

Carnegie Mellon



C A M P U S P L A N

As approved by the
Pittsburgh City Council
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1 CAMPUS MASTER PLAN SUMMARY

Over the last three years a new Campus Master Plan has been prepared for Carnegie Mellon University. The Plan provides a framework for campus growth over the next 20-plus years by creating sites for new buildings while enhancing the overall quality and character of the campus.

Rationale

During Carnegie Mellon's first 100 years several master plans were developed for the campus. The most recent plan, developed in 1987, included a major re-work of the eastern and central portions of the campus, including a new stadium, new residence halls, the University Center and the Purnell Center for the Arts. It is notable that the 1987 Master Plan is completely built out, a rare occurrence among university master plans. With its completion, however, university leaders recognize that there is more to do. A number of projects are underway or on the drawing boards. The West Campus and the Morewood site wait to be integrated into the fabric of the original campus. There are numerous opportunities for open space improvements. And, we are challenged to find ways to make Forbes Avenue compliment the campus, rather than dividing it with its high-speed traffic along narrow sidewalks.

These are compelling reasons for a new campus master plan as Carnegie Mellon begins its second century. Building on the momentum of the last master plan we can continue to make this a truly great campus, one that is equal to the national and international reputation of Carnegie Mellon.

Goals of the Planning Process

- Stewardship of resources: best use of the 110-acre core of the campus
- Attract and retain students, faculty and staff by improving the quality and aesthetics of the campus
- Establish a plan for future development to be used by trustees, donors, city officials, students, faculty and staff
- Reach consensus on issues of importance to the future of the campus

Key Components of the Plan

- Establish a sound plan for building out the campus over the next 20-plus years in support of Carnegie Mellon's mission
- Enhance the quality of campus open space
- Create sites for new academic, research and residential buildings
- Define better campus entrances on Forbes and other portals
- Develop the West Campus and Morewood precincts effectively
- Improve the character of Forbes Avenue
- Improve parking and transportation systems





Process

The core of the planning process focused on engaging the university community in crafting a plan for the future of Carnegie Mellon. Town meetings were widely advertised and dozens of meetings were held with students, faculty and staff as well as neighbors in Oakland and Squirrel Hill and the City of Pittsburgh.

Summer 1999

- Formation of the Campus Master Plan Steering Committee
- Goals of the planning process established
- Steps set out for an inclusive process that would draw on the creativity of the Carnegie Mellon community

Fall 1999

- Selection of the firm of Ayers/Saint/Gross as planning consultants
- Inventory and assessment (interviews, data collection)
- Town meetings

Winter 2000

- Identification of critical issues
- Revision of campus planning principles
- Development of the key concepts of the plan
- Town Meetings

Spring 2000

- Master plan development
- Town meetings
- Preliminary report to board of trustees

Summer/Fall 2000

- Feedback from reviewers

2001-2002

- Traffic and parking studies
- Evaluation of narrowing Forbes Ave.
- Implementation plan
- Proposed formation of a Transportation Management Office
- Submission to Planning Commission and Pittsburgh City Council

2 CARNEGIE MELLON VISION AND MISSION

The fundamental purpose for master planning is to ensure that the campus supports the mission of Carnegie Mellon, which is to create and disseminate knowledge.

Following is a summary of Carnegie Mellon's strategic plan. It leaves no doubt that Carnegie Mellon is a preeminent institution of higher education with a significant interest in the prosperity of the Pittsburgh region. Though it does not specifically address campus space and facilities, it reflects the desire to develop and refine the physical campus in support of our vision and mission.

Vision:

Carnegie Mellon aspires to be a leader among educational institutions by building on its traditions of innovation, problem solving and interdisciplinary collaboration to meet the changing needs of society.

This vision acknowledges that higher education will be challenged to meet the needs of society in the 21st century. Carnegie Mellon must be positioned to accept this challenge and responsibility so that we can continue to lead advances in educational and technological innovation, scientific discovery, creative expression and artistic production by fostering an atmosphere of intellectual excitement, innovation and entrepreneurship.

To exploit our comparative advantages and to identify opportunities for fruitful collaboration beyond our boundaries, we remain committed to interdisciplinary research and education, not only within and across academic fields, departments, schools and colleges, but also across institutional, national and cultural boundaries. We shall continue to focus our attention and resources where we can achieve excellence and comparative advantage in achieving our mission.



**Mission:**

To create and disseminate knowledge and art through research and artistic expression, teaching and learning; and to transfer intellectual products to society.

To serve our students by teaching them problem-solving, leadership and teamwork skills, and the value of a commitment to quality, ethical behavior, society and respect for one another.

To pursue the advantages provided by a diverse and relatively small university community, open to the exchange of ideas, where discovery, creativity, and personal and professional development can flourish.

Carnegie Mellon will continue to develop as a distinctive research university, one in which research and education are integral. Our faculty share with one another and with their students the excitement of creative inquiry, discovery and expression. However, we are interested not only in theory and practice, but also in production, or making - for example, making devices and processes, art, hardware and software, new management tools and literary works.

To fully achieve our goals, we cannot limit our focus to internal concerns. We must also nurture a concern for the welfare of others and a commitment to improve the world. Through our education, research and creative expression, the university relates to an unusual extent to the world beyond our campus. Our activities have impact by creating knowledge, improving the quality of life, enhancing culture, and advancing economic and environmental sustainability.

Our research-based graduate programs aim to develop future leaders for academe, industry and government. Doctoral education represents an essential component of our mission as a research university and of our contribution to society. The development of Ph.D. students is as important as the research products themselves.

The development of problem-solving skills within a liberal-professional framework is a hallmark of a Carnegie Mellon education. Our undergraduate programs prepare our students to become accomplished professionals who are broadly educated, independent and humane leaders. A Carnegie Mellon education challenges students to create intellectual depth and breadth, as well as professional skills. We must provide a social environment that reinforces academic objectives and the personal development of students.

A diverse academic environment is essential to enrich intellectual exchanges and to enhance cultural understanding. Likewise, it is important for the diversity of our community to reflect our regional, national and global constituencies. We must be more successful than we have been in realizing and nurturing a diverse community.

3 INSTITUTIONAL NEEDS

Three categories of institutional needs are addressed by the Carnegie Mellon master plan:

Quality of life for students, faculty, staff and visitors.

- More residence halls and special interest housing for students
- Improved fraternity housing
- Continue to develop and enhance space and facilities in support of teaching and learning
- More recreation area and campus open/green space
- Better facilities for receiving visitors (admissions, alumni, career center...)
- Combined childcare and children's school
- Support function office space

Facilities that support the University's teaching and research missions

- New research and teaching lab facilities
- Life sciences building(s)
- Computer science building
- Entertainment Technology Center
- Expanded Engineering & Science Library

Linkages to the local and regional economic development

- Panther Hollow Building
- Improved connections to Craig Street retail area
- Campus neighborhood and regional quality of life improvements through enhanced transportation management



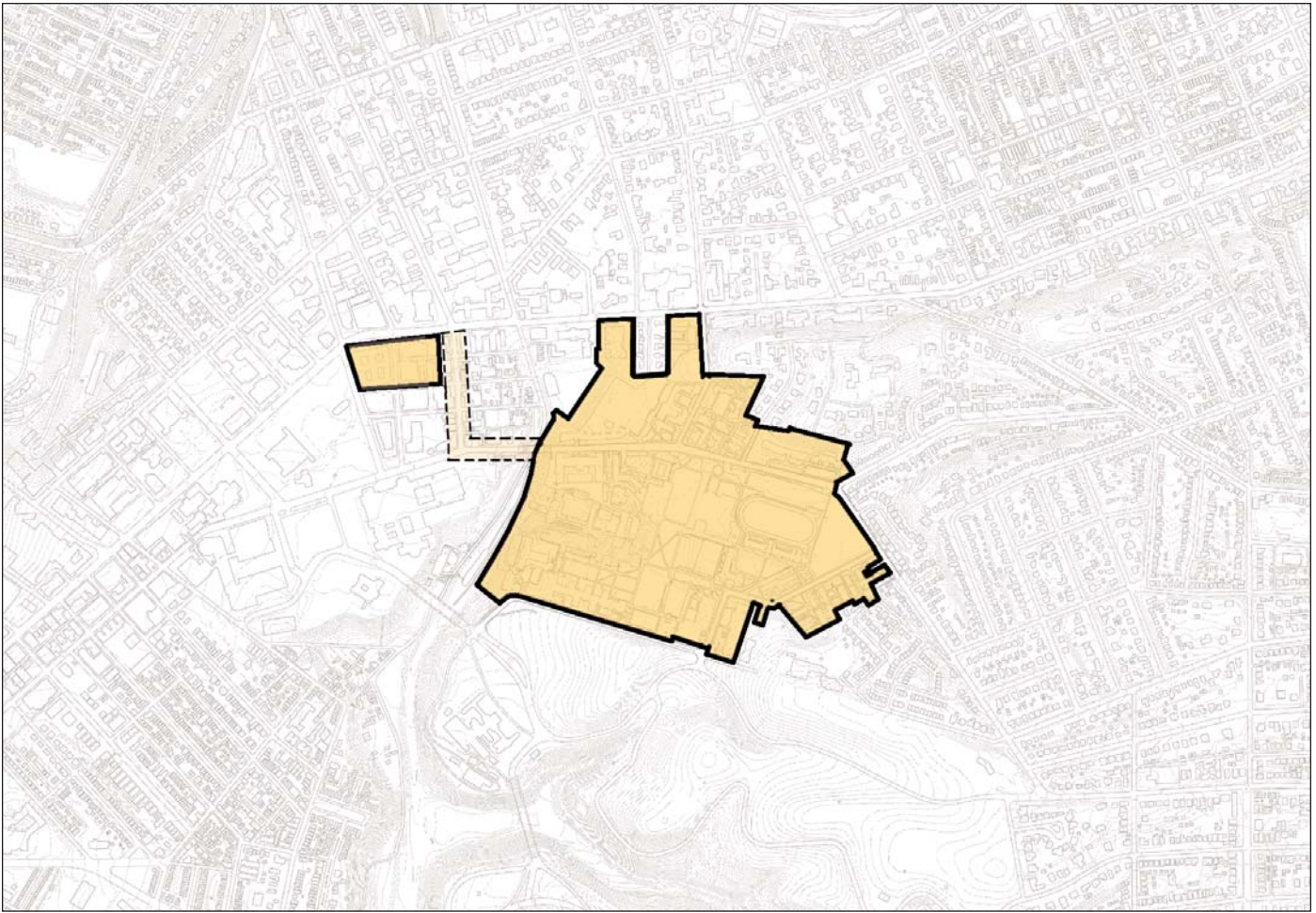
Neighborhood Linkages

4 THE CAMPUS PLAN

4.1 The Carnegie Mellon Planning Area

The core of the Carnegie Mellon campus occupies a contiguous area of 110 acres from Frew Street on the south --spanning Forbes Avenue-- to Fifth Avenue on the North; and from Margaret Morrison and Tech Streets on the east and Junction Hollow on the west. The planning area also includes the linkages (but not the actual buildings) to several important parts of the campus that are not in the 110-acre core: The Software Engineering Institute

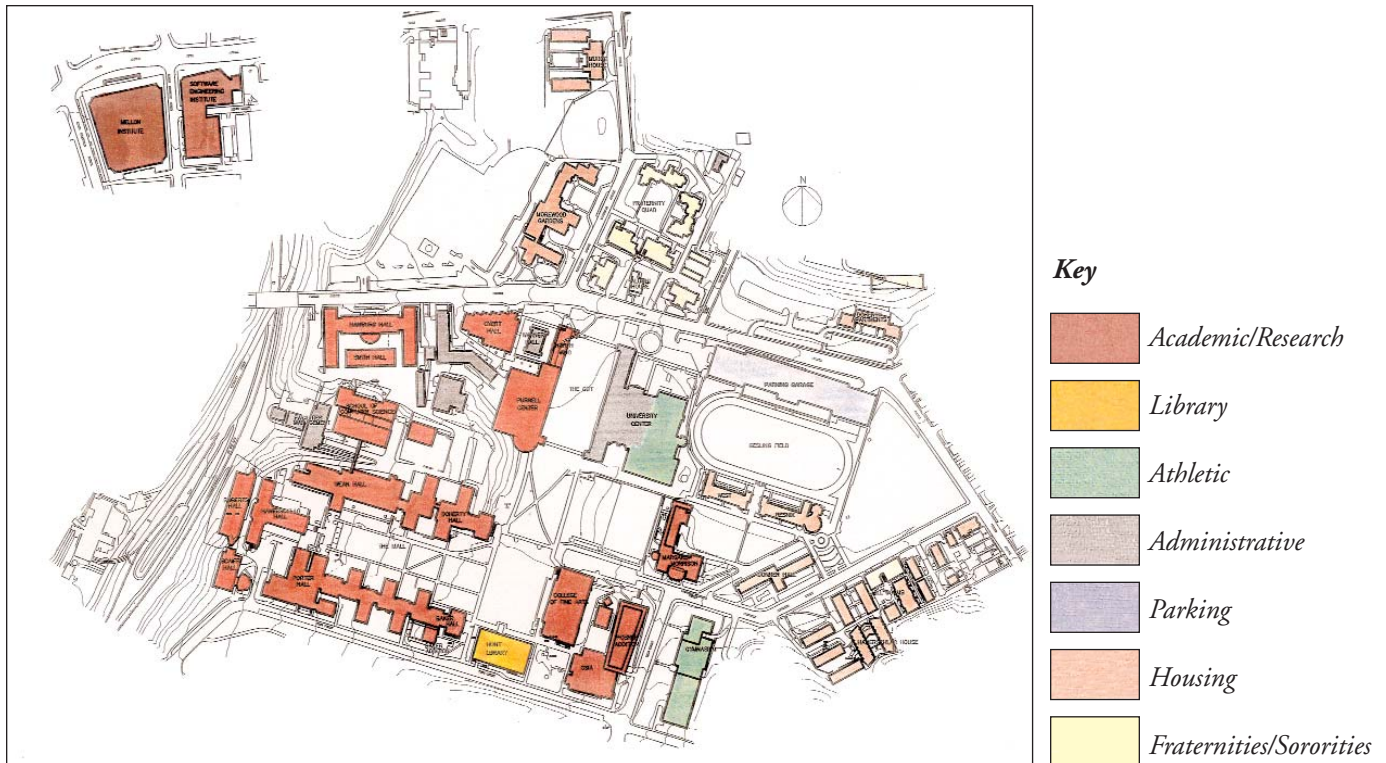
(long-term lease from RIDC) and Mellon Institute on Fifth Avenue, Pittsburgh Technology Center on Second Avenue and several buildings on Craig Street. Other notable Carnegie Mellon facilities that were not specifically addressed in this planning process include The National Robotics Engineering Consortium in Lawrenceville (leased from RIDC) and the University Receiving and Stores facility on Penn Ave.



Carnegie Mellon Land Holdings within Pittsburgh

Key

-  *Planning Area*
-  *Area of Additional Consideration*



Building Use

4.2 Existing Property & Uses

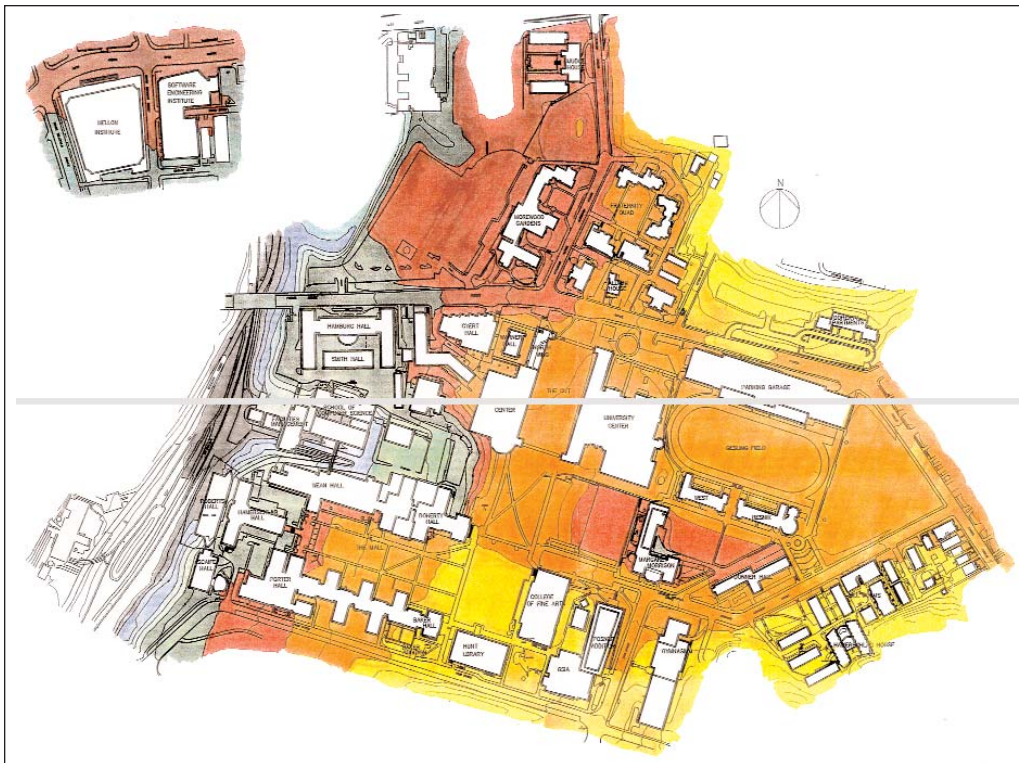
Building Coverage:

Carnegie Mellon owns 81 buildings in the Oakland and Squirrel Hill neighborhoods. Of these, 61 are in the core campus included in this plan. See attached plan of existing campus. See Appendix 5 for the list of Campus Buildings and Facilities.

