

**DESMAN**  
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**FINAL REPORT**

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**LAWRENCE HOSPITAL CENTER  
CAMPUS-WIDE PARKING STUDY**

**MUNICIPAL  
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HIGHER EDUCATION  
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**PARKING CONSULTING**

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**Table of Contents**

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. EXISTING PARKING CONDITIONS</b>	<b>1</b>
<b>3. PARKING OCCUPANCY</b>	<b>4</b>
<b>4. PARKING SURPLUS/DEFICITS</b>	<b>7</b>
<b>5. ASSESSMENT OF FUTURE PARKING CONDITIONS</b>	<b>9</b>
<b>6. ESTIMATED FUTURE PARKING DEMAND</b>	<b>10</b>
<b>7. REVIEW OF HOSPITAL MASTER PLAN</b>	<b>12</b>
<b>8. ZONING CODE REVIEW</b>	<b>14</b>

## **1. INTRODUCTION**

Lawrence Hospital Center retained DESMAN Associates to evaluate its short-term and long-term parking needs and to assess the parking conditions on campus. Lawrence Hospital is a 291-bed acute care facility located in semi-urban environment of Bronxville, NY. In order to meet the growing needs of the community Lawrence Hospital Center has been redesigning its current campus and recently moved some of its services to another location.

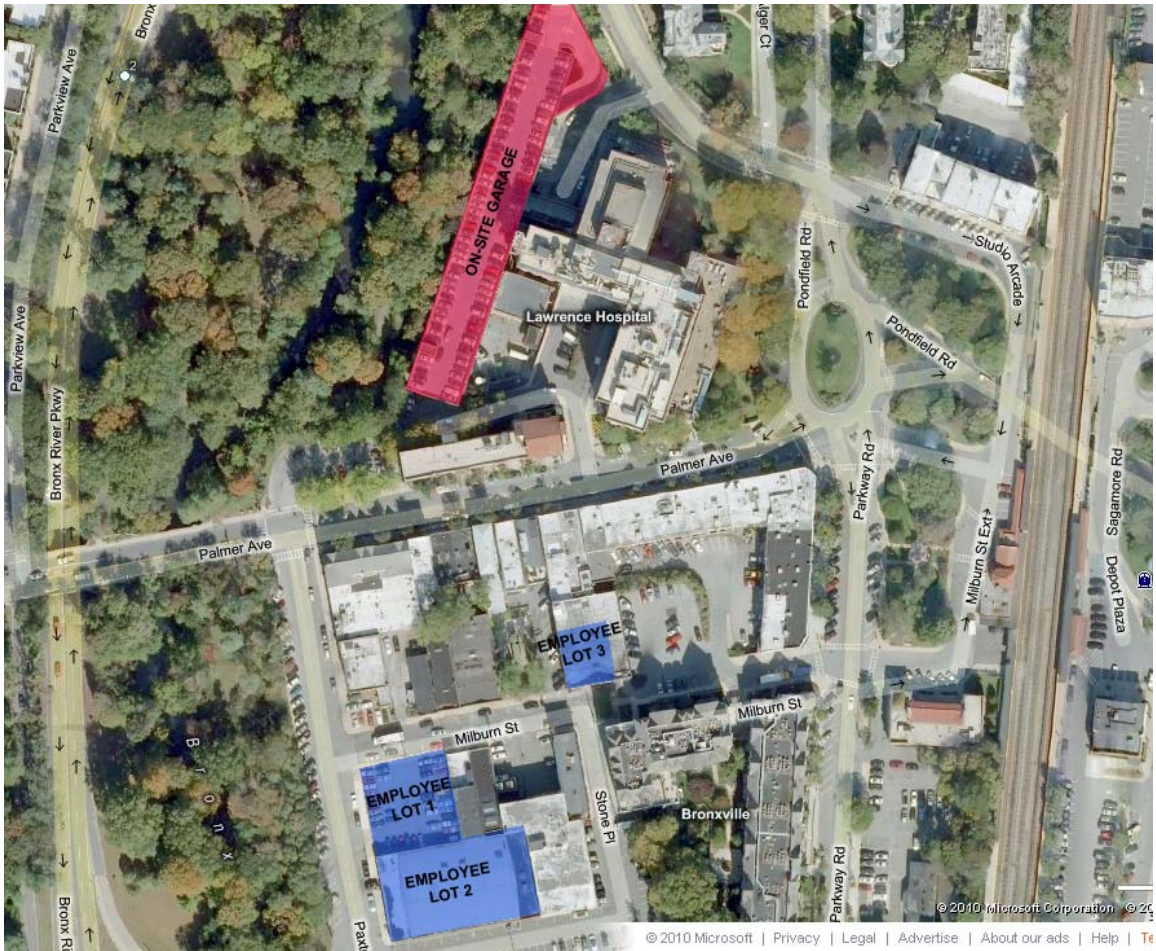
The following study was prepared to present the results of our review the existing parking infrastructure, outcome of field studies, a supply and demand analysis, short-term and long-term parking demand projections and a zoning review to evaluate the condition of parking on campus. The results of which are presented herein.

