	0
19	0	0	0	264	271	(7)	0	0	0
20	39	20	19	0	0	0	55	9	46
21	0	0	0	0	0	0	0	0	0
22	44	11	33	0	0	0	19	7	12
23	7	2	5	0	0	0	21	13	8
24	14	12	2	0	0	0	667	114	553
25	0	0	0	0	0	0	310	189	121
Total	484	315	169	1,195	1,006	189	2,217	801	1,416

Source: Walker Parking Consultants, 2016

On-street parking is expected to experience a 169-space surplus by 2021, with only Blocks 7, 13, 14, 15, and 16 experiencing deficits. When the public off-street parking demand is studied, a surplus of 189 spaces is projected.

A parking surplus of more than 800 spaces is expected for private parking within the Study Area by 2021.

### 2026 WEEKEND ADEQUACY

In addition to projecting the overall adequacy for each block, Walker also considered the adequacy of each type of parking supply to support demand.

## Appendix B – Supply and Demand Supplement Analysis

As shown in the table below, a parking surplus of more than 1,300 spaces is expected for private parking within the Study Area over the next ten years. While the public on- and off-street parking categories are also expected to experience surpluses, several blocks may experience shortages.

Table 48: Projected 2026 Parking Adequacy Weekend – by Type

Block	On-Street			Public Off-Street			Private Off-Street		
	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy	Effective Supply	Demand	Adequacy
1	0	0	0	85	12	73	55	12	43
2	0	0	0	0	0	0	81	48	33
3	3	1	2	0	0	0	47	19	28
4	0	0	0	0	0	0	169	0	169
5	99	39	60	0	0	0	231	153	78
6	38	20	18	79	63	16	25	8	17
7	13	17	(4)	164	85	79	81	36	45
8	20	8	12	0	0	0	88	19	69
9	69	47	22	0	0	0	233	101	132
10	16	10	6	0	0	0	34	23	11
11	14	12	2	0	0	0	24	49	(25)
12	32	30	2	0	0	0	20	14	6
13	10	13	(3)	320	297	23	35	30	5
14	28	36	(8)	0	0	0	0	0	0
15	26	34	(8)	0	0	0	5	3	2
16	12	15	(3)	56	68	(12)	17	10	7
17	0	0	0	62	76	(14)	0	0	0
18	0	0	0	122	145	(23)	0	0	0
19	0	0	0	264	321	(57)	0	0	0
20	39	21	18	0	0	0	55	9	46
21	0	0	0	0	0	0	0	0	0
22	44	11	33	0	0	0	19	7	12
23	7	2	5	0	0	0	38	25	13
24	14	12	2	0	0	0	667	114	553
25	0	0	0	0	0	0	310	201	110
<b>Total</b>	<b>484</b>	<b>328</b>	<b>156</b>	<b>1,152</b>	<b>1,067</b>	<b>85</b>	<b>2,234</b>	<b>881</b>	<b>1,354</b>

Source: Walker Parking Consultants, 2016

APPENDIX C  
PARKING OCCUPANCY DATA – MARCH BY FACILITY



**WALKER**  
PARKING CONSULTANTS

Weekday Public Off-Street Parking		Rates	Full						ADA Only							
Facility ID	Restriction		Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM
24	8am-5pm 2-hour parking	-	88	63	66	60	63	6	4	2	3	2	4	2	3	2
31	City Hall Visitors	-	94	73	54	18	17	4	0	0	0	0	4	0	0	0
42	8am-5pm 2-hour parking	-	140	99	100	36	32	4	0	0	0	0	4	0	0	0
44	8am-5pm 2-hour parking	-	42	17	28	16	18	1	1	0	1	0	1	0	1	0
51	No overnight parking	\$1/hour \$12/max free/30 min	356	151	223	125	117	9	3	3	0	0	9	3	0	0
64	8am-6pm 1-hour parking	-	48	23	48	48	46	6	0	0	6	4	6	0	6	4
66	8am-6pm 2-hour parking	-	62	32	62	58	59	4	2	4	1	3	4	2	4	1
69	8am-6pm 1-hour parking	-	69	35	69	68	68	5	2	5	4	4	5	2	5	4
70	8am-6pm 2-hour parking	-	135	80	135	123	121	6	4	6	4	6	6	4	6	4
71	No overnight parking	\$1/hour \$12/max free/30 min	293	77	180	46	48	9	1	5	2	1	9	1	5	2

Weekday Private Off-Street Parking		Full							ADA Only				
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
3	Student Resident	-	residential	68	66	68	53	60	-	0	0	0	0
4	Restaurant	-	commercial	33	6	5	33	32	1	0	0	0	1
6	Church	-	institutional	51	5	5	3	8	7	0	0	0	0
7	Resident	-	residential	20	8	13	12	14	6	5	5	6	4
9	Restaurant	-	commercial	16	4	7	16	16	-	0	0	0	0
10	Faculty/Staff	-	institutional	7	-6	4	3	6	-	0	0	0	0
11	Student Resident	-	residential	24	17	15	11	12	-	0	0	0	0
12	Wawa Grocery	-	commercial	18	13	11	11	6	1	0	0	0	0
13	Tribe Square	-	institutional	29	29	29	26	26	2	2	2	1	1
14	Church	-	institutional	70	8	16	12	36	8	3	1	0	0
15-1	Faculty/Staff	-	institutional	20	19	20	7	5	2	2	2	0	0
15-2	Resident	-	residential	36	34	36	36	35	-	0	0	0	0
16-1	Church	-	institutional	12	12	11	5	7	-	0	0	0	0
16-2	Faculty/Staff	-	institutional	13	12	13	5	2	-	0	0	0	0
17	Restaurant	-	commercial	36	6	13	16	26	2	0	0	0	2
22	Resident	-	residential	25	18	19	16	13	1	0	1	0	0
23	Police	-	office	19	14	12	10	11	-	0	0	0	0
25	Library 5-minute parking	-	institutional	7	1	4	1	2	-	0	0	0	0
32	City Public Work	-	office	Unable to access						0	0	0	0
33	Transportation Center Long-term	-	commercial	20	4	4	7	3	-	0	0	0	0
34	City Employee	-	office	38	22	22	4	0	2	0	0	0	0
35	Transportation Center 1-hour Parking	-	commercial	41	28	27	31	24	3	1	1	3	0
36	Transportation Center dropoff& taxi Parking	-	commercial	19	5	0	6	4	-	0	0	0	0
37	Post Office Visitors	-	office	29	13	22	4	4	2	0	2	0	0
38	Post Office Employee	-	office	Unable to access									
40	Fire Department	-	office	25	14	18	11	12	2	0	0	0	0
43	Office	-	office	46	13	19	8	4	2	0	0	0	0
45	Resident	-	residential	12	10	7	10	11	1	0	0	1	0
46	Resident	-	residential	10	8	10	7	8	-	0	0	0	0
47	Office	-	office	17	12	12	3	2	1	0	0	0	0
48	Office	-	office	13	7	6	2	2	1	0	0	0	0
52	Resident	-	residential	15	6	7	6	6	-	0	0	0	0
53	Bank	-	commercial	9	4	3	0	0	-	0	0	0	0
54	School 6am-8pm parking	-	institutional	93	70	83	14	3	4	0	0	0	0
55	Governor's Inn	-	commercial	178	0	0	0	0	2	0	0	0	0
56	Post Office Visitors	-	office	20	16	15	8	1	-	0	0	0	0
60	Faculty/Staff	-	institutional	21	17	19	9	9	2	0	0	0	1
65	Office	-	office	5	3	3	3	3	-	0	0	0	0
67	Church	-	institutional	18	11	16	4	2	-	0	0	0	0
74	Office	-	office	26	12	12	1	1	1	0	0	0	0
75	Verizon Office	-	office	32	10	9	7	4	-	0	0	0	0
76	Museum Employee	-	institutional	100	42	58	47	33	2	0	1	0	0
77	Museum Visitors	-	institutional	58	22	42	15	13	4	0	2	0	0
81-1	Resident	-	residential	10	2	4	1	1	1	0	0	0	0

Weekday Private Off-Street Parking		Rates	User Type	Inventory	Full				ADA Only				
Facility ID	Restriction				10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
81-2	NCSC Office	-	office	10	4	4	0	0	0	0	0	0	0
83	NCSC Office	-	office	105	66	61	9	6	4	2	2	0	0
84	Resident	-	residential	7	6	6	6	5	-	0	0	0	0
85	Resident	-	residential	15	12	9	6	10	-	0	0	0	0
87	Faculty/Staff	-	institutional	105	88	100	73	68	4	0	2	1	0
88	Faculty/Staff/Student	-	institutional	384	252	245	71	91	2	0	0	0	0
89	Student Resident	-	residential	108	59	56	63	56	2	0	0	1	0
90	Colonial Employee/Museum Visitors	-	institutional	326	118	136		120	6	0	0	0	0

Weekday Public On-Street Parking			Full						ADA Only					
Facility ID	Face	Restriction	Rates	Type	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
1	E	Red Decal		Permit	9	3	2	2	1	-	-	-	-	-
1	W	Red Decal		Permit	13	5	2	5	2	-	-	-	-	-
2	S	No parking M-F		Time Limit	6	0	0	0	0	-	-	-	-	-
5	Circle	Red Decal		Permit	27	12	11	7	12	-	-	-	-	-
8	Circle	Red Decal		Permit	38	10	12	13	14	-	-	-	-	-
18	N	9am-5pm 2-hour parking		Time Limit	9	8	7	8	8	-	-	-	-	-
18	S	9am-5pm 2-hour parking		Time Limit	9	7	8	8	5	-	-	-	-	-
19	E	9am-5pm 2-hour parking		Time Limit	12	11	11	4	5	-	-	-	-	-
19	W	9am-5pm 2-hour parking		Time Limit	12	12	11	4	11	-	-	-	-	-
20	N	8am-5pm 1-hour parking		Time Limit	5	0	2	4	5	-	-	-	-	-
20	S	8am-5pm 1-hour parking		Time Limit	7	0	3	7	6	-	-	-	-	-
21	E	8am-5pm 1-hour parking		Time Limit	14	6	14	14	14	-	-	-	-	-
26	W	No parking 2am-6am		Time Limit	8	6	6	6	6	1	0	0	0	0
27	W	Church Event Only		Private	5	0	0	0	0	-	-	-	-	-
28	W	No parking 2am-6am		Time Limit	10	10	10	6	6	-	-	-	-	-
29	W	8am-5pm 1-hour parking		Time Limit	13	12	6	4	8	-	-	-	-	-
30	N	8am-5pm 1-hour parking		Time Limit	16	4	1	2	8	-	-	-	-	-
39	N	Post Office Visitors		Private	4	1	2	0	0	-	-	-	-	-
41	S	8am-5pm 1-hour parking		Time Limit	16	3	6	3	6	-	-	-	-	-
49	W	No parking 11pm-6am		Time Limit	15	15	13	5	6	-	-	-	-	-
50	N	9am-5pm 1-hour parking		Time Limit	12	3	9	9	10	-	-	-	-	-
50	S	9am-5pm 1-hour parking		Time Limit	11	4	8	8	8	-	-	-	-	-
57	W	Red Decal		Permit	13	3	2	2	1	-	-	-	-	-
58	W	No parking M-F 8am-5pm		Time Limit	10	0	0	0	1	-	-	-	-	-
59	N	No parking 11pm-6am		Time Limit	13	12	13	6	7	-	-	-	-	-
61	E	9am-5pm (9am-9pm) 2-hour parking 32(8)		Time Limit	40	36	38	35	25	-	-	-	-	-
61	W-1	9am-5pm (9am-9pm) 2-hour parking		Time Limit	25	25	23	17	16	-	-	-	-	-
61	W-2	9am-5pm (9am-9pm) 2-hour parking		Time Limit	20	20	20	18	12	-	-	-	-	-
62	E	9am-5pm 30-minute parking		Time Limit	15	7	11	14	14	-	-	-	-	-
63	N	9am-5pm 1-hour parking		Time Limit	16	12	14	16	13	-	-	-	-	-
68	E	8am-6pm 2-hour parking		Time Limit	14	4	12	9	9	-	-	-	-	-
68	W	No parking 11pm-6am		Time Limit	20	19	20	11	16	-	-	-	-	-
72	E	No parking 11pm-6am		Time Limit	16	16	16	4	7	-	-	-	-	-
73	N	Blue Decal		Permit	18	10	9	6	11	-	-	-	-	-
78	E	Blue Decal No parking 11pm-6am		Permit	12	9	10	3	5	-	-	-	-	-
78	W	Blue Decal No parking 11pm-6am		Permit	12	0	1	0	1	-	-	-	-	-
79	E	No parking 11pm-6am		Time Limit	17	17	17	3	5	-	-	-	-	-
80	S	M-F 8am-5pm 1-hour parking		Time Limit	14	9	9	8	6	-	-	-	-	-
82	N	Blue Decal		Permit	16	4	3	2	3	-	-	-	-	-
82	S	Blue Decal		Permit	10	3	5	2	3	-	-	-	-	-
86	W	Blue Decal		Permit	8	1	2	2	1	-	-	-	-	-

