2004 Campus Master Plan Update

Georgia Institute of Technology
November 2004

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Executive Summary

A. Introduction

1. Intent

The intent of the Campus Master Plan Update (CMPU) for the Georgia Institute of Technology is threefold:

- to review the recommendations of the 1997 Campus Master Plan in light of the substantial development that has occurred on campus since that plan was prepared;
- to update the plan in response to the recently updated Strategic Plan for the Institute; and
- to create a plan for the future development of the campus that addresses the rapidly evolving needs of the institution.

2. Background

The CMPU has been prepared within the context of rapid development that has occurred on campus over the past five years. During that period a significant amount of new construction and facility renovations have taken place, including the construction of a significant amount of new academic and research facilities over the past five years. In that same time period the Baseball Stadium has been rebuilt, the Football Stadium expanded and the Campus Recreation Center substantially expanded. Campus construction has also included the mixed-use complex at Technology Square, which houses academic, research and support facilities as well as a new hotel and conference facility.

3. Issues and Findings

The history of change and development that has occurred over the past five years, combined with the goals expressed in the recently updated Strategic Plan for the Institute, suggest that this pattern of rapid development, responding in large part to the context of the evolving research environment, will continue. The CMPU addresses the potential needs of the Institute for academic and research facilities within this environment.

The CMPU addresses more than just the future needs for academic and research space. The strategic plan recognizes that creating the academic and research environments of today – and the future – also requires consideration of the needs for living, and playing facilities. As envisioned in the 1997 campus master plan, it is the integration of these activities that will create a vibrant campus community. Toward this end the Institute has recognized the need for additional housing to support the graduate students and those students with families, as well as the further development of informal recreation spaces on campus.

The Strategic Plan for the Institute also strongly embraces the principals of sustainability, and the Institute has already made substantial progress in integrating sustainable design practices into the construction of new facilities. The CMPU has also embraced this principal through two major new initiatives that are included in the Plan. The first of these is the development of an “Eco Commons” that threads together existing and new campus open spaces to create a functional landscape that will improve stormwater retention and thereby reduce the amount of stormwater that flows from the campus into the City’s combined sewer system. The Eco Commons will also provide a setting for expanded informal recreational spaces in several locations around the campus.

The second sustainability-related initiative incorporated in the master plan is an accessibility overlay. With a campus that has substantial changes in grade, accessibility is a major issue for those students, faculty, staff and visitors that are mobility impaired. The CMPU identifies several specific locations and types of improvements that are needed to make the campus significantly more accessible.

B. Goals

The major goals for the CMPU can be viewed in the context of the Strategic Plan's emphasis on creating a "sustainable campus community". Sustainability is often described as the balance between the three "E's": ***Economy*** – "how we manage and use resources", ***Ecology*** – "the pattern of relationships between living things and their environment", and ***Equity*** – "the fairness of relationships between people". If we translate this general sustainability framework to one that better describes the Campus Environment we would exchange the term equity for ***"Educational Life"*** – which encompasses equity and all the additional elements related to the social and academic life of the campus community. In this context accessibility is a key part of an equitable environment and a key element of a sustainable campus community.

Based on the goals presented in the strategic plan, and the sustainability emphasis adopted in that plan, the following major goals have been identified for the CMPU.

Educational Life

- *Improve campus livability by planning and designing buildings and spaces that enhance the living, working, learning environment of the Institute*
- *Improve campus accessibility*

Ecology

- *Plan an integrated functional open space system that reduces stormwater discharge to the city system*

Economy

- *Accommodate future needs of the Institute for academic, research, support and related functions*
- *Maintain flexibility to address opportunities*
- *Minimize costs*

C. Existing Conditions

As noted in the introduction to the Executive Summary, the Georgia Institute of Technology has undergone substantial growth and change over the past five years.

1. Enrollment

In 1996 the enrollment at Georgia Tech was 12,985 total undergraduate and graduate students.

At the time the previous master plan was prepared it was projected by Georgia Tech that by 2002 the enrollment would grow to 13,799 undergraduate and graduate students and an additional 1,042 distance learning students. Actual enrollment in the fall of 2002 was 16,479 total students of which 11,457 were undergraduates and 7,533 were graduate students. This is 2,680 more students than was projected in the 1997 master plan.

2. Facilities

Major new facilities that have been constructed on-campus since completion of the previous plan include: the Parker H. Petit Biotechnology Building, the Ford Motor Company Environmental Science and Technology Building, the U. A. Whitaker Biomedical Engineering Building, and the J. Erskine Love Manufacturing Building. **(Figure 1 Existing Conditions - 2004 Master Plan Update)** Combined these facilities have added approximately 692,000 square feet of academic and research space to the campus. In addition the Joseph B. Whitehead Medical Services Building has been completed providing a new state of the art medical facility for the campus. Major athletic and recreational facilities have been completed including the construction of the new Chandler Stadium for baseball and the expansion and renovation of Bobby Dodd Stadium.

J. Erskine Love Manufacturing Building

Georgia Tech's facility expansion has also extended to nearby areas including Technology Square in MidTown Atlanta and the North Avenue Research Area located to the southwest of main campus. Technology Square is a major new mixed use complex that incorporates significant new academic and research facilities. Among the major functions incorporated in the complex are: The College of Management, the Global Learning Center, the Economic Development Institute, and the Technology Square Research Building. Combined these facilities comprise approximately 700,000 gross square feet of new space. In addition to these facilities the Technology Square complex incorporates a 252 room hotel, 21,000 square feet of executive meeting space, and ballroom that can seat 600 persons and numerous additional support facilities and functions.

The North Avenue Research Area was developed as a location near campus that could accommodate facilities that involve activities not appropriate for the main campus . Presently the area

Technology Square

includes the Aerospace Combustion Laboratory and the Structural Engineering and Materials Research Laboratory that houses College of Engineering research programs. Approximately 40,000 gross square feet of new facilities have been constructed at the North Avenue site since completion of the previous campus master plan.

This context of significant development responding to rapidly changing and evolving academic and related research activities is also reflected in the Strategic Plan for the Institute, which was updated in 2002.

D. Future Needs

1. Enrollment, Faculty and Staff

For planning purposes, the CMPU has been based on an assumption about future enrollment growth at the Institute. In general it has been assumed that the undergraduate enrollment would grow very little if at all over the next 10 years, while the graduate enrollment might double in that same time frame. Numerically these assumptions mean that in ten years – 2014– Georgia Tech total enrollment on-campus would be approximately 20,000 - 22,000. Of this total, approximately 12,000 -13,000 are assumed to be undergraduate students and approximately 8,000 - 10,000 are assumed to be graduate students.

In 2002 there were 4,609 faculty and staff reported at the Institute. Assuming the ratio of faculty and staff to students remains the same as in 2002, future faculty and staff in 2012 will be approximately 7,600 persons.

2. Facilities

The assumed growth in enrollment, faculty and staff translate into needs for future facilities. Based on goals for class size, student/faculty ratios and appropriate ratios for academic, research, office and other support space, Georgia Tech staff have estimated future space needs. Their calculations indicate that approximately 4.1 million additional new gross square feet of academic, research and related support spaces will be required to support the assumed enrollment growth over a ten year planning period. This is the equivalent of approximately 26 buildings of the same size as the J. Erskine Love Manufac-

Georgia Institute of Technology

Campus Master Plan Update 2004
Inventory Data
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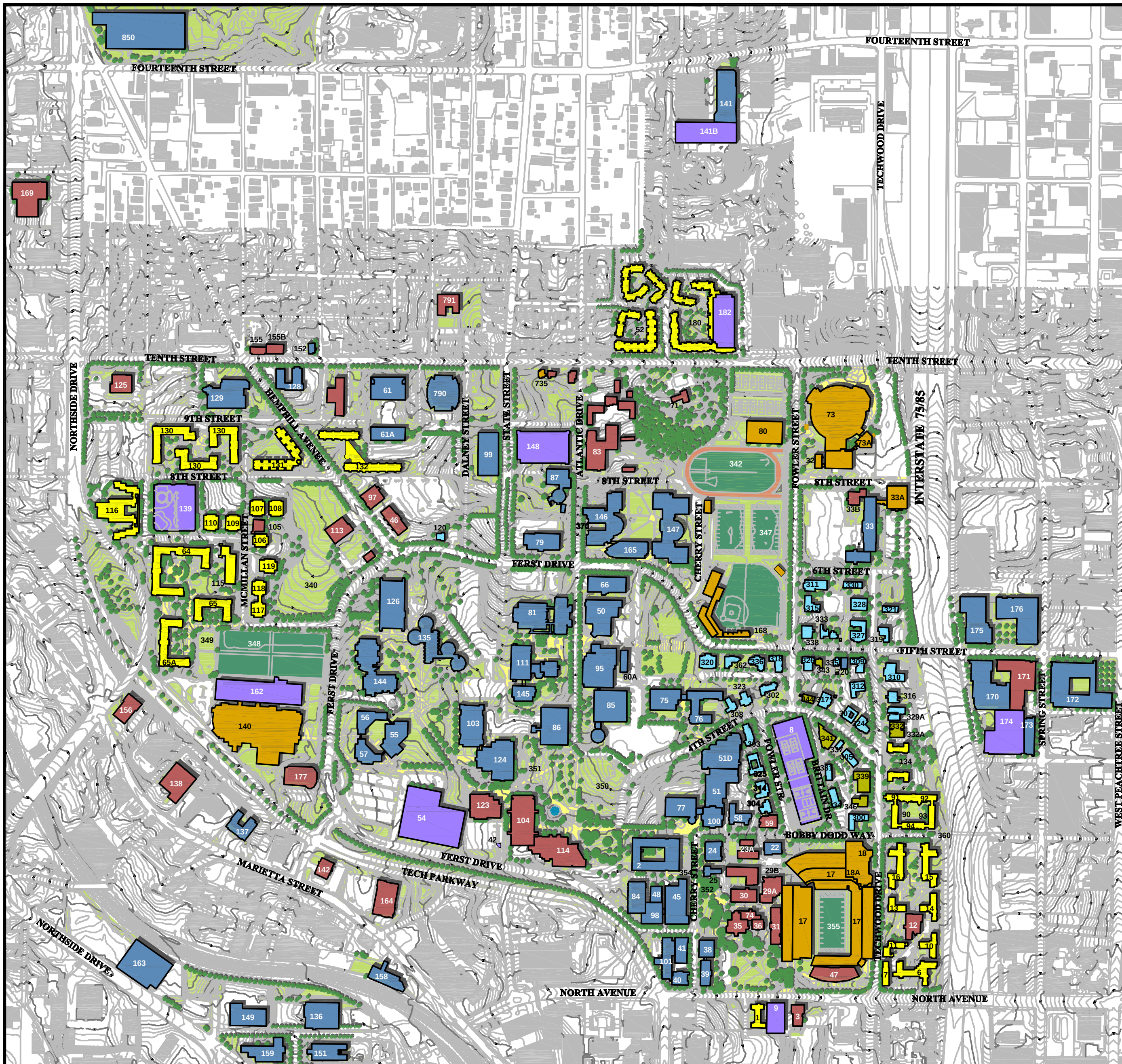
Figure 1 Existing Conditions - 2004 Master Plan Update



North

450
0 900
Scale: 1" = 900'

- Instructional / Research
- Support Services
- Athletic
- Athletic Fields
- Greek Organizations
- Parking Deck
- Residence Halls
- Religious Facilities
- Green Space

Note: See Appendix for Building Reference Number List.

turing Building.

In addition, the Institute has identified other future facility needs. These include the following:

Graduate Student Housing – Approximately 800 beds of additional graduate student housing have been identified as “current needs” to meet the needs of the current levels of graduate students at the Institute. These needs are the result in part of the high cost of off campus housing. In addition, given the assumption about future growth of graduate student housing, additional housing will continue to be needed well into the future. The Institute has not yet completed specific estimates of future additional needs, nor yet determined whether those needs should be met on-campus by the Institute.

Campus Support Facilities – the 1997 Campus Master Plan called for the relocation of the existing campus support facilities to provide sites on-campus for additional academic and research facilities. The relocation of these facilities remains a recommendation of the CMPU, and therefore a site or sites for their relocation will be required. In total, the relocation of these facilities will make available approximately 7 acres of land for future academic and research facilities on the north side of campus.

Chiller Plant – The expansion of academic and research facilities will require the construction of a new chiller plant. It is estimated that this facility will require a site of approximately 2 acres.