## **2. EXISTING PARKING CONDITIONS**

To evaluate the short term and long-term parking needs of Lawrence Hospital Center the existing parking infrastructure in the campus was studied. The existing parking supply at the Lawrence Hospital campus equals 683 spaces distributed in one on-site garage and three off-site parking lots. Table 1 below summarizes the parking inventory by type (garage/lot), parking restrictions and user groups.

The three off-site parking lots serve hospital employees and employ a valet system. The on-site garage has both self parking and valet service. The garage consists of 5 levels with Levels B2, B1 and Level 3 self-park reserved for hospital employees and the 45 spaces on B1 and 24 spaces on Level 1 are reserved for physicians controlled by a parking access control system. Part of Level 1 and the entire Level 2 are reserved for visitors using a valet parking system to maximize parking capacity.

**Figure 1: Parking Inventory Map**



**Table 1: Campus-wide Parking Inventory**

TYPE	LEVEL	RESTRICTION	INVENTORY
GARAGE	B2	Outreach	4
		Volunteer	3
		Trailer	1
		Employee of the month	1
		Company Vehicles only	5
		Employee	101
		Service vehicles	3
<b>GARAGE</b>	<b>B2</b>	<b>TOTAL</b>	<b>118</b>
	B1	Physicians	45
		Employees	38
<b>GARAGE</b>	<b>B1</b>	<b>TOTAL</b>	<b>83</b>
	1	Physicians	24
		Valet	27
		Handicapped	9
		Cars in Physician Ailse	
<b>GARAGE</b>	<b>1</b>	<b>TOTAL</b>	<b>60</b>
	2	Valet	77
		Employees	17
		Cars in Ailse	
<b>GARAGE</b>	<b>2</b>	<b>TOTAL</b>	<b>94</b>
<b>GARAGE</b>	<b>3</b>	<b>Employees</b>	<b>98</b>
<b>Total- Outreach</b>			4
<b>Total- Volunteer</b>			3
<b>Total- Trailer</b>			1
<b>Total- Employee of the month</b>			1
<b>Total- Company Vehicles</b>			5
<b>Total- Service vehicles</b>			3
<b>Total- employee</b>			254
<b>Total - Physicians</b>			69
<b>Total- Valet</b>			104
<b>Total- Handicapped</b>			9
<b>GARAGE TOTAL</b>			<b>453</b>
<b>LOT 1</b>	<b>Employees</b>		<b>75</b>
<b>LOT 2</b>	<b>Employees</b>		<b>105</b>
<b>LOT 3</b>	<b>Employees</b>		<b>50</b>
<b>SYSTEM-WIDE TOTAL</b>			<b>683</b>

**3. PARKING OCCUPANCY**

The assessment of existing conditions was completed through hourly occupancy surveys that were conducted on Wednesday, March 24, 2010 and Thursday, March 25, 2010 between the hours of 7:00 AM and 5:00 PM. These days were identified by the Hospital staff as representing typical days of the week as it relates to parking demand.

Tables 2 and 3 illustrate the parking occupancy figures for Wednesday and Thursday. The occupancy figures are summarized by type (garage/lot), level, parking restrictions and user groups.

Data collected on both days indicates that peak parking occupancy occurs between 12:00 PM to 1:00 PM. The collected data suggests that the parking occupancy recorded on Wednesday was slightly higher than that collected on Thursday. The peak parking occupancy figures for Wednesday was 605 spaces or a system-wide occupancy percentage of 89%. The peak parking occupancy Thursday was 529 spaces which converts to a system-wide occupancy percentage of 77%. The average peak parking demand over the two days of data collections equaled approximately 570 spaces, or an occupancy level of 83%.