Weekend Public Off-Street Parking		Rates	Full						ADA Only			
Facility ID	Restriction		Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM		
24	8am-5pm 2-hour parking	-	88	36	57	8	6	1	5	0		
31	City Hall Visitors	-	94	11	11	12	4	0	0	0		
42	8am-5pm 2-hour parking	-	140	39	53	22	4	0	0	0		
44	8am-5pm 2-hour parking	-	42	12	24	17	1	0	0	0		
51	No overnight parking	\$1/hour \$12/max free/30 min	356	122	244	113	9	3	8	2		
64	8am-6pm 1-hour parking	-	48	48	48	48	6	6	6	6		
66	8am-6pm 2-hour parking	-	62	58	62	57	4	4	4	2		
69	8am-6pm 1-hour parking	-	69	69	69	69	5	5	5	5		
70	8am-6pm 2-hour parking	-	135	135	131	126	6	6	2	0		
71	No overnight parking	\$1/hour \$12/max free/30 min	293	197	202	92	9	5	2	4		

Weekend Private Off-Street Parking		Full						ADA Only		
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	7:00 PM	10:00 AM	2:00 PM	7:00 PM
3	Student Resident	-	residential	68	32	29	25	0	0	0
4	Restaurant	-	commercial	33	3	17	33	1	0	1
6	Church	-	institutional	51	30	2	1	7	0	0
7	Resident	-	residential	20	9	12	12	6	4	6
9	Restaurant	-	commercial	16	12	16	15	0	0	0
10	Faculty/Staff	-	institutional	7	3	4	7	0	0	0
11	Student Resident	-	residential	24	10	9	11	0	0	0
12	Wawa Grocery	-	commercial	18	7	6	5	1	0	0
13	Tribe Square	-	institutional	29	13	24	22	2	0	2
14	Church	-	institutional	70	5	7	4	8	0	1
15-1	Faculty/Staff	-	institutional	20	5	6	1	2	0	1
15-2	Resident	-	residential	36	16	12	8	0	0	0
16-1	Church	-	institutional	12	5	0	0	0	0	0
16-2	Faculty/Staff	-	institutional	13	5	4	2	0	0	0
17	Restaurant	-	commercial	36	4	23	32	2	0	2
22	Resident	-	residential	25	12	15	14	1	1	0
23	Police	-	office	19	7	6	7	0	0	0
25	Library 5-minute parking	-	institutional	7	1	2	0	0	0	0
32	City Public Work	-	office	Unable to access						
33	Transportation Center Long-term	-	commercial	20	10	10	10	0	0	0
34	City Employee	-	office	38	1	2	3	2	0	0
35	Transportation Center 1-hour Parking	-	commercial	41	39	37	40	3	3	3
36	Transportation Center dropoff& taxi Parking	-	commercial	19	1	0	3	0	0	0
37	Post Office Visitors	-	office	29	16	4	0	2	2	0
38	Post Office Employee	-	office	Unable to access						
40	Fire Department	-	office	25	11	11	12	2	0	0
43	Office	-	office	46	13	16	18	2	0	0
45	Resident	-	residential	12	11	8	10	1	0	0
46	Resident	-	residential	10	10	6	7	0	0	0
47	Office	-	office	17	0	1	1	1	0	0
48	Office	-	office	13	2	5	2	1	0	0
52	Resident	-	residential	15	10	9	11	0	0	0
53	Bank	-	commercial	9	0	0	0	0	0	0
54	School 6am-8pm parking	-	institutional	93	5	19	4	4	0	1
55	Governor's Inn	-	commercial	178	0	0	0	2	0	0
56	Post Office Visitors	-	office	20	13	15	1	0	0	0

Weekend Private Off-Street Parking		Full						ADA Only			
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM
60	Faculty/Staff	-	institutional	21	18	14	14	2	0	0	0
65	Office	-	office	5	3	3	3	-	0	0	0
67	Church	-	institutional	18	7	10	4	-	0	0	0
74	Office	-	office	26	0	2	0	1	0	0	0
75	Verizon Office	-	office	32	7	7	7	-	0	0	0
76	Museum Employee	-	institutional	100	37	69	68	2	0	1	1
77	Museum Visitors	-	institutional	58	33	51	21	4	1	1	0
81-1	Resident	-	residential	10	1	2	2	1	0	0	0
81-2	NCSC Office	-	office	10	0	0	0	-	0	0	0
83	NCSC Office	-	office	105	0	0	0	4	0	0	0
84	Resident	-	residential	7	5	4	5	-	0	0	0
85	Resident	-	residential	15	8	9	9	-	0	0	0
87	Faculty/Staff	-	institutional	105	36	42	19	4	0	0	1
88	Faculty/Staff/Student	-	institutional	384	34	26	26	2	0	0	0
89	Student Resident	-	residential	108	49	46	44	2	2	0	1
90	Colonial Employee/Museum Visitors	-	institutional	326	90	106	108	6	0	0	0



Weekday Public On-Street Parking												
Facility ID	Face	Restriction	Rates	Type	Full				ADA Only			
					Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM
78	W	Blue Decal No parking 11pm-6am		Permit	12	0	0	0	0	-	-	-
79	E	No parking 11pm-6am	-	Time Limit	17	2	11	1	-	-	-	-
80	S	M-F 8am-5pm 1-hour parking	-	Time Limit	14	3	2	2	-	-	-	-
82	N	Blue Decal		Permit	16	1	2	2	-	-	-	-
82	S	Blue Decal		Permit	10	1	1	0	-	-	-	-
86	W	Blue Decal		Permit	8	0	2	0	-	-	-	-



APPENDIX D  
PARKING OCCUPANCY DATA – JULY



**WALKER**  
PARKING CONSULTANTS

Weekday Public Off-Street Parking		Rates	Full						ADA Only								
Facility ID	Restriction		Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
24	8am-5pm 2-hour parking	-	88	12	61	-	74	6	0	-	-	1	6	0	2	-	1
31	City Hall Visitors	-	94	68	63	-	14	4	1	-	-	0	4	1	2	-	0
42	8am-5pm 2-hour parking	-	140	49	66	-	22	4	0	-	-	0	4	0	0	-	0
44	8am-5pm 2-hour parking	-	42	21	33	-	13	1	0	-	-	0	1	0	0	-	0
51	No overnight parking	\$1/hour \$12/max free/30 min	356	99	146	-	42	9	2	-	-	1	9	2	3	-	1
64	8am-6pm 1-hour parking	-	48	43	45	-	48	6	3	-	-	6	6	3	4	-	6
66	8am-6pm 2-hour parking	-	62	57	59	-	62	4	4	-	-	4	4	4	3	-	4
69	8am-6pm 1-hour parking	-	69	38	69	-	69	5	2	-	-	5	5	2	5	-	5
70	8am-6pm 2-hour parking	-	135	107	126	-	132	6	6	-	-	6	6	6	6	-	6
71	No overnight parking	\$1/hour \$12/max free/30 min	293	66	102	-	40	9	3	-	-	3	9	3	3	-	2

Weekday Private Off-Street Parking		Full							ADA Only				
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
3	Student Resident	-	residential	68	14	13	13	11	-	-	-	-	-
4	Restaurant	-	commercial	33	4	13	13	19	1	0	0	0	0
6	Church	-	institutional	51	2	2	2	4	7	0	0	0	0
7	Resident	-	residential	20	11	10	10	14	6	6	4	4	6
9	Restaurant	-	commercial	16	1	7	7	16	-	-	-	-	-
10	Faculty/Staff	-	institutional	7	5	3	3	2	-	-	-	-	-
11	Student Resident	-	residential	24	6	7	7	5	-	-	-	-	-
12	Wawa Grocery	-	commercial	18	12	9	9	9	1	1	0	0	0
13	Tribe Square	-	institutional	29	6	7	7	11	2	0	0	0	0
14	Church	-	institutional	70	5	10	10	18	8	0	0	0	1
15-1	Faculty/Staff	-	institutional	20	2	5	5	5	2	1	2	2	0
15-2	Resident	-	residential	36	7	9	9	3	-	-	-	-	-
16-1	Church	-	institutional	12	6	4	4	3	-	-	-	-	-
16-2	Faculty/Staff	-	institutional	13	6	6	6	0	-	-	-	-	-
17	Restaurant	-	commercial	36	2	10	10	19	2	0	0	0	1
22	Resident	-	residential	25	10	18	18	18	1	1	0	0	1
23	Police	-	office	19	12	12	12	7	-	-	-	-	-
25	Library 5-minute parking	-	institutional	7	0	2	2	2	-	-	-	-	-
32	City Public Work	-	office	Unable to access	-	-	-	-	-	-	-	-	-
33	Transportation Center Long-term	-	commercial	20	5	5	5	4	-	-	-	-	-
34	City Employee	-	office	38	24	24	24	1	2	0	0	0	0
35	Transportation Center 1-hour Parking	-	commercial	41	33	21	21	19	3	3	2	2	2
36	Transportation Center dropoff& taxi Parking	-	commercial	19	9	0	0	0	0	-	-	-	-
37	Post Office Visitors	-	office	29	5	11	11	3	2	0	0	0	0
38	Post Office Employee	-	office	Unable to access	-	-	-	-	-	-	-	-	-
40	Fire Department	-	office	25	19	20	20	14	2	0	1	1	0
43	Office	-	office	46	11	15	15	10	2	0	0	0	0
45	Resident	-	residential	12	8	7	7	11	1	0	0	0	0
46	Resident	-	residential	10	8	9	9	9	-	-	-	-	-
47	Office	-	office	17	8	13	13	3	1	0	0	0	0
48	Office	-	office	13	8	8	8	3	1	0	0	0	0
52	Resident	-	residential	15	9	7	7	8	-	-	-	-	-
53	Bank	-	commercial	9	4	4	4	1	-	-	-	-	-
54	School 6am-8pm parking	-	institutional	93	7	6	6	38	4	0	0	0	1
55	Governor's Inn	-	commercial	178	0	0	0	0	2	0	0	0	0
56	Post Office Visitors	-	office	20	8	6	6	10	-	-	-	-	-
60	Faculty/Staff	-	institutional	21	17	17	17	9	2	0	0	0	0
65	Office	-	office	5	3	3	3	1	-	-	-	-	-
67	Church	-	institutional	18	13	17	17	14	-	-	-	-	-
74	Office	-	office	26	17	13	13	1	1	0	0	0	0
75	Verizon Office	-	office	32	7	7	7	6	-	-	-	-	-
76	Museum Employee	-	institutional	100	45	57	57	39	2	1	2	2	1
77	Museum Visitors	-	institutional	58	15	20	20	8	4	1	1	1	0
81-1	Resident	-	residential	10	2	3	3	2	1	0	0	0	0
81-2	NCSC Office	-	office	10	3	3	3	0	-	-	-	-	-

Weekday Private Off-Street Parking		Full						ADA Only					
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
83	NCSC Office	-	office	105	58	52	-	1	4	1	1	2	0
84	Resident	-	residential	7	5	3	-	6	-	-	-	-	-
85	Resident	-	residential	15	10	7	-	11	-	-	-	-	-
87	Faculty/Staff	-	institutional	105	78	72	-	15	4	1	2	-	0
88	Faculty/Staff/Student	-	institutional	384	37	32	-	19	2	1	0	-	0
89	Student Resident	-	residential	108	14	13	-	18	2	1	0	-	0
90	Colonial Employee/Museum Visitors	-	institutional	326	100	109	-	30	6	1	1	-	0

