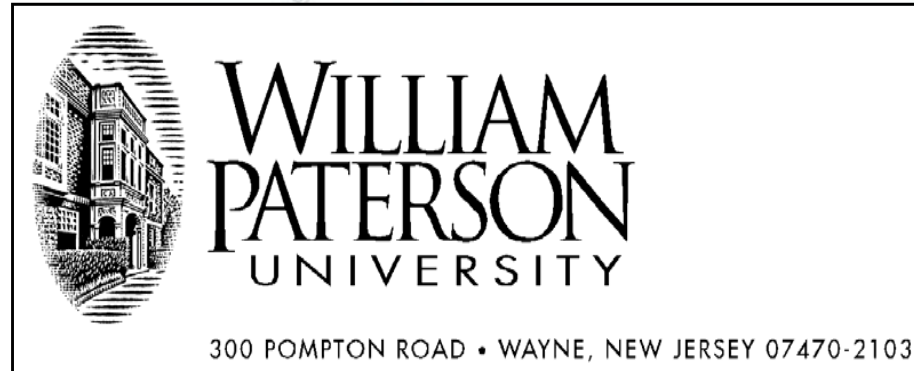


# 3<sup>RD</sup> DRAFT PARKING GARAGE FEASIBILITY STUDY

Prepared For:



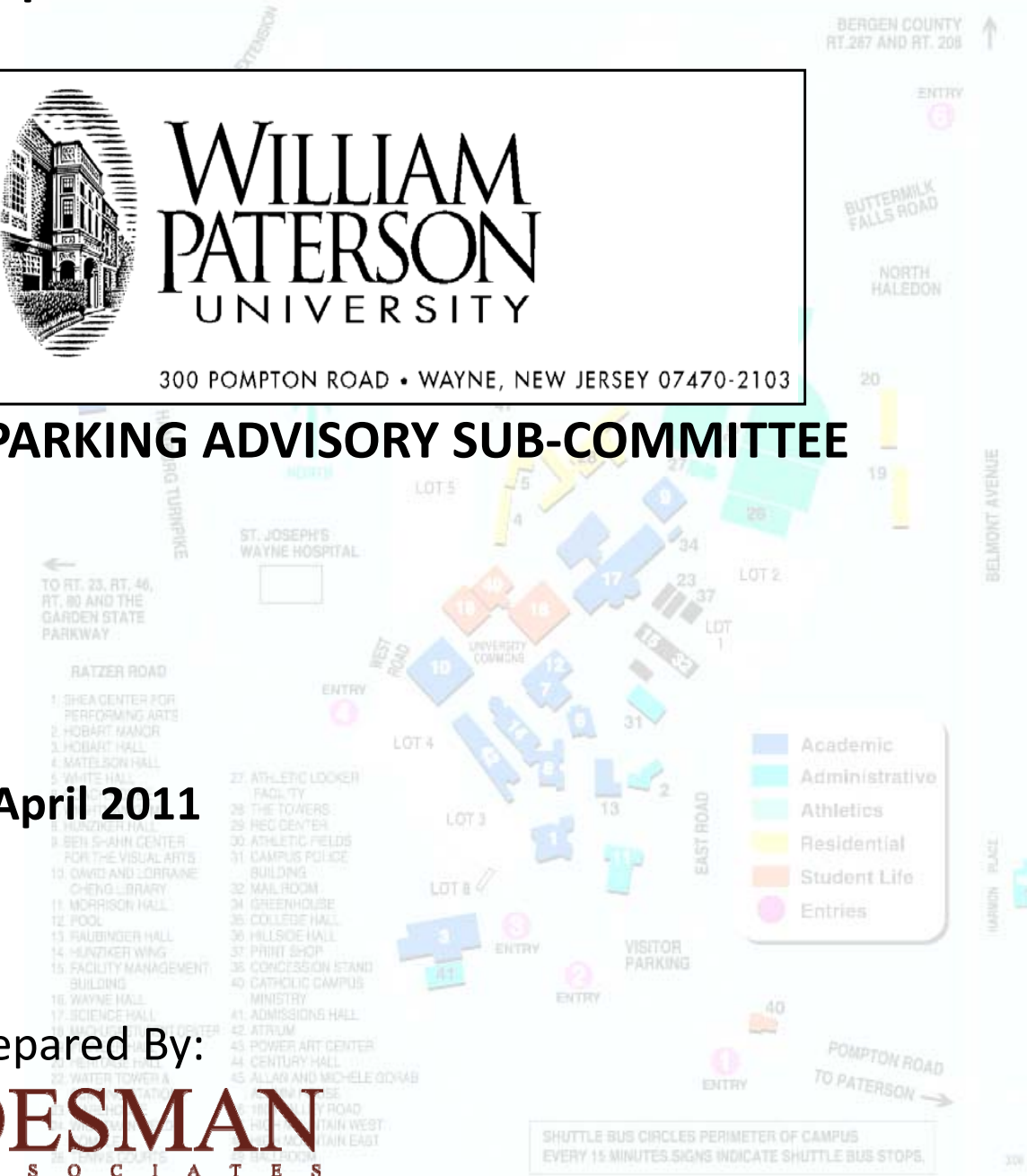
**PARKING ADVISORY SUB-COMMITTEE**

April 2011

Prepared By:



49 West 37<sup>th</sup> Street – 5<sup>th</sup> Floor  
New York, New York 10018



**TABLE OF CONTENTS**

<b>Section 1.0 – Introduction</b>	<b>Page 1</b>
<b>Section 2.0 – Parking Demand Analysis</b>	<b>Page 3</b>
<b>Section 3.0 – Site Alternatives &amp; Preliminary Design Concepts</b>	<b>Page 8</b>
<b>Section 4.0 – Financial Analysis (to be completed)</b>	<b>Page 18</b>

**LIST OF TABLES**

<b>Table #1 – Parking Occupancy Surveys</b>	<b>Page 4</b>
<b>Table #2 – Parking Demand Ratios</b>	<b>Page 6</b>
<b>Table #3 – Projected Staffing &amp; Enrollment Growth (Fall 2013)</b>	<b>Page 7</b>
<b>Table #4 – Projected Parking Demand Increases</b>	<b>Page 7</b>
<b>Table #5 – Lot #1 Conceptual Construction Budget</b>	<b>Page 13</b>
<b>Table #6 – Lot #2 Conceptual Construction Budget</b>	<b>Page 14</b>
<b>Table #7 – Lot #5 Conceptual Construction Budget</b>	<b>Page 15</b>
<b>Table #8 – Parking Garage Site Alternates Matrix</b>	<b>Page 17</b>
<b>Table #9 – Capital Cost &amp; Debt Service</b>	<b>Page 22</b>
<b>Table #10 – Operating &amp; Maintenance Budget</b>	<b>Page 23</b>

**LIST OF FIGURES/PLANS**

<b>Site Identification Aerial</b>	<b>Page 9</b>
<b>Site Footprint Studies</b>	<b>After Page 10</b>
<b>Lot #1 Concept Plans</b>	<b>After Page 12</b>
<b>Lot #2 Concept Plans</b>	<b>After Page 13</b>
<b>Lot #5 Concept Plans</b>	<b>After Page 14</b>

## **SECTION 1.0 - INTRODUCTION**

DESMAN Associates was retained to provide consulting services for William Paterson University (WPU) for the purpose of performing a Feasibility Study for adding a parking garage on the campus. To accomplish this we completed the following tasks, working in conjunction with the University's Parking Advisory Sub-Committee, which was comprised of the following:

- Administration and Finance – Vice President, Steve Bolyai
- Administration and Finance – Associate Vice President, Rosemarie Genco
- Administration – Associate Vice President, Richard Stomber
- Capital Projects, Design and Construction – Director, John Urinyi
- Commuter Services – Director, Allen Williams
- Public Safety and University Police – Interim Director, Bob Fulleman
- Faculty Representative – Rajender Kaur, Department of English

**PARKING DEMAND ANALYSIS** - Our initial task consisted of updating the supply and demand analysis performed by DESMAN in 2004. This task identified current parking occupancies and the number of parking spaces required to meet the parking needs both today and forecasted 3 years forward.

Based on the verification of parking space inventory, from data that was provided by the University, DESMAN tabulated the parking supply and demand on the campus. By using the demand based ratios calculated in the 2004 Study, an estimate of future parking demand at WPU was forecasted.

**SITE ALTERNATIVES ANALYSIS & PRELIMINARY DESIGN CONCEPTS** - Considering the influence of the **University's** goals for this project as well as forecasted parking demand, a number of sites were identified for possible consideration for future parking alternatives. Criteria were developed to evaluate and prioritize alternative sites for future structured parking. Using these criteria, parking sites were comparatively evaluated. As a result of this process, a site evaluation matrix was developed including advantages and disadvantages as measured by identified criteria and summarized in the matrix. A simple rating system of 1 to 3 was incorporated to prioritize parking sites, with the goal of selecting multiple parking sites that will be subject to a more in-depth design study and economic analysis.

Options were presented and discussed with the Parking Advisory Sub-Committee to solicit comments and discuss various advantages and disadvantages of each potential site solution. After a number of preferred sites were selected, functional design concepts and preliminary building plans were developed to further investigate and analyze each site's feasibility. Concept Design Documents including Grade, Typical and Roof Plans, were prepared to visualize the following project components:

- Vehicular Ingress and Egress Locations.
- Ramping Methods, slopes and locations.
- Internal Traffic Flow.
- Parking Geometry, including bay widths/heights, parking angle and stall widths.
- Per floor space counts.
- Possible Stair/elevator locations.
- Efficiency on sq. ft. per space basis.

**FINANCIAL ANALYSIS** - Utilizing Concept Design Drawings and the construction budget that was developed, a financial analysis was performed for the Lot 1 alternate to assist the University in investigating funding and development requirements and options. Project costs, including soft costs and associated fees were investigated for two financing options. The first scenario was developed assuming the University funds the project through the New Jersey Educational Facilities Authority, or another like bonding agency, as a traditional capital improvement project. The second scenario forecasted the project costs and funding requirements if the University entered into a Public Private Partnership (P3), whereby private investment funds would be used to finance the development and construction costs.

## **SECTION 2.0 - PARKING DEMAND ANALYSIS**

The first task of our engagement was to update the supply and demand analysis performed by DESMAN in 2004. This consisted of evaluating the current parking supply in the study area and documenting the existing usage of these spaces to identify parking occupancies and identify the number of parking spaces required to meet the parking needs of the campus.

Data regarding current parking inventory was provided by William Paterson University (WPU) and validated during DESMAN field surveys conducted in November in 2003. This data was then compared with recent field surveys that were performed by WPU to understand if there have been any changes in the parking occupancies and patterns on the campus. Parking at WPU is allocated/assigned/restricted to a variety of user groups (students, employees, reserved, handicapped, time restricted, and visitor parking). There are a number of lots found at WPU designed to serve more than one user group. Scattered around the University's parking facilities are reserved, handicapped and visitor spaces. Presently, reserved spaces are allocated to the deans, directors, department chairs, police vehicles, etc.

During the mid-day peak period almost 95% of the parking spaces on the main campus were found to be occupied. These occupancy levels are consistent for both the 2003 and 2010 survey data. The Veritans Lot was found to be underutilized for the duration of the survey period. As this lot is the most remote facility serving the Pompton Road area of campus, a point-to-point shuttle bus system serves the lot and operates all day and delivers its users in the core campus area. Without the underutilized Veritans Lot, the parking occupancy during the peak period is 97%. It was observed that students would line-up in the drive aisles of Lots 1, 2, 4, and 5 to wait for other students to walk from campus and exit their respective parking space even though there was an abundance of unoccupied spaces in other campus parking facilities.

The following table illustrates the recorded parking occupancies in both 2003 and 2010. Parking demands have remained relatively constant over that period while student populations have grown by almost 4%. This could be attributed to many factors such as:

- Modifications to the class schedules and/or programs thereby shifting the distribution of student population during the traditional mid-day peak period.
- Increased dependence on public transportation.
- Capacity constrained parking system.

**TABLE #1**  
**Parking Occupancy Surveys**

Location/Facility	Lot Capacity	Nov. 2003 Parking Survey	Oct. 2010 Parking Survey
Lot1	124	124	124
Lot 2	284	313	237
Lot 3	299	261	286
Lot 4	375	364	375
Lot 5	1030	1055	1030
Lot 6	874	862	857
Lot 8	60	47	53
Admissions Lot	16	12	4
Visitors Lot	37	15	34
Veritans Lot	200	25	37
415 Hamburg Tpk.			40
<b>Total Reported Population</b>	<b>3,299</b>	<b>3,078</b>	<b>3,087</b>
Faculty		370	380
Staff		720	746
On-Campus Resident Students		2300	2630
Commuter Students		8625	8730

Anecdotally, it may be a combination of all of the above, and presumably other factors. As planners it is difficult and therefore complicated to estimate parking demand for a constrained parking system since the base factors may not present a true picture of need. Another question that is also asked is that even if it were possible to provide an inventory to meet the unconstrained demand, is it feasible from an operational, physical, economic or policy point of view?

