



# CLEMSON UNIVERSITY

## Parking Utilization Study & Parking Sufficiency Update

2008 Biennial Report

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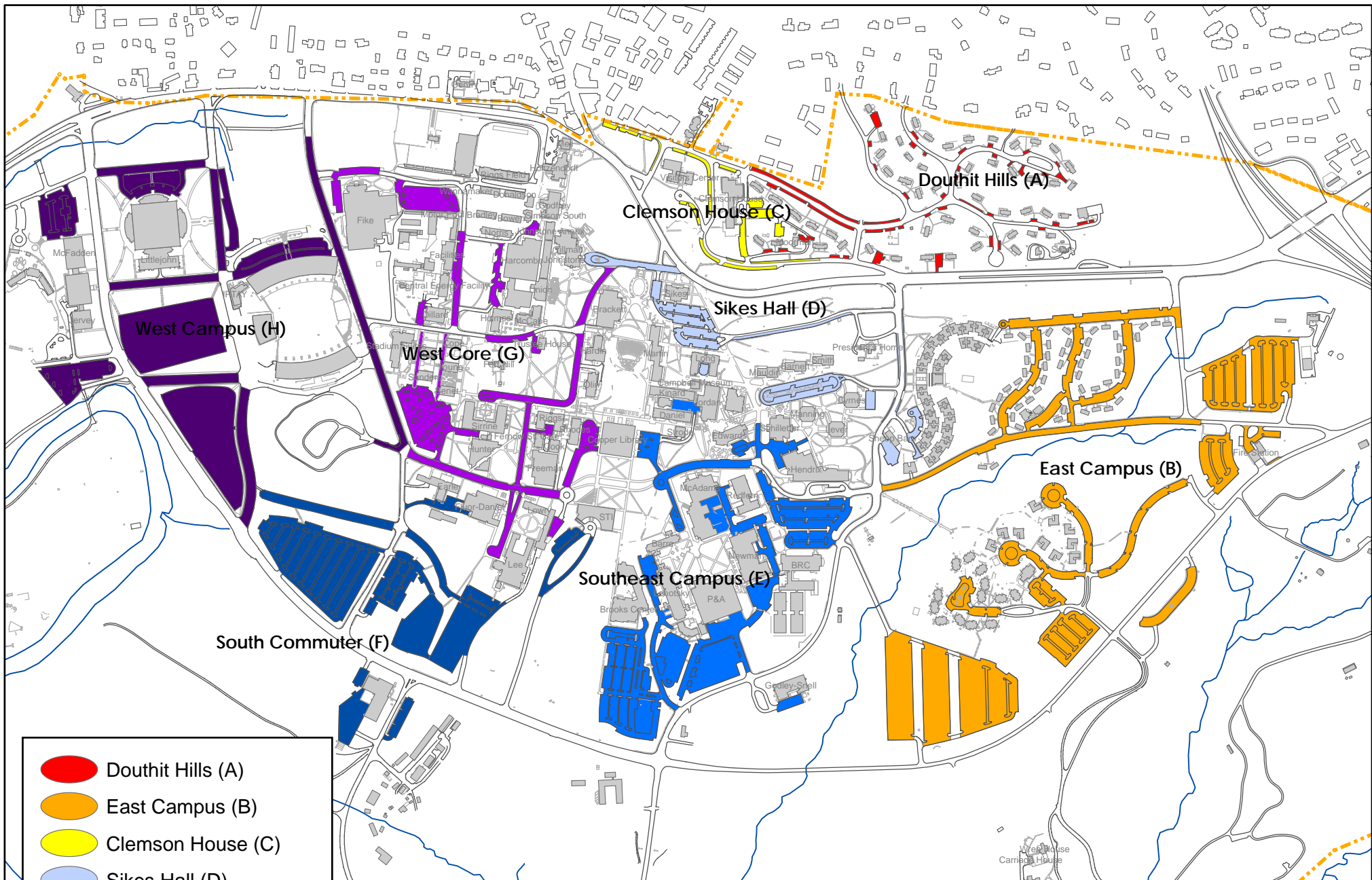
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# INTRODUCTION

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This document is a compilation of parking data gathered from October 13 - 30, 2008. This study depicts the nature of parking usage throughout the main campus of Clemson University. This data provides a snapshot of parking utilization patterns for each parking type within eight distinct study areas and the campus as a whole. The purpose of this study is to generate reliable, objective information useful for measuring current parking supply and demand. This information can then be used to guide future decisions regarding modification to existing and future parking and transportation facilities.

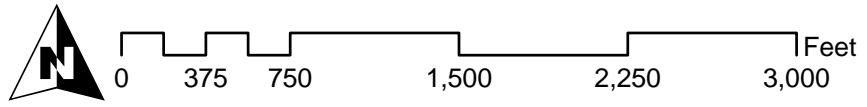
There are approximately 12,370 parking spaces on the main campus of Clemson University. It is the goal of this study to ascertain the manner in which these spaces are used on a comprehensive level. This report documents peak hour (10:00 AM + 2:00 PM) utilization for two consecutive weeks. The average values of the surveys conducted are depicted in this report and compared with surveys conducted in the past.



- Douthit Hills (A)
- East Campus (B)
- Clemson House (C)
- Sikes Hall (D)
- Southeast Campus (E)
- South Commuter (F)
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# PARKING UTILIZATION

## Study Areas



Area	Douthit Hills		a.	b.
A	Type	Total	Occupied	Percent
			Stalls	Occupied
	Clemson House	192	189.00	95.88
	Douthit Res.	110	65.63	56.69
	Undesignated	71	38.88	61.04
	Employee	5	0.63	12.50
	H.C.	1	0.13	12.50

Please Note that the numbers listed above for the Douthit Hills Study Area reflect the conditions surveyed in 2002. This area was not studied in detail in either 2006 or 2008 because of the demolition of the housing units in this neighborhood. This area will undergo complete redevelopment in the future, though a timeline for this redevelopment has not yet been set. The parking facilities and usage in this area will change dramatically in the years to come.

B	East Campus		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	11	8.13	73.86
	Motorcycle	66	18.31	27.75
	Commuter	460	152.63	33.18
	Any Permit	519	413.56	79.68
	Timed	9	2.56	28.47
	H.C.	30	8.19	27.29
	Resident	2347	2007.31	85.53
	Service	9	4.19	46.53
	Loading Zone	4	16.56	20.45
	Visitor	81	1.69	42.19
	Bus	4	0.13	3.13

C	Clemson House		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	215	199.10	92.60
	Service	8	4.46	55.69
	H.C.	4	2.59	64.73
	Visitor	32	15.25	47.66
	Motorcycle	7	3.27	46.68
	Clemson House	44	42.04	95.54
	Timed	12	5.44	45.31
	Special Use	19	14.63	76.97
	Resident	16	15.72	98.27

D	Sikes		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	364	358.38	98.45
	Timed	148	80.13	54.14
	Service	35	26.75	76.43
	H.C.	12	10.38	100.00
	Motorcycle	28	17.31	61.83
	Resident	2	0.88	43.75
	Visitor	5	3.44	68.75

Area	SouthEast Campus		a.	b.
E	Type	Total	Occupied	Percent
			Stalls	Occupied
	Visitor	9	7.75	86.11
	Visitor Meter	20	14.13	70.63
	Recruiter Meter	7	5.25	75.00
	Service	23	19.69	85.60
	Employee	693	684.50	98.77
	H.C.	53	43.19	81.49
	Motorcycle	36	28.06	77.95
	Timed	44	33.88	76.99
	Commuter	371	367.94	99.17
	Redfern Permit	6	4.50	75.00
	Medical Permit	3	2.44	81.25
	Physician	2	1.88	93.75
	Any Valid permit	64	63.94	99.90

F	South Commuter		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	300	260.38	86.79%
	Visitor	21	12.31	58.63%
	Timed	1	0.50	50.00%
	H.C.	2	0.50	25.00%
	Commuter	935	902.00	96.47%
	Service	1	1.00	100.00%
	Resident	829	793.94	95.77%
	Motorcycle	12	0.75	58.33%

G	West Core		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	707	690.83	97.71
	Service	66	48.27	73.14
	H.C.	34	28.25	83.09
	Timed	56	45.08	80.51
	Special Use	5	2.58	51.67
	Visitor	17	14.90	87.62
	Motorcycle	89	60.77	68.28
	Reserved	2	1.81	90.63

H	West Campus		a.	b.
	Type	Total	Occupied	Percent
			Stalls	Occupied
	Employee	205	150.94	73.63
	Commuter	1099	641.15	58.34
	Any Permit	1159	733.02	63.25
	Timed	3	1.17	38.89
	H.C.	14	0.92	6.55
	Resident	481	340.58	70.81
	Visitor	7	5.88	83.93
	Service	20	11.38	56.88
	Motorcycle	23	2.00	8.70

Peak Hour - Integrated Campus Parking Profile			
Type	Total	Avg. Number Occupied Stalls	Percent Occupied
Employee	2495	2352.24	94.28
Commuter	2865	2063.71	72.03
Resident	3673	3157.56	85.97
Clemson House	44	42.04	95.54
H.C.	149	94.01	63.09
Timed	273	168.75	61.81
Visitor	172	61.21	35.59
Service	162	115.73	71.44
Motorcycle	261	130.48	49.99
Resident	2	0.88	43.75
Redfern Permit	6	4.50	75.00
Physician	2	1.88	93.75
Medical Permit	3	2.44	81.25
Recruiter Meter	7	5.25	75.00
Visitor Meter	20	14.13	70.63
Any Permit	1742	1210.52	69.49
Loading Zone	4	16.56	414.06
Douthit Hills <sup>1</sup>	380	246.50	64.87
Not Studied <sup>2</sup>	110	-	-
<b>Total</b>	<b>12370</b>	<b>9688.36</b>	<b>79.02</b>

**Note:**

"Type" is the parking designation.

"Total" is the number of parking spaces supplied.

a. "Occupied Stalls." is the average number of parking spaces occupied during the peak hour 10:00am - 2:00 pm period.

b. "Percent Occupied" is the percentage of parking spaces occupied during the peak hour 10:00am - 2:00 pm period.

1. Douthit Hills 2008 totals included in Integrated Campus Profile table above. (380 Total Spaces)

According to the most recent survey performed by Carl Walker, Inc. as part of the Parking & Transportation Master Plan there were 12,817 parking stalls on campus in 2006. Since then over 400 stalls have been lost to new construction. The 2008 Parking Utilization Study focuses primarily on the most highly utilized parking facilities on campus.

2. The following lots were not included in the study:

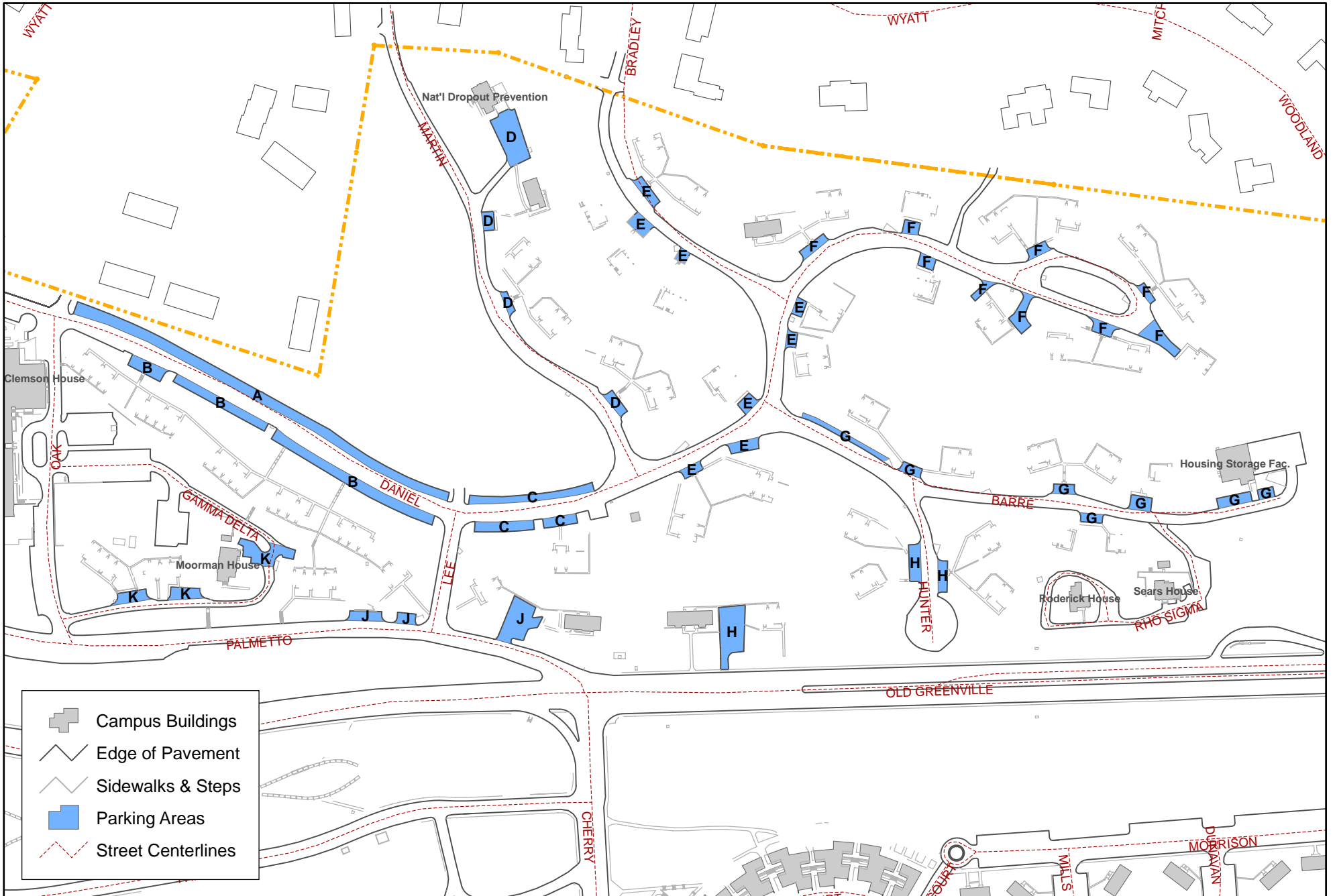
Mell Hall Lot	29 Spaces
Gentry Hall Lot	31 Spaces
Daniel House Lot	21 Spaces
Kingsmore Stadium	29 Spaces

Based on changes in the parking inventory since 2006, this study estimates the total parking inventory to now be 12,370 paved and striped parking stalls. (+171 in gravel lot at Cherry/Perimeter)

# AREA [A] - DOUTHIT HILLS



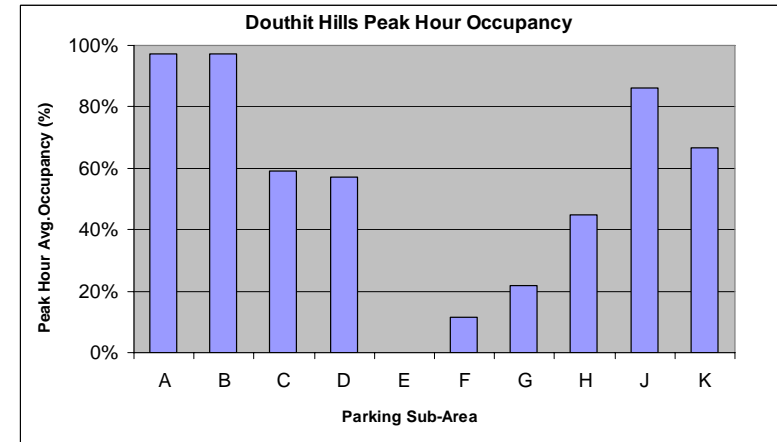
[A]



DOUTHITT HILLS Area Locator Map

**(A) Douthit Hills Parking**

Area	(a)		(b)				10:00-4:00 Avg Occupancy (b/a)	Occupancy (b/a)
	Total # Spaces	Type	10:00 M/W	10:00 Tu/Th	2:00 M/W	2:00 Tu/Th		
A	95	Total Spaces	93	95	90	92	92.50	97.37%
B	69	Total Spaces	69	68	67	64	67.00	97.10%
C	52	Total Spaces	35	28	32	28	30.75	59.13%
D	24	Total Spaces	11	18	13	13	13.75	57.29%
E	31	Total Spaces	0	0	0	0	0.00	0.00%
F	30	Total Spaces	3	3	5	3	3.50	11.67%
G	32	Total Spaces	6	7	6	9	7.00	21.88%
H	15	Total Spaces	7	2	9	9	6.75	45.00%
J	20	Total Spaces	17	18	16	18	17.25	86.25%
K	6	Residential	6	6	6	5	5.75	95.83%
	3	Employee	1	1	1	1	1.00	33.33%
	3	Service	1	1	3	0	1.25	41.67%
<b>Total</b>	<b>380</b>		<b>249</b>	<b>247</b>	<b>248</b>	<b>242</b>	<b>246.50</b>	<b>64.87%</b>



In August of 2006, all of the housing units previously dedicated to graduate students, married students, and students with families were either removed or demolished. Without these housing units the Douthit Hills neighborhood is essentially unoccupied, has very little traffic, and no significant need for parking facilities in its current state. Remaining tenants in this parking study area include the National Drop-out Prevention Center, a University Housing storage facility, EHS Offices, Internal Auditing, the Sears House, and the Roderick House.

Because of the current low-intensity use of the Douthit Hills property, parking occupancy and utilization were only studied for a one week period during the week of October 20-24, 2008.

Future redevelopment of this property will necessitate closer study of traffic patterns and parking needs associated with future land uses and must remain sensitive to the relationships with adjoining City of Clemson neighborhoods to the north of the site.

Please contact University Planning & Design for additional information regarding the redevelopment and master planning of the Douthit Hills site.



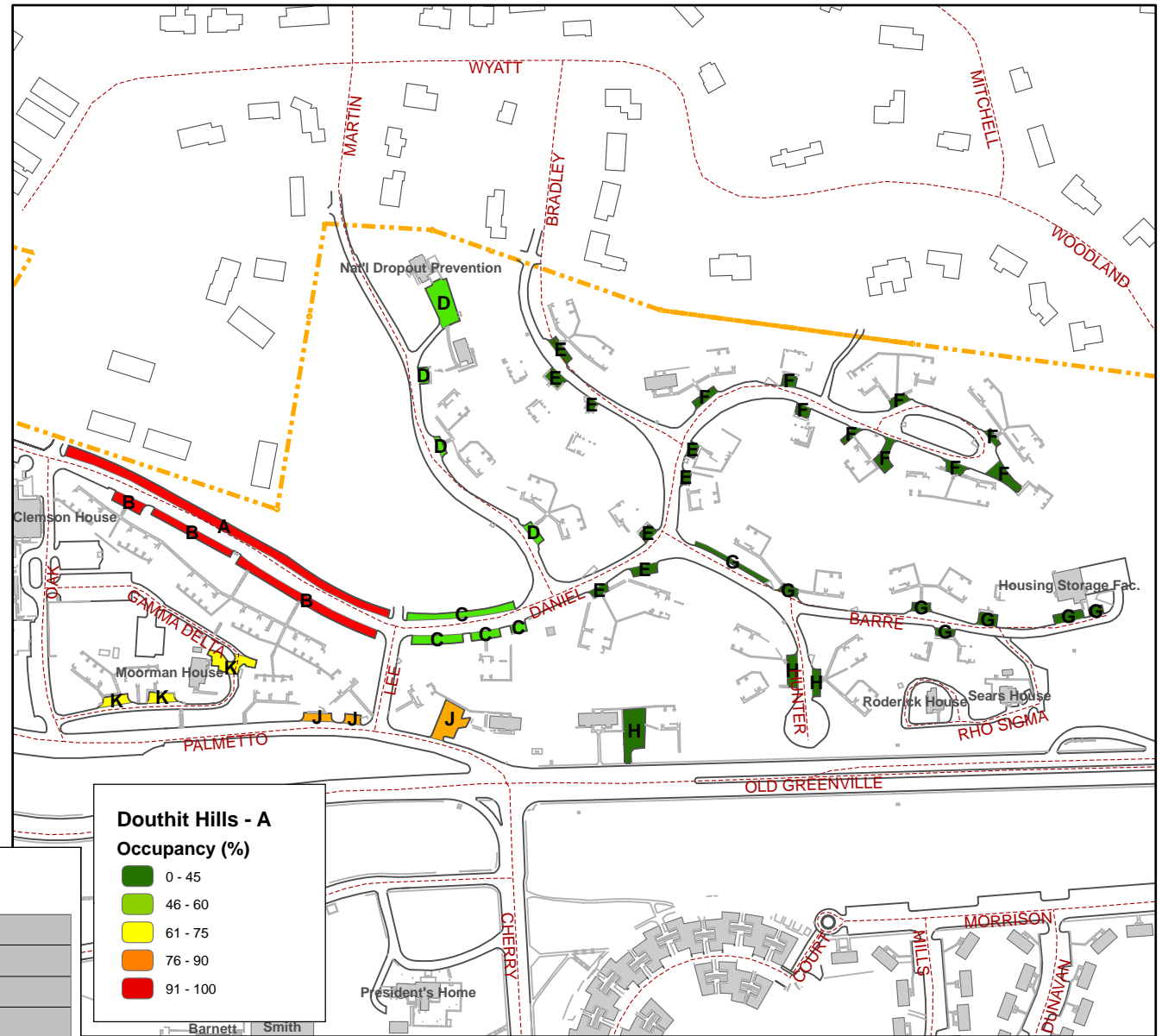
# [ A ]

## Observations:

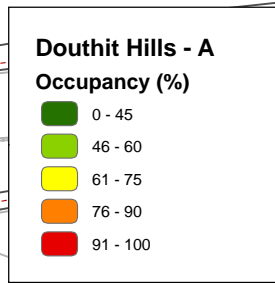
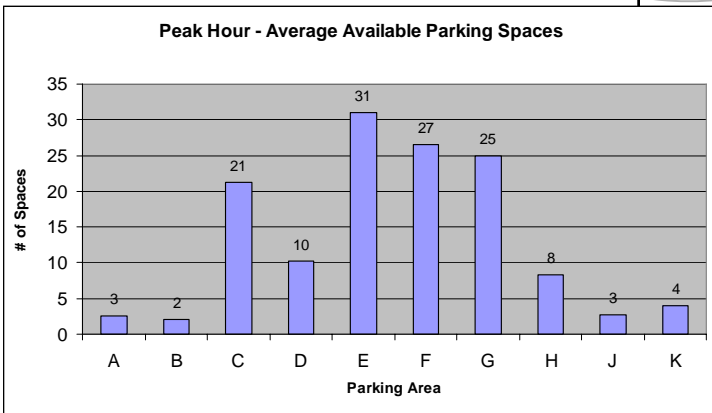
- The total parking in this area (380 spaces) accounts for less than 3% of the total parking inventory on campus.
- Despite the demolition of 110 units of graduate student housing, occupancy rates remain relatively high in the parking spaces nearest the Clemson House (A, B, C, J).
- There is minimal utilization of parking resources further east of the Clemson House as was expected upon the demolition of the housing facilities. The remaining parking is undesirable because of its remote location and lack of connectivity to the rest of campus.