Softball Field – The women’s softball field is currently located several blocks north of campus. Although the facility meets basic NCAA requirements, it is inadequate, lacking on-site locker rooms, training facilities etc. In addition, an on-campus location would be preferred.

3. The Challenge

The amount of new facilities that will potentially be required to support the assumed growth in enrollment at the Institute is significant. During evaluation of alternative concepts for the master plan it was calculated that the “remaining” development capacity of the 1997 campus master plan could be between 1.7 million gross square feet and 2.4 million gross square feet, depending on the extent of the proposed Eco Commons and related open spaces. Clearly a major challenge for the CMPU was to identify additional development capacity either on or off-campus to meet the calculated future need. Related to this was the challenge to develop a plan that significantly advanced campus sustainability at the master plan level – through the creation of the Eco Commons functional open space system – while achieving the development capacity that will be required.

E. Campus Master Plan Update

1. Conceptual Framework

The Georgia Institute of Technology, through its recent development of new academic, research and related support facilities has begun to experience a fundamental change in the way the campus functions. The 1997 Campus Master Plan reflected to a large extent a traditional model of campus development. That model might be generally characterized as based on the notion of the campus as a place removed from the everyday life of the community, in which students were exclusively focused on their academic pursuits for a lengthy period of time. Today the Tech campus offers quite a different activity profile – with facilities, functions and activities extending well beyond the “historic” campus. This transition is further explained in the following comparison between the characteristics of the “traditional campus” and the characteristics of the “knowledge based community” that Georgia Tech now exemplifies.

Traditional Campus	**Knowledge Based Community**
Internally Oriented	Internally and Externally Oriented
“Ivory Tower” Isolated and Apart from the Community	Engaged with the Community at many Different Levels
“Silos” of knowledge	Interdisciplinary Teaching and Learning Community
Single Purpose Facilities Facilities	Multi-Functional / Interdisciplinary
Traditional Inwardly-focused Campus and Facilities	Distributed Facilities involving Movement of People and Electronic Communications
“Monastic Lifestyle”	Study / Play – Live / Work Community
Consumer of Resources	Steward of Resources
Uses Traditional Funding Sources and Project Delivery Methods	Leverages Partnerships and Funding Sources at many Different Levels to Achieve the Best, most Cost Effective Facilities

What does the Knowledge Based Community conceptual framework mean for the CMPU? In general terms it means several things:

a. The campus will continue to expand – both through infill development on the existing campus, and through expansion of facilities in key off-campus locations
b. As a result, the Institute will have to become increasingly involved with the surrounding Atlanta and MidTown communities – both to protect the future interests of Georgia Tech, and to further contribute to the enhancement of the areas around campus
c. Transportation – moving students around campus and to other locations will be even more important in the future, as more facilities are developed in off-campus locations.
d. Institute objectives for reducing on-campus parking ratios should be retained and transportation use further encouraged so that Georgia Tech can contribute to better air quality and less asphalt devoted to impervious surface.
e. Additional housing, open space, recreational opportunities will need to be developed to create the “Live – work – play” community envisioned in the strategic plan.

F. Major Campus Master Plan Recommendations

The CMPU is a logical extension of the patterns of activity and facility expansion that was established in the 1997 Campus Master Plan. Major recommendations of the Plan are **(Figure 2 Illustrative Plan Campus Map - 2004 Master Plan Update):**

Georgia Institute of Technology

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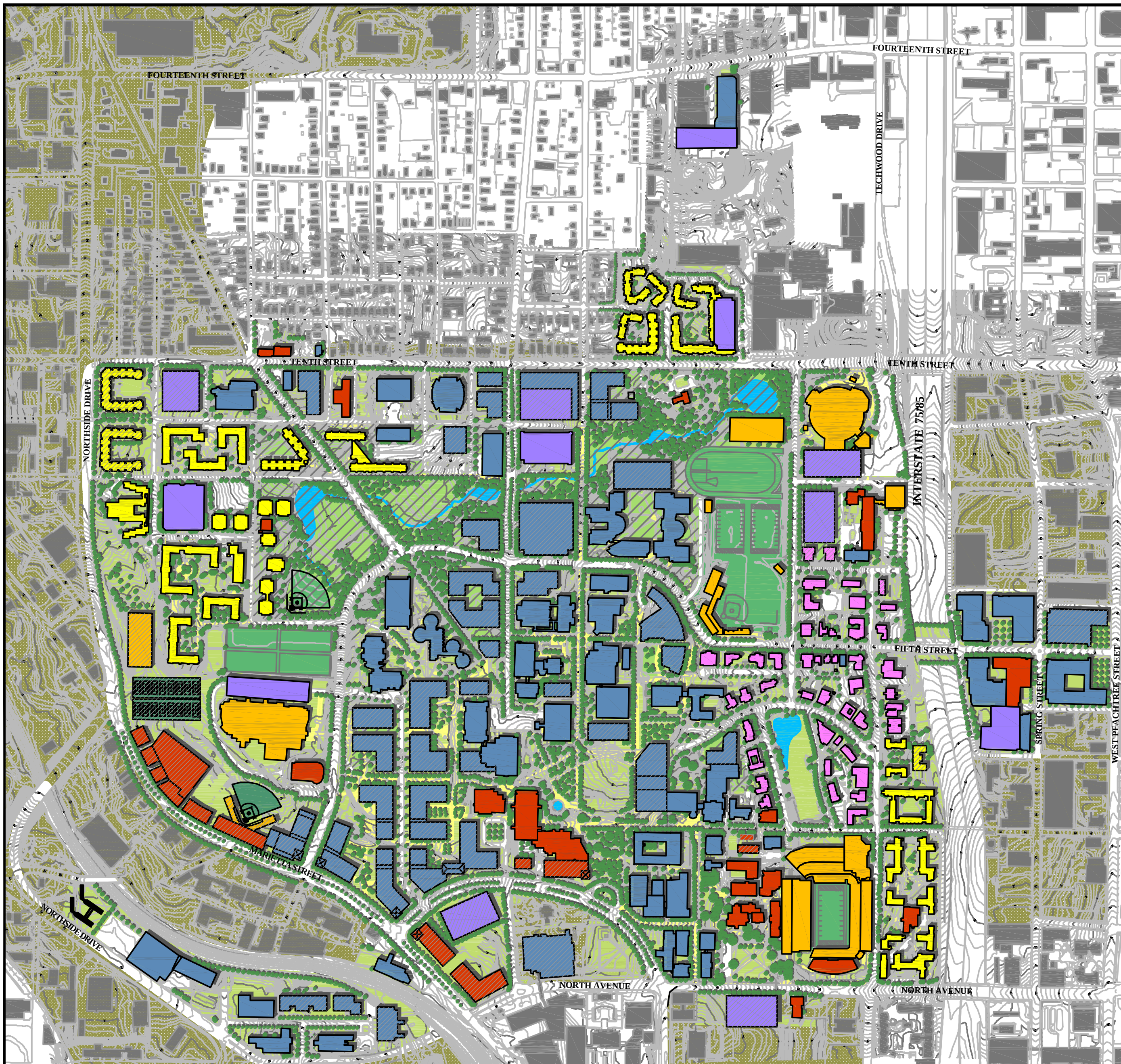
Figure 2 Illustrative Plan Campus Map - 2004 Master Plan Update



North

450
0 900
Scale: 1" = 900'

- Future Building
- Green Space
- Area Preserved for Storm Water Management
- Area of Interest

- Instructional / Research
- Support Services
- Athletic
- Athletic Fields
- Greek / Other Organizations
- Parking Deck
- Residence Halls

1. Land and Building Use

The CMPU retains the overall functional organization described in the 1997 campus master plan, and as reflected by the existing distribution of academic, research, residential, and support facilities. However, while the previous master plan identified a series of functional sectors radiating outward from the central academic core, the CMPU identifies future building sites and the appropriate general use of those sites, and focuses less on the concept of functional sectors. This is in recognition of the increasing multi-discipline / multi-purpose character of new facilities.

The plan identifies potential building sites both on and off campus. The on-campus net additional development capacity for academic and research facilities represented in the CMPU is estimated to be between 2.9 million gross square feet and 3.8 million gross square feet with the variance related to the height of buildings. While the Master Plan Update retains the recommendation to generally maintain the three – story height of buildings, it is recognized that some sites allow for development of additional floors due to their topography, in ways that will not compromise the desired low-rise character of the overall ensemble.

Based on the expansion into Midtown that has occurred at Technology Square, the Master Plan Update includes the potential for expansion of Georgia Tech – or Tech-related facilities on blocks adjacent to this important complex. As in the 1997 Campus Master Plan the Update includes the recommendation to expand the campus to Marietta Street on west.

2. Vehicular Circulation and Parking

The CMPU incorporates the vehicular circulation plan developed in the 1997 campus master plan. Major components of that plan included the reconfiguration of the campus entrance at Ferst Drive and Marietta Street and the closure of a number of streets to improve campus connectivity and pedestrian access.

The CMPU also retains the parking ratio goal adopted in the 1997 campus master plan of 52 spaces for every 100 students, faculty and staff. In 1997 this ratio represented a significant reduction in the 61/100 parking ratio that existed at that time. As of 2002 the Institute has actually exceeded the 52/100 objective – having achieved a parking ratio of 46 spaces per 100 persons. Maintaining the objective of providing 52 spaces per 100 persons will require a total of approximately 15,250 parking spaces to support the assumed future campus population. This number of spaces will be achieved by relocating approximately 7,000 surface parking spaces into more efficient parking decks and adding approximately 3,600 additional new spaces in deck parking facilities. This will significantly reduce the impervious footprint occupied by parking facilities on-campus.

3. Open Space and Pedestrian Circulation

The CMPU recommends that open space on the Georgia Tech Campus play a significant role in achieving the goals of sustainability and livability. This requires a new approach to open space. First, the idea of campus open space must be broadened to include the total area of the campus. Second, the idea of the landscape that is contained within the open space must be defined as the sum total treatment of all the open space, including roads, parking lots, and hardscape, as well as lawns, trees, and planting areas. Third, open space must be planned in both ecological and human dimensions, and these dimensions overlap and interrelate. The importance of this new approach points to ecology, whereby living and non-living elements within an environment are known to be inter-related. It is only by this concept that the issues of environmental sustainability, such as stormwater management, can be effectively addressed. Planning campus livability also requires this inclusive concept, because the human experience of the Tech campus knits everything together – walkways, roadways, gathering places, parking places, play places, etc. In summary the CMPU discusses two aspects of a singular, total campus open space: the ecological landscape, which is based on biophysical processes, and the human landscape, which is based on human activity patterns. **(Figure 3 Eco-Commons)**

The Eco-Commons is comprised of two fundamental building blocks: open spaces that are integrated physically and linked hydrologically to create a functional open space; and spaces that are designated with an ecological underlay. The functional open space constitutes what will look like a continuous park space extending through the north side of campus, occupying lands that are predominantly existing parking lots. The ecological underlay is applied to sites that are either occupied by existing development (buildings, open space, athletic and recreational fields, etc.) but that are important to the future development of the overall Eco-Commons concept. The Eco-Commons concept defines performance criteria for future improvement of existing facilities and /or development of new facilities in these zones. In broad terms the Eco-Commons will create a more sustainable campus for Georgia Tech. The practical result of which will be a campus that has significantly less storm water discharge to the city's combined sewer system.

The pedestrian circulation component of the CMPU incorporates the majority of the major pedestrian paths identified in the 1997 campus master plan. To that system the Update has added the concept that service corridors must – in the future – also serve as pedestrian movement corridors. This is the result of the increased pedestrian movement that has already occurred throughout the campus and the fact that as the campus becomes more intensively developed in the future, it will be increasingly difficult to prohibit pedestrian movement along the numerous service corridors that will exist.

