

**DOWNTOWN WILLIAMSBURG
PARKING STUDY - FINAL REPORT**

Prepared for:
**City of Williamsburg
Planning Department**

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EXECUTIVE SUMMARY

The purpose of this study is to develop a downtown parking program which would include code and design guidelines, parking planning policies, and a series of parking facility improvement recommendations for both existing on- and off-street parking and future surface and structured parking development opportunities. Presently, parking activity in the downtown area is shaped by Colonial Williamsburg, the College of William & Mary, the Municipal Center, Library, Merchants Square, and other commercial areas on Prince George Street, Richmond Road and Scotland Street. One of the driving development forces within Downtown Williamsburg is the proposed redevelopment of the Northington Block. In order to understand the characteristics of parking in this area, and therefore be able to address existing and future needs, extensive analysis was required to understand the parking impact of each of the above components.

To better define the nature and characteristics of parking, the various different sections, or sub-areas, of the downtown were identified and parking occupancy, turnover, and durations of stay surveys were conducted. Parking conditions for a typical weekday (Thursday) and Saturday in October were surveyed in an effort to capture the impact of tourist activities, College sessions, and standard commercial and municipal activities. Though parking activity within the Merchants Square/Retail Sub-Area was extremely high during both survey days, 99% and 98% occupancy respectively during the peak period, peak period parking overall was more significant on Thursday than on Saturday (71% versus 58%). Therefore, conditions during Thursday were examined in more detail.

Based on the survey data, and on the desire to provide a surplus of parking over and above the peak demand to ensure safe, efficient and effective utilization of spaces (concept of Practical Capacity), a surplus of just over 350 spaces was observed during the peak period of 1 PM during the Thursday surveys for the entire study area. However, nearly all of that surplus exists in the southeastern fringe of the study area, i.e. the Gallery/CWF Employee parking areas (Sub-Area 5). Based on Practical Capacity limits, a 132 space deficiency is perceived in the Merchants Square/Prince George Street area (Sub-Area 3) and only slight surpluses of less than 10 spaces are perceived around the Municipal Center/Northington Block area (Sub-Area 1) and the W&M Bookstore/Facilities area (Sub-Area 4).

DESMAN's assessment of the existing condition concluded that the surplus of spaces on the periphery could not satisfy the excess demand which exist in the core due to the nature of most parker's trip purpose and the distance and conditions required to utilized the outer lots.

Working with the City's Planning Department, and primarily based on a study of existing land use activity (type, density, location), DESMAN was able to develop parking demand factors which would accurately estimate the peak parking demand associated with future development. New/future development included library expansion, redevelopment/reuse of the Boundary Street office building, Merchants Square expansion, and, most notably, redevelopment of the Northington Block. In addition, future growth associated with present retail and tourist activities was projected. Based on this information, the perceived deficiency in the Merchants Square/Retail area increased to nearly 200 spaces. The previous parking equilibrium in and

around the Municipal Center and Northington Block will become a deficiency when development plans are finalized.

To address the existing and future parking deficiencies, DESMAN advanced various parking management and parking facility development recommendations. Parking management solutions are policy changes, most of which can be implemented quickly, and would include improved/expanded signage, modification of existing parking enforcement policies, coordination between existing transit operations, and the integration of a bicycle parking program. Parking facility recommendations, however, are much more significant, and include recommending the development of a public surface lot for long- and short-term parkers, elimination of some on-street parking, and, to improve the utilization of existing short-term retail parking, the phasing of a pay parking system at key on- and off-street areas. Finally, the assessment, in concept, of the development of parking structures was included. Because of the nature and significance of these facility recommendations, a phasing program was developed and is illustrated on Exhibit A1 and A2.

The critical Phase I Parking Facility Improvements include (see Exhibit A1);

- o improve directional signage identifying short-term parking, and parking destinations for W&M visitors,
- o improve striping and modify layout of parking stalls to increase capacity at existing surface lots,
- o install 1 to 2-hour parking meters along Prince George Street,
- o and develop a 100-150 space public surface lot for long- and short-term parkers (meters and monthly permits) in the lot located behind the Hitchens/Sacalis building.
- o eliminate parking along North Henry Street upon the development of additional long-term parking,

The critical Phase II Parking Facility Improvements include (see Exhibit A2);

- o install parking meters or payment kiosks with 30 minute to 2 hour limits at the Merchants Square lots north of Duke of Gloucester Street,
- o install gates with cashiers for pay/validated parking and control all access points at CWF and Merchants Square lots south of Duke of Gloucester Street,
- o initiate the management of a merchant parking validation program,

As identified in Phase III - Master Plan/Concept Plan Development, DESMAN examined the feasibility of developing a 300 space parking structure behind the Hitchens/Sacalis building in place of the surface lot program recommended as part of Phase I. This program would represent the phasing from surface lot to parking structure in an effort of anticipate and accommodate increases in parking demand in the long term without impacting alternative parking development sites.

Lastly, in cooperation with LDR International and Carlton Abbott Partners, a series of parking concept plans associated with the Municipal Center and Northington Block area were examined,

Develop a 100-150 space public surface lot for long- and short-term parkers (meters and monthly permits)

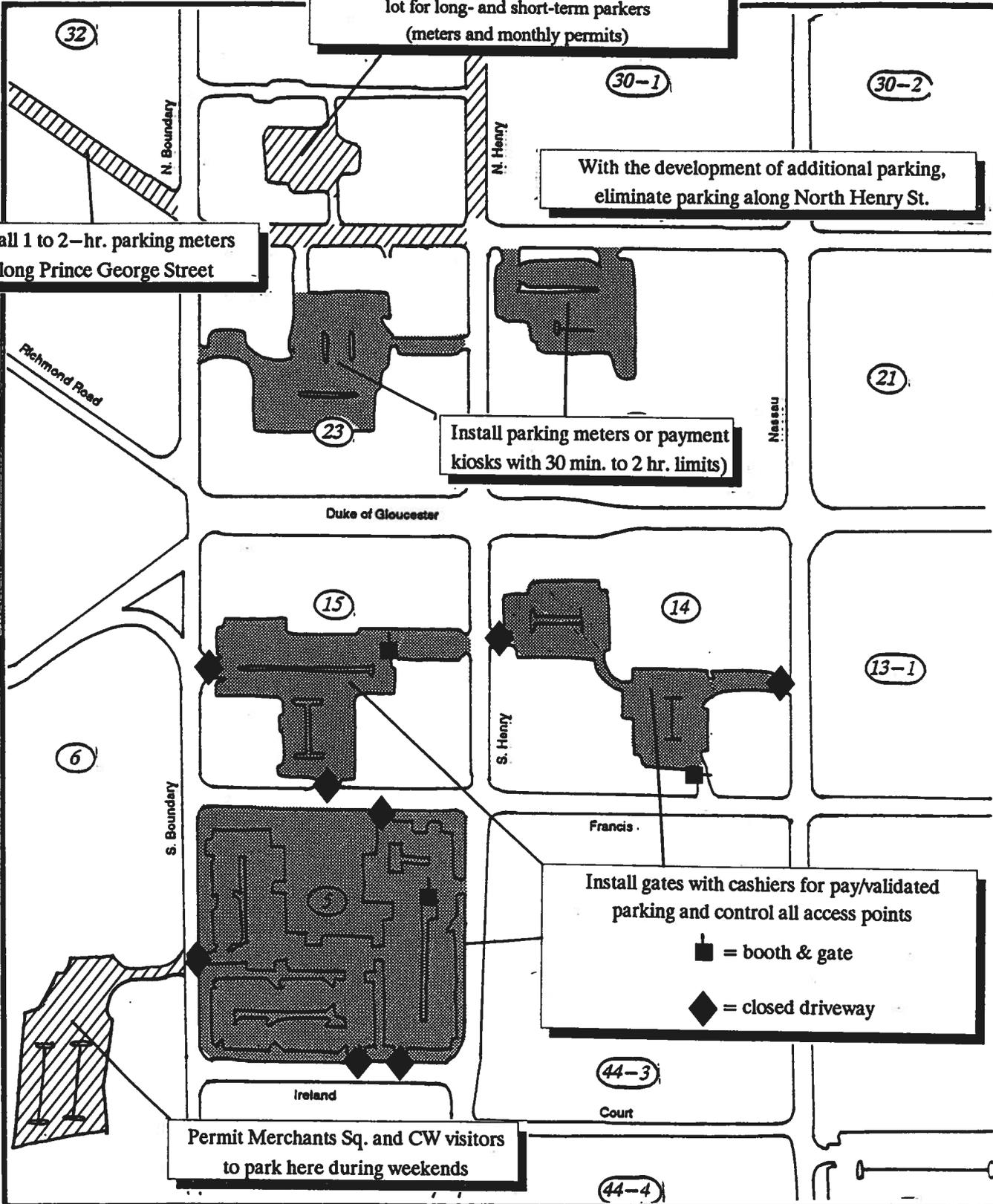
With the development of additional parking, eliminate parking along North Henry St.

Install 1 to 2-hr. parking meters along Prince George Street

Install parking meters or payment kiosks with 30 min. to 2 hr. limits)

Install gates with cashiers for pay/validated parking and control all access points
■ = booth & gate
◆ = closed driveway

Permit Merchants Sq. and CW visitors to park here during weekends



ranging from expanding existing surface parking to the development of a 4 level 330 space parking structure.

Throughout the study process DESMAN has had the opportunity to meet individually, in groups, or in public forum, the persons most directly affected by any changes to the existing parking system. Concerned citizens, Neighborhood groups, business leaders, the Merchants Square Association, and the Colonial Williamsburg Foundation had input into the development of this parking master plan.

INTRODUCTION

The purpose of this study is to develop a downtown parking plan and design standards for parking facilities in downtown Williamsburg, Virginia. Currently, downtown parking is provided by several small and intermediate-sized, ground-level parking facilities and on-street parking, all of which are free, with some areas subject to time limits. Parking activity in the downtown area is shaped by Colonial Williamsburg, the College of William & Mary, the Municipal Center, Post Office, Library, Courthouse, Merchants Square, and other commercial areas on Prince George Street, Richmond Road and Scotland Street. As such, a variety of parking users compete for a limited and restrictive supply of parking, including W & M students, tourists to the historic area, regional/local shoppers, library patrons, and area employees. Several specific development proposals are also being studied, including the Northington Block redevelopment, Library expansion and City/County Courts relocation.

Additionally, various other planning and architectural disciplines are developing open space, landscaping, and development studies which will provide guidelines for the future of downtown Williamsburg. Therefore, it is critical that a unified plan for parking in the downtown area address these needs. Critical to this final issue, acceptance and implementation of parking policies and plans, is the involvement of the Colonial Williamsburg Foundation, the College of William & Mary, and downtown businesses. Integrating the unique parking and pedestrian requirements associated with the above mentioned user groups into a single consolidated Parking System will be the key to the success of such a system.

The following report documents the various phases of analysis required for the successful development of a parking master plan. Phase I assesses the existing parking supply and demand conditions. Phase II, supported by information obtained during Phase I, assesses future parking conditions associated with development and expansion programs. Phase III, given the current and future parking conditions assessment, involves the development of a parking master plan and parking facility concepts, including development costs and alternative management strategies.

PHASE I: EXISTING PARKING SUPPLY AND DEMAND ANALYSIS

The downtown Williamsburg study area is roughly bound by C & O Railroad to the north, the College of William & Mary to the west, the historic district to the east, and Newport Road to the south. To better understand the variety of parking activities which occur in this area, 5 Parking Sub-Areas were created. The boundaries of each sub-area in this instance are characterized by both land use activity and physical separation.

Sub-Area 1: This area is dominated by the Municipal Center, the Stryker Building, the Williamsburg Regional Library, and the Northington Block redevelopment area.

Sub-Area 2: This area is bounded by Richmond Road, Virginia Avenue, Armistead Avenue, and North Boundary Street and is dominated by various churches, the Hospitality House hotel, and numerous commercial enterprises such as Paul's Deli and the Triangle Building.

Sub-Area 3: Sub-Area 3 is in the core of the study area and is dominated by the Merchants Square shops, retail activity along Prince George Street and historic Duke of Gloucester Street.

Sub-Area 4: This sub-area is located in the southwest corner of the study area and is the site of the College of W & M's Facilities Management buildings, Bookstore, and Campus Police Office. This sub-area is somewhat isolated from the rest of the study area by physical barriers, (North Boundary Street and vegetative screening) and by the type of land use activity (campus service functions).

Sub-Area 5: Sub-Area 5, in the southern most section of the downtown, has a mix of uses, including residential, office, cultural (Wallace Gallery), and municipal (Courts). The most dominant features of this area are the Williamsburg/James City Courthouse, the Wallace Gallery and the Colonial Williamsburg parking lot in Block 44.

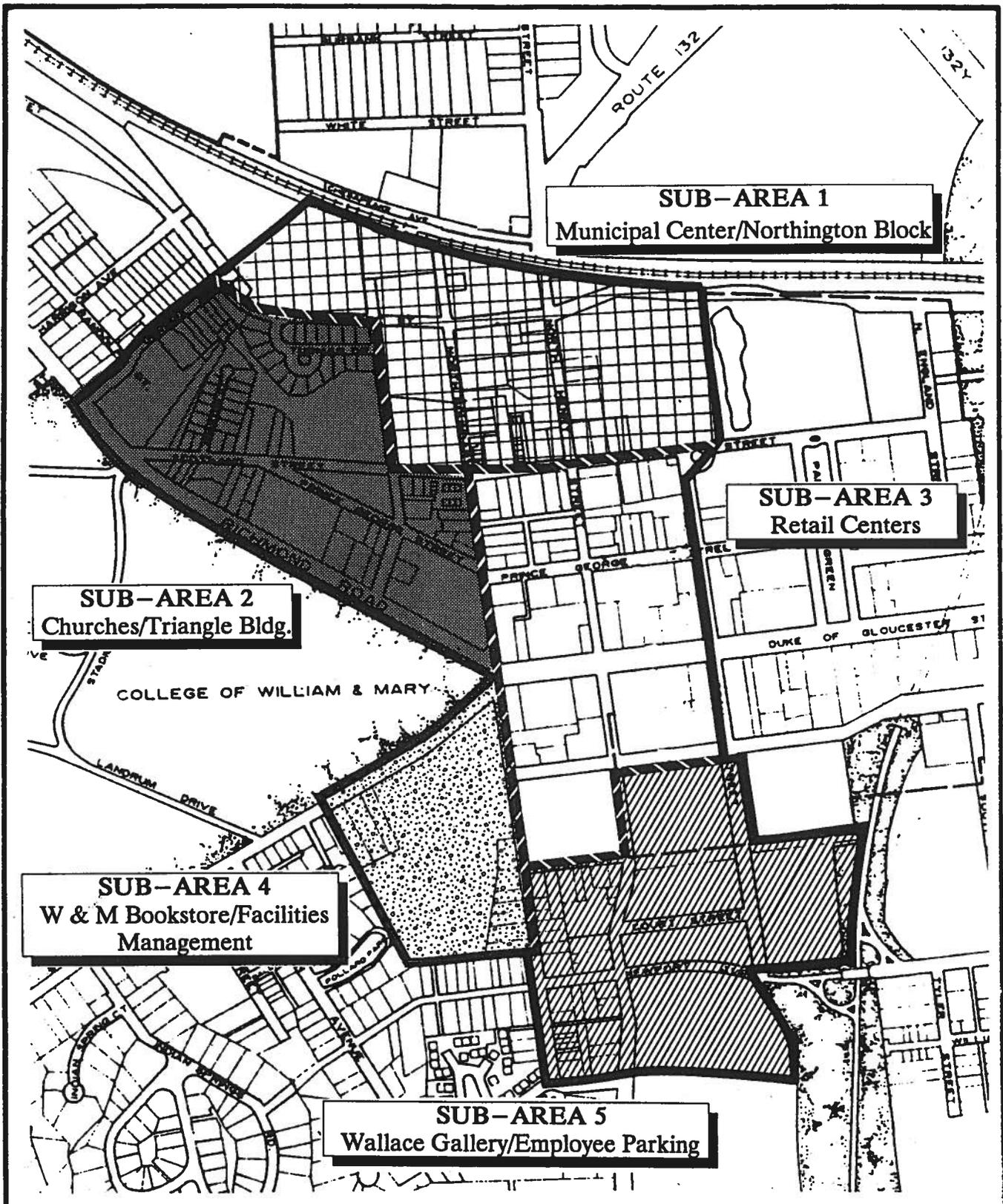
Exhibit 1 illustrates the boundary of the overall study area as well as the boundary for each specific sub-area.

CURRENT PARKING SUPPLY

As an initial step in the data collection process, an inventory of all spaces was made to ascertain the following:

- o Number and type of off-street spaces
- o Number of on-street spaces (restricted/unrestricted)
- o Total parking supply by city block and for each sub-area

To determine the most exact inventory of parking spaces recent aerial photographs were referenced and intensive ground counts were conducted. Using the Colonial Williamsburg block



coding system (see Appendix Exhibit A1), the parking supply by type or each block was noted. Appendix Exhibit A2 illustrates this block by block parking inventory. It must be noted that due to the lack of pavement markings for on-street parking spaces, this count reflects an estimate and takes into account the actual number of vehicles which were parked at on-street locations.

Exhibit 2a illustrates the location of off-street parking facilities and Exhibit 2b illustrates the location and restriction for on-street parking.

Exhibit 3 provides a inventory of the current parking supply by type (on- and off-street) for each sub-area. The greatest concentration of parking spaces exist in Sub-Area 3 - Retail Centers, with a total of 840 on- and off-street spaces. The vast majority of these 840 spaces are in five lots designed to serve Merchants Square visitors. As a result of this inventory, 393 on-street spaces and 2,721 off-street spaces were identified, totalling 3,114 parking spaces.

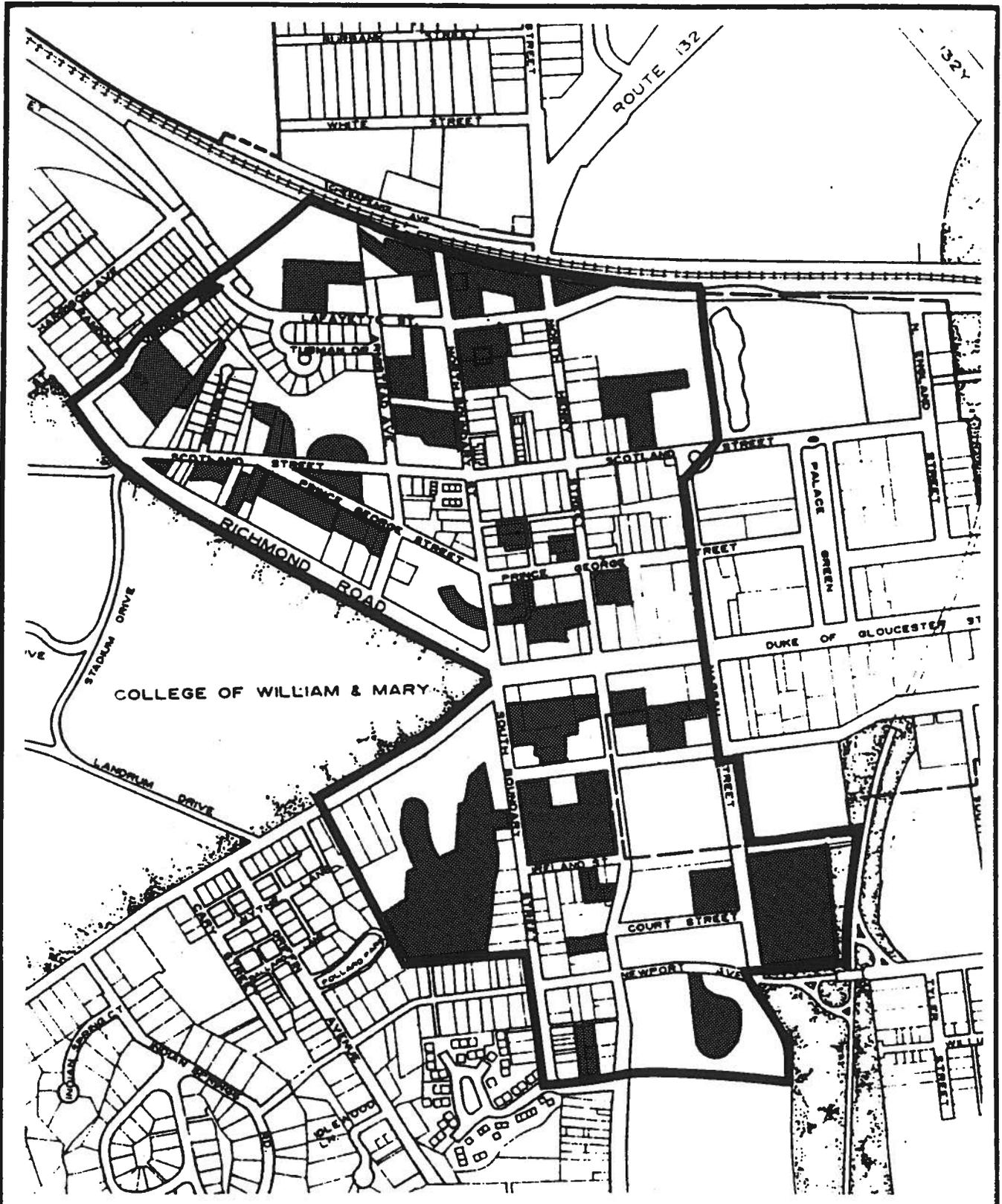
CURRENT PARKING CHARACTERISTICS

The development of successful parking management policies, such as encouraging employees who park in high demand off-street facilities to park in presently under utilized lots, relies heavily on the accurate assessment of current parking characteristics. DESMAN staff (in conjunction with local technicians) monitored parking activity in the downtown study area on Thursday, October 20th and Saturday, October 22nd between the hours of 8 AM and 7 PM. These dates were specifically chosen so that typical parking conditions could be observed. Discussions with the Colonial Williamsburg Foundation (CWF), the Merchants Square Association and the College focused on the most appropriate and acceptable month and day of the week where typical parking activity would not be under or overestimated. Through the use of hourly license plate surveys, parking occupancy, duration of stay and vehicle to space turnover rates for select parking facilities was collected. Exhibit 4 illustrates the location and coding of the off-street parking facilities which were surveyed. All on-street parking spaces were also surveyed in this manner.