Weekday Public On-Street Parking		Full						ADA Only						
Facility ID	Face	Restriction	Rates	Type	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	6:00 PM	7:00 PM
1	E	Red Decal		Permit	9	0	0	0	0	0	-	-	-	-
1	W	Red Decal		Permit	13	4	1	1	2	-	-	-	-	-
2	S	No parking M-F	-	Time Limit	6	0	0	0	0	0	-	-	-	-
5	Circle	Red Decal		Permit	27	6	7	7	5	-	-	-	-	-
8	Circle	Red Decal		Permit	38	7	8	10	10	-	-	-	-	-
18	N	9am-5pm 2-hour parking	-	Time Limit	9	2	3	0	0	-	-	-	-	-
18	S	9am-5pm 2-hour parking	-	Time Limit	9	2	3	6	6	-	-	-	-	-
19	E	9am-5pm 2-hour parking	-	Time Limit	12	0	2	1	1	-	-	-	-	-
19	W	9am-5pm 2-hour parking	-	Time Limit	12	1	0	0	2	-	-	-	-	-
20	N	8am-5pm 1-hour parking	-	Time Limit	5	0	1	1	5	-	-	-	-	-
20	S	8am-5pm 1-hour parking	-	Time Limit	7	0	1	1	5	-	-	-	-	-
21	E	8am-5pm 1-hour parking	-	Time Limit	14	3	11	14	14	-	-	-	-	-
26	W	No parking 2am-6am	-	Time Limit	8	4	5	4	4	1	0	0	0	0
27	W	Church Event Only	-	Private	5	0	0	0	0	-	-	-	-	-
28	W	No parking 2am-6am	-	Time Limit	10	8	10	10	1	-	-	-	-	-
29	W	8am-5pm 1-hour parking	-	Time Limit	13	2	9	9	6	-	-	-	-	-
30	N	8am-5pm 1-hour parking	-	Time Limit	16	3	1	1	2	-	-	-	-	-
39	N	Post Office Visitors	-	Private	4	0	0	0	0	-	-	-	-	-
41	S	8am-5pm 1-hour parking	-	Time Limit	16	1	5	5	5	-	-	-	-	-
49	W	No parking 11pm-6am	-	Time Limit	15	14	13	9	9	-	-	-	-	-
50	N	9am-5pm 1-hour parking	-	Time Limit	12	6	10	11	11	-	-	-	-	-
50	S	9am-5pm 1-hour parking	-	Time Limit	11	2	7	7	7	-	-	-	-	-
57	W	Red Decal		Permit	13	1	2	1	1	-	-	-	-	-
58	W	No parking M-F 8am-5pm	-	Time Limit	10	0	0	0	0	-	-	-	-	-
59	N	No parking 11pm-6am	-	Time Limit	13	13	13	12	12	-	-	-	-	-
61	E	9am-5pm (9am-9pm) 2-hour parking 32(8)	-	Time Limit	31	20	23	21	21	-	-	-	-	-
61	W-1	9am-5pm (9am-9pm) 2-hour parking	-	Time Limit	29	22	17	8	8	-	-	-	-	-
61	W-2	9am-5pm (9am-9pm) 2-hour parking	-	Time Limit	15	5	8	5	5	-	-	-	-	-
62	E	9am-5pm 30-minute parking	-	Time Limit	15	4	14	15	15	-	-	-	-	-
63	N	9am-5pm 1-hour parking	-	Time Limit	16	8	13	16	16	-	-	-	-	-
68	E	8am-6pm 2-hour parking	-	Time Limit	14	6	11	14	14	-	-	-	-	-
68	W	No parking 11pm-6am	-	Time Limit	20	19	18	20	20	-	-	-	-	-
72	E	No parking 11pm-6am	-	Time Limit	16	14	14	3	3	-	-	-	-	-
73	N	Blue Decal		Permit	18	2	4	4	4	-	-	-	-	-
78	E	Blue Decal No parking 11pm-6am		Permit	12	3	5	0	0	-	-	-	-	-
78	W	Blue Decal No parking 11pm-6am		Permit	12	0	0	0	0	-	-	-	-	-
79	E	No parking 11pm-6am	-	Time Limit	17	8	7	0	0	-	-	-	-	-
80	S	M-F 8am-5pm 1-hour parking	-	Time Limit	14	0	2	2	2	-	-	-	-	-
82	N	Blue Decal		Permit	16	1	3	1	1	-	-	-	-	-
82	S	Blue Decal		Permit	10	3	3	2	2	-	-	-	-	-
86	W	Blue Decal		Permit	8	0	1	1	1	-	-	-	-	-

Weekday Public Off-Street Parking		Rates	Full						ADA Only			
Facility ID	Restriction		Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM		
24	8am-5pm 2-hour parking	-	88	21	79	31	6	1	2	0		
31	City Hall Visitors	-	94	15	14	15	4	0	0	1		
42	8am-5pm 2-hour parking	-	140	24	39	17	4	0	0	0		
44	8am-5pm 2-hour parking	-	42	12	28	20	1	0	1	0		
51	No overnight parking	\$1/hour \$12/max free/30 min	356	94	166	71	9	1	3	0		
64	8am-6pm 1-hour parking	-	48	48	48	48	6	6	6	6		
66	8am-6pm 2-hour parking	-	62	61	61	52	4	3	4	4		
69	8am-6pm 1-hour parking	-	69	69	69	69	5	5	5	5		
70	8am-6pm 2-hour parking	-	135	131	135	135	6	6	6	6		
71	No overnight parking	\$1/hour \$12/max free/30 min*	293	141	129	66	9	4	4	3		

Weekday Private Off-Street Parking		Full						ADA Only			
Facility ID	Restriction	Rates	User Type	Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM
3	Student Resident	-	residential	68	6	5	6	6	-	-	-
4	Restaurant	-	commercial	33	3	9	26	1	0	0	0
6	Church	-	institutional	51	2	1	1	7	0	0	0
7	Resident	-	residential	20	10	11	12	6	6	4	6
9	Restaurant	-	commercial	16	2	14	16	-	-	-	-
10	Faculty/Staff	-	institutional	7	2	2	1	-	-	-	-
11	Student Resident	-	residential	24	6	5	4	-	-	-	-
12	Wawa Grocery	-	commercial	18	6	6	7	1	0	0	0
13	Tribe Square	-	institutional	29	5	11	14	2	0	0	0
14	Church	-	institutional	70	1	1	2	8	0	0	0
15-1	Faculty/Staff	-	institutional	20	3	2	3	2	1	1	0
15-2	Resident	-	residential	36	7	6	2	-	-	-	-
16-1	Church	-	institutional	12	0	2	1	-	-	-	-
16-2	Faculty/Staff	-	institutional	13	1	0	1	-	-	-	-
17	Restaurant	-	commercial	36	2	17	20	2	0	0	0
22	Resident	-	residential	25	12	17	19	1	0	0	0
23	Police	-	office	19	8	8	10	-	-	-	-
25	Library 5-minute parking	-	institutional	7	0	4	0	-	-	-	-
32	City Public Work	-	office	Unable to access							
33	Transportation Center Long-term	-	commercial	20	11	11	12	-	-	-	-
34	City Employee	-	office	38	0	0	0	2	0	0	0
35	Transportation Center 1-hour Parking	-	commercial	41	30	27	27	3	0	0	0
36	Transportation Center dropoff& taxi Parking	-	commercial	19	0	0	0	-	-	-	-
37	Post Office Visitors	-	office	29	4	4	0	2	1	0	0
38	Post Office Employee	-	office	Unable to access							
40	Fire Department	-	office	25	12	13	12	2	1	0	0
43	Office	-	office	46	3	14	14	2	0	0	0
45	Resident	-	residential	12	10	10	11	1	1	0	0
46	Resident	-	residential	10	8	7	8	-	-	-	-
47	Office	-	office	17	0	1	0	1	0	0	0
48	Office	-	office	13	1	2	2	1	0	0	0
52	Resident	-	residential	15	12	8	13	-	-	-	-
53	Bank	-	commercial	9	0	0	0	-	-	-	-
54	School 6am-8pm parking	-	institutional	93	8	8	3	4	0	0	0
55	Governor's Inn	-	commercial	178	0	0	0	2	0	0	0
56	Post Office Visitors	-	office	20	8	10	7	-	-	-	-
60	Faculty/Staff	-	institutional	21	12	11	3	2	0	1	0
65	Office	-	office	5	1	3	2	-	-	-	-
67	Church	-	institutional	18	12	14	5	-	-	-	-

Weekday Private Off-Street Parking											
Facility ID	Restriction	Rates	User Type	Inventory	Full			ADA Only			
					10:00 AM	2:00 PM	7:00 PM	10:00 AM	2:00 PM	7:00 PM	
74	Office	-	office	26	1	1	0	0	1	0	0
75	Verizon Office	-	office	32	4	5	5	-	-	-	-
76	Museum Employee	-	institutional	100	35	68	62	0	2	0	0
77	Museum Visitors	-	institutional	58	12	31	8	0	4	0	1
81-1	Resident	-	residential	10	1	2	1	0	1	0	0
81-2	NCSC Office	-	office	10	0	0	0	0	-	-	-
83	NCSC Office	-	office	105	4	3	1	0	4	0	0
84	Resident	-	residential	7	3	2	2	-	-	-	-
85	Resident	-	residential	15	7	8	9	-	-	-	-
87	Faculty/Staff	-	institutional	105	18	28	18	0	4	0	0
88	Faculty/Staff/Student	-	institutional	384	9	3	2	0	2	0	0
89	Student Resident	-	residential	108	17	13	16	0	2	0	0
90	Colonial Employee/Museum Visitors	-	institutional	326	69	88	44	0	6	0	1

Weekday Public On-Street Parking												
Facility ID	Face	Restriction	Rates	Type	Full				ADA Only			
					Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM
1	E	Red Decal		Permit	9	0	0	0	0	-	-	-
1	W	Red Decal		Permit	13	3	5	3	-	-	-	-
2	S	No parking M-F		Time Limit	6	0	0	0	-	-	-	-
5	Circle	Red Decal		Permit	27	3	2	5	-	-	-	-
8	Circle	Red Decal		Permit	38	7	5	10	-	-	-	-
18	N	9am-5pm 2-hour parking		Time Limit	9	1	3	0	-	-	-	-
18	S	9am-5pm 2-hour parking		Time Limit	9	2	5	4	-	-	-	-
19	E	9am-5pm 2-hour parking		Time Limit	12	2	3	4	-	-	-	-
19	W	9am-5pm 2-hour parking		Time Limit	12	0	0	3	-	-	-	-
20	N	8am-5pm 1-hour parking		Time Limit	5	0	2	4	-	-	-	-
20	S	8am-5pm 1-hour parking		Time Limit	7	0	1	7	-	-	-	-
21	E	8am-5pm 1-hour parking		Time Limit	14	12	8	13	-	-	-	-
26	W	No parking 2am-6am		Time Limit	8	4	2	7	1	0	0	0
27	W	Church Event Only		Private	5	0	0	0	-	-	-	-
28	W	No parking 2am-6am		Time Limit	10	2	8	1	-	-	-	-
29	W	8am-5pm 1-hour parking		Time Limit	13	4	10	1	-	-	-	-
30	N	8am-5pm 1-hour parking		Time Limit	16	2	4	1	-	-	-	-
39	N	Post Office Visitors		Private	4	2	1	0	-	-	-	-
41	S	8am-5pm 1-hour parking		Time Limit	16	2	7	4	-	-	-	-
49	W	No parking 11pm-6am		Time Limit	15	14	13	2	-	-	-	-
50	N	9am-5pm 1-hour parking		Time Limit	12	11	12	11	-	-	-	-
50	S	9am-5pm 1-hour parking		Time Limit	11	6	10	8	-	-	-	-
57	W	Red Decal		Permit	13	2	3	1	-	-	-	-
58	W	No parking M-F 8am-5pm		Time Limit	10	1	5	3	-	-	-	-
59	N	No parking 11pm-6am		Time Limit	13	13	13	8	-	-	-	-
61	E	9am-5pm (9am-9pm) 2-hour parking 32(8)		Time Limit	31	15	17	13	-	-	-	-
61	W	9am-5pm (9am-9pm) 2-hour parking		Time Limit	29	11	10	6	-	-	-	-
61	W	9am-5pm (9am-9pm) 2-hour parking		Time Limit	15	11	15	5	-	-	-	-
62	E	9am-5pm 30-minute parking		Time Limit	15	15	15	15	-	-	-	-
63	N	9am-5pm 1-hour parking		Time Limit	16	15	15	16	-	-	-	-
68	E	8am-6pm 2-hour parking		Time Limit	14	11	14	10	-	-	-	-
68	W	No parking 11pm-6am		Time Limit	20	19	20	17	-	-	-	-
72	E	No parking 11pm-6am		Time Limit	16	10	13	7	-	-	-	-
73	N	Blue Decal		Permit	18	3	4	5	-	-	-	-
78	E	Blue Decal No parking 11pm-6am		Permit	12	1	0	1	-	-	-	-
78	W	Blue Decal No parking 11pm-6am		Permit	12	0	0	0	-	-	-	-
79	E	No parking 11pm-6am		Time Limit	17	0	2	4	-	-	-	-
80	S	M-F 8am-5pm 1-hour parking		Time Limit	14	0	0	0	-	-	-	-
82	N	Blue Decal		Permit	16	2	2	1	-	-	-	-

Weekday Public On-Street Parking												
Facility ID	Face	Restriction	Rates	Type	Full			ADA Only				
					Inventory	10:00 AM	2:00 PM	7:00 PM	Inventory	10:00 AM	2:00 PM	7:00 PM
82	S	Blue Decal		Permit	10	3	3	2	-	-	-	-
86	W	Blue Decal		Permit	8	0	0	0	-	-	-	-