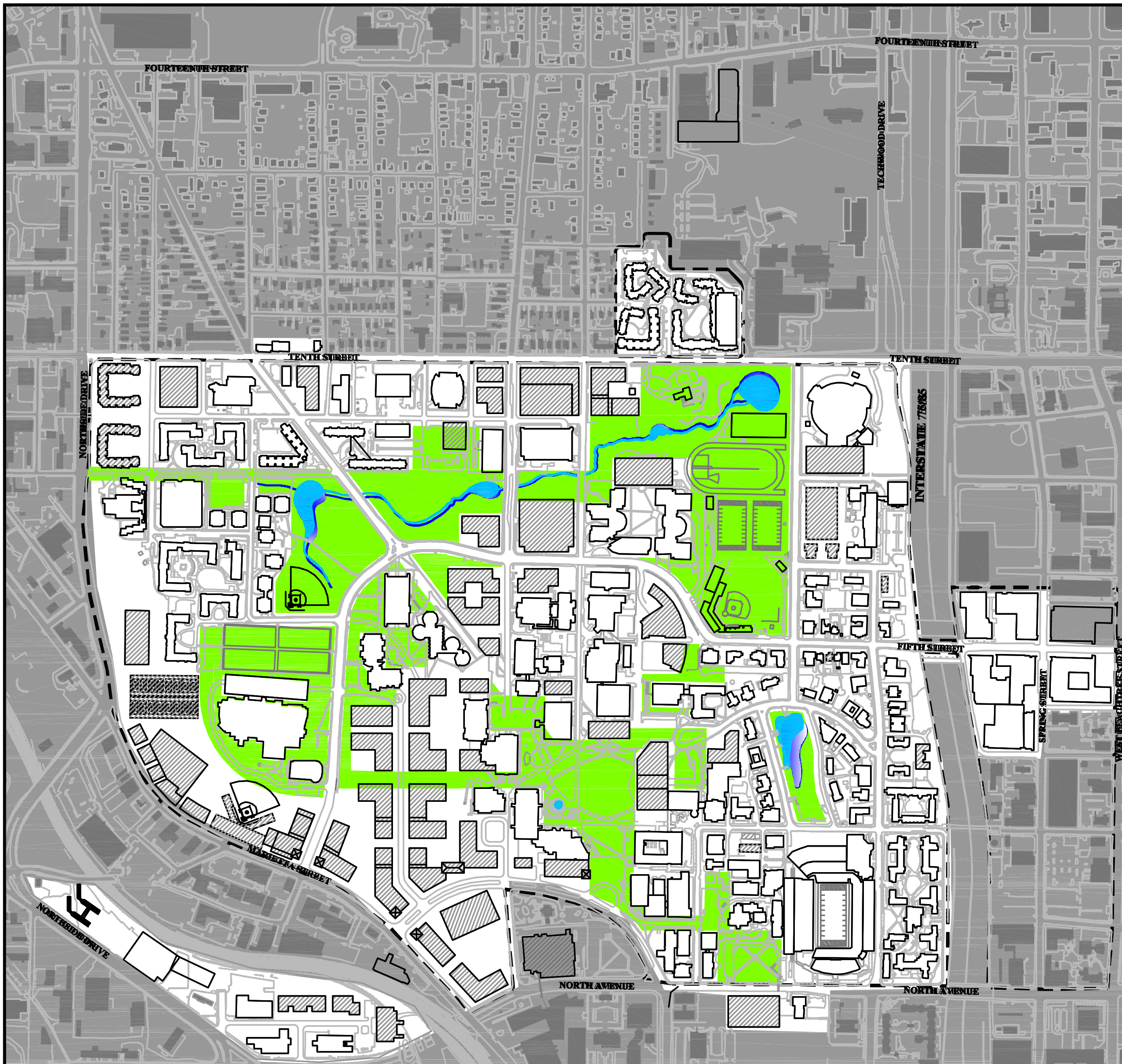
In addition, the pedestrian circulation system recommended in the Update incorporates an accessibility "overlay". This means that the entire campus – the major movement corridors as well as every major facility - has been analyzed to identify areas where accessibility is a problem. The plan incorporates specific recommendations for all areas and facilities inventoried that are not now readily accessible in accordance with federal guidelines. In addition, the plan identifies five major accessibility action areas where significant improvements will need to be made to improve overall campus accessibility.

4. Athletic and Recreational Facilities

The CMPU includes a short and long range plan for the relocation of the women's intercollegiate softball field. In the short range the field can be moved to Couch Park where the basic facilities for NCAA play can be accommodated. This will put the field on-campus which will be an improvement over the current off-campus location. In the long range the CMPU indicates a site for the softball field located just southwest of the Campus Recreation Center. This location will provide room for development of adjacent training and locker room facilities and will become part of the larger athletic / recreational complex centered in this part of campus.

The CMPU also incorporates the relocation of the Tennis Center from its present location at the east side of campus to a new location just west of the Campus Recreation Center. Due to the fact that land for the construction of this facility will have to be acquired, the existing tennis facility will remain until such time as the new one can be constructed.

Figure 3 Eco-Commons



North

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Scale: 1" = 900'

Future Building Sites

Existing Georgia Tech Facilities to Remain

The CMPU incorporates several locations for additional informal playing fields on the northwest part of campus that can be constructed as part of the implementation of the proposed Eco Commons open space. On the eastern section of campus, the Update incorporates the recommendation previously included in the 1997 Campus Master Plan that the Peters Park Parking Deck be demolished and the space returned to an informal park space for recreation and pre-football game events.

5. Campus Infrastructure

The CMPU indicates, as did the 1997 Plan, substantial additional development of academic and research facilities on the west and southwest sides of campus. To accommodate this development an additional Chiller Plant will be required. While this Plant can generally be located anywhere in the vicinity of the new construction, the Update indicates one location that is relatively central to all of the future development envisioned in this part of campus.

In addition, the CMPU illustrates a new site for a west-campus IT Hub.

I. History of the Institute

Initially founded in 1885, Georgia Tech opened to students in October 1888 as the Georgia School of Technology. It was initially an all male, vocational training-focused institution that required students to take shop classes and offered only one degree – a bachelor of science in mechanical engineering. The Administration Building – now Tech Tower, and the Shop Building located immediately to the west (destroyed by fire in 1892) were the first structures constructed on campus. Today the area around these structures – “the Hill” – comprises a national register historic district that encompasses 12 buildings including among them the Tech Tower, the J. S. Coon building, the A. French Building and the Lyman Hall building. In addition there are a number of other buildings on campus of various ages that are examples of a variety of historic architectural styles.

The Georgia Tech Campus 1913

The commercial shop program was abandoned in 1896 – unable to make a profit. This became a notable turning point for the school as new science-based programs were introduced to replace the shop programs and the schools of civil engineering and electrical engineering were created. By 1912 the campus was bounded by Cherry Street on the west, Techwood on the east, North Avenue on the south and 3rd Street on the north. The emphasis on technological innovation was initiated with the creation, by the Georgia General Assembly in 1919, of the Engineering Experiment Station – the precursor of the Georgia Tech Research Institute.

In 1931 the University System of Georgia was established and Tech’s role as the focal point for technology-oriented education in the state was secured, with the relocation of civil and electrical engineering courses at UGA to the School. In 1948 the Board of Regents authorized the School to change its name to the Georgia Institute of Technology.

The emphasis on forward-looking technology continued in 1957 when the Georgia Legislature provided $2.5 million for construction of a nuclear reactor on the Tech campus – and the subsequent completion of the Frank H. Neeley Nuclear Research Center in 1963. In 1964 the campus extended from Hemphill Avenue on the west to I 75/85 on the east and from North Avenue on the south to Tenth Street on the north. At that time Hemphill Avenue – a significant street in part because it cut across the regular north-south midtown street grid, extended southeasterly all the way to North Avenue. Then in the mid –60's the campus was expanded significantly to the west through an urban renewal program, to what is now Tech Parkway. This major expansion created the core campus boundaries as they presently exist.

Since the completion of the previous master plan in 1997, the campus has continued to undergo major changes. Among the major buildings constructed on campus over the past five years are: the Parker H. Petit Biotechnology Building, the Ford Motor Company Environmental Science and Technology building, the U.A. Whitaker Biomedical Engineering Building, the Joseph B. Whitehead Medical Services Building, the J. Erskine Love Manufacturing Building, and the expansion and renovation of the Campus Recreation Center and Aquatic Center. In addition the institute has undergone significant expansion of the campus as well with the construction of major new facilities at Tech Square and the creation of the North Avenue Research Area. The creation of these new campus facilities has occurred in response to the need for new facilities and the opportunities afforded by available, underutilized properties.

II. Goals Formulation

A. Institutional Vision, Mission Statement and Strategic Plan

The vision and mission of Georgia Tech are described in two succinct, focused statements:

> **Vision** – "Georgia Tech will define the technological university of the 21st century and educate the leaders of a technologically driven world"
>
> **Mission** – "to provide the state of Georgia with the scientific and technological knowledge base, innovation, and workforce it needs to shape a prosperous and sustainable future and quality of life for its citizens"

The strategic plan, which was updated in 2002 provides the basis for fulfilling the vision and mission. The introduction to the strategic plan contains the following statement: "Successful universities of the future will be defined by their ability to build learning and research communities that are multidisciplinary, multi-institutional, and that emphasize lifelong learning. They will extend the involvement of their graduates with the university throughout their lifetimes. These institutions will cross their own traditional boundaries as well as those among industry, government, and academia throughout the world." The introduction continues: " Georgia Tech's mission in education and research will provide a setting for students to engage in multiple intellectual pursuits in an interdisciplinary fashion."

The emphasis on "communities", "multidisciplinary", "multiple pursuits" and "interdisciplinary fashion" clearly speak to the way in which new facilities have been programmed and constructed since the 1997 campus master plan was completed. This emphasis on crossing traditional boundaries for collaborative efforts will continue to inform the 2003 campus master plan update. It suggests that facilities will continue to be organized (as they have in recent years) according to important – and ever evolving interrelationships among intellectual disciplines rather than according to traditional single academic department/ functional districts.

The strategic plan identifies Georgia Tech's Strategic Advantages, Challenges, Core Values and Strategic Goals. Strategic Advantages relevant to the development of the physical master plan include the following:

> *"A culture that fosters strong foundations for multidisciplinary and entrepreneurial activities and that orients the campus community to apply its knowledge to address real problems and opportunities."*
>
> *"A growing number of innovative facilities and campus settings designed to encourage interaction across units and the campus community and build bridges to adjacent neighborhoods."*

Several of the challenges listed in the Strategic Plan speak to issues that may have physical implications for the campus master plan update. The following quotes from the "challenges" section of the strategic plan also relate to some of the areas of emphasis from the mission and vision statements. Included among those challenge statements are the following:

> *"Continue to find ways to enhance our students' learning environment"*
>
> *"look beyond the traditional means of delivering instruction…. Also learn how to build new configurations of learning through these technologies" (distance learning)*
>
> *"take advantage of alliances with the growing technology community in Atlanta and*

Georgia"

"enhance our image as an institution where students can aspire to succeed in athletic, cultural, and social endeavors outside of the classroom"

The Strategic Plan lists 7 Strategic Goals and strategies to achieve them:

Goal 1: A Student-Focused Education

Goal 2: A Diverse Community

Goal 3: An Enhanced Research Enterprise

Goal 4: Expanded Local, Regional, and Global Outreach

Goal 5: Intelligent Development of Effective Information and Educational Technology

Goal 6: A Supportive, Collaborative and Effective Administrative Infrastructure

Goal 7: Facilities Improvement and Expansion

Strategies listed for Goal 7 – which is most directly related to the development of the physical master plan include the following:

"Develop the campus in a way that supports the larger aspirations of the Institute by encouraging the development of a sustainable campus community, creating distinctive architecture and open spaces and setting standards for others to emulate in the new century. Build facilities using environmentally responsible design and practices."

"Enhance the educational environment through the transformation of the library and other appropriate facilities into interactive learning centers employing the latest technology."

"Integrate education and research by developing facilities that foster collaboration along the lines of "neighborhoods for our community of scholars and researchers."

"Create state of the art research facilities that are a 'bridge' between industry and the academic environment, incorporating opportunities for private industry participation and collaboration between the activities of basic and applied research."

"Work with campus neighbors to create a comprehensive 'live/work/play' environment."

"Build on the possibilities offered by the Technology Square project in the growth of our technological management programs, multidisciplinary initiatives, continuing education options, and in the ongoing renaissance of our neighbor to the east and the north, Midtown."

"Use strategic collaborations where goals are consistent with those of Georgia Tech to expand opportunities for acquisition of facilities and equipment."

All of these strategies suggest a continuation of themes that have been developed over the past several years. Of significance is the emphasis on sustainability. While the 1997 master plan touched on this topic, it was not a major factor in the development of the plan or recommendations. Since the previous

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Goal 7: Facilities Improvement and Expansion

Strategies listed for Goal 7 – which is most directly related to the development of the physical master plan include the following:

"Develop the campus in a way that supports the larger aspirations of the Institute by encouraging the development of a sustainable campus community, creating distinctive architecture and open spaces and setting standards for others to emulate in the new century. Build facilities using environmentally responsible design and practices."