**Table 2: Wednesday, March 24, 2010 Parking Occupancy**

TYPE	LEVEL	RESTRICTION	INVENTORY	7-8 AM	8-9 AM	9-10AM	10-11AM	11-12PM	12-1PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	
GARAGE	B2	Outreach	4	4	3	4	4	2	2	2	4	4	4	
		Volunteer	3	3	3	3	2	2	2		2	3	2	
		Trailer	1	1	1	1	1	1	1	1	1	1	1	
		Employee of the month	1	0	0	0	0	0	0	1	1	1	1	
		Company Vehicles only	5	5	5	3	4	5	4	5	5	4	5	
		Employee	101	79	90	98	101	99	99	95	101	93	76	72
		Service vehicles	3	0	0	0	0	0	0	0	0	0	0	0
GARAGE	B2	<b>TOTAL</b>	<b>118</b>	<b>92</b>	<b>102</b>	<b>109</b>	<b>112</b>	<b>109</b>	<b>105</b>	<b>110</b>	<b>106</b>	<b>89</b>	<b>85</b>	
	B1	Physicians	45	3	14	25	28	38	39	40	35	31	25	
		Employees	38	16	25	36	38	35	34	36	32	25	27	
GARAGE	B1	<b>TOTAL</b>	<b>83</b>	<b>19</b>	<b>39</b>	<b>61</b>	<b>66</b>	<b>73</b>	<b>73</b>	<b>76</b>	<b>67</b>	<b>56</b>	<b>52</b>	
	1	Physicians	24	21	22	24	24	24	24	22	23	24	24	
		Valet	27	27	27	27	27	27	27	27	25	27	27	
		Handicapped	9	9	9	9	9	9	9	8	8	1	3	
		Cars in Physician Ailse							2		1		2	
GARAGE	1	<b>TOTAL</b>	<b>60</b>	<b>57</b>	<b>58</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>62</b>	<b>57</b>	<b>57</b>	<b>52</b>	<b>56</b>	
	2	Valet	77	7	44	66	72	76	76	72	69	56	53	
		Employees	17	12	13	17	17	17	17	15	14	9	12	
		Cars in Ailse						8	17	8	1	1		
GARAGE	2	<b>TOTAL</b>	<b>94</b>	<b>19</b>	<b>57</b>	<b>83</b>	<b>89</b>	<b>101</b>	<b>110</b>	<b>95</b>	<b>84</b>	<b>66</b>	<b>65</b>	
GARAGE	3	Employees	98	60	61	64	69	73	77	78	79	69	70	
<b>Total- Outreach</b>			4	4	3	4	4	2	2	2	4	4	4	
<b>Total- Volunteer</b>			3	3	3	3	2	2	2	0	2	3	2	
<b>Total- Trailer</b>			1	1	1	1	1	1	1	1	1	1	1	
<b>Total- Employee of the month</b>			1	0	0	0	0	0	1	1	1	1	1	
<b>Total- Company Vehicles</b>			5	5	5	3	4	5	4	5	5	4	5	
<b>Total- Service vehicles</b>			3	0	0	0	0	0	0	0	0	0	0	
<b>Total- employee</b>			254	167	189	215	225	224	223	230	218	179	181	
<b>Total - Physicians</b>			69	24	36	49	52	62	65	62	59	55	51	
<b>Total- Valet</b>			104	34	71	93	99	111	120	107	95	84	80	
<b>Total- Handicapped</b>			9	9	9	9	9	9	9	8	8	1	3	
<b>GARAGE TOTAL</b>			<b>453</b>	<b>247</b>	<b>317</b>	<b>377</b>	<b>396</b>	<b>416</b>	<b>427</b>	<b>416</b>	<b>393</b>	<b>332</b>	<b>328</b>	
<b>%</b>				<b>55%</b>	<b>70%</b>	<b>83%</b>	<b>87%</b>	<b>92%</b>	<b>94%</b>	<b>92%</b>	<b>87%</b>	<b>73%</b>	<b>72%</b>	
LOT 1	Employees	75	44	51	59	59	64	63	62	66	52	24		
	<b>%</b>		<b>59%</b>	<b>68%</b>	<b>79%</b>	<b>79%</b>	<b>85%</b>	<b>84%</b>	<b>83%</b>	<b>88%</b>	<b>69%</b>	<b>32%</b>		
LOT 2	Employees	105	19	53	65	73	77	75	73	71	58	50		
	<b>%</b>		<b>18%</b>	<b>50%</b>	<b>62%</b>	<b>70%</b>	<b>73%</b>	<b>71%</b>	<b>70%</b>	<b>68%</b>	<b>55%</b>	<b>48%</b>		
LOT 3	Employees	50	0	0	29	39	40	40	40	40	40	30		
	<b>%</b>		<b>0%</b>	<b>0%</b>	<b>58%</b>	<b>78%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>60%</b>		
<b>SYSTEM-WIDE TOTAL</b>			<b>683</b>	<b>310</b>	<b>421</b>	<b>530</b>	<b>567</b>	<b>597</b>	<b>605</b>	<b>591</b>	<b>570</b>	<b>482</b>	<b>432</b>	