## Opportunities:

- Until redevelopment occurs, parking in this area will continue to be left vacant. Until land use in Douthit Hills intensifies, parking in this area could potentially be used for special event parking or tailgating.



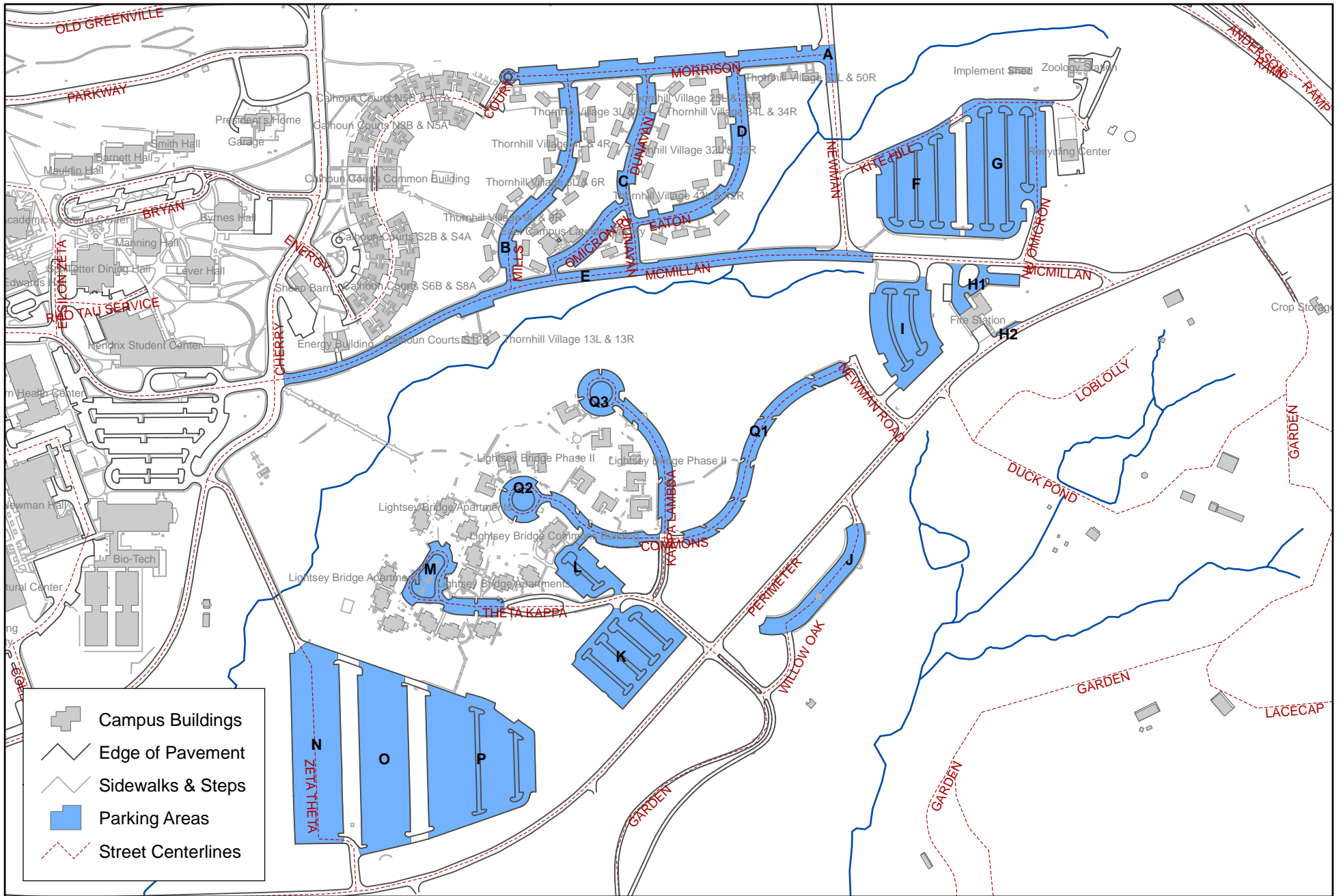
Peak Hour Occupancy by Parking Area



# AREA [B] - EAST CAMPUS



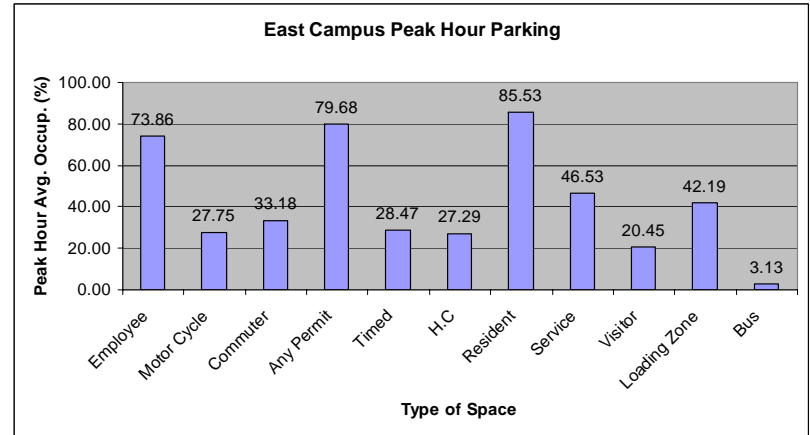
[ B ]



EAST CAMPUS Area Locator Map

**(B) East Campus Parking**

Area	(a)		(b)				Average Occupancy (b/a) (%)	Occupancy (%)				
	Total # Spaces	Type	10:00		2:00			10:00-4:00 Avg. (occup.Spaces)		M/W	Tu/Th	AM
A	4	Timed	0.25	0.75	1.25	1	0.81	20.31	18.75	21.88	12.50	28.13
	181	Resident	145.5	145	147	143	144.94	80.08	80.73	79.42	80.25	79.90
	15	Motorcycle	3.75	3.25	3.5	2.5	3.25	21.67	24.17	19.17	23.33	20.00
	2	H.C	1.25	1.25	1.25	1.5	1.31	65.63	62.50	68.75	62.50	68.75
B	112	Resident	111.25	112	110	109	110.50	98.66	98.77	98.55	99.44	97.88
C	122	Resident	119.25	121	117	112	117.06	95.95	96.72	95.18	98.26	93.65
	5	Timed	1.75	2.25	1.25	1.75	1.75	35.00	30.00	40.00	40.00	30.00
	1	H.C	0.25	0	0	0.25	0.13	12.50	12.50	12.50	12.50	12.50
	2	Employee	2	1.25	1	1	1.31	65.63	75.00	56.25	81.25	50.00
	10	Motorcycle	2	0	0	0	0.50	5.00	10.00	0.00	10.00	0.00
	1	Service	0.75	0.5	0	0	0.31	31.25	37.50	25.00	62.50	0.00
D	142	Resident	55.5	57.8	57.5	53.3	56.00	56.13	55.72	55.27	55.78	55.72
	3	Motorcycle	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
E	129	Resident	83.5	88.5	82.8	80.3	83.75	64.92	64.44	65.41	66.67	63.18
F & G	508	Any Permit	373.5	413	405	437	406.75	80.07	76.57	83.56	77.36	82.78
	8	H.C	0.25	0.5	0	1	0.44	5.47	1.56	9.38	4.69	6.25
H1	5	Employee	5	5	4.75	4.5	4.81	96.25	97.50	95.00	100.00	92.50
	11	Any Permit	7.25	6.5	6.25	7.25	6.81	61.93	61.36	62.50	62.50	61.36
	3	Service	3	3	3	2.75	2.94	97.92	100.00	95.83	100.00	95.83
H2	2	Visitor	0.25	0	0.25	0	0.13	6.25	12.50	0.00	6.25	6.25
	2	H.C.	0	0	0.25	0	0.06	3.13	6.25	0.00	0.00	6.25
I	174	Commuter	50.5	58.5	91.5	111	77.81	44.72	40.80	48.64	31.32	58.12
J	77	Visitor	10.5	8.75	30	13.5	15.69	20.37	26.30	14.45	12.50	28.25
	2	H.C	0.25	0.25	0	0	0.13	6.25	6.25	6.25	12.50	0.00
	4	Bus	0	0.25	0	0.25	0.13	3.13	0.00	6.25	3.13	3.13
K	209	Resident	196.75	204	194	189	195.56	93.57	93.36	93.78	95.75	91.39
L	50	Resident	49.75	50	50	49.8	49.88	99.75	99.75	99.75	99.75	99.75
	2	Visitor	1	0	1	1	0.75	37.50	50.00	25.00	25.00	50.00
	2	H.C	1	0.75	0.75	1.5	1.00	50.00	43.75	56.25	43.75	56.25
	4	Employee	2.5	1.5	1.75	2.25	2.00	50.00	53.13	46.88	50.00	50.00
	1	Service	0.25	0	0	0	0.06	6.25	12.50	0.00	12.50	0.00
M	38	Resident	38	37.5	38	38	37.88	99.67	100.00	99.34	99.34	100.00
	6	H.C	2	2.5	1.75	2	2.06	34.38	31.25	37.50	37.50	31.25
	2	Service	0.5	0.75	0.5	0.25	0.50	25.00	25.00	25.00	31.25	18.75
	4	Loading Zone	1.25	1.25	2.5	1.75	1.69	42.19	46.88	37.50	31.25	53.13
	11	Motorcycle	6.25	4.5	7.25	6.25	6.06	55.11	61.36	48.86	48.86	61.36
N,O & P	1072	Resident	952	962	952	954	955.00	89.09	88.79	89.38	89.28	88.89
	286	Commuter	56	73.8	72.5	97	74.81	26.16	22.47	29.85	22.68	29.63
	18	Motorcycle	0.25	0.25	0	0.25	0.19	1.04	0.69	1.39	1.39	0.69
Q1	127	Resident	97.75	93.8	90.3	95.8	94.38	74.31	74.02	74.61	75.39	73.23
	70	Resident	69.5	70	69	69.8	69.56	99.38	98.93	99.82	99.64	99.11
	5	H.C.	3	2.25	3	1.5	2.44	48.75	60.00	37.50	52.50	45.00
	1	Service	0	0.25	0.25	0.5	0.25	25.00	12.50	37.50	12.50	37.50
	6	Motorcycle	5	5.5	4.5	4.75	4.94	82.29	79.17	85.42	87.50	77.08
	95	Resident	94.5	94	92	90.8	92.81	97.70	98.16	97.24	99.21	96.18
Q3	2	H.C.	0.75	0.5	0.75	0.5	0.63	31.25	37.50	25.00	31.25	31.25
	1	Service	0	0.25	0	0.25	0.13	12.50	0.00	25.00	12.50	12.50
	3	Motorcycle	3.75	3.5	3.5	2.75	3.38	112.50	120.83	104.17	120.83	104.17
	Total	3540		2559.3	2636	2647	2691	2633.25	74.39	73.53	75.24	73.38



Type	Total # Spaces	Peak Hour Avg. Occup.
Employee	11	73.86
Motor Cycle	66	27.75
Commuter	460	33.18
Any Permit	519	79.68
Timed	9	28.47
H.C	30	27.29
Resident	2347	85.53
Service	9	46.53
Visitor	81	20.45
Loading Zone	4	42.19
Bus	4	3.13

Type	10:00-4:00 Avg. (Occup. Spaces)	Avg. Available Spaces
Employee	8	3
Motor Cycle	18	48
Commuter	153	307
Any Permit	414	105
Timed	3	6
H.C	8	22
Resident	2007	340
Service	4	5
Visitor	17	64
Loading Zone	2	2
Bus	0	4

Total Spaces 3540 74.39

Total Spaces 2633 907

# [ B ]

## Observations:

-Overall utilization of parking resources within this study area remains nearly identical to patterns seen in 2006. Average occupancy only increased by 1/100th of a percent to 74.39.

-Resident parking spaces nearest the residential units continue to be the most heavily utilized in this area of campus (B, K, Q2, Q3).

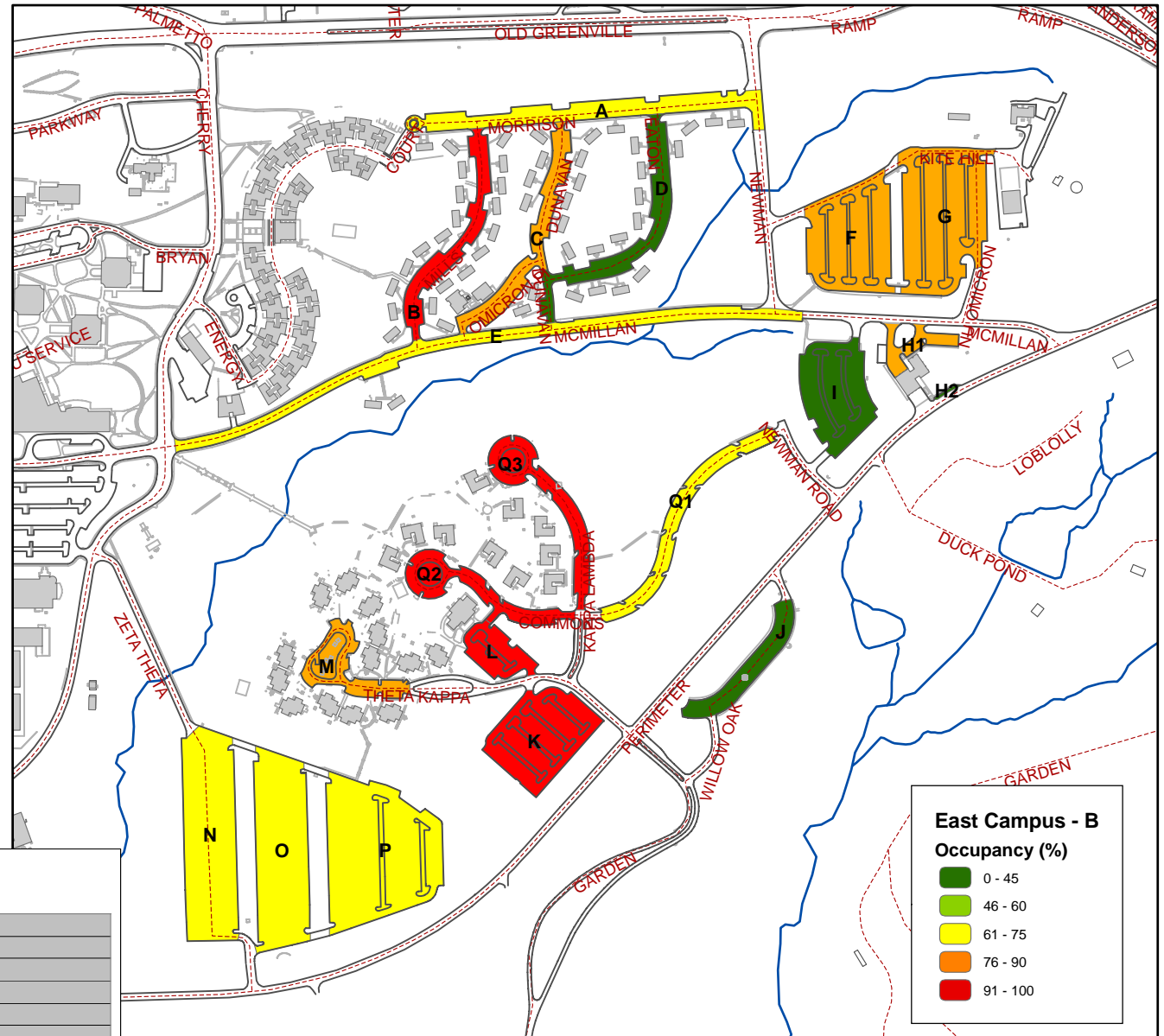
-Commuter spaces appear to be under-utilized in this area with just 33% average occupancy. The most heavily utilized Commuter lot within this area is the C-1 (I) lot (only 45% average occupancy).

## Opportunities:

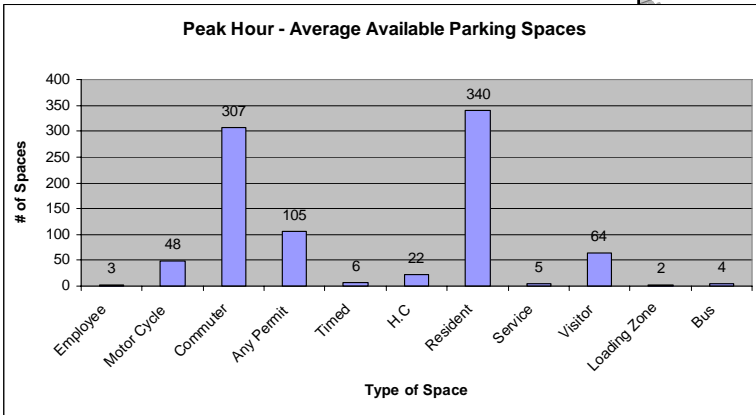
-Commuter and Any Valid Permit lots in this area of campus can accommodate an additional 400 vehicles per day according to the results of the occupancy surveys.

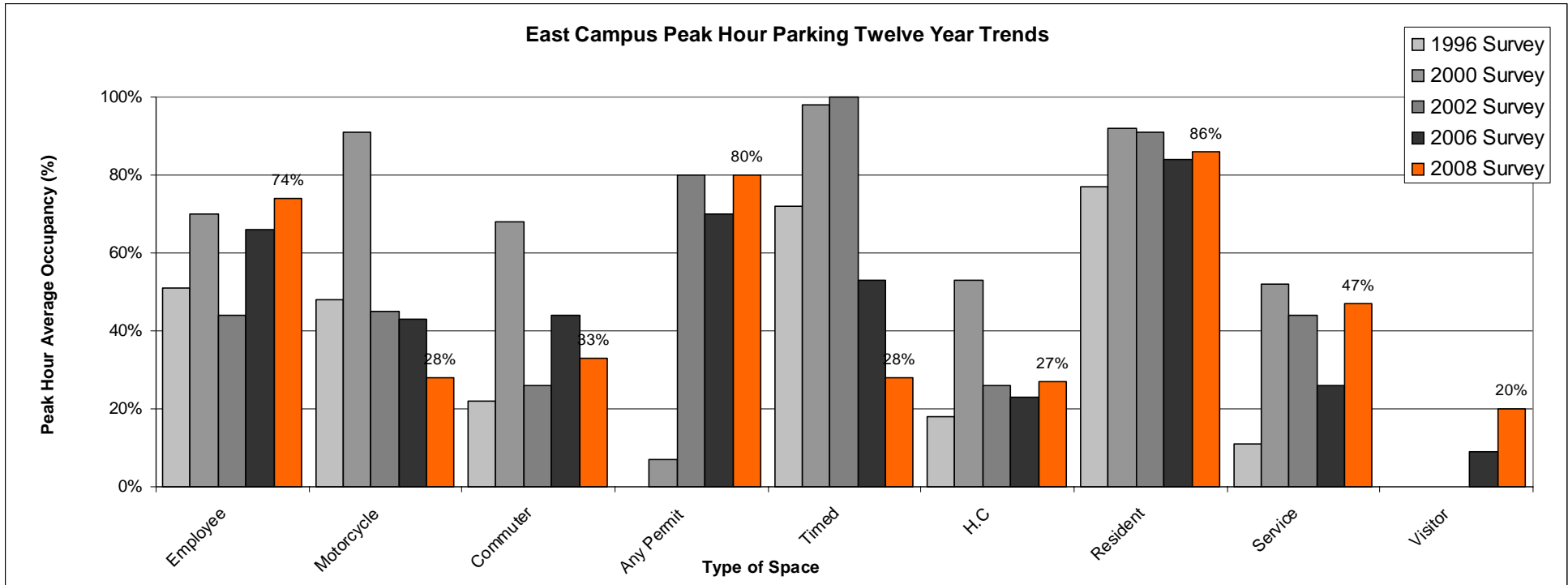
-The reassignment of 286 Residential spaces to Commuter spaces within R-1 (N,O,P) has attracted an average of 75 Commuter vehicles daily. However, overall utilization of this lot has remained nearly the same since 2006.

-Continued service of these lots by the new TIGER route should encourage greater utilization by commuters, particularly as new construction projects deplete parking resources elsewhere on campus.