Parking Occupancy

Prior to the review of occupancy findings it is important to discuss a key element in understanding parking supply, occupancy rates and the level of demand satisfaction. Under the concept of Practical Capacity a parking facility is perceived to be at full operational capacity when occupancy levels reach 85-90%. Once this level is exceeded, potential parkers find difficulty in locating an open space. As a result, those individuals must continue to search, increasing traffic circulation in and around these locations. The effective and efficient turnover of convenient parking spaces is most successful when the supply of spaces exceeds the demand for those spaces by 10-15%.

Appendix Exhibits B1 through B4 provide a graphic summary of the hourly on- and off-street occupancy counts for Thursday and Saturday for the total study area and for each sub-area individually. On Thursday the peak period of parking occupancy occurs at 1 PM with 1,779



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Downtown Williamsburg Parking Study
Location of Off-Street Parking Facilities

Exhibit
2a

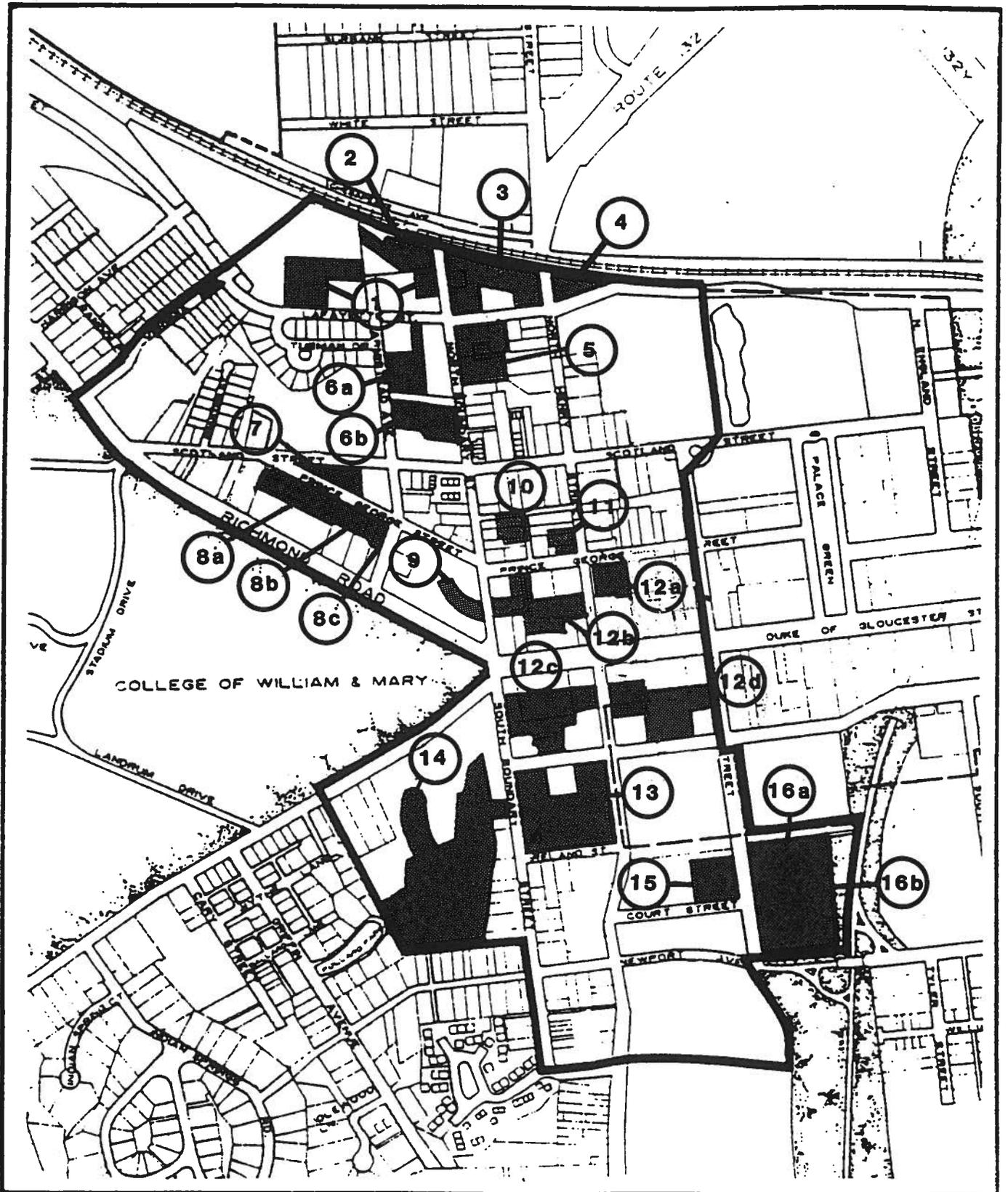
EXISTING PARKING SUPPLY BY SUB-AREA

SUB-AREA	ON-STREET PARKING	OFF-STREET PARKING	TOTAL SPACES
SUB-AREA 1 Municipal/Northington	71	583	654
SUB-AREA 2 Church/Triangle	156	477	633
SUB-AREA 3 Retail Center/Merchants Sq.	47	793	840
SUB-AREA 4 W&M Bookstore/Facilities	0	277	277
SUB-AREA 5 Gallery/Employee Parking	119	591	710
TOTAL:	393	2,721	3,114

CASUPPLY2

NOTE:

The supply of spaces is based on an inventory which was conducted on Tuesday, June 7th. Further note that on-street spaces are unmarked, and that this supply may fluctuate depending on daily conditions. Excluded in this inventory are approximately 36 spaces on Richmond Rd. along the W&M campus.



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Downtown Williamsburg Parking Study
Location of Selected Off-Street Parking
Facilities (Occupancy & Turnover Surveys)

Exhibit
4

spaces, or 74% occupied (see Appendix Exhibit B1). The peak period of parking occupancy for Saturday occurs at 1 PM as 1,443 spaces, or 60%, were occupied (see Appendix Exhibit B3). Exhibit 5a, 5b, 6a and 6b provide a summary of peak period occupancy for on- and off-street spaces for both survey days.

Based on this assessment it would appear that a significant surplus of parking spaces exist to adequately serve parking needs. This statement, however, may over generalize current parking conditions. Specific parking sub-areas do exhibit occupancy rates at or above acceptable levels (85% Practical Capacity). In fact, parking occupancy levels in Sub-Area 3 - Retail Center on both survey days approaches 100% occupancy between the hours of 11 AM and 4 PM (see Appendix Exhibit B2 and B4). Furthermore, parking conditions in individual lots needs to be examined. For example, parking activity in the lots associated with the Stryker Building and the County Library exceeded 85% capacity levels during several period of the day on both Thursday and Saturday.

On Thursday, on-street parking occupancy for the entire downtown area exceeded Practical Capacity levels throughout most of day, peaking at 96% occupancy at 10 AM. The demand for on-street parking overall on Saturday was much lower than Thursday as the peak occupancy reaches only 71% of capacity. The Saturday results are attributed to the very low levels of parking occupancy in streets along the periphery of the study area. However, on-street parking in the core of the study area, i.e. Prince George Street, Richmond Road and Scotland Street, often exceeded Practical Capacity levels on both survey days. Prince George Street between North Boundary and Scotland, for example, had as many as four vehicles illegally parked during peak periods.

Duration of Stay

As noted earlier, the license plate surveys noted the length of stay for each parked vehicle. Identifying the length of time a vehicle is parked helps characterize the types of parkers which are using a particular lot or on-street location. While a majority of the parking spaces in the downtown area either have parking limits (typically 2 hours) or are reserved for specific groups, i.e. W & M Faculty/Staff only (long-term parkers), this information can further identify compliance with stated parking restrictions.

Appendix Exhibits C1 through C4 provide a graphic summary of the off-street parking durations for Thursday and Saturday for the total study area and for each sub-area individually. Given the dominance of retail activities in the study area it is not surprising to note the high percentage of parkers who remain parked for less that 2 hours. 63% of parkers on Thursday and 71% of parkers on Saturday fall into this category. Conversely, of the total number of vehicles parked off-street, only 8% on Thursday and 7% on Saturday parked for 8 hours or longer (see the top of Appendix Exhibits C1 and C3).

Based on further analysis of this data, it could be said that overall parking conditions in the downtown area are dominated by two parking sub-areas, Sub-Area 1 - Municipal Area and Sub-

**SUMMARY OF OFF-STREET PEAK OCCUPANCY,
TURNOVER AND DURATION FOR THURSDAY (10/20/94)**

LOT #	NAME/USE	CAPACITY (1) (# of Spaces)	PEAK (2) OCCUPANCY	TOTAL VEHICLES OBSERVED	AVERAGE TURNOVER PER SPACE (3)	AVERAGE DURATION OF STAY
SUB-AREA 1 - Municipal/Library						
1	Municipal Bldg Lots	84	54 64%	122	1.5	3.7
2	Train Station Lot (4)	30	17 57%	61	2.0	4.9
3	Post Office Patrons (5)	31	21 68%	148	4.8	1.3
4	Commuter Lot	21	16 76%	36	1.7	2.4
5	CWF Office Lot	99	60 61%	144	1.5	3.7
6A	Stryker Bldg Lot	67	60 90%	138	2.1	1.7
6B	Library Lot	66	53 80%	308	4.7	3.8
SUB-AREA 1 TOTAL		398	281 71%	957	2.4	3.1
SUB-AREA 2 - Church/Triangle						
7	Triangle Bldg Customers	38	19 50%	66	1.7	5.5
8A	Church Parking	47	5 11%	27	0.6	2.4
8B	Employee Parking	59	54 92%	73	1.2	6.2
8C	W&M Faculty/Staff Lot	26	18 69%	38	1.5	4.6
9	W&M Faculty/Staff Lot	21	19 90%	27	1.3	5.1
SUB-AREA 2 TOTAL		191	115 60%	231	1.2	4.8
SUB-AREA 3 - Retail Center/Merchants Sq.						
10	CWF/Residents/Customers	43	43 100%	38	0.9	5.4
11	Bank Customers/Employees	12	11 92%	22	1.8	5.9
12A	NE. Merchant Sq. Lot	76	77 101%	295	3.9	2.1
12B	NW. Merchant Sq. Lot	88	93 106%	484	5.5	2.0
12C	SW. Merchant Sq. Lot	84	86 102%	454	5.4	1.8
12D	SE. Merchant Sq. Lot	115	113 98%	454	3.9	1.9
13	Block 5 Visitor Lot	296	285 96%	837	2.8	1.8
SUB-AREA 3 TOTAL		714	708 99%	2,584	3.6	3.0
SUB-AREA 4 - W&M Bookstore/Facilities Management						
14	W&M Bookstore, Etc.	277	230 83%	575	2.1	3.7
SUB-AREA 4 TOTAL		277	230 83%	575	2.1	3.7
SUB-AREA 5 - Gallery/Employee Lot						
15	Court Employee Parking	59	32 54%	110	1.9	2.7
16A	Wallace Gallery Lot	75	15 20%	114	1.5	4.7
16B	Block 44 Employee Lot	307	57 19%	282	0.9	6.8
SUB-AREA 5 TOTAL		441	104 24%	506	1.1	4.7
TOTAL:		2,021	1,438 71%	4,853	2.4	2.8

NOTE:

- (1) Represents capacity of surveyed off-street facilities
- (2) Peak period of parking occupancy occurs between 1 and 2 PM.
- (3) Indicates the average number of different vehicles which utilized a parking space in that facility.
- (4) Does not include 14 spaces reserved for rental cars.
- (5) Does not include 65 spaces reserved for employees and mail vehicles.

 Denotes parking facilities which exceed 85% Practical Capacity limits, i.e. decreasing efficiency.

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Downtown Williamsburg Parking Study
Summary of Off-Street Parking Occupancy,
Turnover and Duration Surveys for a Typical Weekday

**Exhibit
5a**

**SUMMARY OF OFF-STREET PEAK OCCUPANCY,
TURNOVER AND DURATION FOR SATURDAY (10/22/94)**

LOT #	NAME/USE	CAPACITY (1) (# of Spaces)	PEAK (2) OCCUPANCY	TOTAL VEHICLES OBSERVED	AVERAGE TURNOVER PER SPACE (3)	AVERAGE DURATION OF STAY
SUB-AREA 1 - Municipal/Library						
1	Municipal Bldg Lots	84	LOT CLOSED DURING WEEKEND			
2	Train Station Lot (4)	30	15 50%	25	0.8	2.6
3	Post Office Patrons (5)	31	9 29%	25	0.8	4.7
4	Commuter Lot	21	17 81%	83	4.0	1.3
5	CWF Office Lot	99	18 18%	37	0.4	2.5
6A	Stryker Bldg Lot	67	61 91%	131	2.0	2.3
6B	Library Lot	66	66 100%	198	3.0	1.3
SUB-AREA 1 TOTAL		398	186 47%	499	2.7	2.1
SUB-AREA 2 - Church/Triangle						
7	Triangle Bldg Customers	38	5 13%	57	1.5	1.9
8A	Church Parking	47	5 11%	5	0.1	6.8
8B	Employee Parking	59	24 41%	41	0.7	3.3
8C	W&M Faculty/Staff Lot	26	13 50%	35	1.3	3.4
9	W&M Faculty/Staff Lot	21	19 90%	45	2.1	3.5
SUB-AREA 2 TOTAL		191	66 35%	183	2.8	3.5
SUB-AREA 3 - Retail Center/Merchants Sq.						
10	CWF/Residents/Customers	43	40 93%	38	0.9	4.8
11	Bank Customers/Employees	12	12 100%	35	2.9	2.7
12A	N.E. Merchant Sq. Lot	76	76 100%	322	4.2	1.9
12B	N.W. Merchant Sq. Lot	88	95 108%	505	5.7	1.9
12C	S.W. Merchant Sq. Lot	84	90 107%	401	4.8	2.2
12D	S.E. Merchant Sq. Lot	115	97 84%	466	4.1	2.1
13	Block 5 Visitor Lot	296	288 97%	1157	3.9	2.0
SUB-AREA 3 TOTAL		714	698 98%	2924	4.2	2.1
SUB-AREA 4 - W&M Bookstore/Facilities Management						
14	W&M Bookstore, Etc.	277	51 18%	107	0.4	4.8
SUB-AREA 4 TOTAL		277	51 18%	107	0.4	4.8
SUB-AREA 5 - Gallery/Employee Lot						
15	Court Employee Parking	59	21 36%	28	0.5	5.9
16A	Wallace Gallery Lot	75	46 61%	53	0.7	5.2
16B	Block 44 Employee Lot	307	97 32%	210	0.7	6.0
SUB-AREA 5 TOTAL		441	164 37%	291	1.8	5.4
TOTAL:		2,021	1,165 58%	4,004	2.0	2.4

NOTE:

- (1) Represents capacity of surveyed off-street facilities.
- (2) Peak period of parking occupancy occurs between 2 and 3 PM.
- (3) Indicates the average number of different vehicles which utilized a parking space in that facility.
- (4) Does not include 14 spaces reserved for rental cars.
- (5) Does not include 65 spaces reserved for employees and mail vehicles.

Denotes areas where peak occupanc exceeds Practical Capacity (85%), i.e. efficiency declines

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Downtown Williamsburg Parking Study
Summary of Off-Street Parking Occupancy,
Turnover and Duration Surveys for Saturday

**Exhibit
5b**

**SUMMARY OF ON-STREET PEAK OCCUPANCY,
TURNOVER AND DURATION FOR THURSDAY (10/20/94)**

STREET NAME	RESTRICTION	CAPACITY (1) (# of Spaces)	PEAK (2) OCCUPANCY	TOTAL VEHICLES OBSERVED	AVERAGE TURNOVER PER SPACE (3)	AVERAGE DURATION OF STAY
N.BOUNDARY ST.						
Station-Lafayette	No Parking 11PM-6AM	13	7 54%	57	4.4	2.8
Lafayette-Scotland	No Parking 11PM-6AM	12	10 83%	23	1.9	5.3
Scotland-Prince George	1-2 Hr. Max	9	8 89%	20	2.2	2.9
Prince George-Richmond	No Restriction	12	11 92%	50	4.2	2.2
ARMISTED AVE.						
Lafayette-Scotland	No Parking 11PM-6AM	18	18 100%	34	1.9	4.9
RICHMOND RD.						
N.Boundary-Scotland	1-2 Hr. Max	46	41 89%	161	3.5	2.6
Scotland-N.Boundary	No Restriction	37	37 100%	47	1.3	7.5
PRINCE GEORGE ST.						
Nassau-N.Boundary	1-2 Hr. Max	22	24 109%	119	5.4	1.4
N.Boundary-Scotland	1-2 Hr. Max	24	19 79%	93	3.9	1.9
SCOTLAND ST.						
Richmond-Armisted	No Parking 11PM-6AM	28	27 96%	45	1.6	5.3
Armisted-N. Boundary	No Parking 11PM-6AM	6	5 83%	6	1.0	5.7
N.Boundary-N.Henry	No Parking 11PM-6AM	14	14 100%	18	1.3	5.9
N.Henry-Nassau	Unrestricted	8	8 100%	11	1.4	6.5
N. HENRY ST.						
Prince George-Scotland	No Parking 11PM-6AM	14	13 93%	33	2.4	4.5
COURT ST.						
S.Henry-Nassau	Unrestricted	43	35 81%	77	1.8	3.8
IRELAND ST.						
S.Boundary-S.Henry	No Parking 11PM-6AM	16	13 81%	22	1.4	4.8
NEWPORT AVE.						
S.Boundary-Nassau	Unrestricted	54	51 94%	75	1.4	4.9
TOTAL		376	341 91%	891	2.4	3.5

NOTE:

- (1) Reflects capacity of surveyed on-street spaces
- (2) Peak period of parking occupancy occurs between 3 and 4 PM
- (3) Reflects the average number of different vehicles which utilized a space in each facility.