**Legend**

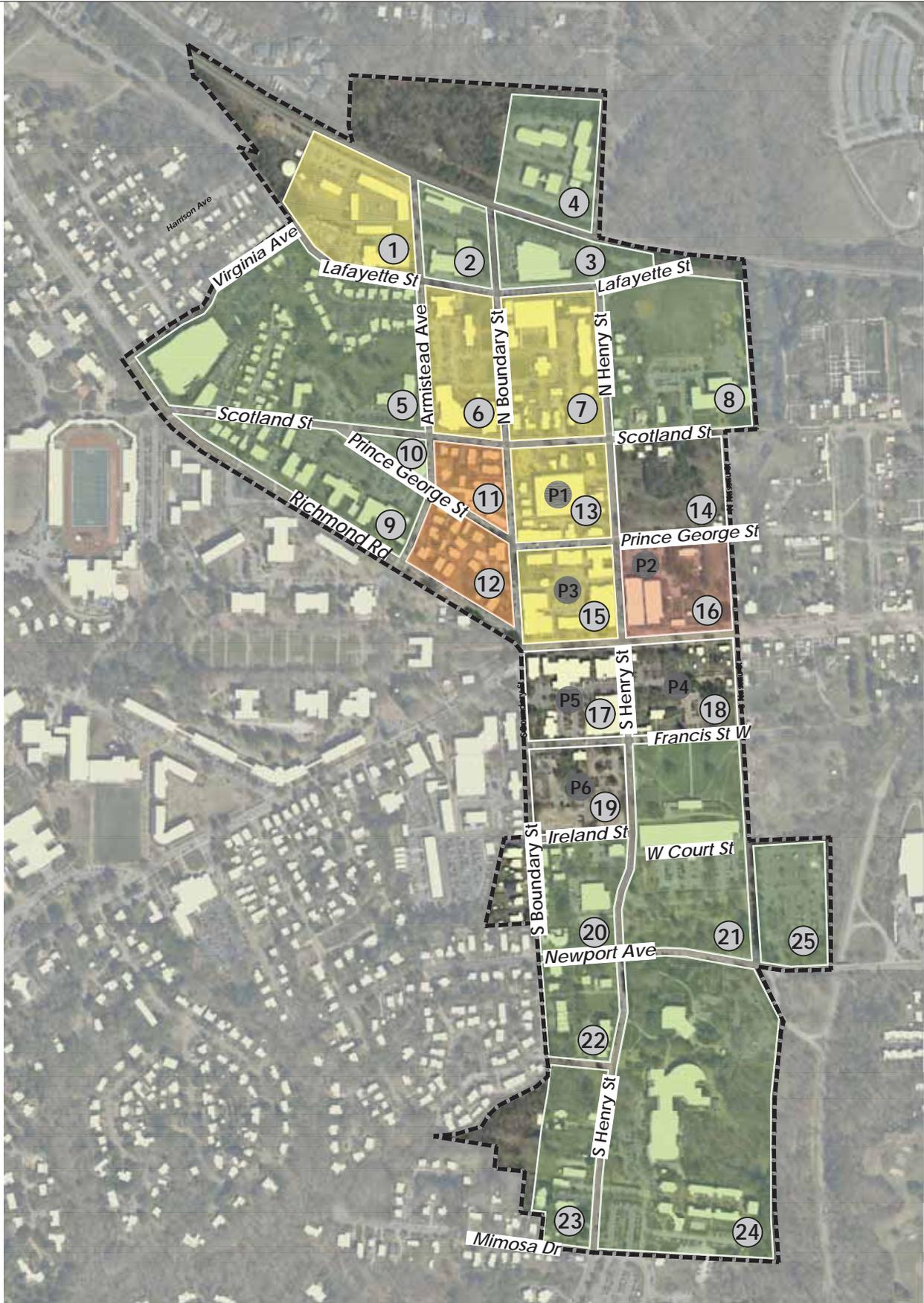
- Planning Area
- Parcels
- Road
- Buildings



Williamsburg Parking Study Base Map - July 2016

- ① Block Numbers
- Study Area





Williamsburg Parking Study Existing Weekday Private Occupancy - July 2016

① Block Numbers  
 ■ Study Area

Occupancy Percentage

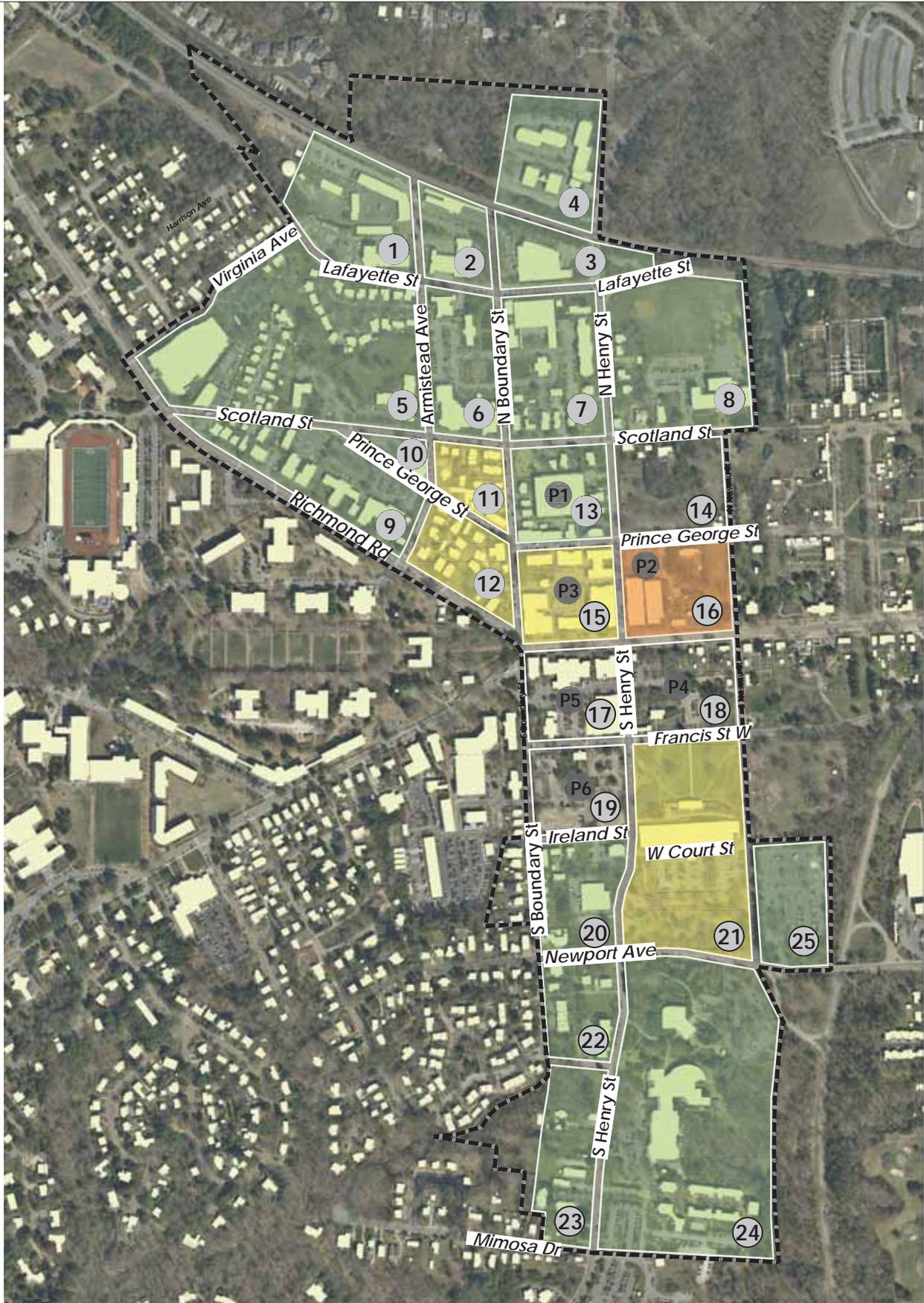
Off-Street	00% - 49%	50% - 69%	70% - 84%	85% - 100%
On-Street	00% - 49%	50% - 69%	70% - 84%	85% - 100%





Williamsburg Parking Study Existing Weekday Public & On-Street Occupancy - July 2016





Williamsburg Parking Study Existing Weekend Private Occupancy - July 2016





Williamsburg Parking Study Existing Weekend Public & On-Street Occupancy - July 2016

① Block Numbers  
 ■ Study Area

Occupancy Percentage

Off-Street	00% - 49%	50% - 69%	70% - 84%	85% - 100%
On-Street	00% - 49%	50% - 69%	70% - 84%	85% - 100%



APPENDIX E  
SHARED PARKING AGREEMENTS



**WALKER**  
PARKING CONSULTANTS

# DEL RAY *Parking Study*



## Appendix – Example Shared Parking Agreements

## Model - Shared Use Agreement for Parking Facilities

This Shared Use Agreement for Parking Facilities, entered into this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, between \_\_\_\_\_, hereinafter called lessor and \_\_\_\_\_, hereinafter called lessee. In consideration of the covenants herein, lessor agrees to share with lessee certain parking facilities, as is situated in the City of \_\_\_\_\_, County of \_\_\_\_\_ and State of \_\_\_\_\_, hereinafter called the facilities, described as: [Include legal description of location and spaces to be shared here, and as shown on attachment 1.]

The facilities shall be shared commencing with the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, and ending at 11:59 PM on the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, for [insert negotiated compensation figures, as appropriate]. [The lessee agrees to pay at [insert payment address] to lessor by the \_\_\_\_ day of each month [or other payment arrangements].] Lessor hereby represents that it holds legal title to the facilities

### The parties agree:

#### 1. USE OF FACILITIES

This section should describe the nature of the shared use (exclusive, joint sections, time(s) and day(s) of week of usage.

**-SAMPLE CLAUSE-***[Lessee shall have exclusive use of the facilities. The use shall only be between the hours of 5:30 PM Friday through 5:30 AM Monday and between the hours of 5:30 PM and 5:30 AM Monday through Thursday.]*

#### 2. MAINTENANCE

This section should describe responsibility for aspects of maintenance of the facilities. This could include cleaning, striping, seal coating, asphalt repair and more.

**-SAMPLE CLAUSE-***[Lessor shall provide, as reasonably necessary asphalt repair work. Lessee and Lessor agree to share striping, seal coating and lot sweeping at a 50%/50% split based upon mutually accepted maintenance contracts with outside vendors. Lessor shall maintain lot and landscaping at or above the current condition, at no additional cost to the lessee.]*

#### 3. UTILITIES and TAXES

This section should describe responsibility for utilities and taxes. This could include electrical, water, sewage, and more.

**-SAMPLE CLAUSE-***[Lessor shall pay all taxes and utilities associated with the facilities, including maintenance of existing facility lighting as directed by standard safety practices.]*

#### 4. SIGNAGE

This section should describe signage allowances and restrictions.

**-SAMPLE CLAUSE-***[Lessee may provide signage, meeting with the written approval of lessor, designating usage allowances.]*

## 5. ENFORCEMENT

This section should describe any facility usage enforcement methods.

**-SAMPLE CLAUSE-***[Lessee may provide a surveillance officer(s) for parking safety and usage only for the period of its exclusive use. Lessee and lessor reserve the right to tow, at owners expense, vehicles improperly parked or abandoned. All towing shall be with the approval of the lessor.]*

## 6. COOPERATION

This section should describe communication relationship.

**-SAMPLE CLAUSE-***[Lessor and lessee agree to cooperate to the best of their abilities to mutually use the facilities without disrupting the other party. The parties agree to meet on occasion to work out any problems that may arise to the shared use.]*

## 7. INSURANCE

This section should describe insurance requirements for the facilities.

**-SAMPLE CLAUSE-***[At their own expense, lessor and lessee agree to maintain liability insurance for the facilities as is standard for their own business usage.]*

## 8. INDEMNIFICATION

This section should describe indemnification as applicable and negotiated. This is a very technical section and legal counsel should be consulted for appropriate language to each and every agreement.

**-NO SAMPLE CLAUSE PROVIDED-**

## 9. TERMINATION

This section should describe how to or if this agreement can be terminated and post termination responsibilities.

**-SAMPLE CLAUSE-***[If lessor transfers ownership, or if part of all of the facilities are condemned, or access to the facilities is changed or limited, lessee may, in its sole discretion terminate this agreement without further liability by giving Lessor not less than 60 days prior written notice. Upon termination of this agreement, Lessee agrees to remove all signage and repair damage due to excessive use or abuse. Lessor agrees to give lessee the right of first refusal on subsequent renewal of this agreement.]*

## 10. SUPPLEMENTAL COVENANTS

This section should contain any additional covenants, rights, responsibilities and/or agreements.

**-NO SAMPLE CLAUSE PROVIDED-**

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date Set forth at the outset hereof.

[Signature and notarization as appropriate to a legal document and as appropriate to recording process negotiated between parties.]

Please return to: Administrative Staff, Cary Planning Department, P.O. Box 2008, Cary, NC 27512-8005

**STATE OF NORTH CAROLINA  
COUNTY OF WAKE**

**SAMPLE  
Shared Parking Agreement**

This Shared Parking Agreement ('Agreement') entered into this \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_ by and between \_\_\_\_\_, whose address is \_\_\_\_\_, and Parcel Identification Number (PIN) is \_\_\_\_\_ ('Lessor') and \_\_\_\_\_, whose address is \_\_\_\_\_, and Parcel Identification Number (PIN) is \_\_\_\_\_ ('Lessee').

1. To relieve traffic congestion in the streets, to minimize any detrimental effects of off-street parking areas on adjacent properties, and to ensure the proper and uniform development of parking areas throughout the Town, the Town of Cary Land Development Ordinance ('LDO') establishes minimum number of off-street parking and loading spaces necessary for the various land uses in the Town of Cary; and
2. Lessee owns property at \_\_\_\_\_, Cary, N.C. ('Lessee Property') which property does not have the number of off-street parking spaces required under the LDO for the use to which Lessee Property is put; and
3. Lessor owns property at \_\_\_\_\_, Cary, N.C. ('Lessor Property') which is zoned with the same or more intensive zoning classification than Lessee Property and which is put to a use with different operating hours or different peak business periods than the use on Lessee Property; and
4. Lessee desires to use some of the off-street parking spaces on Lessor Property to satisfy Lessee Property off-street parking requirements, such shared parking being permitted by the Town of Cary LDO, Section 7.8.3; and
5. Town LDO requires that such shared use of parking spaces be done by written agreement.

NOW THEREFORE, in consideration of the premises and the information stated above, the parties agree as follows:

1. SHARED USE OF OFF STREET PARKING FACILITIES

Per Section 7.8.2, Town of Cary Land Development Ordinance (Off-Street Parking Space Requirements), Lessor is required \_\_\_\_\_ off-street parking spaces and has \_\_\_\_\_ existing off-street parking spaces, which results in an excess of \_\_\_\_\_ off-street parking spaces. Lessee is required \_\_\_\_\_ off-street parking spaces and has \_\_\_\_\_ existing off-street parking spaces.