Peak Hour Occupancy by Parking Area





1996 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	25	51%
Motor Cycle	6	48%
Commuter	617	22%
Any Permit	0	0%
Timed	42	72%
H.C	19	18%
Resident	2086	77%
Service	18	11%
Undesignated	100	12%
2913		

2000 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	25	70%
Motor Cycle	8	91%
Commuter	173	68%
Any Permit	476	7%
Timed	49	98%
H.C	19	53%
Resident	2049	92%
Service	5	52%
Undesignated	0	0%
2804		

2002 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	21	44%
Motor Cycle	17	45%
Commuter	173	26%
Any Permit	476	80%
Timed	9	100%
H.C	28	26%
Resident	2378	91%
Service	8	44%
Undesignated	90	67%
3200		

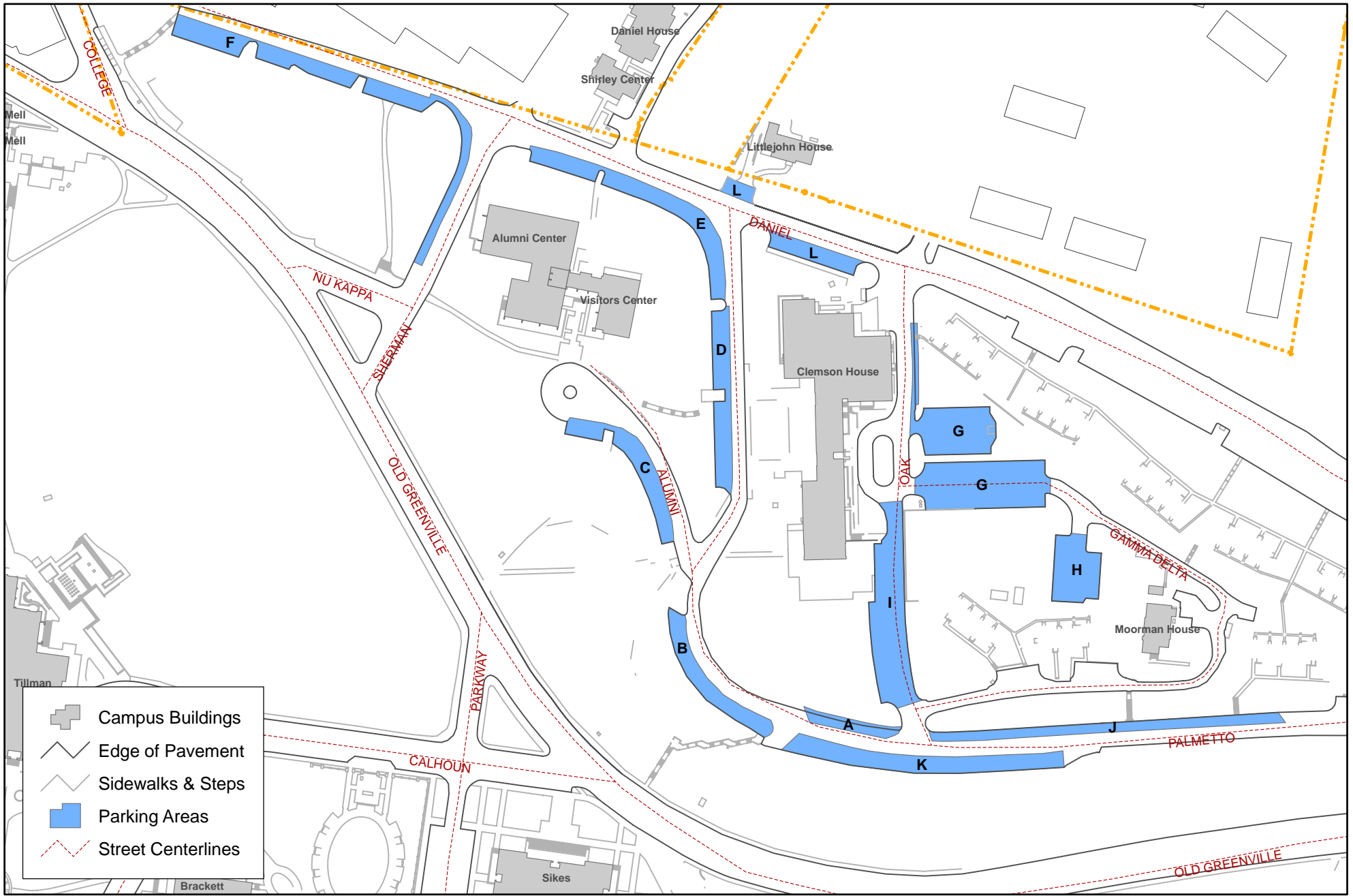
2006 Survey		
Type	Total # Spaces	Peak Hr. Avg.Occup.
Employee	14	66%
Motor Cycle	26	43%
Commuter	174	44%
Any Permit	519	70%
Timed	9	53%
H.C	30	23%
Resident	2650	84%
Service	9	26%
Visitor	79	9%
3510		

2008 Survey		
Type	Total # Spaces	Peak Hour Avg.Occup.
Employee	11	74%
Motorcycle	66	28%
Commuter	460	33%
Any Permit	519	80%
Timed	9	28%
H.C	30	27%
Resident	2347	86%
Service	9	47%
Visitor	81	20%
3532		

A site plan for Area [C] - Clemson House. The plan shows a rectangular area with a central horizontal road and a vertical road intersecting it. There are several buildings of varying sizes and shapes, some with multiple windows. The area is surrounded by trees and landscaping, with a large tree on the left and right sides. The text 'AREA [C] - CLEMSON HOUSE' is written in purple across the center of the plan.

# AREA [C] - CLEMSON HOUSE

[ C ]

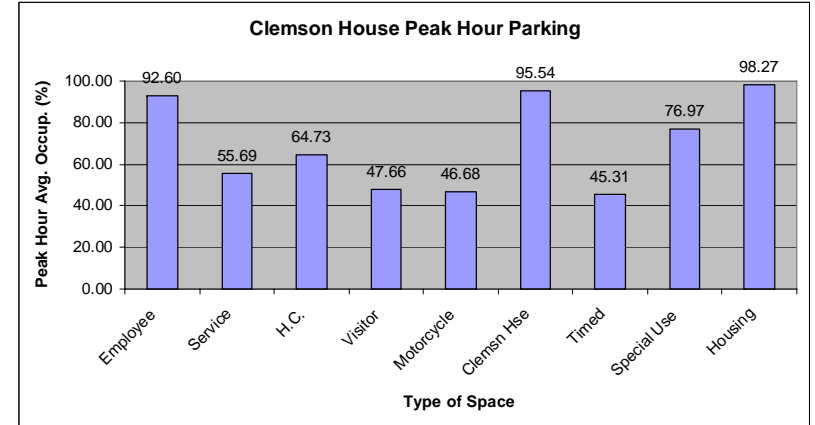


CLEMSON HOUSE Area Locator Map



**(C) Clemson House Area Parking**

Area	(a)		(b)				Average Occupancy (b/a) (%)	Occupancy (%)				
	Total # Spaces	Type	10:00 M/W	2:00 Tu/Th	10:00-4:00 M/W	10:00-4:00 Tu/Th		10:00-4:00 Avg. (occup.Spaces)	M/W	Tu/Th	AM	PM
A	7	Employee	7	7	7	7	7.00	100.00	100.00	100.00	100.00	100.00
B	19	Employee	19	19	18.8	18.5	18.81	99.01	99.34	98.68	100.00	98.03
C	1	Service	1	1	1	1	1.00	100.00	100.00	100.00	100.00	100.00
	1	H.C. (Handicap)	0.25	0.64	0.25	0.75	0.47	47.32	25.00	69.64	44.64	50.00
	19	Visitor	6.75	9.75	9.25	11.5	9.31	49.01	42.11	55.92	43.42	54.61
	1	Timed	0.5	0.68	0.5	1	0.67	66.96	50.00	83.93	58.93	75.00
D	12	Vistor	4.5	5.93	5	7.25	5.67	47.25	39.58	54.91	43.45	51.04
	11	Timed	4.25	2.57	6.75	5.5	4.77	43.34	50.00	36.69	31.01	55.68
E	33	Employee	32.3	32.3	30.3	30	31.21	94.56	94.70	94.43	97.84	91.29
	7	Motorcycle	3.75	3.32	3	3	3.27	46.68	48.21	45.15	50.51	42.86
F	37	Employee	36.8	35.8	33.8	33.5	34.96	94.47	95.27	93.68	98.07	90.88
G	41	Employee	27.3	28.4	36.3	36.5	32.10	78.29	77.44	79.14	67.86	88.72
	19	Special Use	13.8	13.8	14.8	16.3	14.63	76.97	75.00	78.95	72.37	81.58
H	17	Clemson Hse.	17	16.6	16.5	16	16.52	97.16	98.53	95.80	98.74	95.59
I	24	Employee	21.5	23.1	21.8	22.3	22.14	92.26	90.10	94.42	92.86	91.67
	2	H.C	1.25	1.29	1	1.75	1.32	66.07	56.25	75.89	63.39	68.75
	7	Service	3.5	3.32	3.5	3.5	3.46	49.36	50.00	48.72	48.72	50.00
J	27	Clemson Hse.	26.3	25.8	24.8	25.3	25.52	94.51	94.44	94.58	96.43	92.59
	1	Visitor	0.5	0.32	0.25	0	0.27	26.79	37.50	16.07	41.07	12.50
	16	Housing	16	15.9	15.8	15.3	15.72	98.27	99.22	97.32	99.67	96.88
K	39	Employee	39	38.8	37.8	37.5	38.26	98.10	98.40	97.80	99.73	96.47
L	15	Employee	15.3	15	14	14.3	14.63	97.50	97.50	97.50	100.83	94.17
	1	H.C.	0.75	0.68	1	0.75	0.79	79.46	87.50	71.43	71.43	87.50
Total	357		297	300	302	308	301.69	84.51	83.89	85.12	83.68	85.33



Type	Total	Peak Hr Avg. Occup. (%)
Employee	215	92.60
Service	8	55.69
H.C.	4	64.73
Visitor	32	47.66
Motorcycle	7	46.68
Clemson Hse	44	95.54
Timed	12	45.31
Special Use	19	76.97
Housing	16	98.27
Total	357	84.51

Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Employee	199	16
Service	4	4
H.C.	3	1
Visitor	15	17
M.Cycle	3	4
Clemson Hse	42	2
Timed	5	7
Special Use	15	4
Housing	16	0
Total	302	55

# [ C ]

## Observations:

-Employee parking stalls comprise 60% of the parking in this study area and continue to display extensive utilization with an average peak hour occupancy exceeding 92%. Several of the employee parking areas saw over 97% utilization (A, B, E, K, L).

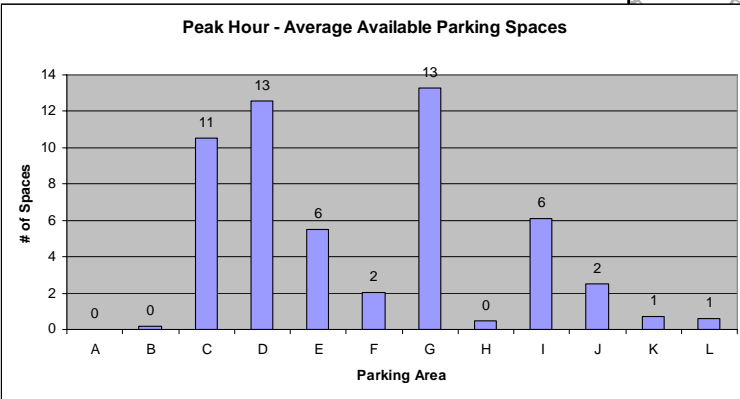
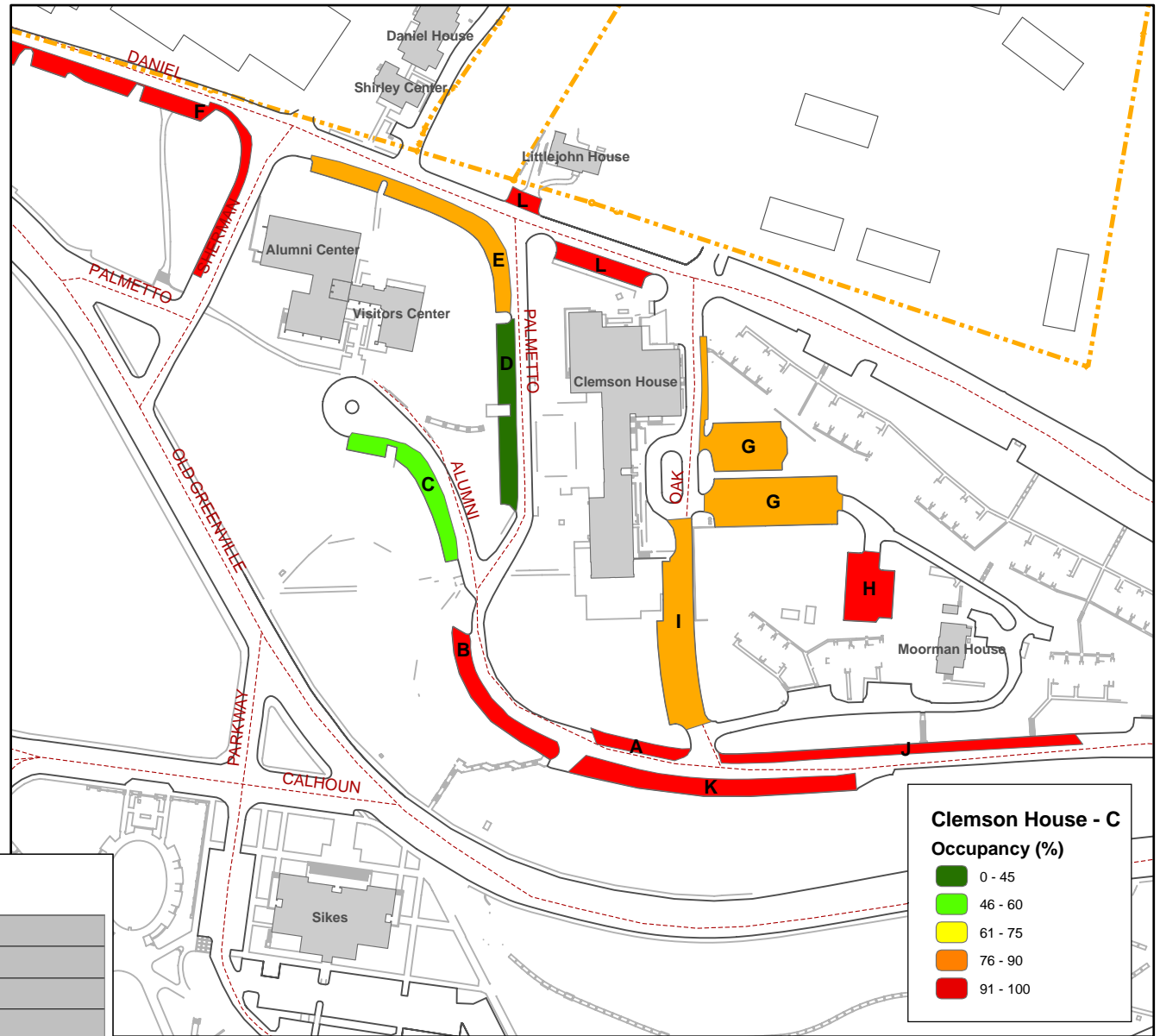
-Parking spaces reserved for Clemson House residents (96% occupancy) and those formerly used by Douthitt Hills residents (98% occupancy) continue to show almost complete utilization at every count period.

-Visitor parking continues to show only moderate utilization (47.6%).

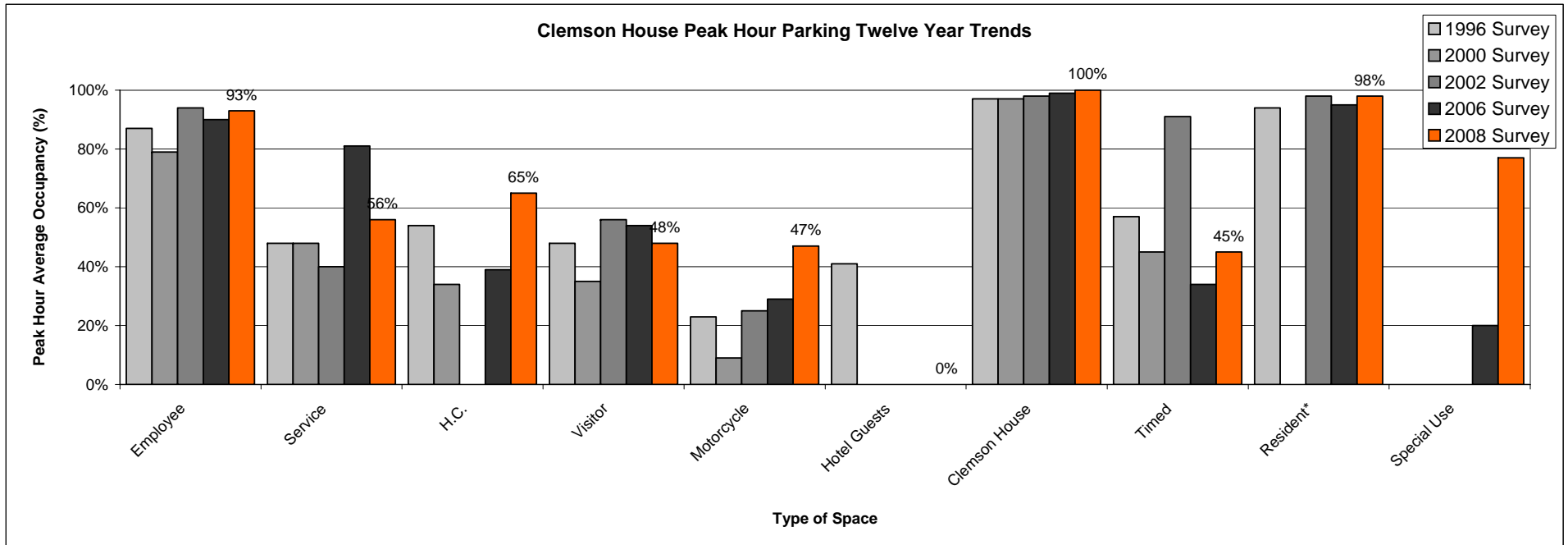
-Timed spaces also continue to be moderately utilized with an average peak hour occupancy of just 45.3%.

## Opportunities:

-Proposed campus-wide policy changes regarding parking for visitors should make parking in both the visitor and timed spaces within this study area more accessible and user-friendly. Despite their moderate utilization, these spaces should be preserved to accommodate visitors and members of campus community who visit the dining and conference facilities at the Clemson House.



Peak Hour Occupancy by Parking Area



1996 Survey		
Type	Total	Peak Hr. Avg. Occ.
Employee	197	87%
Service	3	48%
H.C.	3	54%
Visitor	29	48%
Motorcycle	7	23%
Hotel Guests	56	41%
Clemson House	17	97%
Timed	24	57%
Housing	10	94%
Special Use	0	N/A
<b>Total Spaces</b>	<b>346</b>	

2000 Survey		
Type	Total	Peak Hr. Avg. Occ.
Employee	225	79%
Service	4	48%
H.C.	3	34%
Visitor	26	35%
Motorcycle	7	9%
Hotel Guests	0	0%
Clemson House	28	97%
Timed	59	45%
Housing	0	0%
Special Use	0	N/A
<b>Total Spaces</b>	<b>352</b>	

2002 Survey		
Type	Total	Peak Hr. Avg. Occ.
Employee	220	94%
Service	4	40%
H.C.	3	0%
Visitor	68	56%
Motorcycle	7	25%
Hotel Guests	0	0%
Clemson House	18	98%
Timed	23	91%
Housing	10	98%
Special Use	0	N/A
<b>Total Spaces</b>	<b>353</b>	

2006 Survey		
Type	Total	Peak Hr. Avg. Occ.
Employee	215	90%
Service	5	81%
H.C.	4	39%
Visitor	32	54%
Motorcycle	7	29%
Hotel Guests	0	0%
Clemson House	44	99%
Timed	13	34%
Housing	16	95%
Special Use	18	20%
<b>Total Spaces</b>	<b>354</b>	

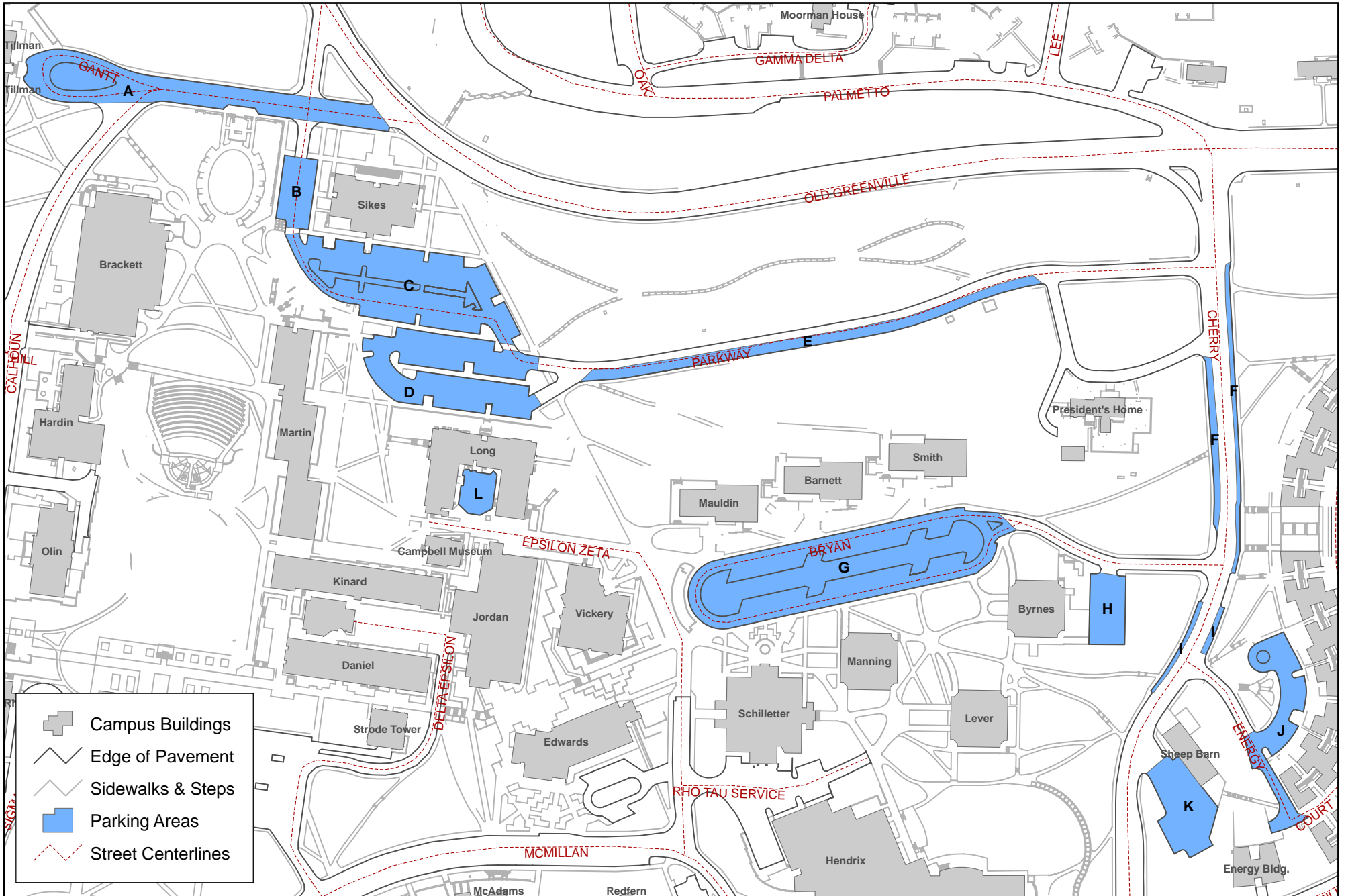
2008 Survey		
Type	Total	Peak Hr. Avg. Occ.
Employee	215	93%
Service	8	56%
H.C.	4	65%
Visitor	32	48%
Motorcycle	7	47%
Hotel Guests	0	N/A
Clemson House	44	100%
Timed	12	45%
Resident*	16	98%
Special Use	19	77%
<b>Total Spaces</b>	<b>357</b>	

\*Note: Parking stalls in Area J formerly referred to as 'Housing' were associated with Douthitt Hills Apartments. In 2008, these stalls are classified as Resident parking.