Another important factor that needs to be included is the concept of Practical Parking Capacity. Industry standards suggest that a parking facility is considered to be at full operational capacity when occupancy levels reach 90-95%. Once this level is achieved, potential parkers find it difficult to locate an available space. As a result, those individuals must continue to search, creating traffic flow problems and increases in the potential for vehicle/vehicle and vehicle/pedestrian conflicts. Additional considerations include the inefficient use of the facilities (vehicles potentially occupying more than one space), snow storage during winter months, and areas needed for maintenance procedures (cleaning, painting, landscaping, striping, drainage, etc.). The effective and efficient turnover of parking spaces is most successful when the supply of spaces exceeds the peak demand for those spaces by 5%-10%. As is common for non-urban university settings, a practical capacity factor of 90% is used. It is this factor that we recommend be used for this planning model for William Paterson University.

Applying the industry accepted practice of Practical Parking Capacity and the recommended 90% factor for WPU, under current conditions the parking system is operating at a deficit of approximately 100 spaces if we include the Veritans Lot. It is our understanding that WPU does not own the Veritans Lot so reliance on the facility to provide parking capacity is questionable. Another factor that has diminished the popularity, convenience and use of this lot was the elimination of the dedicated bus service from this facility. Thus for planning purposes, it is our recommendation that the Veritans Lot be excluded from the supply, which historically has not been well utilized or a viable solution. This would increase the existing parking deficit number to approaching 250 spaces, with the accepted practice of included a 90% practical parking capacity.

Peak parking demand based ratios for each of the various user groups on campus were developed using the relationship between parking occupancy, population data, and travel characteristics in the 2004 Study. By using the demand based ratios, future growth projections and development activity, an estimate of future parking demand at WPU could be forecasted. A model of existing parking demand, vehicle use and arrival patterns was conducted to assist in forecasting parking demands under an unconstrained parking system scenario. The population based estimates were then compared to the surveys of actual space utilization with the results suggesting a relatively accurate solution.

Given the apparent accuracy of this model and presuming its accuracy with respect to individual user groups (faculty, staff, students, etc.), the population to peak parking demand factors could be utilized when assessing the parking demand on the WPU campus as staffing and enrollment levels increase over time. The following table illustrates the factors that were developed specifically for WPU.

**TABLE #2**  
**Population to Peak Parking Demand Ratios**  
*(drove & parked own car/persons per auto present during peak period)*

Category	Demand Ratio
Faculty	0.54
Staff	0.82
On-Campus Resident Students	0.50
All Other Students	0.24
Visitor/Other	0.46

Given the development of accurate population based parking ratios for each campus user group, projections for future staffing and enrollment could be used to estimate anticipated peak weekday parking demand for the WPU campus. The university has provided projected growth numbers for the next three years on the campus which can be used to forecast parking needs. The forecasted growth for the fall semester in 2013 is as follows:



**TABLE #3**  
**Projected Staffing & Enrollment Growth**  
**Fall 2013**

Category	Growth Projection
Faculty	20
Staff	40
On-Campus Resident Students	370
All Other Students	1400
Visitor/Other	50

Utilizing the above growth factors and population based parking ratios for these user categories will result in a forecast for added unconstrained parking demand expected on the campus. The following table illustrated these forecasts.

**TABLE #4**  
**Projected Parking Demand Increases**  
**Fall 2013**

Category	Growth Projection	Demand Ratio	Parking Space Demand
Faculty	20	0.54	11
Staff	40	0.82	33
On-Campus Resident Students	370	0.50	185
All Other Students	1400	0.24	336
Visitor/Other	50	0.46	23
<b>TOTAL PARKING DEMAND</b>			<b>588</b>

As previously illustrated with the recorded 2003 and 2010 surveys, parking demands have remained relatively constant over that period while student populations have grown by almost 4%. This could be attributed to many factors such as modifications to the class schedules and/or programs thereby shifting the distribution of student population during traditional mid-day peak period, increased dependence on public transportation and/or a capacity constrained parking system. If we assume that it was anything but a capacity constrained parking system, then the student demand factor would need to be modified slightly to account for the added population generating a similar parking demand.

Accounting for an added student population of approximately 500 students would reduce the demand factor to roughly 0.22 spaces per student during the mid-day peak period. This would in turn reduce the demand for this category to approximately 308 spaces with 1400 added students in the Fall of 2013. Therefore for planning and feasibility purposes, the added parking demands that could be expected with the forecasted growth in year 2013 will approach 530 spaces. This, when added to the existing deficit of 250 spaces with the elimination of the Veritans Lot and when the principal of practical capacity is applied, would suggest a minimum parking expansion of 750-800 spaces should be planned.

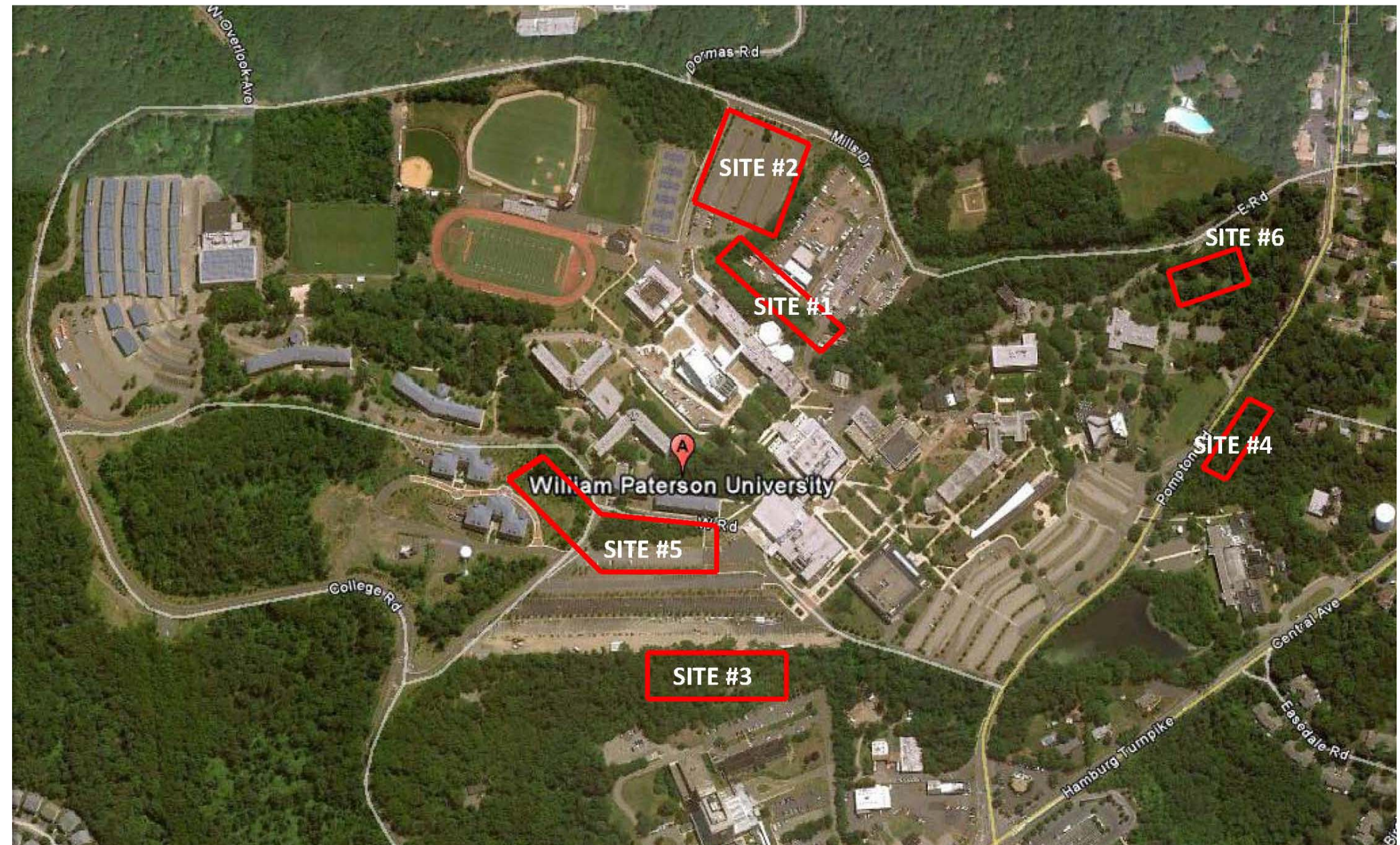
### **SECTION 3.0 - SITE ALTERNATIVES ANALYSIS & PRELIMINARY DESIGN CONCEPTS**

The Parking Advisory Sub-Committee's goals were to select and evaluate potential sites that would meet the immediate and forecasted parking demands for the campus. The underlying premise was that any expansion would result in the University's first structured parking facility. The initial step was to identify viable options, or "sites", on the campus that could support a structured parking facility. Some of the criteria used to identify viable sites were the following:

- Site availability – ownership.
- Site conditions (sub-surface conditions, topography, etc.).
- Site size (dimensions).
- Gateway Impacts.
- Proximity to Campus destinations.
- Vehicular access.
- Pedestrian access.
- Shared parking opportunities.
- Alternative plans for displaced cars during construction.
- Construction staging and storage issues.

This deliberation resulted in the Parking Advisory Committee selecting six areas of the campus for further consideration. These areas, or sites, were identified as Site #1 (Lot 1), Site #2 (Lot 2), Site #3 (St. Joseph's Wayne Hospital joint use), Site #4 (Hobart Hall), Site #5 (Lot 5) and Site #6 (Morrison Hall). The following image graphically illustrates these general locations on the campus.

**SITE IDENTIFICATION AERIAL**



The next step in our analysis was to take a closer look at the opportunities at each one of the identified sites on the campus. This was done by incorporating industry practices with regard to parking geometry, functional design requirements and the physical characteristics of each site. Footprints were developed for each of the six locations taking into consideration such items as site conditions, site size and standard parking geometrical requirements, vehicular access and minimizing the displacement of existing parking spaces. This resulted in the placement of garage footprints that would respond to these general requirements. The placement of the footprints could then be converted to parking capacities to allow the Committee to assess the validity of each site.

The following diagrams illustrate in greater detail each sites location on the campus and the resultant parking footprints that would be feasible. These footprints were then tested against the ability for each site to support the suggested parking requirements/needs, or what would be the number of levels needed to achieve a goal of adding approximately 900 additional spaces on the campus. The building massing was then compared to the surrounding buildings on the campus to qualitatively measure its impact.

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



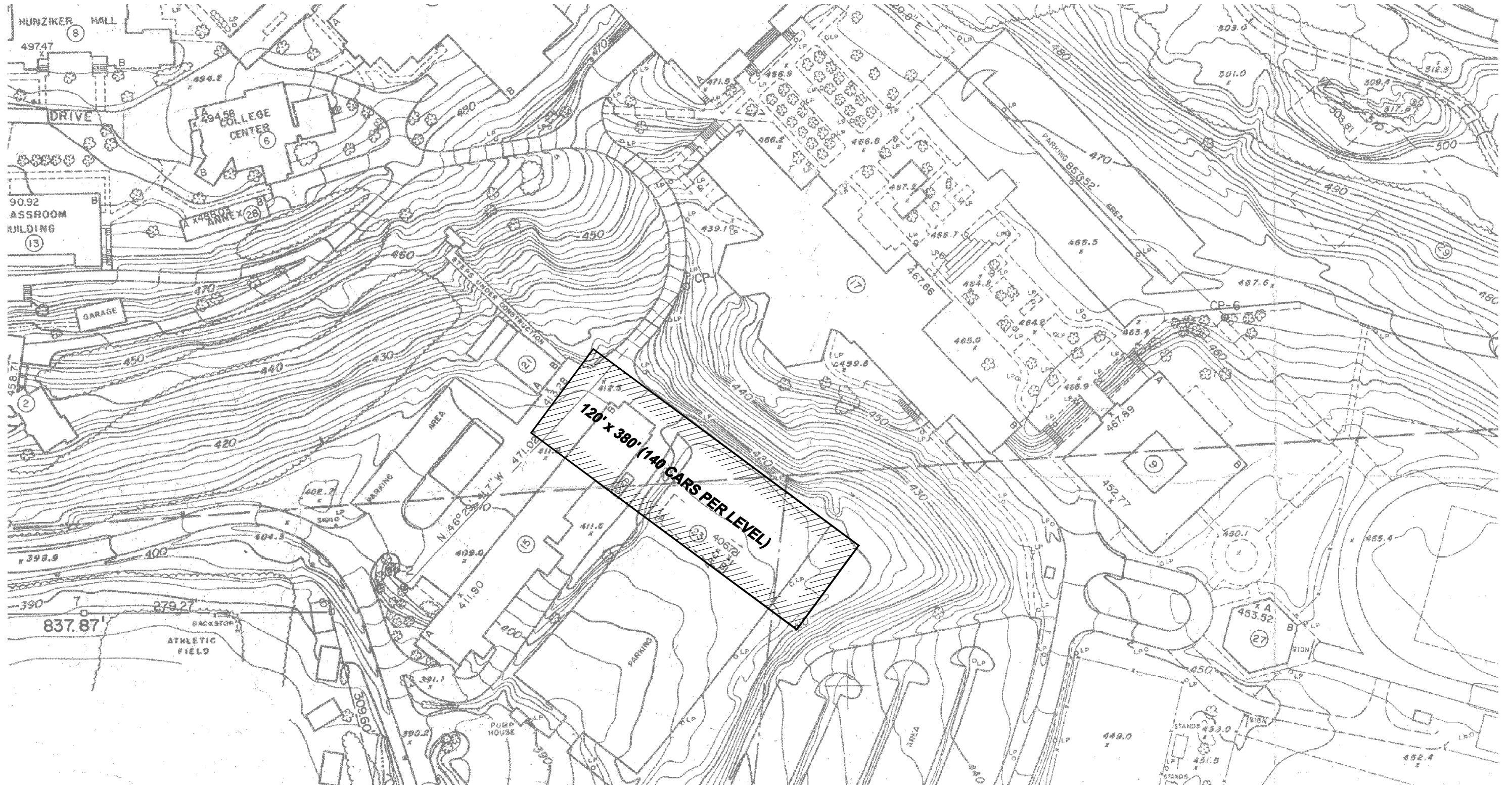
Station	North	East
1	769,764.80	2,131,816.73
2	769,895.77	2,131,179.77
3	769,824.44	2,130,812.79
4	768,255.71	2,130,217.07
5	769,486.09	2,129,210.64
6	769,214.43	2,128,909.98
7	769,135.15	2,129,909.31
8	768,855.85	2,129,904.74
9	768,576.56	2,129,902.58
10	768,294.27	2,130,000.09
11	768,015.76	2,130,137.65
12	767,892.74	2,130,136.54
13	767,933.12	2,129,874.29
14	768,093.19	2,129,291.81
15	768,109.71	2,129,282.40
16	768,234.90	2,129,349.78
17	768,248.89	2,129,821.67
18	767,933.39	2,128,669.29
19	768,343.34	2,128,291.27
20	768,647.72	2,128,738.37
21	768,784.64	2,128,770.53
22	768,998.81	2,128,195.99
23	769,176.59	2,128,259.79
24	769,425.93	2,128,163.96
25	769,489.87	2,128,282.74