"Enhance the educational environment through the transformation of the library and other appropriate facilities into interactive learning centers employing the latest technology."

"Integrate education and research by developing facilities that foster collaboration along the lines of "neighborhoods for our community of scholars and researchers."

"Create state of the art research facilities that are a 'bridge' between industry and the academic environment, incorporating opportunities for private industry participation and collaboration between the activities of basic and applied research."

"Work with campus neighbors to create a comprehensive 'live/work/play' environment."

"Build on the possibilities offered by the Technology Square project in the growth of our technological management programs, multidisciplinary initiatives, continuing education options, and in the ongoing renaissance of our neighbor to the east and the north, Midtown."

"Use strategic collaborations where goals are consistent with those of Georgia Tech to expand opportunities for acquisition of facilities and equipment."

All of these strategies suggest a continuation of themes that have been developed over the past several years. Of significance is the emphasis on sustainability. While the 1997 master plan touched on this topic, it was not a major factor in the development of the plan or recommendations. Since the previous plan was prepared sustainability has become a more important issue for all planning and design activities – especially with the increasing use of the LEED process for rating building sustainability.

They also suggest, especially in the last four strategies listed above that this master plan update should focus – more than the preceding plan – on the relationships between GIT and its surrounding neighbors and properties. These strategies also suggest an institution in which the boundaries of "the traditional campus" are becoming less important – as non-traditional interrelationships become more important.

B. Goals for the Master Plan

Goals for the Master Plan have been developed in response to the major themes expressed in the Strategic Plan and in consideration of important issues facing the campus now and in the future. Two significant issues that have surfaced since the 1997 plan are related to storm water management and campus accessibility.

Storm water management is a significant issue for the city of Atlanta as a whole due to the fact that much of the city still relies on a combined storm and sanitary sewer system. This fact results in times when the sewage treatment system cannot contain all of the water flowing in during heavy and continuous rain storms. At such times untreated sewage overflows into rivers and streams resulting in degradation of the water quality, thereby putting the city out of compliance with clean water regulations.

While the City is under a consent decree with the federal government to solve the problems – by continuing to separate the two systems and by building extensive water storage facilities, the real question facing the city, its residents and commercial users of the sewer system is how the city will pay for the required improvements. Cost estimates for the repairs and new construction suggest that all costs involved could approach $3 billion.

One scenario that would significantly impact Georgia Tech would be for the city to adopt stormwater utility districts as one of several mechanisms to fund the required sewer improvements. As used in other cities, fees are levied – usually based on the amount of impervious surface. Given that approximately 50 percent of the Georgia Tech campus is in impervious surface – parking lots, decks, roads and building footprints – such a fee could have major financial consequences for the Institute.

While the city has not finalized the specific plan and funding mechanism(s) for the sewer upgrades it is likely that a decision will be made relatively soon, as the consent decree requires the city to remedy the sewer problems by 2007.

The 1997 Campus Master Plan addressed the issue of stormwater management and recommended the creation of two retention areas on campus – one at Peters Park (based on demolition of the existing parking deck), and one at the Glade at the northern end of campus adjacent to the President's residence. In addition, that plan also recommended other actions including decreasing non-permeable surfaces, utilizing detention tanks for structured parking and other hard surfaces to reduce the peak stormwater outflows, and utilizing stormwater ponds or tanks for irrigation to reduce the consumption of potable water for this purpose.

In the broad spectrum of recommendations of the 1997 plan, the proposals concerning stormwater management were not seen as significant elements of the plan. With the terms of the City's consent decree now at the forefront of City government concern, the circumstances warrant a renewed look at the Institute's stormwater management systems. As a result, the Institute has asked the planning consulting team preparing the Campus Master Plan update, to focus attention on the issue of stormwater management and in particular on ways to reduce stormwater runoff and outflow to the sewer system.

The second major issue now of importance to the institute that was not a significant factor in the 1997 Campus Master Plan is accessibility for persons with disabilities. Although the '97 plan addressed the framework for pedestrian movement it did not directly deal with accessibility issues. The issue recently came to the forefront during the planning and design for the Klaus Advanced Computing Building. In that instance the topography of the site required that accessibility be provided both through and around the building, through a combination of gently sloping sidewalks and building elevators.

Two additional major buildings that are planned for construction within the next five years – the MSE building and the Innovative Learning Center will also have the opportunity to significantly improve handicapped accessibility. As a result the Institute has asked that the master plan consulting team add handicapped accessibility to the list of elements for inclusion in the Campus Master Plan update.

The major goals for the Campus Master Plan update can be viewed in the context of the Strategic Plan's emphasis on creating a "sustainable campus community". Sustainability is often described as the balance between the three "E's": ***Economy*** – "how we manage and use resources", ***Ecology*** – "the pattern of relationships between living things and their environment", and ***Equity*** – "the fairness of relationships between people". If we translate this general sustainability framework to one that better describes the Campus Environment we would exchange the term equity for ***"Educational Life"*** – which encompasses equity and all the additional elements related to the social and academic life of the campus community. In this context accessibility is a key part of an equitable environment and a key element of a sustainable campus community.

Based on the above discussion of the Strategic Plan and campus issues, preliminary major goals for the Campus Master Plan Update, placed in the sustainability framework are as follows:

Economy

- *Accommodate Future Needs of the Institute for academic, research, support and related functions*
- *Maintain flexibility to address opportunities*
- *Minimize costs*

Ecology

- *Plan an integrated functional open space system that reduces stormwater runoff and discharge to the city system*

Educational Life

- *Improve campus livability by planning and designing buildings and spaces that enhance the living, working, learning environment of the Institute*
- *Improve campus accessibility*

III. Existing Campus Conditions

This section has been updated and is included in Working Paper I prepared as part of the planning process and documentation.

IV. Future Campus Requirements

A. Description of Future Academic Programs

See Appendix

B. Space Needs Analysis to Target Year

1. Student Enrollment Assumptions

Based on information provided by Georgia Tech, the following table outlines the key assumptions for growth of the campus population over the next ten years. In general terms it is anticipated that the undergraduate student population will remain relatively constant, while the graduate population will grow substantially. Assumptions about increases in faculty and staff are based on extrapolation of the growth that occurred between 1996 and 2002. It is important to note that the numbers in the table represent assumptions for master plan purposes only and do not constitute actual projections, targets or goals defined by the Institute.

Table 1 Future Campus Population Assumptions

Past Campus Population Growth					Working Assumptions for 10 year growth			
			Change				Change	
	1996 (fall)	2002 (fall)	Number	Percent	2003	2014	Number	Percent
Faculty/staff	3,973	4,609	636	16%	5,482	7,585	2,103	38%
Undergraduate students	9,469	11,457	1,988	21%	11,257	12,000 - 13,000	1,000	9%
Graduate students	3,516	5,022	1,506	43%	5,535	8,000 - 10,000	4,500	81%
TOTAL	**16,958**	**21,088**	**4,130**	**24%**	**22,274**	**27,585 - 29,585**	**7,603**	**34%**
Notes:								
Source: Georgia Tech Office of Capital Planning and Space Management								

2. Faculty and Staff Projections

The staff of Georgia Tech's Office of Capital Planning and Space Management has provided estimates of future faculty and staff needs for the 2012 target year. In 2003 there were 5,482 faculty and staff at the Institute. It is estimated that by 2012 total faculty and staff will be 7,571 – an increase of 2,089 persons, or a 38 percent increase. The largest number of increases are assumed to occur in the categories of Instructional Faculty and Librarians, Research Faculty and Professionals, who combined, account for 1,566 of the total 2,089 assumed increase.

3. Future Instructional and Research Space Needs

Georgia Tech planning staff have estimated the future space need for instructional and research space to be approximately 3,500,000 gross square feet between 2003 and the target year 2012. This is based on the enrollment growth assumptions, the experience of growth in facility needs since the 1997 campus master plan and the goals of the Institute. Of this, the largest single additional space need – some 2.5 million of the 3.5 million estimated is attributable to the growth in research faculty and research space.

Using the recently completed Love Manufacturing Building as a "measure", it will require approximately 26 buildings of that size (158,133 gsf) to provide the approximately 4,100,000 gross square feet estimated to be needed in the future. Using the Love Building's footprint of approximately 55,000 square feet (+/-3 story building), the future 4,100,000 square feet will require approximately 33 acres just for building footprints.

4.. Instructional Support Facilities Projections

a. Physical Plant Support Facilities Projections

The 1997 campus master plan called for the relocation of the existing physical plant support functions from their present location along Atlantic Avenue in order to provide additional building sites for academic / research functions. The Institute plans to retain this aspect of the previous campus master plan. Therefore approximately 2.3 acres of land/buildings will have to be purchased and / or constructed to provide accommodations equal in size to those at the present on-campus location. In the short range, the physical plant functions will be temporarily moved to the O'Keefe Building.

b. Graduate Student Housing Projections

The Institute has evaluated the need for graduate and married student housing and has identified a current need for an additional 800 beds for graduate students. Currently there are a total of 669 beds available for graduate students (not including married student housing). The Graduate Living Center – located across Tenth Street from campus provides 347 beds in apartment style units and the Hemphill Apartments located on campus provide 322 beds for a total current supply of 669 beds. However the 322 beds at the Hemphill Apartments are planned to be converted to undergraduate housing, significantly reducing the supply of graduate student housing. The 800 beds to be constructed will both offset this decrease in supply while adding approximately 500 beds to help serve the expected growth in graduate student enrollment.

Using the 6 story Graduate Living Center as a "measure" the 800 beds would require approximately 2.5 times the current Graduate Living Center, or about 1.5 acres just for the building footprints.

C. Parking Space Projections

The amount of parking spaces that will have to be provided to meet the needs of the future campus population is subject to several variables:

- *the demand for parking by faculty, staff, students and visitors;*
- *the policies of the Institution regarding the level of service to be afforded to the campus population; and the*
- *the amount of parking that may have to be relocated to provide sites for future buildings or other functions*

The 1997 campus master plan called for an overall reduction in the ratio of parking provided. At the time the data for that plan were prepared the parking ratio at Georgia Tech was approximately 61 spaces per 100 persons (faculty, staff and students) or about .6 spaces per person. Compared to other urban campuses this ratio was found to be relatively high – meaning that more people drive cars to campus than at other similar institutions. As a result of this consideration the 1997 campus master plan recommended a reduction of the parking ratio to .52, or 52 spaces per 100 persons. While not a drastic reduction this change would reduce the amount of parking required for the estimated campus population (19,710) by approximately 1,612 cars and would reinforce the Institute's growing emphasis on sustainability.

In 2002 the parking situation at the Institute had changed fairly substantially. The new parking deck called for in the master plan on State Street had been constructed, and the new parking deck at Technology Square was under construction. In addition, other parking had been removed. The net result is that for a fall 2002 campus population of 21,088 (which had already exceeded the 1997 campus master plan estimate of 19,710 for the year 2005) the Institute had a total parking supply of 9,744 spaces. This number of spaces excludes 383 transient spaces and does not include the spaces then under construction at Technology Square. This results in an effective parking ratio of 9,744/21,088 = .46 – well below the 1997 plan's target of .52.

Based on the assumption that the total campus population in 2012 will be 29,336 persons, the total future parking supply required to meet the previously defined parking ratio of .52 spaces per person objective would be15,254 spaces. This is an increase of 5,510 spaces, assuming that none of the existing campus spaces were removed.

D. Athletic and Recreational Facilities Projections

The Athletic Association has identified three facility needs for consideration in the campus master plan update: relocation of the existing tennis center, construction of NCAA regulation women's softball field and construction of a men's / women's soccer field.

The existing Bill Moore Tennis Center, located on the northeast section of campus presently contains 12 outdoor courts and three indoor courts. Due to the low-lying location of the courts and the poor soil conditions under them they are constantly in need of repair and maintenance. Relocation of the center to a different site with better foundation conditions would save substantial money now spent on annual repairs. It is also desirable that the relocated facilities remain on-campus. If and when relocated it is desirable to expand the numbers of courts available to 15 outdoor courts and 6 indoor courts. It is estimated that approximately 3.5 acres will be required for a relocated and expanded tennis center.