# AREA [D] - SIKES HALL



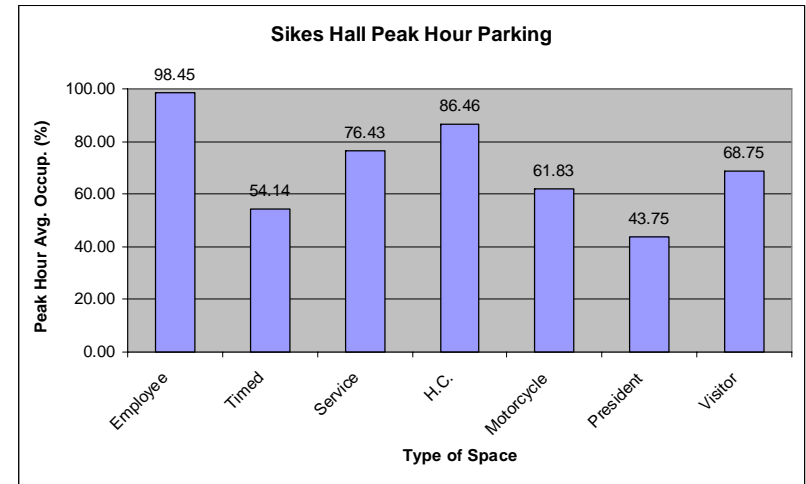
[ D ]



SIKES HALL Area Locator Map

**(D) Sikes Hall Area Parking**

Area	(a)		(b)				Average Occupancy (b/a) (%)	Occupancy (%)				
	Total # Spaces	Type	10:00		2:00			10:00-4:00 Avg. (occup.Spaces)	M/W	Tu/Th	AM	PM
A	12	Employee	12	12	12	11.8	11.94	99.48	100.00	98.96	100.00	98.96
	6	Timed	5.5	5.75	5.25	5.25	5.44	90.63	89.58	91.67	93.75	87.50
	5	Visitor	2.75	3.75	4.25	3	3.44	68.75	70.00	67.50	65.00	72.50
	4	H.C.	4	3.75	3.5	4	3.81	95.31	93.75	96.88	96.88	93.75
B	12	Employee	11.75	11.3	11.8	11.5	11.56	96.35	97.92	94.79	95.83	96.88
	4	Service	1.75	2.25	2.75	2	2.19	54.69	56.25	53.13	50.00	59.38
	5	Timed	4.25	4.75	3.5	4.5	4.25	85.00	77.50	92.50	90.00	80.00
	2	President	0.75	0.75	0.75	1.25	0.88	43.75	37.50	50.00	37.50	50.00
	1	H.C.	1	1	1	0.75	0.94	93.75	100.00	87.50	100.00	87.50
C	85	Employee	84.75	85	85	83.8	84.63	99.56	99.85	99.26	99.85	99.26
	24	Timed	19.25	20	20.5	22.8	20.63	85.94	82.81	89.06	81.77	90.10
	2	H.C.	1.75	2	1.75	1.75	1.81	90.63	87.50	93.75	93.75	87.50
D	92	Employee	92	92	91.3	91.3	91.63	99.59	99.59	99.59	100.00	99.18
	15	Motorcycle	10.25	13.8	11.8	14	12.44	82.92	73.33	92.50	80.00	85.83
	2	Service	1	0.75	0.25	0.25	0.56	28.13	31.25	25.00	43.75	12.50
	2	H.C.	2	2	1.5	1.5	1.75	87.50	87.50	87.50	100.00	75.00
E	78	Employee	78	77.8	75.8	73.8	76.31	97.84	98.56	97.12	99.84	95.83
F	37	Employee	36.75	36.5	34.5	34	35.44	95.78	96.28	95.27	98.99	92.57
G	17	Employee	16.75	16.5	16	15.8	16.25	95.59	96.32	94.85	97.79	93.38
	71	Timed	48.25	40	44	37.5	42.44	59.77	64.96	54.58	62.15	57.39
	2	Service	0.75	0.5	1.25	0.75	0.81	40.63	50.00	31.25	31.25	50.00
	8	Motorcycle	3	1.75	2.75	2	2.38	29.69	35.94	23.44	29.69	29.69
	1	H.C.	0.75	0.75	0.75	0.75	0.75	75.00	75.00	75.00	75.00	75.00
H	23	Timed	3	2.5	4.5	5.25	3.81	16.58	16.30	16.85	11.96	21.20
	1	H.C.	1	0.75	1	0.5	0.81	81.25	100.00	62.50	87.50	75.00
I	4	Employee	4	4	4	3.75	3.94	98.44	100.00	96.88	100.00	96.88
J	19	Timed	1.5	3	4	5.75	3.56	18.75	14.47	23.03	11.84	25.66
	11	Service	8.25	8.25	9.25	9.5	8.81	80.11	79.55	80.68	75.00	85.23
	5	Motorcycle	2.5	2	2.5	3	2.50	50.00	50.00	50.00	45.00	55.00
	1	H.C.	0	1	0.5	0.5	0.50	50.00	25.00	75.00	50.00	50.00
K	27	Employee	27	27.8	26.3	25.8	26.69	98.84	98.61	99.07	101.39	96.30
L1	11	Service	11.25	10.5	10.3	10	10.5	95.45	97.73	93.18	98.86	92.05
L2	5	Service	4	3.75	4.25	3.5	3.875	77.50	82.50	72.50	77.50	77.50
Total	594		486.3	484	484	478	482.88	81.29	81.65	80.93	81.65	80.93



Type	Total	Peak Hour Avg. Occ. (%)	Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Employee	364	98.45	Employee	358.38	6
Timed	148	54.14	Timed	80.13	68
Service	35	76.43	Service	26.75	8
H.C.	12	86.46	H.C.	10.38	2
Motorcycle	28	61.83	Motor	17.31	11
President	2	43.75	President	0.88	1
Visitor	5	68.75	Visitor	3.44	2
Total Spaces	594	81.29	Total Spaces	497.25	97

# [ D ]

## Observations:

-Employee parking within this study area continues to approach maximum utilization during peak hours (98.45%).

-While the Timed spaces adjacent to Sikes Hall remain highly utilized (85%), those located around Bryan Circle are only seeing moderate use during peak hours (59.77%). Utilization of the Timed spaces near Byrnes Hall (H) and Calhoun Courts (J) remain surprisingly low at 16.6% and 18.8% respectively.

-Service vehicle parking utilization has increased from 49% in 2006 to over 76% in 2008..

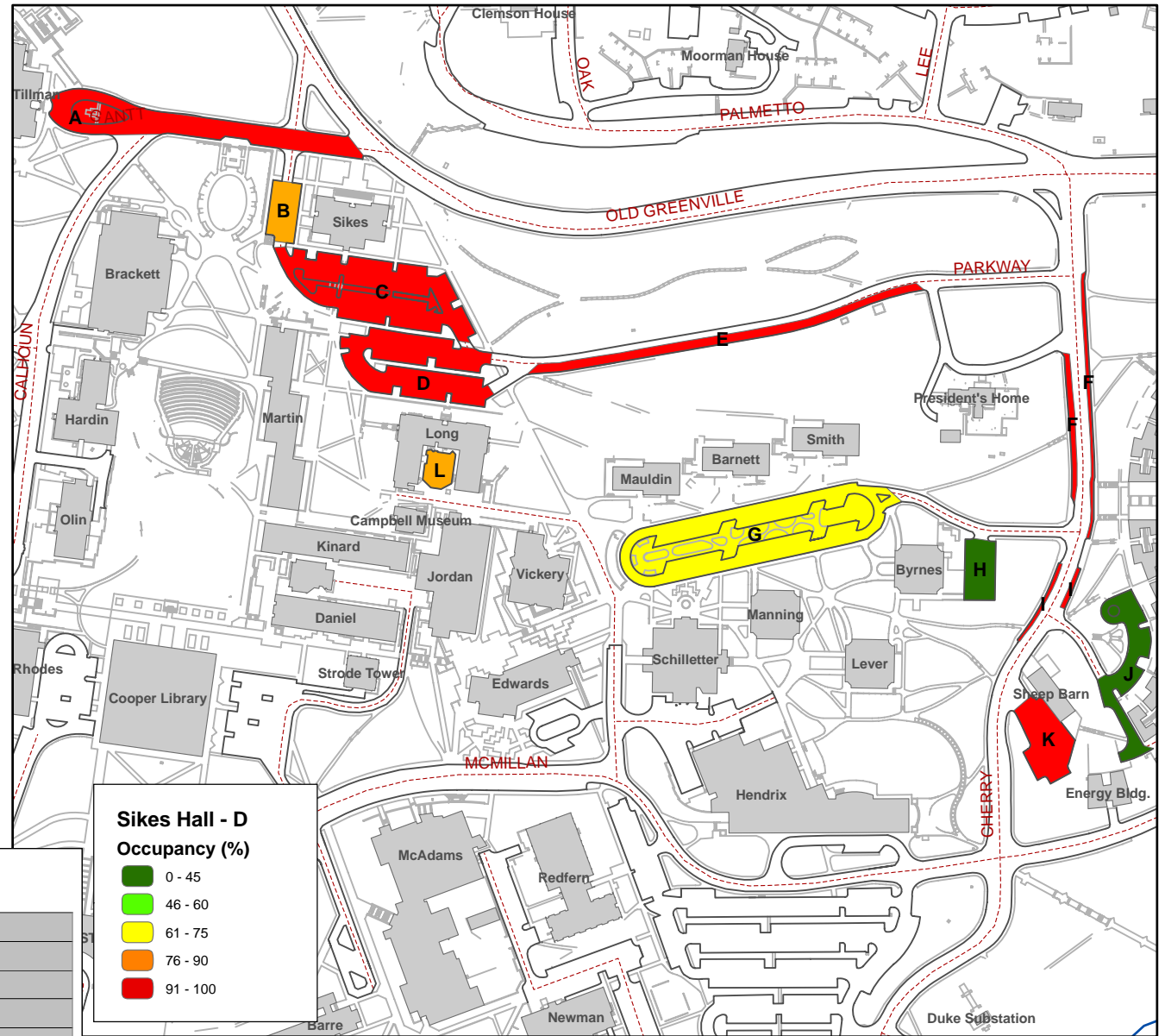
-Utilization of the Handicapped spaces in this study area has increased since 2006 despite the addition of two new stalls (Average occupancy increased from 77% to 86%).

## Opportunities:

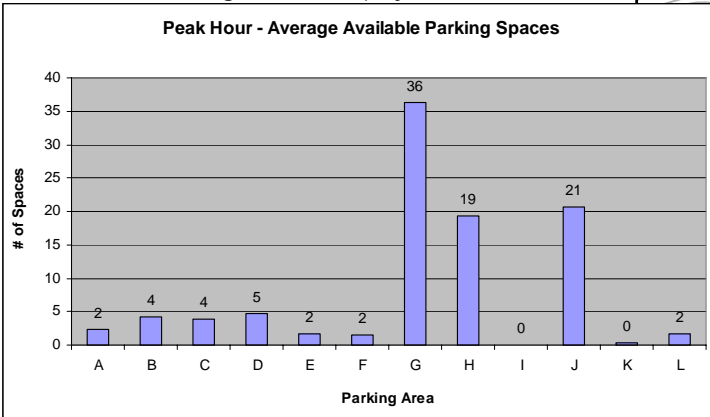
-Because of their under-utilization, the Timed spaces near Byrnes Hall (H) should be considered for reassignment. Eight Employee stalls on Cherry Road (I) were lost to pull-offs for CAT buses. Perhaps these spaces could be replaced in area H.

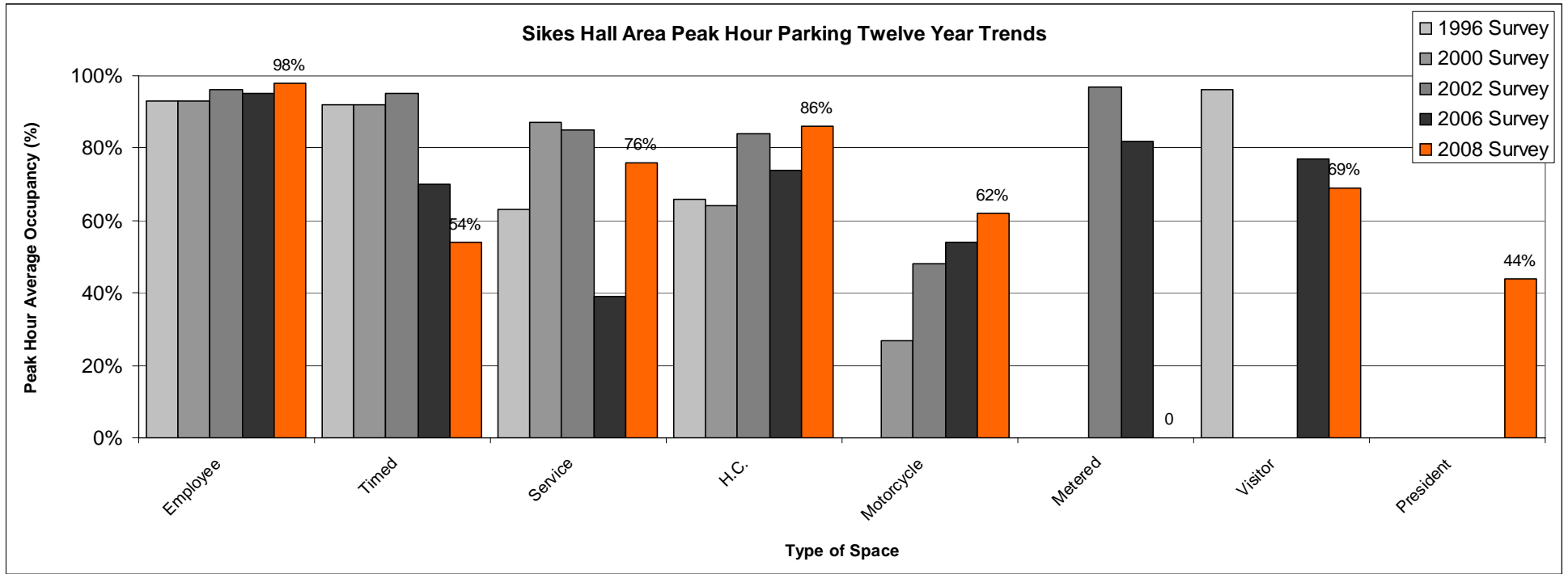
-The under-utilized spaces at Calhoun Courts (J) should also be considered for reassignment. Recent requests for additional Handicapped stalls here should be reconsidered.

-A portion of the Timed stalls along Bryan Circle should be considered for reassignment to Employee stalls.



Peak Hour Occupancy by Parking Area





1996 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	346	93%
Timed	132	92%
Service	19	63%
H.C.	9	66%
Motorcycle	0	0%
Metered	0	0%
Visitor	41	96%
President	0	N/A
<b>Total Spaces</b>	<b>547</b>	<b>97%</b>

2000 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	367	93%
Timed	135	92%
Service	20	87%
H.C.	11	64%
Motorcycle	41	27%
Metered	0	0%
Visitor	0	0%
President	0	N/A
<b>Total Spaces</b>	<b>574</b>	<b>45%</b>

2002 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	401	96%
Timed	128	95%
Service	22	85%
H.C.	10	84%
Motorcycle	28	48%
Metered	24	97%
Visitor	0	0%
President	0	N/A
<b>Total Spaces</b>	<b>613</b>	

2006 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	382	95%
Timed	121	70%
Service	34	39%
H.C.	10	74%
Motorcycle	28	54%
Metered	24	82%
Visitor	5	77%
President	2	29%
<b>Total Spaces</b>	<b>606</b>	

2008 Survey		
Type	Total	Peak Hour Avg. Occ. (%)
Employee	364	98%
Timed	148	54%
Service	35	76%
H.C.	12	86%
Motorcycle	28	62%
Metered	*See Note	N/A
Visitor	5	69%
President	2	44%
<b>Total Spaces</b>	<b>594</b>	

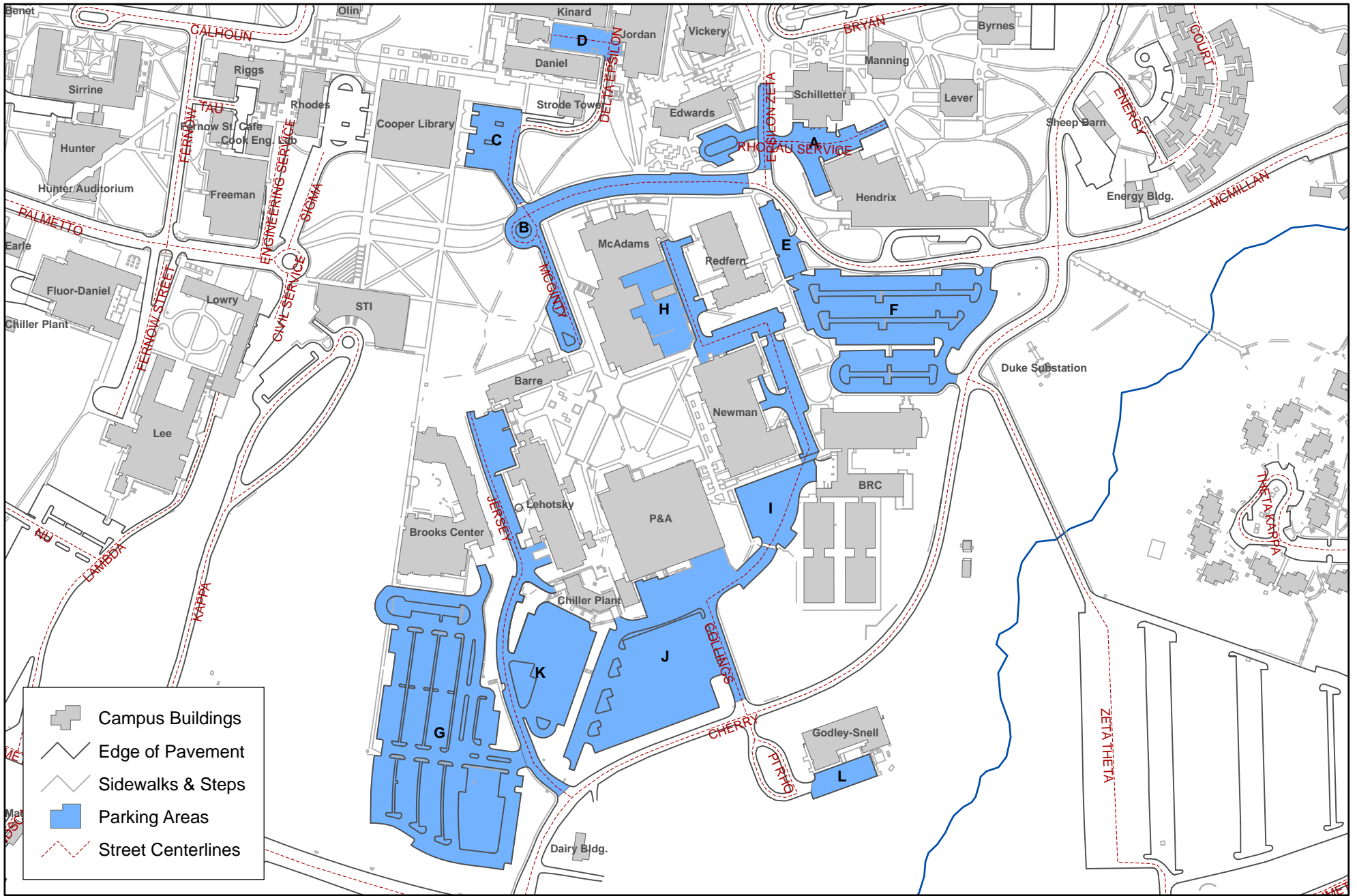
Note: In 2008, Metered spaces were counted as Timed spaces.