Parking:

Carnegie Mellon has nearly 2,300 parking spaces in or adjacent to the master plan planning area and another 160 spaces at remote locations (PTC and Penn Ave.) There are 920 spaces in two garages (East Campus and Dithridge Street) and 1,370 surface spaces. Of these spaces 2,100 are used by permit holders, 150 are CMU-owned metered spaces and 50 are designated for visitors.

	Total	Meters	Dedicated Visitor Spaces
<i>In the Planning Area</i>			
4902 Forbes	11	1	
Bramer House	17		
Doherty Apartments	120		
East Campus Garage	602	80	46
Fine Arts	60		
Fraternities	73		
Hamburg Hall	66	19	
Junction Hollow	11	2	
Morewood	733	20	
Porter/Wean	62	9	
Purnell Center	29		
Sorority	29		
Warner Hall	16		
West Campus	69		
SUBTOTAL	1,898	131	46
<i>Adjacent to the Planning Area</i>			
Clyde Street	20		
Dithridge/SEI	322		
Whitfield Hall	44	16	
SUBTOTAL	386	16	-
<i>Remote Locations</i>			
6555 Penn Ave.	50	5	
Pgh Tech Center	110		
SUBTOTAL	160	5	-
TOTAL	2,444	152	46

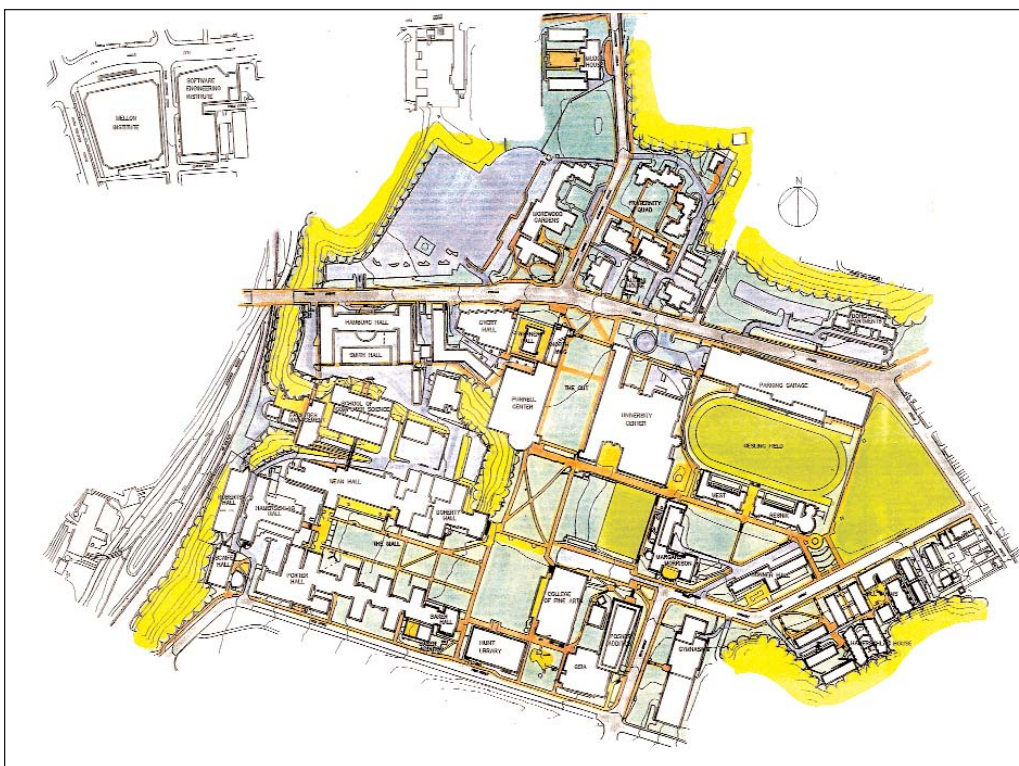


Key

Elevation, in feet

	840 - 860
	860 - 880
	880 - 900
	900 - 920
	940 - 960
	960 - 980
	980 - 1000

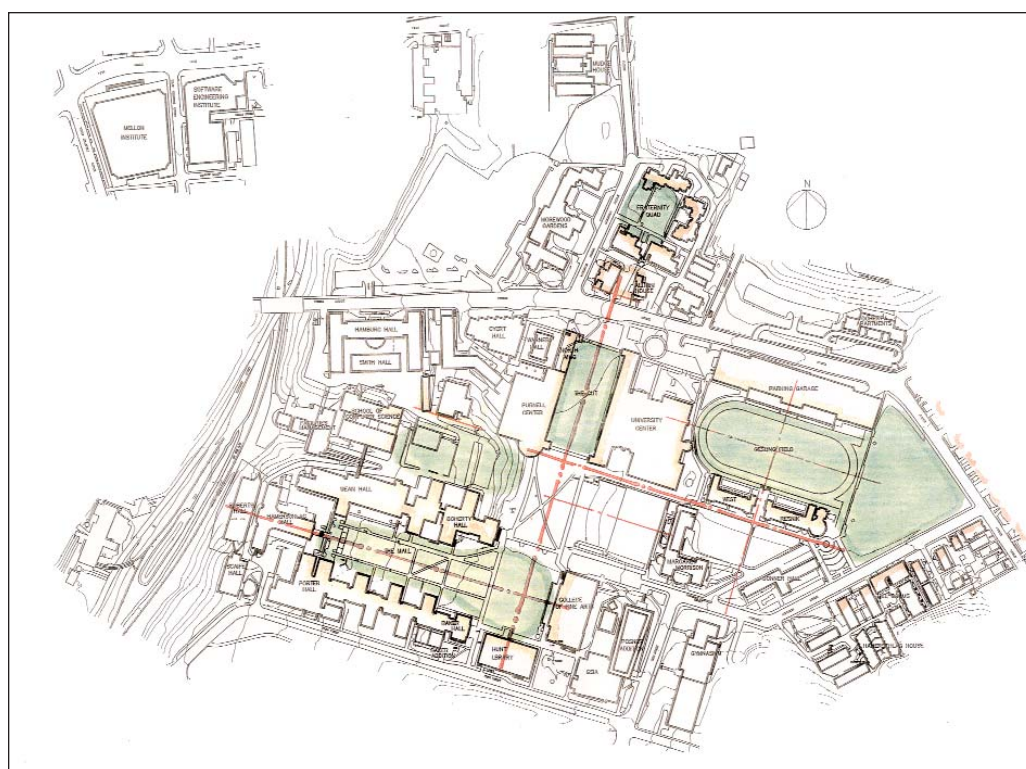
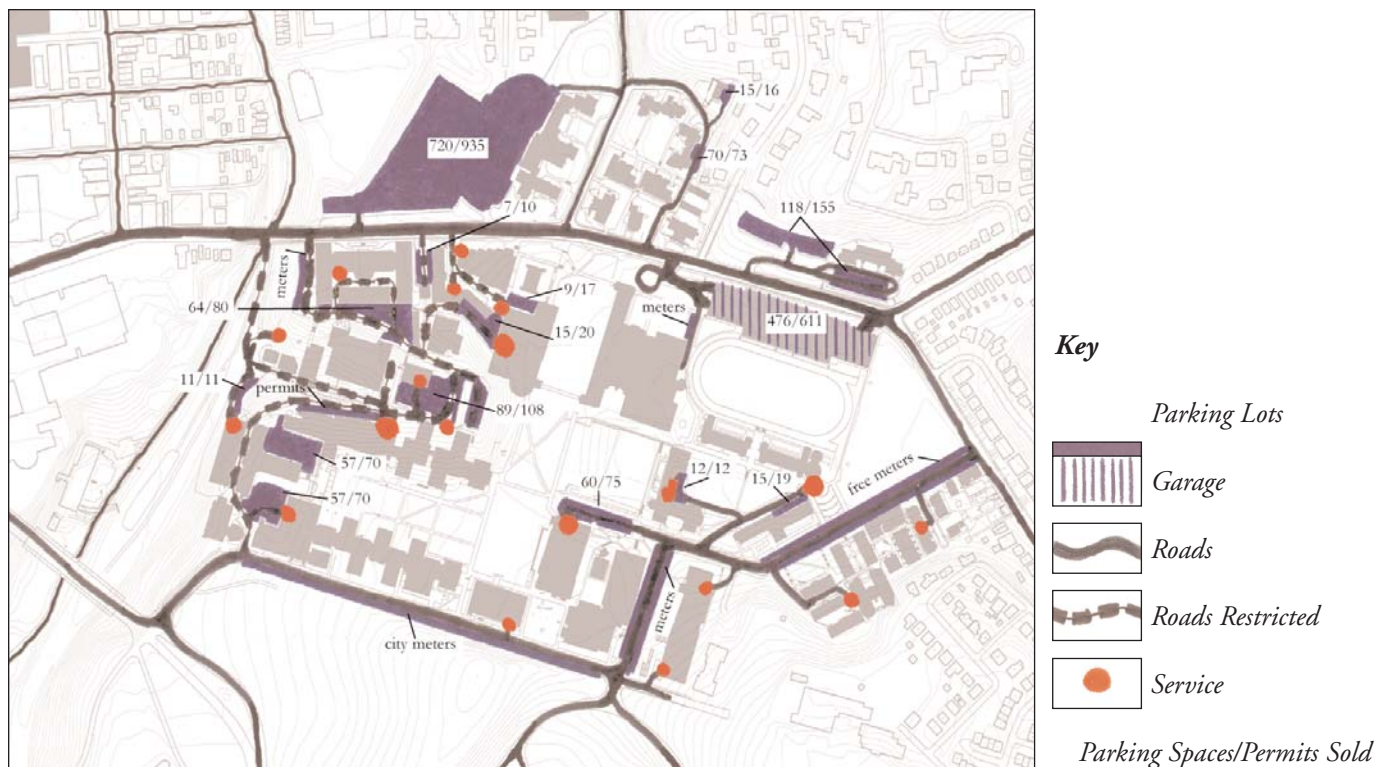
Topography



Key

	Green Space
	Natural Slope
	Athletic Space
	Plaza/Terrace
	City Street
	Campus Road
	Surface Parking
	Walkway
	Railroad

Open Space





4.3 Campus Plan by Precincts

North of Forbes Ave:

The plan for the Morewood lot includes academic buildings across from Hamburg Hall, a large athletic field, parking beneath the buildings and recreation field, and a new building near WQED that could serve as housing or administrative space. The lot between Mudge and Morewood is already under construction for a new 259-bed undergraduate dorm that received a conditional use permit from the City in September 2001. The Fraternity quad would be re-worked with some of the houses remaining and others being razed and replaced. The plan would result in the same number of fraternity houses that exist today (12), but they will be configured around three well-defined campus greens. Adjacent to the fraternity area, the plan calls for a large, significant building on the corner of Forbes and Morewood across from the Cut. This building might be the place for visitor-intensive services such as Admissions, Career Services, the Alumni Office and possibly other student supports and senior administration. Near the Doherty apartments, there are sites for more housing, if more is needed, and this could include a 70-car parking structure beneath the housing.

East Campus:

The plan includes new housing to replace the old houses on the Roselawn site and on the corner of Margaret Morrison and Forbes Ave. An addition is shown for Margaret Morrison Carnegie Hall with a new, small recreation field between MMCH and Donner with a

parking garage beneath the field. Possible façade improvements for Donner Hall will be considered. Another level is proposed for the parking garage on Forbes Avenue, adding capacity for 220 more spaces without modifying the façade of the garage on Forbes Avenue.

South Campus:

One new building -- a combined gallery and conference facility beneath a garden-- is planned in the oldest portion of the campus. This will be located on the site of the Studio Theatre, the function of which was relocated to the Purnell Center. In addition to this, the plan calls for creating an entrance into the Schenley Park across Frew Street from the walk that extends from Forbes to Frew. Several surface parking lots near CFA and Scaife Hall will be converted to pedestrian garden parks. A long-awaited open space improvement is called for on the Hornbostel Mall with the replanting of the row of trees on the north side of the mall.

Central Campus:

This area was largely reworked in the 1987 plan with the new University Center and the Purnell Center for the Performing Arts. The completion of the Purnell loggia in front of, and attaching to, Warner Hall is planned with the possible alternative of razing Warner and Cyert Halls and replacing them with a much improved academic or administrative building as part of the final extension of the west loggia. Just to the west of Purnell, on the site of the current printing building and the former Naval Reserve, a new academic/research building is planned.

West Campus:

Here is a big opportunity to green the campus. Now the area is a tangle of parking, roads and pedestrians. The plan calls for removing the parking next to and behind Hamburg Hall and between Smith Hall and Newell-Simon Hall. All of this would be trees, lawn and walkways. There would be limited vehicle access to accommodate service and emergency vehicles. A careful analysis by our traffic consultant concluded that we could eliminate almost all of the traffic that comes and goes from Forbes Ave. The area between the Cut and Newell-Simon would be a new green, perhaps with a fountain or water sculpture. This would be on top of a one- or two-level parking garage that would replace several unattractive surface lots currently in that area. To the west of the Facilities Management Building, a new building is called for to house the emerging opportunities for collaborative research with industry partners. This building would include parking for 288 cars.



Precincts Diagram

Forbes Avenue:

This has long been seen as a problem... having a busy road running through campus. Currently, the street is wide and the sidewalks are very narrow making it less than ideal for pedestrians, especially in wet or slushy conditions when passing busses and cars spray pedestrians. The plan calls for narrowing the street to three lanes through most of the campus, allowing for wider the sidewalks, more trees and slowing traffic to the posted 25 mph. This will also create more of an identity for Carnegie Mellon; people would not drive through and not know that they are on a campus. A traffic analysis was conducted and concluded that narrowing Forbes is feasible without a detrimental effect on traffic passing through the campus. Rebuilding the road is an ambitious project, one that will involve working further with the City of Pittsburgh and the State of Pennsylvania.

Related to the issue of enhancing the identity of Carnegie Mellon, the plan calls for improving all of the portals to the campus, on Forbes at the east and west ends of campus, at Morewood near Fifth Ave, and on Frew near GSIA and Scaife Hall.



The Campus Neighborhood:

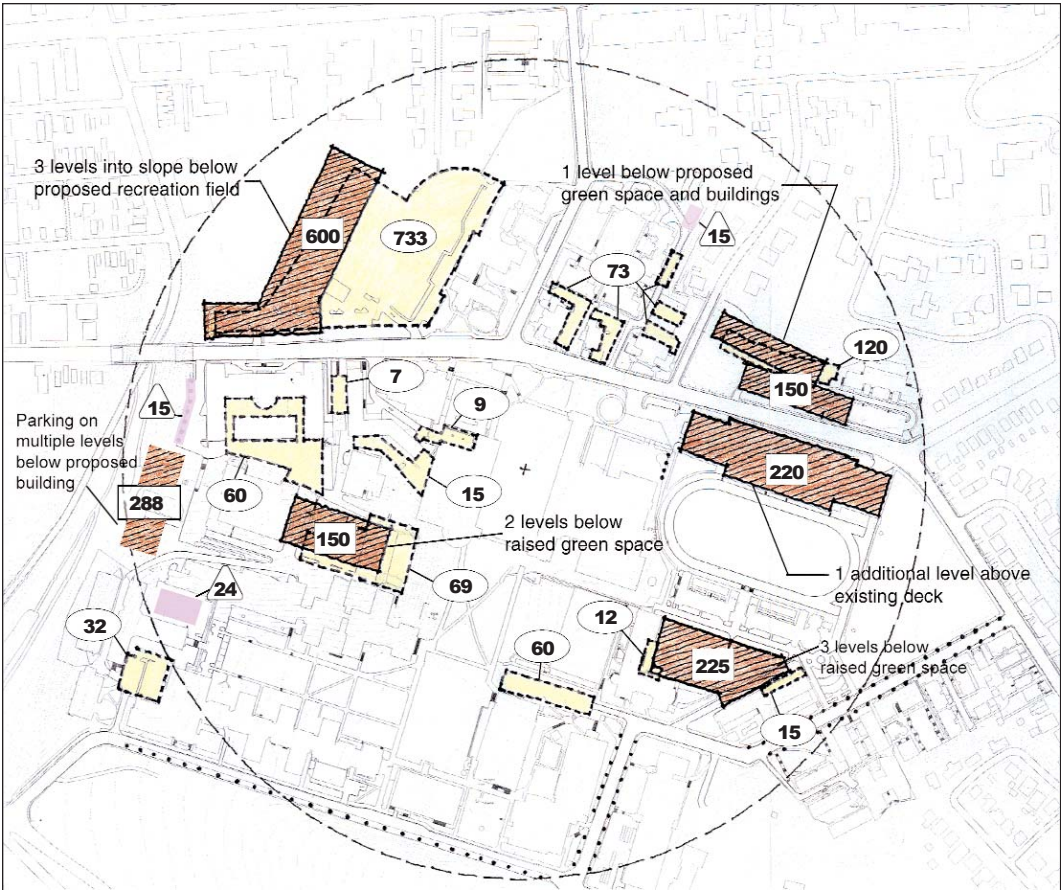
Looking beyond Carnegie Mellon-owned space, the plan suggests collaboration with our neighbors, especially the merchants on Craig Street and the Carnegie Institute. One can envision more of a mini-Harvard Square atmosphere in the Forbes/Craig area... more of the college town quality for which Craig Street has long had potential.

Campus Parking:

As noted above, there are over 2,400 parking spaces on the campus today. The plan calls for replacing surface spaces with structured parking on slightly more than a one-to-one ratio with the exception of an additional 280+/- spaces proposed in the Panther Hollow Building in the West Campus. Replacing surface lots with parking structures provides sites for new buildings, sports fields or general open/green spaces. The plan maintains a number of spaces close to each building to accommodate people with limited mobility. See the illustration of parking areas before and after the plan.