Building No.	North	East	FF Elev.
1 A	768,718.02	2,129,149.90	492.20
2	768,770.26	2,129,146.05	492.20
3	768,804.96	2,129,245.73	498.71
4	769,037.97	2,129,385.76	498.71
5 A	769,037.97	2,129,385.76	498.71
6	768,539.22	2,128,540.10	494.29
7	768,295.87	2,128,374.99	494.29
8	768,343.67	2,128,454.82	494.29
9	768,284.36	2,128,271.54	494.29
10	768,347.51	2,128,832.14	494.29
11	768,286.91	2,128,388.10	494.29
12	768,231.59	2,128,682.40	494.29
13	768,198.94	2,128,682.40	494.29
14	770,117.01	2,128,978.01	530.41
15	770,237.79	2,129,008.18	530.41
16	770,037.76	2,129,042.33	530.41
17	770,533.27	2,129,074.08	494.29
18	769,271.96	2,129,133.09	494.29
19	769,276.41	2,129,408.37	494.29
20	769,438.18	2,129,223.48	494.29
21	769,259.76	2,129,133.09	494.29
22	769,053.54	2,129,298.39	497.67
23	769,133.75	2,129,266.48	497.67
24	770,354.80	2,129,667.28	452.77
25	770,453.30	2,129,122.90	452.77

Control Point No.	North	East	Elev.
CP-1	768,823.25	2,129,548.81	428.44
CP-2	768,494.89	2,129,869.43	408.52
CP-3	769,109.37	2,129,348.17	392.27
CP-4	769,536.61	2,128,772.46	344.91
CP-5	769,812.14	2,128,591.25	312.12
CP-6	770,453.41	2,128,548.71	468.55
CP-7	770,086.62	2,129,458.45	479.81
CP-8	771,771.99	2,129,729.98	488.17

1. BOUNDARY CORNER FOR PERFORMING ARTS
2. BOUNDARY CORNER
3. BOUNDARY CORNER
4. BOUNDARY CORNER
5. BOUNDARY CORNER
6. BOUNDARY CORNER
7. BOUNDARY CORNER
8. BOUNDARY CORNER
9. BOUNDARY CORNER
10. BOUNDARY CORNER
11. BOUNDARY CORNER
12. BOUNDARY CORNER
13. BOUNDARY CORNER