# AREA [E] - SOUTHEAST CAMPUS

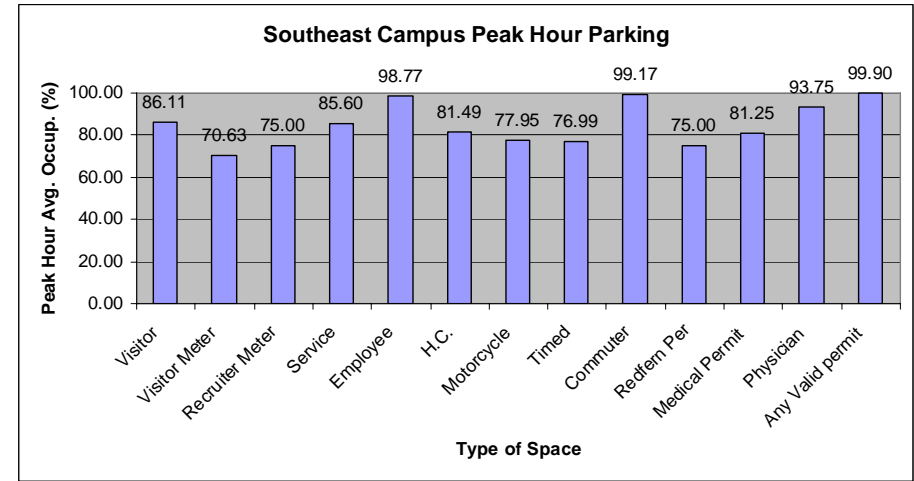
[ E ]



SOUTHEAST CAMPUS Area Locator Map

**(E) Southeast Area Parking**

Area	Total # Spaces	Type	(b)					Average Occupancy (b/a) (%)	Occupancy (%)			
			10:00		2:00		10:00-4:00 Avg. (occup.Spaces)		M/W	Tu/Th	AM	PM
A	21	Employee	21	20.8	20.3	20.5	20.63	98.21	98.21	98.21	99.40	97.02
	4	Timed	3.75	4	4	2.5	3.56	89.06	96.88	81.25	96.88	81.25
	3	Medical Permit	2.75	1.75	2.75	2.5	2.44	81.25	91.67	70.83	75.00	87.50
	4	Service	3.5	3	4	2.75	3.31	82.81	93.75	71.88	81.25	84.38
	2	H.C.	1.75	1.75	2	1.25	1.69	84.38	93.75	75.00	87.50	81.25
B	43	Employee	43	43	43	39.8	42.19	98.11	100.00	96.22	100.00	96.22
	22	Motorcycle	20.3	17.5	20	16.3	18.50	84.09	91.48	76.70	85.80	82.39
	2	H.C.	2	2	1.75	1.75	1.88	93.75	93.75	93.75	100.00	87.50
	8	Visitor	7.5	7.75	7.25	6	7.13	89.06	92.19	85.94	95.31	82.81
C	34	Employee	33.8	34	34	31.8	33.38	98.16	99.63	96.69	99.63	96.69
	6	H.C.	5.5	5.75	5.5	5	5.44	90.63	91.67	89.58	93.75	87.50
	2	Service	1.75	1.75	1.75	2	1.81	90.63	87.50	93.75	87.50	93.75
D	5	Service	3.5	3.75	3.5	3.75	3.63	72.50	70.00	75.00	72.50	72.50
	8	H.C.	7.25	6	7.5	6.75	6.88	85.94	92.19	79.69	82.81	89.06
E	20	Employee	20	19.5	20	18.8	19.56	97.81	100.00	95.63	98.75	96.88
	5	H.C.	5	4	5	3.75	4.44	88.75	100.00	77.50	90.00	87.50
	6	Redfern.Perm	5	4.25	4.75	4	4.50	75.00	81.25	68.75	77.08	72.92
F	233	Employee	233	232	233	230	231.75	99.46	99.84	99.09	99.73	99.20
	20	Visitor Metered	14.3	12.3	16.3	13.8	14.13	70.63	76.25	65.00	66.25	75.00
	33	Timed	30.3	22.8	30.8	22.5	26.56	80.49	92.42	68.56	80.30	80.68
	7	Recruiter Metered	5	4	6	6	5.25	75.00	78.57	71.43	64.29	85.71
	6	H.C.	3.75	4.75	4.25	4.75	4.38	72.92	66.67	79.17	70.83	75.00
5	Motorcycle	5.25	3.25	4.5	4.5	4.38	87.50	97.50	77.50	85.00	90.00	
G	371	Commuter	371	371	370	361	367.94	99.17	99.83	98.52	99.93	98.42
	10	H.C.	6.5	7.75	6	7.75	7.00	70.00	62.50	77.50	71.25	68.75
	7	Timed	4.75	4.5	2.25	3.5	3.75	53.57	50.00	57.14	66.07	41.07
	2	Service	1.75	1.75	1.75	1.75	1.75	87.50	87.50	87.50	87.50	87.50
	64	Any Valid permit	64	64	64	63.8	63.94	99.90	100.00	99.80	100.00	99.80
H	62	Employee	62	61.8	61	61	61.44	99.09	99.19	98.99	99.80	98.39
	2	Physician	2	1.5	2	2	1.88	93.75	100.00	87.50	87.50	100.00
	1	H.C.	0.5	1	0.75	0.75	0.75	75.00	62.50	87.50	75.00	75.00
I	69	Employee	68.5	69	69	67	68.38	99.09	99.64	98.55	99.64	98.55
	9	H.C.	7.25	8.75	7.75	7.25	7.75	86.11	83.33	88.89	88.89	83.33
J	18	Employee	*Lost to Construction of Life Sciences Building - Last remaining spaces lost during study.									
	5	Service	*Not Included in Totals									
	1	Timed										
K	191	Employee	190	190	186	188	188.19	98.53	98.36	98.69	99.28	97.77
	7	Service	6.5	6.5	6.5	6.5	6.50	92.86	92.86	92.86	92.86	92.86
	9	Motorcycle	4.25	5.5	6.5	4.5	5.19	57.64	59.72	55.56	54.17	61.11
	3	H.C.	2.75	2.5	2.25	2.75	2.56	85.42	83.33	87.50	87.50	83.33
L	1	H.C.	0.25	0.5	0.5	0.5	0.44	43.75	37.50	50.00	37.50	50.00
	1	Visitor	0.75	0.25	0.5	1	0.63	62.50	62.50	62.50	50.00	75.00
	20	Employee	20	18.3	19.8	18	19.00	95.00	99.38	90.63	95.63	94.38
	3	Service	2.75	2.5	2.75	2.75	2.69	89.58	91.67	87.50	87.50	91.67
Total	1331		1294	1276	1290	1249	1277.13	80.80	97.07	94.83	96.52	95.39



Type	Total	Peak Hour Avg. Occup	Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Visitor	9	86.11	Visitor	7.75	1
Visitor Meter	20	70.63	Visitor Meter	14.13	6
Recruiter Meter	7	75.00	Recruiter Meter	5.25	2
Service	23	85.60	Service	19.69	3
Employee	693	98.77	Employee	684.50	9
H.C.	53	81.49	H.C.	43.19	10
Motorcycle	36	77.95	Motorcycle	28.06	8
Timed	44	76.99	Timed	33.88	10
Commuter	371	99.17	Commuter	367.94	3
Redfern Per	6	75.00	Redfern Per	4.50	2
Medical Permit	3	81.25	Medical Permit	2.44	1
Physician	2	93.75	Physician	1.88	0
Any Valid permit	64	99.90	Any Valid permit	63.94	0
<b>Total Spaces</b>	<b>1331</b>	<b>95.95</b>	<b>Total Spaces</b>	<b>1277.13</b>	<b>54</b>

# [ E ]

## Observations:

-377 parking stalls were lost in C-2 (J) adjacent to P&A to make way for construction of the Life Sciences Building (This includes 293 Commuter stalls and 65 Employee stalls).

-There are fewer than 9 Employee stalls available at any given time during peak parking hours within the entire study area.

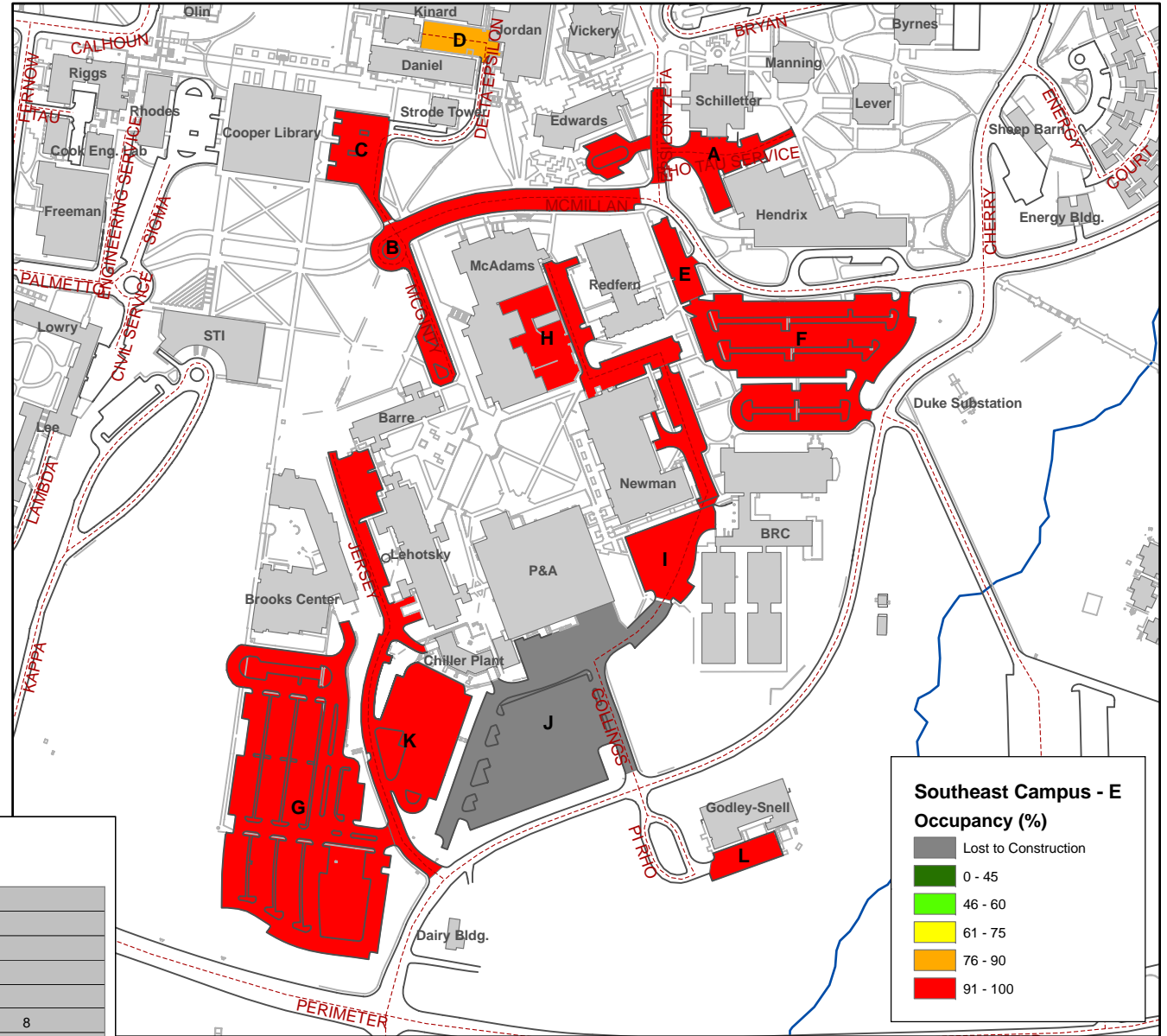
-There are fewer than 4 spaces typically available within the Brooks Center lot (G) in Commuter or Any Valid Permit sections during peak hours.

## Opportunities:

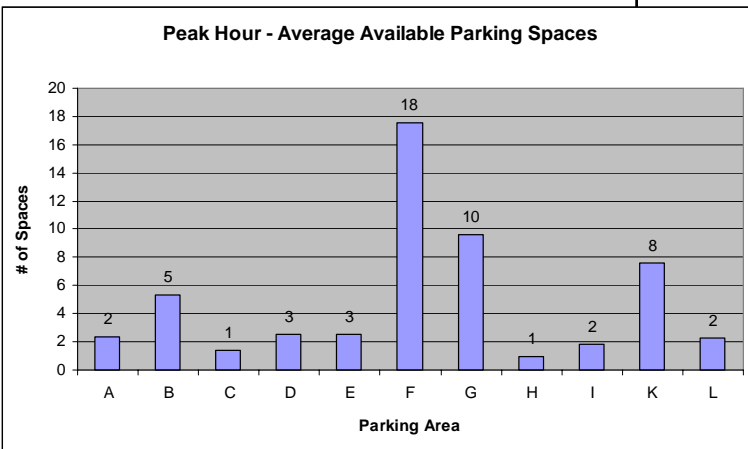
-As in 2002 and 2006, there is practically no additional parking capacity within this district for the primary parking groups. There is less than 2% capacity for both Commuters and Employees in paved lots.

-The gravel lot while not studied in detail appears to be under-utilized. Five counts of this lot during the study period indicate an average occupancy of 95 vehicles. Many of the vehicles are parked here long-term and are service or government vehicles that could be relocated.

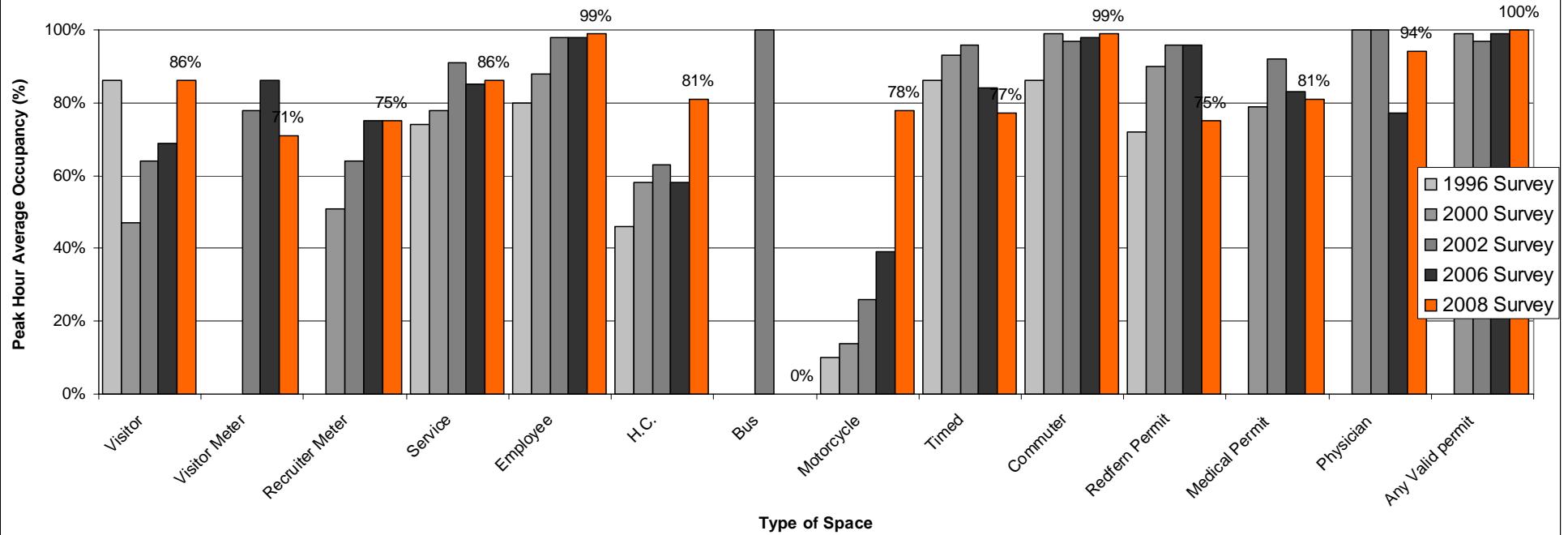
-The delay of construction of the Life Sciences Building may provide the opportunity to temporarily restore unpaved parking in the former C-2 lot to relieve the parking pressures in this precinct.



Peak Hour Occupancy by Parking Area



South East Campus Peak Hour Parking Twelve Year Trends



1996 Survey		
Type	Total	Peak Hr. Avg.Occup
Visitor	31	86%
Visitor Meter	0	0%
Recruiter Meter	0	0%
Service	32	74%
Employee	765	80%
H.C.	33	46%
Bus	0	N/A
Motorcycle	51	10%
Timed	32	86%
Commuter	841	86%
Redfern Permit	4	72%
Medical Permit	0	0%
Physician	0	0%
Any Valid permit	0	0%
<b>Total Spaces</b>	<b>1789</b>	

2000 Survey		
Type	Total	Peak Hr. Avg.Occup
Visitor	29	47%
Visitor Meter	0	0%
Recruiter Meter	7	51%
Service	27	78%
Employee	892	88%
H.C.	32	58%
Bus	0	N/A
Motorcycle	34	14%
Timed	67	93%
Commuter	668	99%
Redfern Permit	6	90%
Medical Permit	3	79%
Physician	1	100%
Any Valid permit	64	99%
<b>Total Spaces</b>	<b>1830</b>	

2002 Survey		
Type	Total	Peak Hr. Avg.Occup
Visitor	9	64%
Visitor Meter	53	78%
Recruiter Meter	7	64%
Service	25	91%
Employee	696	98%
H.C.	35	63%
Bus	1	100%
Motorcycle	33	26%
Timed	19	96%
Commuter	668	97%
Redfern Permit	6	96%
Medical Permit	3	92%
Physician	2	100%
Any Valid permit	64	97%
<b>Total Spaces</b>	<b>1621</b>	

2006 Survey		
Type	Total	Peak Hour Avg.Occup
Visitor	9	69%
Visitor Meter	53	86%
Recruiter Meter	7	75%
Service	26	85%
Employee	769	98%
H.C.	46	58%
Bus	0	N/A
Motorcycle	39	39%
Timed	19	84%
Commuter	664	98%
Redfern Permit	6	96%
Medical Permit	3	83%
Physician	2	77%
Any Valid permi	64	99%
<b>Total Spaces</b>	<b>1707</b>	

2008 Survey		
Type	Total	Peak Hour Avg.Occup
Visitor	9	86%
Visitor Meter	20	71%
Recruiter Meter	7	75%
Service	23	86%
Employee	693	99%
H.C.	53	81%
Bus	0	N/A
Motorcycle	36	78%
Timed	44	77%
Commuter	371	99%
Redfern Permit	6	75%
Medical Permit	3	81%
Physician	2	94%
Any Valid permit	64	100%
<b>Total Spaces</b>	<b>1331</b>	



# AREA [F] - SOUTH COMMUTER

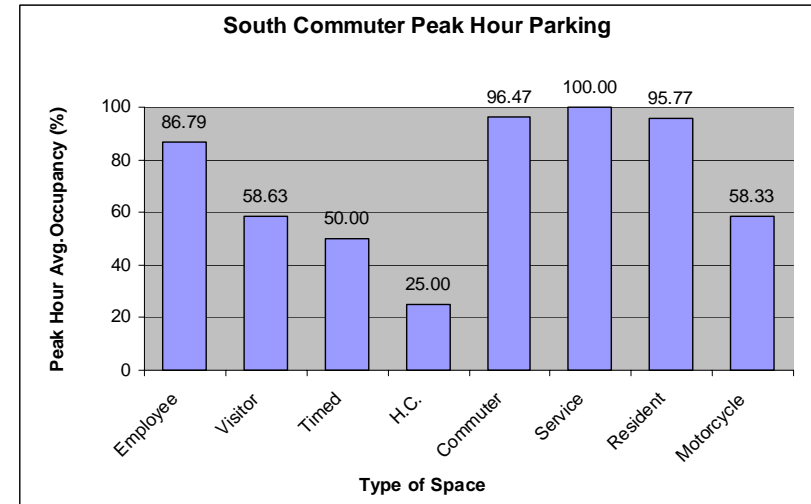
[ F ]



# SOUTH COMMUTER Area Locator Map

**(F) South Commuter Parking**

Area	(a)		(b)					Average Occupancy (b/a) (%)	Occupancy (%)			
	Total # Spaces	Type	10:00		2:00		10:00-4:00 Avg. (occup.Spaces)		M/W	Tu/Th	AM	PM
A	50	Employee	49.75	50	49.5	45.5	48.69	97.38	99.25	95.50	99.75	99.50
	11	Visitor	4	6	6.75	4.5	5.31	48.30	48.86	47.73	45.45	57.95
	1	Timed	0.5	0.75	0.75	0	0.50	50.00	62.50	37.50	62.50	75.00
	1	H.C.	0.25	0.5	0.5	0.25	0.38	37.50	37.50	37.50	37.50	50.00
B	260	Commuter	259.8	261	260	254	258.63	99.47	100.00	98.94	100.14	100.24
	59	Employee	58	58.75	59	55.3	57.75	97.88	99.15	96.61	98.94	99.79
	10	Motorcycle	4.25	6	10.3	4.5	6.25	62.50	72.50	52.50	51.25	81.25
C	42	Commuter	41.5	43	42	38.8	41.31	98.36	99.40	97.32	100.60	101.19
	16	Employee	11.25	16	14.8	14.3	14.06	87.89	81.25	94.53	85.16	96.09
D	1	Service	1	1	1	1	1.00	100.00	100.00	100.00	100.00	100.00
	11	Employee	9.75	10.75	10.5	10	10.25	93.18	92.05	94.32	93.18	96.59
E	26	Employee	10	18	15	20.8	15.94	61.30	48.08	74.52	53.85	63.46
	175	Commuter	149	170.5	154	146	154.88	88.50	86.57	90.43	91.29	92.71
F	829	Resident	799.3	799.8	799	778	793.94	95.77	96.37	95.17	96.44	96.40
G	220	Commuter	218.5	219.5	213	200	212.56	96.62	98.01	95.23	99.55	98.24
H	238	Commuter	238.5	238.5	237	225	234.63	98.58	99.84	97.32	100.21	99.84
I1	12	Employee	10.5	11.5	11	10.8	10.94	91.15	89.58	92.71	91.67	93.75
	10	Visitor	6.75	7.5	6.5	7.25	7.00	70.00	66.25	73.75	71.25	70.00
	1	HC	0	0.25	0	0.25	0.13	12.50	0.00	25.00	12.50	12.50
I2	70	Employee	51.75	57.5	50.3	47.8	51.81	74.02	72.86	75.18	78.04	76.96
	2	Motorcycle	1	1	0.5	0.5	0.75	37.50	37.50	37.50	50.00	37.50
J	56	Employee	51	53.75	50.3	48.8	50.94	90.96	90.40	91.52	93.53	92.86
Total	2101		1976	2032	1991	1912	1977.63	94.13	94.41	93.85	95.38	95.72



Type	Total # Spaces	Peak hour Avg. Occ. (%)
Employee	300	86.79
Visitor	21	58.63
Timed	1	50.00
H.C.	2	25.00
Commuter	935	96.47
Service	1	100.00
Resident	829	95.77
Motorcycle	12	58.33
Total Spaces	2101	94.13

Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Employee	260.38	40
Visitor	12.31	9
Timed	0.50	1
H.C.	0.50	2
Commuter	902.00	33
Service	1.00	0
Resident	793.94	35
Motorcycle	7.00	5
Total Spaces	1977.63	123



# [ F ]

## Observations:

-Utilization of Employee parking is relatively high throughout this precinct (87%), but is particularly high (over 97%) in those areas in greater proximity to the Academic Core (A, B, C, D).