**Table 3: Thursday, March 25, 2010 Parking Occupancy**

TYPE	LEVEL	RESTRICTION	INVENTORY	7-8 AM	8-9 AM	9-10AM	10-11AM	11-12PM	12-1PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	
GARAGE	B2	Outreach	4	2	2	4	4	4	3	4	4	4	4	
		Volunteer	3	0	2	3	3	2	2	3	2	3	2	
		Trailer	1	1	1	1	1	1	1	1	1	1	1	
		Employee of the month	1	0	0	0	0	0	0	0	0	0	0	
		Company Vehicles only	5	5	5	4	5	5	5	5	5	4	4	5
		Employee	101	67	82	86	90	91	92	92	94	84	94	70
		Service vehicles	3	0	0	0	1	0	0	0	0	0	2	3
GARAGE	B2	<b>TOTAL</b>	<b>118</b>	<b>75</b>	<b>92</b>	<b>98</b>	<b>104</b>	<b>103</b>	<b>103</b>	<b>107</b>	<b>95</b>	<b>108</b>	<b>85</b>	
	B1	Physicians	45	6	17	30	33	30	29	28	29	29	30	
		Employees	38	22	27	28	31	29	28	27	24	23	23	
GARAGE	B1	<b>TOTAL</b>	<b>83</b>	<b>28</b>	<b>44</b>	<b>58</b>	<b>64</b>	<b>59</b>	<b>57</b>	<b>55</b>	<b>53</b>	<b>52</b>	<b>53</b>	
	1	Physicians	24	14	21	22	24	23	22	18	20	19	24	
		Valet	27	24	27	27	27	27	27	27	27	24	24	
		Handicapped	9	4	6	8	7	8	6	5	8	9	7	
		Cars in Physician Ailse												
GARAGE	1	<b>TOTAL</b>	<b>60</b>	<b>42</b>	<b>54</b>	<b>57</b>	<b>58</b>	<b>58</b>	<b>55</b>	<b>50</b>	<b>55</b>	<b>52</b>	<b>55</b>	
	2	Valet	77	5	21	43	52	65	69	72	69	62	36	
		Employees	17	12	11	9	11	13	14	14	12	11	14	
		Cars in Ailse												
GARAGE	2	<b>TOTAL</b>	<b>94</b>	<b>17</b>	<b>32</b>	<b>52</b>	<b>63</b>	<b>78</b>	<b>83</b>	<b>86</b>	<b>81</b>	<b>73</b>	<b>50</b>	
GARAGE	3	Employees	98	47	51	58	61	66	69	69	69	66	64	
<b>Total- Outreach</b>			4	2	2	4	4	4	3	4	4	4	4	
<b>Total- Volunteer</b>			3	0	2	3	3	2	2	3	2	3	2	
<b>Total- Trailer</b>			1	1	1	1	1	1	1	1	1	1	1	
<b>Total- Employee of the month</b>			1	0	0	0	0	0	0	0	0	0	0	
<b>Total- Company Vehicles</b>			5	5	5	4	5	5	5	5	4	4	5	
<b>Total- Service vehicles</b>			3	0	0	0	1	0	0	0	0	2	3	
<b>Total- employee</b>			254	148	171	181	193	199	203	204	189	194	171	
<b>Total - Physicians</b>			69	20	38	52	57	53	51	46	49	48	54	
<b>Total- Valet</b>			104	29	48	70	79	92	96	99	96	86	60	
<b>Total- Handicapped</b>			9	4	6	8	7	8	6	5	8	9	7	
<b>GARAGE TOTAL</b>			<b>453</b>	<b>209</b>	<b>273</b>	<b>323</b>	<b>350</b>	<b>364</b>	<b>367</b>	<b>367</b>	<b>353</b>	<b>351</b>	<b>307</b>	
<b>%</b>				<b>46%</b>	<b>60%</b>	<b>71%</b>	<b>77%</b>	<b>80%</b>	<b>81%</b>	<b>81%</b>	<b>78%</b>	<b>77%</b>	<b>68%</b>	
LOT 1	Employees	75	40	43	60	60	60	60	60	63	62	51	35	
	<b>%</b>		<b>53%</b>	<b>57%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>80%</b>	<b>84%</b>	<b>83%</b>	<b>68%</b>	<b>47%</b>	
LOT 2	Employees	105	32	66	71	71	72	72	72	72	70	64	50	
	<b>%</b>		<b>30%</b>	<b>63%</b>	<b>68%</b>	<b>68%</b>	<b>69%</b>	<b>69%</b>	<b>69%</b>	<b>69%</b>	<b>67%</b>	<b>61%</b>	<b>48%</b>	
LOT 3	Employees	50	0	0	30	30	30	30	30	30	30	28	28	
	<b>%</b>		<b>0%</b>	<b>0%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>56%</b>	<b>56%</b>	
<b>SYSTEM-WIDE TOTAL</b>			<b>683</b>	<b>281</b>	<b>382</b>	<b>484</b>	<b>511</b>	<b>526</b>	<b>529</b>	<b>532</b>	<b>515</b>	<b>494</b>	<b>420</b>	
<b>%</b>				<b>41%</b>	<b>56%</b>	<b>71%</b>	<b>75%</b>	<b>77%</b>	<b>77%</b>	<b>78%</b>	<b>75%</b>	<b>72%</b>	<b>61%</b>	