In summary, the key elements of the plan address the following critical issues:

- Image & pedestrian quality of the campus, including green, open space
- The overall build-out capacity of the campus
- Critical Precincts: West Campus, Morewood Site and the Fraternity Quad
- Forbes Avenue
- Collaboration with neighbors
- Improved parking and transportation management



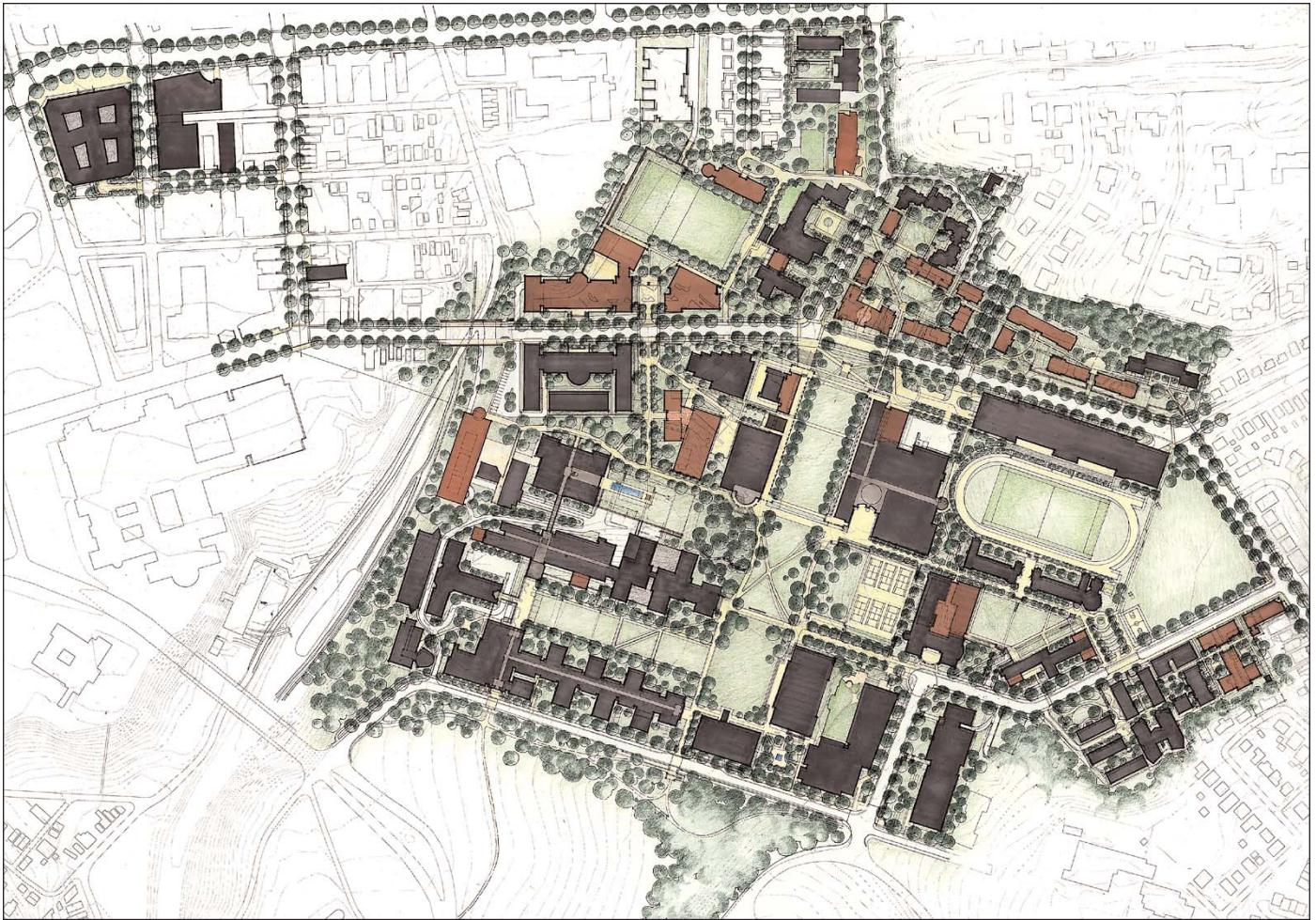
Key

-  *Proposed Spaces in New Plan*
-  *Existing Surface to be Relocated*
-  *Existing Surface Spaces to Remain*

Total Spaces on Carnegie Mellon Campus 2,444

Total Spaces Relocated 1,205
Total Spaces in Proposed Decks . . . 1,633
Net Increase in Parking 428

Parking Diagram



Final Plan - Ten Year

5 TEN-YEAR GROWTH/DEVELOPMENT PLAN

When President Jared Cohon set out the charge to develop a new campus master plan, he did so with particular awareness that there are only a few sites left in the core campus for future development. With this in mind, a central goal of the plan is to identify a rational build-out of the core campus that will ensure the highest and best use of these remaining sites. As such, the timing for developing some elements of the plan is not specified. Rather, development of such sites will depend on the evolution of needs, opportunities and the strategic direction of the university. The plan thus sets out the envelope for future development that can be understood by the campus community, City Planning and the Planning Commission, and neighbors of the campus.

Note that with the completion of this master plan, the university has decided to move forward with a more finely detailed area plan for the section of the campus north of Forbes Avenue - all within the context of the new master plan. The firm of Ayers/Saint/Gross will carry out this study in 2002.

Following are descriptions of all buildings and open space improvements in the plan. Building height and areas (gross square feet) include all occupied floors above and below grade. It is possible, but not likely that all of these will be built in the next ten years.



Ten-Year Development Plan - Proposed Buildings

North of Forbes Precinct

1. Undergraduate Dorm on Morewood Avenue

Location: Parcel on the west side of Morewood Avenue between Mudge Hall (corner of 5th and Morewood) and Morewood Hall (corner of Forbes and Morewood).

Description: Undergraduate dormitory building with 259 beds and related social rooms.

Maximum Floor Area: 72,000 GSF

Maximum Height: Five stories plus a mechanical penthouse with a maximum height of 85 feet.

Setback: 50' in front and 110' in the back.

Other: Conditional Use Approval received September 2001

2. Academic/Research Building on Forbes Avenue

<i>Location:</i>	Forbes Avenue across from Hamburg Hall. Current site of Morewood parking lot.
<i>Description:</i>	Academic/research building
<i>Maximum Floor Area:</i>	175,000 GSF
<i>Maximum Height:</i>	Four stories (max of 65') plus mechanical penthouse
<i>Setback:</i>	Forbes - Approximately 30' from street right-of-way (similar to that of center section of Hamburg Hall directly south across Forbes) with occasional projections to within 5' of right-of-way. Provide a continuous area for sidewalks and street trees.

3. Parking Garage beneath Academic Research Building

<i>Location:</i>	Forbes Avenue on current site of Morewood lot
<i>Description:</i>	Three-level garage beneath building and soccer field with 600 spaces. Also included in the garage will be the Campus Security Office.
<i>Maximum Floor Area:</i>	290,000 GSF
<i>Maximum Height:</i>	Below grade

4. Academic/Research Building on Forbes Avenue

<i>Location:</i>	Forbes Avenue across from Cyert Hall. Current site of Morewood parking lot.
<i>Description:</i>	Academic/research building
<i>Maximum Floor Area:</i>	70,000 GSF
<i>Maximum Height:</i>	Four stories (max of 65') plus mechanical penthouse
<i>Setback:</i>	Forbes - Approximately 30' from street right-of-way with occasional projections to within 5' of right-of-way. Provide a continuous area for sidewalks and street trees.

5. Soccer Field

<i>Location:</i>	Back section of what is currently the Morewood parking lot.
<i>Description:</i>	Practice soccer field, partially above a parking garage.

6. Housing or Administrative Building

<i>Location:</i>	North side of the current Morewood parking lot
<i>Description:</i>	Building could serve as residential facility in a number of forms such as a dorm or suite complex. Alternatively, the building could be used for administrative and support functions. In either of these schemes, it would be possible to locate campus childcare and the University Children's School in a shared facility in this building.
<i>Maximum Floor Area:</i>	40,000 GSF
<i>Maximum Height:</i>	Four stories (max of 50') plus mechanical penthouse. (Three stories / 40' max for pavilion at west end of building - represented as octagon in plan)
<i>Setback:</i>	15' side yard setback on Devonshire Other building edges are internal to the campus and are located to create alignments with adjacent campus buildings to better define outdoor spaces and paths.

7. Addition for Social Space on Morewood Gardens

<i>Location:</i>	Between the original Morewood Gardens and the newer Morewood E-Tower.
<i>Description:</i>	Renovation or replacement of link between two buildings for social space in student housing facility.
<i>Maximum Floor Area:</i>	6,000 GSF (net increase of 3,000 GSF)
<i>Maximum Height:</i>	Two stories plus mechanical penthouse
<i>Setback:</i>	Existing setbacks maintained (new or renovated construction on same general footprint of existing link between buildings).

8. Administrative / Visitor Services Building

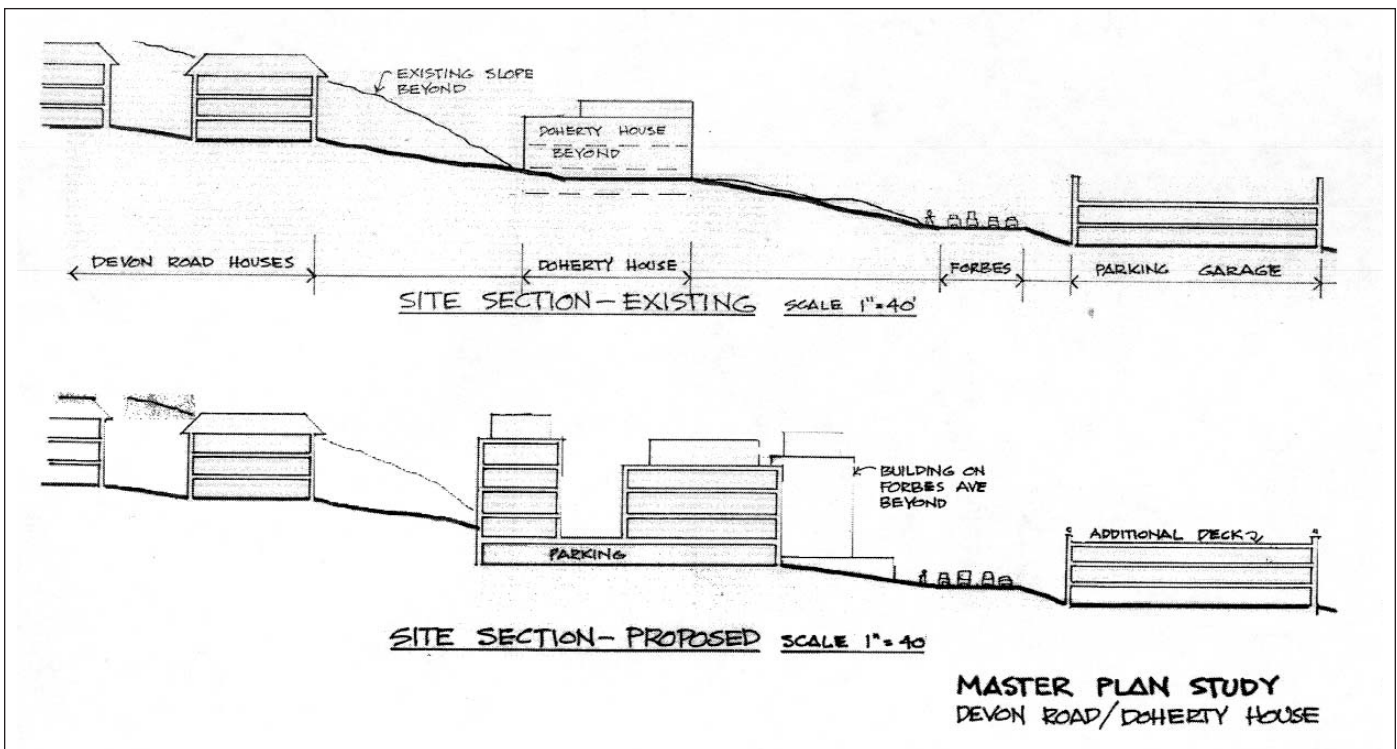
<i>Location:</i>	Corner of Forbes and Morewood Avenues
<i>Description:</i>	Prominently placed building on a key campus location will serve as the main reception space for visitors and guests and as administrative space for functions such as Admissions, Alumni, Career Services... as well as executive administration.
<i>Maximum Floor Area:</i>	70,000 GSF
<i>Maximum Height:</i>	Five stories (max 80') plus mechanical penthouse
<i>Setback:</i>	Forbes - Approximately 30' from street right-of-way with occasional projections to within 5' of the right-of-way. Provide a continuous area for sidewalks and street trees. Morewood - Approximately 30' from street right-of-way (similar to that of projecting wings that form courtyard at Morewood Gardens at opposite side of street).

9. Fraternities (8 fraternities in 6 buildings)

<i>Location:</i>	Area of Morewood and Forbes Avenues and Devon Road.
<i>Description:</i>	Raze four duplex buildings and replace with four single-unit houses and two duplexes.
<i>Maximum Floor Area:</i>	Four single houses at max of 15,000 each and two duplexes at max of 30,000 GSF each for a total of 120,000 GSF in six buildings
<i>Maximum Height:</i>	Four stories (max of 65') plus mechanical penthouse
<i>Setback:</i>	Morewood - For buildings fronting Morewood, setback from street right-of-way to be approximately 30' with occasional projections to within 5' of right-of-way. Provide a continuous area for sidewalks and street trees. Forbes - For building fronting Forbes, setback from street right-of-way to be approximately 30' with occasional projections to within 5' of right-of-way. Devon - For buildings fronting Devon, setback from street right-of-way to be approximately 30' (to achieve a similar relationship to the street as other structures along Devon). Side yard setback(for condition where side yard abuts side yard of "R" property) - 15' minimum. Other building edges in this group of buildings are internal to the campus and are located to create alignments with adjacent campus buildings to better define outdoor spaces and paths.

10. Residential buildings near Devon and Forbes

- Location:** Near the Doherty Apartment site, fronting on Forbes and Devon.
- Description:** As many as three residential buildings on the site depending on demand for residential space by students.
- Maximum Floor Area:** 100,000 GSF
- Maximum Height:** Topography of this site is sloped, creating a low side and a high side to the buildings. For each building, the low side is to be four stories (max of 65') plus mechanical penthouse. The uphill side will be three stories in height, allowing clear views to the south from hilltop residences beyond.
- Setback:** Forbes - Approximately 30' from street right-of-way (similar to that proposed for other buildings along Forbes) with site wall, stair, and other occasional projections to within 5' of right-of-way. Provide continuous area for sidewalks and street trees.
Devon - For buildings fronting Devon, setback from street right-of-way to be approximately 30' (to achieve a similar relationship to the street as other existing structures along Devon and as those proposed on the other side of the street) with occasional projections to within 5' of right-of-way. Provide a continuous area for sidewalks and street trees.
Sideyard (for condition where side yard abuts side yard of "R" property) - 15' minimum.
Rear yard (for condition where rear yard abuts side yard of "R" property) - 15' minimum
- Other:** Potential for one or two parking structures beneath these buildings for as many as 150 cars.



11. Parking beneath residential buildings near Devon and Forbes

<i>Location:</i>	Beneath new residential buildings near the Doherty Apartment site, fronting on Forbes and Devon.
<i>Description:</i>	Up to 150 parking spaces in one or two garages beneath new residential buildings.
<i>Maximum Floor Area:</i>	75,000 GSF
<i>Maximum Height:</i>	NA... subterranean
<i>Setback:</i>	Forbes- Approximately 20' from street right-of-way for site wall (with entry to lower level parking and exterior stair to buildings on the hill beyond.) with occasional projections to within 5' of right-of-way. Similar to setback of parking deck directly south across Forbes. Provide continuous area for sidewalks and street trees.

East Campus Precinct

12. Parking Garage Addition

<i>Location:</i>	South side of Forbes Avenue between Devon and Beeler.
<i>Description:</i>	New floor added to existing garage to provide 220 parking spaces. (Note this will not increase the profile of the building from the outside as there is an existing oversized wall at the top of the existing structure.)
<i>Maximum Floor Area:</i>	84,000 GSF
<i>Maximum Height:</i>	No increase in the current height, with exception of light poles

13. Residential Building

<i>Location:</i>	Corner of Forbes Avenue and Margaret Morrison Street
<i>Description:</i>	Raze existing building with three stories and a basement used for nine student apartments and an art gallery. Replace with a new residential building.
<i>Maximum Floor Area:</i>	24,000 GSF
<i>Maximum Height:</i>	Four stories, including basement, (max 65') plus mechanical penthouse
<i>Height:</i>	Three stories (max of 40') plus mechanical penthouse and basement.
<i>Setback:</i>	Forbes - Align building with adjacent buildings. Margaret Morrison - Align building front with those of adjacent buildings to create a strong street edge. Provide continuous area for sidewalks and street trees. Rear yard setback (for condition where rear abuts side yard of "R" property) - 15' minimum.

14. Residential Building

<i>Location:</i>	Margaret Morrison and Roselawn Streets
<i>Description:</i>	Raze existing building and row houses used for 14 residential units. Replace with new residential building.
<i>Maximum Floor Area:</i>	62,000 GSF
<i>Maximum Height:</i>	Topography of this site is sloped, creating a low side and a high side to the buildings. For each building, the low side is to be four stories (max of 65') plus mechanical penthouse. The uphill side will be three stories in height, allowing clear views to the west from residences beyond.
<i>Setback:</i>	Margaret Morrison - Align building front with that of adjacent buildings to create a strong, street edge. Provide continuous area for sidewalks and street trees. Side yard setback (for condition where side yard abuts rear of "R" property) - 15' minimum Rear yard setback (for condition where rear abuts rear of "R" property) - 30' minimum

15. Modifications to Donner House

<i>Location:</i>	Margaret Morrison Street
<i>Description:</i>	Possible façade improvements and small additions to existing residential hall.
<i>Maximum Floor Area:</i>	9,000 GSF additional
<i>Maximum Height:</i>	Three floors above grade
<i>Setback:</i>	Margaret Morrison -Align fronts of proposed additions with existing portion of building that extends toward the street to achieve a consistent distance from the street right-of-way.