Lessor hereby agrees to share with Lessee a maximum of \_\_\_\_\_ off-street parking spaces associated with Lessor's Property, which is described in more detail on Attachment 1, attached hereto and incorporated herein by reference ('Shared Spaces').

Lessee's interest in such parking spaces is non-exclusive. The Lessee's shared use of parking shall be subject to the following:

*[describe the time, days etc of the use and the nature of the shared use, limits on time vehicles may be parked, etc.]*

2. TERM

This Agreement shall be effective upon execution by both parties and shall be accepted by the Planning Director and shall not be amended and/or terminated without written consent of both parties and the Cary Planning Director, or his/her designee.

3. SIGNAGE

Directional signage in accordance with Chapter 9, Town of Cary Land Development Ordinance and the written approval of Lessor may be added to direct the public to the shared parking spaces.

4. COOPERATION

The parties agree to cooperate and work together in good faith to effectuate the purpose of this Agreement.

5. SUPPLEMENTAL COVENANTS

No private agreement shall be entered into that overrides this agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date Set forth at the outset hereof.

\_\_\_\_\_

(Lessor)

\_\_\_\_\_

(Date)

\_\_\_\_\_

(Lessee)

\_\_\_\_\_

(Date)

\_\_\_\_\_

(Planning Director)

\_\_\_\_\_

(Date)

\_\_\_\_\_ COUNTY, NORTH CAROLINA

**SWORN TO AND SUBSCRIBED** before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

(Official Seal)

\_\_\_\_\_

Signature of Notary Public

\_\_\_\_\_

My Commission Expires

\_\_\_\_\_ COUNTY, NORTH CAROLINA

**SWORN TO AND SUBSCRIBED** before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

(Official Seal)

\_\_\_\_\_

Signature of Notary Public

\_\_\_\_\_

My Commission Expires



**THE CITY OF SAN DIEGO**

RECORDING REQUESTED BY:  
**THE CITY OF SAN DIEGO**  
AND WHEN RECORDED MAIL TO:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(THIS SPACE IS FOR RECORDER'S USE ONLY)

**SHARED PARKING AGREEMENT**

This SHARED PARKING AGREEMENT ("Agreement") is entered into and effective \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_, \_\_\_\_\_ and the City of San Diego.

**RECITALS**

WHEREAS, pursuant to sections 142.0535 and 142.0545 of the Land Development Code, the City of San Diego specifies criteria which must be met in order to utilize off-site shared parking agreements to satisfy on-site parking requirements.

NOW, THEREFORE, in consideration of the recitals and mutual obligations of the parties as herein expressed, \_\_\_\_\_, \_\_\_\_\_ and the City of San Diego agree as follows:

1. \_\_\_\_\_ the owner of the property located at \_\_\_\_\_, agrees to provide \_\_\_\_\_ the owner of the property located at \_\_\_\_\_ with the right to the use of (\_\_\_\_) parking spaces \_\_\_\_\_ from \_\_\_\_\_ as shown on Exhibit A to this Agreement on property located at \_\_\_\_\_.

1.1 Applicant: \_\_\_\_\_ Co-Applicant: \_\_\_\_\_  
Assessor Parcel No: \_\_\_\_\_ Assessor Parcel No: \_\_\_\_\_  
Legal Description: \_\_\_\_\_ Legal Description: \_\_\_\_\_  
\_\_\_\_\_

2. The parking spaces referred to in this Agreement have been determined to conform to current City of San Diego standards for parking spaces, and the parties agree to maintain the parking spaces to meet those standards.

3. The Parties understand and agree that if for any reason the off-site parking spaces are no longer available for use by \_\_\_\_\_, \_\_\_\_\_ will be in violation of the City of San Diego Land Development Code requirements. If the off-site parking spaces are no longer available, Applicant will be required to reduce or cease operation and use of the property at Applicant's address to an intensity approved by the City in order to bring the property into conformance with the Land Development Code requirements for required change for required parking. Applicant agrees to waive any right to contest enforcement of the City's Land Development Code in this manner should this circumstance arise.

Although the Applicant may have recourse against the Party supplying off-site parking spaces for breach of this Agreement, in no circumstance shall the City be obligated by this agreement to remedy such breach. The Parties acknowledge that the sole recourse for the City if this Agreement is breached is against the Applicant in a manner as specified in this paragraph, and the City may invoke any remedy provided for in the Land Development Code to enforce such violation against the Applicant.

**Continued on Page 2**

- 4. The provisions and conditions of this Agreement shall run with the land for those properties referenced in paragraph 1 of this document and be enforceable against successors in interest and assigns of the signing parties.
- 5. Title to and the right to use the lots upon which the parking is to be provided will be subservient to the title to the property where the primary use it serves is situated.
- 6. The property or portion thereof on which the parking spaces are located will not be made subject to any other covenant or contract for use which interferes with the parking use, without prior written consent of the City.
- 7. This Agreement is in perpetuity and can only be terminated if replacement parking has been approved by the City's Director of the Development Services Department and written notice of termination of this agreement has been provided to the other party at least sixty (60) days prior to the termination date.
- 8. This Agreement shall be kept on file in the Development Services Department of the City of San Diego in Project Tracking System (PTS) Project Number: \_\_\_\_\_ and shall be recorded on the titles of those properties referenced in paragraph 1 of this document.

In Witness whereof, the undersigned have executed this Agreement.

\_\_\_\_\_  
Applicant

Date: \_\_\_\_\_

\_\_\_\_\_  
Deputy Director

Business and Process Management, Development Services

\_\_\_\_\_  
Party/Parties Supplying Spaces

Date: \_\_\_\_\_

Date: \_\_\_\_\_

### Shared Parking Agreement

*'160.117(E)(4): A Shared parking. Formal agreements which share parking between intermittent uses with non-conflicting parking demands (eg. a church and a bank) are encouraged as a means to reduce the amount of parking required. Such agreements are subject to the approval of the Planning Commission. Individual spaces identified on a site plan for shared users shall not be shared by more than one user at a time.@*

As owner(s) of the property located at \_\_\_\_\_, I (we) hereby agree to share \_\_\_\_\_ parking spaces (as shown on attached site plan) during the following times and days:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The following restrictions apply:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### Required parking

My (our) property requires \_\_\_\_\_ parking spaces based upon the City's parking lot ordinance. The use of my (our) property is \_\_\_\_\_ and it contains \_\_\_\_\_ square feet.

The applicant's property requires \_\_\_\_\_ parking spaces based upon the City's parking lot ordinance. The use of the applicant's property is \_\_\_\_\_ and it contains \_\_\_\_\_ square feet.

#### Site Plan

Attach a diagram of the entire parking lot. Enumerate spaces to be shared per this agreement. Also indicate any spaces within this lot which are shared with other entities.

Owner Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Owner Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Applicant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## PARKING LOT LEASE AGREEMENT

This PARKING LOT LEASE AGREEMENT (“Agreement”) is made and entered into as of this \_\_\_\_ day of \_\_\_\_\_, 200\_\_, by and between the [PLEASE PROVIDE EXACT NAME OF TRUST AND NAMES OF (CO)-TRUSTEES] (“Owner”), and the CITY OF ARCADIA, a California municipal corporation (“City”). Owner and City are hereinafter sometimes referred to collectively as “parties” and individually as a “party.”

### R E C I T A L S

A. Owner is the owner in fee of that certain real property located at [ADDRESS], Assessor’s Parcel Numbers (“APN”) [APN NUMBER] located in the downtown area of the City of Arcadia, County of Los Angeles, State of California (the “Property”).

B. City has requested to lease, and Owner is willing to lease, those portions of the Property more particularly depicted in Exhibit “A”, attached hereto and incorporated by this reference (the “Premises”), for the purpose of providing public parking according to the terms and conditions of this Agreement.

### C O V E N A N T S

Based upon the foregoing Recitals, which are incorporated into this Agreement by reference, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by both parties, Owner and City hereby agree as follows:

1. Grant of Lease. Owner hereby leases to City, and City hereby leases from Owner, the Premises and all landscaping, improvements, and structures that will be used for the Permitted Uses (defined below) according to the terms and conditions of this Agreement.

2. Term.

2.1 Initial Term. The lease of the Premises shall be for an initial term of five (5) years (the “Initial Term”), commencing upon the date that the City Council approves in accordance with law this fully executed Agreement (the “Commencement Date”) and expiring on the date that is the fifth (5<sup>th</sup>) anniversary of the Commencement Date.

2.2 Automatic Renewal. Upon the expiration of the Initial Term, the lease of the Premises shall be divided into one (1) year renewable terms, wherein each one (1) year term is hereinafter referred to as a “Renewable Term.” The first Renewable Term shall automatically commence upon the date that is the day immediately after the expiration of the Initial Term, and each subsequent Renewable Term shall automatically commence on the date that is the day immediately after the expiration of the previous Renewable Term. The lease of the Premises for any time after the expiration of the Initial Term (i.e., for any time during any and all Renewable Terms) is hereinafter referred to as the “Extended Term.” The Initial Term and Extended Term are collectively referred to in this Agreement as the “Term.”

2.3 Termination of Lease. Either party, in its sole and absolute discretion, may terminate the lease of the Premises either: (i) at the expiration of the Initial Term, or (ii) at any time during the Extended Term. The party seeking to terminate the lease shall deliver to the other party written notice thereof no later than sixty (60) days prior to the date of termination.

3. Rent and Security Deposit.

3.1 Rent. City shall pay to Owner as rent for the Premises [AMOUNT] per month (the "Rent"). The first payment of Rent shall be prorated pursuant to Section 3.4 below (if applicable) and shall be delivered to Owner no later than the date that is three (3) weeks after the Commencement Date. Each and every subsequent payment of Rent shall be delivered to Owner no later than the tenth (10<sup>th</sup>) day of the month for which the Rent is due.

3.2 Security Deposit. City shall deliver to Owner, no later than the date that is three (3) weeks after the Commencement Date, a security deposit in the amount of [AMOUNT] (the "Security Deposit"). The Security Deposit shall be held by Owner as security for the performance by City of the terms and conditions of this Agreement to be kept and performed by City. Prior to the use of the Security Deposit for any obligation to be performed by City pursuant to this Agreement, Owner shall deliver written notice to City of the reason for the use, and Owner shall provide City with an opportunity to cure any failure to perform said obligation prior to the use of the Security Deposit pursuant to the cure provisions set forth in Section 10 below. If City fully performs every obligation of this Agreement to be performed by it, the Security Deposit or any balance thereof shall be returned to City upon termination of this Agreement.

3.3 Delivery. All payments and charges due under this Agreement shall be paid by City in lawful money of the United States of America, which shall be legal tender at the time of payment, at:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Attn: \_\_\_\_\_

or to such other person or at such other place as Owner may from time to time designate in writing. Owner shall promptly deliver to City any change in address or person responsible for receiving payment of Rent. City shall not be in default of this Agreement if Owner fails to receive any payment of Rent when Owner fails to promptly deliver any change in address or person responsible for receiving payment.

3.4 Prorated Amounts. Any Rent due under this Agreement for any fractional part of a calendar month shall be prorated based on the ratio that the number of days in that month during the Term bears to the total number of days in that month.

4. Permitted Uses. For the duration of the Term, the Premises shall be used for parking by the general public and incidental uses relating thereto (the "Permitted Uses"), and for no other purpose, subject to the following conditions: (i) no overnight parking shall be permitted; (ii) parking for each vehicle used by a member of the general public shall be limited

to four (4) hours for any twenty-four (24) hour period, provided, however, that the time limits may be adjusted by mutual consent of the parties; (iii) any vehicle used by a current employee of [NAME] may park all day on the Premises, but only if such vehicle has a parking permit or sticker for such all day use clearly posted on the vehicle's bumper or windshield; and (iv) any other rules and regulations that City may impose on the general public for the use of the Premises. With respect to the condition concerning the ability of [NAME] employees to park on the Premises pursuant to clause (iii) above, the parties agree that this parking condition shall remain in effect only so long as [NAME] remains in business at its location as of the Commencement Date, and that in the event [NAME] no longer continues its business operations at such location, City shall have no obligation to comply with the parking condition set forth in clause (iii) above.

5. Improvement and Maintenance of Premises. City, at its own cost and expense, shall be responsible for the improvement and maintenance, as needed, of the Premises for use as a public parking lot, including but not limited to: (i) surfacing the parking lot; (ii) striping parking lot spaces; and (iii) providing signage, as needed. Signage shall indicate, where City determines is appropriate, that the parking lot is open for use by the general public.

6. Insurance.

6.1 General Liability. City shall obtain and keep in force and effect for the entire Term a commercial general liability insurance policy which names Owner as an additional insured, protecting against claims of bodily injury, personal injury and property damage based upon, involving, or arising out of the use or maintenance of the Premises by City. Such insurance shall be on an occurrence basis providing single limit coverage in an amount not less than One Million Dollars (\$1,000,000.00) per occurrence.

6.2 Certificates. City shall provide to Owner a certificate of insurance evidencing insurance coverage as provided herein no later than the date that is three (3) weeks after the Commencement Date, and thereafter as requested by Owner until the termination of this Agreement.