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Downtown Williamsburg Parking Study
Summary of On-Street Parking Occupancy,
Turnover and Duration Surveys for a Typical Weekday

Exhibit
6a

**SUMMARY OF ON-STREET PEAK OCCUPANCY,
TURNOVER AND DURATION FOR SATURDAY (10/22/94)**

STREET NAME	RESTRICTION	CAPACITY (1) (# of Spaces)	PEAK (2) OCCUPANCY	TOTAL VEHICLES OBSERVED	AVERAGE TURNOVER PER SPACE (3)	AVERAGE DURATION OF STAY
N.BOUNDARY ST.						
Station-Lafayette	No Parking 11PM-6AM	13	5 38%	57	4.4	3.6
Lafayette-Scotland	No Parking 11PM-6AM	12	16 133%	23	1.9	3.4
Scotland-Prince George	1-2 Hr. Max	9	9 100%	20	2.2	1.8
Prince George-Richmond	No Restriction	12	11 92%	50	4.2	2.1
ARMISTED AVE.						
Lafayette-Scotland	No Parking 11PM-6AM	18	18 100%	34	1.9	2.2
RICHMOND RD.						
N.Boundary-Scotland	1-2 Hr. Max	46	41 89%	161	3.5	3.2
Scotland-N.Boundary	No Restriction	37	37 100%	47	1.3	5.4
PRINCE GEORGE ST.						
Nassau-N.Boundary	1-2 Hr. Max	22	17 77%	119	5.4	1.5
N.Boundary-Scotland	1-2 Hr. Max	24	27 113%	93	3.9	4.2
SCOTLAND ST.						
Richmond-Armisted	No Parking 11PM-6AM	28	22 79%	45	1.6	4
Armisted-N. Boundary	No Parking 11PM-6AM	6	6 100%	6	1.0	2.4
N.Boundary-N.Henry	No Parking 11PM-6AM	14	15 107%	18	1.3	3.4
N.Henry-Nassau	Unrestricted	8	10 125%	11	1.4	3.7
N. HENRY ST.						
Prince George-Scotland	No Parking 11PM-6AM	14	14 100%	33	2.4	7.3
COURT ST.						
S.Henry-Nassau	Unrestricted	43	2 5%	77	1.8	5
IRELAND ST.						
S.Boundary-S.Henry	No Parking 11PM-6AM	16	4 25%	22	1.4	4.9
NEWPORT AVE.						
S.Boundary-Nassau	Unrestricted	54	9 17%	75	1.4	4.2
TOTAL		376	263 70%	891	2.4	3

NOTE:

- (1) Represents capacity of surveyed on-street facilities
- (2) Peak period of parking occupancy occurs between 2 and 3 PM
- (3) Reflects the average number of different vehicles which utilized a space in each facility.

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Downtown Williamsburg Parking Study
Summary of On-Street Parking Occupancy,
Turnover and Duration Surveys for Saturday

**Exhibit
6b**

Area 3 - Retail Center. Approximately 50% of all Sub-Area 1 parkers remain for 1 hour or less. Approximately 80% of all Sub-Area 3 parkers remained for 2 hours or less. Given that off-street parking in Sub-Area 3, which is designed to serve Merchants Square shoppers, is limited to 2 hour parking, then approximately 20% of all users parked in excess of the 2 hour limit (see the top of Appendix Exhibits C2 and C4).

The length of time the average off-street user parked for each sub-area and for each lot individually is summarized on Exhibit 5a and 5b for Thursday and Saturday respectively. For the downtown area as a whole, the average vehicle remained parked for 2.4 hours on Thursday and 2.0 hours on Saturday.

With the exception of on-street areas where a 1 or 2 hour maximum parking limit was noted, on-street parkers were primarily long-term visitors, students and/or employees, with parking durations as long as 7.5 hours (Richmond Road along the W & M campus). It was noted during discussions with the City that in areas south of Duke of Gloucester Street on-street parking was being used by students attending W & M's law school during weekdays. Vehicles in those areas parked for 4 hours or longer on average. The average parked duration for each street for either survey day is summarized on Exhibit 6a and 6b. For the entire study area, the average on-street vehicle parked for 3.5 hours on Thursday and 3.0 hours on Saturday.

Vehicle to Space Turnover Rates

Another statistic which examines user characteristics is parking turnover. By conducting detailed license plate surveys, the number of different vehicles which use a particular space was observed and an average for each lot and sub-area was calculated. Turnover rates are directly affected by occupancy levels and average parked durations, and as such, low occupancy levels and/or long duration levels dramatically reduce the average per space turnover rate.

Regarding off-street parking, Sub-Area 3 - Retail Center exhibits the highest rate of parking turnover on either survey day with turnover rates of 3.6 and 4.1 vehicles per space. The most heavily utilized lot in Sub-Area 3 was the 88 space Merchants Square lot located near Duke of Gloucester Street which served 505 different vehicles on Saturday (turnover rate of 5.7 vehicles/space). Sub-Area 5 - Gallery/CWF Employee Parking exhibited the lowest rate of vehicle turnover with .06 vehicles per space on Saturday. The Courts Employee lot, located in Sub-Area 5, with a capacity of 59 parking spaces, served only 28 different vehicles throughout the 12 hour Saturday survey (turnover rate of 0.5 vehicles/space).

Exhibit 5a and 5b summarize the results of the off-street vehicle to space turnover ratios for each survey and for each sub-area.

The most heavily utilized on-street parking area was Prince George Street between North Boundary and Nassau. 119 vehicles utilized the 22 spaces along this street during the Saturday survey, resulting in a vehicle to space turnover rate of 5.4. On-street parking south of Duke of Gloucester Street exhibited the lowest turnover rates on either survey day. Long durations of

stay on Thursday (student parking) and low occupancy rates on Saturday (less than 15% occupancy) held turnover rates below 1.5 vehicles per space on both days.

Pedestrian Questionnaires

Pedestrian questionnaires were also conducted at the Block 5 parking lot, the Library and in the Merchants Square parking lots to expand upon the parking characteristics obtained during the vehicle surveys. Appendix Exhibit D1 illustrates the range of questions which were asked the different parkers at each survey station. Appendix Exhibits D2 and D3 illustrate the statistical results for each survey day respectively.

The following summarizes the key findings for each area:

Block 5 Parking - 77% are in-state or area residents, 30% are related to campus or work/business trips, the average anticipated parked duration = 4.5 hours, 88% found a space convenient to their destination, and only 76% said it was easy locating an available space (12% said very difficult).

Library Lot - 100% area residents, 19% parked in Stryker Lot, average anticipated parked duration = 2.5 hours, 96% found a space convenient to their destination, and 100% said it was easy locating an available space.

Merchants Sq. - 73% are in-state or area residents, 24% are related to campus or work/business trips, average anticipated duration = 1.5 hours, 92% found a convenient space, and 76% said it was easy to find a space (8% said very difficult).

Summary of Parking Characteristics

Exhibit 7 illustrates by sub-area the peak period of parking activity within the study area. Note that the Thursday 1 PM period reflects the highest period of parking activity for either survey day with 2,295 spaces, or 74% occupied. When applying the concept of Practical Capacity to the existing supply of 3,114 spaces, the effective supply becomes 2,648 spaces ($3,114 * 85\%$ Practical Capacity). Based on this analysis, a parking surplus of 353 spaces exists even when considering Practical Capacity. The majority of that surplus exists in Parking Sub-Area 5 which, given its location, would appear inconvenient to typical parkers. The parking facilities in Sub-Area 1 and Sub-Area 4 are, however, already operating at maximum Practical Capacity as only minor parking surpluses (2 and 9 spaces respectively) exist to serve fluctuating demand. Sub-Area 3, the retail/Merchants Square sub-area, currently faces a 132 space parking deficiency.

Furthermore, on-street spaces are not being utilized to their full potential, in order to provide convenient parking spaces with high rates of turnover for short-term parkers. And while certain on-street location could not be expected to support short-term, retail oriented parking activity,

**PARKING SURPLUS OR DEFICIENCY BY SUB-AREA FOR
THE PEAK PERIOD OF PARKING (THURSDAY 1 PM)**

SUB-AREA	TOTAL PARKING SUPPLY	PRACTICAL CAPACITY OF SUPPLY (1)	OBSERVED PEAK OCCUPANCY (2)	PARKING SURPLUS OR DEFICIENCY
SUB-AREA 1 Municipal/Northington	654	556	554	2
SUB-AREA 2 Church/Triangle	633	538	409	129
SUB-AREA 3 Retail Center/Merchants Sq.	840	714	846	-132
SUB-AREA 4 W&M Bookstore/Facilities	277	236	227	9
SUB-AREA 5 Gallery/Employee Parking	710	604	259	345
TOTAL:	3,114	2,648	2,295	353

C:CURRENT

NOTE:

- (1) Under the concept of Practical Capacity a parking facility is perceived to be at full operational capacity when occupancy levels reach 85-90%. Once this level is exceeded, potential parkers find difficulty in locating an available space. Given the retail nature of this area, 85% was used.
- (2) Actual peak period weekday occupancy occurred on Thursday between 1 and 2 PM. Occupancy for the total of all parking spaces is based on the representative sample which was surveyed (approximately 67% of all spaces).

such as Ireland Street and Newport Avenue, decreasing parking durations and increasing turnover rates for short-term parking along Scotland Street and North Henry Street should be further examined.

Overall, it would appear that the parking surplus within Sub-Area 5 cannot support the significant deficiency which exists in other areas of the downtown. It was also noted that 20% of the vehicles using 2-hour parking in and around Merchants Square are parking for longer than the permitted length of time. Parking policies should be developed which address these and other related issues. Before any policy recommendation can be made, however, parking activity associated with the existing land uses in the study area needs to be examined. It is important to understand this relationship both when examining current parking conditions and when estimating what impact future development and expansion programs will have on the downtown.

PARKING DEMAND

This section of the report provides an evaluation of downtown parking from zoning and industry standard perspectives. That is, parking requirements can be applied to estimates of square footage by land use in order to assess parking demand. To achieve this, land use information from the City of Williamsburg Planning Department and CWF's Property Management Division was obtained and the type and square footage of a variety of land uses were recorded by block. To examine the parking activity associated with land use activity, the block by block data for each sub-area and for the downtown area is summarized on Exhibit 8.

Parking Demand Based on Zoning Requirements

Exhibit 9a illustrates Williamsburg's current off-street parking requirements as stated in Section 21-707 from the City's Zoning Ordinance. These requirements were then applied to the amount of commercial and residential space as identified in Exhibit 8. Exhibit 9b shows a summary by sub-area of the parking demand estimated when using the City's zoning requirements in Exhibit 9a. Based on this exercise, the City's ordinance would require 4,096 spaces to adequately serve the parking activity associated with the existing land uses. When compared to either the actual number of parking spaces which presently serve these uses (3,114) or the number of spaces occupied during the peak weekday period (2,295), it appears that zoning requirements do not accurately estimate peak period parking conditions. Clearly, Williamsburg's off-street requirements overestimate the parking needs associated with various land use activities. It must be mentioned, however, that off-street requirements are not intended to estimate demand, but are, in fact, tools which planners use to ensure that new developments provide sufficient parking for economic viability and to minimize negative impacts on adjacent uses.

Parking Demand Based on a Range of Industry Standards

Various municipal zoning/parking ordinances were reviewed in order to develop a list of factors that would be applicable for each of the land use categories in downtown Williamsburg. In addition, a number of professional organizations' publications were referenced to assist in that

DENSITY BY LAND USE TYPE (Square Feet)

SUB-AREA	General Office	Retail	Residential Units	Restaurant	Hotel Rooms	Warehouse/ Lt. Industrial	Libraries/ Museums/ Schools	Theater/ Auditorium	Religious	Historical	TOTAL SQ. FT.
SUB-AREA 1 MUNICIPAL/NORTHINGTON	61,868	4,000	18	0	0	46,570	85,323	268	0	0	198,029
SUB-AREA 2 CHURCH/TRIANGLE	46,839	7,623	235	44,331	294	0	0	0	825	0	99,618
SUB-AREA 3 RETAIL CENTERS	92,697	160,382	82	32,653	0	0	0	532	0	8,578	294,842
SUB-AREA 4 W&M BOOKSTORE/FACILITIES	71,902	21,222	55	15,428	0	40,369	6,510	0	0	0	155,431
SUB-AREA 5 GALLERY/EMPLOYEE PARKING	91,303	3,750	6	0	0	0	0	0	0	92,421	187,474
TOTAL	364,609 sf	196,977 sf	396 units	92,412 sf	294 rooms	86,939 sf	91,833 sf	800 seats	825 seats	100,999 sf	935,394 sf

SOURCE:

The land use data was obtained from a variety of sources, including: The Colonial Williamsburg Foundation Department of Architecture and Engineering, Colonial Williamsburg Off-Street Parking Computation (4/9/80), Merchants Square Parking Parking Study (9/27/90), Parking Assessment of Scotland Associates property - Paul's Deli, etc.(9/20/89), Post Office Renovation - Statistics (7/12/92), City of Williamsburg Planning Department, and field surveys and property owner contacts (6/94).

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Downtown Williamsburg Parking Study
Inventory of Existing Land Uses by Type
Size and Sub - Area Location

Exhibit
8

**CITY OF WILLIAMSBURG OFF-STREET
PARKING REQUIREMENTS (1)**

LAND USE	REQUIREMENTS
OFFICE <i>(in Square Feet)</i>	1 space/400 SF
RETAIL <i>(in Square Feet)</i>	1 space/200 SF
SHOPPING CENTER (2) <i>(in Square Feet)</i>	1 space/250 SF
201 - 300 BEDROOM HOTEL (3) <i>(# of Rooms)</i>	190 spaces plus 0.8 spaces/room
RESIDENTIAL <i>(Dwelling Units)</i>	2 space/unit - Single Family 1.75 spaces/unit - Multi-Family 2.25 spaces/unit - Townhouse
AUDITORIUMS/ THEATER (4) <i>(# of Seats)</i>	1 space/4 seats
RESTAURANTS <i>(in Square Feet)</i>	1 space/100 SF
LIBRARIES & MUSEUMS <i>(in Square Feet)</i>	1 space/400 SF

C:\CITYCODE

NOTE:

- (1) This information was obtained from the Williamsburg Zoning Ordinance, Section 21-707 as adopted in Oct, 1991
- (2) The Merchants Square Shops qualify as a shopping center
- (3) The only hotel within the study area is the 294 room Hospitality House in Block 38, therefore, this specific code was applied.
- (4) Because the Williamsburg Theater is part of Merchants Square, its off-street parking requirement is lower (1 space/8 seats).

PARKING SPACES REQUIRED BY THE CITY'S ZONING ORDINANCE (1)

SUB-AREA	General Office	Retail (2)	Residential	Restaurant (3)	Hotel	Warehouse/ Lt. Industrial	Libraries/ Museums/ Schools	Theater/ Auditorium	Religious (5)	Total Spaces Required
SUB-AREA 1 MUNICIPAL/NORTHINGTON	155	20	36	0	0	47	115	67	0	440
SUB-AREA 2 CHURCH/TRIANGLE	117	38	411	377	425	0	0	0	83	1,451
SUB-AREA 3 RETAIL CENTERS	232	642	144	278	0	0	0	67	0	1,363
SUB-AREA 4 W&M BOOKSTORE/FACILITIES	180	106	110	131	0	40	16	0	0	583
SUB-AREA 5 GALLERY/EMPLOYEE PARKING	228	19	12	0	0	0	0	0	0	259
TOTAL	912	825	713	786	425	87	131	134	83	4,096

C:\LANDUSE

NOTE:

- (1) Unless otherwise noted, parking requirements for each land use type are listed on the previous exhibit.
- (2) As Merchants Square represents a shopping center, the code requirement for the retail portion of that development equals 1 space per 250 SF (lower than the standard requirement).
- (3) As the requirement for restaurant uses is for total dining area, which does not include service space (kitchen, storage, etc.) the total sq.ft. for each facility is reduced by 15% to account for this space.
- (4) Off-street requirements for warehouse uses equals 1 space for each 1,000 SF of floor area.
- (5) Institutional uses such as churches require 1 space for every 10 seats.

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Downtown Williamsburg Parking Study
Number of Parking Spaces which would be
Required by City's Code

Exhibit
9b

task. Experience has shown that standards are adjusted by jurisdictions in an attempt to achieve a specific objective or result, such as encouraging transit usage or enticing development. Exhibit 10 presents optional parking demand factors for the selected land use categories in downtown Williamsburg which may best replicate existing occupancy conditions.

However, these factors should be considered as a preliminary step toward developing parking demand factors for comparison with actual occupancy conditions. Additional measures of parking activity within an urban environment such as downtown Williamsburg's are parking accumulation patterns, which is the total number of vehicles parked at a given time. The accumulation of parking vehicles fluctuates throughout the course of the day as different parkers arrive and depart an area. Workers tend to arrive early and remain throughout the day. Customers, shoppers and business trips increase throughout the morning, peak around noon and gradually diminish throughout the afternoon. Exhibit 11 illustrates representative hourly accumulation rates by percentage of the peak hour for a variety of land use activities. Note that in downtown Williamsburg, the peak accumulation on a typical weekday (Thursday) occurs at 1 PM.

Based on these accumulation patterns, the opportunity for various different types of parkers to share a limited resource of parking can be estimated. Shared Parking is defined as parking space that can be used to serve two or more individual land uses and parking needs without conflict or encroachment. These hourly factors will be used to adjust the demand factors illustrated in Exhibit 10 in an effort to improve the demand model's accuracy.

Exhibit 12a illustrates the results of applying Option A demand factors with shared parking adjustments to the land use inventory. Option A demand estimates were utilized as, initially, they compared best with actual conditions. Based on this analysis, these factors estimated the total peak period demand for parking in downtown Williamsburg at 2,292 occupied spaces. To determine the accuracy of these factors to actual peak occupancy levels, Exhibit 12b compares the estimates to the actual condition within each sub-area and for the total study area. Overall, the demand estimate for 2,334 spaces compares well with the observed peak occupancy of 2,295 spaces (98% correlation). Although some significant deviations exist within certain sub-areas, i.e. 203 space underestimation of demand in Sub-Area 1, these differences may identify the relationship between parking activity in one area and land use requirements in another. It could be inferred from this sub-area analysis that the parking facilities in Sub-Area 1 support parking activity generated by land uses in Sub-Areas 2 and 3.

For the overall study area the demand factors appear as a valuable guideline when evaluating parking and development requirements associated with future conditions. Given the validity of these factors in predicting parking demand conditions, the next phase of this study will identify future development proposals/programs and will quantify the parking impact and need associated with those future changes. Once quantified, policy and supply recommendations will be forwarded for discussion and review purposes.