16. Parking Garage

<i>Location:</i>	Between Donner House and Margaret Morrison Carnegie Hall
<i>Description:</i>	Two-level parking structure beneath a campus green with entry from Margaret Morrison Street.
<i>Maximum Floor Area:</i>	110,000 GSF
<i>Maximum Height:</i>	Two or three levels underground
<i>Setback:</i>	Below grade

17. Addition to Margaret Morrison Carnegie Hall

<i>Location:</i>	Corner of Tech and Margaret Morrison Streets
<i>Description:</i>	Wing and atrium addition to building used by Architecture, Design, Music and the Children's School
<i>Maximum Floor Area:</i>	68,000 to 85,000 GSF
<i>Maximum Height:</i>	Seven stories, four above grade and three below. Max above grade 65' plus mechanical penthouse.
<i>Setback:</i>	Edges of the addition are internal to the campus and are established to complement the existing building and to create alignments with adjacent campus buildings that better define outdoor spaces and paths.

South Campus Precinct

18. Gallery & Conference Facility

<i>Location:</i>	Between The College of Fine Arts Building and Posner Hall
<i>Description:</i>	Conference facility and gallery
<i>Maximum Floor Area:</i>	17,000 GSF
<i>Maximum Height:</i>	One story beneath a landscaped garden
<i>Setback:</i>	Below grade with garden area above designed to enhance open space and pedestrian movement in this area of campus.

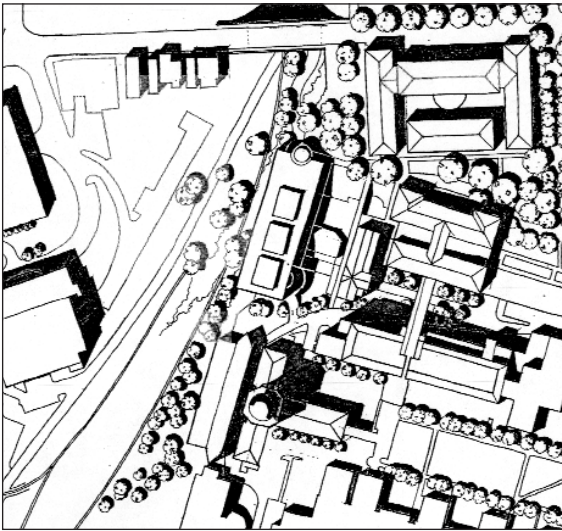
19. Small Wing Addition to Wean Hall

<i>Location:</i>	South side of Wean Hall facing the Hornbostel Mall
<i>Description:</i>	Office, classroom or library space
<i>Maximum Floor Area:</i>	6,500 GSF
<i>Maximum Height:</i>	Three stories. Max 50'
<i>Setback:</i>	The setbacks of the addition are internal to the campus and are located to reinforce the proportions and rhythm of the projecting wings of the Mall.

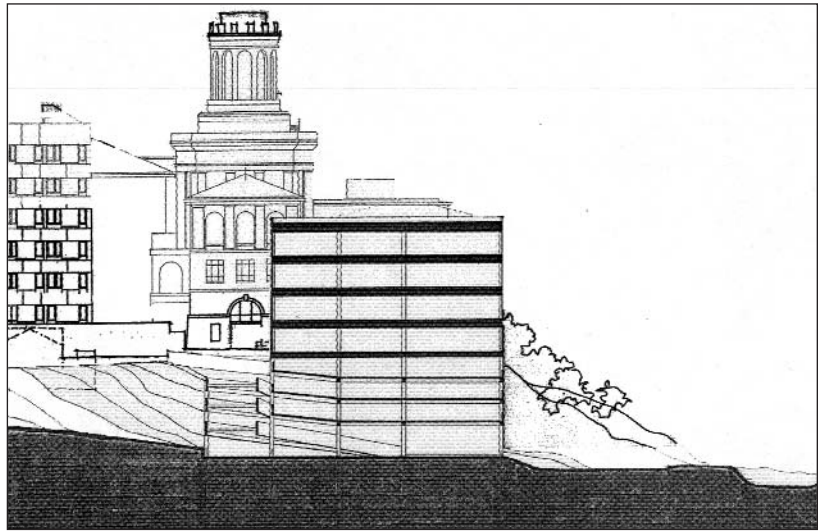
West Campus Precinct

20. Center for Technology Research and Development

- Location:* West edge of the campus, near the Facilities Management Building
- Description:* Four stories of office/research space for Carnegie Mellon researchers and industry research collaborators above a parking garage.*
- Maximum Floor Area:* Approximately 145,000 GSF of office space
- Maximum Height:* Approximately 130' high from the base of Junction Hollow, plus mechanicals.
- Setback:* Establish a similar alignment and relationship to the hollow as exists with Roberts Hall. Other building edges are internal to the campus and are located to create alignments with adjacent campus buildings to better define outdoor spaces and paths.
- Other:* *Approximately 250 to 300-car parking structure beneath four-story office/research building. If the structure is built with steel, the garage could accommodate four levels of parking; if the structure is post-tension concrete the floor-to-floor distance can be reduced and thus allow a fifth level of parking in the same vertical distance as four levels with structural steel. Either way the overall height of the building is approximately the same.



*Center for Technology Research and Development
Site Plan (LD Astorino Companies)*



*Center for Technology Research and Development Section Study
(LD Astorino Companies)*

21. Academic/Research Building in the West Campus

<i>Location:</i>	West Campus, behind Cyert Hall, next to the Purnell Center for Performing Arts
<i>Description:</i>	Academic/research building
<i>Maximum Floor Area:</i>	150,000 GSF
<i>Maximum Height:</i>	Five stories, three above (approx. at the Forbes Ave level - max 75') plus mechanical penthouse and two stories below built into the hillside
<i>Setback:</i>	Building edges are internal to the campus and are located to create alignments with adjacent campus buildings to better define outdoor spaces and paths.

22. Parking Garage and Campus Green

<i>Location:</i>	East of Newell-Simon Hall and west of the Cut
<i>Description:</i>	Two levels of parking for 150 cars beneath a campus green
<i>Maximum Floor Area:</i>	70,000 GSF
<i>Maximum Height:</i>	Two levels below a landscaped green space.
<i>Setback:</i>	Below grade

Central Campus Precinct

23. Addition to the University Center

<i>Location:</i>	North side of University Center facing Forbes Ave
<i>Description:</i>	Office/retail/social space
<i>Maximum Floor Area:</i>	28,000 GSF
<i>Maximum Height:</i>	Three stories above a basement
<i>Setback:</i>	Align north wall of addition with the inside wall of the open loggia at the north end of the University Center.

24. Completion of loggia in front of Warner Hall

<i>Location:</i>	Immediately to the east of Warner Hall facing Forbes Avenue at Morewood Avenue.
<i>Description:</i>	Academic and/or administrative space.
<i>Maximum Floor Area:</i>	25,000 GSF
<i>Maximum Height:</i>	Continue height of existing loggia. Basement plus three stories above grade (maximum 50') plus mechanical penthouse.
<i>Setback:</i>	Align north side with existing north front of University Center loggia. Align east side with east side of the Purnell Center loggia.
<i>Other:</i>	Possibly this would not be built as an addition in front of Warner Hall; rather, it could be part of a new building that would replace Warner.

Open Space Improvements in all Precincts

25. Forbes Avenue Improvements

<i>Location:</i>	Forbes Avenue from Beeler to the bridge over Neville
<i>Description:</i>	Significant pedestrian improvement and improvement to the identity of Carnegie Mellon. Narrow Forbes Avenue without constricting traffic to calm traffic, widen sidewalks and improve pedestrian safety. A traffic planner completed a conceptual study, which was discussed with City of Pgh engineers and planners, and there is general agreement that narrowing/re-working the street would be feasible. Further study and coordination with state and city will be required. See Appendix A-3 for more detail.

26. Margaret Morrison Street Modifications

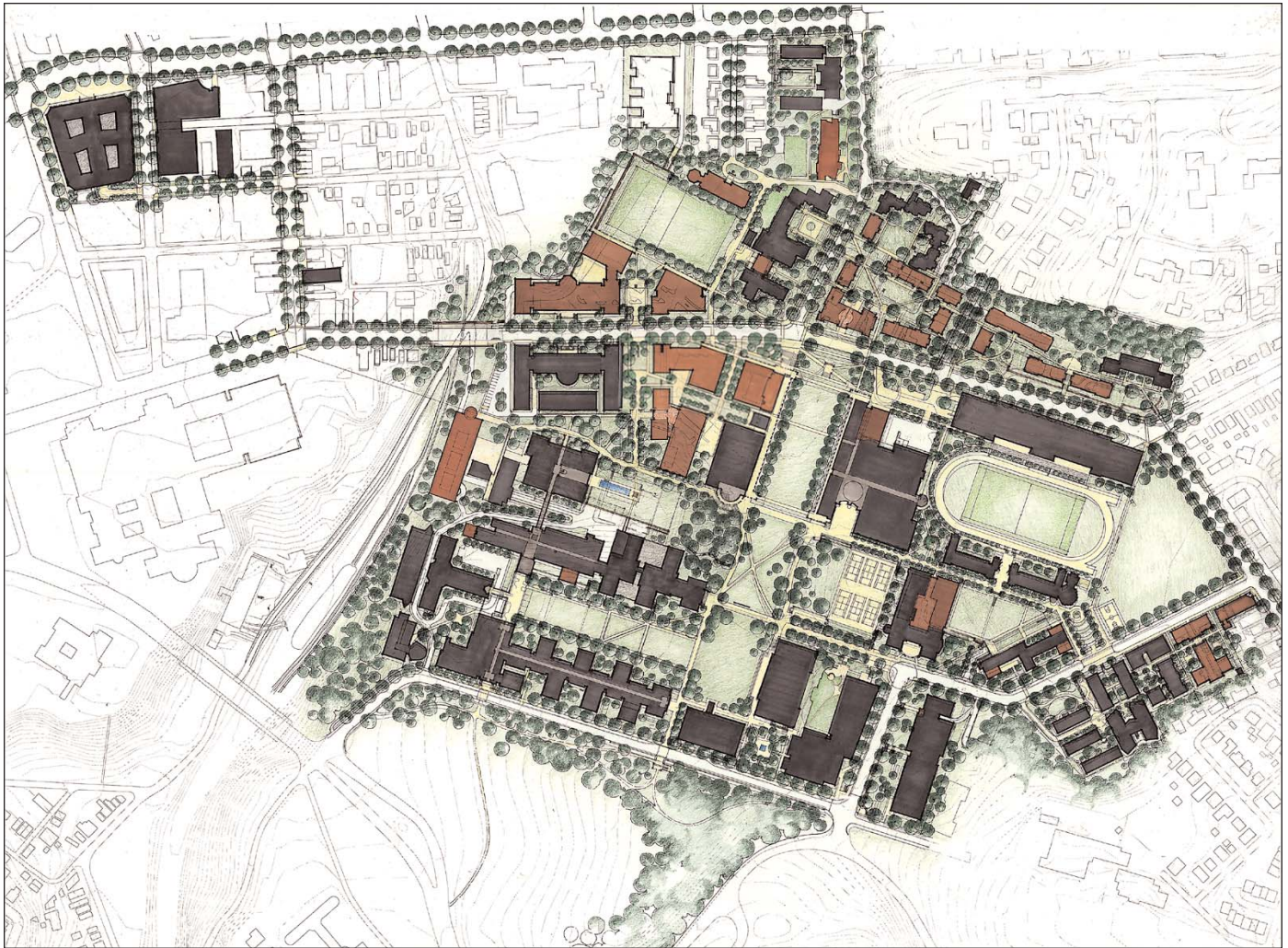
<i>Location:</i>	Margaret Morrison Street at the junction with the east-west walkway.
<i>Description:</i>	Improve pedestrian crossing/safety by extending the sidewalk into the parking lane at the crossing. Alter the paving in the road to alert drivers to crossing pedestrians.

27. Entrance to Schenley Park from Frew Street

<i>Location:</i>	Frew Street, across from the walkway between Hunt Library and Baker Hall
<i>Description:</i>	This project could be a collaboration between Carnegie Mellon and the City to create a new entry into Schenley Park. This would connect to the main north-south pedestrian way across the Carnegie Mellon campus.

28. Various Open Space Improvements

<i>Location:</i>	Campus-wide
<i>Description:</i>	Overall outdoor space enhancements: a.) quadrangle improvements, eg. replant trees on Hornbostle Mall, b.) courtyards and gardens, eg. Roof of proposed gallery/conference center between CFA and Posner Hall, c.) streetscape, walkways, and parking lots.



Final Plan - Twenty Five Year

6 TWENTY-FIVE YEAR GROWTH/DEVELOPMENT PLAN

Potential building projects that are not likely to be built in the next ten years include:

24A. Academic / Research / Administrative Building

<i>Location:</i>	Current site of Cyert Hall on Forbes Avenue near Morewood Avenue
<i>Description:</i>	Academic / Research / Administrative Building
<i>Maximum Floor Area:</i>	95,000
<i>Maximum Height:</i>	Four stories, (max 65') plus mechanical penthouse
<i>Setback:</i>	Forbes - Approximately 30' from street right-of-way (similar to that of center section of Hamburg Hall immediately to the west) with occasional projections to within 5' of right-of-way. As the Forbes Avenue face of the building extends to the east, it stops paralleling Forbes and picks up the alignment and orientation of Warner and the Cut. Provide a continuous area for sidewalks and street trees. Other building edges are internal to the campus and are located to create alignments with adjacent campus buildings to better define outdoor spaces and paths.



Twenty Five-Year Development Plan - Proposed Buildings

24B. Academic / Research / Administrative Building

<i>Location:</i>	Current Site of Warner Hall on Forbes at Morewood Avenue
<i>Description:</i>	Academic / Research / Administrative Building
<i>Maximum Floor Area:</i>	125,000
<i>Maximum Height:</i>	Six stories (max 100')
<i>Setback:</i>	Existing setbacks generally maintained (new construction on similar footprint to existing building).

7 TRAFFIC IMPACTS AND TRANSPORTATION MANAGEMENT PLAN

Traffic Analysis:

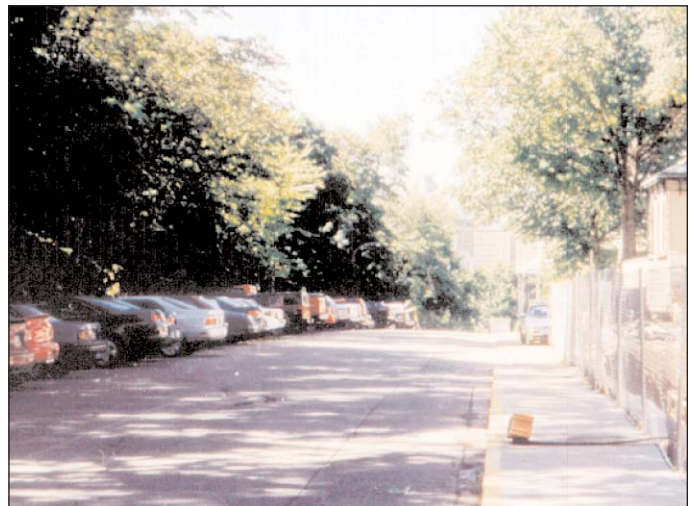
Key transportation components of the Plan are described in Appendix 2 below and include the following:

- Several new parking garages, primarily to replace existing surface parking that will be eliminated for new buildings or open space. The Plan does not anticipate any significant increases in parking, however there will be substantial shifts in the location of parking.
- Closure of a West Campus street.
- Enhancements to Forbes Avenue and Margaret Morrison Street to improve pedestrian safety and the appearance of the roads.

Transportation Management:

In addition to addressing traffic, the plan includes a proposal to design and implement a transportation management program for Carnegie Mellon. The central idea is that the number of cars that come to campus each day could be reduced significantly if there are viable, convenient transportation alternatives to single-occupant vehicles.

A transportation office is proposed that will be charged with developing and promoting the use of alternatives modes of transportation (transit, car/van pooling, ride share, guaranteed ride home for transit riders who stay late on campus, bike rack and lockers, etc...), providing advice to students, faculty and staff about choices of neighborhoods in which to live that are served by transit or are within walking/biking distance of campus, and interacting with the Port Authority and neighbors in Oakland to continually improve transit service. It is hoped that even as the built area and the population of the campus grows, the number of cars on campus will decline.



8 STEWARDSHIP, SUSTAINABILITY AND ENVIRONMENTAL PROTECTION

Carnegie Mellon is committed to a sustainable campus. The university retained an environmental consultant to participate in the campus planning process and provide a review of planning decisions to assure that they fit into a sustainable framework. The Green Building Alliance with Conservation Consultants Inc. (GBA/CCI) served as environmental consultant and prepared the material included in Appendix 3.

The first section in Appendix 3 is a review of the university's Campus Planning Principles (also referred to in Section 11. Urban Design Guidelines). This review prompted a reconsideration of the Planning Principles and a re-writing to address issues of stewardship of the university's resources and campus ecology.

The second section-Campus Wide Issues, and the fourth section-Parking and Road Network, have influenced the design of building and outdoor space projects. A review of outdoor space maintenance practices is underway.

The third section in Appendix 3 is on the topic of natural landscape. This review prompted the formation of a university committee, the Green Campus Committee. The mission of the Green Campus Committee was to advocate and plan improvements to campus outdoor space that:

- 1.Enhance the quality of the pedestrian environment
- 2.Are planned with respect to slope, drainage, solar orientation, and micro-climate
- 3.Are planted with maintainable materials that are native to Western Pennsylvania

Subsequently the work of the Green Practices Committee was incorporated into the work of the Environmental Practices Committee.