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS

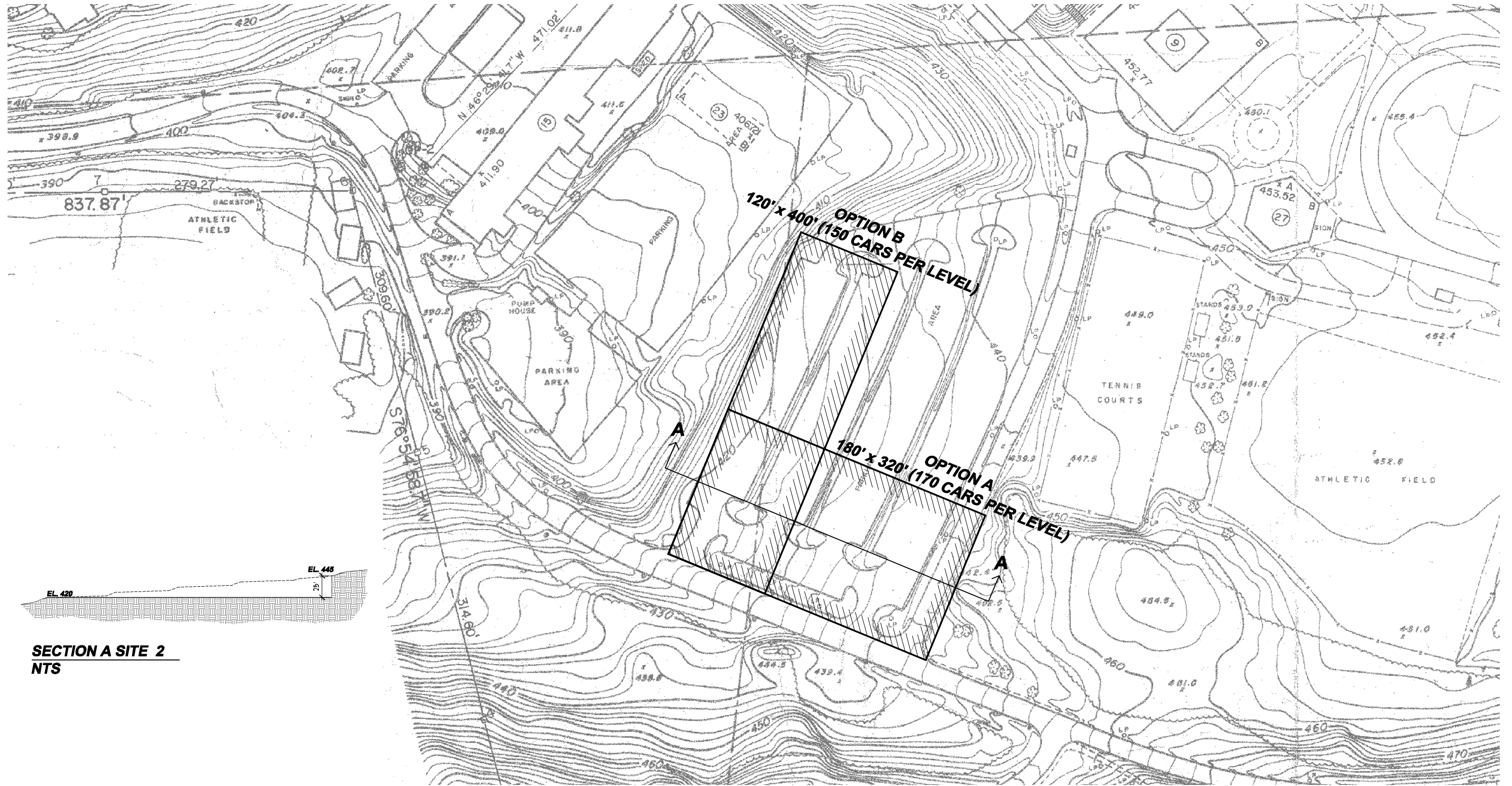


March 2011

SITE #1

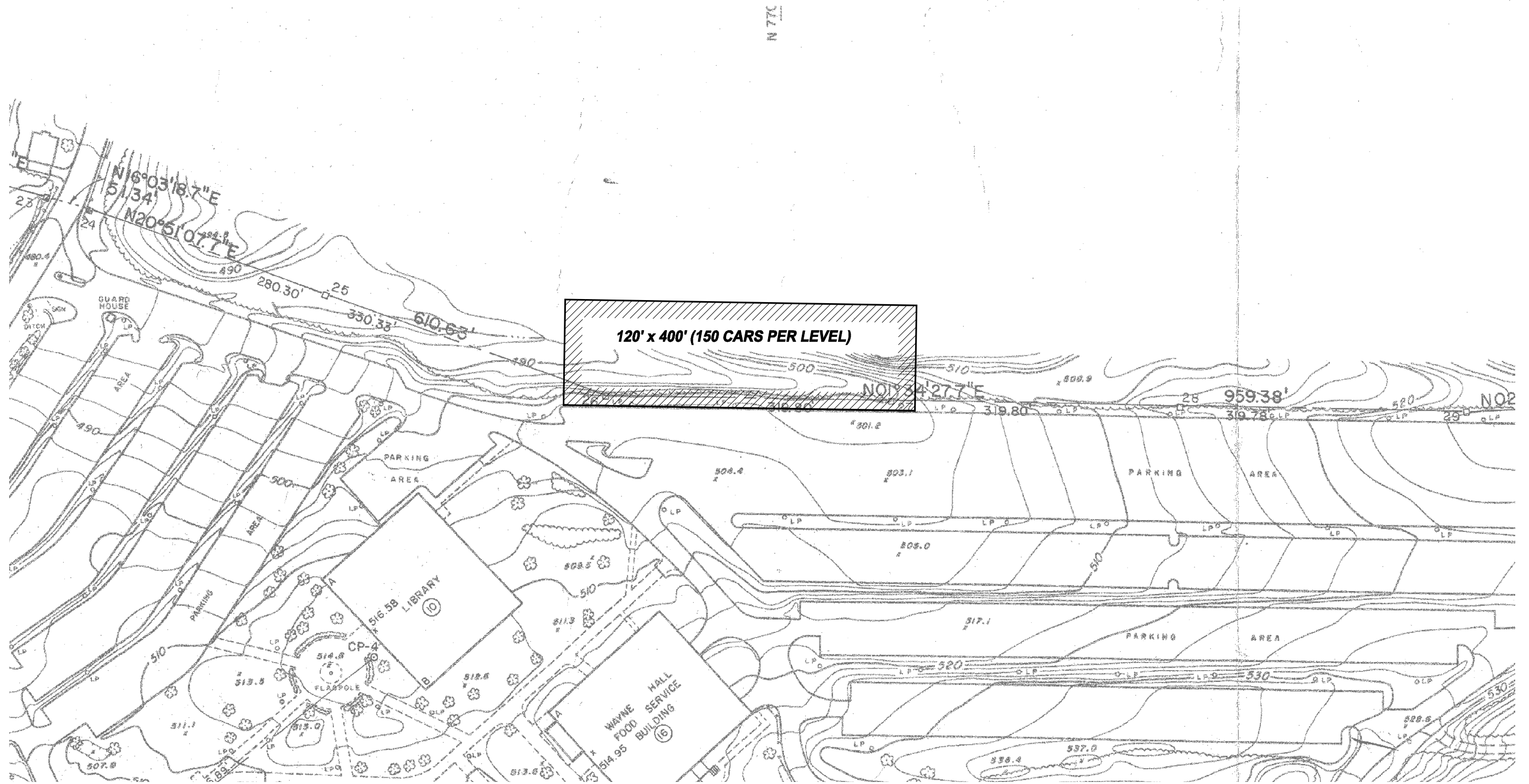
**DESMAN**  
ASSOCIATES

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



**SECTION A SITE 2  
NTS**

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



March 2011

SITE #3

**DESMAN**  
ASSOCIATES



# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS

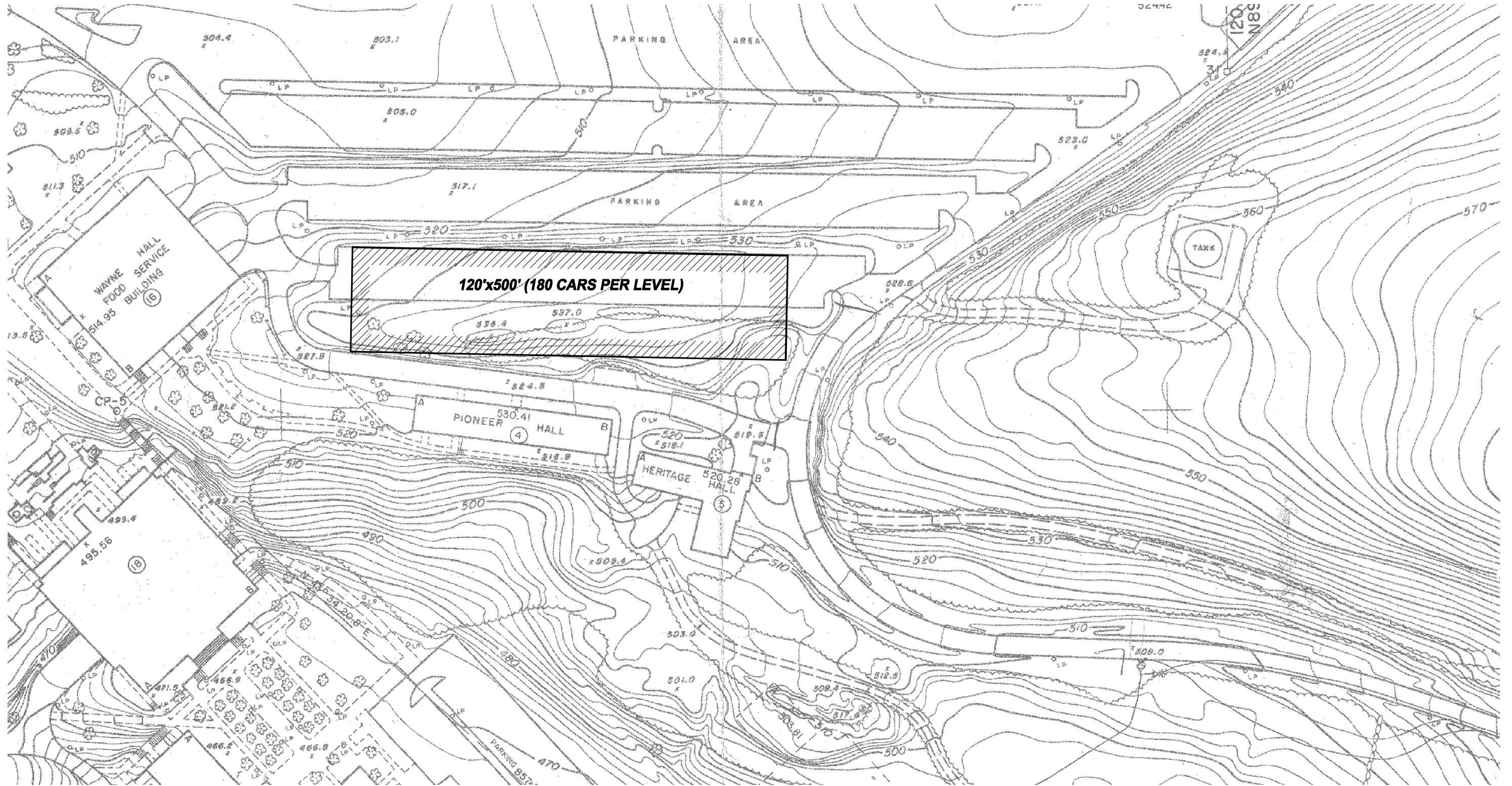


March 2011

SITE #4

**DESMAN**  
ASSOCIATES

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS

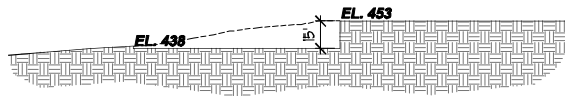
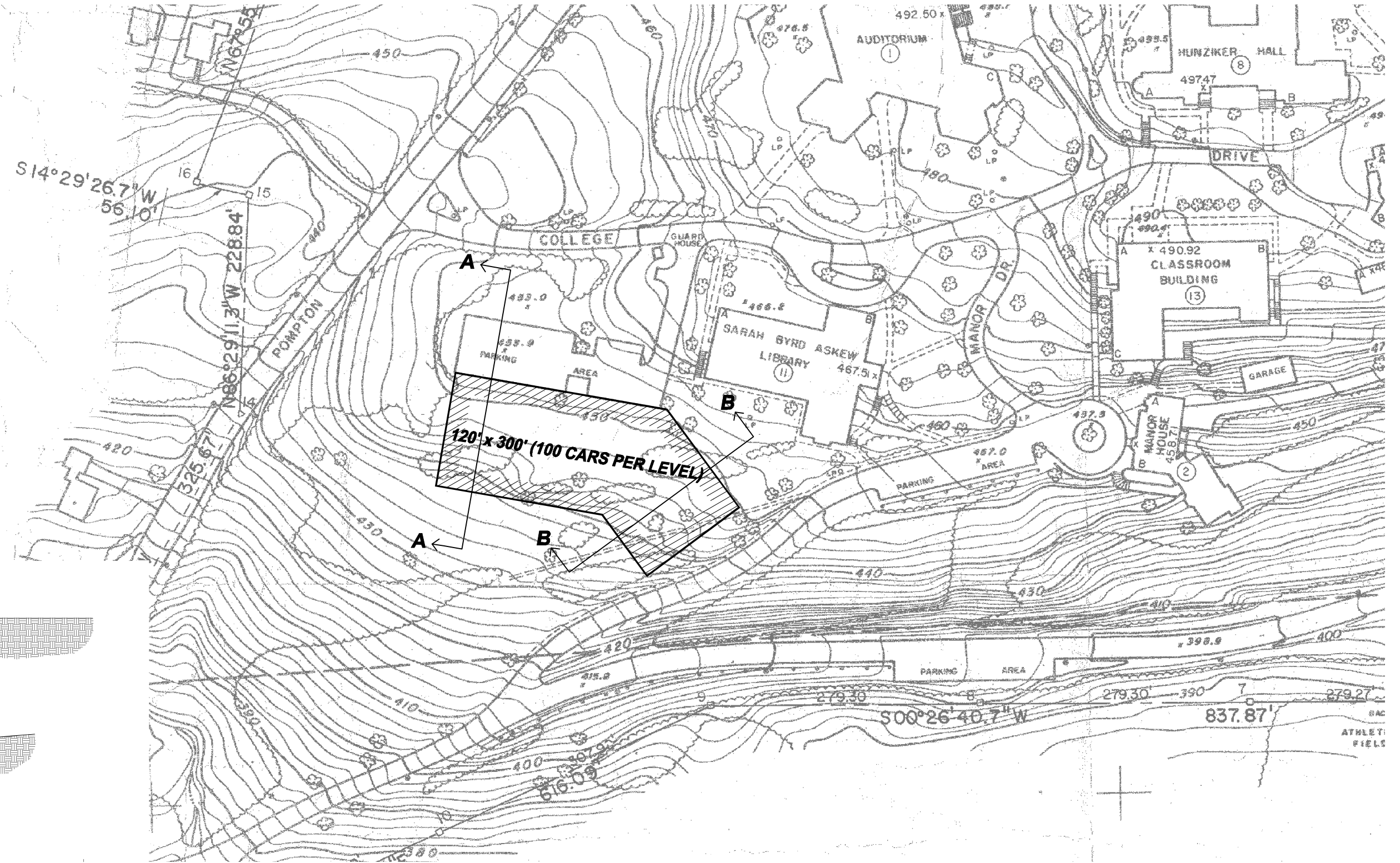


March 2011

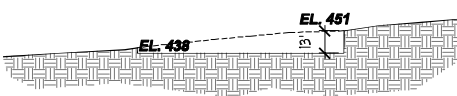
SITE #5

**DESMAN**  
ASSOCIATES

# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



**SECTION A SITE 6**  
NTS



**SECTION B SITE 6**  
NTS

The Parking Advisory Committee reviewed the opportunities for each of the sites and reached the following conclusions. In general, floor to floor heights are programmed at 11 feet, and bay widths are 60 feet, which is comprised of an 18 foot deep parking space, 24 foot wide drive/circulation aisle and an 18 foot deep parking. Parking spaces were assumed to be 9 feet wide for this exercise. A 900-space parking garage would equate to 280,000-290,000 square feet of building area.

- Site #1 – Lot 1 Between Facilities and Science Hall East
  - Aesthetically one of the better locations requiring the least amount of façade articulation.
  - Does not impact any existing parking spaces.
  - Elevators and pedestrian bridges will be required to span from top deck to grade adjacent to the Science Hall.
  - Truck access to Student Center loading dock needs to be maintained.
  - The warehouse and switchgear would need to be relocated.
  - Provides good access to and from three campus entry points.
  
- Site #2A and #2B – Lot 2
  - Option B was deemed to be functionally superior.
  - Option B would be more economical than Option A in terms of cost per space.
  - Provides good access to and from three entry points.
  - Results in the loss of space during construction.
  - Not as close to campus destinations as some of the other sites.
  
- Site #3 – St. Joseph’s Wayne Hospital– West of Lot 5
  - The topography of this site is challenging.
  - Requires the involvement of another property owner.
  - The height of new garage may block existing solar panels.
  
- Site #4 – East of Hobart Hall
  - Buildable area does not appear large enough to meet projected parking requirements.
  - Pedestrian bridge crossing Pompton Road would be required.
  - Traffic safety is a concern.

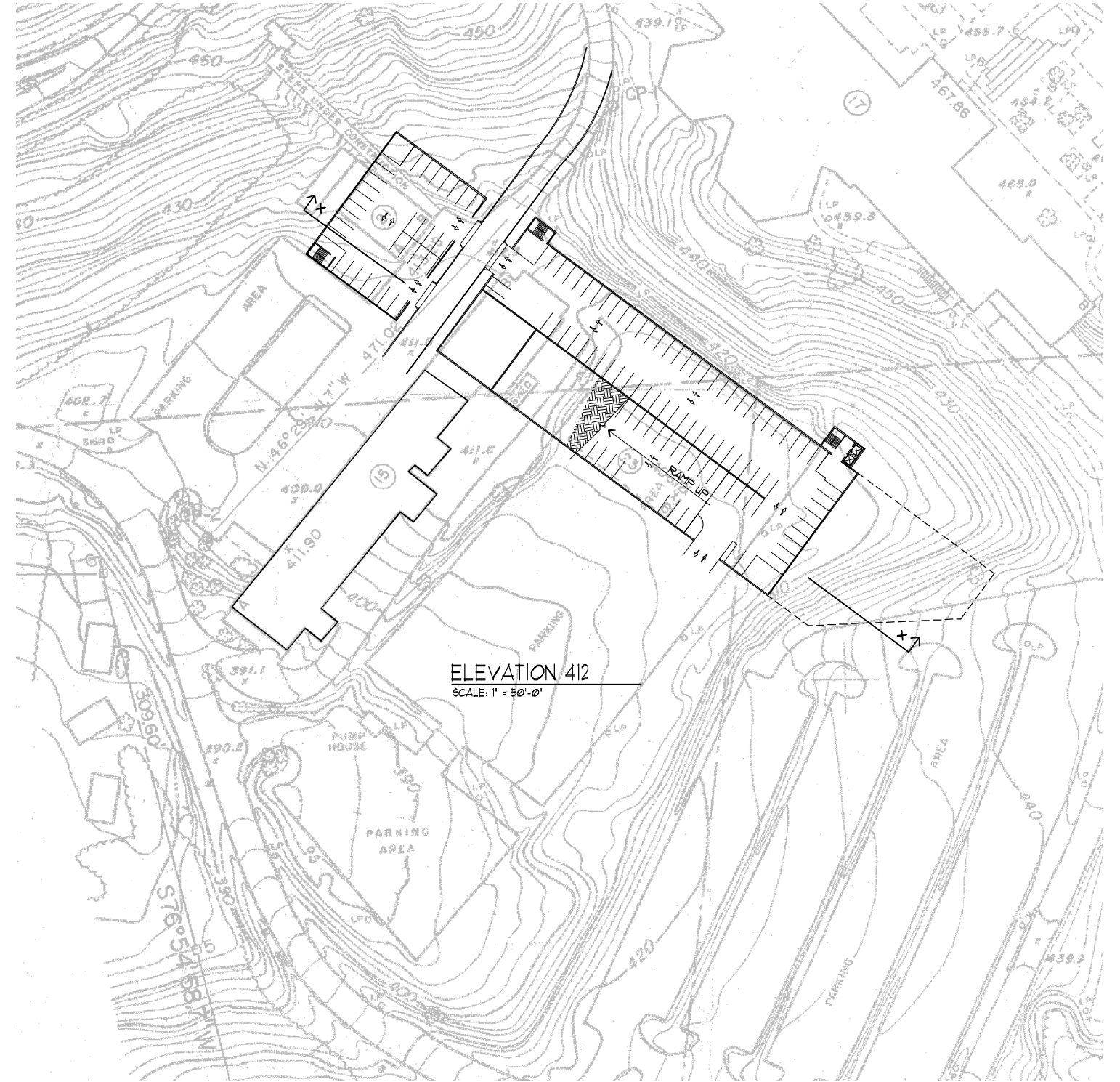
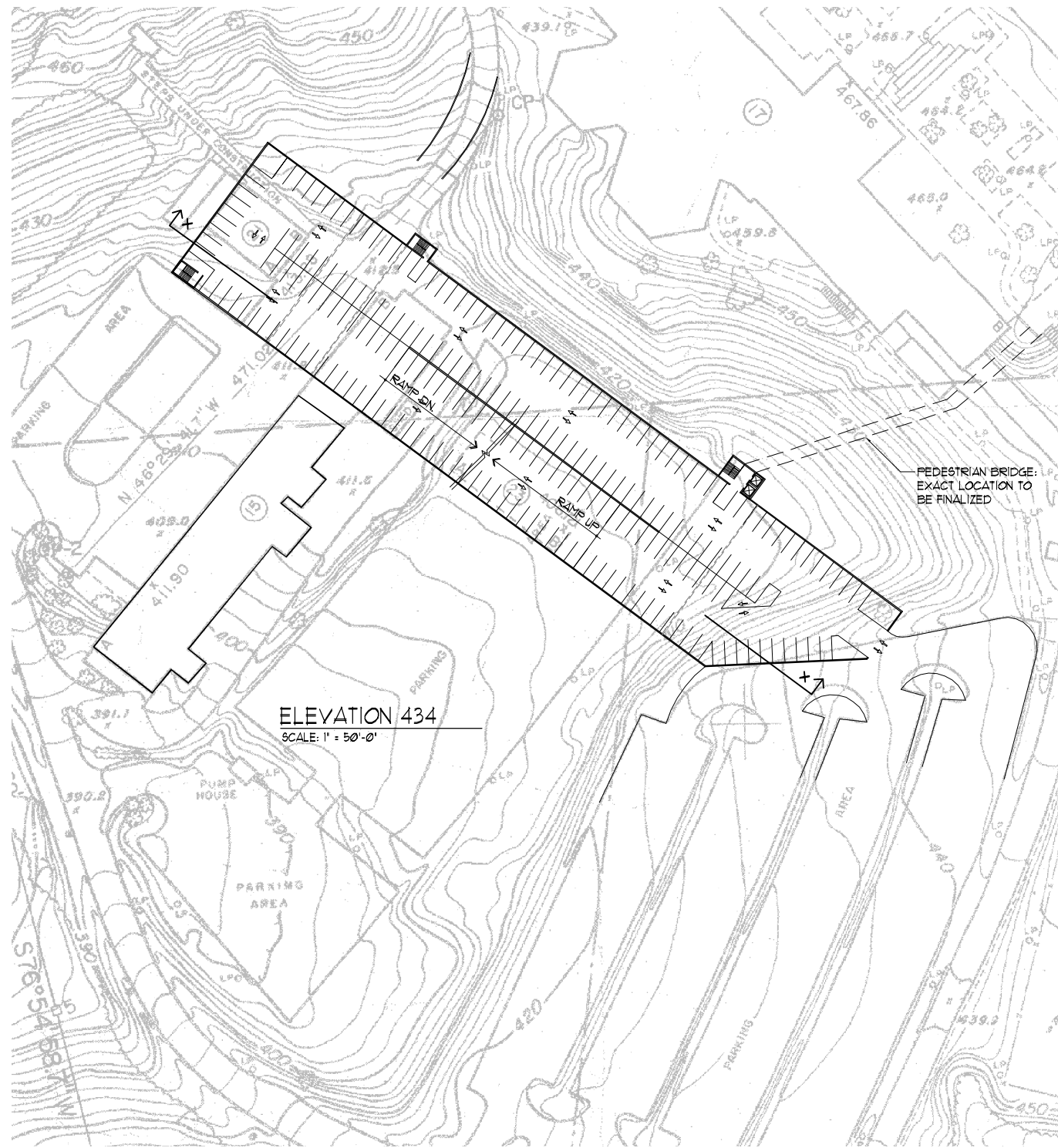
- Site #5 – Lot 5
  - Five level structure would be required for 800 added spaces.
  - Results in the loss of space during construction.
  - Highly desirable location for commuters, residents, and Student Center visitors.
  - Good vehicular access from Pompton Road and College Road,
  - Added traffic to Entry 4 may need to be mitigated.
  - Loading Dock access for Wayne Hall needs to be maintained.
  