#### **4. PARKING SURPLUS / DEFICITS**

The occupancy data presented in Section 3 do not necessarily reflect the operational efficiency of the parking system. In order to account for parking efficiency, practical capacity of the parking system is generally taken into consideration. Practical capacity reflects the operational efficiency of a parking lot, garage, or overall parking system beyond which users find difficulty in locating an available space, thus increasing their level of frustration and the opportunity for vehicle/vehicle or vehicle/pedestrian conflict. Industry standards suggest that practical capacity has been reached when anywhere from 85-95% of a parking facility or system is occupied depending on the type of user (long-term vs. short-term) and the level of customer convenience that the parking provider wishes to ensure.

Table 4 below summarizes the parking surplus/deficit conditions arising in the system once practical capacity is applied. For Lawrence Hospital Center a 95% practical capacity is appropriate for employee and physician spaces due to their familiarity with the campus, whereas no practical capacity allowances should be applied to the spaces serviced by valets.

Based on the application of practical capacity to the parking system, and occupancy levels at Lawrence Hospital Center, we would anticipate that a minimum surplus of 80 spaces would be available during the typical peak parking periods. This equates to almost 12% of the supply, which exceeds industry standards.

**Table 4: System-wide Surplus/Deficit Conditions**

TYPE	LEVEL	RESTRICTION	INVENTORY	PRACTICAL CAPACITY <sup>(1)</sup>	PEAK PARKING OCCUPANCY	SURPLUS/ DEFICIT
GARAGE	B2	Outreach	4	4	2	2
		Volunteer	3	3	2	1
		Trailer	1	1	1	0
		Employee of the month	1	1	1	0
		Company Vehicles only	5	5	4	1
		Employee	101	96	94	2
		Service vehicles	3	3	0	3
<b>GARAGE</b>	<b>B2</b>	<b>TOTAL</b>	<b>118</b>	<b>112</b>	<b>104</b>	<b>8</b>
	<b>B1</b>	Physicians	45	43	34	9
		Employees	38	36	31	5
<b>GARAGE</b>	<b>B1</b>	<b>TOTAL</b>	<b>83</b>	<b>79</b>	<b>65</b>	<b>14</b>
	<b>1</b>	Physicians	24	23	23	0
		Valet	27	27	27	0
		Handicapped	9	9	8	1
		Cars in Physician Ailse		0	1	-1
<b>GARAGE</b>	<b>1</b>	<b>TOTAL</b>	<b>60</b>	<b>57</b>	<b>59</b>	<b>-2</b>
	<b>2</b>	Valet	77	77	73	4
		Employees	17	16	16	0
		Cars in Ailse		0	8	-8
<b>GARAGE</b>	<b>2</b>	<b>TOTAL</b>	<b>94</b>	<b>89</b>	<b>97</b>	<b>-8</b>
<b>GARAGE</b>	<b>3</b>	<b>Employees</b>	<b>98</b>	<b>93</b>	<b>73</b>	<b>20</b>
		<b>Total- Outreach</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>2</b>
		<b>Total- Volunteer</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
		<b>Total- Trailer</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
		<b>Total- Employee of the month</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
		<b>Total- Company Vehicles</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>1</b>
		<b>Total- Service vehicles</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>3</b>
		<b>Total- employee</b>	<b>254</b>	<b>241</b>	<b>213</b>	<b>28</b>
		<b>Total - Physicians</b>	<b>69</b>	<b>66</b>	<b>58</b>	<b>8</b>
		<b>Total- Valet</b>	<b>104</b>	<b>99</b>	<b>108</b>	<b>-9</b>
		<b>Total- Handicapped</b>	<b>9</b>	<b>9</b>	<b>8</b>	<b>1</b>
		<b>GARAGE TOTAL</b>	<b>453</b>	<b>430</b>	<b>398</b>	<b>32</b>
<b>LOT 1</b>		<b>Employees</b>	<b>75</b>	<b>75</b>	<b>62</b>	<b>13</b>
<b>LOT 2</b>		<b>Employees</b>	<b>105</b>	<b>105</b>	<b>74</b>	<b>31</b>
<b>LOT 3</b>		<b>Employees</b>	<b>50</b>	<b>50</b>	<b>35</b>	<b>15</b>
		<b>SYSTEM-WIDE TOTAL</b>	<b>683</b>	<b>649</b>	<b>569</b>	<b>80</b>

<sup>(1)</sup> 0% practical capacity used for Valet , 95% practical capacity was used for physician/ employee parking.