**COMPARISON OF VARIOUS
OFF-STREET PARKING REQUIREMENTS (1)**

LAND USE	OPTION A	OPTION B	OPTION C
OFFICE <i>(in Square Feet)</i>	1 space/400 SF	1 space/333 SF	1 space/250 SF
RETAIL <i>(in Square Feet)</i>	1 spaces/333 SF	1 spaces/250 SF	1 space/200 SF
HOTEL <i>(# of Rooms)</i>	0.5 spaces/room	0.7 spaces/room	1.25 spaces/room
RESIDENTIAL <i>(Dwelling Units)</i>	1 space/unit	1.5 spaces/unit	2 spaces/unit
AUDITORIUM/ THEATER <i>(# of Seats)</i>	1 space/4 seats	1 space/3.5 seats	1 space/3 seats
RESTAURANT <i>(Seated Floor Area)</i>	0.5 space/100 SF	0.75 space/100 SF	1 space/100 SF
LIBRARIES & MUSEUMS <i>(in Square Feet)</i>	1 space/400 SF	1 space/333 SF	1 space/300 SF

C/CODES

NOTE:

(1) Various municipal and parking organizations were referenced to develop the above scale.
Those references include:

- City of Cincinnati, Ohio
- City of Norfolk, Virginia
- Montgomery Co., Maryland
- Institute of Transportation Engineers
- Urban Land Institute
- Eno Foundation

**REPRESENTATIVE HOURLY ACCUMULATION BY
PERCENTAGE OF PEAK HOUR 1)**

LAND USE HOUR OF DAY	OFFICE	RETAIL	RESIDENTIAL	WAREHOUSE 3)	HOTEL
6:00 AM	3%	8%	100%	3%	100%
7:00	20%	18%	87%	20%	85%
8:00	63%	42%	79%	63%	65%
9:00	93%	68%	73%	93%	55%
10:00	100%	87%	68%	100%	45%
11:00	100%	97%	59%	100%	35%
12 NOON	90%	100%	60%	90%	30%
1:00 PM	90%	97%	59%	90%	30%
2:00	97%	95%	60%	97%	35%
3:00	93%	87%	61%	93%	35%
4:00	77%	79%	66%	77%	45%
5:00	47%	82%	77%	47%	60%
6:00	23%	89%	85%	23%	70%
7:00	7%	87%	94%	7%	75%
8:00	7%	61%	96%	7%	90%
9:00	3%	32%	98%	3%	95%
10:00	3%	13%	99%	3%	100%
11:00	0%	0%	100%	0%	100%
MIDNIGHT	0%	0%	100%	0%	100%

CAPERCENT

1:00 PM - 2:00 PM Denotes period of peak parking activity for Thursday (high occupancy day)

- 1) Source: Urban Land Institute, Shared Parking, 1987
- 2) TDOZ Code Required Parking is based on space requirements per 1,000 SF of Office, Retail, and Office/Warehouse uses.
- 3) Warehouse Parking Accumulation Rates are based on Office Rates

**PEAK PERIOD PARKING DEMAND ESTIMATES BASED ON
OPTION A FACTORS AND SHARED PARKING**

SUB-AREA	Office	Retail	General Residential	Restaurant	Hotel	Warehouse/ Lt. Industrial	Libraries/ Museums/ Schools	Theater/ Auditorium	Religious	Total Spaces Required
SUB-AREA 1 MUNICIPAL/NORTHINGTON	139	12	11	0	0	44	108	58	0	372
SUB-AREA 2 CHURCH/TRIANGLE	105	22	139	164	44	0	0	0	0	474
SUB-AREA 3 RETAIL CENTERS	208	467	50	121	0	0	0	58	0	904
SUB-AREA 4 W&M BOOKSTORE/FACILITIES	162	62	32	57	0	37	14	0	0	364
SUB-AREA 5 GALLERY/EMPLOYEE PARKING	205	11	4	0	0	0	0	0	0	220
TOTAL	819	574	236	342	44	81	122	116	0	2,334

C:\LANDUSE

Note that historical landmarks/buildings were not included in the demand estimate. Historic uses either represent or generate secondary trip purposes and therefore are already included in the parking impact, and are primarily supported by shuttle bus transportation from outer areas, including the Visitors Center.

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Downtown Williamsburg Parking Study
Estimate of Peak Period Parking Demand by Land
Use Type based on Adjusted Demand Factors

**Exhibit
12a**

**COMPARISON OF OPTION A DEMAND ESTIMATES TO
ACTUAL SUB-AREA PEAK PERIOD
PARKING OCCUPANCY (THURS. 1-2 PM)**

SUB-AREA	TOTAL PARKING SUPPLY	OBSERVED PEAK OCCUPANCY (1)	DEMAND ESTIMATE (2)	COMPARISON OF DEMAND ESTIMATE TO ACTUAL OCCUPANCY (3)
SUB-AREA 1 Municipal/Northington	654	554 85%	372	182
SUB-AREA 2 Church/Triangle	633	409 65%	474	(65)
SUB-AREA 3 Retail Center/Merchants Sq.	840	846 101%	904	(58)
SUB-AREA 4 W&M Bookstore/Facilities	277	227 82%	364	(137)
SUB-AREA 5 Gallery/Employee Parking	710	259 36%	220	39
TOTAL:	3,114	2,295 74%	2,334	(39)

98% Correlation between Actual Occupancy and Demand Estimates

C:\COMP\MODEL

NOTE:

- (1) Actual peak period weekday occupancy occurred on Thursday between 1 and 2 PM. Occupancy for the total of all parking spaces is based on the representative sample which was surveyed (approximately 67% of all spaces).
- (2) Based on the application of low end demand factors and shared parking to existing uses
- (3) The purpose of this comparison is to illustrate the accuracy with which these parking demand factors estimate parking activity associated with existing commercial/residential uses (2,293 / 2,295 = correlation factor of 99%.)

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Downtown Williamsburg Parking Study
Comparison of Actual Parking Occupancy
to Demand Estimates (Correlation)

**Exhibit
12b**

PHASE I SUMMARY

The results of the parking occupancy surveys indicated that while the overall study area currently has a surplus of 353 parking spaces, that surplus is not in a high demand area or within an acceptable walking distance (Sub-Area 5) to primary employment or shopping destinations. Furthermore, those surveys identified sub-areas where the supply of spaces just meets the demand for those spaces within Practical Capacity guidelines (Sub-Areas 1 and 4). In fact, the core of the study area, Sub-Area 3 - Retail Center, has a 132 parking space deficit.

The duration of stay and parking space turnover analysis concluded that 20% of the off-street users who park in 2-hour limit spaces exceed that time limit. On-street parking, with the exception of spaces along Prince George Street, primarily serve long-term parkers such as employees, students and visitors. Due to the lack of pavement marking for parking stalls, parking on Prince George Street is often chaotic, with a significant number of illegally parked vehicles present during most of the day.

The City's zoning ordinance for off-street parking requirements overestimates the downtown area's reliance of the automobile and underestimates the interrelationship between different land use activities as a far greater number of parking spaces would be required by code than are actually necessary. Parking demand factors which accurately estimate the peak period parking activities associated with the existing land uses in the study area were developed and will be used to assess future parking conditions given upcoming development and expansion proposals.

PHASE II - FUTURE PARKING CONDITIONS

EVALUATION OF POTENTIAL GROWTH

Future parking demand estimates are based on existing conditions in combination with future land use development scenarios which may be either planned or programmed. In addition, DESMAN reviewed established historic trends and growth projections for the downtown area (retail sales), Colonial Williamsburg visitation figures, and the College of William & Mary for future land use activity. Specifically identified projects include the Northington Block redevelopment and the Library expansion.

Colonial Williamsburg Attendance and Merchants Square Sales

Exhibits 13a and 13b present the 1992, 1993 and projected 1994 Colonial Williamsburg census data and Merchants Square's monthly gross sales. The census data includes the monthly attendance figures as well as the number of Visitor Center bus passengers. Both sets of information reflect a slight decline in attendance of approximately 1.5% per year. However, this rate of decline may reflect the overall downturn in tourist activity and the general economy during the latter half of the 1980's and early 1990's and should not be considered in the assessment of future conditions. No significant increase in student populations, changes to student automobile policies or on-campus expansion proposals are anticipated for the College in the near future. Therefore, tourism, shopping and student parking activity will be stabilized at the current level for purposes of this analysis.

New/Proposed Developments

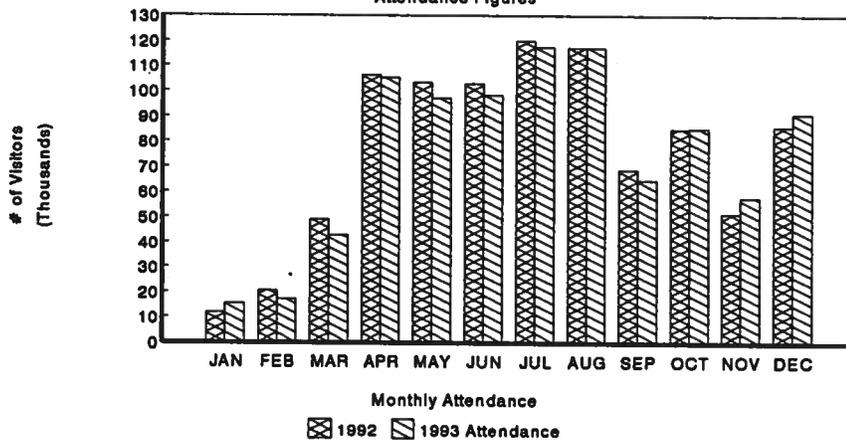
Discussions with the City and with CWF identified several future development/expansion plans within the study area. Exhibit 14 illustrates the development type, location and density of those plans. Future development includes the expansion of the Library, conversion of the existing Boundary St. office building, redevelopment plans for the Northington Block, and potential expansion of Merchants Square. While the future relocation of the Courthouse and potential reuse/redevelopment of those facilities were discussed, neither CWF nor the City would predict the type or timing of any redevelopment. It was agreed, however, that the scale of redevelopment, once known, is not anticipated to significantly increase parking activity in that area or affect parking conditions in more critical areas (Sub-Areas 1 and 3).

By applying the parking demand factors created earlier to these developments, the estimated peak period parking impact can be added to the existing conditions within each sub-area. As a result of this analysis, 186 parking spaces would be required to serve these uses during the peak period. Note, however, that as the conversion of the Boundary St. office building would only eliminate a small number of existing spaces which serves this building, nearly all the 64 spaces required on this site will already be provided.

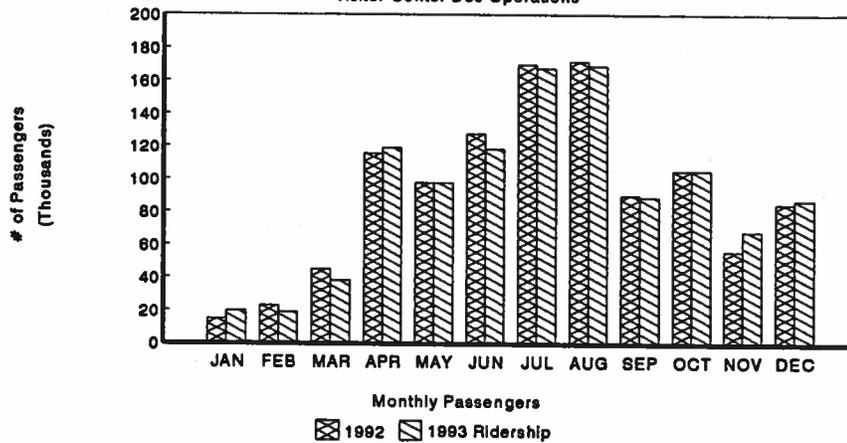
COLONIAL WILLIAMSBURG CENSUS DATA

MONTH	ATTENDANCE		VISITOR CENTER BUS OPERATIONS	
	1992	1993	1992	1993
JAN	11,858	15,387	14,576	19,626
FEB	20,522	17,157	22,728	18,830
MAR	49,032	42,631	44,634	38,194
APR	106,192	105,275	115,678	119,002
MAY	103,252	97,028	97,459	97,628
JUN	102,893	98,374	127,302	118,239
JUL	119,866	117,314	169,600	167,565
AUG	117,283	117,258	171,787	168,828
SEP	68,779	64,764	89,822	88,719
OCT	84,817	85,158	105,032	105,056
NOV	51,517	57,791	55,956	68,296
DEC	85,880	90,915	84,760	86,980
TOTAL	921,891	909,052	1,099,334	1,096,963

Colonial Williamsburg
Attendance Figures



Colonial Williamsburg
Visitor Center Bus Operations

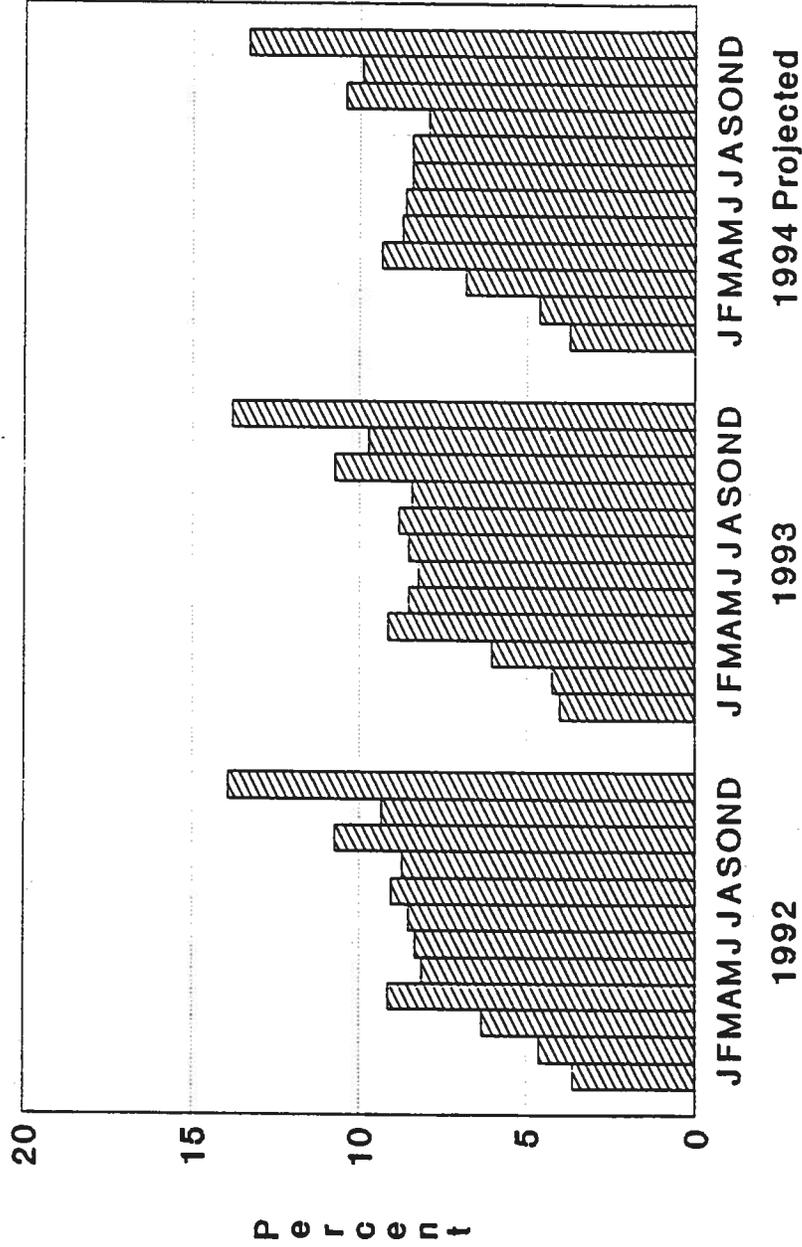


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Downtown Williamsburg Parking Study
Colonial Williamsburg Visitation and Visitor
Center Take-Away Bus Ridership

**Exhibit
13a**

Merchants Square Percent of Year's Gross Sales



NEW/FUTURE DEVELOPMENT IMPACT

EXPANSION/ DEVELOPMENT	LOCATION (SUB-AREA)	LAND USE		ESTIMATED PEAK PARKING DEMAND
		TYPE	DENSITY	
Library Expansion	Sub-Area 1	Library	10,927 SF	27 Spaces
Boundary St. Office Bldg. (1)	Sub-Area 1	Retail	19,039 SF	50 Spaces
		Office	6,347 SF	14 Spaces
Northington Block	Sub-Area 1	still to be determined (2)		30 Spaces
Merchants Sq. Expansion	Sub-Area 3	Retail	25,000 SF	65 Spaces
TOTAL DEVELOPMENT				186 Spaces

C:\DEMAND2

NOTE:

- (1) As 63 existing spaces at the Boundary St. Office Bldg. will remain after conversion, the net increase in unmet parking demand for development equals only 1 spaces (64 space demand minus 63 existing spaces)
- (2) At this time the development mix for the Northington Block redevelopment plan has not been finalized or approved. Based on the redevelopment of the existing buildings on site and the mix of residential and commercial space, an approximate 30 - 40 space demand can be anticipated.

Future Parking Surplus/Deficiency

Exhibit 15 illustrates the layering of the additional parking demand associated with future expansion/development programs within each sub-area and for the downtown as a whole. Based on this analysis a parking surplus of 230 spaces would remain even when considering Practical Capacity. However, as before, the majority of that surplus would exist in Parking Sub-Area 5 which is inconvenient to typical parkers. The 129 space parking surplus projected for Sub-Area 2 - Church/Triangle area, primarily exists to serve church functions and is currently restricted to clergy, employees and volunteers, and therefore should not be considered a supply which would be available to the general public. With the redevelopment of the Northington Block and expansion of the Library, a 56 space parking deficiency would occur in Sub-Area 1. With possible expansion of retail space in Merchants Square, Sub-Area 3 would face a parking deficit of 197 spaces.

VARIOUS PARKING SOLUTIONS

Given the existing 132 space deficiency and projected 197 space deficiency in Sub-Area 3 - Retail Centers, and the projected 56 space deficiency in Sub-Area 1 - Municipal Center, the next step of the analysis involves the development of a well conceived parking program which will provide viable support to meet existing and future deficiencies. Various parking management policy and facility development options will be required to create a successful downtown parking master plan which can address the specific deficiencies. However, parking management strategies and facility development must be gradually implemented to maintain the current support for retail, office and tourist activities in the downtown area.

Parking management solutions are policy changes, most of which can be implemented quickly, and would include improved/expanded signage, modification of existing parking enforcement policies, and the coordination between existing transit operations (bus service). Parking facility recommendations include development of a public surface lot for long- and short-term parkers, elimination of some on-street parking, and, to improve the utilization of existing short-term retail parking, the phasing of a pay parking system at key on- and off-street areas.

Facility recommendations have been broken into two separate phases in an effort to evaluate and balance their desired effects. It is recommended that Phase I Parking Facility Improvements be initiated and reviewed shortly thereafter to determine their effectiveness. The key to Phase I is the development of a public parking facility within close proximity to the study area's core which can serve both short-term and long-term parker's needs. This parking facility would allow other parking improvements to be made without disrupting supply and demand requirements. Although Phase II (Pay Parking System) could be implemented simultaneously with Phase I, it should be reserved so that the effectiveness of Phase I improvements can be measured.

**FUTURE PARKING SURPLUS/DEFICIENCY BY SUB-AREA
FOR THE PEAK PERIOD OF PARKING**

SUB-AREA	TOTAL PARKING SUPPLY	PRACTICAL CAPACITY OF SUPPLY (1)	CURRENT OCCUPANCY (2)	ADDITIONAL PARKING DEMAND (3)	PARKING SURPLUS OR DEFICIENCY
SUB-AREA 1 Municipal/Northington	654	556	554	58	-56
SUB-AREA 2 Church/Triangle	633	538	409	0	129
SUB-AREA 3 Retail Center/Merchants Sq.	840	714	846	65	-197 4)
SUB-AREA 4 W&M Bookstore/Facilities	277	236	227	0	9
SUB-AREA 5 Gallery/Employee Parking	710	604	259	0	345
TOTAL:	3,114	2,648	2,295	123	230

CA/FUTURE2

NOTE:

- (1) Under the concept of Practical Capacity a parking facility is perceived to be at full operational capacity when occupancy levels reach 85-90%. Once this level is exceeded, potential parkers find difficulty in locating an available space. Given the retail nature of this area, 85% was used.
- (2) Actual peak period weekday occupancy occurred on Thursday between 1 and 2 PM. Occupancy for the total of all parking spaces is based on the representative sample which was surveyed (approximately 67% of all spaces).
- (3) See the previous exhibits on proposed development for the estimation of additional parking demand.
- (4) Based on the assessment of existing parking conditions, a existing parking deficiency of 132 spaces was identified in Sub-Area 3 earlier in the analysis (see Exhibit 7).

Additionally, the municipal parking code requirements analyzed in Phase I of this report will be reexamined. The number of off-street spaces required for development and the standard dimensions required for parking stalls and drive isles will be included in this assessment.

Under each of the following sections, each suggested improvement will be summarized and number for ease of discussion and evaluation.