At the present time the women's softball team plays at Glenn Field which is located several blocks to the north of the campus in the Homepark neighborhood. This location has seating for 500, and provides outfields of 190 feet in left and right fields and 220 feet in center field. This facility is considered inadequate – lacking on-site locker rooms, training rooms and other ancillary support facilities. In addition an on-campus location is preferred to the present site. The planning team estimates that approximately 3.2 acres will be required to provide one regulation field and adjacent support facilities.

Georgia Tech does not presently have a competition soccer field or Division 1 soccer teams. The preference is for an on-campus soccer field if and when the Institute makes a firm commitment to add soccer as an intercollegiate sport. The land area required for one regulation soccer field is approximately 2.6 acres, although the exact size of the field can vary somewhat.

The 1997 campus master plan identified informal recreation space as an important component of the future needs of the Institute. Subsequent to that plan, studies done by Institute staff have confirmed that Georgia Tech remains below the level of other comparable schools in terms of recreational space provided.

The 1997 campus master plan indicated development of additional recreational facilities – informal recreational fields – in two locations: Peters Park, accomplished by the relocation of the parking spaces and demolition of the existing parking deck; and the parking lots east of Hemphill Avnue and north of Ferst Drive, accomplished by the demolition and removal of two existing buildings and adjacent parking lots. The land area for informal recreation resulting from those actions was approximately 2 acres. Since those recommendations of the previous master plan have not yet been implemented it is proposed that the CMPU seek to provide the same amount – approximately 2 additional acres of informal recreation space. It is preferred that this area be located on-campus.

E. Campus Infrastructure Projections

The Georgia Tech Design and Construction Department has determined that an additional chiller plant will need to be constructed to serve the estimated 3 million additional square feet of academic and research facilities that will be required in the future. It has been estimated that this plant will need to be approximately the same size and capacity as the existing Tenth Street Chiller plant. A site of approximately 1.3 acres will therefore need to be provided somewhere in close proximity to the future development. Based on the 1997 campus master plan which proposed that a large portion of future expansion occur in the west and southwest section of campus, a future chiller plant location somewhere in that general area would be preferred.

In addition, a major infrastructure need is for two IT Hubs. At present, the Institute has three locations that provide computer support to the campus. The first of these is located in the Rich Building, that has long been the central computer service site. In recent years the Institute has added two new Hubs – one located at 845 Marietta Street on the west side of campus, and one located in the new Technology Square development on the east side of campus. Both of these facilities are in key locations adjacent to the major hard lines by which data enters and leaves the City of Atlanta downtown.

In the future it is anticipated that both the east and west Hubs will remain, providing a redundant loop for data transmission into, through and out of the campus. It is also anticipated that the western Hub will expand – either in its present location or a nearby parcel. As this facility is expanded it is also anticipated that the Rich Building will no longer be a critical link in the transmission or storage of data, although the data transmission lines that current enter this site will likely remain as part of the overall data transmission system of campus.

F. Proposed Land Acquisition and Disposition

In the 1997 Campus Master Plan the Institute adopted an “Area of Interest” that extended outward from the campus in all directions for approximately ¼ mile. This was an area where Georgia Tech would consider property acquisitions and/or campus expansions. A similar principle is described as part of the CMPU, in following sections of this document. At the writing of this report, the Institute does not plan to dispose of any of its property.

G. Summary of Future Requirements

The following chart summarizes the land area requirements described above. If added together the total footprint requirement would be approximately 40 acres, which does not include open

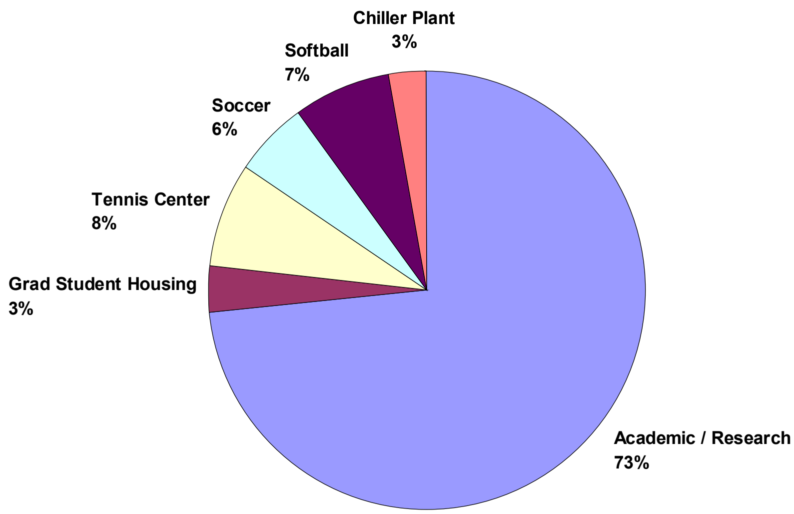


Chart 1 Summary of Future Functional Land Area Requirements

space, service access and other functional site requirements.

V. Preliminary Physical Master Plan

This section (Alternative Concepts) has been updated and is included in Working Paper I prepared as part of the planning process and documentation.

VI. Physical Master Plan

A. Land and Building Use

The Campus Master Plan Update incorporates the three fundamental concepts that were described in the 1997 Campus Master Plan as the “design framework”. These concepts were:

Maximizing the Use of Existing Campus Lands
The Campus Master Plan Update (CMPU) incorporates all of the remaining on-campus development sites that were identified in the 1997 campus master plan. However, in order to provide additional development capacity to meet the anticipated future needs for academic and research space, the Update incorporates several additional on-campus development sites that were identified during the Update planning process.

Campus Expansion

The CMPU incorporates the campus expansion to Marietta Street on the west, that was recommended in the 1997 Campus Master Plan. In addition, the CMPU has added the potential for additional campus expansion immediately adjacent to the existing North Avenue Research Area. Also added is the potential for development of Georgia Tech facilities on several blocks adjacent to the Technology Square Development in MidTown Atlanta.

Enhancement of the Campus Landscape

One of the major recommendations of the 1997 campus master plan was the demolition of the Hightower Textile Engineering Building to allow the creation of a central signature campus space. This has been accomplished and the central space has been created with a temporary grass surface occupying the site of the former Textile Building. Further enhancement of this space continues to be recommendation of the CMPU.

In addition, the CMPU incorporates the concept of a campus Eco-Commons.This concept involves the identification of those areas of campus that can be improved – through the addition of landscape plant materials and other means – to create a functional landscape. The Eco-Commons functional landscape will provide pervious areas for rainfall percolation and detention of stormwater runoff, thereby reducing the stormwater discharge from campus into the City’s combined sewer system.

1. Existing Land Uses and Campus Functions

The existing arrangement of functions on the Georgia Tech campus is the result of previous Master Plans as well as years of incremental growth of the Institute. As a result, today there are several established functional areas around campus. These provide the framework within which to make decisions regarding placement of future functions.

The academic and research functions occupy a significant area and extend into many different regions of the campus. Significant change has occurred in this functional category over the past five years, as new research and academic facilities have been constructed on the northern portion of campus.

Residential uses are more compact and occupy three distinct areas – a residential sector on the west side of campus, another on the east side of campus and a third comprising the graduate and married student housing located across Tenth Street adjacent to the north side of campus. A related residential sector is the “Greek Sector” that is also located on the east side of campus. Although Georgia Tech owns several of the parcels on which Greek houses have been built, the majority of the property in this area is privately owned by the various fraternities and sororities.

Administrative functions of the Institute are largely concentrated in the historic hill sector that extends around the Tech Tower, although offices and administrative functions exist in other locations around the campus.

Intercollegiate athletic facilities occupy a distinct sector on the east side of campus, and include the Bobby Dodd Stadium, Chandler Field, the track, tennis center and football practice fields. On the west side of campus the Campus Recreation Center, along with the adjacent intramural fields comprise a second major sector of athletic and recreation activity.

Technology Square, located east of the I 75/85 connector, has created a new functional sector of academic, research and commercial activities. Similarly the North Avenue Research Area located southwest of campus has created a distinct area comprised of research facilities.

2. Future On-Campus Land Use

Academic and research functions are anticipated to occupy most of the remaining development sites on-campus. As development of the Georgia Tech campus has proceeded over the past five years, it is has become clear that functional relationships between academic and research facilities have been and will continue to be the driving determinant in locating functions and activities in the future. Therefore the CMPU does define sectors for different academic and research activities. Rather, potential building sites for academic and research functions are identified and recommended to be reserved for those uses. The most appropriate type of academic / research functions for a particular site will be determined by the Institute when specific facility programs and functions are identified.

The well-established functional sectors of residential, athletic and recreational uses are planned to remain in the future – with several minor modifications. On the northwest side of campus the existing residential area is proposed to be expanded to include the parcel at the corner of Tenth Street and Northside Drive. This site, along with the surface parking lot immediately to the south is proposed to be developed as graduate student housing.

The existing Campus Recreation Center and the adjacent intramural play fields comprise an athletic functional area on the west side of campus. This area is proposed to be expanded to include two intercollegiate athletic facilities: the Tennis Center and the Softball Field. The existing Tennis Center – which includes 12 outdoor and 3 indoor tennis courts is located on the northeast side of campus, and experiences continual maintenance problems due to poor soil conditions. This facility is proposed to be relocated and expanded to a site located immediately to the west of the existing Campus Recreation Center. The softball field, now located several blocks north of campus on a separate parcel is proposed to be relocated to a site immediately south of the Campus Recreation Center. Both the site for the Tennis Center and the Softball Field are located on lands that will be acquired as part of the proposed campus expansion toward the west and south. These shifts will provide a consolidated site for recreational and intercollegiate sites and allow the Softball Field to be integrated into the campus.

3. Future Off-Campus Land Use
a. Midtown
The development of Technology Square has created a new type of facility and functional district. It is a relatively high density compared to the rest of campus, and it incorporates a mix of academic, research and commercial activities including a hotel, conference center and retail uses. The intensity, scale and mix of activities of Technology Square are very appropriate for its location in Midtown Atlanta – a vibrant community of offices, residential apartments and condominiums, restaurants and retail uses.

This model of higher density, mixed-use development is also proposed for those blocks adjacent to Technology Square that are indicated for future potential contiguous campus expansion.

b. North Avenue

The North Avenue Research Area was added to the Campus Master Plan following its completion in 1997,specifically to provide a site for research activities that may not be appropriate for location on-campus.The area now contains two research facilities, and is proposed to be reserved in the future for similar type research activities. In addition the CMPU indicates the potential expansion of this area to Northside Drive at the northern end of the existing property.

c. Georgia Tech Area of Interest

The 1997 Campus Master Plan recognized that Georgia Tech needed to expand the campus and also be aware of changing real estate conditions in an "area of interest" around the campus. The CMPU incorporates a refinement of this concept. As shown in **Figure 4 Illustrative Campus Map - 2004 Master Plan Update,** the Georgia Tech Area of Interest is proposed to include areas on the east, south and west sides of campus. These Areas of Interest are:

Areas where the Institute will track development and seek to influence the nature of future development
It is important that future development in the area of interest be complementary to the academic and research functions of the campus, and if possible enhance the campus and its activities.

Areas where the Institute may expand
These areas are distinguished from areas designated as potential continuous campus expansion areas. Georgia Tech may elect to acquire and develop "satellite" sites and facilities in these areas that are not contiguous to campus.

Areas where the Institute may partner with others in future development activity
It is beneficial to the Institute to be the center of a vibrant mixed use community. Therefore, Georgia Tech may partner with various entities to implement this concept within the area of interest.

4. Future On-Campus Building Sites
The CMPU identifies a total of 54 potential sites for future instructional / research buildings, athletic and recreational facilities, student residential facilities, parking decks and infrastructure facilities. The proposed building sites are designated for future uses as follows:

a. Future Sites for Instructional / Research Facilities

With the exception of several sites described below, the CMPU does not attempt to assign particular uses to specific sites. The multidisciplinary nature of most instructional and research activities and facilities and the need to retain flexibility to accommodate changing research focus areas suggest those decisions are best made when specific programs are developed. In general all building sites proposed in the CMPU that are not specified for other functions are considered candidates for instructional or research functions and facilities. Functional adjacency requirements will lead to the specific location decisions in the future, as they have in the past.