**5. ASSESSMENT OF FUTURE PARKING CONDITIONS**

The study of parking, circulation and access is truly a study of people, places and the mode of travel preferences. As such, the study of future parking impacts requires an understanding of population and development trends. However, the assessment of existing parking conditions examined the utilization of employee and patient/visitor parking facilities, field surveys cannot identify who is the driver/parker. Surveys cannot identify if the vehicle is associated with an employee or visitor. Therefore, it was necessary to develop a parking demand model, which accurately reflects the current demand for parking based on population data, travel demographics and comparisons to current peak period. Table 5 below demonstrates the population information provided by the Hospital and the estimated daily volumes.

**Table 5: Summary of Annual and Daily Population Volumes**

<b>Population Group</b>	<b>Annual Volume (2009)</b>	<b>Estimated Average Daily Volume (2009)</b>
Physicians/Staff (Shift 1 Volumes)	805	725
Inpatient Admissions	11,309	31
Inpatient Discharges	11,271	31
Outpatient Services	35,135	36
Emergency Department	39,198	96
Business & Patient Visitors <sup>(1)</sup>	n.a	437
<b>TOTAL</b>		<b>1,355</b>

<sup>(1)</sup> Business & Patient Visitor estimate based ratio of 1.5 visitors per occupied bed

To convert estimates of average daily population to peak weekday parking demand (i.e., turning “people into parked cars”) auto use patterns, individuals per auto ratios and arrival patterns that are typical of medical centers were applied. Table 6 below exhibits the average daily population converted to peak weekday parking demand.

**Table 6: Estimated Average Daily Parking Volumes**

<b>Population Group</b>	<b>Est. Average Daily Volume</b>	<b>Drove/Parked Own Car</b>	<b>Persons Per Auto</b>	<b>Present During Peak Period (12PM - 2PM)</b>	<b>Estimated Peak Parking Demand</b>
Physicians/Staff (Shift 1 Volumes)	725	85.0%	1.1	80%	448
Inpatient Admissions	31	95.0%	1	60%	18
Inpatient Discharges	31	95.0%	1	60%	18
Outpatient Services	36	95.0%	1	60%	21
Emergency Department	96	95.0%	1	25%	23
Business & Patient Visitors <sup>(1)</sup>	437	95.0%	2.5	25%	41
<b>Total</b>	<b>1,355</b>	<b>----</b>	<b>----</b>	<b>----</b>	<b>569</b>

<sup>(1)</sup> Business & Patient Visitor estimate based ratio of 1.5 visitors per occupied bed

Based on this analysis, it is estimated that during the peak period of parking activity there would be approximately 450 physician/staff, 20 inpatient admission, 20 inpatient discharge, 20 outpatient, 40 visitor and 25 Emergency Department vehicles parked in association with system activities. In comparison to the total number of occupied spaces that were observed during the field surveys, the demand estimates balance to reflect total and individual user group's parking use.

## **6. ESTIMATED FUTURE PARKING DEMAND**

To assess the future peak period parking demand for the Hospital the average annual population growth figures were applied to the estimates of existing parking demand presented in Table 6. The annual growth figures were derived using the historical population volume data provided by the Hospital (see Table 7). Based on historic data it appears that physician and staffing levels have decreased over time. However based on DESMAN's experience with similar projects elsewhere it is highly unlikely that the number of physicians and staff in a flourishing facility like Lawrence Hospital Center

will continue to decrease and thus DESMAN assumes a modest 1% annual increase for the purpose of projecting future demand.

**Table 7: Annual Growth Percentage**

Population Group	2001 Actual	2002 Actual	2003 Actual	2004 Actual	2005 Actual	2006 Actual	2007 Actual	2008 Actual	2009 F/Y Forecast	% Change from 2009 to 2001	Annual % Change
Physicians/Staff							849	904	805	-5.2%	-1.7%
Inpatient Admissions	9,405	9,384	10,537	10,840	10,739	10,695	10,635	10,816	11,309	20.2%	2.2%
Inpatient Discharges	9,428	9,389	10,495	10,839	10,750	10,683	10,636	10,780	11,271	19.5%	2.2%
Outpatient Services	19,096	20,900	20,321	21,981	26,893	28,953	28,855	30,835	35,135	84.0%	9.3%
Emergency Department	29,460	30,142	32,570	33,387	33,789	34,204	33,832	35,291	39,198	33.1%	3.7%

Table 8 below summarizes the population-based peak parking demand estimates for a period of 10 years.