6.3 Self-Insurance. In lieu of the obligations set forth in Section 6.1 and 6.2 above, City may satisfy its obligation to provide general liability insurance for the Premises through a self-insurance program, but only if City remains self-insured for no less than One Million Dollars (\$1,000,000.00) in liability claims. In the event that City is self-insured, City shall deliver to Owner, no later than the date that is three (3) weeks after the Commencement Date, a statement, certificate, or other proof of financial responsibility, duly acknowledged by City's authorized representative, for One Million Dollar (\$1,000,000.00) in self-insurance.

7. Indemnity. City shall indemnify, defend, and hold harmless Owner and its officers, officials, employees, agents, or representatives (collectively the "Indemnitees") against any and all claims, demands, causes of action, damages, costs, expenses, losses and liabilities, at law or in equity arising out of or relating to (i) any activity or work done, permitted, or suffered on the Premises; (ii) use of the Premises by City and its officers, officials, employees, agents, representatives, invitees, patrons, or sub-lessees; or (iii) the acts or omissions of City or its officers, officials, employees, agents, or representatives acting in an official capacity. This

indemnity shall specifically include the right to indemnification for any claims, demands, causes of action, damages, costs, expenses, losses and liabilities, at law or in equity arising from the acts or omissions, whether negligent, reckless, willful or otherwise, of any member of the public (as that term is defined below) while that member of the public is or was on or about the Premises. Notwithstanding the forgoing sentences in this Section 7, City shall have no obligation to indemnify, defend, and hold harmless the Indemnitees for any claim, demand, cause of action, damages, costs, expenses, losses and liabilities arising from or relating to (i) a pre-existing environmental condition concerning hazardous substances on or under the Premises; or (ii) any negligent, reckless, or willful act or omission of Indemnitee(s) while on or about the Premises.

For purposes this Agreement, the term “hazardous substance” shall mean any substance or material defined or designated as hazardous or toxic waste, hazardous or toxic material, a hazardous or toxic substance, or other similar term by any federal, state, or local environmental statute, regulation, or ordinance. For purposes of this Section 7, the term “member of the public” shall mean any person other the officers, officials, employees, agents, or representatives, acting in an official capacity, of Owner or City.

8. Peaceable Possession. Owner hereby warrants and represents that it has the authority to lease the Premises and to execute this Agreement. Owner further covenants and agrees that City, upon performing and quietly observing the terms and conditions of this Agreement, shall have the right to hold, occupy, and enjoy the Premises for the Permitted Uses during the Term without any interruption or hindrance from Owner, its successors or assigns, or any person or entity lawfully claiming by or through it.

9. Assignment and Subletting. Upon Owner’s approval, which shall not be Unreasonably withheld, conditioned, or delayed, City shall have the right to assign or transfer this Agreement or any interest in this Agreement, and shall have the right to sublet the Premises or any part thereof, for the purpose of operating and maintaining the Premises for the Permitted Uses.

10. Default. The occurrence of any one or more of the following events shall constitute a material default (“default”): (i) the vacating or abandonment of the Premises by City; (ii) the failure by City to pay Rent when due pursuant to this Agreement, and such failure continues for a period of ten (10) days after delivery of written notice from Owner to City of said failure; and (iii) the failure by either party to observe or perform any of the obligations of this Agreement to be observed or performed by the responsible party (other than the obligation described in clause (ii) above), where such failure either: (A) continues for a period of thirty (30) days after delivery of written notice thereof from the party seeking performance, or (B) if performance cannot be completed with thirty (30) days, cure of such failure has not commenced within thirty (30) days after delivery of written notice thereof and diligently prosecuted until completion within sixty (60) days of the expiration of the thirty (30) day period (for a total of ninety (90) days). Upon an event of default and after the expiration of the applicable cure period, this Agreement and City’s right to lease the Premises shall terminate upon the date that is one day after the date of expiration of the applicable cure period unless the party in default cures the default within the applicable cure period.



supersedes all negotiations and previous agreements between the parties with respect to all or part of the subject matter hereof. All waivers of the provisions of this Agreement must be in writing and signed by the appropriate authorities of the party to be charged. A waiver of the breach of the covenants, conditions or obligations under this Agreement by either party shall not be construed as a waiver of any succeeding breach of the same or other covenants, conditions or obligations of this Agreement. Any amendment or modification to this Agreement must be in writing and executed by the appropriate authorities of City and Owner.

11.5 Interpretation; Governing Law. This Agreement shall be construed according to its fair meaning and as if prepared by all of the parties hereto. This Agreement shall be construed in accordance with the internal laws of the State of California without regard to any conflict of law principles in effect at the time of the execution of this Agreement.

11.6 Severability. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

11.7 Force Majeure. In the event that either party is delayed, hindered, or prevented from performing any act required hereunder by reason of strikes, lockouts, or other labor troubles, inability to procure or shortage of materials or supplies, failure of power, energy shortages, restrictive governmental laws or regulations, inclement weather, fire, explosion, earthquake or other casualty, riots, insurrection, war, act of God, or other causes that are without the fault and beyond the reasonable control of such Party, then the performance of the party obligated to perform under this Agreement shall be excused for and extended by the period of such delay.

11.8 Headings. Section and Subsection headings in this Agreement have been inserted solely for the convenience of the parties, and such captions, headings, and titles shall in no way define or limit the scope, intent, or application of any provision of this Agreement.

11.9 Time is of the Essence. Time is of the essence with respect to every provision of this Agreement.

11.10 Computation of Time. Unless otherwise specified in this Agreement, use of the word “days” shall mean calendar days, and any provision requiring the computation of time shall be based upon a standard calendar of three hundred sixty five and one-quarter (365 ¼) days.

11.11 Execution in Counterpart. This Agreement may be executed in several counterparts, and all so executed shall constitute one agreement binding on all parties hereto, notwithstanding that all parties are not signatories to the original or the same counterpart.

[signatures on next page]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first set forth above.

“CITY”

CITY OF ARCADIA,  
a California municipal corporation

By: \_\_\_\_\_  
Mayor

ATTEST:

\_\_\_\_\_  
City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney

“OWNER”

By: \_\_\_\_\_  
Its: \_\_\_\_\_

By: \_\_\_\_\_  
Its: \_\_\_\_\_

APPENDIX F  
METER ANALYSIS



**WALKER**  
PARKING CONSULTANTS

## Appendix E – Meter Analysis

### SMART PARKING METERS

The parking meter was invented by Carl Magee in Oklahoma City, Oklahoma, in 1935. Today it is ubiquitous. Anyone reading this report knows what it is and how it works; however, technological improvements may make the conventional parking meter obsolete. Newer ‘smart’ parking meters brought three key technologies to on-street parking: computers, solar power, and wireless communication. This allows customers to pay by credit card, cities to set complex rate structures, and the meters to communicate wirelessly via a central management system, providing remarkable audit control and maintenance capability.

### CREDIT CARD ACCEPTANCE

One of the major benefits of smart meters (single-space or multi-space) is the ability to accept credit cards. Benefits include the following:

- Enhanced Customer Convenience: Most motorists do not carry coins with them, or keep enough coins in their vehicles to pay for parking. Most motorists do carry credit cards, enabling them to pay for parking at credit card-enabled meters.
- Enhanced Compliance: The added customer convenience results in a higher level of meter compliance, as most motorists will pay the parking fees when they can, but may risk receiving a ticket once they’ve parked but don’t have enough coins to purchase the time they need.
- Increased Revenue: Motorists tend to purchase more time when paying with credit cards. They are no longer limited to the number of coins carried on their person or in their car. Furthermore, credit card-accepting meters typically offer a “max” button that enables the motorist to purchase the maximum time allowed at the push of one button, rather than predicting how long they will actually be parked. Most people would rather leave unused time on the meter than risk getting a ticket for an expired meter.
- Fewer Collections: Credit card payments reduce the number of coins being inserted in the meter, reducing the frequency of coin collections. Conventional meter vaults hold approximately \$30 in quarters, requiring the coins to be collected at least once per week and more frequently in busy areas.
- Fewer Coins to Process: Credit cards reduce the number of coins that need to be processed; including transporting the coins, counting and rolling the coins and depositing them into the bank. Credit card transactions typically account for 35% - 70% of all transactions, reducing coin volume by more than that percentage, as credit card transactions typically replace the higher priced coin transactions. The higher the hourly parking rate, the higher the percentage of credit card use.
- Fewer Staff Injuries: Coin processing is a common cause of staff injuries. Coins are heavy in mass volumes. Most cities experience coin-related injuries to staff, leading to reduced productivity, time off from work and worker’s compensation claims.
- PCI Certification: The Payment Card Industry (PCI) sets rigorous security standards for credit card processing. Best practices include contracting with a PCI-certified vendor, providing the Borough with assurance that credit card processing protocols are being adhered to, such as credit card data being

## Appendix E – Meter Analysis

encrypted and not stored, etc. Most major manufacturers are PCI-certified. Walker always specifies PCI certification.

### COMPLEX RATE STRUCTURES AND DEMAND BASED PRICING

Conventional parking meters have limited rate setting capabilities. Rate structures were limited to one fixed rate for one fixed time frame. Computer software programs enable smart meters (single space or multi-space) to create a variety of rate structures. Hourly rates can change from hour to hour, or by time of day, or day of week. Flat rates can also be programmed for any duration of time. Rate structures can also be changed remotely (conventional meters require a trip to each meter).

New meter technologies enable cities to implement demand-based pricing at parking meters. This is a relatively new concept that has garnered a lot of attention since Donald Shoup; Professor of Urban Planning at UCLA published “The High Cost of Free Parking” in 2004. Shoup cites motorists contributing to traffic congestion and air pollution while circling blocks looking for a parking space. Shoup called this “Cruising”. Shoup says that demand based (aka market rate) pricing would eliminate cruising. Shoup contends that cruising occurs because on-street parking is priced below market value.

Furthermore, if on-street parking rates were more expensive in high demand areas and less expensive a block or two away, some people would opt to pay more, while others would opt to save money by parking farther away and walking a block or two. Shoup suggests raising and lowering the parking rates on each block based on the occupancy. When there are one or two parking spaces available on all blocks, you have reached the “sweet spot”. Parking rates are “not too high, not too low, but just right”.

To restate Shoup’s theory, demand-based pricing uses demand as the key factor in establishing parking rates. The higher the demand is, the higher the rates are. It is also a method of redistributing the parking occupancy levels of various streets and neighborhoods throughout a city. Typically, the goal is to reduce demand on high occupancy streets, and increase demand on low occupancy streets. Hourly parking rates would be increased on high occupancy streets and decreased on low occupancy streets, inducing motorists to park on the low occupancy streets. High occupancy streets are typically closest to motorist’s final destinations, e.g., streets with high volume offices, stores, restaurants, theatres, etc. Low occupancy streets are typically on the outskirts of these areas, a block or two (or three) away.

Demand-based pricing is beneficial when demand exceeds supply, causing motorists to spend more time driving, or ‘cruising’ to find an open parking space. Motorists drive up and down multiple blocks until they find a space, and may circle the same block more than once, hoping to find someone pulling out of a space. This causes frustration, creates traffic congestion and releases air polluting gas emissions. Reducing cruising for parking addresses the commitment to environmental sustainability.

Multi-space and single-space smart meters enable a city to implement demand-based pricing. Not only can the meters handle complex rate structures and rate changes, they also help to provide baseline data needed to determine which blocks are candidates for rate increases, and which blocks are candidates for reduced rates. The system software provides reports showing transaction details such as when motorists paid, where they paid and

## Appendix E – Meter Analysis

how much time they purchased. Once the rates are implemented, the reports will also help determine the effectiveness of the rates.

Note that meter reports cannot identify when cars actually come and go or duration of stay, they can only report on payment data. Payment data is typically consistent with motorists' parking habits, but does not account for unpaid or overtime parking, and will not track actual duration of stay. Other technologies, such as vehicle sensors and/or license plate recognition systems will track actual vehicle activity (rather than payment data), and are discussed later in this report.

### AUDIT CONTROL

Conventional meters have minimal audit control. No-one knows how much money is inside them until the meters are collected. If a meter was not collected, it could go undetected. No reports are generated.

When a conventional meter vault fills, the vault closes, but the coin slot to the meter remains open. Coins can still be inserted into the meter, but they land on top of (or on the side of) the vault. The collector needs to pick these individual coins up by hand. If any of these coins are left, dropped, misplaced, lost, forgotten about or taken, they may not be missed. This is also the case throughout the coin processing process. There is no record of how much money was collected until after all the coins are processed. This leaves opportunity for shrinkage.

With the implementation of smart meters, computer software will track every payment that is made. The software tracks the date and time of all payments, how much time was purchased, and how it was paid for (coin denominations, credit card types, etc.). If any money goes missing, the auditors will know. The Borough will be able to see how much money is in the meter at any time by simply logging in.

### MAINTENANCE

Smart meters have self-diagnostic software that enables them to 'report' maintenance issues via wireless communication, enabling staff to respond immediately. Conventional meters may be out of service for days before a collector or enforcement personnel notices it and reports it. This results in a loss in revenue, a lack of turnover or an underserved parking citation.