In 1990 Carnegie Mellon adopted a formal recycling policy and appointed campus Recycling Liaisons to implement the policy. The liaisons adopted the "Reduce, Reuse, Recycling" theme and promoted campus wide efforts to reduce waste.

In 1998, the Environmental Practices Committee (EPC) was established to develop a more comprehensive waste reduction and energy conservation program. The committee, which is comprised of staff, faculty and students, establishes priorities, goals, and mechanisms for

implementing environmental practices. Please see the EPC's website (<http://www.cmu.edu/epc/index.html>) for information on Carnegie Mellon's environmental practices, environmental curriculum, it's use of wind power for electrical generation, and publications.

Regarding the Zoning Code, Section 905.03.D, Institutional Master Plans, part 4, Submission Requirements, part (h), Environmental Protection Plan:

The Carnegie Mellon campus is in none of the Environmental Overlay Districts described in Chapter 906:

FP-O	Flood Plain Overlay District
RF-O	Riverfront Overlay District
LS-O	Landslide-Prone Overlay District
UM-O	Undermined Area Overlay District
VP-O	View Protection Overlay District
SM-O	Stormwater management Overlay District

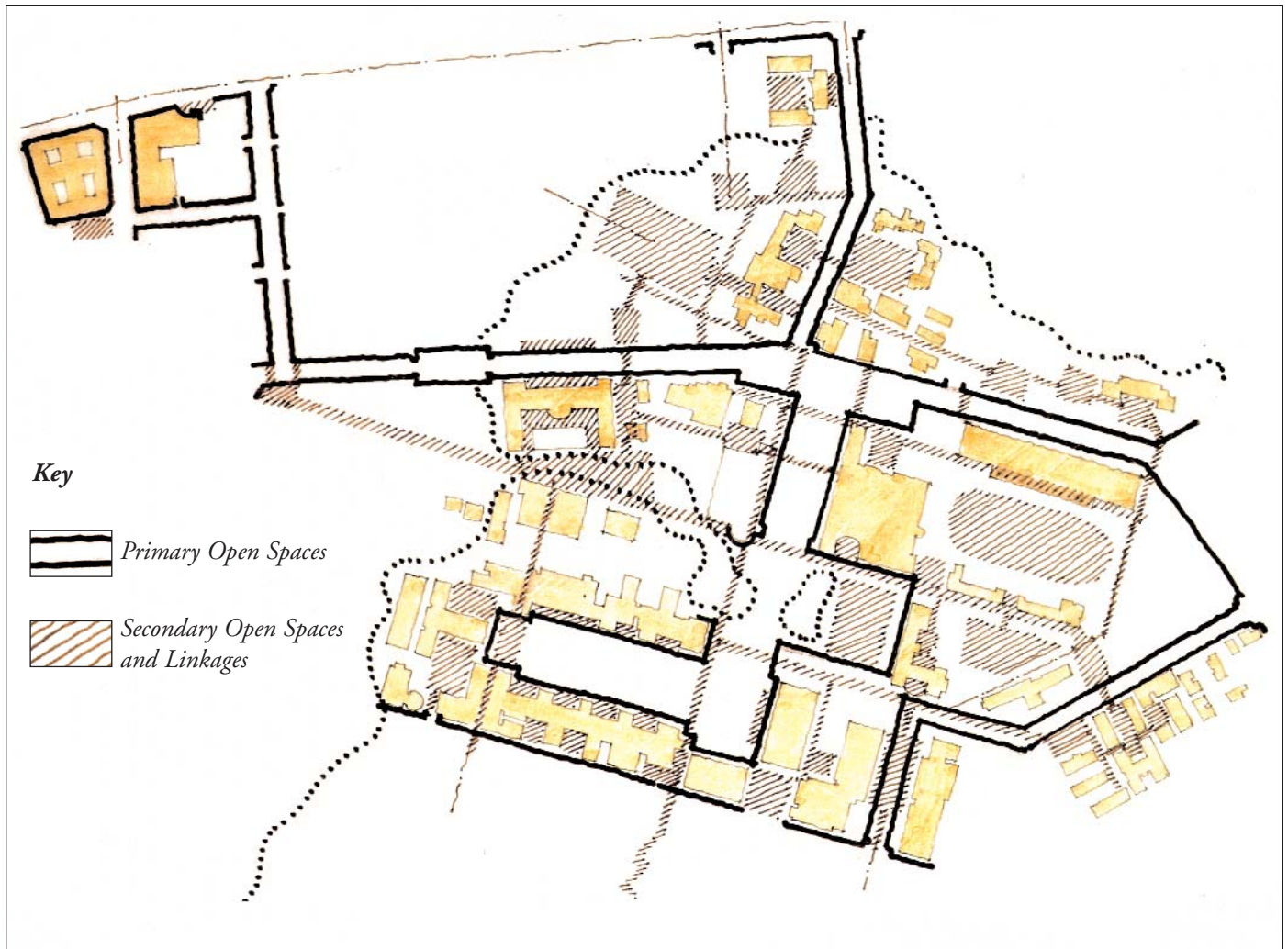
None of the areas proposed for development on the master plan are in a steep slope area as defined in the Zoning Code Chapter 15, with the exception of the roadway at the base of the slope west of Hamburg Hall. Slope protection measures will be defined in that project application.





The university preserves its trees to the greatest extent possible. New trees are planted as part of building projects or independent landscaping projects. Although trees have been lost to disease or site clearing for building projects, there has been a net gain in the number of trees on the Carnegie Mellon campus since 1988. A BIOTIC SURVEY has been undertaken by a team of faculty and students under the guidance of Carnegie Mellon's Hunt Botanical Institute. This survey will analyze and document the plant life on the campus. It will be the basis for the Tree and Vegetative Survey required in the Zoning Code Chapter 15 for building project submissions.

Zoning Code Chapter 15 includes requirements for maximum impervious surfaces. The current master plan calls for a significant reduction in impervious surfaces with the substitution of parking structures with planted roofs for nearly all existing surface parking lots.



Existing Open Space

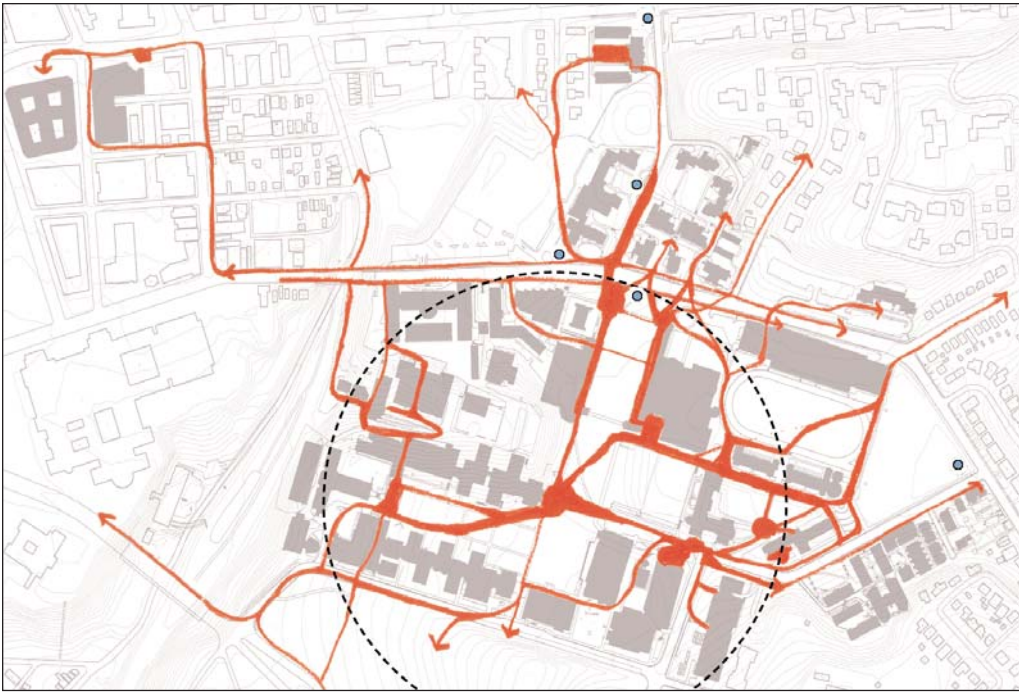
9 OPEN SPACE & PEDESTRIAN CIRCULATION PLAN

The original campus plan of 1904 proposed a new campus organized around a single large quadrangle - the Mall. Buildings were constructed during the following decades that defined the edges of the quadrangle and reinforced the original vision.

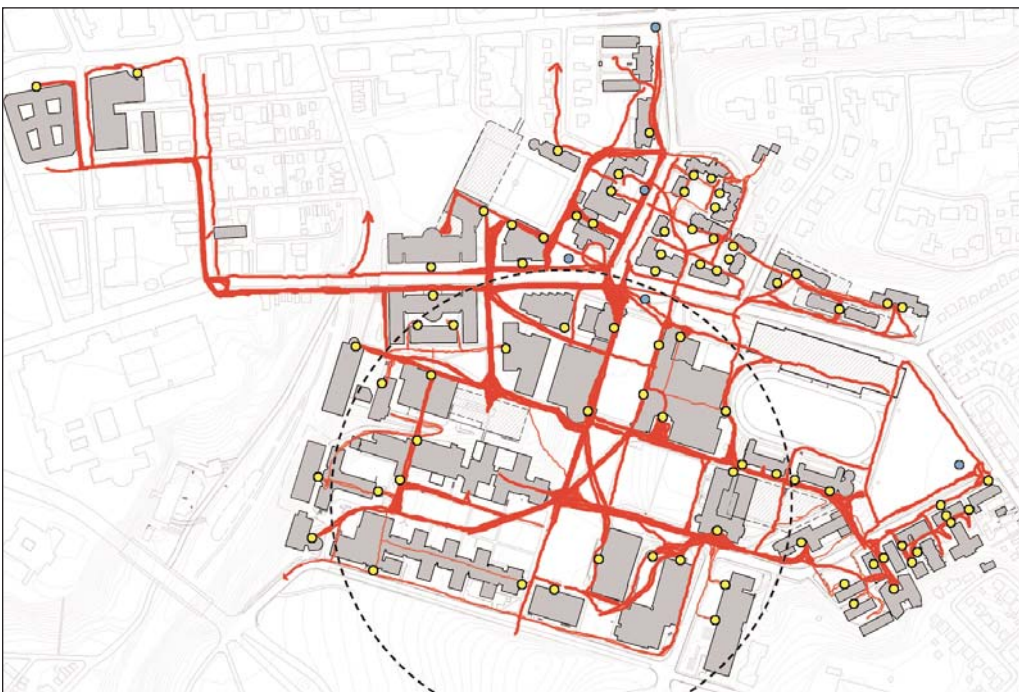
In anticipation of several significant building projects, the 1987 campus plan extended the quadrangle organization of the campus northward to Forbes Avenue with new buildings sited to define "the Cut" and the varsity field as campus open spaces.

Together, the Mall and the Cut create a strong formal spatial organization for the campus. They are appropriately scaled and proportioned as the primary spaces on campus and the long axial views they create help to visually connect opposite ends of the University.

With the primary spaces already well-developed, what seems to be most lacking is a network of secondary, more intimate, or more casual linkages between areas of campus. The campus plan proposes supplementing the existing quadrangles with smaller quads or gardens linked by pedestrian pathways as well as reinforcing the public streets as significant pedestrian paths. These pathways will also help to better integrate the campus into the surrounding urban fabric.



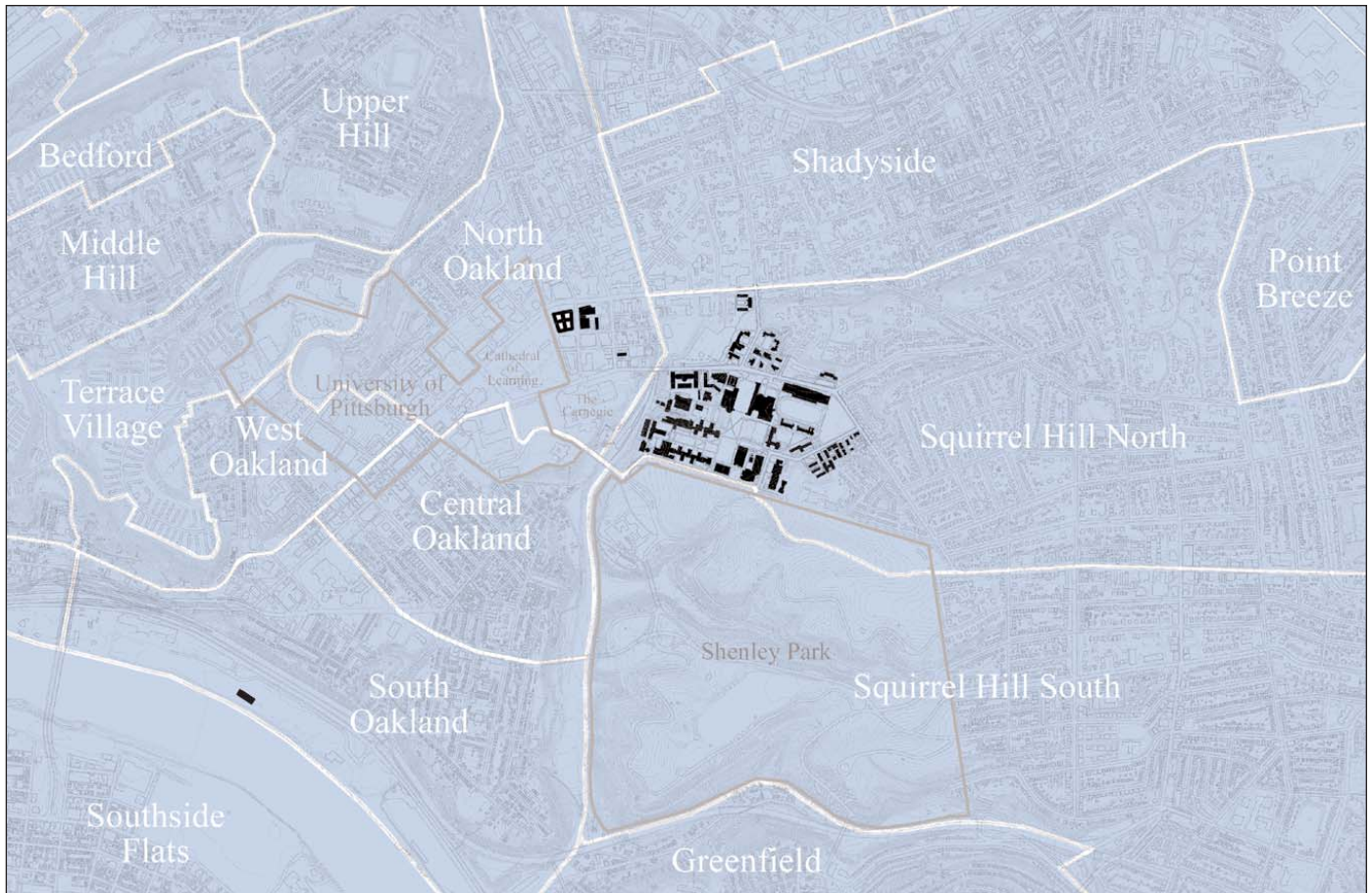
Existing Pedestrian Circulation



Proposed Pedestrian Circulation

Key

-  Major Routes
-  Minor Routes
-  Front Doors
-  Bus Stops
-  5 Minute Walk



10 CARNEGIE MELLON IN ITS URBAN NEIGHBORHOOD CONTEXT

Carnegie Mellon University has been an integral part of the Oakland and Squirrel Hill districts of Pittsburgh for 100 years. The campus mitigates between the more institutional environment to the west and the residential environment to the east. The institutional components of Carnegie Mellon abut Schenley Park and Junction Hollow. Carnegie Mellon's residence halls are near Squirrel Hill residential areas. Neighbors participate in the artistic, cultural, and athletic offerings at the university. Members of the university community enjoy the commercial and entertainment advantages nearby as well as the residential and cultural life of the city.

Schenley Park is one of Pittsburgh's four major urban parks and a welcome amenity for the Carnegie Mellon community. Junction Hollow has the potential to accommodate a transit link between Oakland and technology developments in Hazelwood and along the Monongahela River—as outlined in the Department of City Planning's Hazelwood/Junction Hollow Visioning Study. The preservation of the Junction Hollow residential neighborhoods is consistent with the university's interest in providing high technology research and commercial opportunities at the north end of Junction Hollow, in the immediate university vicinity. Traffic impacts are being carefully evaluated in the planning of the Panther Hollow Building at the west edge of campus.



The Craig Street commercial district is a vital amenity for members of the university community with its restaurants, coffee shops, and retail venues. Craig Street is the pathway between Mellon Institute/SEI and the core campus. During the community outreach phase of the current planning process (fall, 1999-spring, 2000) university staff met twice with business leaders in the Craig Street area and agreed to communicate and cooperate in strengthening the business district.

In addition to communicating the university's plans with neighbors, neighborhood organizations, and the Department of City Planning, Carnegie Mellon staff members have been active participants in the Oakland Task Force, the Oakland Development Fund, and the Oakland Transportation Management Association. The university has given staff and logistical support to the recent collaboration between the Oakland Task Force and the Allegheny Conference on Community Development in the creation of an Oakland Investment Strategy.

Please see Section 7 of this report for information and analysis of parking and traffic issues.

11 URBAN DESIGN GUIDELINES

The Carnegie Mellon campus is a highly planned environment made up of a variety of buildings and open spaces. The original campus built early in the 20th Century was organized around Beaux Arts principles of symmetry, axes connecting monumental buildings, and open space quadrangles edged by architecturally significant structures. (For a more complete discussion of the history of the development, see Appendix A.1.) The 1988 master plan carried these organizational principles forward, without the decorated Beaux Arts architecture, for a number of new buildings primarily in the central and east campus precincts. Since the campus is a 24 hour live-work-play environment, the campus as a whole is meant to convey an image of reflection and scholarly purpose. Certain individual buildings have a unique image because of their position as the terminus of a view corridor. Eye-catching forms or "trendy" architecture are avoided.