-As in 2002 and 2006, there is practically no remaining capacity among Commuter spaces within this district. Average Occupancy is over 96%.

-Parking areas with moderate utilization in 2002 and 2006 (A, E) are experiencing higher occupancy in 2008 during peak hours, most likely due to the loss of Commuter spaces in C-2 (southern section of B on map to right).

-The 10 Motorcycle spaces recently added to parking area B (E-3) are moderately utilized during peak hours (62.5% average occupancy).

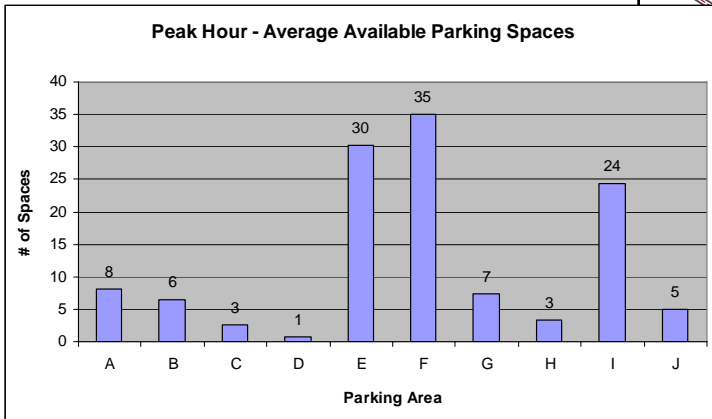
## Opportunities:

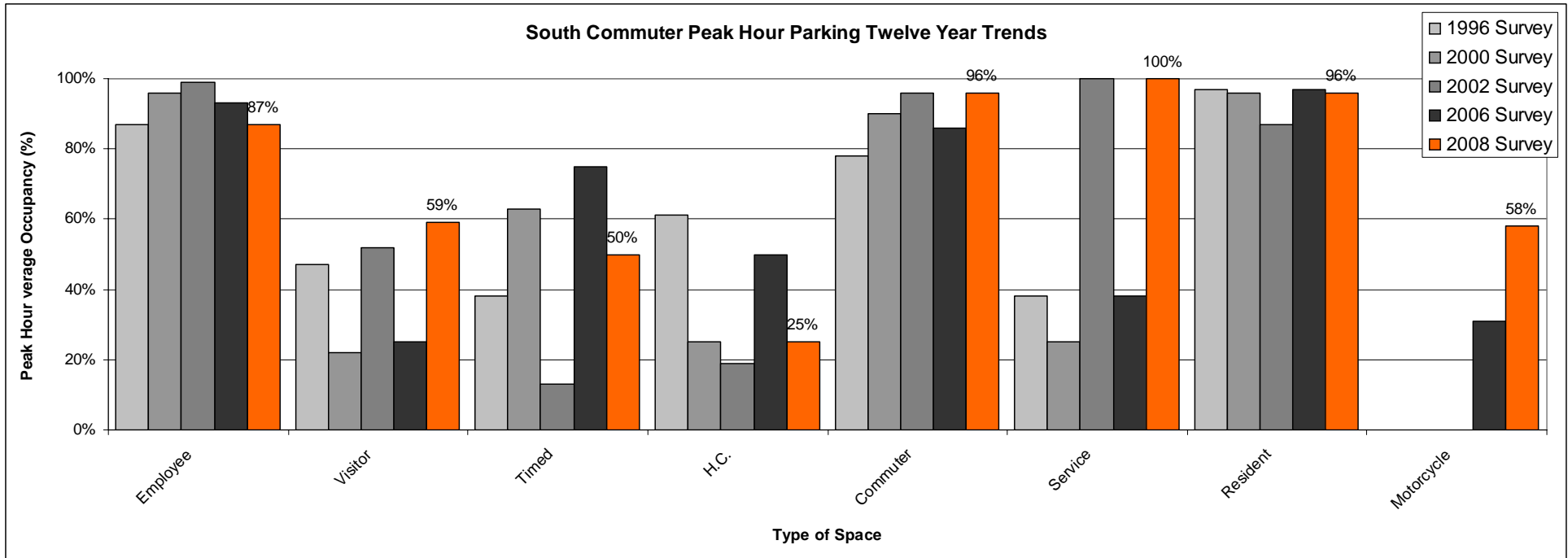
-There is less than 5% excess capacity for both Commuters and Residents. There are typically 40 employee spaces available during peak hours, but a majority of these spaces are across Perimeter Road at the ASB or along Shotgun Alley/Nu Street.

-There appears to be adequate Motorcycle parking in this precinct and in the nearby West Core parking facilities. A small portion of these spaces could be reassigned with little or no impact to this parking group.



Peak Hour Occupancy by Parking Area





1996 Survey		
Type	Total	Peak Hr. Avg.Occ.
Employee	116	87%
Visitor	2	47%
Timed	1	38%
H.C.	1	61%
Commuter	932	78%
Service	1	38%
Resident	886	97%
Motorcycle	0	N/A
<b>Total Spaces</b>	<b>1939</b>	

2000 Survey		
Type	Total	Peak Hr. Avg.Occ.
Employee	132	96%
Visitor	38	22%
Timed	1	63%
H.C.	2	25%
Commuter	997	90%
Service	1	25%
Resident	848	96%
Motorcycle	0	N/A
<b>Total Spaces</b>	<b>2019</b>	

2002 Survey		
Type	Total	Peak Hr. Avg.Occ.
Employee	180	99%
Visitor	60	52%
Timed	1	13%
H.C.	2	19%
Commuter	997	96%
Service	1	100%
Resident	848	87%
Motorcycle	0	N/A
<b>Total Spaces</b>	<b>2089</b>	

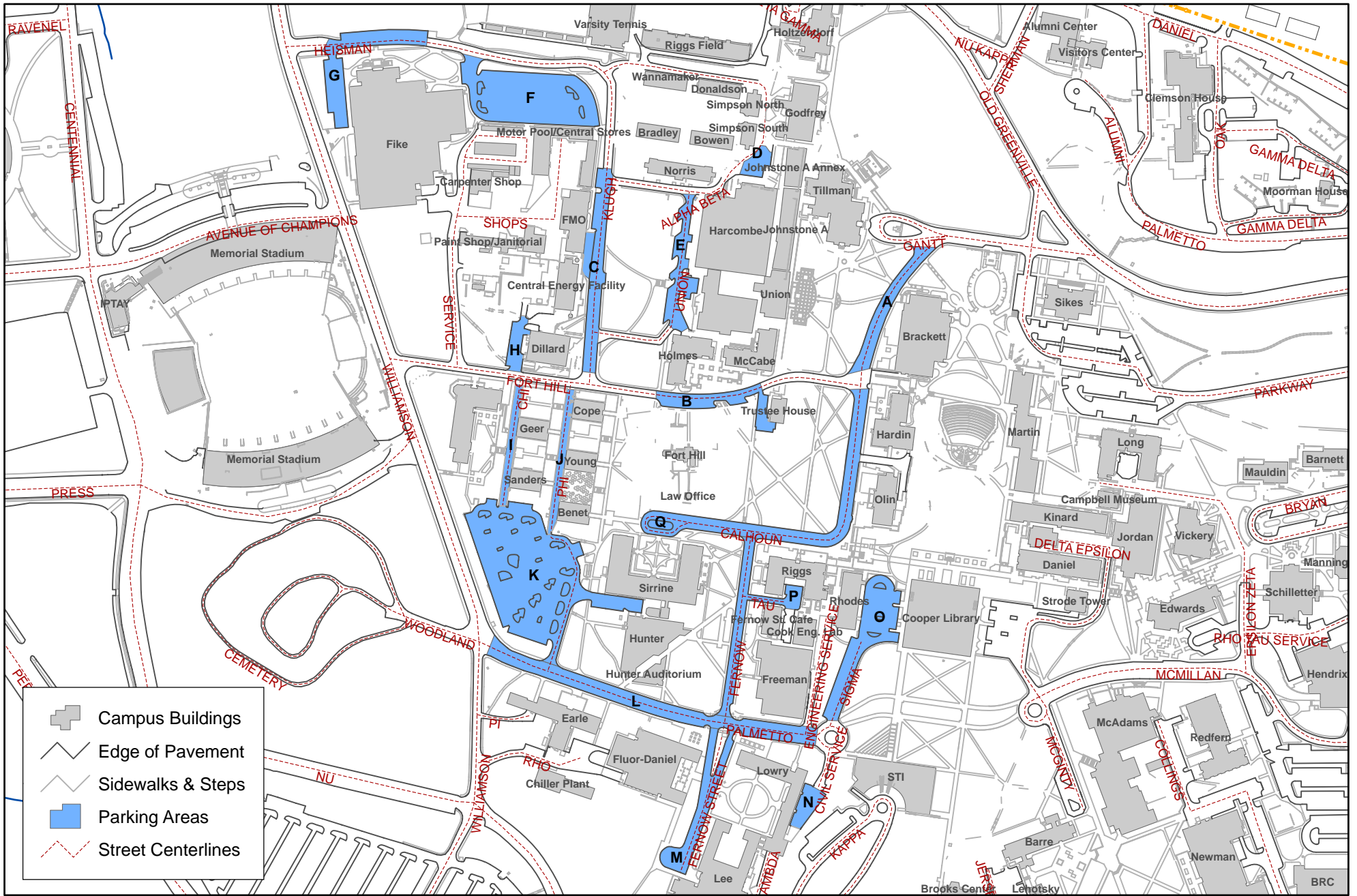
2006 Survey		
Type	Total # Spaces	Peak hour Avg.Occ.
Employee	251	93%
Visitor	48	25%
Timed	1	75%
H.C.	2	50%
Commuter	977	86%
Service	1	38%
Resident	829	97%
Motorcycle	2	31%
<b>Total Spaces</b>	<b>2111</b>	

2008 Survey		
Type	Total # Spaces	Peak hour Avg.Occ. (%)
Employee	300	87%
Visitor	21	59%
Timed	1	50%
H.C.	2	25%
Commuter	935	96%
Service	1	100%
Resident	829	96%
Motorcycle	12	58%
<b>Total Spaces</b>	<b>2101</b>	

The image is a detailed architectural site plan for 'Area [G] - West Core Campus'. It features a grid of streets and several building footprints. The buildings are represented by simple line drawings with rectangular shapes and some internal details like windows or doors. The plan is surrounded by landscaping, including large trees with dense foliage and smaller shrubs. A central horizontal road is prominent, with several buildings situated along it. The overall layout is organized and symmetrical.

# AREA [G] - WEST CORE CAMPUS

[ G ]

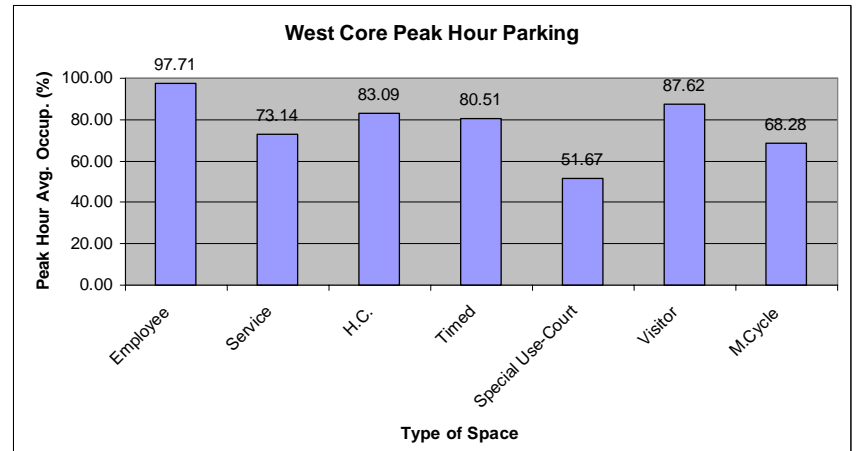


WEST CORE CAMPUS Area Locator Map

**(G) West Core Area Parking**

Area	Total # Spaces	Type	(a)				(b) 10:00-4:00 Avg. (occup.Spaces)	Occupancy (b/a) (%)	Occupancy (%)			
			10:00 M/W	10:00 Tu/Th	2:00 M/W	2:00 Tu/Th			M/W	Tu/Th	AM	PM
A	14	Employee	13.8	14	14	14	13.94	99.55	99.11	100.00	99.11	100.00
B	13	Employee	13	12.8	12.8	12.7	12.79	98.40	99.04	97.76	99.04	97.76
	1	Service	1	1	1	1	1.00	100.00	100.00	100.00	100.00	100.00
	6	Visitor	5.5	5.75	5.75	5.67	5.67	94.44	93.75	95.14	93.75	95.14
	6	H.C.	6	5.75	5	6	5.69	94.79	91.67	97.92	97.92	91.67
	7	Timed	5.75	6.5	6.25	6.33	6.21	88.69	85.71	91.67	87.50	89.88
C	26	Employee	26	26	25.8	26	25.94	99.76	99.52	100.00	100.00	99.52
	3	Timed	1.75	1.75	1.75	1.33	1.65	54.86	58.33	51.39	58.33	51.39
	2	H.C.	1.5	1.75	1.75	2	1.75	87.50	81.25	93.75	81.25	93.75
	1	Visitor	0.5	0.75	0.75	0.67	0.67	66.67	62.50	70.83	62.50	70.83
	14	Motorcycle	10.5	11.5	11.5	10.3	10.96	78.27	78.57	77.98	78.57	77.98
	20	Service	15.5	13.3	16.5	16.3	15.40	76.98	80.00	73.96	71.88	82.08
D	7	Service	6.5	7	6.5	7	6.75	96.43	92.86	100.00	96.43	96.43
	3	Timed	2.75	2.5	2.75	3	2.75	91.67	91.67	91.67	87.50	95.83
E	16	Timed	14	15	14.3	15.3	14.65	91.54	88.28	94.79	90.63	92.45
	4	Service	2.5	3.75	2.5	3.33	3.02	75.52	62.50	88.54	78.13	72.92
	5	Special Use-Court	2.25	2.25	3.5	2.33	2.58	51.67	57.50	45.83	45.00	58.33
	2	H.C.	1.75	1.5	1.75	2	1.75	87.50	87.50	87.50	81.25	93.75
	1	Reserved	1	0.25	1	1	0.81	81.25	100.00	62.50	62.50	100.00
	3	Motorcycle	2	2.75	2	3	2.44	81.25	66.67	95.83	79.17	83.33
F	5	H.C.	2.25	2.5	1.5	2.33	2.15	42.92	37.50	48.33	47.50	38.33
	163	Employee	159	163	153	160	158.60	97.30	95.71	98.90	98.77	95.83
G	58	Employee	56.3	55.5	50.3	56.7	54.67	94.25	91.81	96.70	96.34	92.17
	8	Timed	7.25	5.75	6.25	7	6.56	82.03	84.38	79.69	81.25	82.81
	4	Service	2.25	2.25	1.75	1.67	1.98	49.48	50.00	48.96	56.25	42.71
	14	Motorcycle	0.75	1	3	4.33	2.27	16.22	13.39	19.05	6.25	26.19
H	20	Employee	20	19.8	18.8	17.3	18.96	94.79	96.88	92.71	99.38	90.21
	6	Service	5.25	4.25	4.25	6	4.94	82.29	79.17	85.42	79.17	85.42
I	4	Timed	2.5	2	2.5	2.33	2.33	58.33	62.50	54.17	56.25	60.42
J	9	Timed	6	3.75	5.5	7.33	5.65	62.73	63.89	61.57	54.17	71.30
	1	Service	0	0	0	0.33	0.08	8.33	0.00	16.67	0.00	16.67
K	262	Employee	261	262	257	256	258.79	98.78	98.85	98.70	99.71	97.84
	11	Service	7.75	7	5.75	7	6.88	62.50	61.36	63.64	67.05	57.95
	5	H.C.	3.75	5	5	4.33	4.52	90.42	87.50	93.33	87.50	93.33
L	53	Employee	52.5	52.3	52.8	52.7	52.54	99.14	99.29	98.98	98.82	99.45
	6	Serv	4.25	3.75	3.75	2.67	3.60	60.07	66.67	53.47	66.67	53.47
	3	H.C.	2.5	3	2.75	2.67	2.73	90.97	87.50	94.44	91.67	90.28
	28	Motorcycle	16.8	16	23	15.7	17.85	63.76	70.98	56.55	58.48	69.05
M	3	H.C.	3	2.5	3	2	2.63	87.50	100.00	75.00	91.67	83.33
	10	Visitor	9.25	8.25	8.75	8	8.56	85.63	90.00	81.25	87.50	83.75
	1	Reserved-CE	1	1	1	1	1.00	100.00	100.00	100.00	100.00	100.00
	1	Service	0.75	0.75	1	0.67	0.79	79.17	87.50	70.83	75.00	83.33
	4	Motorcycle	1.75	1.75	2	1.33	1.71	42.71	46.88	38.54	43.75	41.67
	2	Timed	1.33	1.33	1.5	2	1.54	77.08	70.83	83.33	66.67	87.50
	5	Employee	4.25	4.25	3.5	4	4.00	80.00	77.50	82.50	85.00	75.00

Area	Total # Spaces	Type	(a)				(b) 10:00-4:00 Avg. (occup.Spaces)	Occupancy (b/a) (%)	Occupancy (%)			
			10:00 M/W	10:00 Tu/Th	2:00 M/W	2:00 Tu/Th			M/W	Tu/Th	AM	PM
N	16	Employee	16	16	14.8	14.7	15.35	95.96	96.09	95.83	100.00	91.93
	2	Service	1.75	2	2	1.67	1.85	92.71	93.75	91.67	93.75	91.67
O	60	Employee	*Lost to Construction of Rhodes Hall Addition									
	2	Service	*Not included in Totals									
	3	H.C.										
	2	Timed										
P	3	Motorcycle	4	5	5.25	3	4.31	143.75	154.17	133.33	150.00	137.50
	21	Employee	21	21	20.5	20.7	20.79	99.01	98.81	99.21	100.00	98.02
	1	Service	0.5	0.75	0.5	0.67	0.60	60.42	50.00	70.83	62.50	58.33
	3	H.C.	2.75	2.75	2.75	2.67	2.73	90.97	91.67	90.28	91.67	90.28
Q	5	H.C.	4.75	4.5	4	4	4.31	86.25	87.50	85.00	92.50	80.00
	56	Employee	55.5	55.3	53.8	53.3	54.46	97.25	97.54	96.95	98.88	95.61
	2	Service	1.5	1.75	1.25	1	1.38	68.75	68.75	68.75	81.25	56.25
	4	Timed	3.5	3.75	3.75	4	3.75	93.75	90.63	96.88	90.63	96.88
	23	Motorcycle	23.3	19.8	20.3	21.7	21.23	92.30	94.57	90.04	93.48	91.12
Total	976		900	896	883	891	892.50	91.44	91.32	91.57	91.99	90.90



Type	Total	Peak Hour Avg.Occ. (%)	Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Employee	707	97.71	Employee	690.83	16
Service	66	73.14	Service	48.27	18
H.C.	34	83.09	H.C.	28.25	6
Timed	56	80.51	Timed	45.08	11
Special Use-Court	5	51.67	Special Use-Court	2.58	2
Visitor	17	87.62	Visitor	14.90	2
M.Cycle	89	68.28	M.Cycle	60.77	28
Reserved	2	90.63	Reserved	1.81	0
Total Spaces	976	91.44	Total Spaces	892.50	84

# [ G ]

## Observations:

-65 net Employee parking spaces were lost within this precinct due to new construction and associated reassignments in nearby lots. Employee parking still makes up 72% of the parking in this precinct and has moved even closer to maximum utilization (98%).

-Peak hour occupancy has increased since 2006 in parking areas P and Q most likely because of the loss of Employee spaces for the Rhodes Hall Addition.

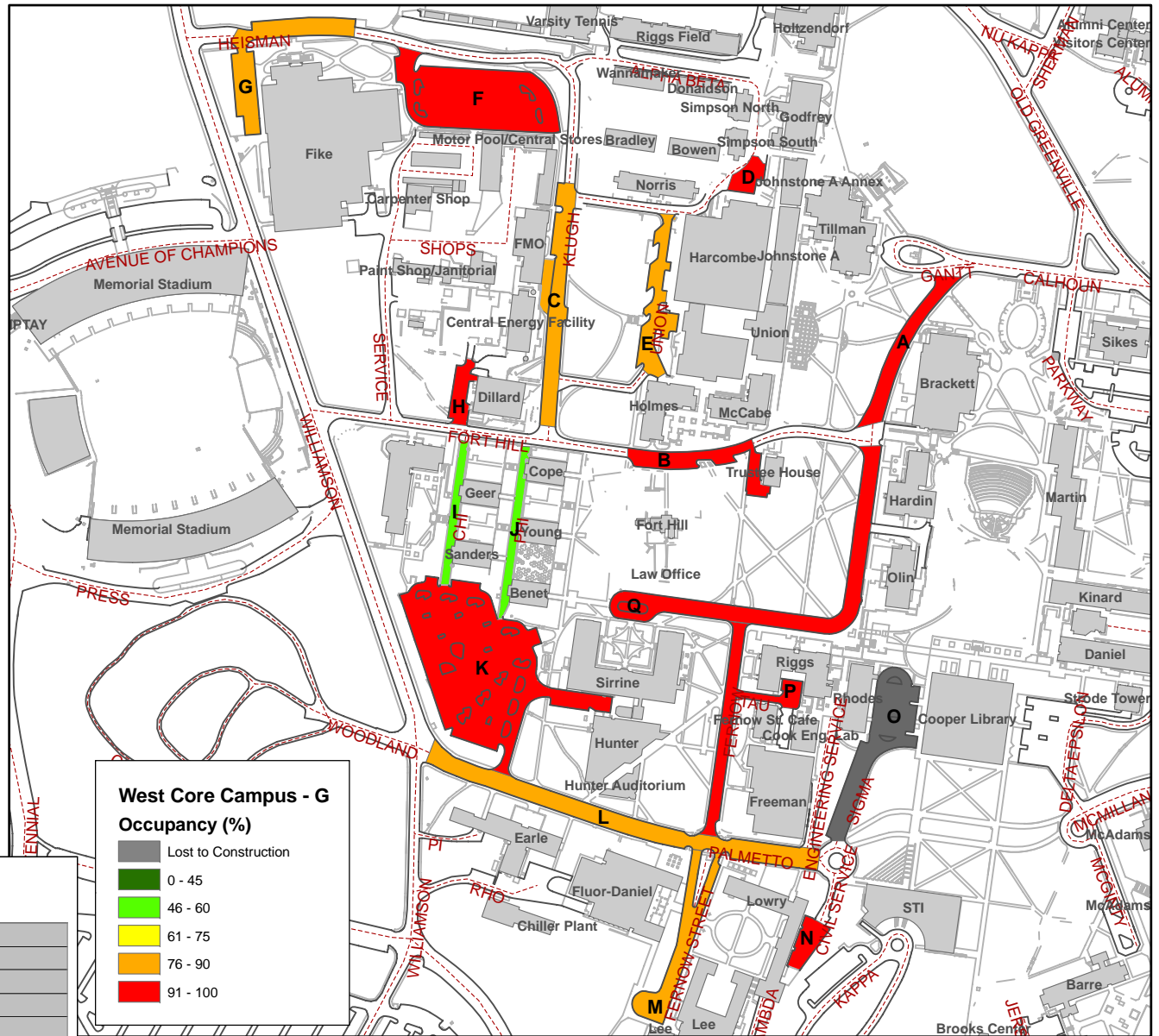
-Parking areas with moderate utilization in 2002 and 2006 (A, E) are experiencing higher occupancy in 2008 during peak hours, most likely due to the loss of Commuter spaces in C-2.