### MULTI-SPACE VS. SINGLE SPACE METER TECHNOLOGY

Following are the major differences between smart single-space meters (SSMs) and smart multi-space meters (MSMs):

- The public generally finds SSMs easier to use. SSMs are familiar and require no special instructions. MSMs require instructions; in fact ambassadors are generally deployed to assist customers during initial rollout.

## Appendix E – Meter Analysis

- SSMs do not require signage. Motorists see the meter and know they are expected to pay. MSMs require signage (w/arrows) advising motorists to pay at the MSM. Pay-by-space meters also require space numbers.
- SSM manufacturers charge credit card transaction fees above and beyond typical merchant processing fees – typically \$0.13 per transaction. This is how they can afford to put all that technology into every meter. MSM manufacturers do not charge these fees.
- SSMs are more susceptible to vandalism and theft. MSMs are more secure and are recommended for high-risk vandalism areas.
- SSMs have smaller coin vaults and consequently need to be collected more frequently.
- MSMs, by their nature, do not allow for ‘piggybacking’ (parking at a meter that has time left on it from the previous parker). This can account for increased revenues of up to 10%. SSMs require sensors to zero out the meter, which also decreases battery life.
- SSMs cannot accommodate pay-by-space or mobile license plate enforcement, which are more efficient than physically inspecting every meter.

A detailed analysis of multi-space and single-space meters follows:

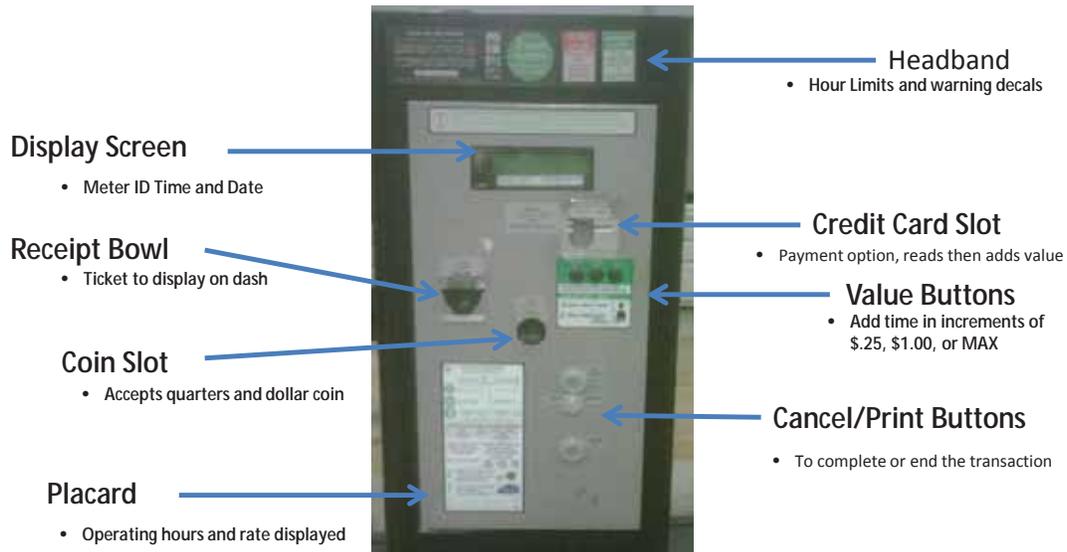
### MULTI-SPACE METERS

The development of the multi-space meter (MSM) enhanced metered parking as a viable option for controlling revenue from multiple spaces with fewer devices. For on-street applications, multi-space meters usually manage eight to fifteen spaces. For surface lot or multi-level parking facility applications, one multi-space meter can manage any number of spaces, depending on the configuration and application.

Each meter is equipped with graphical and LED displays to instruct motorists; one or a combination of coin, token, banknote, credit card or smart card acceptors; a cashbox and/or bill vault to securely store money; and user interface buttons and/or a keypad. The meters are computerized, which allows for complex rate structures and strong audit and enforcement trails.

## Appendix E – Meter Analysis

Figure 1: Multi-Space Meter Face Plate (Example)



Source: Cale

A typical installation is networked, allowing transaction and revenue data to be consolidated to a central server and viewed remotely. This allows the owner to remotely generate reports and other useful data necessary to manage the parking assets, including changing the rates and monitoring revenue.

Depending on the specific application and manufacturer, most multi-space meters can be configured for use in one of three modes of operation: pay and display, pay-by-space, or pay-by-license plate. Most multi-space meter manufacturers make one meter capable of being programmed for all three payment modes by changing the user interface (face plate) and the system software (rather than replacing the meter).

### PAY AND DISPLAY

The Borough is familiar with pay-and-display technology, as two pay-and-display multi-space meters were installed in the Plaza West parking lot approximately three years ago.

In pay and display mode, the motorist parks the vehicle, walks to the parking meter, pays for a certain amount of time and receives a receipt. The motorist is required to return to the vehicle to place the receipt on the dashboard. The receipt displays the duration, location, machine number and most importantly (in larger font), the expiration time of the paid parking session.

Enforcement is done by visually inspecting the receipts, which has been found to take more time and effort than the enforcement of other meter types. The receipt may be placed on the 'opposite side' of the dashboard, or 'upside down', or frequent parkers may leave older receipts on the dashboard, making enforcement more time consuming.

## Appendix E – Meter Analysis

Figure 2: Multi-Space Meter Receipt



Source: CPM, Borough of Chicago

Pay and Display requires that the motorist return to their car to display the receipt. This requires the meter to be relatively close to the car. On average, the meter should be within 100 feet of the parking space. A good rule of thumb is to install the meter with five parallel parking spaces on each side of it for a 1:10 meter to car ratio. For diagonal parking spaces the ratio could increase to 1:20; however, this doesn't account for fire hydrants, driveways, laneways, loading zones and other interruptions in the parking layout.

In Pay and Display mode, parking spaces do not need to be identified (striped), which has shown to allow more cars to park on each block, depending on the sizes of the cars parked at different times and the lengths of uninterrupted parking spaces. If desired by the Borough, the receipt can be valid for parking at a different location, so long as time has not expired. If not desired, the location would be displayed on the receipt for enforcement purposes. Although rare, people have been known to hand-off receipts with time remaining on them to other motorists.

### PAY-BY-SPACE

In pay-by-space mode, the motorist is not required to return to the vehicle with a receipt. Each parking space is numbered. The motorist approaches the parking meter and enters the parking space number in which the vehicle is parked prior to paying for parking. No receipt is needed for enforcement, as the parking space number has been recorded, but there can be a receipt for proof of transaction. Enforcement is done by viewing a web-based report of paid and/or unpaid spaces on a hand-held enforcement device or from any web-enabled computer or smart phone. The paid transaction must be communicated to enforcement in real time to avoid issuing a citation to a motorist who 'just paid' for parking.

Most pay-by-space applications offer the added convenience of allowing motorists to add parking time to the meter from another meter or through their cell phone for added convenience. Pay-by-space meters are typically used in off-street applications where spaces can be easily numbered using signs or surface paint; however, some cities use old parking meter poles as sign poles for space numbers.

## Appendix E – Meter Analysis

### PAY BY LICENSE PLATE

In pay-by-license plate mode, the motorist is not required to remember the parking space or return to the vehicle with a receipt. Instead, the motorist enters the vehicle's license plate number and selects the amount of parking time. No receipt is required for enforcement, but there can be a receipt for proof of transaction. This system can allow a motorist to move the vehicle to another space without having to pay for parking again - provided there was time still remaining on the original purchase, and they were not in violation of the posted time restrictions. As in pay and display mode, parking spaces do not need to be identified (striped), which has shown to allow more cars to park on each block, depending on the sizes of the cars parked at different times and the lengths of uninterrupted parking spaces.

Enforcement can be done with a vehicle mounted license plate recognition (LPR) system that scans the license plates of all parked cars, or with a hand held unit, either scanning or manually entering the license plate. The license plate is compared to a list of all paid vehicles, which is updated in real time. The paid transaction must be communicated to enforcement in real time to avoid issuing a citation to a motorist who 'just paid' for parking.

### MOBILE LICENSE PLATE RECOGNITION

Mobile license plate recognition (LPR) technology has made the enforcement of pay-by-plate, pay-by-cell, and license plate permit parking remarkably efficient and cost effective.

Mobile LPR utilizes vehicle mounted cameras that read and record license plate numbers as an enforcement vehicle is driven through the Borough. The cameras use a series of algorithms to convert the photographic image of license plates into text data that can be compared with lists or databases of paid or permitted license plates, to determine if the vehicle has the right to park in that particular location at that particular time.

The LPR software can integrate multi-space meter software, pay-by-cell software, permit software, and other databases such as law enforcement agencies to not only identify paid and unpaid parkers, but also stolen or otherwise significant license plates, such as Amber Alerts. If the LPR camera reads a plate that is not recorded as registered or paid, or has been otherwise identified as searchable, an audible alarm sounds to alert the driver, who can then take the appropriate action.



## Appendix E – Meter Analysis

Mobile LPR can be used to enforce time restricted parking, as the software time-stamps every image. The software can be programmed to identify license plates that are captured beyond the time limits of that particular zone.

Another benefit of LPR enforcement is the ability to use license plates as employee permits, residential, business or monthly permits. This not only eliminates the need for paper, hang tag or decal permits, since the motorist already has the license plate; it also makes enforcement extremely efficient. Registration is typically done on-line, and can be done 24/7. Permit holders can enter their own data, saving office staff time. Furthermore, the license plate is a regulated credential, providing a higher level of integrity and less opportunity for misuse or fraud.

License plate permitting significantly reduces the possibility of counterfeit permits or real permits being given, loaned or sold to unauthorized users. The permit software allows individuals to register more than one vehicle (for owners with multiple cars), while enforcement can restrict usage to one or more vehicle at a time. Permit parking can also be restricted to particular days, timeframes and even locations. The LPR system includes GPS monitoring to enable it to identify and segregate parking zones.

At a driving speed of just 15 MPH mobile LPR is far more efficient than foot-patrol, as the average foot patrol speed is less than three MPH; however, traffic conditions and parking the vehicle (to cite a car) will impact overall efficiency.

Another benefit of mobile LPR enforcement is the potential for ‘post-processing’ parking citations. Rather than placing citations on vehicle windshields, system software integrates with state motor vehicle registries to ascertain mailing addresses associated with vehicle license plates, and citations are sent via U.S. mail. The ability to mail citations rather than place them on vehicles is remarkably efficient, as the parking enforcement officer (PEO) doesn’t need to stop or get out of the enforcement vehicle. This is also safer for staff and for the public, as it reduces the possibility of a negative exchange or altercation resulting from the issuance of the citation.

Post processing is a relatively new concept, and may or may not be allowed. Some municipalities require that a human verify the violation, and/or physically place the citation on the vehicle. The proliferation of red light camera enforcement and the use of LPR enforcement on toll roads may lead to the proliferation of post-processing.

Mobile LPR is not perfect. Accuracy varies greatly (from 85%-95%) due to a number of factors and variables; however, the more than seven times efficiency in coverage will enable the Borough to increase its capture rate even at a lower accuracy rate.

A mobile LPR system will cost approximately \$50,000 per vehicle (excluding the vehicle).

### METER PAYMENT OPTIONS

As parking rates increase, payment with coins becomes impractical and/or inconvenient. Most meter manufacturers offer the following payment options:

## Appendix E – Meter Analysis

Coins and tokens: All the meters described accept standard coins for payment. As an option, a token program may be added to the meters. Tokens can be offered as a validation incentive from merchants to encourage repeat business. Some municipalities offer downtown merchants the opportunity to purchase parking tokens at a discount. The merchants could provide them to their customers free of charge as an incentive to return to their store. As an added public relations benefit, the tokens can be embossed with the Borough's logo.

Bank Notes: Adding banknote payments allows motorists to pay with paper currency in addition to coins. Most multi-space manufacturers offer this as an added option. Additional equipment (bank note acceptor, bank note vault, etc.) is required, as well as additional instructions for motorists. Multi-space meters do not provide change. A parking motorist inserting a \$5.00 bill for a \$3.00 parking charge will not receive any change.

In a damp environment some bills tend to jam. The best manufacturers tout a 98% acceptance rate overall, meaning 2% of the time bills may jam (even in dry weather). Bills are easily removed by maintenance staff, but it requires a trip to the machine.

The bank note acceptor is one of the most expensive meter parts to replace.

Credit Cards: Paying for parking with a credit card has increased in popularity as more cities have increased parking rates and installed credit card-enabled meters. Credit card acceptance is an essential component to meter installations where the rates exceed \$1.00 per hour. Most people don't carry enough quarters to feed the meters for the length of time they desire. The advantages of credit card acceptance were addressed on page 1 and 2 of this report.

Smart Cards: Smart cards allow for the payment of parking through a pre-paid stored value memory card with an embedded microchip, similar to a credit card. The card is pre-loaded with a dollar value, and when inserted into the parking meter, the parking fee is deducted from the card. Most cards can be replenished either at the meter, at a re-loading station or via the internet. In many cities, the smart cards can be used for multiple purchases, most commonly for parking and transit.

According to the Smart Card Alliance, implementation of a smart card program can be challenging, as the acceptance of credit cards significantly diminish the need for a smart card. Many cities record percent usage rates in single-digits.