**Table 8: Population-based Peak Future Parking Demand Estimate**

Population Group	FY2009 Peak Demand Est.	Annual % Change	Future Peak Demand Estimates									
			FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Physicians/Staff	450	1.0%	455	459	464	468	473	478	482	487	492	497
Inpatient Admissions	20	2.2%	20	21	21	22	22	23	23	24	24	25
Inpatient Discharges	20	2.2%	20	21	21	22	22	23	23	24	24	25
Outpatient Services	20	9.3%	22	24	26	29	31	34	37	41	45	49
Emergency Department	25	3.7%	26	27	28	29	30	31	32	33	35	36
Business & Patient Visitors <sup>(1)</sup>	40	1.0%	40	41	41	42	42	42	43	43	44	44
	<b>575</b>		<b>584</b>	<b>592</b>	<b>602</b>	<b>611</b>	<b>621</b>	<b>631</b>	<b>641</b>	<b>652</b>	<b>664</b>	<b>676</b>

Based on Table 8 it can be seen that the peak parking demand for the Hospital is expected to increase to 621 by FY 2014 (5 years) and 676 by FY2019 (10years).

The second half of the supply and demand equation is parking supply. Most often, this is the most critical part of the equation as many hospitals and medical centers lease parking from public or private operators. Other times, they eliminate existing surface parking to

accommodate new construction. These issues do not appear to be applicable to Lawrence Hospital Center; therefore, it is assumed that the parking inventory shall remain at the current level.

Based on the projected future demand and assuming that the supply of parking at the Hospital campus remains at its present level of 649 parking spaces (Parking inventory accounting for practical capacity), Table 9 below summarizes the future surplus/deficits conditions.

**Table 9: Projected Future Surplus/Deficit**

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Practical Capacity Space Inventory	649	649	649	649	649	649	649	649	649	649
Project peak Parking Demand	584	592	602	611	621	631	641	652	664	676
Surplus/ Deficit	65	57	47	38	28	18	8	-3	-15	-27

It can be concluded that if no additional parking space inventory is added then it is projected that by FY2017 the Lawrence Hospital Center parking system will reach the level of practical capacity, which still provides a surplus buffer of almost 80 spaces. If the growth trends continue to track at the projected levels, the practical capacity surplus will be exceeded and the actual parking capacity of the parking system will be not be exceeded in FY2019, and a surplus of approximately 50 spaces, or 8% of the capacity would be available.

## **7. REVIEW OF HOSPITAL MASTER PLAN**

Lawrence Hospital Center is currently in the process of redesigning its campus to meet the growing needs of the community. In the recent past, the hospital moved some of its services to off-site locations. The hospital is currently planning for the construction of an additional 38,900 square feet of medical services on the campus. The planned construction will house a new Radiation Therapy program whereas the Medical

Oncology Chemo Infusion Center and the Operation suite in the existing building will move into this new facility.

The purpose of this review is to assess the impact this expansion will have on parking demand at the campus. As per the parking demand model developed in Section 5; any increase in the number of employees and/or patients visiting the hospital will increase the parking demand at the campus. Independent of that growth, the new radiation therapy program is anticipated to modestly increase the number of employees and patients that will be coming to the campus. The Hospital anticipates new staffing for Radiation Oncology will total 7. Whereas the patient volume visiting this program is expected to be 22 patients/day. Consistent with the existing parking operation, employees will be assigned off-site parking and patients/visitors will use the valet service. The Hospital administration anticipates the new building to be constructed and operational by the 1st Quarter of 2012. Table 10 below summarizes the parking demand due to the addition of the new Radiation Therapy program.

**Table 10: Parking Demand due to addition of Radiation Therapy Program**

<b>Population Group</b>	<b>Est. Average Daily Volume</b>	<b>Drove/Parked Own Car</b>	<b>Persons Per Auto</b>	<b>Present During Peak Period (12PM - 2PM)</b>	<b>Estimated Peak Parking Demand</b>
Physicians/Staff (Shift 1 Volumes)	7	85.0%	1.1	80%	4
Inpatient Admissions		95.0%	1	60%	0
Inpatient Discharges		95.0%	1	60%	0
Outpatient Services	22	95.0%	1	60%	13
Emergency Department		95.0%	1	25%	0
Business & Patient Visitors <sup>(1)</sup>		95.0%	2.5	25%	0
<b>Total</b>	<b>29</b>	<b>----</b>	<b>----</b>	<b>----</b>	<b>17</b>

<sup>(1)</sup> Business & Patient Visitor estimate based ratio of 1.5 visitors per occupied bed

Table 11 below summarizes the impact that the additional 17 spaces from Table 10 will have on the projected future surplus/deficit forecasted on Table 9.