-This study area has the largest number of Motorcycle spaces (89) with a peak hour occupancy of 68%.

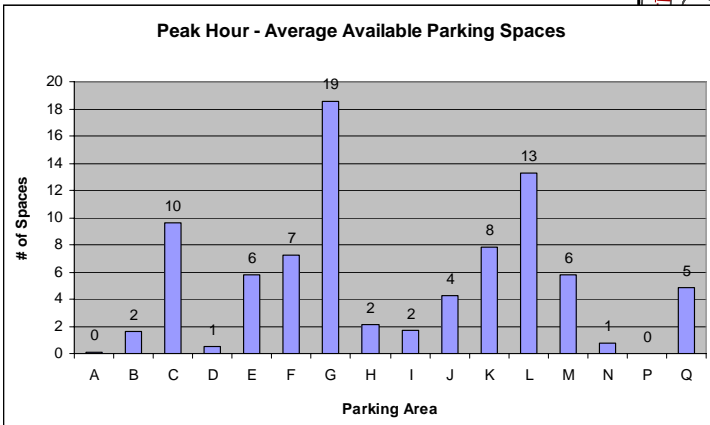
## Opportunities:

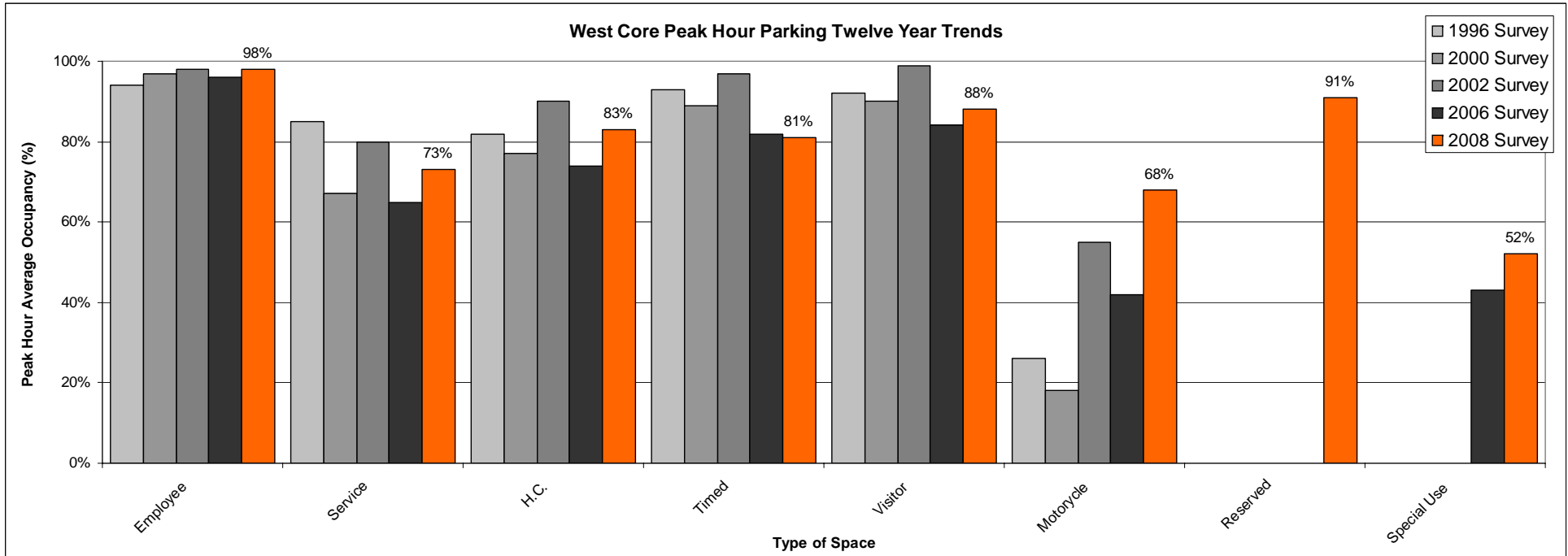
-Most of the parking areas in this study area are very highly utilized and very convenient to the Academic Core. TDM incentives such as carpool or vanpool preferred parking could be located here to potentially reduce pressures on these parking areas.

-With the departure of Fleet Services, there may be an opportunity to take advantage of the covered parking areas now vacant at the former Motor Pool site. Univ. Facilities Service vehicles could be parked here to free space in parking area C. With this move, a portion of the Service vehicle parking spaces could be reassigned to Employee spaces.



Peak Hour Occupancy by Parking Area





1996 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	811	94%
Service	39	85%
H.C.	33	82%
Timed	72	93%
Visitor	14	92%
M.Cycle	92	26%
Reserved	0	N/A
Special Use-Court	0	N/A
<b>Total Spaces</b>	<b>1061</b>	

2000 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	816	97%
Service	43	67%
H.C.	29	77%
Timed	83	89%
Visitor	10	90%
M.Cycle	41	18%
Reserved	0	N/A
Special Use-Court	0	N/A
<b>Total Spaces</b>	<b>1022</b>	

2002 Survey		
Type	Total	Peak Hr. Avg.Occup
Employee	715	98%
Service	44	80%
H.C.	30	90%
Timed	41	97%
Visitor	10	99%
M.Cycle	67	55%
Reserved	0	N/A
Special Use-Court	0	N/A
<b>Total Spaces</b>	<b>907</b>	

2006 Survey		
Type	Total	Peak Hour Avg.Occup.
Employee	772	96%
Service	63	65%
H.C.	37	74%
Timed	58	82%
Visitor	17	84%
M.Cycle	79	42%
Reserved	0	N/A
Special Use-Court	5	43%
<b>Total Spaces</b>	<b>1031</b>	

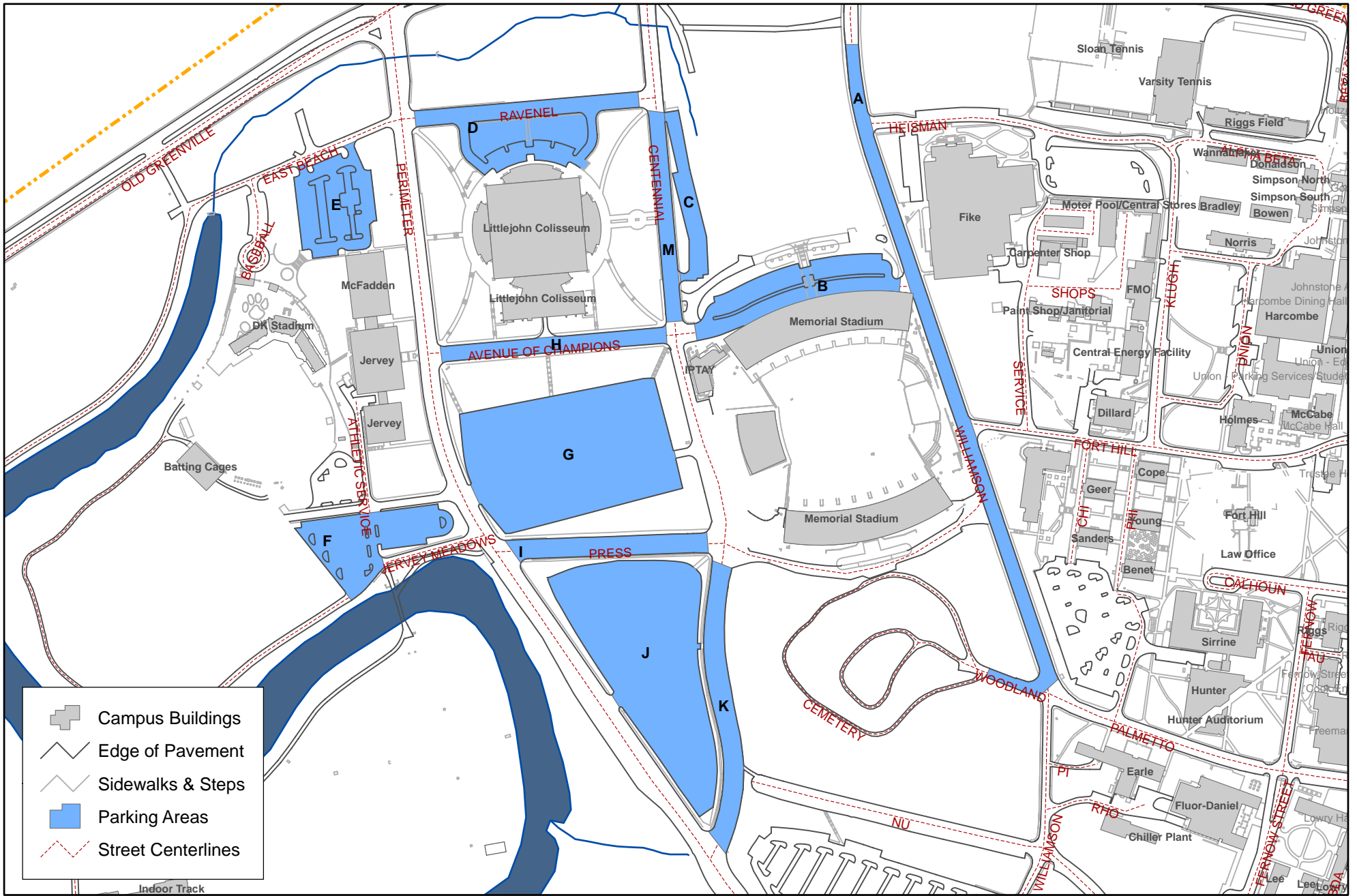
2008 Survey		
Type	Total	Peak Hour Avg.Occ. (%)
Employee	707	98%
Service	66	73%
H.C.	34	83%
Timed	56	81%
Visitor	17	88%
Motocycle	89	68%
Reserved	2	91%
Special Use	5	52%
<b>Total Spaces</b>	<b>976</b>	



AREA [H] - WEST CAMPUS



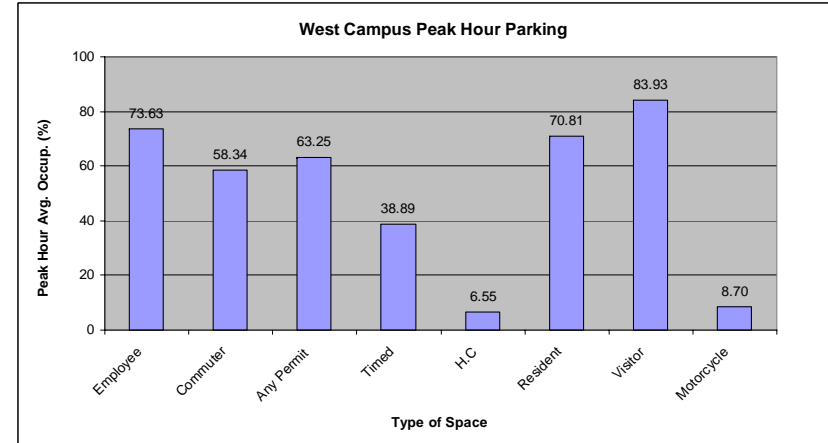
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WEST CAMPUS Area Locator Map

**(H) West Campus Parking**

Area	(a)		(b)				Average Occupancy (b/a) (%)	Occupancy (%)				
	Total # Spaces	Type	10:00		2:00			10:00-4:00 Avg. (occup.Spaces)	M/W	Tu/Th	AM	PM
A	93	Commuter	93	93	92.3	92.3	92.65	99.62	99.60	99.64	100.00	99.24
	48	Employee	40.8	45.3	42.3	43.7	42.98	89.54	86.46	92.62	89.58	89.50
B	23	Employee	19.8	18.5	22.3	21.3	20.46	88.95	91.30	86.59	83.15	94.75
	147	Commuter	147	147	143	147	145.94	99.28	98.64	99.91	99.83	98.72
	47	Any Permit	47	47	47	47	47.00	100.00	100.00	100.00	100.00	100.00
	3	Timed	0.5	1.5	1	1.67	1.17	38.89	25.00	52.78	33.33	44.44
C	93	Commuter	71.5	82.5	82	91.7	81.92	88.08	82.53	93.64	82.80	93.37
	15	Motorcycle	0.5	0.75	0.25	0.33	0.46	3.06	2.50	3.61	4.17	1.94
D	59	Commuter	3.25	11	12	33.3	14.90	25.25	12.92	37.57	12.08	38.42
	48	Any Permit	15	12.3	18.8	20.3	16.58	34.55	35.16	33.94	28.39	40.71
E	118	Employee	74.5	69.5	73.5	75.3	73.21	62.04	62.71	61.37	61.02	63.06
	25	Any Permit	11	10.3	12	14	11.81	47.25	46.00	48.50	42.50	52.00
	7	Visitor	6	5.25	6.25	6	5.88	83.93	87.50	80.36	80.36	87.50
	5	H.C.	0.75	0.75	1	0.67	0.79	15.83	17.50	14.17	15.00	16.67
F	231	Any Permit	67	57.5	116	94.3	83.58	36.18	39.50	32.86	26.95	45.42
	8	Motorcycle	1.75	1.5	1.25	1.67	1.54	19.27	18.75	19.79	20.31	18.23
	9	H.C.	0	0	0.5	0	0.13	1.39	2.78	0.00	0.00	2.78
G	780	Any Permit	499	502	575	610	546.29	70.04	68.80	71.28	64.15	75.92
	20	Service	11	12	11.5	11	11.38	56.88	56.25	57.50	57.50	56.25
H	28	Any Permit	27.3	28	27.7	28	27.75	99.11	98.21	100.00	98.81	99.40
	11	Employee	9.67	10.7	9.33	9	9.67	87.88	86.36	89.39	92.42	83.33
I	136	Commuter	32	49.3	32.3	55.3	42.21	31.04	23.62	38.45	29.87	32.20
J	481	Resident	339	343	338	343	340.58	70.81	70.27	71.34	70.84	70.77
	297	Commuter	43.5	70	77	132	80.54	27.12	20.29	33.95	19.11	35.13
K	205	Commuter	107	136	138	157	134.58	65.65	59.82	71.48	59.27	72.03
L	71	Employee	*Temporarily Lost to Construction of West End Zone Ph. II									
	6	Timed	*Not included in Totals.									
	2	H.C.										
	10	Service										
M	5	Employee	4.75	4.5	4.25	5	4.63	92.50	90.00	95.00	92.50	92.50
	69	Commuter	37	45	51	60.7	48.42	70.17	63.77	76.57	59.42	80.92
Total	3011		1709	1804	1934	2102	1887.02	62.67	60.49	64.85	58.32	67.02



Type	Total # Spaces	Peak Hour Avg. Occup.
Employee	205	73.63
Commuter	1099	58.34
Any Permit	1159	63.25
Timed	3	38.89
H.C.	14	6.55
Resident	481	70.81
Visitor	7	83.93
Service	20	56.88
Motorcycle	23	8.70
Total Spaces	3011	62.67

Type	10:00-4:00 Avg. (occup.Spaces)	Avg. Available Spaces
Employee	150.94	54
Commuter	641.15	458
Any Permit	733.02	426
Timed	1.17	2
H.C.	0.92	13
Resident	340.58	140
Visitor	5.88	1
Service	11.38	9
Motorcycle	2.00	21
Total Spaces	1887.02	1124

# [ H ]

## Observations:

-As in 2006, the parking area to the immediate west of the stadium was unavailable due to construction of the West End Zone Ph. II.

-This precinct offers the largest number of vacant parking spaces than any of the other study areas on campus. The 1,124 average available spaces include 458 Commuter stalls and 426 Any Valid Permit spaces.

-Utilization of Commuter spaces in this precinct has decreased from 70% in 2006 to 58% in 2008.

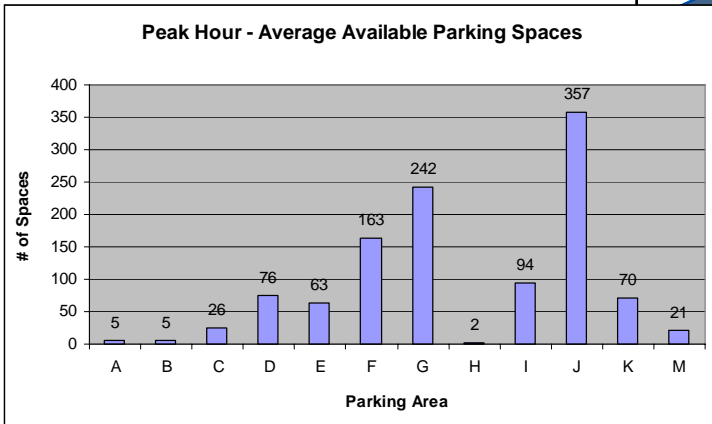
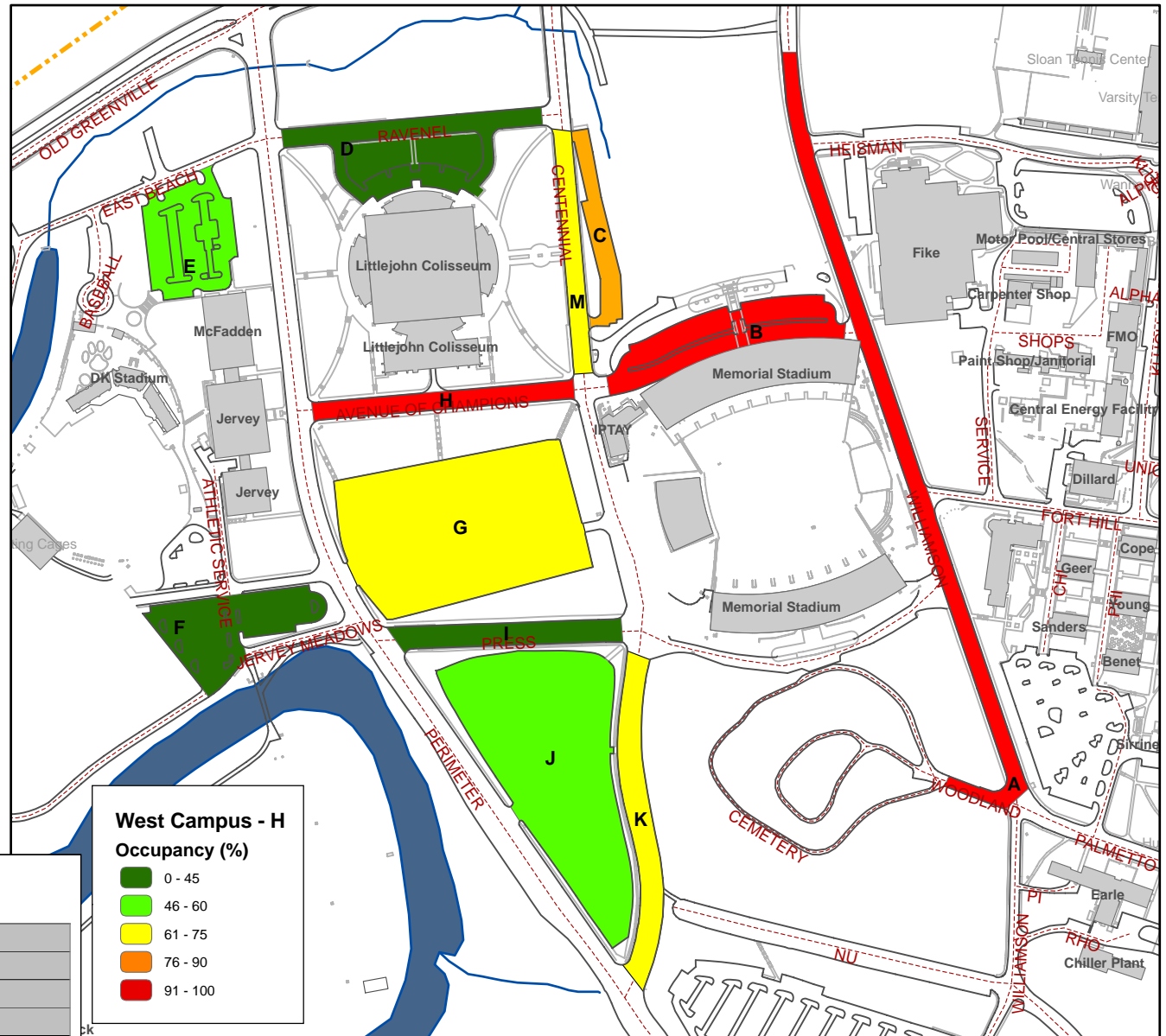
-Utilization in parking areas nearest the former Orange CAT route (C,D,M) have all decreased, while a parking nearest to the new TIGER route has seen increased utilization (K).

-The loss of 39 spaces in the A parking area due to the Woodlands Cemetery project has caused a sharp increase in its percent average occupancy (96%).