- Site #6 – East of Morrison Hall
  - Proximity to campus destinations is questionable.
  - Existing topography creates functional and economic challenges.
  - Buildable area does not appear large enough to meet projected parking requirements.

The Parking Advisory Committee completed their review of the opportunities for each of the sites and concluded, based on the above factors, that Site #1-Lot 1, Site #2B-Lot 2 and Site #5-Lot 5 should be advanced for further planning and study. With the selection of these sites, functional design concepts and preliminary building plans were developed to further investigate and analyze each site's feasibility. Concept Design Documents including Grade, Typical and Roof Plans, were prepared to visualize the following project components:

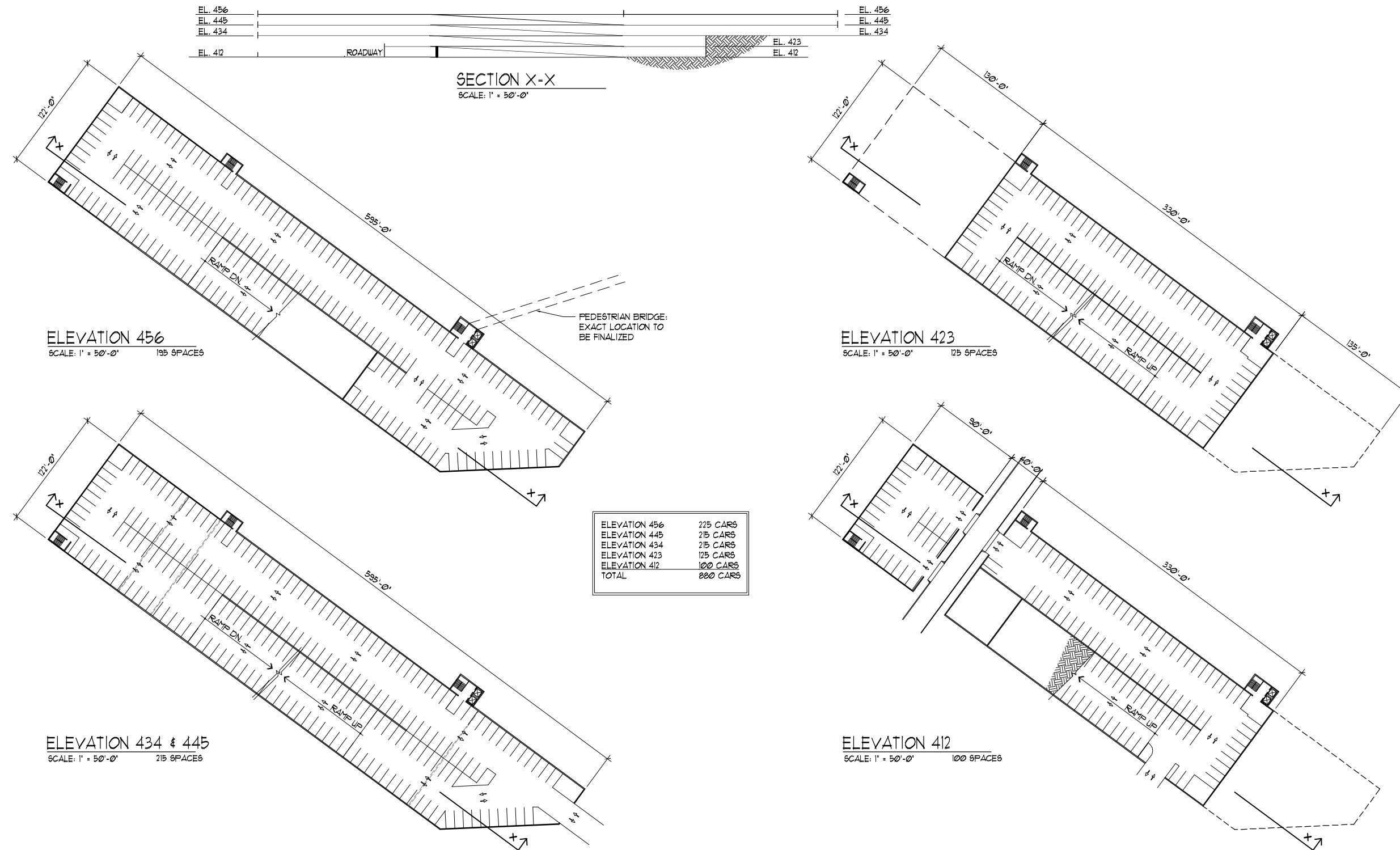
- Possible Vehicular Ingress and Egress locations.
- Ramping Methods, slopes and locations.
- Internal Traffic Flow.
- Parking Geometry, including bay widths/heights, parking angle and stall widths.
- Building Sections.
- Per floor and total parking space counts.
- Possible Stair/elevator locations and connections to the campus.

Construction budgets were also prepared for each option to assist the committee to evaluate the alternatives. Budgets were prepared on a square foot basis for the major divisions of work (i.e. earthwork, foundations, structure, elevators, architectural treatment, plumbing, electrical, etc.), using our in-house database of costs for recent similar area projects and discussions with contractors and material suppliers. The concept plans and budgets for Lot #1, Lot#2 and Lot #5 are as follows:

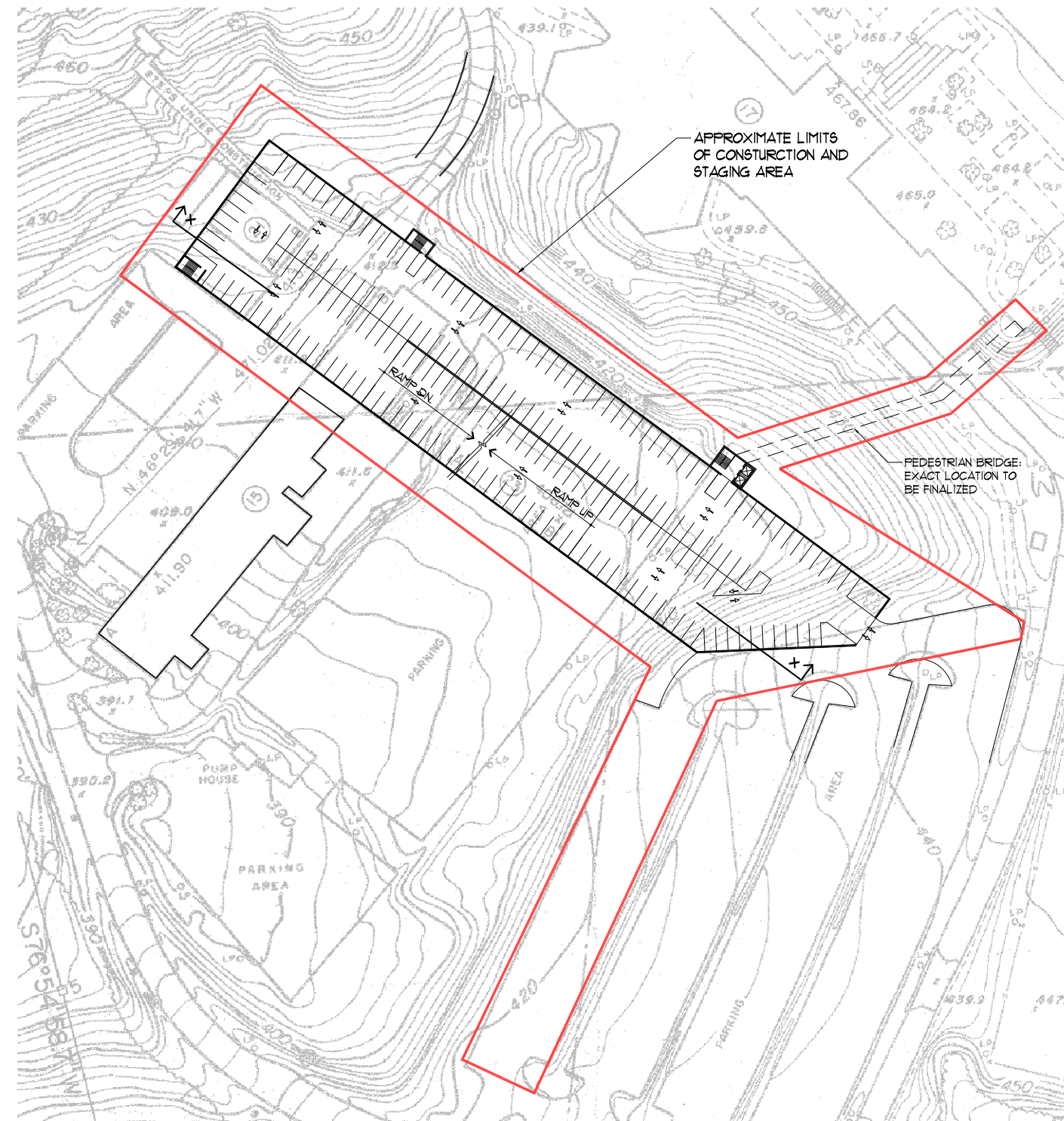
# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS

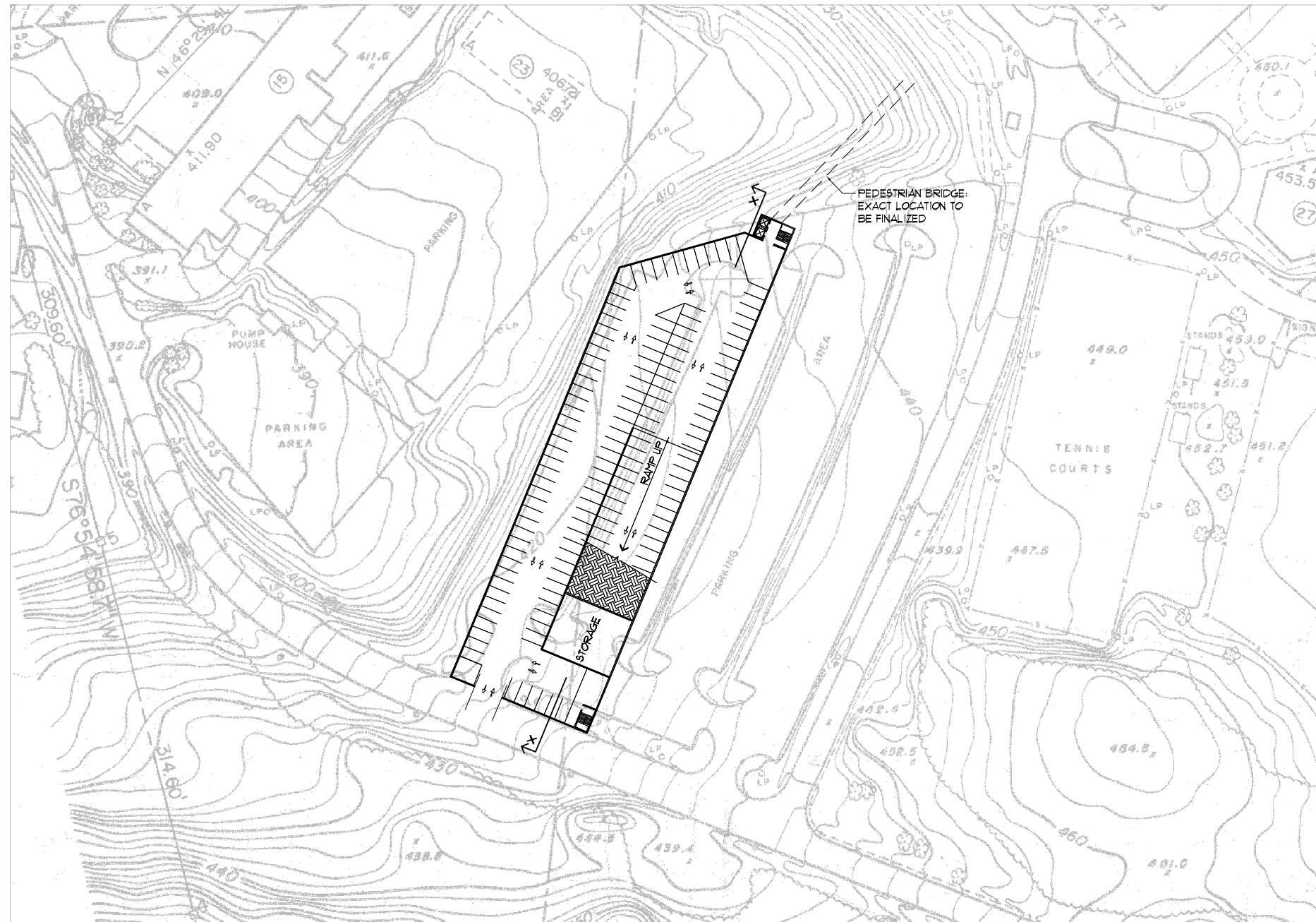




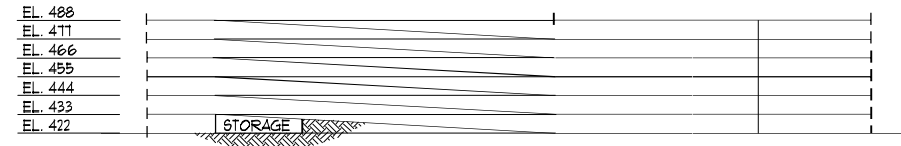
**TABLE #5**  
**LOT#1 CONCEPTUAL CONSTRUCTION BUDGET**

<b>LOT 1 CONCEPT</b>		880	Total Spaces		
		0	Existing Spaces		
		880	Net New Spaces		
<u>ITEM</u>	<u>Cost Basis</u>	<u>Item Cost</u>			
<b>Site Preparation</b>					
Clear Site	LS	\$75,000			
Building Demolition	LS	\$500,000			
Environmental Allowance	LS	\$500,000			
Remove & Relocate Existing Utilities	LS	\$500,000			
<u>Remove Existing Site Items</u>	LS	<u>\$25,000</u>			
<b>Sub-Total</b>		<b>\$1,600,000</b>			
<b>Earthwork &amp; Site Work</b>					
Erosion Control	LS	\$50,000			
Excavation & Removal	CY	\$200,000			
Utility Connections	LS	\$50,000			
<u>Landscaping Allowance</u>	LS	<u>\$150,000</u>			
<b>Sub-Total</b>		<b>\$450,000</b>			
<b>Garage</b>					
Foundations	SF	\$573,800			
Slab on Grade	SF	\$556,500			
Structure	SF	\$5,807,200			
Walls	CY	\$180,000			
Miscellaneous Masonry	SF	\$215,175			
Miscellaneous Metals	SF	\$229,520			
Carpentry	SF	\$111,891			
Waterproofing/Caulking/Sealants	SF	\$207,400			
Membrane	SF	\$105,000			
Expansion Joint	LF	\$72,000			
Utility Connections	SF	\$28,690			
Plumbing	SF	\$430,350			
Fire Protection	SF	\$430,350			
Electric	SF	\$1,147,600			
Stairs	SF	\$288,000			
Signage & Graphics	Space	\$79,200			
Passenger Elevators	Unit	\$240,000			
Access Control & Security	LS	\$150,000			
Pedestrian Bridge	LF	\$1,501,500			
Façade Allowance	LS	\$0			
			<b>PARKING GARAGE SUBTOTAL</b>	<b>\$14,404,176</b>	<b>\$12,902,676</b>
			General Conditions @ 9.0%	\$1,296,376	\$1,161,241
			Contractor Overhead & Profit @ 3.5%	\$504,146	\$451,594
			Insurance & Bond @ 3.0%	\$288,084	\$258,054
			Testing & Inspection @ 1.5%	\$216,063	\$193,540
			Contingency @ 10%	\$1,620,470	\$1,451,551
			<b>TOTAL BUDGET</b>	<b>\$18,329,314</b>	<b>\$16,418,655</b>
			<i>COST PER TOTAL SPACES</i>	<i>\$20,829</i>	<i>\$18,658</i>
			<i>COST PER NET NEW SPACE</i>	<i>\$20,829</i>	<i>\$18,658</i>
			<i>COST PER SF</i>	<i>\$64</i>	<i>\$57</i>
			<i>EFFICIENCY (square feet per parking space)</i>	<i>326</i>	<i>326</i>

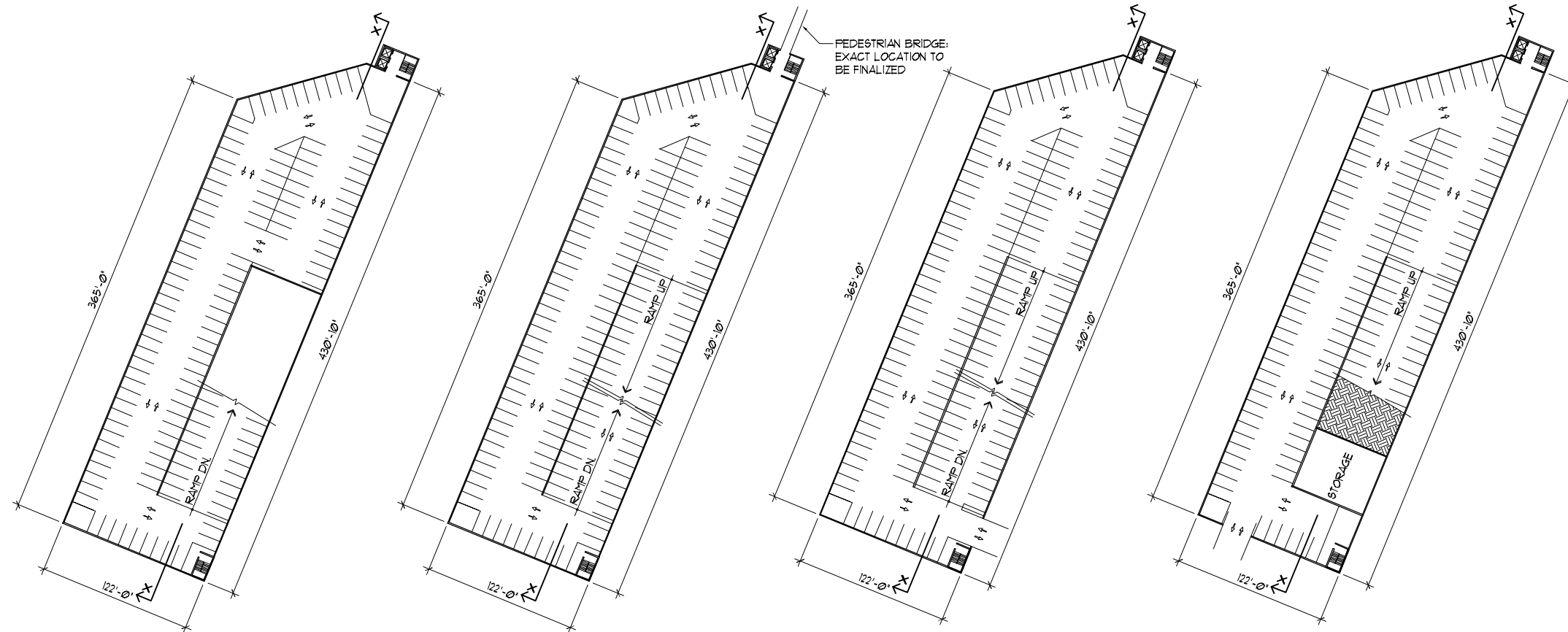
# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



ELEVATION 488	135 CARS
ELEVATION 411	160 CARS
ELEVATION 466	160 CARS
ELEVATION 455	160 CARS
ELEVATION 444	160 CARS
ELEVATION 433	155 CARS
ELEVATION 422	137 CARS
TOTAL	1060 CARS
SPACES LOST	150 CARS
NET GAIN	910 CARS



ELEVATION 488  
SCALE: 1" = 50'-0" 135 SPACES

ELEVATION 444, 455, 466 & 411  
SCALE: 1" = 50'-0" 160 SPACES

ELEVATION 433  
SCALE: 1" = 50'-0" 155 SPACES

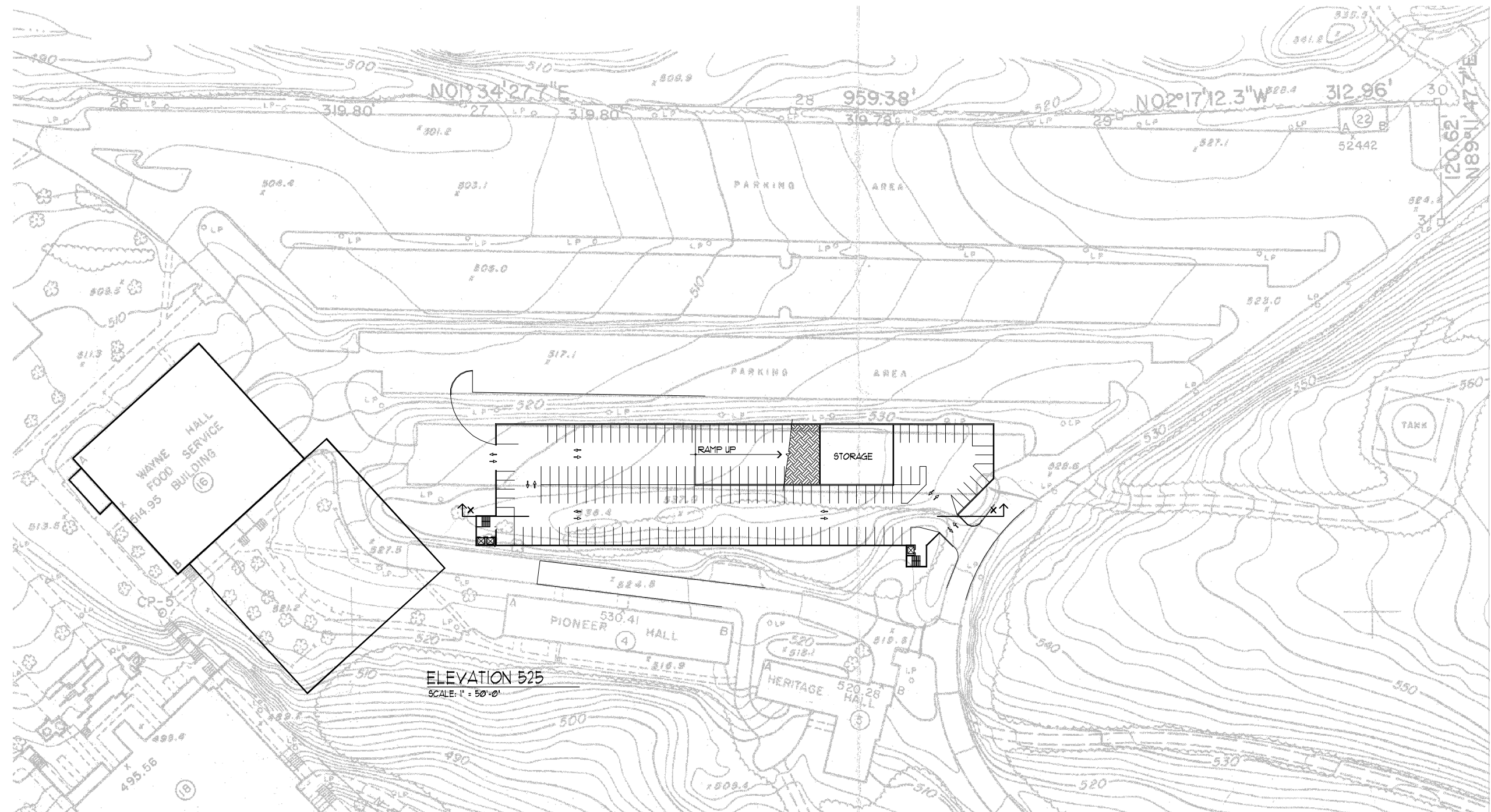
ELEVATION 422  
SCALE: 1" = 50'-0" 137 SPACES