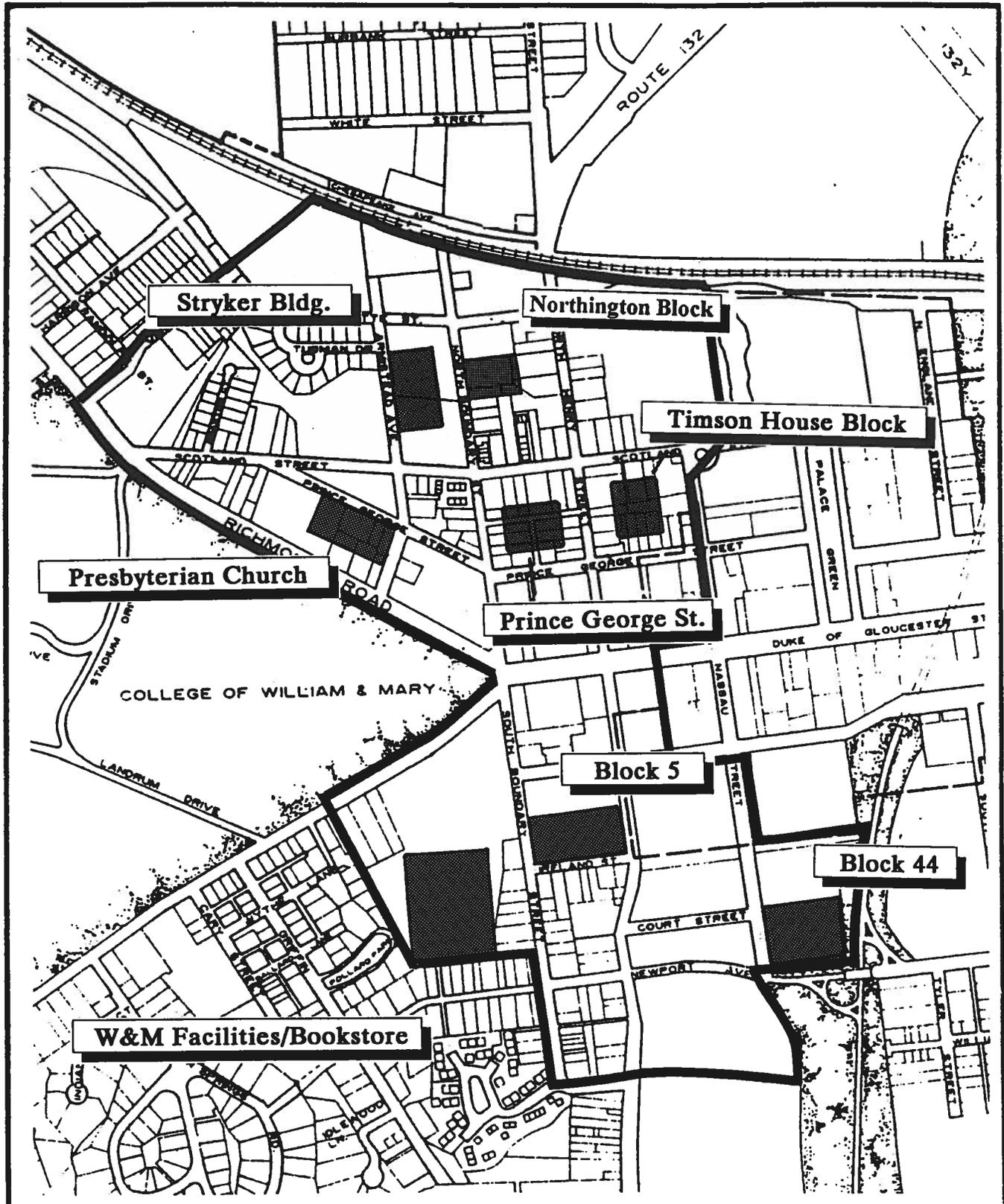
Parking Management Solutions

- 1 Parking for business visitors and tourists to the College can be redirected to other, more appropriate campus parking facilities, such as the stadium lot or to other visitor parking areas (i.e. 66 metered parking spaces exist on campus). Signs can be installed at key locations to direct these parkers to these areas. A suggested signage plan will be part of the final submission.
- 2 Parking in Sub-Area 4, which was only 18% occupied during the peak of the Saturday surveys could be used as W & M visitor parking and as an overflow lot for Merchants Square/tourist parking during weekends. Informational signage can be placed in front of the entrance to the W & M Bookstore/Facilities Management parking area and at all Merchants Square lots. Initial discussions with W & M regarding this issue have been favorable.
- 3 A parking enforcement system which identifies and fines repeat offenders while also minimizing the negative impact of parking fines for first time visitors must be developed. An administrative parking review system managed by the City's Finance Department or other agency could wave first time violations. Upon the initiation of such a system, parking fines should be raised above the current fine of \$10.00 to deter additional violations and to financially support any additional administrative expenses.
- 4 Discussion between the City, James City County Transit, the College, and CWF should be initiated by the City so that a more consolidated transit/shuttle system could be developed. Currently, each agency operates individually, without coordination of service and routing.
- 5 The City should consider reassessing the present zoning ordinance regarding off-street parking requirements for existing retail and restaurant uses within the study area. Based on the results of the land use analysis, the existing code overestimates the number of parking spaces required for new or redeveloped properties. Therefore, DESMAN would suggest that the various codes for retail and restaurant square feet be consolidated and reduced to 1 parking space to 333 square feet. Appendix Exhibit E illustrates the boundary of the Parking Overlay District where the application of this requirement is permitted. Note that the modification of existing zoning requirements would best be initiated in conjunction with the development of additional public parking facilities.

- 6 Bicycle parking facilities need to be provided in appropriate areas of the downtown. Bike racks should be provided at the municipal and Library buildings, government center, and at Merchants Square along Duke of Gloucester Street. Any new parking facilities need to include bike racks and consider circulation and access requirements of bicyclists. A bicycles represent an ever increase commuting option, bicycle lockers should also be considered for the storage of bikes and associated gear (helmets, pads, etc.). Appendix Exhibit F illustrates the recommended location for bicycle lockers and other cyclist conveniences.
- 7 The City should change the current minimum dimensions of all non-parallel parking spaces. Section 21-704 of the Zoning Ordinance sets the minimum parking stall size at 9 feet by 18 feet. Acceptable dimensions for parking stalls can be reduced to 8.5 feet by 18 feet, thereby increasing the number of spaces on an existing or future site.
- 8 The City should consider the acquisition of key parcels of land for future development of either surface lots or a parking garage to meet future deficits. Exhibit 16 illustrates a number of sites which have the necessary physical requirements for the development of parking. These sites were then evaluated using both physical and developmental criteria. Adjacency to historic activities was one of the key factors used to eliminate unacceptable locations. Appendix Exhibit G illustrates the criteria and scoring used to select acceptable sites.

Phase I - Parking Facility Improvements

- 9 As identified under recommendation number 8, additional off-street parking at key downtown locations should be developed to meet current and future deficits. Given the lack of long-term parking for non-CWF employees in the downtown area, a significant number of spaces needs to be created for these individuals. This supply would permit the City to replace long-term on-street parking spaces with short-term, retail oriented spaces, or, in heavily traveled roadways, eliminate on-street parking altogether. Phase III of this report will examine the potential associated with a public surface lot off Prince George Street behind the Hitchens and Sacalis buildings.
- 10 It is recommended that, with the development of additional long-term parking options, long-term on-street parking should be eliminated along North Henry Street. Parking on North Henry Street creates a significant traffic problem due to cars pausing for an available space. Furthermore, long-term parking along North Boundary should be replaced with short-term parking spaces. Two hour parking limit signs similar to those on Prince George Street should be installed along North Boundary Street to serve library patrons. However, as noted, these improvements should be done in conjunction with the development of a long-term off-street parking facility to serve these individuals.
11. The Colonial Williamsburg Foundation could reexamine the layout/design of existing parking lots. Parking in Block 5 has been examined by DESMAN and has been found



to be a successful candidate for improved capacity and circulation without disturbing existing vegetation.

12. On-street parking along Prince George Street is often chaotic, with a constant number of vehicles either parking in no parking zones or double parking to deliver or pick up merchandize. Therefore, parking meters along this section should be installed. Parking rates, however, should be structured to encourage orderly utilization and turnover of these high demand spaces with deterring shoppers.

Phase II - Pay Parking System

- 13 A comprehensive parking meter installation program should be implemented in locations where short-term parking is beneficial. CWF should consider installing short-term parking meters or payment kiosks (2-hour limit or less) in the two Merchants Square lots near Duke of Gloucester Street (Blocks 22 and 23). These pay parking spaces would compliment the on-street meters on Prince George Street which were recommended earlier. Again, hourly parking rates should be structured to encourage high turnover of spaces without deterring retail visitors. As a significant percentage of Merchants Square visitors park for less that 1 hour, 15 and/or 30 minute meters can be installed along store fronts to serve those quick stop shoppers. Parking rates at these locations should be set at a higher rate that the 2 hour meters to ensure higher turnover.
- 14 In combination with the installation of parking meters at various on- and off-street locations, Colonial Williamsburg should introduce cashier operated pay parking at the other Merchants Square facilities (Block 5, 14, and 15) south of Duke of Gloucester Street. With a minimum purchase at any of the Merchants Square or other participating shops and restaurants, the first 2 hours of parking at these facilities would be free. Otherwise, hourly parking rates would be equal to or slightly lower that those suggested for off-street meters to encourage its use. Long-term parking would be deterred by an accelerating parking rate schedule, i.e. each hour beyond 2 hours becomes more expensive, with a set maximum daily rate (beyond eight hours). This system could deter unwarranted parkers (students, CWF employees, etc.) while providing a service to short- and immediate-term Merchants Square parkers.

PHASE II SUMMARY

This section of the analysis has identified both current and future parking deficiencies and has introduced both policy changes and facility development options which could improve parking conditions in downtown Williamsburg. It is recommended that the balanced application of both parking management and parking facility development would be most successful as each type of solution compliments and supports the other. Without increasing the supply of off-street spaces for long-term, non-Colonial Williamsburg parking, policies which reduce or restrict on-street parking will have a negative effect of displacing those long-term parkers. Without the development of metered spaces on Prince George Street and other on-street restrictions, the

introduction of pay parking in Merchants Square lots would relocate parkers to these on-street areas, increasing traffic congestion.

The next section of this report will address the specifics associated with a parking master plan, i.e. the location, number and cost of off-street meters recommended, the location, number of spaces and development cost of off-street facilities, and the layout, circulation and number of spaces achieved through improved striping of existing lots. Please note that all plans introduced in this section are conceptual and do not represent final or design plans for construction.

PHASE III - MASTER PLAN/CONCEPT PLAN DEVELOPMENT

INTRODUCTION

Given the general recommendations issued in Phase II, Phase III will discuss key issues toward the implementation of a parking master plan for the downtown Williamsburg area. Included in the master plan will be the identification of appropriate sites for the development of new public parking facilities, recommendations to improve the overall parking conditions at existing facilities, and a recommended parking management strategy, i.e. a pay parking system.

On-Street Parking Meters

It has been recommended that on-street parking on Prince George Street from Armistead Avenue to North Henry Street should be metered. Approximately 48 metered spaces could be created in this high demand area. As noted earlier, parking rates at these on-street spaces should be slightly higher than in the off-street locations (to be suggested). Assuming a \$500 acquisition and installation cost, this program would cost approximately \$24,000. Note that this program is required regardless to the development of a City wide pay parking system as parking controls are needed in this presently chaotic high demand area.

Prince George Street Public Parking Facility.

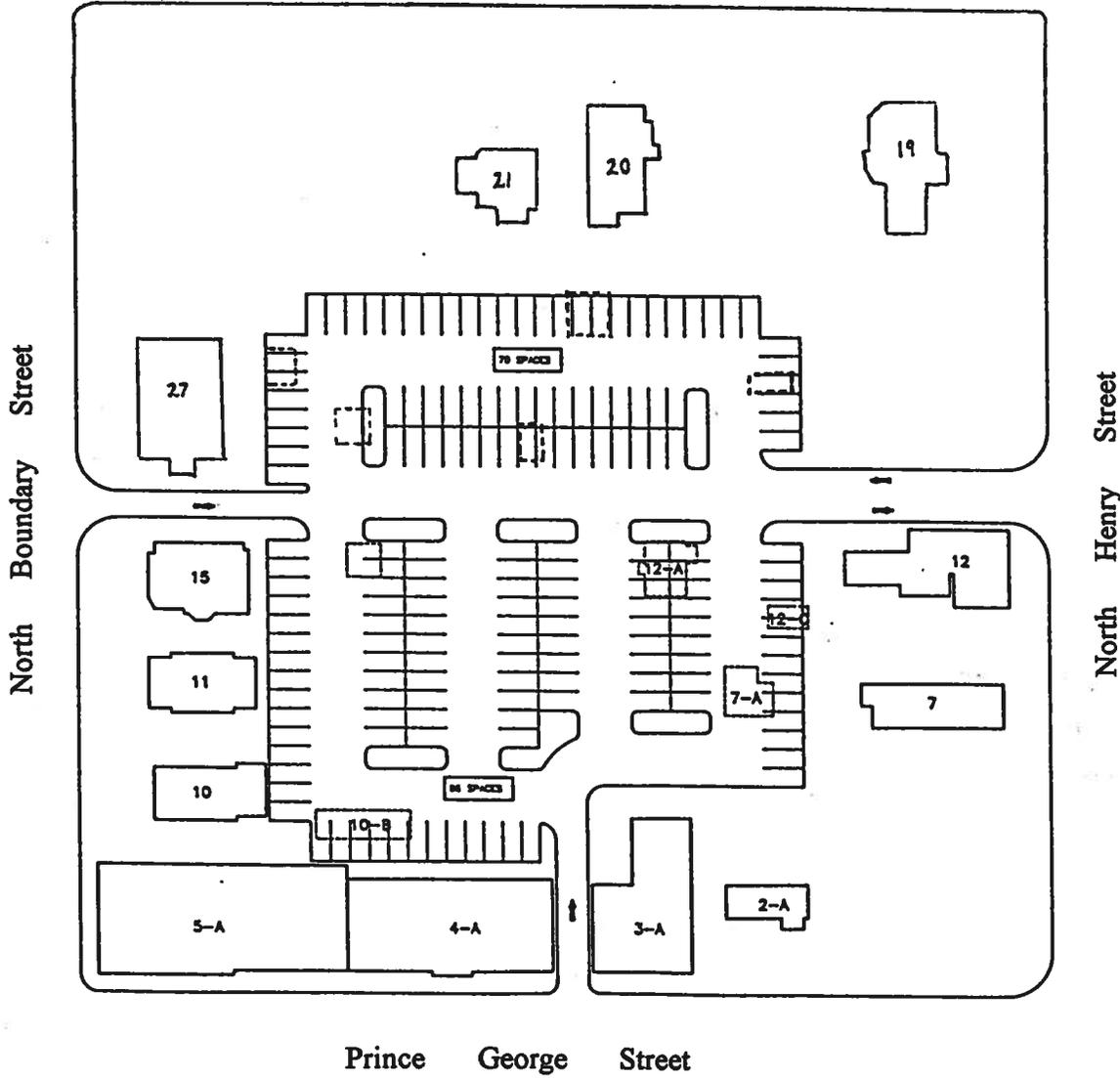
In conjunction with the identification of acceptable parking development sites, DESMAN has prepared a conceptual layout for a public surface parking lot in Block 31 behind the Hitchens Building. Currently, a number of small informal private lots serve a variety of different property owners, and, as such, provides only 43 spaces. By consolidating that property, the City could develop a potentially large (approximately 150 spaces) public surface lot serving both long-term monthly permit parking and short-term metered parking. Exhibit 17a illustrates the conceptual layout and access for this facility.

It is recommended that the 70 spaces north of the access road be used for monthly permit parking to serve the large number of non-Colonial Williamsburg employees who do not have access to off-street parking facilities. The City could be responsible for issuing monthly permits (decal/stickers) to those who wish to purchase a permit. Monthly rates can be monitored during the first year to determine an acceptable market rate and to ensure coverage of administrative expenses.

The remainder of the lot should be metered to serve short-term, retail oriented parkers. Parking rates should be slightly less than those which are installed along Prince George Street. Appropriate signage should be introduced at key intersections (decision making points) and at the North Boundary and North Henry street entrances.

Construction of a Prince George Street public parking lot would cost an estimated \$335,000, assuming a \$1,500 per space construction cost, \$300 per meter purchase and installation cost,

Scotland Street



Existing Number of Spaces =	43
Proposed Facility Capacity =	158
Net Increase in Supply =	105

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Downtown Williamsburg Parking Study
Prince George St. Public Parking Lot
(Conceptual Plan)

Exhibit
17a

appropriate illumination and signage costs, and architecture/engineering services. Note that this estimate does not include land acquisition costs.

Once constructed, this consolidated surface lot could be eventually redeveloped by the City as a parking garage assuming an increase in future parking demand. Exhibit 17b illustrates the concept plan for the at-grade level of a 3 level parking structure. Approximately 300 spaces could be developed on this property, serving both short-term and long-term parkers through attendant/gate operations. Construction costs for this project are estimated at \$2,500,000, and assumes extensive facade treatments and amenities to mitigate any negative visual impacts.

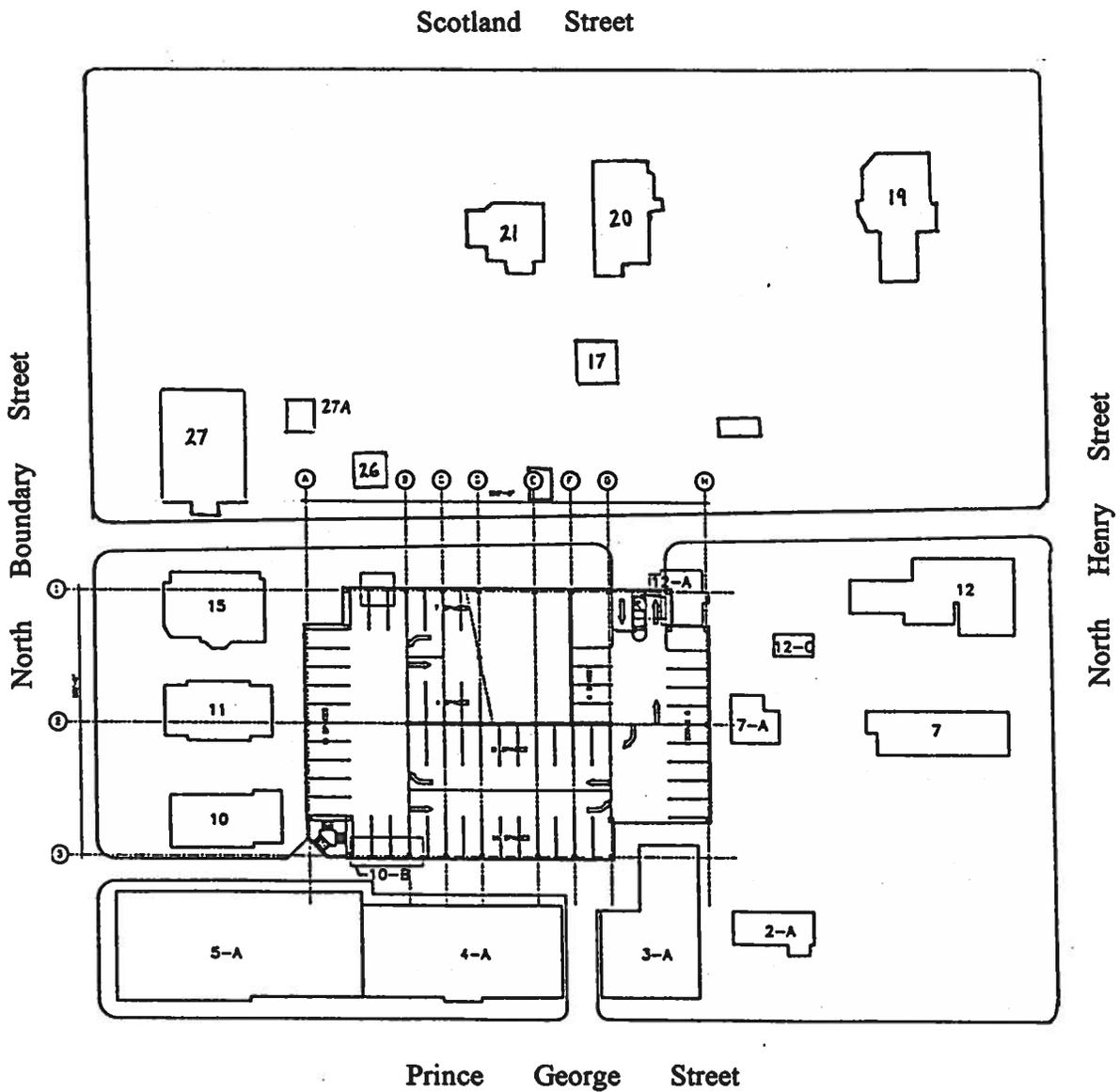
Municipal Center/Northington Block Possibilities

As a parking deficiency is projected for the Municipal/Northington area (Sub-Area 1), recommendations which address this deficiency are required. Note that the demand for parking in this area and any potential solutions to satisfy this demand must be developed in a consolidated manner, as the studies conducted thus far have indicated that this area of the downtown functions separately and is distinctly different from other sections of the Downtown. Given the redevelopment efforts associated with the Northington Block, both the Municipal Center's and Northington Block's parking issues should be addressed simultaneously and comprehensively to anticipated future needs.