Sites Committed or Reserved for Specific Instructional / Research Facilities **(Figure 5 Future Sites for Instructional/Research Facilities)**
One site **(I/R-14 on Figure 5)** is reserved for the Innovative Learning Resource Center (ILRC):
This facility has a project budget of $43,500,000 and a preliminary program of 205,000 gross square feet. This facility is anticipated to be complete in 2006, pending funding availability.

One site **(I/R-6 on Figure 5)** is already committed to the Molecular and Materials Science and Engineering (MSE) Building:
This facility has a project budget of $60,000,000 and a preliminary program of approximately 274,500 gross square feet. This facility is in the early design phases as of January 2004.

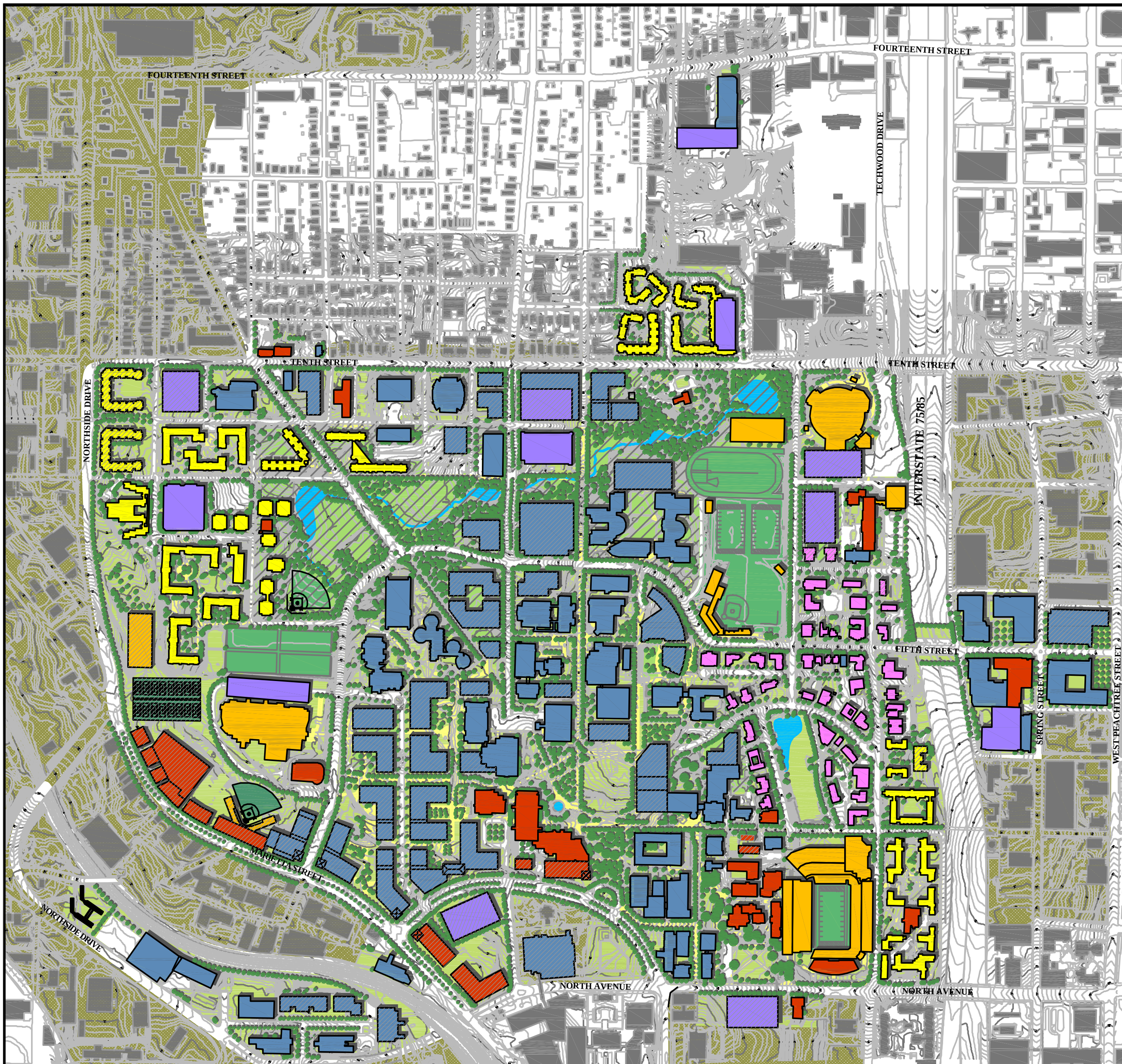
One site **(I/R-7 on Figure 5)** is already committed to the Nanotechnology Research Center (NRC) Building:
This facility has a project budget of $80,000,000 and a preliminary program of 150,000 gross square feet. This facility is in the early design phases as of January 2004.

One site **(I/R-31 on Figure 5)** is already committed to the Phase I Food Processing Technology (FPT) Research Building:
This facility has a project budget of $7,500,000, and a preliminary program of 36,000 gross square feet.This facility is under construction as of the time this report was written.

Additional Sites for Instructional / Research Facilities
Thirty one additional sites are reserved for future academic / research facilities:
As shown in **Table 2 Future Instructional/Research Facility Development Sites**, these sites combined will provide between 2.9 million and 3.8 million gross square feet of building space. The variable amount of potential development is the result of calculating development capacity for 3 and 5 story construction. This reflects the fact that the campus topography often allows development of additional floors while still maintaining the desired low-rise character of the campus.

This gross future development capacity will be reduced by the demolition of several existing Georgia Tech buildings that will be required to accommodate the development of future facilities and open spaces recommended in the CMPU **(Figure 6 Facility Demolition and Table 3 Existing Georgia Tech Facilities Demolition)**. The net future development capacity is therefore approximately 2.6 – 3.5 million gross square feet of additional space. These development sites will therefore provide approximately 85 percent of the square feet of future development capacity estimated to be required to support the assumed enrollment growth of the Institute over the next ten years.

Figure 4 Illustrative Plan Campus Map - 2004 Master Plan Update



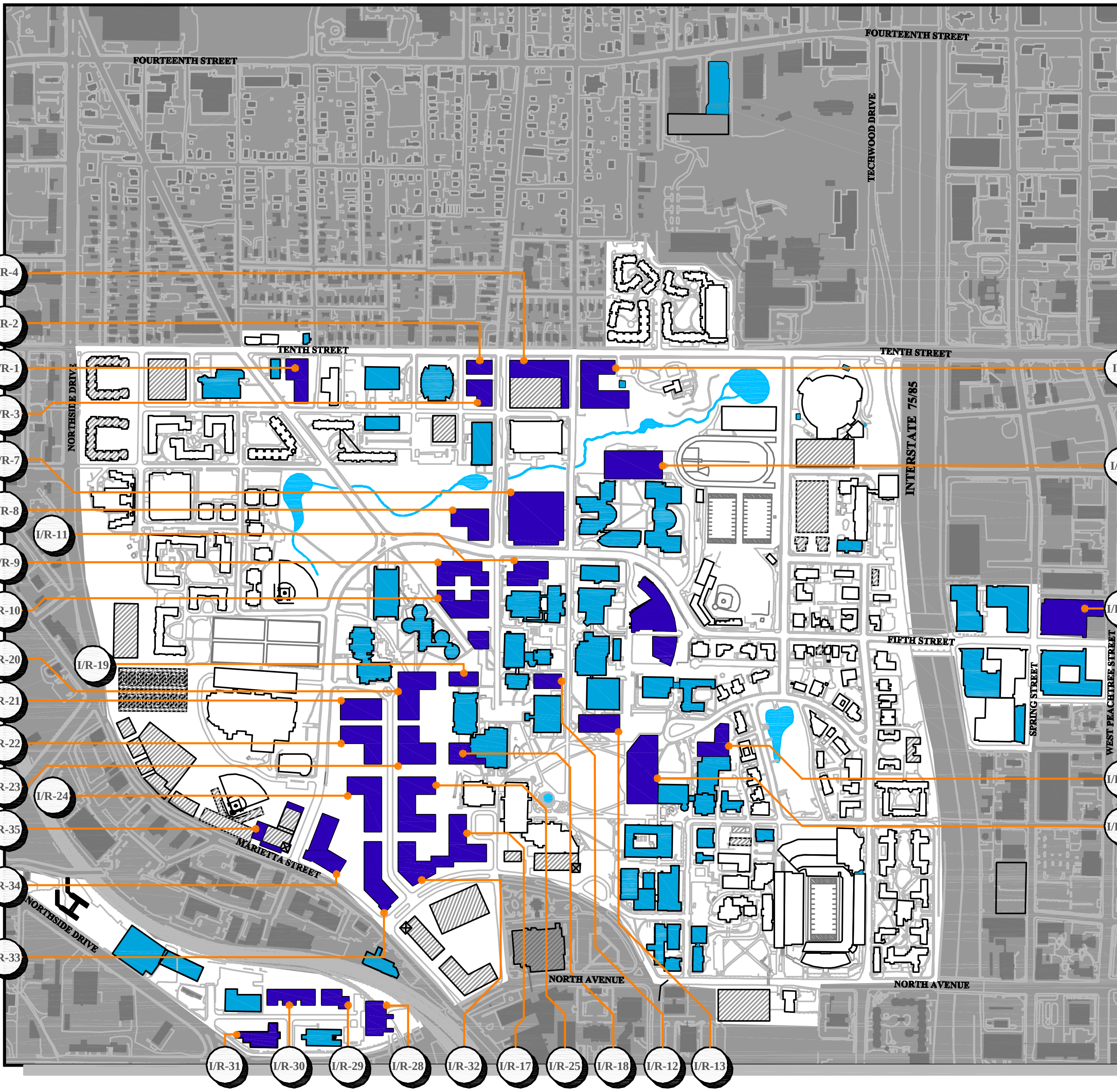
North

450
0 900
Scale: 1" = 900'

- Future Building
- Green Space
- Area Preserved for Storm Water Management
- Area of Interest

- Instructional / Research
- Support Services
- Athletic
- Athletic Fields
- Greek / Other Organizations
- Parking Deck
- Residence Halls

Figure 5 Future Sites for Instructional/Research Facilities



North

450
0
900
Scale: 1" = 900'

Existing Instructional and Research Facilities to Remain

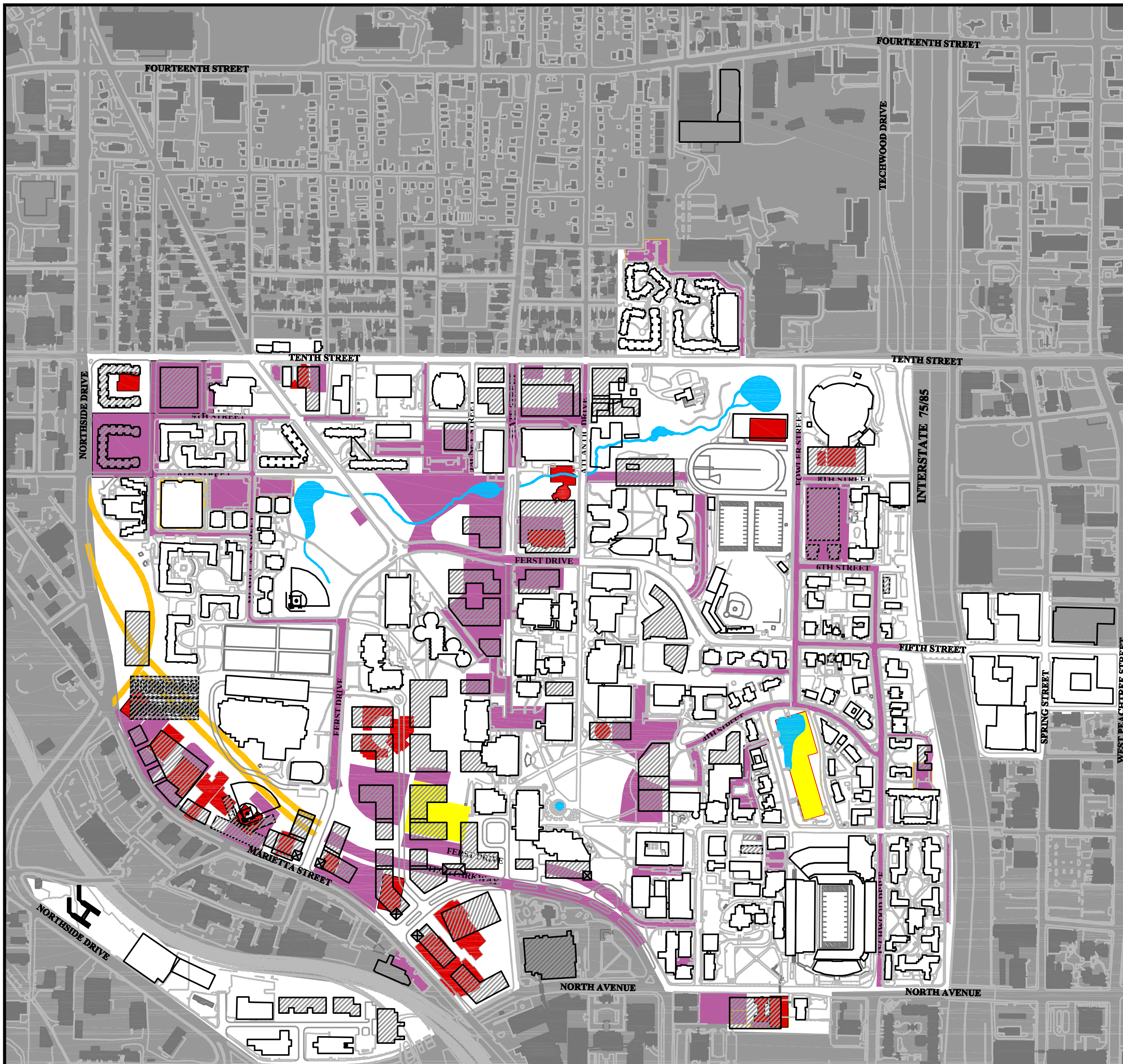
Sites for Future Instructional and Research Facilities