**TABLE #6**  
**LOT#2 CONCEPTUAL CONSTRUCTION BUDGET**

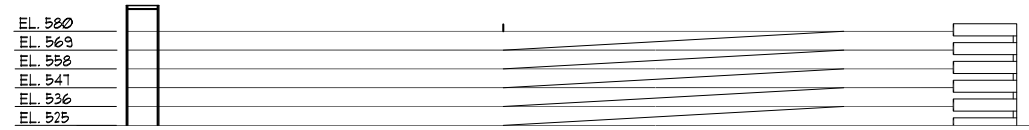
<b>LOT 2 CONCEPT</b>		1060	Total Spaces
		150	Existing Spaces
		910	Net New Spaces
<u>ITEM</u>	<u>Cost Basis</u>		<u>Item Cost</u>
<b>Site Preparation</b>			
Clear Site	LS		\$75,000
Building Demolition	LS		\$0
Remove Existing Utilities	LS		\$25,000
<u>Remove Existing Site Items</u>	LS		<u>\$25,000</u>
<b>Sub-Total</b>			<b>\$125,000</b>
<b>Earthwork &amp; Site Work</b>			
Erosion Control	LS		\$50,000
Excavation & Removal	CY		\$144,000
Utility Connections	LS		\$50,000
<u>Landscaping Allowance</u>	LS		<u>\$150,000</u>
<b>Sub-Total</b>			<b>\$394,000</b>
<b>Garage</b>			
Foundations	SF		\$655,000
Slab on Grade	SF		\$339,500
Structure	SF		\$7,812,000
Walls	CY		\$150,000
Miscellaneous Masonry	SF		\$245,625
Miscellaneous Metals	SF		\$262,000
Carpentry	SF		\$127,725
Waterproofing/Caulking/Sealants	SF		\$279,000
Membrane	SF		\$70,000
Expansion Joint	LF		\$72,000
Utility Connections	SF		\$32,750
Plumbing	SF		\$491,250
Fire Protection	SF		\$491,250
Electric	SF		\$1,310,000
Stairs	SF		\$320,000
Signage & Graphics	Space		\$95,400
Passenger Elevators	Unit		\$240,000
Access Control & Security	LS		\$150,000
Pedestrian Bridge	LF		\$1,375,000
Façade Allowance	LS		\$420,000

	<u>W/ Ped. BRIDGE</u>	<u>W/O Ped. BRIDGE</u>
<b>PARKING GARAGE SUBTOTAL</b>	<b>\$15,457,500</b>	<b>\$14,082,500</b>
General Conditions @ 9.0%	\$1,391,175	\$1,267,425
Contractor Overhead & Profit @ 3.5%	\$541,013	\$492,888
Insurance & Bond @ 3.0%	\$309,150	\$281,650
Testing & Inspection @ 1.5%	\$231,863	\$211,238
Contingency @ 10%	\$1,738,969	\$1,584,281
<b>TOTAL BUDGET</b>	<b>\$19,669,669</b>	<b>\$17,919,981</b>
<i>COST PER TOTAL SPACES</i>	<i>\$18,556</i>	<i>\$16,906</i>
<i>COST PER NET NEW SPACE</i>	<i>\$21,615</i>	<i>\$19,692</i>
<i>COST PER SF</i>	<i>\$60</i>	<i>\$55</i>
<i>EFFICIENCY (square feet per parking space)</i>	<i>309</i>	<i>309</i>

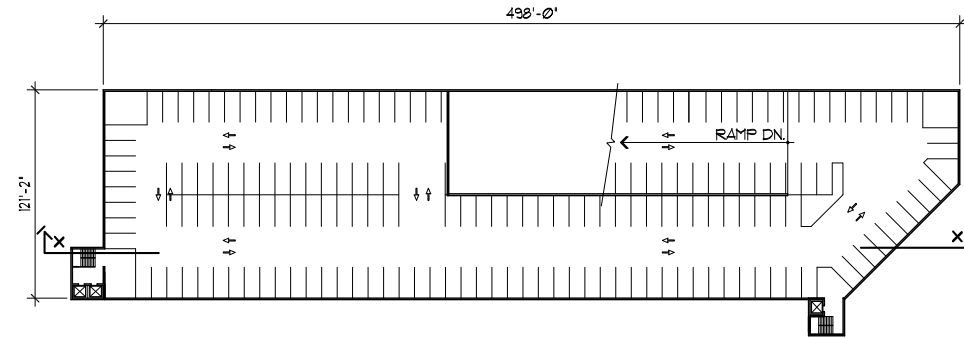
# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



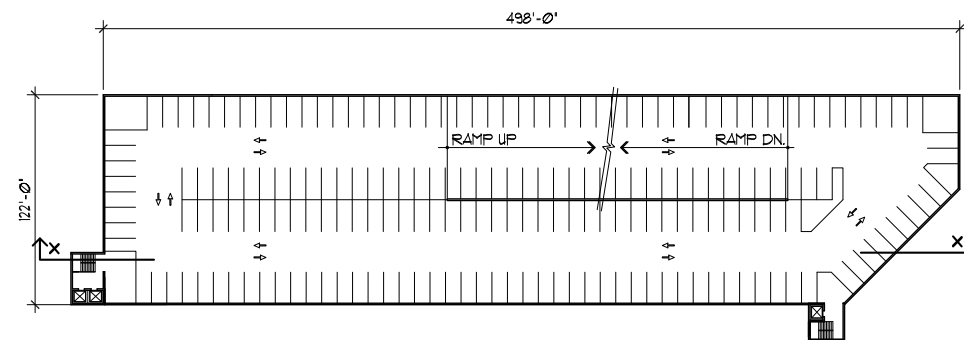
# WILLIAM PATERSON UNIVERSITY PARKING EXPANSION STUDY - SITE OPTIONS



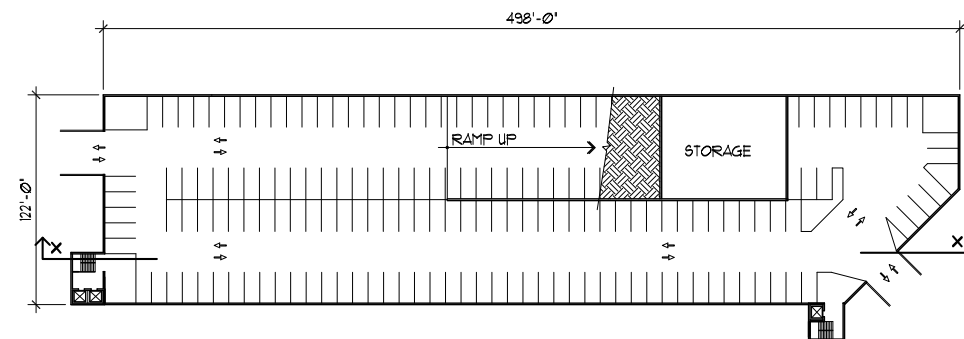
SECTION X-X  
SCALE: 1" = 50'-0"



ELEVATION 580  
SCALE: 1" = 50'-0" 110 SPACES



ELEVATION 536, 541, 558 & 569  
SCALE: 1" = 50'-0" 195 SPACES



ELEVATION 525  
SCALE: 1" = 50'-0" 165 SPACES

ELEVATION 580	110 CARS
ELEVATION 569	195 CARS
ELEVATION 558	195 CARS
ELEVATION 541	195 CARS
ELEVATION 536	195 CARS
ELEVATION 525	165 CARS
TOTAL	1115 CARS
SPACES LOST	110 CARS
NET GAIN	1005 CARS

**TABLE #7**  
**LOT#5 CONCEPTUAL CONSTRUCTION BUDGET**

<b>LOT 5 CONCEPT</b>	1115	Total Spaces
	<u>110</u>	Existing Spaces
	1005	Net New Spaces

<u>ITEM</u>	<u>Cost Basis</u>	<u>Item Cost</u>
<b>Site Preparation</b>		
Clear Site	LS	\$75,000
Building Demolition	LS	\$0
Remove Existing Utilities	LS	\$25,000
<u>Remove Existing Site Items</u>	LS	<u>\$25,000</u>
<b>Sub-Total</b>		<b>\$125,000</b>
<b>Earthwork &amp; Site Work</b>		
Erosion Control	LS	\$50,000
Excavation & Removal	CY	\$320,000
Utility Connections	LS	\$50,000
<u>Landscaping Allowance</u>	LS	<u>\$150,000</u>
<b>Sub-Total</b>		<b>\$570,000</b>
<b>Garage</b>		
Foundations	SF	\$715,800
Slab on Grade	SF	\$420,000
Structure	SF	\$8,341,200
Walls	CY	\$300,000
Miscellaneous Masonry	SF	\$268,425
Miscellaneous Metals	SF	\$286,320
Carpentry	SF	\$139,581
Waterproofing/Caulking/Sealants	SF	\$297,900
Membrane	SF	\$70,000
Expansion Joint	LF	\$72,000
Utility Connections	SF	\$35,790
Plumbing	SF	\$536,850
Fire Protection	SF	\$536,850
Electric	SF	\$1,431,600
Stairs	SF	\$256,000
Signage & Graphics	Space	\$100,350
Passenger Elevators	Unit	\$360,000
Access Control & Security	LS	\$150,000
Pedestrian Bridge	LF	\$0
Façade Allowance	LS	\$450,000
Occupied Area Core & Shell	SF	\$0

<b>PARKING GARAGE SUBTOTAL</b>	<b>\$15,463,666</b>
General Conditions @ 9.0%	\$1,391,730
Contractor Overhead & Profit @ 3.5%	\$541,228
Insurance & Bond @ 3.0%	\$309,273
Testing & Inspection @ 1.5%	\$231,955
Contingency @ 10%	\$1,739,662
<b>TOTAL BUDGET</b>	<b>\$19,677,515</b>

<i>COST PER TOTAL SPACES</i>	<i>\$17,648</i>
<i>COST PER NET NEW SPACE</i>	<i>\$19,580</i>
<i>COST PER SF</i>	<i>\$55</i>
<i>EFFICIENCY (square feet per parking space)</i>	<i>321</i>

The concept designs were presented to the Parking Advisory Committee to discuss the pros and cons of the alternatives. Baseline costs, parking efficiencies, siting, floor plans and potential traffic and pedestrian circulation was presented and discussed. General observations of the concepts are summarized below.

- Lot 1
  - Vehicular access to this garage option would be gained through Lots 1 and 2.
  - Access road to Student Center is maintained.
  - Sections of PPO operations: storeroom, salt shed, switchgear, old boiler plant would need to be demolished as part of this solution.
  - Little to no impact on existing parking capacity.
  - Pedestrian bridges would be needed for communication to the campus.
- Lot 2
  - This location has best proximity to athletic facilities.
  - In order to achieve projected parking demands this solution requires one additional level.
  - Vehicular access to this garage option would be gained directly from the campus loop road and Lot 2.
  - Pedestrian bridges are desirable for communication to the campus.
  - Interim loss of 130 spaces during construction.
  - This location is furthest from the primary campus destinations.
- Lot 5
  - This is the largest alternative with at 358,000 gross square feet (GSF) and 1,025 spaces.
  - Access to this facility will increase traffic to and from Entry 4 requiring further analysis and study of potential impacts and mitigation.
  - Vehicular entry and exit appears feasible from two locations which will improve internal circulation and may define user ground access.
  - Proximity to the Residence Halls is a concern and privacy issues will need to be addressed.
  - The Speert Hall loading dock should not be affected.
  - Interim loss of 110 spaces during construction.
  - NJ Transit Bus circulation may be impacted and/or re-routed.



A site evaluation matrix was developed including advantages and disadvantages as measured by identified criteria and summarized in the matrix. A simple rating system of 1 to 3 was incorporated to prioritize the three advanced parking sites to assist the Committee in evaluating the options. Each committee member independently completed the matrix and the results were tabulated by DESMAN for presentation to the Committee. The following table illustrates the tabulated results from the Committee's completion of the matrix.