To satisfy the parking needs associated with the library expansion an, approximately 70 additional spaces would be needed at a minimum to meet the zoning ordinance requirements. However, meeting this minimum requirement may only represent a short term solution, and may not be enough to meet the peak parking demand in the long term. Furthermore, this supply would not satisfy the potential demand associated with a finalized Northington Block redevelopment scheme. At present, no definitive redevelopment plans have been approved, and, therefore, the final parking demand figures for this redevelopment are not available. However, DESMAN has developed a formula for estimating this demand and has made some assumptions for analysis purposes (see Exhibit 14). The peak period parking demand, taking into consideration shared parking opportunities, would be developed for the two block area as follows, and would include the on-street parking around the municipal block:

- o Office uses 2.5 spaces/1,000 sf demand factor, 100% peak period factor
- o Assembly 1 space/4 fixed seats demand factor, 40% peak period factor
1 space/100 sf (no fixed seats), 40% peak period factor
- o Library uses 5 spaces/1,000 sf demand factor, 87% peak period factor
- o Retail uses 3 spaces/1,000 sf demand factor, 97% peak period factor
- o Residential uses 1 space/unit demand factor, 59% peak period factor

Northington Block parking needs, as well as Municipal Center block needs, could be met by ground level parking in both blocks, or a combination of ground level and structured parking. DESMAN Associates, as well as LDR International and Carlton Abbott Partners, examined the concept of a two to three level parking structure in the Municipal Center block behind the



Existing Number of Spaces =	43
Proposed Facility Capacity =	300
Net Increase in Supply =	257

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Downtown Williamsburg Parking Study
Prince George St. Public Parking Garage
(Conceptual Plan)

Exhibit
17b

Stryker Building, and LDR has also looked into the possibilities for a two level parking structure in the Northington Block. Based on preliminary information, approximately 240 parking spaces in a two level structure (with partial basement) could be constructed on land which the City presently owns, thereby minimizing any development costs. Land would need to be acquired to construct either ground level or structured parking in the Northington Block.

Any additional parking provided to serve existing and future patrons, visitors and residents of the Municipal Center and Northington Block areas must ensure that a functional surplus of parking is provided. Good facility planning and design practice dictate that a surplus of 10-15% over and above the peak demand for parking be provided to ensure the safe, efficient and effective utilization of spaces (concept of 85-90% Practical Capacity). Therefore, when examining the estimated peak demand associated with both the Municipal Center and eventual Northington Block redevelopment plan, this functional surplus should be included.

Improvement of Existing Facilities

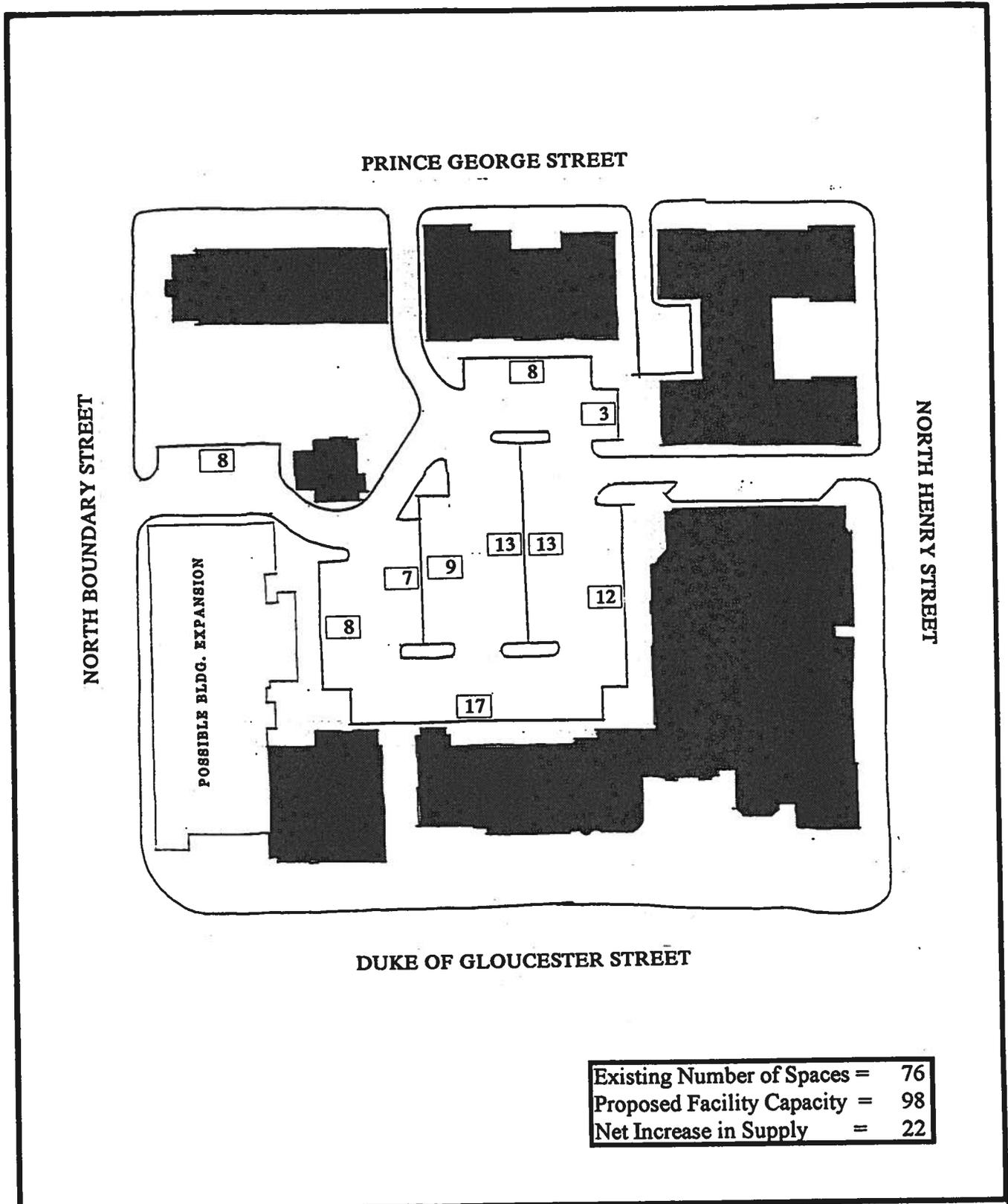
The key issue involving Merchants Square parking involves enhancing signage and pavement marking to improve the identification of existing parking stalls as well as relocating parkers not associated with tourist/retail activity. CWF needs to develop an alternative striping policy as the currently parking stall markings quickly fade, reducing efficiency of each lot. Reflective stone and improved curb pavement markers may improve this situation.

Furthermore, the Foundation should reexamine the layout/design of existing Merchants Square parking lots and introduce a pay parking system as suggested earlier. DESMAN was successful in developing layout alternatives which would increase the supply of parking spaces in Blocks 5 and 23. Exhibits 18a and 18b illustrate the conceptual layouts for each. Based on these conceptual plans, over 40 additional parking spaces could be created. Note that circulation and ingress/egress requirements for both metered operation (Blocks 14, 15, 22 and 23) and attendant operation (Block 5) have been considered in this assessment. Attendant operations in Blocks 14 and 15 were not recommended due to the significant number of spaces lost to the channelization required for booths and gates.

The Block 5, 14 and 15 parking lots could be used to serve retail parkers who wish to remain for longer than 2-hours. As mentioned earlier, manned/gated operation at this lot could serve short- and long-term parkers while deterring students, employees and campus visitors.

Costs associated with the development of a pay system (meters, gates, improved pavement markings) at all Merchants Square facilities is estimated to range from \$528,000 to \$572,000 depending on the scale of improvements made. Note however, that this cost estimate does not include the personnel required to man cashier booths, parking patrol/enforcement, and/or collection of meter revenue.





Existing Number of Spaces =	76
Proposed Facility Capacity =	98
Net Increase in Supply =	22

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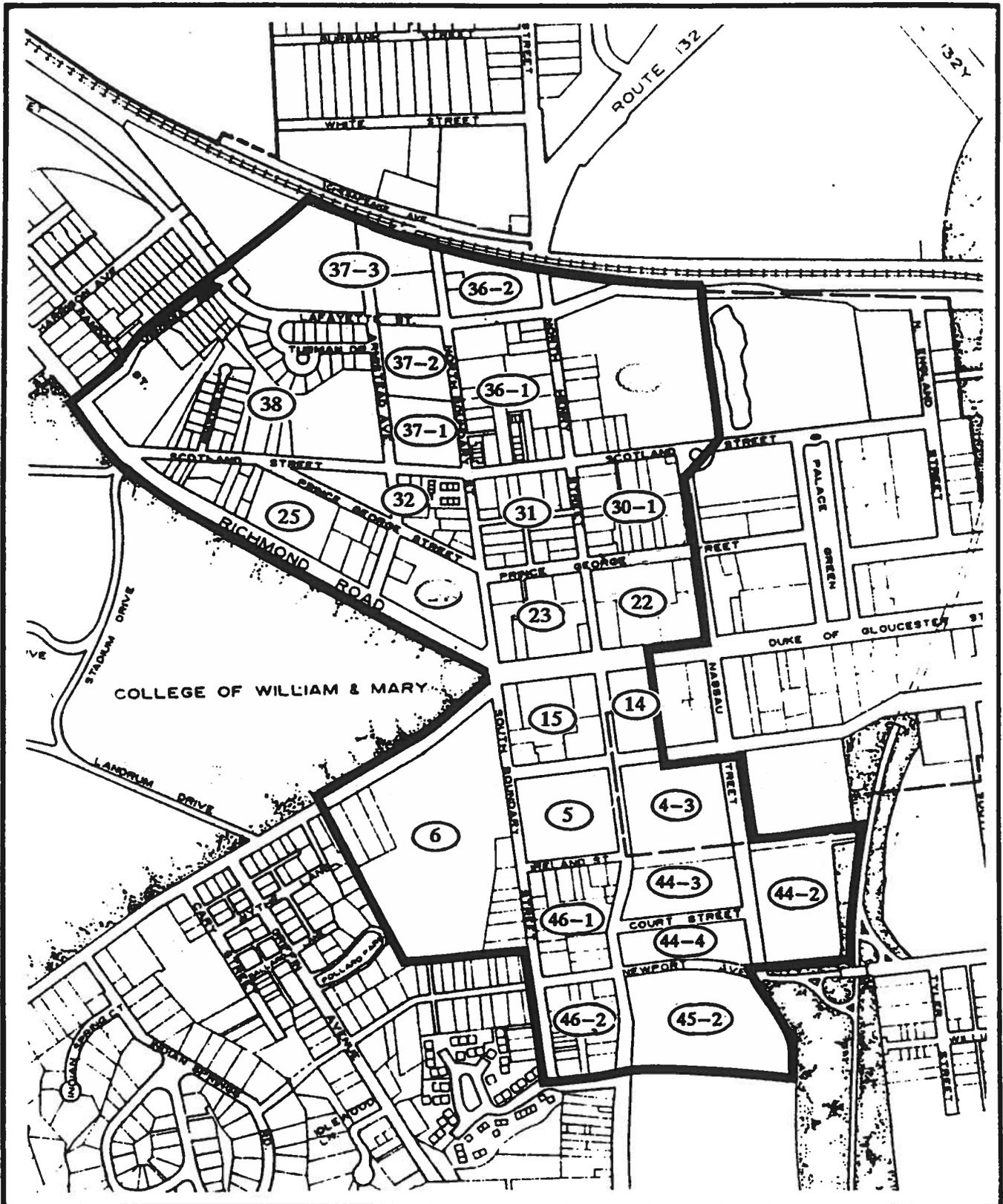
Downtown Williamsburg Parking Study
Merchants Sq./Block 23 Restriping Plan

Exhibit
18b

Phase III Summary

Critical to the success of a parking master plan is appropriate cooperative agreements between the City of Williamsburg, the College of William and Mary, the Colonial Williamsburg Foundation, the Merchants Square Associations and other downtown business leaders. The recommendations in this report represent an outline of the strategies which DESMAN believes would be successful in bringing equilibrium to the existing parking system. Therefore, integrating the unique parking requirements associated with each of these groups into a single consolidated parking system must be a primary goal.

APPENDIX



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Downtown Williamsburg Parking Study
Downtown Block Coding
(Source: Colonial Williamsburg Foundation)

Exhibit
A1

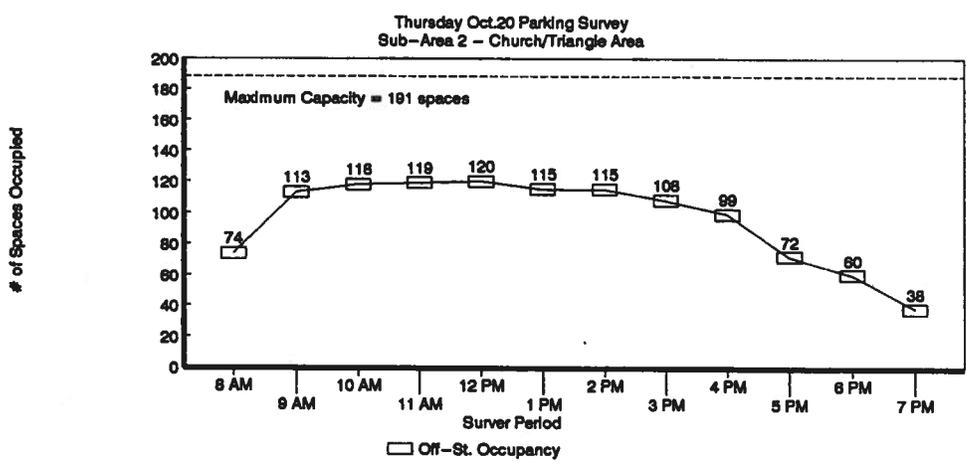
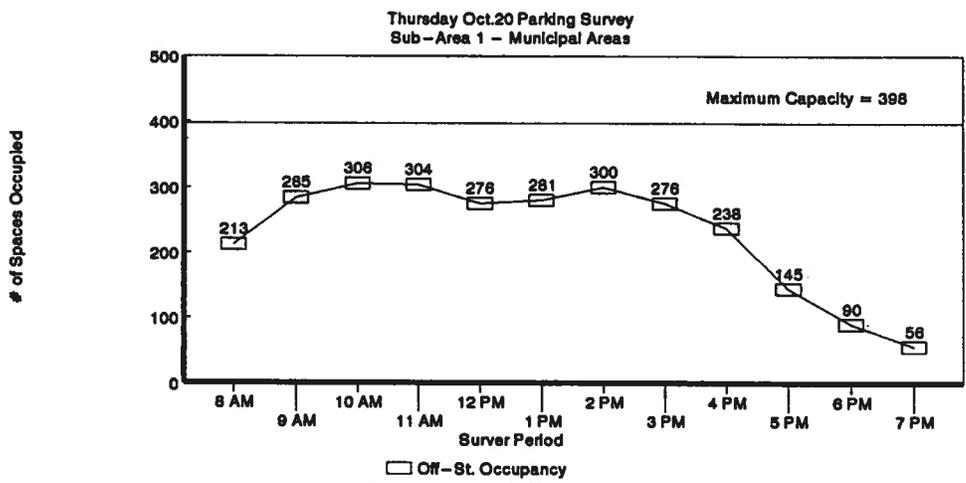
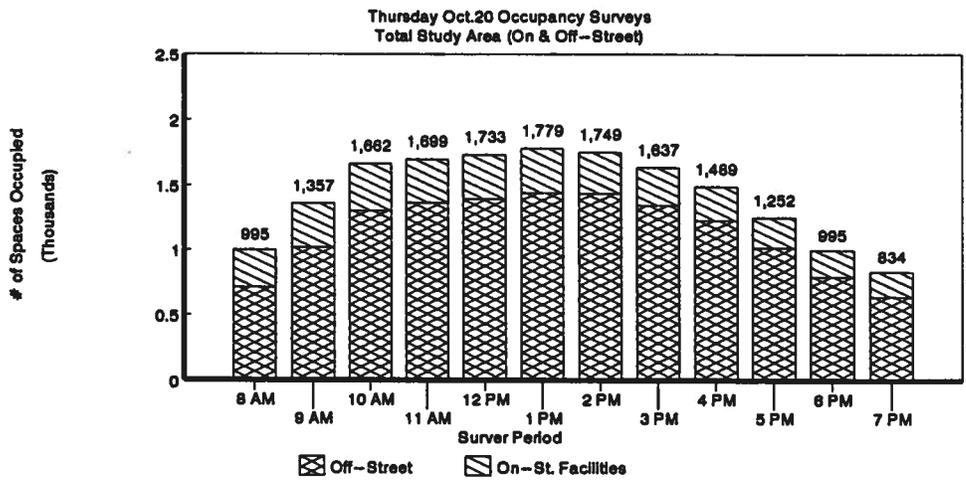
EXISTING PARKING SUPPLY

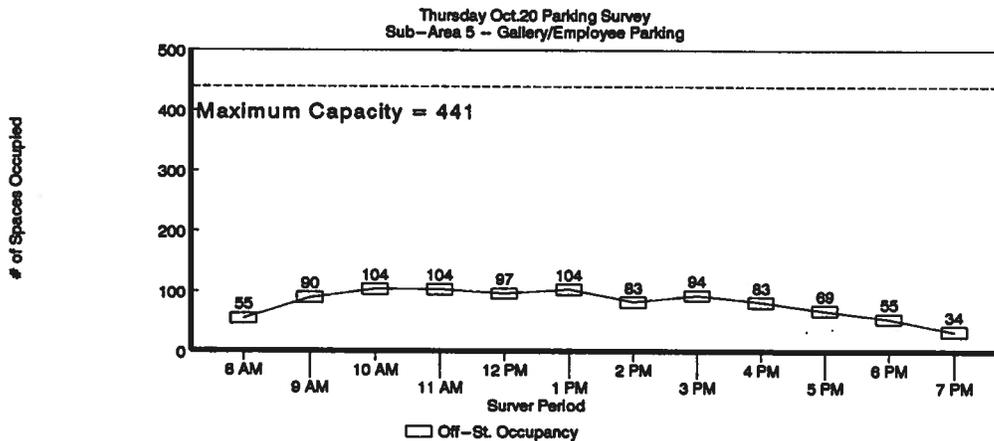
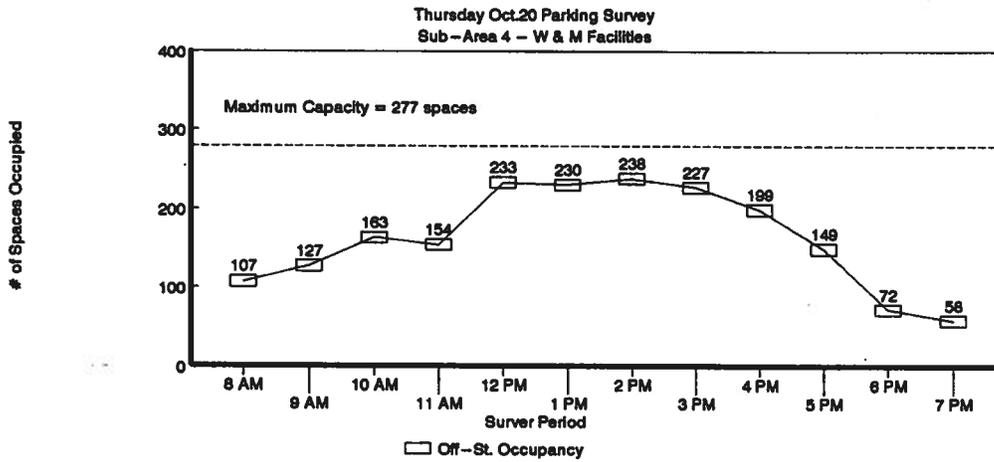
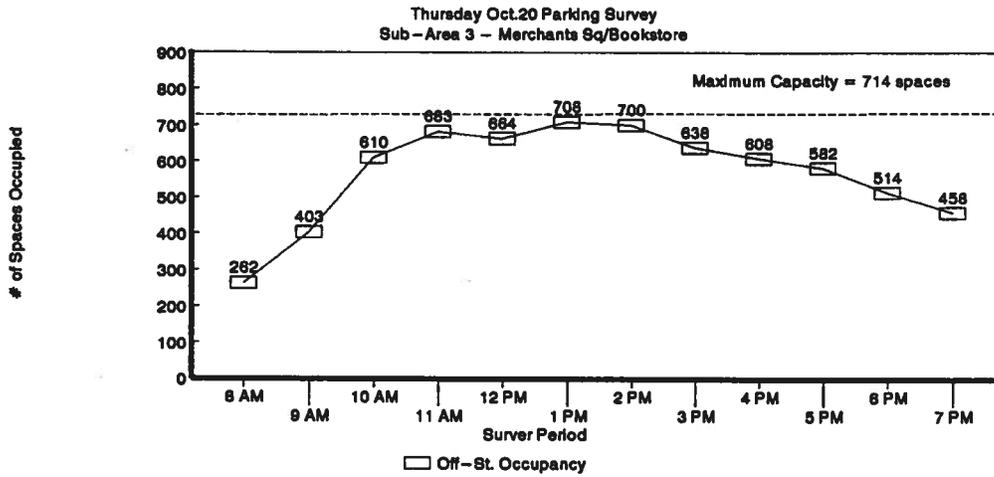
LOCATION/ BLOCK	ON-STREET	OFF-STREET	TOTAL
4-3	0	0	0
5	0	296	296
6	0	277	277
14	0	62	62
15	0	84	84
22	0	192	192
23	8	88	96
24	25	21	46
25	33	281	314
30-1	14	8	22
31	25	63	88
32	33	70	103
35	8	89	97
36-1	14	111	125
36-2	7	98	105
37-1	20	66	86
37-2	16	67	83
37-3	6	152	158
38	28	105	133
44-2	0	382	382
44-3	18	59	77
44-4	25	0	25
45-2	32	86	118
46-1	22	40	62
46-2	22	24	46
W&M Campus	37	0	37
TOTAL	393	2,721	3,114