Carnegie Mellon is committed to the preservation of its original buildings designed by architect Henry Hornbostel between 1900 and 1930. All of the Hornbostel buildings were awarded Historic Preservation plaques last year by the Pittsburgh History & Landmarks Foundation. Significant restorations have been completed on the College of Fine Arts, Hamerschlag Hall, and Margaret Morrison Carnegie Hall. Buildings constructed during the 1988 master plan period made direct contextual connections to the Hornbostel buildings in massing, proportion, materials, and color-if not in decoration. With a critical mass of literally contextual buildings now constructed in the central campus, buildings proposed outside of the central area should be designed in context but also display their unique functions through architectural means. For example, the addition to Doherty Hall currently under construction in the west campus uses similar brick, stone, and window arrangement on the side adjacent to the Hornbostel building, but a multi-story glass wall displays the large laboratory ductwork on the side adjacent to the 1960s Wean Hall.

The design of individual campus buildings is given oversight by the university's Design Review Committee. The DRC is made up of staff, faculty, and students who review proposed designs by consultant architects and engineers. Consultants are coordinated by Facilities Management staff. The review process is guided by the university's Campus Planning Principles. See Appendix A.2

for the complete Campus Planning Principles. Note that the Principles were updated and expanded by and the Master Plan Steering Committee with information assembled by the environmental consultants. See Section 8 of this report.

Building designs incorporate the following considerations:

Setbacks

Many university buildings are not fronted on streets. Buildings within the campus are aligned to form and contain outdoor space of either large scale-quadrangles, or small scale-gardens.

Buildings on streets or public right-of-ways are generally aligned with existing adjacent buildings. Buildings will be set back a minimum of ten feet but usually more to allow safe and pleasant pedestrian environment, including appropriate sidewalks, street trees, lighting, and landscaping.

Where university property abuts adjacent property zoned Residential, buildings are set back to equal or exceed the residential compatibility standards in Chapter 916 of the Zoning Code.

Height

Academic and research buildings are generally three or four stories above grade. Certain existing and proposed buildings have more stories either because of their positions on slopes or because they are the terminus of an important view corridor. An example in the current master plan of a





taller building is the structure proposed for the corner of Forbes and Morewood. This building will terminate the long axial view from the Hunt Library and will mark the center of campus for those approaching on Forbes Avenue.

Bulk and Massing

Buildings will be designed to maximize natural daylight, and to provide an exterior view and natural ventilation for all occupants. Some buildings will have a top floor setback to be in context with similar adjacent buildings. Pitched roofs and flat roofs will be used as appropriate. Rooftop mechanical equipment is not exposed but enclosed in penthouse structures.

Landscaping

Carnegie Mellon is committed to a sustainable environment including the use of plant materials native to Western Pennsylvania. A more formal landscape is used for the major quadrangles-the Mall and the Cut. These open lawns complement the campus architecture and serve as informal recreation fields. A less formal garden environment is desired for smaller campus spaces.

APPENDIX A.1: HISTORY

A Brief History of Campus Development at Carnegie Mellon

Martin Aurand and Paul Tellers, December, 2001

By the end of the nineteenth century a number of different forces were at work in changing the face of American campuses. Programs for higher education had become more complex. Colleges with a single focus could not address the educational needs of industry, commerce, and the arts, so large universities were becoming common. The 1893 Columbian Exposition in Chicago had widespread influence in architecture and planning, giving birth to the City Beautiful movement. An ideal city, a place of order and harmony, was seen as attainable. Campus planners believed that a university could be a city of learning within the broader city. The Ecole des Beaux-Arts in Paris was training influential American architects. Paul Venable Turner states in *Campus, An American Planning Tradition* that the Beaux-Arts "principles of monumental organization facilitated orderly planning on a grand scale and were capable of including many disparate buildings or parts within a unified overall pattern."

Post-Civil War industrialists accumulated unprecedented wealth and were eager to found institutions in their name. Leland Stanford at Stanford University, John D. Rockefeller at the University of Chicago, and Phoebe Hearst at the University of California, Berkeley were just a few. Hearst funded a design competition for Berkeley. Competitions were clearly in the Beaux-Arts tradition, with its emphasis on design contests. Washington University, St. Louis, the U. S. Military Academy at West Point and the Western University of Pennsylvania (now the University of Pittsburgh) all held competitions for their campus plans.

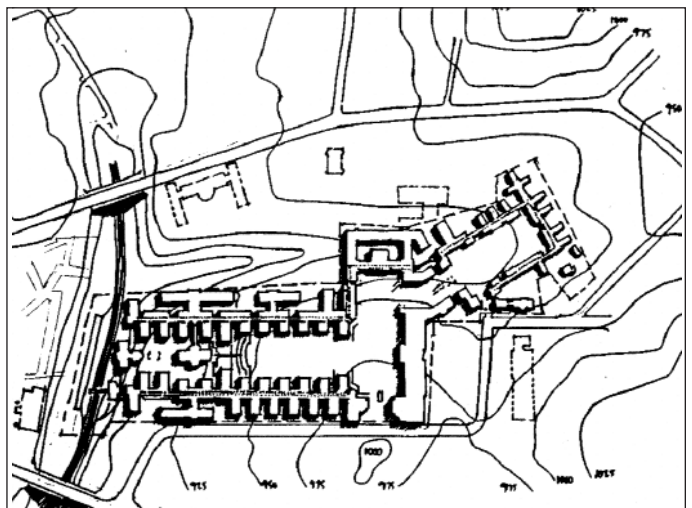
In a letter to Pittsburgh Mayor William J. Diehl dated November 15, 1900, Andrew Carnegie expressed his belief in the importance of technical education in the advancement of society. He had investigated technical schools in Britain and America and wanted to found such a school in his adopted city of Pittsburgh. He states, "If the City of Pittsburgh will furnish a site, which I hope will be of ample size for future extensions, I shall be delighted to furnish the money for such a school, taking care to provide for additions to the buildings to meet the certain growth of Pittsburgh." Carnegie closes the letter with, "...my heart is in the work," a phrase later to become a university motto. The City responded by purchasing 32 acres adjacent to Schenley Park as the site for the Carnegie Technical Schools.

The Hornbostel Era

In 1904, a competition for the design of the new institution was organized under the supervision of the Head of the Department of Architecture at the University of Pennsylvania. Five nationally recognized firms were invited to submit designs while the competition was open to other interested firms. The competition was entered by forty-four firms and won by the firm of Palmer and Hornbostel of New York City—not one of the invited five. Henry Hornbostel, who attended the Ecole des Beaux-Arts in the 1890's, created a campus plan that is a modification of the Jefferson plan for the University of Virginia with the Beaux-Arts device of creating primary and secondary axes and grouping buildings around significant open spaces.

The Hornbostel plan was revised in 1906 and 1911, but key elements remained consistent. The plan features a major open space (the Mall) with large representational buildings (Hamerschlag Hall and the College of Fine Arts) anchoring the ends of a major axis. The sides of the open space are flanked by buildings (Porter, Baker, and Doherty Halls) with wings extending off a long central spine. Secondary axes lead to a women's college (Margaret Morrison Carnegie Hall) and, in the 1911 plan, to a bridge (never built) across a ravine connecting the quadrangle to Forbes Avenue. The buildings are executed in a Renaissance style with buff-colored brick arches and piers, hipped tile roofs, and terra cotta and granite details.

Hornbostel's campus engages its urban and topographical setting, and uses architecture and landscape for visual and symbolic effect. For instance, the College of Fine Arts is the viewpoint for a carefully composed vista that extends along the axis of the Mall to the tower of Hamerschlag Hall, and to the city and hills beyond.

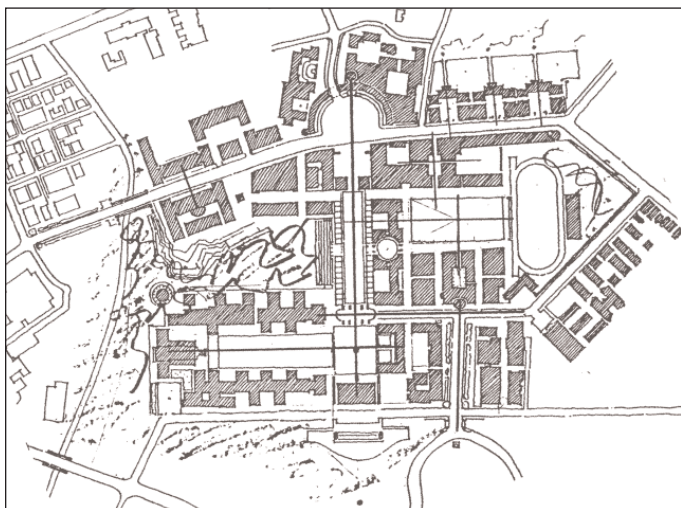


Palmer & Hornbostel's First Plan, 1904

Master Plan Projects of the 1980's and 90's

In 1984 the university acquired the property and buildings of the U.S. Bureau of Mines which completed the west end of campus to Junction Hollow. The main building, which had been designed by Hornbostel and completed in 1915, became the home of the Heinz School and a number of other departments. This caused a major re-allocation of space and which prompted a need for a new master plan. The 1985 CRS Sirrine Master Plan showed a way to incorporate the new west campus into the main campus, identified sites for proposed buildings, and originated the University Center concept. The University Center would be more than a student union; it would combine social, student activities, dining, and athletic spaces in an interactive setting.

Because of the size of the proposed facility and its importance in setting a standard for future projects, a design competition was held for the University Center, plus proposed dormitory and arts center. The winning scheme by Michael Dennis, Jeffrey Clark & Associates was selected in May, 1987. It returned to the planning principles that guided the development of the early campus and was adopted as the campus master plan. Buildings proposed on the plan incorporated the form and materials of the Hornbostel buildings and at the same time satisfied their highly complex programs. The building projects in the intervening years followed the new master plan, extending the order and quality of the original Hornbostel campus.



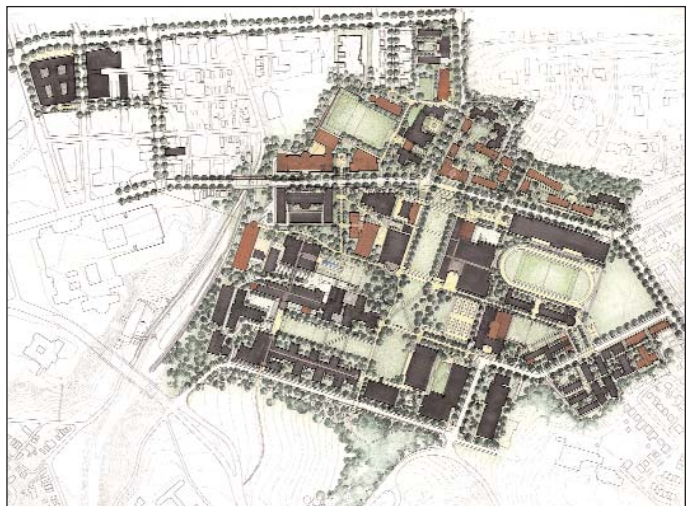
Dennis & Clark Study, 1986

Campus Master Plan 2000

With the completion of the Purnell Center in 2000, the projects on the 1987 master plan had all been accomplished. With Ayers/Saint/Gross as master plan consultant, the university commenced a community based planning process which concluded in spring, 2000. Following are key components of the plan:

- Establish a sound plan for building out the campus over the next 20-plus years in support of Carnegie Mellon's mission
- Enhance the quality of campus open space
- Create sites for new academic, research and residential buildings
- Define better campus entrances on Forbes and other portals
- Develop the West Campus and Morewood precincts effectively
- Improve the character of Forbes Avenue
- Improve parking and transportation systems

The campus master plan is being submitted for City Planning Commission and City Council approval in spring, 2002.



Campus Plan 2000

Chronology of Major Buildings and Master Plans

Below is a chronology of major university buildings and *master plans*, the year each was completed, and the architect. (Original building names are in parentheses.) A line separates the projects by decade.

<i>Completed</i>	<i>Building</i>	<i>Architect</i>
1903-1911	<i>Campus Master Plan</i>	<i>Hornbostel</i>
1906	Porter Hall (Industries Hall)	Hornbostel
1907	Margaret Morrison College (Margaret Morrison Hall)	Hornbostel
1908	Doherty Hall (School of Applied Science)	Hornbostel
1912, 1916	College of Fine Arts (School of Applied Design)	Hornbostel
1913	Hamerschlag Hall (Machinery Hall)	Hornbostel
1914	Baker Hall (Administration Hall)	Hornbostel
1915	Hamburg Hall (U.S. Bureau of Mines, acquired 1984)	Hornbostel
1915-1918	Hill Dorms (Boss, McGill, Scobell, Welsh)	Hornbostel
1924-1932	Gymnasium/Thistle Hall	Hornbostel
1931	Mellon Institute (acquired 1967)	Janssen & Cocken
1938	<i>Campus Master Plan</i>	<i>Githens & Keally</i>
1950	Doherty Hall addition	Francis Keally and Palmgreen, Patterson & Fleming
1952	GSIA	Marlier & Johnstone
1954	Donner Hall	Mitchell & Ritchey
1957-1959	<i>Campus Master Plan</i>	<i>Rice, Schweikher, et al.</i>
1959	Doherty Apartments	Franklin Douden Assoc.
1960	Fraternities	Lawrence & Anthony Wolfe
1960	Hamerschlag House	Celli-Flynn
1960	Studio Theater	Paul Schweiker
1960	Skibo Hall (demolished 1994)	Lawrie & Green
1961	Hunt Library	Lawrie & Green
1962	Scaife Hall	Altenhof & Brown
1966	Warner Hall	Charles Luckman Assoc.
1968	<i>Campus Master Plan</i>	<i>Sasaki, Dawson & Demay</i>

Chronology of Major Buildings and Master Plans

<i>Completed</i>	<i>Building</i>	<i>Architect</i>
1971	Wean Hall (Computer-Science Building)	Deeter Ritchey Sipple
1982	Margaret Morrison Plaza	Damianos & Pedone
1983	Cyert Hall (University Computer Center)	Deeter Ritchey Sipple
1985	<i>Campus Master Plan</i>	<i>CRS Sirrine</i>
1987	Software Engineering Institute	Bohlin Powell Larkin Cywinski Burt Hill Kosar Rittleman <i>Michael Dennis, Jeffrey Clark & Associates</i>
1987	<i>Campus Master Plan</i>	
1988	Physical Plant Building	IKM, Inc.
1990	East Campus Dormitory, Parking Garage, Athletic Fields	Dennis, Clark & Assoc. TAMS Consultants
1992	Posner Hall (GSIA addition)	Kallmann McKinnell Wood
1995	Carnegie Mellon Research Institute	Bohlin Cywinski Jackson
1996	University Center	Michael Dennis & Assoc. UDA Architects
1996	Roberts Hall (Electronic Materials Technology Building)	Payette Associates
1999	Purnell Center for the Arts	DDF Associates, Inc. Damianos + Anthony Michael Dennis & Assoc. John Sergio Fisher & Assoc.
2000	Baker Hall Addition	Burt Hill Kosar Rittelman
2000	Posner Hall Additional Floor	The Design Alliance
2000	<i>Campus Master Plan</i>	<i>Ayers/Saint/Gross</i>

APPENDIX A.2: CAMPUS PLANNING PRINCIPLES

These Planning Principles are established to support the mission of the university, to aid in the orderly and creative development of the master plan, and to assure the quality of physical additions and improvements to the campus. The Principles shall ensure a campus environment for living, learning, and creative inquiry.

1. The campus-like nature of the university's open space is a strong component of its physical environment, and therefore the university shall be its steward. Campus green space shall be protected and the quality shall be enhanced.

Campus design shall recognize that landscaping is an essential contributor to the campus ecology.

Campus design shall show respect for existing topography. Wooded slopes are an identifiable feature of the Carnegie Mellon campus and shall be respected.

Outdoor activity areas shall be designed for a variety of uses. Activity spaces shall be complemented by passive watching areas.

Open spaces shall be designed with consideration of size, proportion, access and circulation, views, and opportunities for activities. Links between open spaces shall be designed as transitions from one space to the next.

Campus entrances and boundaries shall be clearly defined.

2. Outdoor campus space shall be planned with spatial definition. The quadrangle is a viable planning concept for the Carnegie Mellon campus. Formal axially planned spaces and informal spaces for casual use shall be planned and promoted.

Buildings and plantings shall be designed as definers of outdoor spaces.

Buildings and plantings shall relate to the qualities of the open space they face in size, scale, and formality.

The Hornbostel Mall is recognized as significant in design and campus history. The Mall shall be preserved and enhanced.

3. Transportation routes through and around the campus shall facilitate the movement of pedestrians, vehicles, and materials to their destinations. Where pedestrians and vehicles conflict, pedestrian needs take priority.

Parking areas shall be planned and positioned as service areas, not as destinations in themselves. Parking areas and service drives shall be designed to not interrupt pedestrian movement or the visual continuity of the campus. Surface parking should be eliminated wherever possible.

Campus design should assume and accommodate a multi-modal approach to transportation.

4. Existing campus circulation patterns shall be enhanced, and new paths created, to provide clear orientation and sense of place.

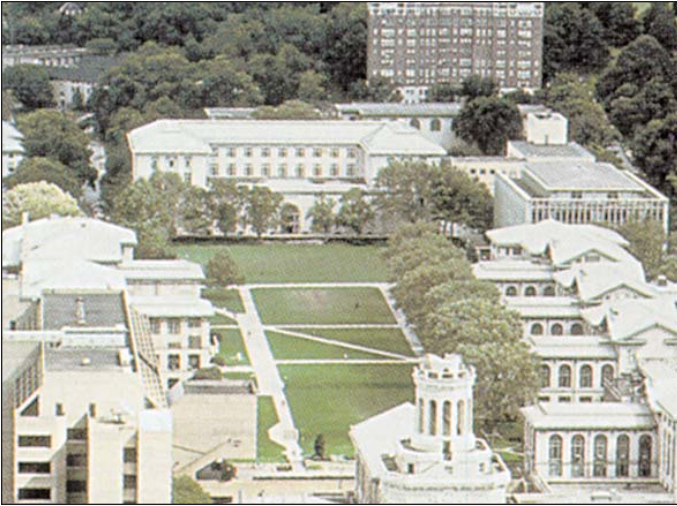
Pedestrian and vehicular routes shall be separated.