**TABLE #8**  
**Parking Garage Site Alternatives Matrix**

	<u>Lot 1</u> 880 Spaces 880 Net New Spaces	<u>Lot 2</u> 1060 Spaces 910 Net New Spaces	<u>Lot 5</u> 1115 Spaces 1005 Net New Spaces	<i>Definitions:</i>
1- Sizing/Capacity	2.0	1.0	3.0	3 having the largest capacity and 1 having the lowest capacity.
2- Net Increase in Parking	2.1	1.0	2.9	3 having the highest net increase and 1 having the lowest.
3- Parking Efficiency	1.9	1.6	2.3	3 representing best efficiency in terms of sf per parking space and 1 being least efficient.
4- Expansion Capability	1.9	1.9	2.0	3 representing best opportunity for expansion
5- Mixed Use Potential	2.1	1.5	1.9	3 representing best opportunity for alternate uses and 1 offering worst opportunity. .
6- Ability to Accommodate Different Parkers	2.1	1.5	2.0	3 allowing greatest flexibility to accommodate different parkers and 1 having least flexibility.
7- Access from Roadway Network	1.8	1.5	2.0	3 providing most direct connections to external roadway and 1 having least direct.
8- Campus Traffic Flow	2.1	2.1	2.5	3 minimizing conflict points and 1 having greatest potential for conflict.
9- Pedestrian Connections to Buildings	2.1	1.4	2.5	3 providing most direct unencumbered pedestrian route and 1 the least.
10- Aesthetic Integration into Campus	2.8	1.4	1.5	3 allowing easiest integration and 1 having the potential greatest impact.
11- Compliance with Master Plan	2.5	1.8	1.8	3 adhering to master plan and 1 being least compliant.
12- Impacts During Construction	2.6	1.9	1.4	3 having the slightest impact and 1 having the greatest.
13- Economics/Construction Costs	2.1	1.6	2.0	3 providing the potential for the least cost per space and 1 having the greatest cost per space.
<b>TOTAL</b>	<b>28.1</b>	<b>20.2</b>	<b>27.8</b>	

As can be seen from the matrix, the conceptual parking improvement developed for Lot 1 has ranked the highest, followed closely by the proposal for Lot 5. The parking improvements preliminarily developed for Lot 2 received a significantly lower ranking than both Lot 1 and Lot 5. Based on the evaluation of the six parking improvement sites and conceptual planning that was advanced for parking structures on Lots 1, 2 and 5, the Parking Sub Committee reached a consensus on recommending Lot 1 for further consideration, planning and financial analyses. The advantages that the Lot 1 program offered in terms of connections to external roadways, vehicular access and egress within the campus, aesthetic integration on the campus and minimizing the impact on parking capacity during construction were some of the factors that resulted in this recommendation.

The results of the campus planning and preliminary design concepts were independently presented to other stakeholder groups by the Vice President of Administration and Finance to solicit feedback and comments. Presentations were made to the Student Government Association Leadership, Finance, Audit and Institutional Advancement Committee, and University Cabinet. A consensus for Lot 1 was voiced by all three groups.

#### **SECTION 4.0 – FINANCIAL ANALYSIS**

Utilizing Concept Design Drawings and the developed construction budget using 2011 dollars, a financial analysis was performed for the Lot 1 program to assist the University in investigating funding and development requirements and options. Project costs, including soft costs and associated fees were investigated for two financing options. The first scenario was prepared assuming the University funds the project through the New Jersey Educational Facilities Authority, or another like bonding agency, as a traditional tax-exempt capital improvement project. The second scenario forecasted the project costs and funding requirements if the University entered into a Public Private Partnership (P3), whereby private investment funds would be used to finance the development and construction costs. For the purpose of this report, the P3 alternative that is presented is only one of many variations that could have applicability for this project. This exercise is presented to allow the University to understand possible variations in the cost and annual expenses if the project is funded using traditional tax-exempt bonding or private investment. This presentation is qualitative only and final funding requirements cannot be forecasted until the design is advanced and additional site, environmental and geotechnical surveys are completed.

Assumptions for the University funding scenario, using state tax-exempt bonding sources, were as follows:

**UNIVERSITY FUNDED ANALYSIS**

1. PROPOSED PROJECT – LOT 1 IMPROVEMENT:
  - 880-space Parking Deck.
  - 5 level facility.
  - Contract and hourly parking.
  - No other uses/occupied areas are planned as part of the project.
  - Revenue control system will require pre-payment.
2. Estimated parking garage construction schedule: *20 months*
3. Estimated Professional Architectural & Engineering Design Fees: *8.5% of construction costs*
4. Estimated Fees for University Project/Construction Manager: *1.8% of construction costs*
5. No land costs are included as part of the financing for this project.
6. The parking garage will be tax-exempt financed through the New Jersey Educational Facilities Authority, or another like bonding agency, with a 25-year term.
7. University does not plan any capital contribution to the construction of the parking deck to reduce the required Bond proceeds.
8. No other sharing of the construction of the parking garage with other funding/financing opportunities to reduce the Bond amount has been used.
9. Estimated Tax Exempt Interest Rate: *5.25%*
10. Assumed level debt payment for term of bond.
11. Estimated Bond Costs of Issuance/Insurance and Underwriters Discount: *5.0% of construction costs*
12. Project Budget includes an allowance of \$350,000 for traffic improvements.

Assumptions for the privately funding scenario, whereby the University would have a lease agreement, or some other arrangement for payment to the private partnership, are presented below. The University would effectively make annual payments to the private investment entity for the term of the loan, at which time the improvement would revert back to the University. For the purpose of this presentation of costs, it is assumed that even though private investment would be used to secure financing for the project, neither the local or county jurisdictions would impose real estate taxes on the improvement.

#### **PUBLIC-PRIVATE-PARTNERSHIP FUNDED ANALYSIS**

##### 1. PROPOSED PROJECT – LOT 1 IMPROVEMENT:

- 880-space Parking Deck.
- 5 level facility.
- Contract and hourly parking.
- No other uses/occupied areas are planned as part of the project.
- Revenue control system will require pre-payment.

2. Estimated parking garage construction schedule: *16 months*

3. Estimated Professional Architectural & Engineering Design Fees: *8.5% of construction costs*

4. Development Fees: *5.0% of construction costs*

5. Return on Investment (ROI) : *10% of project costs*

6. Take out term on ROI: *7 years*

7. No land costs are included as part of the financing for this project.

8. The parking garage will be financed through private investment, with part or all of the project costs funded or secured by a commercial loan. Loan term would be 20 years.

9. University does not plan any capital contribution to the construction of the parking deck to reduce payment requirements.

10. No other sharing of the construction of the parking garage with other funding/financing opportunities to reduce the project costs has not been used.

11. Estimated Taxable Interest Rate: 6.50%
12. Estimated Legal & Closing Costs: 2.00% of construction costs
13. Project Budget includes an allowance of \$350,000 for traffic improvements.

The following table illustrates preliminary capital project costs and annual debt service payments associated with the planned parking improvements on Lot 1, incorporating the abovementioned financial assumptions. The two scenarios were forecasted based on the construction budgets that were prepared in terms of 2011 dollars. As can be seen, the total cost to the University would be slightly higher under a P3 taxable financing arrangement, but the debt would be retired in 20 years as opposed to the University funded tax-exempt option of 25 years.

Additionally the University will have additional costs in terms of design professionals under the P3 delivery. These costs generally come from the University financing the preliminary engineering studies and surveys, environmental studies, geotechnical surveys, traffic surveys and the architectural fees to develop and define the program to a 25-30% design effort. Traditionally these costs are non-recoverable in a P3 financing and delivery and are funded by the owner. We have included a cost of \$400,000 for these services.

**TABLE #9  
CAPITAL COST & DEBT SERVICE**

**UNIVERSITY FUNDED**

<u>Item</u>	<u>Budget</u>
Parking Deck Construction Budget (based on 2011 dollars-see Budget)	\$ 18,300,000
Project Design Fees (8.5% Construction Cost)	\$ 1,555,500
Project/Construction Manager Fees (1.8% Construction Cost)	\$ 329,400
Traffic Improvements	\$ 350,000
<b>Total Project / Construction Costs</b>	<b>\$ 20,534,900</b>
Bond Costs of Issuance / Insurance (5% of Project Cost)	\$ 1,026,745
<b>Total Project / Construction Costs, Fees for Financing</b>	<b>\$ 21,561,645</b>
<b>Total Amount to be Financed</b>	<b>\$ 21,561,645</b>
Financing Period in years	25
Interest Rate	5.25%
<b>Annual Debt Service, Level Payment</b>	<b>\$ 1,568,408</b>
<b>TOTAL REPAYMENT AMOUNT (Principal &amp; Interest)</b>	<b>\$ 39,210,206</b>

**PRIVATELY FUNDED**

<u>Item</u>	<u>Budget</u>
Parking Deck Construction Budget (based on 2011 dollars-see Budget)	\$ 18,300,000
Private Industry Savings (4% Construction Cost)	\$ (732,000)
Project Design Fees (7.5% Construction Cost)	\$ 1,317,600
University Cost to prepare Design/Build RFP Documents	\$ 400,000
Developer Fees (5% Construction Cost)	\$ 944,280
Traffic Improvements	\$ 350,000
<b>Total Project / Construction Costs</b>	<b>\$ 20,579,880</b>
Legal & Closing Costs (2% of Project Cost)	\$ 411,598
<b>Total Project / Construction Costs, Fees for Financing</b>	<b>\$ 20,991,478</b>
<b>Total Amount to be Financed</b>	<b>\$ 20,991,478</b>
Financing Period in years	20
Interest Rate	6.50%
<b>Annual Debt Service, Level Payment</b>	<b>\$ 1,905,111</b>
Developer Return on Investment (10% of Total Project Cost)	\$ 2,099,148
Take out Period on ROI (7 years)	
<b>Annual Cost to University - Years 1-7</b>	<b>\$ 2,204,989</b>
<b>Annual Cost to University - Years 8-20</b>	<b>\$ 1,905,111</b>
<b>Average Cost for Term</b>	<b>\$ 2,010,068</b>
<b>TOTAL REPAYMENT AMOUNT (Principal &amp; Interest)</b>	<b>\$ 40,201,365</b>

In addition to the annual debt service for the capital cost, the introduction of a new parking facility on the campus will increase the operational budget for the University to account for added staffing to manage and oversee the garage and costs associated with utility demands, supplies, equipment and maintenance. Operating and maintenance expenses for the proposed Lot 1 facility have been derived based on industry-accepted operating line-item budgets, University supplied information and our experience with similar facilities.

Based on our research and analyses, we estimate for the first full year of operation that the operating budget for a project consistent with the concept plans developed for Lot 1 will be approximately \$299,000 with a maintenance budget of \$110,000, which includes a reserve for structural maintenance of \$44,000. These numbers have been derived from the following estimated line item budget.

**TABLE #10  
OPERATING & MAINTENANCE BUDGET**

<u>STAFFING</u>	
<u>ANNUAL LABOR COSTS</u>	
New Employee	1 @ \$65,000 per year = \$65,000.00
New Employee	1 @ \$45,000 per year = \$45,000.00

<u>OPERATING BUDGET</u>	
<u>ITEM</u>	<u>YEARLY EXPENSE</u>
Salary & Wages - BASE	\$110,000.00
Salary & Wages - OVERTIME (@ 5% of Base)	\$5,500.00
<b>TOTAL SALARY &amp; WAGES</b>	<b>\$115,500.00</b>
<b>TOTAL BENEFITS &amp; INSURANCE @ 35%</b>	<b>\$40,425.00</b>
Payroll Taxes	
FICA @ 7.65%	\$8,835.75
SUI/SDI @ 1.15%	\$1,328.25
<b>TOTAL TAXES</b>	<b>\$10,164.00</b>
<b>TOTAL SALARY, WAGES, BENEFITS &amp; TAXES</b>	<b>\$166,089.00</b>
INSURANCE	\$10,000.00
UTILITIES ( @ \$115/space)	\$101,200.00
EQUIPMENT ( @ \$10/space)	\$8,800.00
SUPPLIES & MISC. (@ \$15/space)	\$13,200.00
<b>TOTAL OPERATING BUDGET</b>	<b>\$299,289.00</b>

<u>MAINTENANCE BUDGET</u>	
<u>ITEM</u>	<u>YEARLY EXPENSE</u>
GENERAL MAINTENANCE ( @ \$30.00/space)	\$26,400.00
ELEVATOR SERVICE CONTRACT	\$25,000.00
PARC SERVICE CONTRACT	\$15,000.00
STRUCTURAL RESERVE FUND (\$50.00/space)	\$44,000.00
<b>TOTAL MAINTENANCE BUDGET</b>	<b>\$110,400.00</b>
<b>OPERATING &amp; MAINTENANCE BUDGET</b>	<b>\$409,689.00</b>
<b>O &amp; M PER SPACE</b>	<b>\$463</b>

Based on our research and analyses, we have presented estimated costs and operating expenses for the construction of a 900-space parking facility on Lot 1 of WPU's campus. One scenario was prepared assuming the University funds the project as a traditional tax-exempt capital improvement project. The second scenario forecasted the project costs and funding requirements if the University entered into a Public Private Partnership (P3), whereby private taxable investment funds would be used to finance the development and construction costs.

For the purpose of these analyses, we assumed that WPU would maintain the responsibility of operating and maintaining the parking facility, thus resulting in a neutral cost comparison for either delivery method. We estimate that the University's cost to operate and maintain a new 900-space parking facility similar to the concept plans that have been prepared for Lot 1, would be approximately \$410,000 during the first full year it is opened. The operating costs and expenses are expected to escalate on an annual basis.

Our analyses for a University bonded tax-exempt capital improvement suggest an annual debt service payment of approximately \$1.558 million using a 25-year term. Under a Public Private Partnership (P3) delivery, whereby private taxable investment funds are used to finance the project and construction costs, the annual lease or loan payment by the University would be approximately \$2.204 million in the first 7 years, assuming a takeout period for the return on investment, reducing to approximately \$1.905 million in years 8 to 20. Thus, the University should expect an additional expense of approximately \$2,000,000 to \$2,500,000 per year to design, construct, operate and maintain a 900-space parking facility on the campus on Lot 1. The \$500,000 variation is attributed to the options in funding and delivery method.