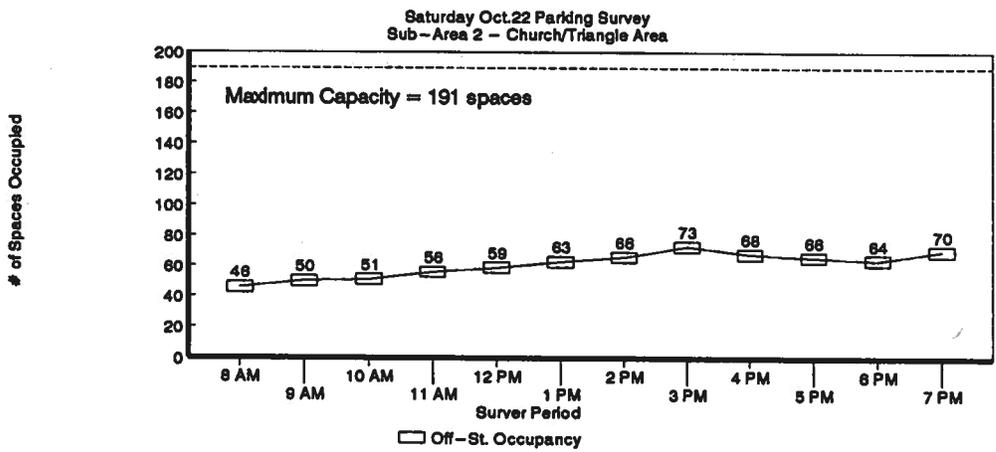
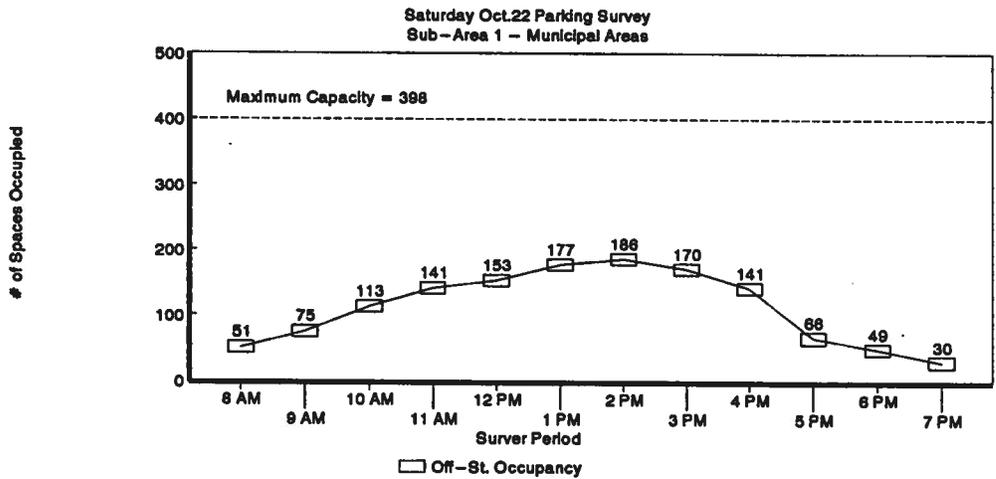
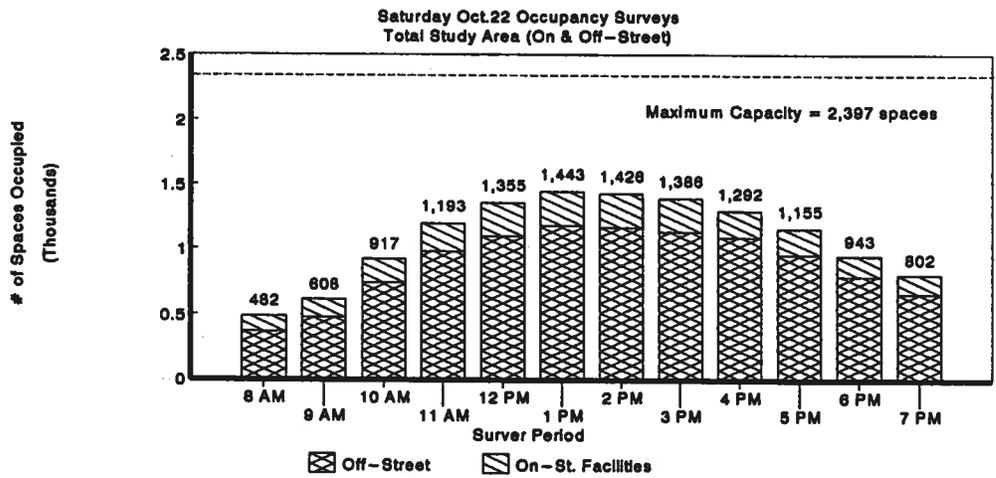
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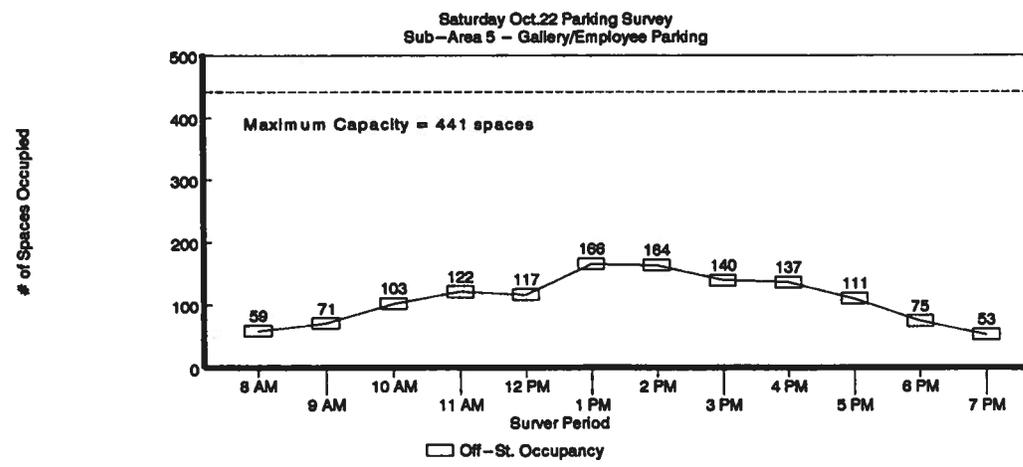
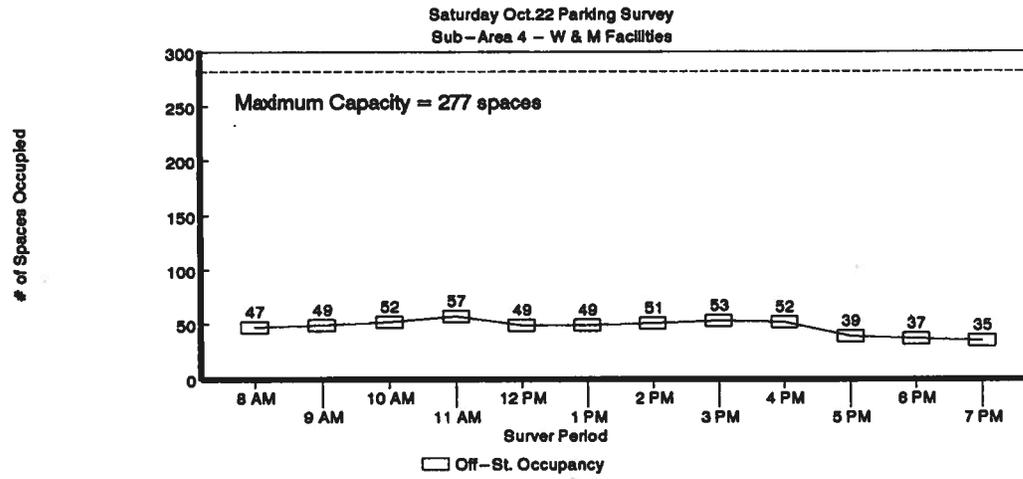
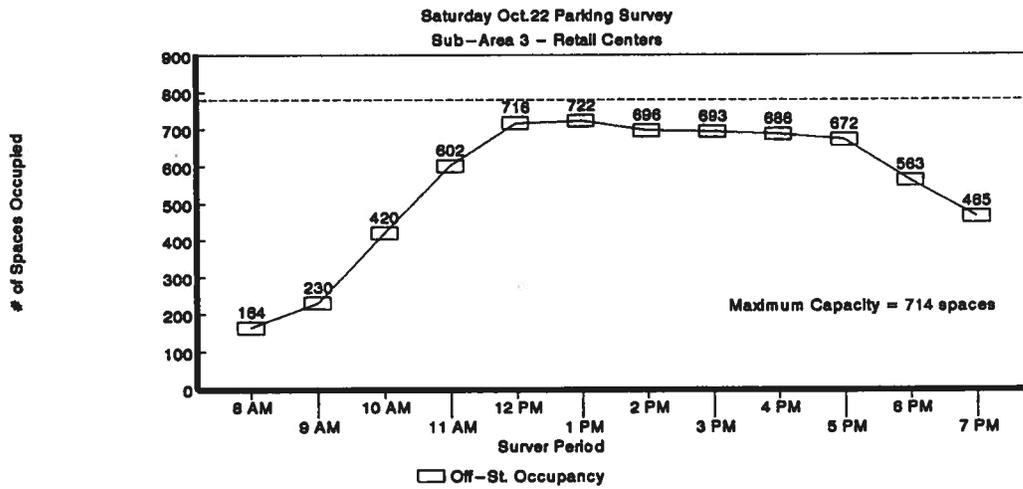
NOTE:

The supply of spaces is based on an inventory which was conducted on Tuesday, June 7th. Further note that on-street spaces are unmarked, and that this supply may fluctuate depending on daily conditions. Included in this inventory are approximately 37 spaces on Richmond Rd. along the W&M campus.

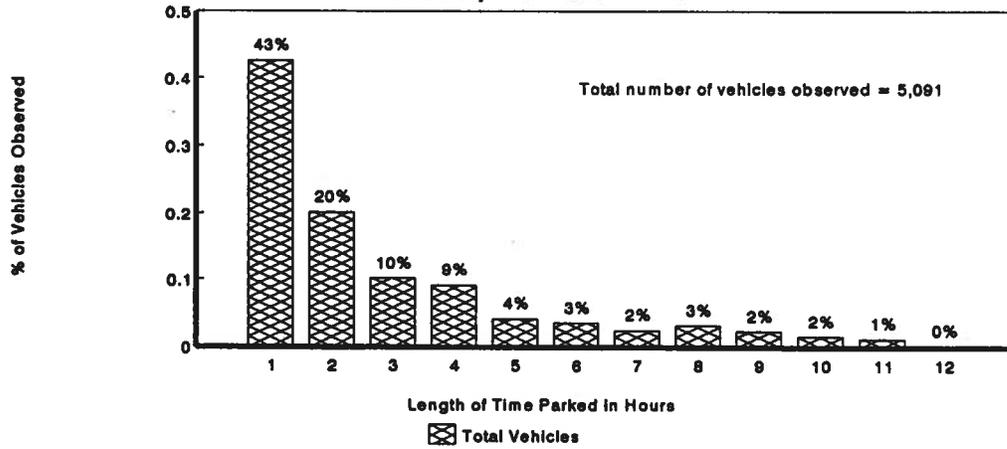




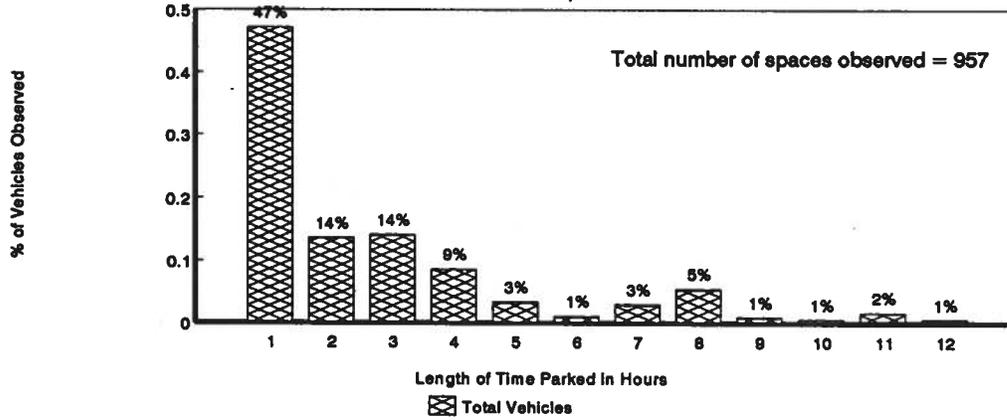




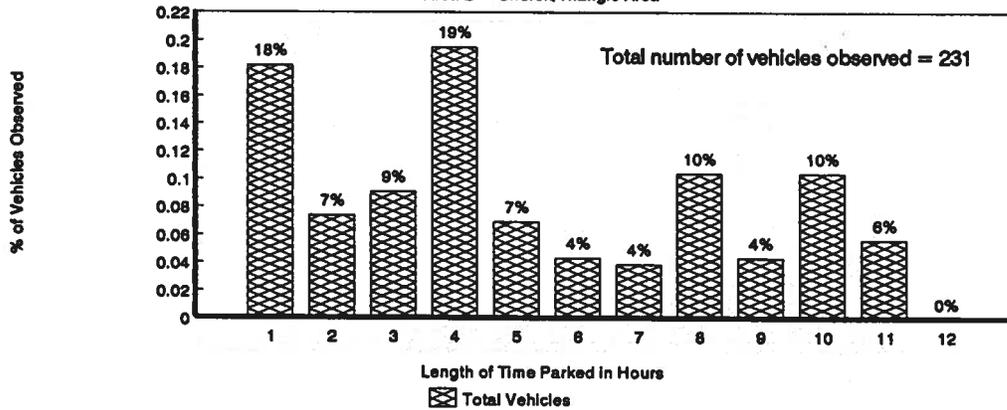
Thursday Oct. 20th Duration Surveys
Total Study Area - Percent of Total

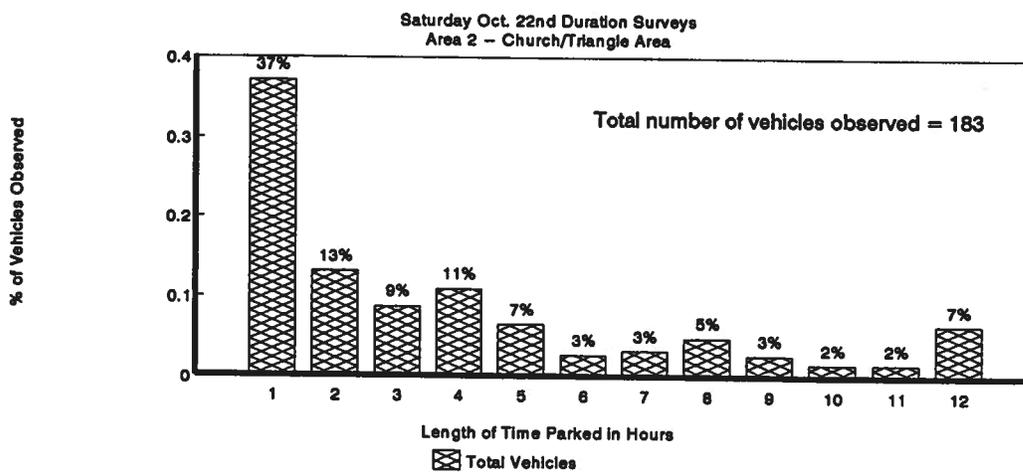
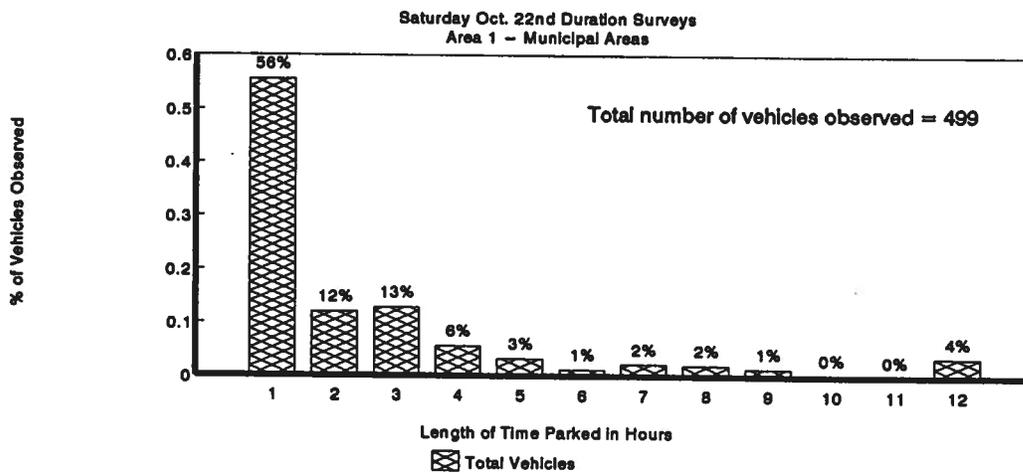
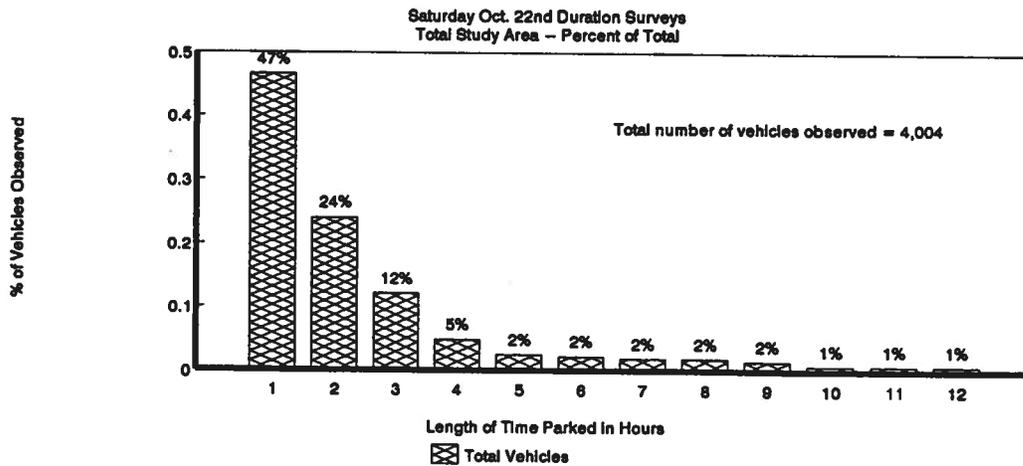