Pedestrian paths shall be designed to have pedestrian scale, continuity, richness, and functionality. Appropriate signage shall assist in orientation along pathways.

The continuity of pedestrian circulation paths, both interior and exterior, shall be maintained and enhanced.

Bicycle use shall be supported by the design of bicycle pathways, which are clearly distinguished from pedestrian pathways.





5. Within new and existing facilities public circulation routes and a mixture of uses/disciplines shall be encouraged.

The passerby should experience academic and research activities to the greatest extent possible, within limits of privacy and security. Circulation through departmental space encourages intellectual discourse and socialization.

Public routes in buildings provide protection from inclement weather.

Public routes through buildings should promote 24-hour activity.

6. Sites for future buildings and open spaces shall be identified and preserved for the most appropriate use.

7. Campus building design shall reflect the innovative spirit of the university while capitalizing on the its architectural heritage.

Buildings shall contribute to the overall coherence of the campus and maintain consistency in scale, materials, and articulation with existing buildings.

Buildings shall be designed as part of a larger fabric, rather than as independent objects.

8. Campus buildings and open space shall be designed with regard to their environmental impact.

Buildings shall be constructed of materials that are efficient in their use of resources, and cause minimal harm to the environment in their manufacture, installation, or disposal. Building materials and their containers shall be recyclable.

Building environmental systems and building envelopes shall be designed to conserve energy.

Site design shall consider storm water management in the extent and types of paving, and in the use of landscaping.

9. The design process for additions and changes to the campus should marshal the innovative spirit of the university in making campus spaces and facilities that perform at the highest technical and functional standards for human need and comfort.

Campus buildings shall avoid deep sections and occupied basements to ensure access for building occupants to the natural environment and to campus activities.

10. The campus is for the use and enjoyment of all members of the campus community. All improvements to the physical environment shall adhere to the concept of universal design.

Buildings and additions shall be designed to allow the same access and use to all people, not just in public areas, but also private areas.

Existing buildings shall be renovated to allow the same access and use to all people.

11. The campus environment shall be enhanced by quality public art.

Public spaces in buildings, quadrangles, and smaller garden spaces provide opportunities for appropriately scaled art.

Public art shall represent the creative energies of the campus community with the potential to make connections between the past the future.

12. Campus improvements shall be designed to respect and enhance the character of the neighboring communities of Squirrel Hill and Oakland.

Campus development shall contribute to the quality of life in adjacent neighborhoods in areas including traffic, parking, real estate values, and aesthetics.

Campus development shall enhance the perception of Squirrel Hill and Oakland as attractive neighborhoods to live and work.

Campus development shall contribute to the strengthening of the university's intellectual, social, and commercial ties with neighboring communities.

Recognizing the critical part that transportation plays in Oakland and Squirrel Hill, the university shall take a leading role in transportation planning.

13. The design of changes and additions to the campus shall reflect a spirit of enlightened long-term fiscal responsibility.

14. The master planning and building design processes shall implement these Campus Planning Principles, and engage campus and community constituencies in meaningful discourse.



APPENDIX A.3: TRAFFIC ANALYSIS

Background

The Campus Master Plan for Carnegie Mellon University provides a framework for campus growth over the next 20 or so years by creating sites for new buildings while enhancing the quality of the campus open space and proposing other improvements. Key transportation components of the Plan are described below and include:

- Several new parking garages, primarily to replace existing surface parking that will be eliminated by new buildings or open space. The Plan does not anticipate any significant increases in parking, however there will be substantial shifts in the location of parking.
- Closure of a West Campus street.
- Enhancements to Forbes Avenue and Margaret Morrison Avenue to improve pedestrian safety and the appearance of the roads.

Parking Deck Sites

A. Parking Overview

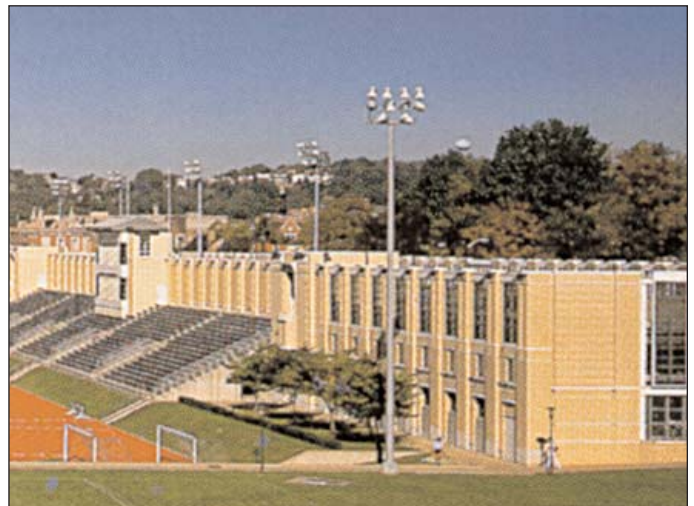
There are currently approximately 2,300 spaces on the CMU campus (including the South Dithridge Street facility). Of these approximately 2,150 are allocated to employees (85 percent of the total allocation) and students, and 150 are visitor spaces. Currently all employees who apply for a parking permit can obtain one. There also appears to be adequate visitor parking for typical days, however the bulk of it is located in one location (the East Campus Garage).

The Master Plan eliminates surface parking to create sites for new buildings and open space. The total number of spaces eliminated is approximately 1,125 spaces. Planned parking decks could add 1,620 spaces, or a net increase of 495 spaces.

The Master Plan also provided a net increase of 743,000 gross square feet of building space (academic, research, administration, and residence halls). This represents a 19 percent increase in space.

CMU is committed to reducing the number of cars that come to campus, and improving the utilization of the parking supply:

- Currently less than 60 percent of all employees drive.
- CMU offers all employees a free Port Authority bus pass. Students ride free with their student ID card. There are 12 bus routes serving the campus, and the impact of the free bus pass program has been very effective. Between 99/00 and 00/01 transit use by CMU employees and students increased by over 40 percent (from 700,000 to 1,000,000 annual riders), and is anticipated to rise to 1.4 million in the next 3-4 years.
- Plans are proceeding to create a Transportation Demand Management (TDM) office to promote, and assist commuters in using, alternative modes. TDM measures to be pursued will include transit, ridesharing, cycling, teleworking, flextime, and financial incentives for CMU faculty and staff to buy housing close to campus.
- The University plans to introduce a flexpass program using "smart" technology. Parking permit holders would be charged for the time they park in contrast to the current arrangement where an annual parking permit allows unlimited parking. The flexpass should encourage some users to avoid bringing their vehicles if they can travel by alternative means.





The University also is examining opportunities for sharing parking with neighboring institutions. One example is a plan by Phipps Conservatory to construct a parking garage to accommodate its peak visitor demands which occur on weekends. This type of shared use reduces the amount of parking that needs to be constructed in the area.

B. Proposed Parking Garages

Morewood Site (north of Forbes Avenue)

This site is currently a surface parking lot accommodating 733 vehicles. Its primary access is from Forbes Avenue, with ingress directly west of the Morewood Gardens Residence Hall and egress via a traffic signal opposite Hamburg Hall. A secondary exit drive connects to Morewood Avenue behind the residence hall.

The Master Plan includes a 600-space below-grade garage in conjunction with academic buildings and open space. The site is elevated approximately 5-10 feet above Forbes Avenue, and slopes gradually downwards towards Junction Hollow. The primary access will continue to be on Forbes Avenue, however the ingress and egress will be combined into one new location opposite Hamburg Drive (directly east of the railroad bridge). The proposed access point will be signalized (distances from adjacent signals are adequate). The existing access points will be eliminated to minimize conflicts with major pedestrian flows across Forbes Avenue as academic buildings are developed on the Morewood lot along with the proposed garage.

A second access will be required, preferably from a different road. A second Forbes Avenue access between the bridge and Morewood Avenue is possible, however, as

indicated above, pedestrian conflicts would be increased. The most obvious option is to use the existing access behind the residence hall, particularly since this is being widened to allow two-way traffic movement. Other options will be assessed in more detailed design studies for this precinct, including the potential for a direct connection to Fifth Avenue.

Doherty Apartments Site

This site currently has 120 spaces in two lots that share a single access point on Forbes Avenue. New residence halls are proposed to occupy the two lots. The lot closest to Forbes Avenue is approximately 20 feet higher than the street, and the second lot another ten feet above that.

As part of the development of the residence halls, the site would be excavated to provide a single level of basement parking beneath the buildings (a total of 136 spaces). The lower level could readily be accessed from Forbes Avenue, and the upper level from Devon Road.

While the two parking floors would be at different elevations, they also could be connected to allow a single access from one of the streets. A Devon Road access would allow the elimination of the existing Forbes Avenue access, which is desirable. This arrangement would be particularly appropriate if the western entrance to the East Campus Garage were slightly relocated to align with Devon Road, and the new four-way intersection signalized. The signal would improve safety for the increased number of pedestrians who will be crossing in this area. A traffic analysis of Forbes Avenue shows that a signal at this location is feasible.

Another option is to avoid Devon Road altogether and serve all the parking with the Forbes Avenue access. This would maintain the existing access arrangements, and the amount of traffic using it would be almost identical to current numbers. The key disadvantage is that the potential to justify a new East Campus Garage entrance is diminished. As result, the large number of pedestrians who cross Forbes Avenue at this location would not have the benefit of a signal.

Expansion of East Campus Garage

The East Campus Garage was designed to accommodate one additional level. This can add 220 spaces to the existing 605 spaces. The traffic signal at the western entrance can readily accommodate the additional traffic.

Margaret Morrison Site

The Master Plan includes a garage under a planned addition to the east side of the Margaret Morrison Carnegie Hall. The site is on average approximately 12 to 15 feet lower than the surrounding pedestrian areas (up to 25 feet in the south-western corner), offering the opportunity, with some excavation, to fill in the bowl with three levels of parking. While the dimensions of the site are very limited, conceptual design shows that 225 spaces can be provided on three levels (using a split-level, two-bay configuration). Access will be via the existing driveway from Margaret Morrison Street which carries light traffic.

The existing driveway is skewed at the street, and realigning it can be considered. However, this is not essential as sight distance at the driveway entrance is adequate and it must continue to serve the loading docks at the east end of Resnik House and Donner Hall. If realigned, consideration could be given to reducing its steepness (now close to 12 percent), but loading dock access and internal truck circulation must be maintained. The current driveway does not interfere with any major pedestrian flows (preliminary designs include a north-south pedestrian bridge from the remaining open space between the proposed building and Donner Hall, over the access driveway, to the street in the vicinity of the gymnasium).

West Campus/Panther Hollow

Two garages are proposed for West Campus:

- In the depression east of Newell-Simon Hall (referred to as the West Campus garage) - 150 spaces on two levels
- West of Hamburg Hall, on east slope of Junction Hollow (referred to as the Panther Hollow garage) - 288 spaces on multiple levels

These garages are considered together since they will share access.

The West Campus garage is an element of redevelopment plans for an area that includes the depression, and south and west of Hamburg Hall. A two-level West Campus garage would "fill" the depression to create a plaza at the elevation of the main floor and upper entry of Newell-Simon Hall (approximately 20 feet above the low point of the depression). The Panther Hollow garage would be located beneath a new building planned for the west side of Hamburg Drive.

The Master Plan also proposes closing (to general traffic) the roadway that winds through West Campus and connects Hamburg Drive with Roberts Drive. This would eliminate cut-through traffic, greatly improve safety for the many pedestrians walking between Newell-Simon Hall and Hamburg Hall, and allow for more green space.

Currently there are approximately 180 parking spaces in this general area, including 60 around Hamburg Hall (24 of which are metered spaces for visitors), 29 behind Purnell Center, and 60 on two levels in the depression. Access is from Hamburg Drive, Roberts Drive and Neville Street via a drive under the Facilities Management Services Building (FMSB). Based on traffic counts which show approximately 100 vehicles exiting Hamburg Drive in the afternoon peak hour, this appears to be the primary access route (this also accounts for the high traffic volume that crosses the pedestrian path between Newell-Simon Hall and Hamburg Hall). The access is dangerous because of limited sight distance, and exiting vehicles cannot easily see pedestrians on the Forbes Avenue sidewalk or vehicles approaching from the west. Vehicles turning into or exiting the drive also disrupt the Forbes Avenue traffic flow. Therefore, it is highly desirable to reduce the amount of traffic using Hamburg Drive.

Roberts Drive also has limitations as an access route since a portion of it is a single lane operating in two directions (though it can accommodate some additional traffic).

The West Campus road system also is used by many service vehicles. These include on-campus service vehicles and traffic generated by facilities such as the Publications and Printing Building. This may account for the high





traffic volumes using Hamburg Drive. Access to these locations, as well as internal circulation for the small, battery-operated CMU service vehicles (referred to as mules), must be maintained.

The redevelopment of this West Campus area will eliminate most of the 180 surface spaces. Approximately 30 spaces will be retained west of Hamburg Hall for visitors. A taxi drop-off/turn around is also planned for this area, with access from Forbes Avenue.

The following access arrangements are proposed:

- The Panther Hollow garage (288 spaces) will have access only from Neville/Boundary Streets and Roberts Drive. The lowest floor of the garage will be at the same level as the unpaved roadway that parallels the east side of the CSX railroad track in Junction Hollow and serves as the current access road. This roadway will be eliminated. The lowest level of the garage will provide access into the garage, as well as replacing the function of the existing roadway for through traffic, including service and emergency vehicles, to Roberts Drive via the road under FMSB.

Currently the unpaved roadway connects at an acute angle to Neville Street directly north of the railroad track crossing. Replacing it with a drive internal to the garage allows a safer, right-angled connection to Neville Street farther north than the existing location. While Neville and Boundary Streets are minor roads that would benefit from some upgrading, they carry relatively low traffic volumes.

A direct connection to Roberts Drive can be provided from an upper level of the garage.

No access is provided to Hamburg Drive which will serve only the 30 surface visitor spaces and service and emergency vehicles.

- The West Campus garage (150 spaces) will be accessed from Roberts Drive and Neville Street via the road through the Panther Hollow garage and under FMSB. No access is provided to Hamburg Drive.

The plan severs the existing access between the Hamburg Drive area and Roberts Drive and the road under FMSB. Service and emergency vehicles will be able to access Smith Hall, the Publications and Printing Building, Purnell Center and other buildings in the area from Forbes Avenue via Hamburg Drive. Wean Hall and Doherty Hall will be accessed via Roberts Drive or from Neville Street via the road under FMSB (sufficient space would be provided on the south side of the West Campus garage for large vehicles). A path also would be provided along the eastern edge of the garage for the mules.

Margaret Morrison Street Modifications

Margaret Morrison Avenue is a local street bordering the east side of the campus. It is 36 feet wide, with parking on both sides. It separates a large amount of student housing from the campus which generates heavy pedestrian flows across the street. One of the most heavily-used pedestrian paths on the campus crosses the street and continues between Bass and McGill Halls.

The Plan proposes improving pedestrian safety and the appearance of this street by narrowing it at this main pedestrian crossing. This is achieved by extending the sidewalk out to the full width of the parking lane on both sides of the street, and altering the pavement to signify to motorists the presence of pedestrians (e.g., by using brick or granite pavers). More prominent pedestrian crossing signs also should be installed.

These changes will:

- Improve pedestrian safety by allowing pedestrians to more clearly see traffic while still on the curb. In addition, pedestrians waiting to cross the street will be more visible to motorists. Currently, many pedestrians cross between parked vehicles, and may not be seen by motorists until they actually step into the travelway.
- Improved the appearance of the street by narrowing the pavement.

This type of narrowing is common in many places in the US (including successful installations locally in Mt. Lebanon

and Dormont), but the City of Pittsburgh does not currently have this type of treatment on any of its streets. The City, which has expressed concerns regarding safety and maintenance, must approve the narrowing.

Forbes Avenue Modifications

Forbes Avenue is a major, four-lane arterial street separating campus housing and other facilities on the north side from the main academic campus. The 17,000 vehicles using this section of Forbes Avenue on a typical weekday create a safety hazard for the large number of pedestrians who must cross the street. In addition to north side residents, bus users, and people parking on the north side also must cross the street. The street environment and traffic makes it generally unpleasant for pedestrians along or near the road, as well as an unattractive entrance for CMU. Sidewalks are narrow with limited streetscape. While the posted speed is 25 MPH, higher speeds are common.

The Master Plan envisions substantial growth on the north side, including academic buildings. In addition to more pedestrians crossing Forbes Avenue, the street will become a more prominent element of the campus. It is therefore highly desirable to improve pedestrian safety and the appearance of the street.