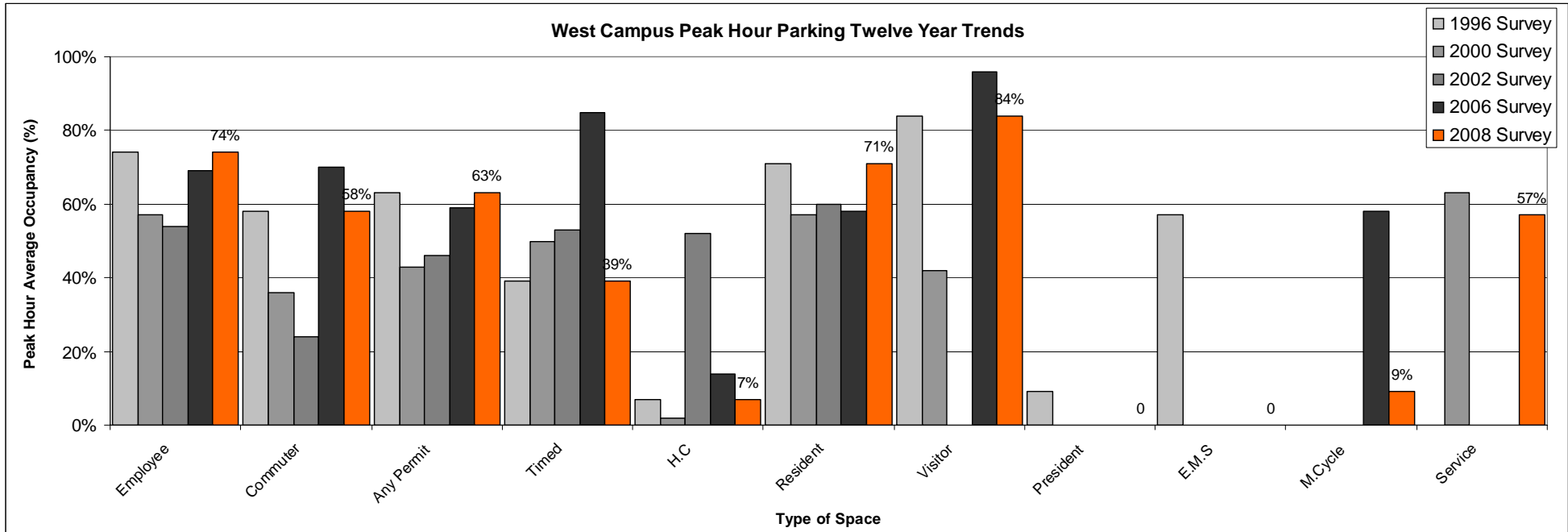
## Opportunities:

-This precinct continues to provide the greatest number of vacant parking spaces during peak hours. More frequent transit service with express service to the eastern side of campus will make these spaces more attractive to Commuters.

-The apparent surplus of parking in this precinct allows the campus to delay the construction of additional parking facilities. The current capacity of these lots will compensate (in the short-term) for the loss of other parking facilities to new development.



Peak Hour Occupancy by Parking Area



1996 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	394	40%
Commuter	1698	26%
Any Permit	0	0%
Timed	16	80%
H.C	6	0%
Resident	891	66%
Visitor	138	20%
President	0	0%
E.M.S	2	3%
M.Cycle	8	1%
Service	11	61%
<b>Total Spaces</b>	<b>3164</b>	

2000 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	264	57%
Commuter	850	36%
Any Permit	1107	43%
Timed	18	50%
H.C	12	2%
Resident	892	57%
Visitor	141	42%
President	1	0%
E.M.S	2	0%
M.Cycle	0	0%
Service	11	63%
<b>Total Spaces</b>	<b>3298</b>	

2002 Survey		
Type	Total	Peak Hr. Avg. Occup.
Employee	391	54%
Commuter	678	24%
Any Permit	1172	46%
Timed	12	53%
H.C	14	52%
Resident	759	60%
Visitor	118	Under Construction
President	1	Under Construction
E.M.S	2	Under Construction
M.Cycle	0	0%
Service	11	Under Construction
<b>Total Spaces</b>	<b>3158</b>	

2006 Survey		
Type	Total # Spaces	Peak Hour Avg. Occup.
Employee	352	69%
Commuter	771	70%
Any Permit	1142	59%
Timed	11	85%
H.C	15	14%
Resident	778	58%
Visitor	6	96%
President	0	Relocated
E.M.S	0	Relocated
Motorcycle	3	58%
Service	11	Under Construction
<b>Total Spaces</b>	<b>3089</b>	

2008 Survey		
Type	Total # Spaces	Peak Hour Avg. Occup.
Employee	205	74%
Commuter	1099	58%
Any Permit	1159	63%
Timed	3	39%
H.C	14	7%
Resident	481	71%
Visitor	7	84%
President	0	Relocated
E.M.S	0	Relocated
Motorcycle	23	9%
Service	20	57%
<b>Total Spaces</b>	<b>3011</b>	

## Summary of Findings:

Despite losing over 400 parking stalls to new construction on campus, overall occupancy and utilization trends reflect those that were documented in 2006. Once again, overall peak hour average occupancy remained at 79%. Even with the loss of the highly utilized C-2 parking lot south of the P&A Building, the remaining parking inventory was able to accommodate the campus community and maintain an average parking surplus of 2,572 stalls. These numbers seem to indicate that Clemson University continues to offer a sufficient parking supply with adequate capacity to accommodate future campus growth. What is more difficult to explain is the decrease in the number of vehicles on campus between 2006 and 2008. In 2006, there was an average of 9,980 vehicles parked on campus compared to only 9,688 in the Fall of 2008. This is a decrease of 292 parked vehicles during peak hours campus-wide. Increased ridership documented by Clemson Area Transit may explain (Need figure) a portion of this decrease and perhaps the dramatically increased fuel prices seen in October of 2008 encouraged the campus community to carpool, bike, or seek other forms of alternative transportation.

### *Average Occupancy 1997 – 2008:*

<u>Year</u>	<u>Parking Inventory</u>	<u>Total Avg. Occupancy</u>	<u>% Occupancy</u>
1997	12,207	8,167	66.9
2002	12,240	9,405	76.8
2006	12,669	9,980	78.8
2008	12,260	9,688	79.0

This seemingly stable utilization of the parking inventory over the past several years accompanied by a greater

acceptance and usage of existing transit services should encourage new thinking regarding the financing and construction of new parking facilities. While previous studies and plans indicate strong dissatisfaction with the convenience and location of existing parking facilities, there is an even stronger resistance to the parking permit fee increases necessary to finance parking structures that would offer the greater convenience desired by the campus community. With an apparent surplus of over 2,500 existing parking stalls, there are opportunities to improve parking and circulation to, from, and throughout campus without the costs of permanent capital improvement. Future developments on campus will continue to shrink this surplus, but careful planning and optimization of existing parking and transportation systems should allow Clemson University to delay the financially burdensome construction of parking structures through at least 2013 and perhaps beyond. The relationship of parking to planned capital improvements is detailed further within this report.

## Employee Parking

Employee parking continues to experience the highest utilization across campus. As a principal parking group, employee parking areas operate at 94% of capacity with only 143 employee spaces remaining available during peak hours. Of those 143 spaces, nearly half (70) are at locations distant from the Academic Core such as the Administrative Services Building or McFadden Building.

According to the land use analysis conducted as part of the 2006 Parking and Transportation Master Plan, the number of employee spaces available in the study areas nearest the Academic Core is significantly lower than the number needed to satisfy the parking demand being generated in those areas.

# SUMMARY OF FINDINGS

This parking deficiency for employees has since been increased by the displacement of parking associated with the construction of the Rhodes Hall Annex and Life Sciences Building.

Campus-wide, the current capacity provided for employees is inadequate if any search margin beyond 5% is accommodated (search margins and effective demand as they relate to parking sufficiency is described in detail later in this report).

Based on the overall campus surplus, employee parking is more of a proximity and convenience issue. There is sufficient parking to accommodate all employees, but it may not be positioned or serviced frequently enough by transit to provide the convenience employees seek.

### **Commuter Parking**

The occupancy of commuter parking lots was 67.2%. Occupancy in 2006 reached 86% overall, but since that time over 600 residential spaces were reassigned for commuters increasing the overall capacity from 2,586 to 2,865 (293 spaces were lost to construction of the Life Sciences Building).

Commuter demand will continue to be satisfied with the significant amount of overflow parking available in the "P" lots where any valid permit is accepted.

### **Resident Parking**

Resident parking capacity is adequate campus-wide with an overall occupancy of 86%. This figure is artificially high as nearly 600 residential parking spaces were reassigned to

commuters due to new construction and realignment of transit routes.

The existing surplus of resident parking has the capacity to support an increase in bed count as may be seen with the Core Campus Redevelopment (the effect of increased bed count on parking sufficiency is studied later in this report).

# SUMMARY OF FINDINGS

## Future Parking Sufficiency

The on-campus population of faculty, staff, and students is the primary driver for parking and transportation system planning. New facilities can also affect parking supply and demand dramatically. New facilities certainly affect supply when they are built upon former parking facilities, but they can also create new demand or shift demand from one portion of campus to another. An analysis of the on-campus populations along with near-term planned capital improvements should illustrate the future parking sufficiency at Clemson University.

It has been indicated that student enrollment will remain relatively constant for the foreseeable future, so there should be little if any increased parking demand associated with the student population. At the time the 2006 Parking and Transportation Master Plan (PTMP) was drafted, Clemson University was actively increasing the number of faculty to both reduce class sizes and increase research activities. The PTMP estimated the faculty population would increase by 10% by the year 2010. It was thought that each new faculty member would be accompanied by an increase of staff support of 3 staff members. Given today's economic climate, it is likely that this growth rate will slow for at least a short period; however the overall number of employees did increase by a headcount of 251 between 2006 and 2008. According the Office of Institutional Research, the faculty headcount grew by 82 resulting in an increased FTE of 4.6% from 2006 to 2008. Likewise, the staff headcount grew from 2,950 to 3,074 (4.2%). These figures nearly mimic the projections listed by Carl Walker, Inc. in the PTMP and assuming similar parking ratios, there should be an additional parking demand for 168 vehicles.

The figure provided on the next page continues to project increases in parking demand associated with population

growth for the next five fiscal years. These demands are measured along with those associated with the construction of new facilities that bring faculty, staff, and students to campus that were not located here previously. The effective parking demand is then calculated based on these changes to demand as well as changes to supply that may occur when new facilities are brought online. For this study, parking supply and demand are related to facility improvements proposed for the next five years in the Capital Permanent Improvement Plan to project future parking sufficiency. The resulting parking surpluses are then calculated for each of the principal parking groups.

Parking sufficiency cannot simply be calculated based upon the available inventory and the measured demand. An effective parking system must account for the time spent searching for available spaces in order to provide a reasonable level of convenience. To avoid long and frustrating searches for available parking stalls, parking management must allow for a search margin and project parking sufficiency based upon the resulting effective demand.

*Search Margin* – The projections of parking sufficiency include a search margin of 10%, which is a margin of empty parking spaces that is needed to help ensure that excessive search times can be avoided. On campuses where available spaces are relatively easy to find during periods of peak occupancy, a lower margin may be considered. A more prudent margin of 10% will better account for larger fluctuations in activity patterns without disrupting normal search patterns.

*Effective Demand* – The fact that some margin of empty space is needed in order for the parking system to function requires an adjustment to vehicle accumulation numbers in

# FUTURE PARKING SUFFICIENCY

order to correctly project actual capacity requirements for a properly functioning system. The actual number of accumulated vehicles found during the occupancy surveys represents the "raw" demand. If a search margin of 10% is applied to that raw demand, the result is a slightly higher capacity requirement that is termed the "effective demand." This is the amount of space that is needed to satisfy the "raw" demand with sufficient empty space for the system to function. If a 10% search margin is applied to a raw demand of 100 vehicles, the result is an effective demand of 111 spaces. (Note: 10% is not added to the raw demand. The raw demand is divided by the inverse or 0.90 so that the search margin is 10% of the resulting capacity requirement rather than 10% of the raw demand:  $100/0.90 = 111$ ).

## FUTURE PARKING SUFFICIENCY



**PRINCIPAL PARKING GROUPS**

	Employee	Commuter	Resident*	Any Permit	TOTAL
Current Capacity (FY-2008/09 Base)	2495	2865	3909	1742	11011
Current Vehicles	2352	1925	3158	1211	8646
Current Available	143	940	751	531	2365
Search Margin	10.0%	10.0%	10.0%	10.0%	10.0%
Effective Demand	2613	2139	3509	1346	9607
Current Surplus	-118	726	400	396	1404

\*Includes Clemson House parking in Douthit Hills Neighborhood (Study Area A: A, B, C)

**FY-2009/10**

Base Year (2008) Capacity	2495	2865	3909	1742	11011
Gain: C-2/E-2 Temporarily Restored <sup>1,1</sup>	100	100			
Gain: Motor Pool <sup>1,2</sup>	10				
REVISED CAPACITY	2605	2965	3909	1742	11221
FY-2009/10 Population Demand Increase	24				
FY-2009/10 New Facility Demand Increase <sup>1,3</sup>	8				
FY-2009/10 New Effective Demand	2645	2139	3509	1346	9631
<b>FY-2009/10 Surplus</b>	<b>-40</b>	<b>826</b>	<b>400</b>	<b>396</b>	<b>1582</b>

**FY-2010/11**

Loss: C-2/E-2 (Life Sciences Building) <sup>2,1</sup>	-100	-100			
Loss: E-16 (IT Building) <sup>2,2</sup>			Spaces already lost to Rhodes Hall Addition		
Loss: E-3 (Lee Hall Addition) <sup>2,3</sup>	-64				
REVISED CAPACITY	2441	2865	3909	1742	11221
FY-2010/11 Population Demand Increase	24		-309		
FY-2010/11 New Facility Demand Increase <sup>2,4</sup>	121				
FY-2010/11 New Effective Demand	2790	2139	3200	1346	9475
<b>FY-2010/11 SURPLUS</b>	<b>-349</b>	<b>726</b>	<b>709</b>	<b>396</b>	<b>1482</b>

**Population Demand Increase Calculations:**

Base Year F/S Vehicles	Base YR	New Faculty Vehicles	New Support Staff Vehicles	TOTAL New Vehicles	Search Margin	Add'l Capacity Needed	
Faculty Increase	2.5%	2009	5	16	22	10%	24
	2.5%	2010	11	33	43	10%	48
	5.0%	2011	22	65	87	10%	97
	5.0%	2012	33	99	131	10%	146
	10.0%	2013	55	166	221	10%	246
	10.0%	2014	78	235	313	10%	348

	Employee	Commuter	Resident*	Any Permit	TOTAL
FY-2011/12					
Loss: Core Campus Redevelopment Ph. I <sup>3,1</sup>	26				
Loss: Redfern Expansion <sup>3,2</sup>	0				
REVISED CAPACITY	2415	2865	3909	1742	10831
FY-2011/12 Population Demand Increase <sup>3,3</sup>	49		270		
FY-2011/12 New Facility Demand Increase <sup>3,2</sup>	3				
FY-2011/12 New Effective Demand	2842	2139	3470	1346	9779
<b>FY-2011/12 SURPLUS</b>	<b>-427</b>	<b>726</b>	<b>439</b>	<b>396</b>	<b>1134</b>

**FY-2012/13**

Loss: Hunter Hall Addition <sup>4,1</sup>	0	0			
Loss: Engineering & Science Building <sup>4,2</sup>	16	42			
Loss: West End Zone, Ph. III <sup>4,3</sup>	*4	*4			
Loss: LSB/P&A Cafe <sup>4,4</sup>	0	0			
REVISED CAPACITY	2399	2823	3909	1742	10773
FY-2012/13 Population Demand Increase	100				
FY-2012/13 New Facility Demand Increase <sup>4,2</sup>	55	88			
FY-2012/13 New Effective Demand	2997	2227	3470	1346	9879
<b>FY-2012/13 SURPLUS</b>	<b>-598</b>	<b>596</b>	<b>439</b>	<b>396</b>	<b>833</b>

**FY-2013/14**

Loss: ASB Renovation/Warehouse <sup>5,1</sup>	40				
Loss: Core Campus Redevelopment, Ph. II <sup>5,2</sup>	Does not affect Principal Parking Groups				
REVISED CAPACITY	2359	2823	3909	1742	10775
FY-2013/14 Population Demand Increase <sup>5,2</sup>	102		525		
FY-2013/14 New Facility Demand Increase <sup>5</sup>	0				
FY-2013/14 New Effective Demand	3099	2227	3995	1346	9981
<b>FY-2013/14 SURPLUS</b>	<b>-740</b>	<b>596</b>	<b>-86</b>	<b>396</b>	<b>166</b>

PROJECTED PARKING SUFFICIENCY

### Projected Parking Sufficiency - Assumptions and Timeline:

- Capacity totals include the residential spaces located within the Douthitt Hills Study Area that are utilized by Clemson House residents (Study Area A: A,B,C)
- Because of current economic conditions and associated budget cuts, the parking sufficiency projections assume a slower rate of growth for faculty and staff. The 2006 Parking and Transportation Master Plan assumed the faculty population would increase at a cumulative growth rate of 10% between 2006 and 2016. In the parking sufficiency analysis, the annual growth rate of 0.024 was reduced to 0.006 for the first two years in the figure and is then increased progressively back to 0.024 by FY2012/13. Additions to parking demand are listed on figure as Population Demand Increases.
- Assumes student enrollment remains constant. Clemson University seeks to maintain enrollment at current figures.
- Assumes construction will be phased as listed in the Capital Permanent Improvement Plan (CPIP) with anticipated delays to approvals and construction as projected by University Planning & Design.
- Assumes number of undergraduate and graduate beds on campus will follow the phasing plan as listed in the Comprehensive Housing, Student & Resident Life Master Plan with appropriate delays to approvals and construction as anticipated by University Planning & Design.

### Base Year:

Base year capacity is the parking inventory for the principal parking groups minus those spaces lost for the construction of the Life Sciences Building and Rhodes Hall Annex.

### Planned Capital Improvements/Adjustments to Parking Inventory and Demand:

#### *FY2009/2010:*

- 1.1 Delays to construction of LSB will allow for temporary restoration of C-2/E-2. This will restore approximately 200 parking spaces most likely for employees and commuters.
- 1.2 The vacant Motor Pool site may provide parking for University Facilities service vehicles allowing for reassignment/addition of 10 employee spaces along Klugh Avenue.
- 1.3 The opening of the Rhodes Hall Annex will provide new space for researchers and will create a demand for 8 additional employee parking spaces.

#### *FY2010/2011*

- 2.1 Resumption of construction of the LSB will displace the 200 temporary parking spaces in C-2/E-2. Parking that would have been displaced by the IT Building has already been fenced off or essentially lost to the Rhodes Hall Annex.
- 2.2 Construction of the Lee Hall Addition will displace 64 employee parking spaces in E-3. Construction of the IT Facility is projected to create demand for 75 additional employee spaces for staff that will be relocated here from sites off-campus. Likewise, the LSB will bring demand for 46 additional parking spaces to accommodate principal investigators that will conduct research in this facility.
- 2.3 Manning Hall will come off-line for renovations and replacement of mechanical systems. This removes 412 beds from the housing inventory. The ratio of residential vehicles to beds on campus was 0.53 in 2006. For the purposes of this study, a more conservative ratio will be used. For every on-campus

# FUTURE PARKING SUFFICIENCY

bed, this study assumes that there are 0.75 resident vehicles. Therefore, demand for resident parking will decrease by 309 spaces with the temporary closure of Manning Hall.

***FY2011/2012***

- 3.1 Phase I of the Core Campus Redevelopment will likely displace the 26 employee parking spaces along Klugh Avenue, at least temporarily.
- 3.2 Construction of the Redfern Expansion will not displace parking, but will add parking demand for new counseling staff to be located here.
- 3.3 Manning Hall will be re-occupied adding parking demand for the residents returning here. The renovated Manning Hall will house fewer beds (360) than the original configuration. Again, this study assumes 0.75 vehicles per resident bed.

***FY2012/2013***

- 4.1 Construction of the Hunter Hall Addition will neither displace existing parking nor add new demand. The intent for this facility is to add adequate space for the over-crowded Chemistry Department.
- 4.2 Construction of the Engineering & Science Building will have the greatest impact of parking on campus following the construction of the LSB. According to the phasing plan within the High Ground Precinct Master Plan 2008, this facility will displace 16 employee parking spaces and 42 commuter spaces at C-13. It is not expected to displace parking in C-5, although this lot may serve as a lay-down area during construction. Beyond the displacement of parking, this new facility will add significant new parking demand to campus. Depending on the eventual tenants, this facility could potentially house 50 new Pls or Post-Doc students and up to 88 graduate students not previously located on the main campus.

4.3 Construction of the West End Zone, Phase III may result in the permanent loss of some commuter parking spaces. Many of the spaces that may be lost are currently unavailable due to Phase II construction.

4.4 The LSB/P&A Café will likely create additional parking demand for the staff who will operate this new facility.

***FY2013/2014***

- 5.1 ASB renovations will eliminate up to 40 employee parking spaces. No new parking demand will be created as this project will house staff currently located on the main campus.
- 5.2 Phase II of the Core Campus Redevelopment will replace the Student Union and existing retail dining, therefore, no new parking demand is created. It should be noted that these replacement facilities will create parking demands for the evening programming to take place in meeting spaces, ballrooms, theater, etc.
- 5.3 Completion of Phase I of the Core Campus Redevelopment will add 700 beds to the housing inventory. At 0.75 vehicles per bed, this creates parking demand for 525 residential parking spaces.

The parking system at Clemson University has the capacity to function at or near the current level of service for at least the next two to three years despite new parking demands associated with growth of the employee population on-campus and displacement of parking for new facilities. There will be a parking surplus (even with a 10% search margin) throughout the next five years, although the convenience of a majority of that parking will remain in question. As the first phases of the Core Campus Precinct and High Ground Precinct near completion, the parking surplus will be reduced

# FUTURE PARKING SUFFICIENCY

significantly. Construction of additional parking facilities should be considered as initiation of these projects draw nearer. Major changes to the parking system are not projected for the next two years, but an update to the Parking Utilization Study in 2010 along with a re-examination of planned capital projects and their phasing will be critical to identifying the proper time for construction of new parking facilities.

## FUTURE PARKING SUFFICIENCY