Thursday Oct. 20th Duration Surveys
Area 1 - Municipal Areas

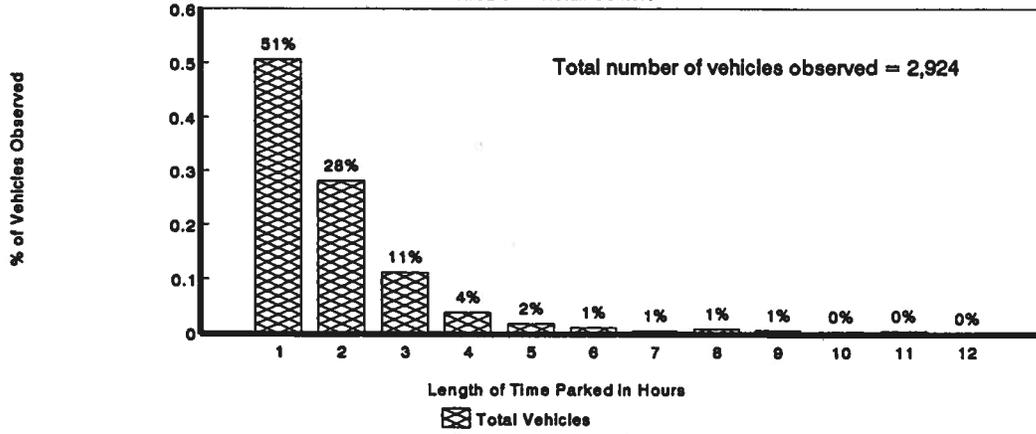


Thursday Oct. 20th Duration Surveys
Area 2 - Church/Triangle Area

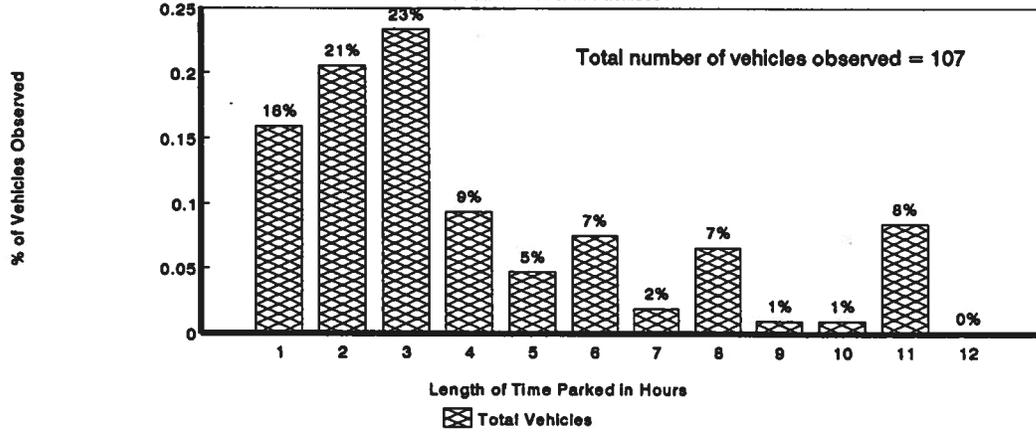




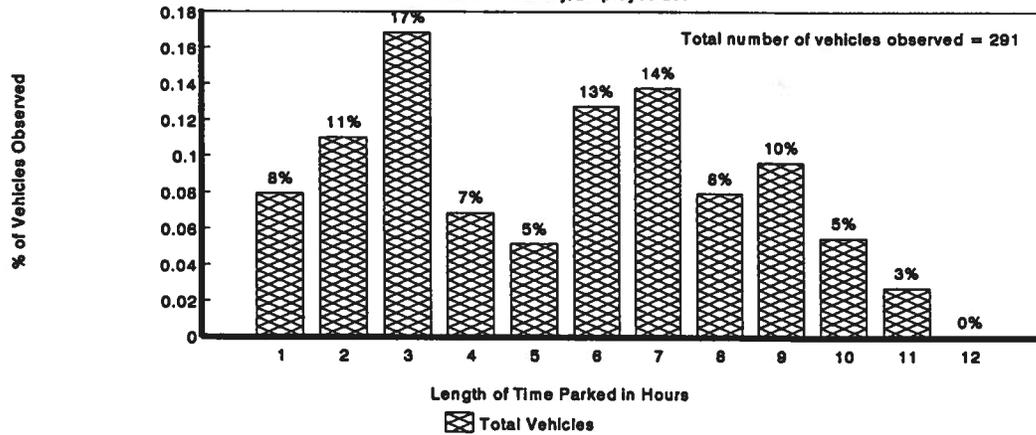
Saturday Oct. 22nd Duration Surveys
Area 3 - Retail Centers



Saturday Oct. 22nd Duration Surveys
Area 4 - W & M Facilities



Saturday Oct. 22nd Duration Surveys
Area 5 - Gallery/Employee Lot



**PEDESTRIAN QUESTIONNAIRES
PRIMARY RESPONSES
(THURSDAY 10/20/94)**

LOCATION	QUESTION NUMBER							
	1	2	3	4A	4B	5	6	7
BLOCK 5 PARKING LOT	47% Area Residents 36% In-State 17% Out of State	88% Auto Drivers 12% Auto Passengers	94% in Block 5 6% in CWF Employee Lot	29% - Shopping 42% - Campus 23% - Work/Business 5% - Tourist	0% Used Tourist Center	Avg. = 95 Min.	88% Yes 12% No	Very Difficult = 6% Not Very = 12% Easy = 82%
COUNTY LIBRARY LOT	100% Area Residents	75% Auto Drivers 12% Auto Passengers (1 by Bike)	85% in Library Lot 12% in Styker Lot	62% - Library Patron 38% - Library Employee	0% Used Tourist Center	Avg. = 4 Hrs.	100% Yes 0% No	Very Difficult = 0% Not Very = 0% Easy = 100%
MERCHANTS SQUARE	48% Area Residents 28% In-State 24% Out of State	92% Auto Drivers 8% Auto Passengers	92% in Merchants Sq. Lots 6% near campus	36% - Shopping 24% - Tourist 28% - Work/Business 12% Campus	0% Used Tourist Center	Avg. = 2.5 Hrs.	92% Yes 8% No	Very Difficult = 8% Not Very = 16% Easy = 76%

TOTAL NUMBER OF RESPONSES = 55

Downtown Williamsburg Parking Study
Results of Pedestrian Questionnaires at
Various Locations (Thurs. Oct 20th)

**Exhibit
D2**

DESMAN
ASSOCIATES

**PEDESTRIAN QUESTIONNAIRES
PRIMARY RESPONSES
(SATURDAY 10/22/94)**

LOCATION	QUESTION NUMBER							
	1	2	3	4A	4B	5	6	7
BLOCK 5 PARKING LOT	66% In-State 11% Area Residents 23% Out of State	88% Auto Drivers 12% Auto Passengers	100% in Block 5	36% - Tourist 29% - Shopping 11% - Campus 19% - Work/Business	0% Used Tourist Center	Avg. = 4.5 Hrs.	88% Yes 12% No	Very Difficult = 12% Not Very = 12% Easy = 76%
COUNTY LIBRARY LOT	100% Area Residents	80% Auto Drivers 20% Auto Passengers	81% in Library Lot 19% in Styker Lot	100% - Library	0% Used Tourist Center	Avg. = 2.5 Hrs.	96% Yes 4% No	Very Difficult = 0% Not Very = 0% Easy = 100%
MERCHANTS SQUARE	45% In-State 28% Area Residents 24% Out of State 3% Foreign	72% Auto Drivers 28% Auto Passengers	100% in Merchants Sq. Lots	52% - Tourist 24% - Shopping 16% - Work/Business 8% Campus	4% Used Tourist Center	Avg. = 1.5 Hrs.	92% Yes 8% No	Very Difficult = 4% Not Very = 8% Easy = 88%

TOTAL NUMBER OF RESPONSES = 62

DESMAN
ASSOCIATES

Downtown Williamsburg Parking Study
Results of Pedestrian Questionnaires at
Various Locations (Sat. Oct 22th)

**Exhibit
D3**



P2



PH

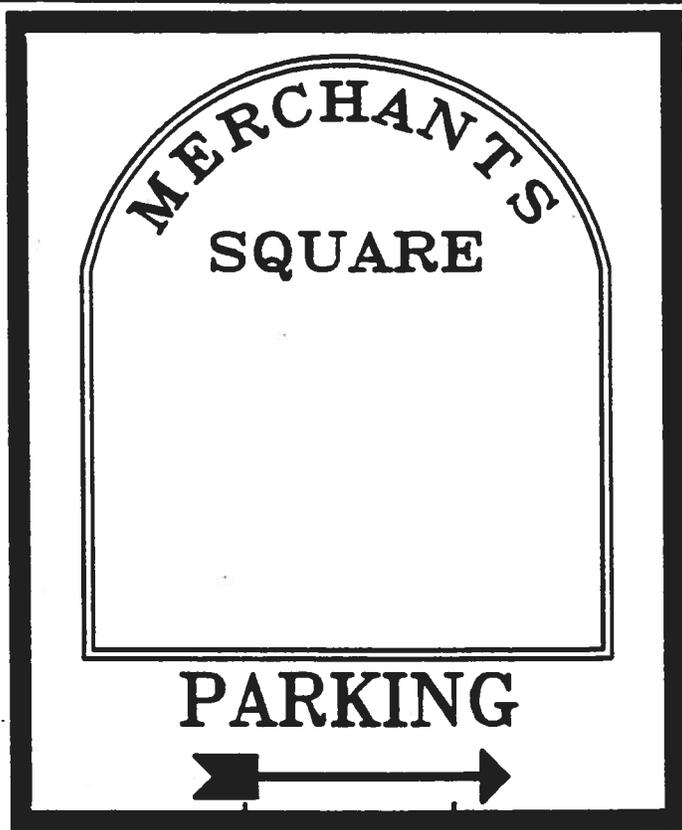


PF

DESMAN
ASSOCIATES

Downtown Williamsburg Parking Study
Integration of Parking Signage Icons
(Colonial Williamsburg)

Exhibit
E1



P2



PH



PF

DESMAN
ASSOCIATES

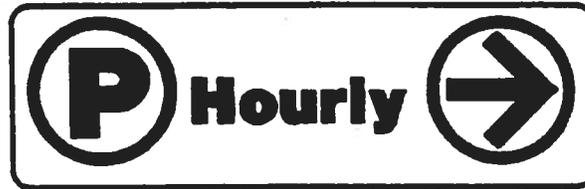
Downtown Williamsburg Parking Study
Integration of Parking Signage Icons
(Merchants Square)

Exhibit
E2

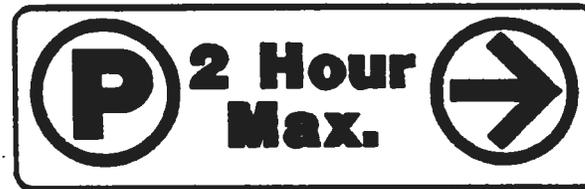
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PHR



P2R



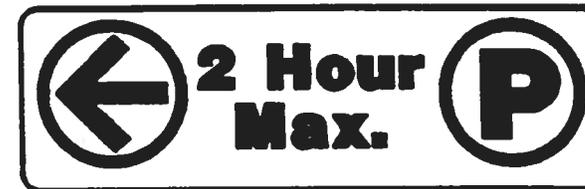
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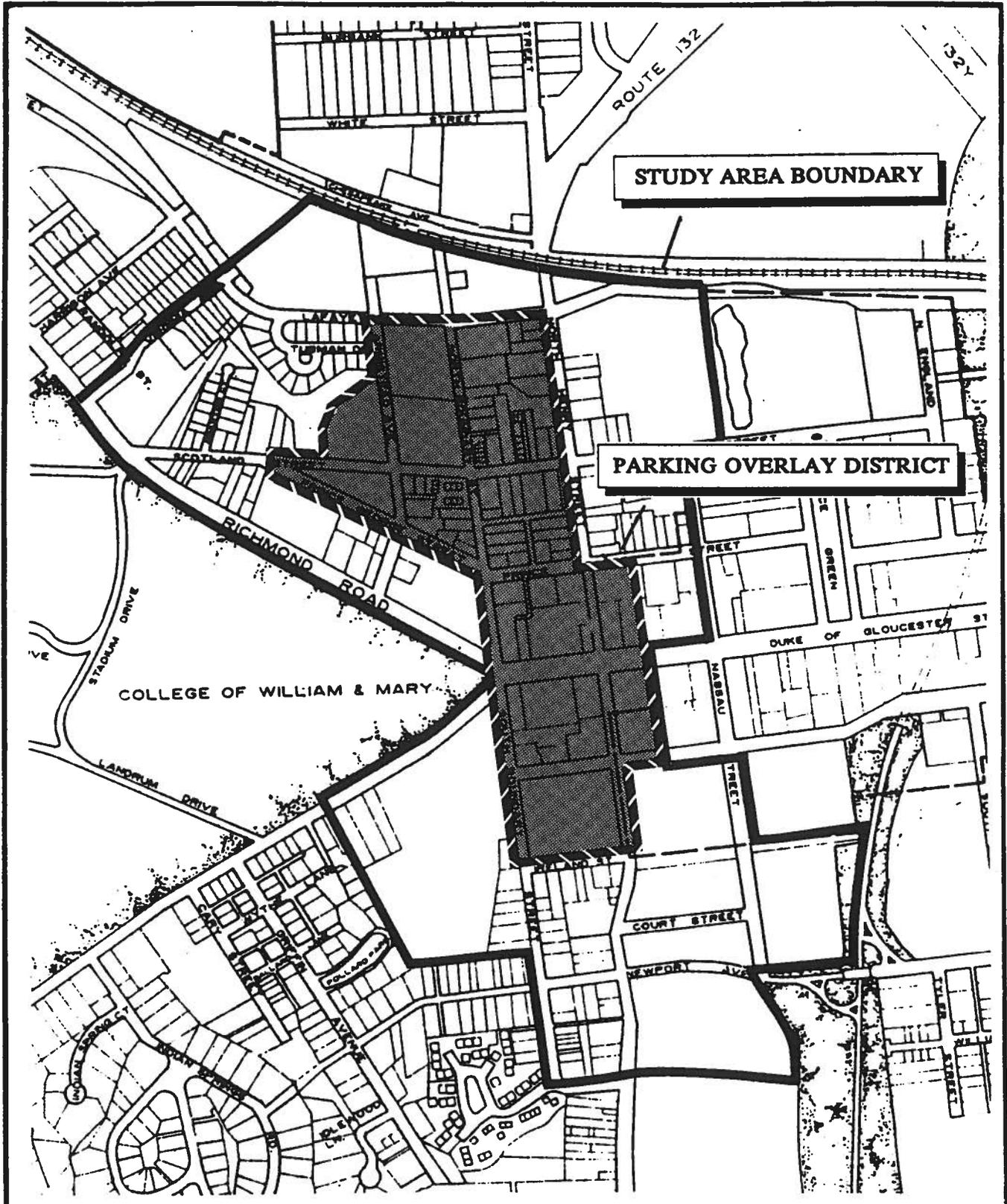


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P2L

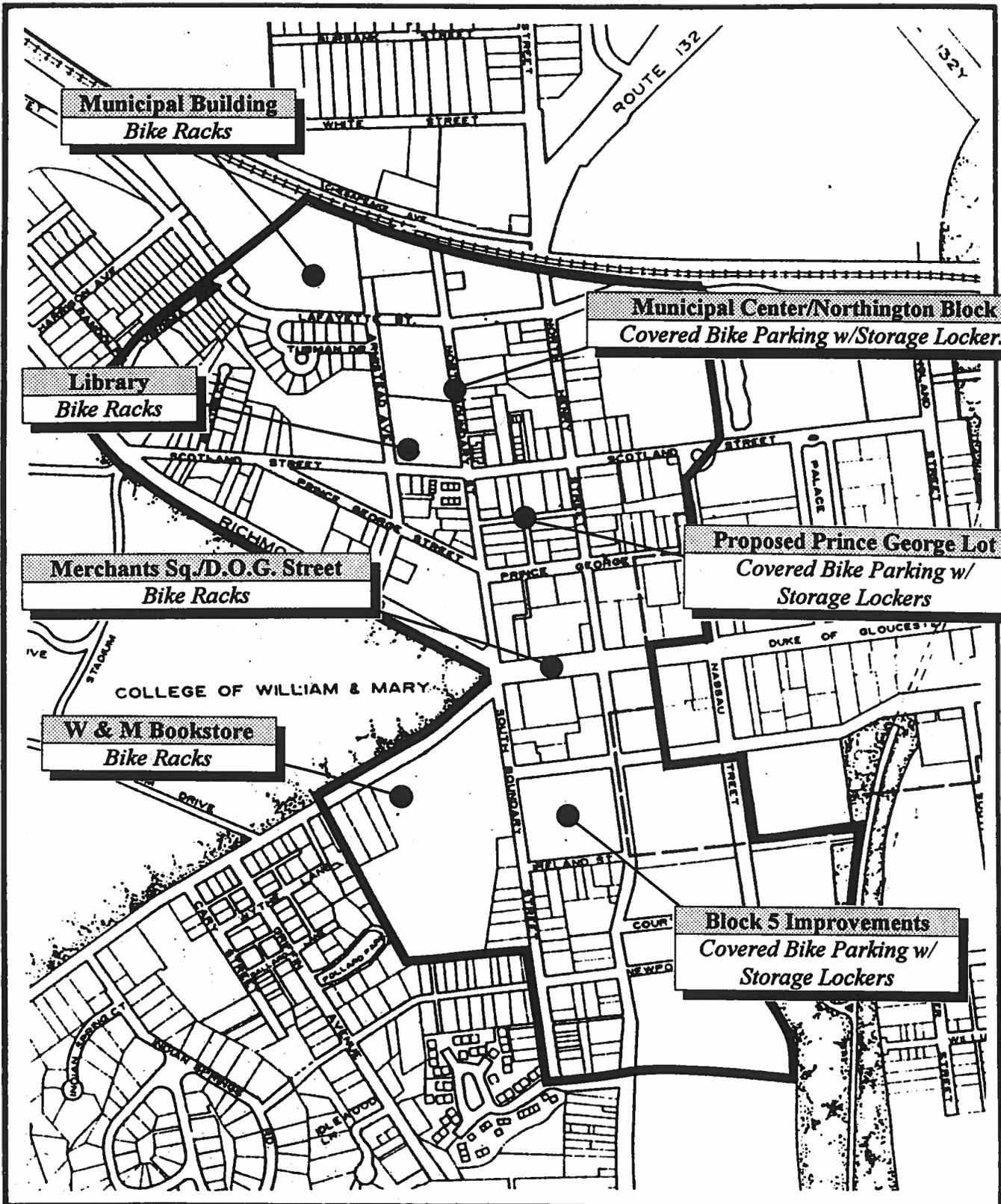




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Downtown Williamsburg Parking Study
Parking Overlay District
(Reduced Off-Street Parking Requirements)

Exhibit
F



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Downtown Williamsburg Parking Study
Type and Location of Bicycle Parking

Exhibit
G

**POSSIBLE PHYSICAL/DEVELOPMENTAL ISSUES
REGARDING A PARKING SITE EVALUATION**

PHYSICAL ISSUES
<p>Primary Issues (1) Location Accessibility Site Configuration Efficiency Capacity Displacement of Existing Uses</p> <p>Secondary Issues (2) Adjacent to Commercial Activities Adjacent to Historic Activities Pedestrian Accessibility Visibility (Screening)</p>
<p>Total Score: Possible Score:</p>

DEVELOPMENT ISSUES
<p>Construction Costs (1)</p> <p>Operation and Maintenance Expenses (1)</p> <p>Other Economic (2) Zoning Land Use Designation Zoning Development Requirements Compatibility Negative Impact to Neighborhoods</p>
<p>Total Score: Possible Score:</p>

NOTE:

- (1) Based on initial assessment of site characteristics, design requirements, and currently available construction, operations, and maintenance information. Rating scale based on scores ranging from 1 to 10.
- (2) Ratings based on scores ranging from 1 to 5.