Advantages of smart cards include:

- Improved customer service (another way to pay for parking).
- Increased revenues due to more people paying, purchasing larger blocks of time, and losing the pre-paid card prior to using the full value.
- Increased operational efficiency.
- Avoidance of credit card fees.
- Stronger internal controls and security.

## Appendix E – Meter Analysis

- Expanded strategic marketing opportunities such as discounted rates and loyalty programs.

Disadvantages of smart cards include:

- The Borough needs to administer the smart card program.
- Smart cards are proprietary single-application cards that do not have the more universal adoption and appeal of a credit card. Reloading value to the card can be inconvenient.
- Adoption rates are generally low.

Cell Phone Payments: Technological improvements in the cell phone industry have extended to the parking industry; however, pay-by-cell (PbC) actually bypasses the meter completely. Here's how it works:

1. The cell-by-phone vendor sets up an account with the Borough, identifying all parking spaces and/or zones.
2. Motorists register their cellphones and provide credit card payment information for the pay-by-cell vendor via their cell phone.
3. Upon parking, the motorist calls the pay-by-cell vendor's automated payment line.
4. The motorist enters the appropriate location codes for the Borough, zone, meter number, space number, etc., or enters their license plate. The motorist enters the desired parking time.
5. The pay-by-cell vendor charges a convenience fee, typically .35 cents per transaction.
6. Enforcement is done by viewing a web-based report of paid transactions provided by the pay-by-cell vendor.
7. The pay-by-cell vendor deposits the parking fees into the Borough's established bank account, keeping the convenience fees.

Benefits and features of Pay-by-Cell to customers:

- No need to worry about coin availability.
- After registering your phone, license plate and credit card information once, the information is stored for fast and efficient use in the future; including in other municipalities that use the same vendor.
- Receive a text message when parking time is about to expire.
- Extend parking remotely (within the maximum time limit).
- Pay for time parked only (in selected locations) by stopping a parking session manually via the cell phone.
- Simple and user friendly.
- View/maintain parking transactions and receipts online.

## Appendix E – Meter Analysis

### Benefits and features of pay-by-cell to the Borough:

1. Pay-by-Cell parking can be implemented quickly, for minimal cost and with minimal infrastructure.
2. Lower operating costs due to reduced cash handling.
3. Real time statistics.
4. Greater convenience, which leads to greater customer/voter satisfaction.
5. Event parking, entertainment venue and sports facility parking can be handled by the system.
6. Supports green initiatives and flexible rate models.
7. Promotes image of modern innovative Borough or administration.

Pay-by-cell adds another layer of enforcement when used in conjunction with parking meters, as the enforcement officer needs to view a web based report of paid vehicles in addition to checking the meter reports. Most vendors integrate their software systems to enable the Borough to view combined payment data on one report.

Pay-by-cell typically does not enjoy a high percentage of usage; however, it is easy and inexpensive to implement, and provides a high level of customer service to those who wish to use it.

### CONCEPTUAL COSTS OF MULTI-SPACE METERS

Multi-space meter costs vary greatly depending on quantities, the features and even the competitive environment. Our opinion of cost ranges from \$8,000 - \$9,000 for pay and display, \$8,500 to \$9,500 for pay-by-space, and \$9,000 to \$10,000 for pay-by-plate, including installation on an existing sidewalk. Adding a banknote acceptor to a multi-space meter could add \$1,000 or more per unit.

In addition to equipment costs, monthly management and connectivity fees of \$50.00 to \$75.00 per unit are required to maintain real-time wireless connectivity and to host the data. Other costs extended warranties, service contracts, battery replacement and paper receipts (not covered by warranties). These fees exclude merchant credit card processing fees.

### ADVANTAGES OF MULTI-SPACE METERS

- Increased revenue (reported as between 15% to 30%) without increasing parking rates; due to improved compliance, higher operability, alternative forms of payment, no piggy-backing, and parkers purchasing larger blocks of time when paying by credit card.
- Flexibility and user convenience. The machines can accept multiple forms of payment including credit cards, smart cards, coins and banknotes.
- Variable rate structures are available for demand based pricing, to encourage turnover of spaces and to discourage long-term parkers. Flat rates can also be set for event periods.

## Appendix E – Meter Analysis

- Strong audit trail. Every transaction is tracked and reported. Multi-space systems provide a full range of revenue and statistical reports.
- Operational efficiency. Meters communicate to a central server and can notify maintenance when coin vaults are full or if units require service.
- In Pay & Display and Pay by Plate mode, stall marking is not required. More cars may be able to fit on the street.
- Fewer machines in the field require less maintenance and fewer spare parts.
- Fewer machines in the field and larger coin capacities require fewer collections.

Figure 4: Multi-Space Meter



Source: Parkeon

### DISADVANTAGES OF MULTI-SPACE METERS

- Higher initial investment compared to single-space meters.
- Pay and Display units require the motorist to return to their vehicle to place the receipt on the vehicle's dashboard. This issue is compounded for motorcycles, as the receipt is not secured; however, 'sticky-back' and duplicate receipts are available.
- Pay-by-space or pay-by-plate systems require the motorist to enter a space or plate number at the meter. Input errors or faulty memory can result in user frustration or fines.
- Requires additional customer education and supplemental signage. A marketing campaign is needed to promote, educate, and encourage acceptance of the new system.

## Appendix E – Meter Analysis

- On-going monthly costs for on-line access, receipt paper, and processing credit card payments.
- Operating procedures for reserving individual spaces is less convenient (there are no meters at every space for bagging).

## Appendix E – Meter Analysis

### SINGLE SPACE SMART METERS

Approximately ten years ago a single-space retrofit meter became an attractive and affordable option for upgrading conventional meters. The computer, solar panel and wireless capability have been incorporated into the single-space meter, providing most of the benefits of the multi-space meter, without requiring the customer to walk to the multi-space meter.

A new meter mechanism fits into the conventional meter housing (simply remove the original dome and mechanism and replace with the new mechanism). The meter features wireless cellular communication that links each meter to a centralized management system and provides real-time credit card authorization, revenue tracking, and flexible remote rate change capabilities. The meters are solar powered and contain a rechargeable battery pack.

This retrofit meter is less expensive than a multi-space meter and can be installed in minutes. If there are no existing meters, a new meter housing and pole can be procured and installed; however, the overall cost obviously increases.

Figure 5: IPS Single-Space Meter



Source: utsandiego.com

Source: commlawblog.com

### CONCEPTUAL COST OF SINGLE SPACE SMART METER

Costs for upgrading a single-space meter head with an IPS meter varies based on the quantity of units. The basic cost is approximately \$500-\$600 per unit, installed, assuming the existing parking meter, including the pole and housing, can be re-used. Add \$375 for a new meter with pole. On-going operating costs include a monthly fee of \$6.00 per meter for network connectivity and a \$0.13 per credit card transaction fee (not including the merchant fees charged by credit card providers). Consumable costs are limited to battery replacement, as the meter does not issue paper receipts.

### ADVANTAGES OF SINGLE-SPACE SMART METERS

- Built on the most familiar form of metered fee collection. The majority of motorists are familiar with the operations of single-space meters; little to no customer education is needed.

## Appendix E – Meter Analysis

- Additional signage requirement is limited.
- Meters can be configured to accept coins or tokens, smart cards, credit cards or debit cards.
- Lower implementation cost than multi-space meters.
- Each machine covers one space, thus an out-of-service meter only impacts one space.
- Meters communicate with a central server. Communication can be configured to notify the parking operator when a coin vault is full or when a unit is out-of-service. This decreases the operational burden while increasing control.
- Rates can be changed from the central server, including adjusting rates for events or specific time periods.
- Retain existing operating procedures for bagging and reserving spaces.

### DISADVANTAGES OF SINGLE-SPACE SMART METERS

- Unused time remains on the meter when the vehicle leaves the space and is available at no cost to the next parker (a.k.a. “piggybacking”).
- Limited maintenance cost savings due to the high number of units (one for each space).
- Besides meter head maintenance, the meter housing and poles require maintenance to straighten and secure.
- Some find the number of poles along the sidewalk less than aesthetically pleasing.
- Motorists cannot receive receipts.
- No bill acceptance option.
- On-going monthly costs for on-line access and processing of credit card payments.

APPENDIX G  
STRUCTURED PARKING ANALYSIS



**WALKER**  
PARKING CONSULTANTS

## Appendix E – Meter Analysis

### CAPITAL COSTS

Walker understands that future parking improvements may be developed as a stand-alone parking ramp or incorporated with the design of a future mixed-use building. A parking facility that is built into a project, as either the upper or lower floors of that development compared to a stand-alone parking facility, requires that the garage use short-span construction. Short-span construction uses an increased number of columns to support the weight of the structural elements above it.

In short-span construction, the column grid is roughly 30 feet on center. The efficiencies of short-span construction are less than long-span construction because of the column projections that interfere with the parking layout. A typical short-span construction garage has a design efficiency in the range of 400-450 square feet per space, depending upon the geometrics of the footprint.

If the ramp is a stand-alone structure, utilizing long-span construction, the columns can be located at the front of the parking stalls so that there are no column projections. The efficiency of the garage can be increased to an approximate range of 315 to 350 square feet per space, depending upon the geometrics of the footprint. The increase in efficiency is due to the ability to increase the number of parking spaces inside the same footprint.

A general guideline for determining the conceptual estimate of probable cost for a parking structure is to apply a cost per space figure to the target capacity. The cost of parking structures also vary greatly based on location, architectural features, sustainability features, and whether the facility is above or below-grade. A reasonable range for a free-standing, above-grade, 200-300 space parking facility in Williamsburg is \$17,000 to \$22,000 per space in construction costs, assuming long-span construction, a site that allows for the design and construction of a facility that can average 300-325 square feet of buildable floor area per parking space, and modest architectural treatments. The cost per space can increase significantly when built below ground, or when including multi-use retail and office space. Additionally, soft costs, including project financing, developer fees, design fees, soils and materials testing, etc. could add another 20-35% of construction costs. Land costs are an additional consideration.

### OPERATING COSTS

Expenses can vary dramatically since these depend on a number of independent variables. Traditional expenses can include costs associated with labor, utilities, daily maintenance, supplies, management and accounting, and insurance. Key factors in determining operating costs include the proposed hours of operations, type of parking access and revenue controls, and the application of active or passive security measures.

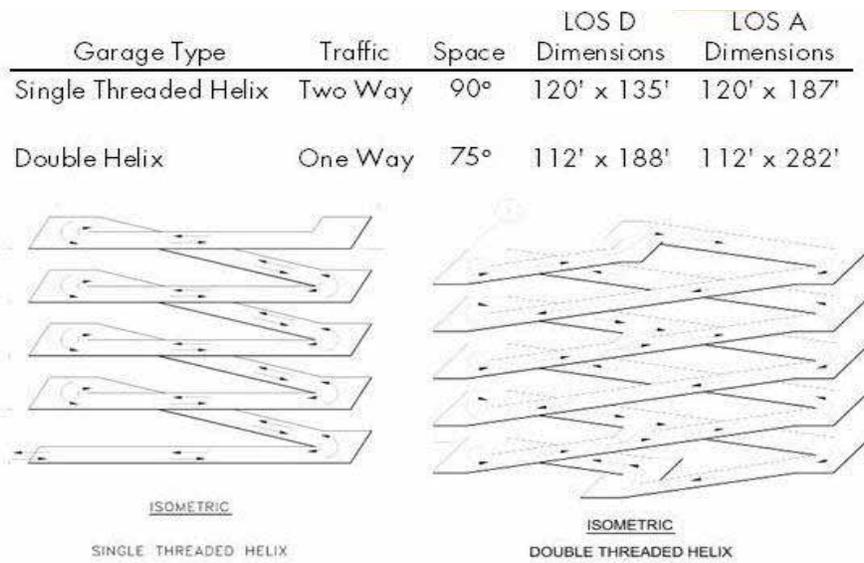
The operating expenses for a parking facility are typically presented on a cost per space basis. Walker's research indicates actual operating expenses that range from \$150 to over \$1,000 per space annually. The operating costs are lower at facilities that do not maintain revenue and access controls, and have limited hours of operation. Conversely, operating costs are higher at facilities that are staffed, that monitor access to the property with revenue and access controls, and operate 24 hours 7 days a week. All facilities require some degree of daily janitorial service that includes trash removal, sweeping, and minor repairs and maintenance, such as lighting replacement. These responsibilities are often delegated to a City's public works department, if a parking department does not exist.

## Appendix E – Meter Analysis

### MINIMUM PARKING STRUCTURE DIMENSIONS

There are several variables and options to consider when selecting the type of structure, including the desired traffic flow (one-way or two-way), the type of users, the Level of Service (LOS), and height restrictions. The following table provides the minimum dimensions for two types of structures, as well as a variation on the level of service. Characteristics of a single-threaded helix include two-bays, two-way traffic flow, and 90-degree parking, with the motorist ascending one floor for every 360-degree revolution. By contrast, a double-threaded helix features angled parking and one-way traffic flow, providing a continuous travel path up and then down through the structure. In a double-threaded helix, the motorist climbs two levels for every 360-degree revolution, thus requiring a longer site than a single-threaded helix.

Figure 29: Minimum Parking Structure Dimensions



Source: Walker Parking Consultants, 2016

Parking structures could be built on smaller footprints. However, implied in this discussion is the desirability to achieve a relatively efficient parking structure design, as measured by square feet of floor area per each parking space.