I/R Future Instructional / Research Site Key (See Text)

Future Building Sites

Existing Georgia Tech Facilities to Remain

Figure 6 Facility Demolition



North

0 450 900
Scale: 1" = 900'

- Potential Building Demolition
- Parking lots to be Removed
- Parking Decks to be Removed
- Tech Parkway Closure / Removal
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

Table 2 Future Instructional / Research Facility Development Sites

Site		Foot Print		Capacity at 3 Levels		Capacity at 5 Levels	
I/R-1	UNASSIGNED	27,000	GSF	83,700	GSF		GSF
I/R-2	UNASSIGNED	13,500	GSF	40,500	GSF		GSF
I/R-3	UNASSIGNED	18,900	GSF	56,700	GSF	94,500	GSF
I/R-4	UNASSIGNED	41,000	GSF	123,000	GSF	205,000	GSF
I/R-5	UNASSIGNED	54,000	GSF	162,000	GSF	270,000	GSF
I/R-6	MMSE BLDG					Committed	
I/R-7	NRC BLDG					Committed	
I/R-8	UNASSIGNED	30,800	GSF	92,400	GSF	154,000	GSF
I/R-9	UNASSIGNED	31,200	GSF	93,600	GSF	Not Applicable	
I/R-10	UNASSIGNED	57,000	GSF	171,000	GSF	Not Applicable	
I/R-11	UNASSIGNED	32,000	GSF	96,000	GSF	Not Applicable	
I/R-12	UNASSIGNED	10,500	GSF	31,500	GSF	Not Applicable	
I/R-13	UNASSIGNED	30,000	GSF	90,000	GSF	Not Applicable	
I/R-14	ILRC BLDG					Committed	
I/R-15	UNASSIGNED	30,000	GSF	90,000	GSF	150,000	GSF
I/R-16	UNASSIGNED	8,400	GSF	25,200	GSF	42,000	GSF
I/R-17	UNASSIGNED	34,000	GSF	102,000	GSF	170,000	GSF
I/R-18	UNASSIGNED	21,600	GSF	64,800	GSF	108,000	GSF
I/R-19	UNASSIGNED	16,200	GSF	48,600	GSF	81,000	GSF
I/R-20	UNASSIGNED	40,200	GSF	120,600	GSF	201,000	GSF
I/R-21	UNASSIGNED	29,000	GSF	87,000	GSF	145,000	GSF
I/R-22	UNASSIGNED	40,000	GSF	120,000	GSF	200,000	GSF
I/R-23	UNASSIGNED	34,000	GSF	102,000	GSF	200,000	GSF
I/R-24	UNASSIGNED	30,000	GSF	90,000	GSF	150,000	GSF
I/R-25	UNASSIGNED	50,000	GSF	150,000	GSF	250,000	GSF
I/R-26	UNASSIGNED	29,000	GSF	87,000	GSF	145,000	GSF
I/R-27	UNASSIGNED	48,000	GSF	144,000	GSF	240,000	GSF
I/R-28	UNASSIGNED	25,000	GSF	75,000	GSF	125,000	GSF
I/R-29	UNASSIGNED	15,000	GSF	45,000	GSF	75,000	GSF
I/R-30	UNASSIGNED	25,000	GSF	75,000	GSF	125,000	GSF
I/R-31	FPT RES. BLDG					Committed	
I/R-32	UNASSIGNED	34,000	GSF	102,000	GSF	170,000	GSF
I/R-33	UNASSIGNED	37,500	GSF	112,500	GSF	187,500	GSF
I/R-34	UNASSIGNED	39,500	GSF	118,500	GSF	197,500	GSF
I/R-35	UNASSIGNED	31,000	GSF	93,000	GSF	155,000	GSF
I/R 36	UNASSIGNED	22,400	GSF	67,200	GSF	112,000	GSF
I/R 37	UNASSIGNED	47,000	GSF	141,000	GSF	235,000	GSF
I/R 38	KACB					Committed	
SUBTOTAL		**1,032,700**		**3,100,800**	**GSF**	**4,187,500**	**GSF**
Removed by New Construction				**294,247**	**GSF**	**294,247**	**GSF**
TOTAL				**2,598,353**	**GSF**	**3,546,253**	**GSF**

Table 3 Existing Georgia Tech Facilities Demolition

Facility Number	Name	Size	
Instructional / Research			
51	Rich Computer Center	41,522	GSF
55	Instruction Center	40,780	GSF
56	Frank F. Groseclose	52,761	GSF
57	College of Management (old)	50,710	GSF
87	Neely Nuclear Research Center	41342	GSF
128	490 Tenth Street	37,972	GSF
137	781 Marietta	29,160	GSF
	711 Marietta		GSF
Sub Total Academic /Research		**294,247**	**GSF**
Support Facilities			
46	Gary F. Beringause	10,629	GSF
83	King Facilities and Shops	52,381	GSF
97	Ajax	10,511	GSF
113	Central Receiving	12,000	GSF
120	401 Ferst Drive	4,101	GSF
138	811 Marietta	44,856	GSF
142	500 Tech Parkway	16,228	GSF
156	845 Marietta	13,225	GSF
Sub Total Support Facilities		**163,931**	**GSF**
Parking Facilities			
8	Peters Park Parking Deck	180,747	GSF
9	Burge Parking Deck	56,064	GSF
54	Student Center Parking Deck	283,162	GSF
Sub Total Parking Facilities		**519,973**	**GSF**
Residential Facilities			
1	**Burge Apartments**	**64,459**	**GSF**

Note: Facilities will require demolition only as a result of new construction

Most of the sites identified in the CMPU for instructional and research functions were also included in the 1997 Campus Master Plan. However additional sites have been identified in order to increase the development capacity on the existing campus footprint. Specifically the CMPU illustrates additional development sites on the western side of campus on and adjacent to the sites now occupied by three existing buildings – the Instructional Building, the Groseclose Building and the College of Management Building. The College of Management has recently moved to its new facility in Technology Square. These buildings were constructed in 1983, and combined, contain a total of 144,251 gross square feet of space. The Institute lists their condition as in need of some remodeling.

The CMPU illustrates the potential development of four major new facilities on the site of these existing buildings and adjacent areas (Sites AR-20,21,22 and Ar-23 shown in **Figure 5**). Two of the four potential future buildings shown in this part of campus occupy the site of the existing three structures. Construction of the two adjacent future buildings would only be possible if the Instructional Center, Groseclose and Dupree College of Management buildings are demolished. Combined these four sites for future development could provide approximately 429,000 – 746,000 gross square feet of academic / research space – a substantial increase from what presently exists on the site.

However, the demolition of three existing facilities is a major action that may not be cost-effective for many years. By incorporating the potential for these sites to become available for future development, the CMPU enables this to occur at the appropriate time.

b. Future Sites for Student Residential Facilities

Three sites are reserved for future student housing. Site SR-1 in **Figure 7 Future Sites for Student Residential Facilities** is reserved for additional graduate student housing. Using a mid-rise type of structure similar to that of the existing Graduate Living Center, it is estimated that this site will accommodate the 800 additional beds of graduate student housing needed by the Institute.

Site SR-2 is located on the eastern side of campus. This site was originally proposed to be developed as a second phase of special-purpose housing but was never built. It could function as either a “theme” house related to an academic activity, or as a temporary home for fraternities/sororities that may be seeking to purchase or build their own facilities.

Site SR-3 is already committed for construction of a new sorority house. Sites SR-4/5 are currently reserved for the future construction of one or two fraternity or sorority houses.

c. Future Sites for Athletic and Recreational Facilities

The CMPU incorporates three sites that address needs for intercollegiate athletic facilities. New sites are identified for a women’s softball field and associated support facilities, a new tennis center that incorporates outdoor courts and an indoor tennis facility on an adjacent site. All the new facilities proposed are clustered on the west side of campus near the existing Campus Recreation Center, thereby creating a consolidated athletic/recreational complex.

In addtion the CMPU incorporates additional sites for recreational open space. Three sites are proposed -two on the west side of campus and oneon the east side of campus. The two western sites are currently occupied by parking lots. The eastern site is presently occupied by the Peters Park parking deck, that is proposed to be removed and the parking relocated elsewhere.

See Section VI D. Athletic and Recreational Facilities for a more detailed explanation of the sites, along with **Figure 8 Future Sites for Athletic and Recreational Facilities**.

d. Future Sites for Structured Parking Decks

The CMPU incorporates the parking supply ratio objective defined in the 1997 Campus Master Plan, of 52 spaces per 100 persons on campus (faculty, students and staff). Applying this ratio to the assumed future campus population of approximatley 29,300 persons results in a total parking need of about 15,000 spaces. The CMPU will meet this objective, while providing additional sites for instructional, research and support facilities, and enhancing the open space and landscape character of campus through several major actions. First is the proposal to relocate approximately 7,200 of the roughly 10,000 existing parking spaces from surface parking lots to parking decks. This will provide needed sites for future buildings and open space, as well as reduce the impervious coverage of the campus now occupied by parking lots. As a result of this action, there will be approximately 4,500 spaces that currently exist that will remain in their present location.

The CMPU identifies 10 sites on the existing and expanded campus for parking decks that will accomodate approximately 8,200 parking spaces. These spaces, in combination with the existing 4,500 spaces to remain will provide a total of about 11,700 spaces.The remainder - or about 2,600 spaces are proposed to be provided in nearby off-campus locations. Should off-campus sites not be readily available or too costly, the Institute can meet its future need by retaining more of the existing surface parking.