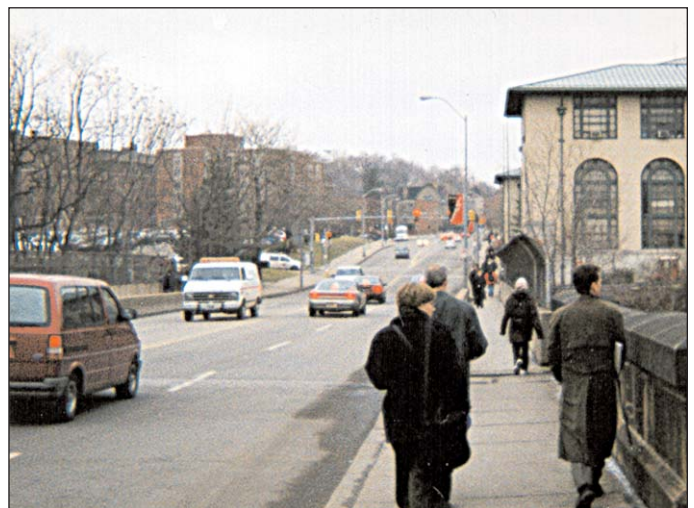
The option of providing one or more pedestrian overpasses to the academic building proposed for the Morewood lot was considered but rejected since they would not provide convenient path and would be used by only a few pedestrians. Therefore, various modifications to Forbes Avenue to mitigate the impacts of traffic were analyzed. Traffic counts were obtained in May, 2001 and a detailed traffic analysis was undertaken for the morning and afternoon peak periods using traffic simulation software. The analysis projected five years into the future by applying a one percent annual growth rate in background traffic in addition to traffic that will be generated by the increased CMU parking in the Master Plan.

A major factor in the analysis was the large number of buses on Forbes Avenue (over 50 buses in a single hour in the peak periods). While bus pullouts for passenger loading are provided in both directions, drivers typically do not use the eastbound direction pullout at the end of the Cut because of the difficulty of merging back into traffic. The Port Authority has indicated that it is not opposed to eliminating this pullout. However, the westbound pullout in front of the Morewood Gardens residence hall must be retained. Passenger loading and discharging for all

westbound buses also occurs at the stop opposite Hamburg Hall and at Devon Street, requiring both westbound traffic lanes to be retained in these areas.

The recommended modifications for Forbes Avenue are selected narrowings as described below. The key modifications are in the westbound direction where one of the two through lanes has been eliminated in some locations to narrow the roadway. The traffic analysis shows that these modifications provide acceptable traffic operations. In summary,

- One westbound lane is eliminated between the Doherty Apartments driveway and Beeler Street, allowing the pavement to be narrowed through this area of Forbes Avenue. In addition, the Forbes Avenue eastbound left-turn lane at the Beeler Street intersection is eliminated to further narrow Forbes Avenue at this location.
- The section between the Doherty Apartments driveway and Morewood Avenue, remains at four lanes because of the unprotected bus stop directly east of Devon Road (i.e., no bus pullout is provided), and turning traffic into several driveways (including the proposed drop-off driveway near the East Campus garage). A signal also is added at Devon Road and the realigned East Campus Garage entrance.
- No narrowing is proposed between Devon Road and Morewood Avenue. However, at the Morewood Avenue intersection, the westbound right-turn bay lane and eastbound left-turn bay lane are eliminated to reduce the roadway width.





- At Morewood Avenue, westbound buses would remain in the right lane which will be an exclusive right turn lane for general traffic. Buses could continue through the intersection to the bus pullout just west of the intersection. This requires the sidewalk to be pulled back approximately ten feet to provide a continuous through lane for buses only.

The narrowing through this intersection allows the sidewalks to be widened. Ideally a wider sidewalk is desirable on the south side of Forbes Avenue where pedestrian traffic is higher. This may be feasible to some degree, but abrupt shifts in traffic lanes must be avoided.

- The Morewood parking lot exit and signal is moved west to the future garage access (entry and exit) opposite Hamburg Drive.
- From the Morewood Avenue intersection to just east of the proposed relocated signal at Hamburg Drive and relocated Morewood parking lot entrance/exit, one westbound through lane is eliminated. The road widens again to two lanes at the bus stop opposite Hamburg Hall (just before the relocated signal) to allow traffic to pass a stopped bus.
- Streetscaping, including trees as shown in the Master Plan, is very desirable as it can visually signify to drivers that they are passing through an area where pedestrians may be prevalent. Altering the texture of the roadway pavement (e.g., brick paving) can also reinforce this message, but may not be acceptable to the City or State.

This design concept and the traffic operations analysis have

been presented to City engineering and planning staff. Their initial response is that it appears feasible, but more detailed studies would be required to confirm its acceptability.

Other options analyzed but rejected include:

- Eliminating one lane in each direction. Because of the heavier eastbound traffic flows, one eastbound lane would result in congestion and long traffic delays in that direction in the afternoon. In addition, the constant flow of traffic along the route would make it very difficult to enter Forbes Avenue from a side street.
- One traffic lane and one bus-only lane per direction (i.e., provide buses with their own lane). This would result in the same congestion as the one lane option.
- Two eastbound and one westbound lane. This also would result in the same congestion as the one lane option.
- One lane in each direction with a reversible center lane. This can be dangerous for pedestrians since they may not be aware that the direction of the reversible lane changes during the day.
- Allowing parking in the curb lanes in the off-peak hours. This does not address the periods when heavy pedestrian and traffic flows coincide.
- Widen the road on the north side to add a landscaped median and retain the four-lane configuration. Operationally this is feasible, but the cost would be very high as Forbes Avenue would have to be widened a minimum of 16 feet to provide a 12-foot median.
- Installing traffic calming devices. There is inadequate right-of-way width to allow the horizontal alignment of the road to be modified or devices such as traffic circles to be installed. Raised pavement devices such as speedtables cannot be considered because of the high volume of traffic.

APPENDIX 4: SUSTAINABILITY

Carnegie Mellon Campus Master Planning and Sustainable Design and Development and Campus Ecology GBA/CCI

Alignment with Carnegie Mellon's Planning Principles

1. Promote meaningful discourse about space and facilities
 - 1.1. Discussion for purposeful education and orientation to:
 - 1.1.1. inform other initiatives and related activities
 - 1.1.2. facilitate research and curriculum development
 - 1.1.3. enable grant writing and capital development
 - 1.1.4. facilitate the formation of public/private partnerships
 - 1.1.5. enable community involvement via information dissemination and the invitation to participate in the discourse
 - 1.1.6. join the US Green Building Council and disseminate the results of the Carnegie Mellon Master Planning process to the widest number of constituents possible
2. Protect campus green space
 - 2.1. Protect in the literal sense of limiting damage to, or abuse of, existing green space
 - 2.2. Protect the ecology of green spaces via restoration to more natural working eco-systems and landscapes
 - 2.3. Wean the landscape from a dependence on chemical intensive inputs and energy and resource intensive equipment
 - 2.4. Incorporate signage and other educational efforts to instill a greater appreciation for the role and importance of green spaces within the campus and surrounding community.
3. Plan outdoor campus space with definition
 - 3.1. Use greater definition and clarity to improve pedestrian orientation and way finding
 - 3.2. Use orientation, sight lines and major/minor axis to emphasize the Carnegie Mellon "heritage" buildings (CFA, etc.), solar geometry (sun dial/plaza), and visual landmarks (Cathedral of Learning?)
 - 3.3. Define spaces in ways that celebrate the grand and formal, and the intimate, human scale experience.
4. Preserve future building sites for the most appropriate use
 - 4.1. Select sites with the intention of accomplishing all of the Master Plan's stated goals
 - 4.1.1. greater definition of outdoor space,
 - 4.1.2. way finding,
 - 4.1.3. improved vehicular and pedestrian circulation
 - 4.2. Evaluate building sites with regard for potential use of natural systems
 - 4.2.1. Solar exposure, wind/natural ventilation, daylighting
 - 4.3. Highest and best use with respect to multiple returns or solutions to perceived needs
 - 4.3.1. Earth integrated parking garages with green roof decks for additional open space where additional open space is needed, and where parking can be strategically located
 - 4.3.2. Campus residence structures placed where the pedestrian patterns can reinforce the proposed circulation.
 - 4.3.3. Structures located to enclose additional open space, or to create residual space that can be used for outdoor gathering and class space
5. Maintain circulation patterns that provide orientation, a sense of place
 - 5.1. See number 3
6. Capitalize on the architectural heritage of the university
 - 6.1. Extend "heritage" to recognition of the local materials, craft guilds, trades, and other cultural influences beyond architecture per se.
 - 6.2. Respect the value of all existing heritage buildings. Adopt a deconstruction/salvage mind set over demolition if any part of a campus heritage buildings is undertaken.
 - 6.3. Incorporate art work or archival information celebrating the campus into signage, graphics, course work, etc.

7. Design buildings with regard to their environmental impact
 - 7.1. Incorporate the tenants of sustainable design and development in all aspects of site and building design, construction and maintenance and operation.
 - 7.2. Adopt the US Green Building Council's LEED building rating system, and include the requirement for the same in all Requests for Proposals and Requests for Qualifications associated with new construction and renovation.
 - 7.3. Become a member of the US Green Building Council (See #1). Use LEED building rating process to educate design and construction stakeholders about environmentally responsible design. Promote/advertise the acquisition of USGBC ratings ("Gold, Silver, Bronze buildings, etc.)
 - 7.4. Review Drivers of Change in Carnegie Mellon Campus/Sustainable Campus Issues, Loftness, et al, and the Commonwealth of Pennsylvania Guidelines for Creating High Performance Green Buildings, Kobet, et al.
 - 7.5. Extend this concern to all operation and maintenance issues, contracts, and procurements.
8. Adhere to universal design in all campus improvements
 - 8.1. Yes
9. Design with regard to the neighborhoods of Squirrel Hill and Oakland
 - 9.1. Recognize that the ecological footprint of Carnegie Mellon extends well beyond Oakland and Squirrel Hill
 - 9.2. Be proactive about linking the Carnegie Mellon Master Planning Process to the work of the Riverlife Task Force
 - 9.3. Optimize the Carnegie Mellon MP by coordinating to the greatest extent possible, the proposed Green Design of the Phipps Conservatory Expansion
 - 9.4. Evaluate the potential for stacking functions with Schenley Park's open space, athletic facilities
10. Maintain the highest technical and functional standards for human need and comfort
 - 10.1. Establish a way to evaluate whether

appropriate technology and/ renewable energy sources can be used to accomplish this goal.

- 10.2. Incorporate a methodology or strategy that includes third party, post occupancy evaluation and feed back of the systems implemented
- 10.3. (See comments in #7)

Carnegie Mellon Master Planning and Sustainable Design and Development and Campus Ecology GBA/CCI

Campus Wide Issues, Landscape and Circulation Issues and Building Issues

1. Recognize the goals of the Riverlife Task Force, and the potential for coordinating the riverside trail net work via the Hollow.
2. Declare Carnegie Mellon a pesticide and herbicide free zone. Work to eliminate all chemically derived pesticides used inside or around buildings.
3. Capitalize on the Green Design Goals inherent in the major expansion of Phipps. Explore whether Phipps or its partners could serve as the nursery/incubation area for future plantings or heritage species to be used on campus.
4. Work toward closing the energy and nutrient loops inherent in the landscape, and the links that exist between those generated in buildings. Can Carnegie Mellon generate enough detritus via natural systems and diverting the organic waste streams to supply the soil constituents and nutrients necessary for a robust soil system?
5. Eliminate chemical deicing agents
6. Explore the use, however limited, of walking and biking surfaces that are not concrete or asphalt. ("Choked chip" ala the Washington D.C. Mall, etc.)
7. Landscape the Hollow to strengthen its potential as a wildlife/songbird corridor.
8. Evaluate the influence of residential and commercial districts to the southwest as well as to the north and east.

9. Earth integrate parking to the greatest extent possible. Use surface decks as additional green space or court surface areas.
 10. If a diagonal pedestrian link is created between Purnell and South Craig Street, commit to a robust design - extension of green way (living bridge), possible gathering/Carnival venue (configure with nodes), etc.
 11. Develop outdoor area east of CFA into outside dining/garden site or outdoor classroom lecture area.
 12. Explore the extension of the Hollow Green way as an alternate route to residential areas to the north and the West Campus Buildings
- Carnegie Mellon Campus Master Planning and Sustainable Design and Development and Campus Ecology
GBA/CCI**
8. Extend the landscape into the entrance zones of major buildings. Encourage the use of natural plants else where in buildings, especially in common areas.
 9. Consider the addition of water feature(s) on campus that are supplied their water and kinetic energy via diverted roof discharge or concentrated surface flows. These may be flow forms, small reflecting pools or intermittent channel flows.
 10. If appropriate species can be identified, use plants that supply color, bouquet and texture all year.
 11. Close all energy, material and nutrient cycles on campus - collect/harvest all fallen organic material. Compost and recycle. Replant from parent stock.
 12. Minimize monocultures. Contrast formal planting schemes with more natural planting designs. Work to create canopy as much as pattern.

Natural Landscape

1. Consider the Natural Landscape as a teaching tool. Design the interpretation of the same into the overall landscape strategy for seating, signage, storm water management, etc.
2. Partner with the Western Pennsylvania Conservancy and/or Phipps Conservancy to establish an arboretum / nursery / future heritage tree bank that will serve CMU.
3. Commit to life cycle cost analysis of green roofs, parking decks and earth integrated parking structures based on the relationship of environmental stewardship and economic benefits.
4. Landscape for energy conservation, habitat and the creation of outdoor class / lecture areas defined by combining landscaping and building facades
5. Where separation or enclosure is required, utilize living fence or landscaping materials whenever possible.
6. Daylight as much storm water run off as possible. West to Panther Hollow?
7. Work to make Carnegie Mellon a herbicide / pesticide / chemical free zone



Parking and Road Network

1. To the greatest extent possible, substitute alternative paving materials for concrete and asphalt.
2. Where hard surfaces are employed, specify high recycled content materials - recycled asphalt, recycled crushed glass filler, fly ash concrete, etc.
3. Use the most benign deicing materials possible. Distribute anti-skid material instead of salt if accumulation/redistribution can be handled.
4. Earth integrate parking, and use green upper decks for increased green space and/or horizontal recreational court surfaces.
5. Untangle west campus
6. Use alternative fuel vehicles for Carnegie Mellon personnel transportation, campus police, the distribution of supplies, and maintenance.
7. Explore the use of Panther Hollow as an extension north into the Central Catholic area, and to West Campus
8. Specify all parking and vehicle control devices and accessories to be made from recycled materials - wheel bumpers, street furniture, kiosks, etc.
9. Specify energy and resource efficient street and exterior lighting. Minimize light pollution and vertical bleed. Scavenge light from existing source where practical.

APPENDIX 5. CAMPUS BUILDINGS AND FACILITIES LIST

<i>Building</i>	<i>Primary Use</i>	<i>Gross Sq. Footage</i>
4902 Forbes Ave. (former Naval Res)	General Use/Support	41,030
Alumni House	Administration	8,325
Baker/Porter Hall	Academic/Research	257,192
Boss Hall	Residence Hall-Dorm	14,095
Bramer House & Garage	Administration	4,472
College of Fine Arts	Academic/Performance	125,143
Doherty Apartments	Residence Hall-Apt	34,071
Doherty Hall	Academic/Research	216,656
Donner Hall	Residence Hall-Dorm	56,308
East Campus Garage	Parking/ Parking & Security Offices	190,000
Elliott Dunlap Smith Hall	Academic/Research	17,526
Fraternity Duplex 1055-57	Residence Hall-F/S	19,585
Fraternity Duplex 1063-65	Residence Hall-F/S	17,964
Fraternity Duplex 1069-71	Residence Hall-F/S	17,680
Fraternity Duplex 1077-79	Residence Hall-F/S	17,680
Fraternity Duplex 1085-91	Residence Hall-F/S	17,680
Fraternity Duplex 5031-33	Residence Hall-F/S	17,680
Fraternity Workshops	Special Use/Support	5,390
George A. Roberts Engineering Hall	Academic/Research	72,000
Gesling Field	Athletics/Support	20,609
GSIA	Academic/Research	58,191
Gymnasium	Athletics	62,845
Hamburg Hall	Academic/Research	101,948
Hamerschlag Hall	Academic/Research	114,881
Hamerschlag House	Residence Hall-Dorm	30,181
Henderson Hall	Residence Hall-Dorm	9,773
Hunt Library	Library	101,525
Margaret Morrison	Academic/Research	109,691
Margaret Morrison Apts A	Residence Hall-Apt	15,980
Margaret Morrison Apts B	Residence Hall-Apt	6,356
Margaret Morrison Plaza	Special Use/Support	6,775
McGill Hall	Residence Hall-Dorm	14,095
Morewood A, B, C, & D Towers	Residence Hall-Dorm	136,156
Morewood E Tower	Residence Hall-Dorm	57,187
Mudge B Wing	Residence Hall-Dorm	25,000
Mudge C Wing	Residence Hall-Dorm	25,000
Mudge House	Residence Hall-Dorm	16,590
Newell-Simon Hall	Academic/Research	169,000

Campus Buildings and Facilities List (continued)

<i>Building</i>	<i>Primary Use</i>	<i>Gross Sq. Footage</i>
Physical Plant Building	Support	44,057
Planetary Robotics	Research	7,312
Posner Hall (GSIA)	Academic/Research	77,906
Publications & Printing	Special Use/Support	10,318
Purnell Center	Academic/Performance	111,000
Resnik House	Residence Hall-Dorm	66,187
Richard M. Cyert Hall	Special Use/Support	62,664
Roselawn Terrace 10-12-14-16	Residence Hall-Apt	6,366
Roselawn Terrace 1-3-5-7	Residence Hall-Apt	6,368
Roselawn Terrace 2-4-6-8	Residence Hall-Apt	6,454
Scaife Hall	Academic/Research	36,674
Scobell Hall	Residence Hall-Dorm	12,715
Sorority Apts 101-105 (MMApts)	Residence Hall-F/S	14,044
Spirit House & Garage	Residence Hall-Apt	3,723
Studio Theatre	Academic	3,915
Tech House (Roselawn 15)	Residence Hall-Apt	2,570
University Center	Special Use/Athletics	240,000
Warner Hall	Administration	45,823
Wean Hall	Acad/Res/Library	293,544
Welch Hall	Residence Hall-Dorm	12,436
West Garages	Special Use/Support	2,797
West Wing	Residence Hall-Dorm	53,571
Woodlawn Apartments	Residence Hall-Apt	11,982
Total Carnegie Mellon Buildings in the Planning Area	61	3,364,686

ACKNOWLEDGEMENTS

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