**Table 11: Projected Future Surplus/deficit accounting for the Radiation Therapy  
Parking Demand**

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Practical Capacity Space Inventory	649	649	649	649	649	649	649	649	649	649
Project peak Parking Demand	601	609	619	628	638	648	658	669	681	693
Surplus/ Deficit	48	40	30	21	11	1	-9	-20	-32	-44

The parking demands, with the additional 17 spaces that will be generated by the expanded Radiation Therapy Program, will reach the level of practical capacity in FY2015. Actual capacity levels (the 683 space supply) will not be exceeded until FY2019. At such time the Hospital will either need to seek additional parking capacity or increase the parking valet operation to artificially increase the parking supply to match the demands.

## **8. ZONING CODE REVIEW**

The final part of the analysis is the study of the Town of Bronxville’s parking code requirement and comparing it to DESMAN’s demand. Town of Bronxville’s zoning code Article VII Special Permits (§ 310-34 — § 310-42) describes the off-street parking requirement as below:

*“Off-street parking requirements - The hospital will provide paved off-street parking spaces on its lot (whether in a garage or not) as required below:*

*(a) A minimum of off-street parking spaces shall be provided equal to one space per 2.5 average daily emergency visits and one space per 2.5 average daily outpatient visits. A total of 73 spaces shall be deemed to be the minimum off-street parking spaces required of Lawrence Hospital.*

*(b) Any increase or decrease in such minimum required spaces shall be provided in minimum increments of five measured by the average number of daily visits during the previous calendar year.*

*(c) These requirements may be modified by the Planning Board under such conditions as it may impose where such modifications and conditions are consistent with public health, safety, and general welfare”.*

Table 12 below summarizes Lawrence Hospital Center’s parking demand based on Town of Bronxville’s parking code.

**Table 12: Lawrence Hospital Center’s Parking Demand based on Town of Bronxville’s Parking Code**

Population Group	Est. Average	Village of Bronxville	
	Daily Volume	Ratio	Demand
Physicians/Staff (Shift 1 Volumes)	725		
Inpatient Admissions	31		
Inpatient Discharges	31		
Outpatient Services	36	1Space/ 2.5 visits	14
Emergency Department	96	1Space/ 2.5 visits	39
Business & Patient Visitors <sup>(1)</sup>	437		
<b>Total</b>	<b>1,355</b>		<b>53</b>

The Town of Bronxville’s zoning code though based on user groups is not reflective of the entire spectrum of parkers in the system. The Town of Bronxville’s zoning code accommodates the needs of patients/visitors using the Outpatients services and Emergency Department but fails to account for the needs of other user groups like Inpatients Services, Business / Patient Visitors and most importantly the hospital employees. Whereas, it is apparent from Table 4 that these users groups account for almost 50% (298 Spaces) of the current peak period utilization

The fact that the town of Bronxville’s zoning code fails to account for certain user groups contribute to the wide disparity in the parking demand figures in Table 12 and Table 6 above.

## **STATEMENT OF GENERAL ASSUMPTIONS AND LIMITING CONDITIONS**

This report is subject to the following limiting conditions:

1. This report is based on assumptions outside the control of DESMAN Associates (“DESMAN”) and/or our client. Therefore, DESMAN cannot guarantee the results discussed in this study.
2. The results and conclusions presented in this report may be dependent on future assumptions regarding the local, national, or international economy. These assumptions and resultant conclusions may be invalid in the event of war, terrorism, economic recession, rationing, or other events that may cause a significant change in economic conditions.
3. DESMAN assumes no responsibility for any events or circumstances that take place or change subsequent to the date of our field inspections.
4. Sketches, photographs, maps and other exhibits included herein may not be of engineering quality or to a consistent scale, and should not be relied upon as such.
5. All information, estimates, and opinions obtained from parties not employed by DESMAN, are assumed to be accurate. We assume no liability resulting from information presented by the client or client’s representatives, or received from third-party sources.
6. This report is to be used in whole and not in part. None of the contents of this report may be reproduced or disseminated in any form for external use by anyone other than our client without written permission.
7. The projections presented in the analysis assume responsible ownership and competent management. Any departure from this assumption may have a negative impact on the conclusions.