See Section VI B. Vehicular Circulation and Parking for a more detailed discussion of the estimation of future parking needs and sites where new parking is proposed to be provided, along with **Figure 9 Future Sites for Parking Decks.**

e. Future Sites for Support Services

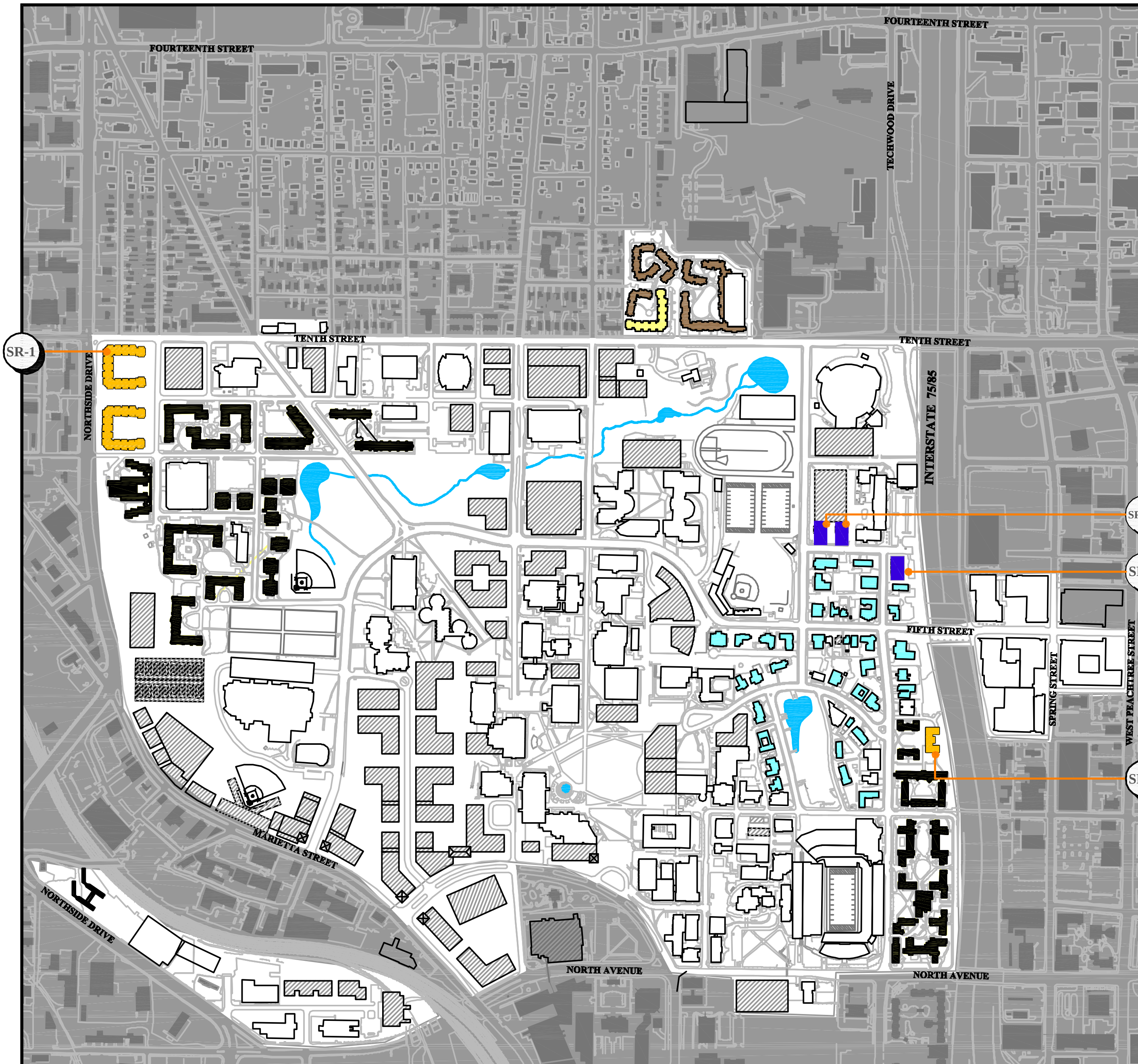
The Institute willl continue to need peripheral locations for facilities and acitivities that need to be in close proximity to the instructional and research functions of campus, but not necessarily in the central part of campus. The CMPU has identified several sites along the Marietta Street campus edge that are suitable for such support activities. **(Figure10 Future Sites for Support Services)** Such facilities could include physical plant, operations and maintenance activities, printing services, infrastrucure facilities, or specialized research facilities that do not require, nor warrant a close-in site. The development on these sites could also take on a mixed - use character, through the inclusion of commercial retail elements that would further the active urban streetscape along Marietta Street.

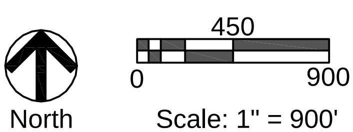
f. Future Sites for Infrastructure Facilities

The 1997 campus master plan identified the future need for a new electrical substation to serve the growing electrical needs of the campus. As of the writing of this report a site for the new substation has been identified on the northern edges of the North Avenue Research Area (NARA) site located west of the main Georgia Tech campus.

The CMPUC has also identified the need for two IT Hubs – one each on the west and east sides of campus. The purpose in having two is to provide a redundant loop, should one Hub become incapacitated. Both of these Hubs exist today. On the west side of campus the building located at 845 Marietta Street houses one of the Hubs. The east side Hub is located in the Technology Square facilities. Both of these Hubs are located along existing IT cable corridors that run into downtown Atlanta.

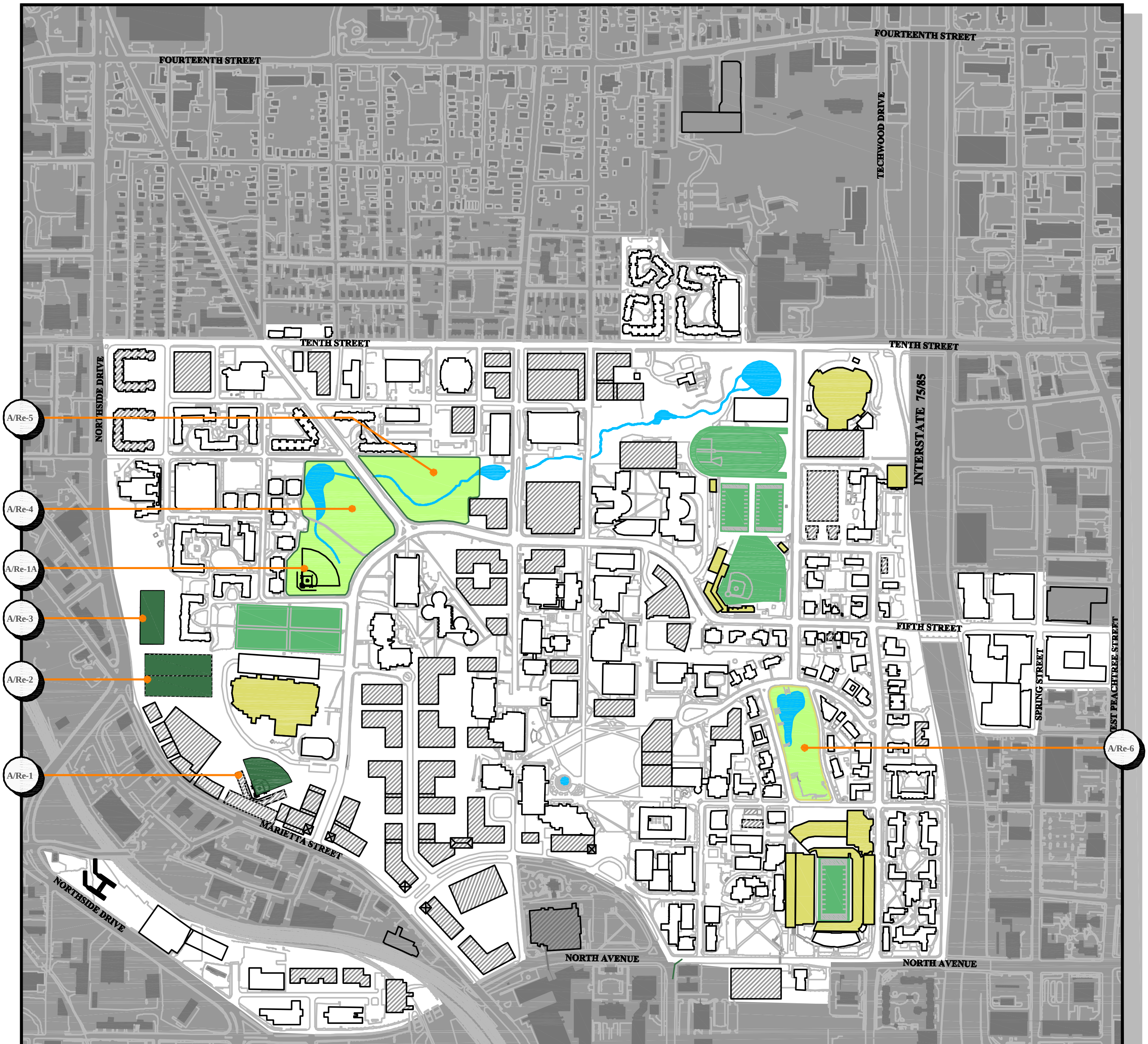
Figure 7 Future Sites for Student Residential Facilities





- Existing Student Residential Facilities to Remain
- Sites for Future Student Residential Facilities
- Existing Greek Houses to Remain
- Sites for Future Greek Houses
- Married Student Housing (Under Construction)
- SR Future Student Residential Site Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

Figure 8 Future Sites for Athletic & Recreational Facilities



North

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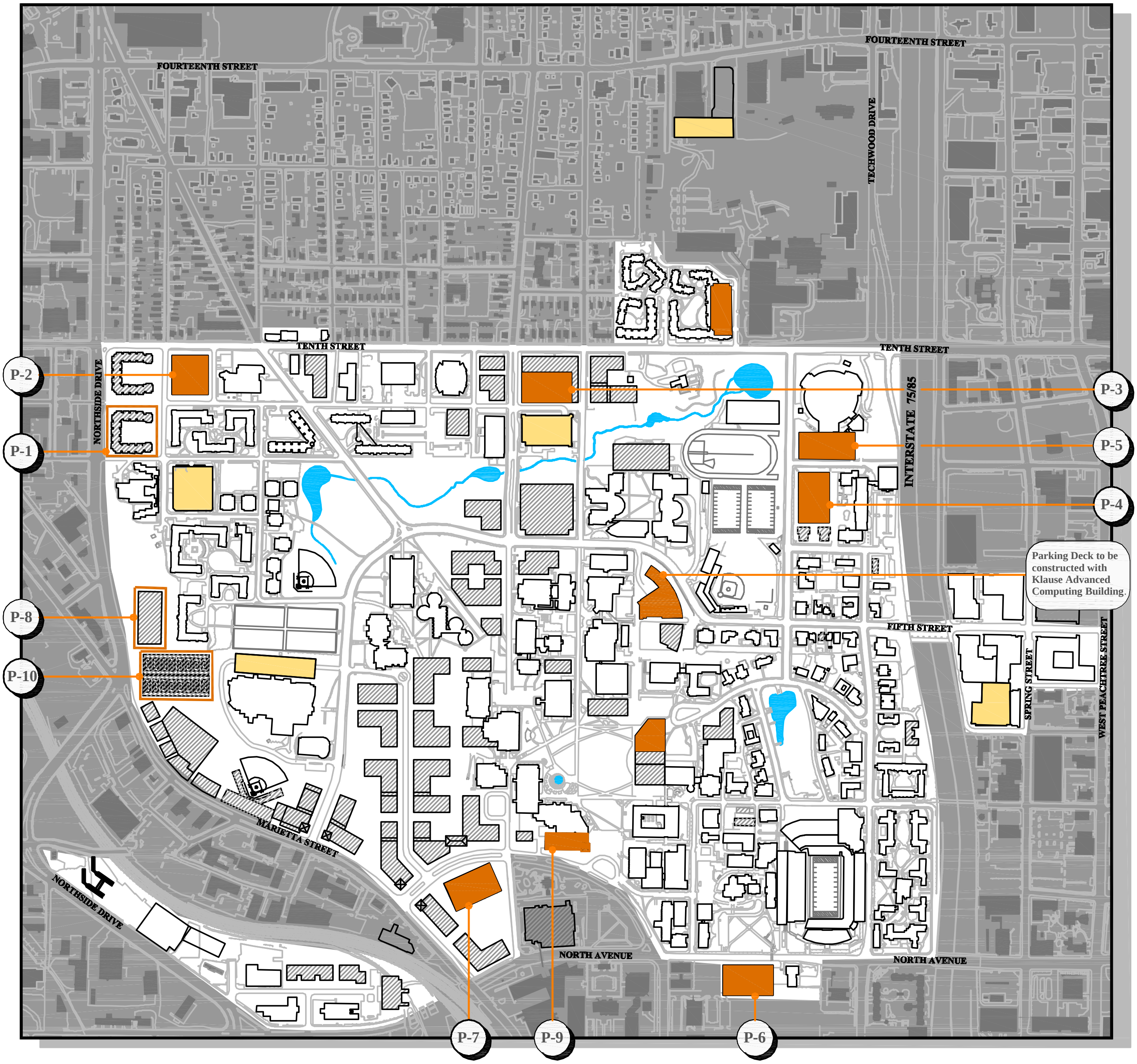
Scale: 1" = 900'

- Existing Athletic Fields to Remain
- Existing Athletic Facilities to Remain
- Future Sites for Athletic Fields and Facilities
- Future Sites for Recreational Use
- A/Re Future Athletic / Recreational Site Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

Figure 9 Future Sites for Parking Decks



North

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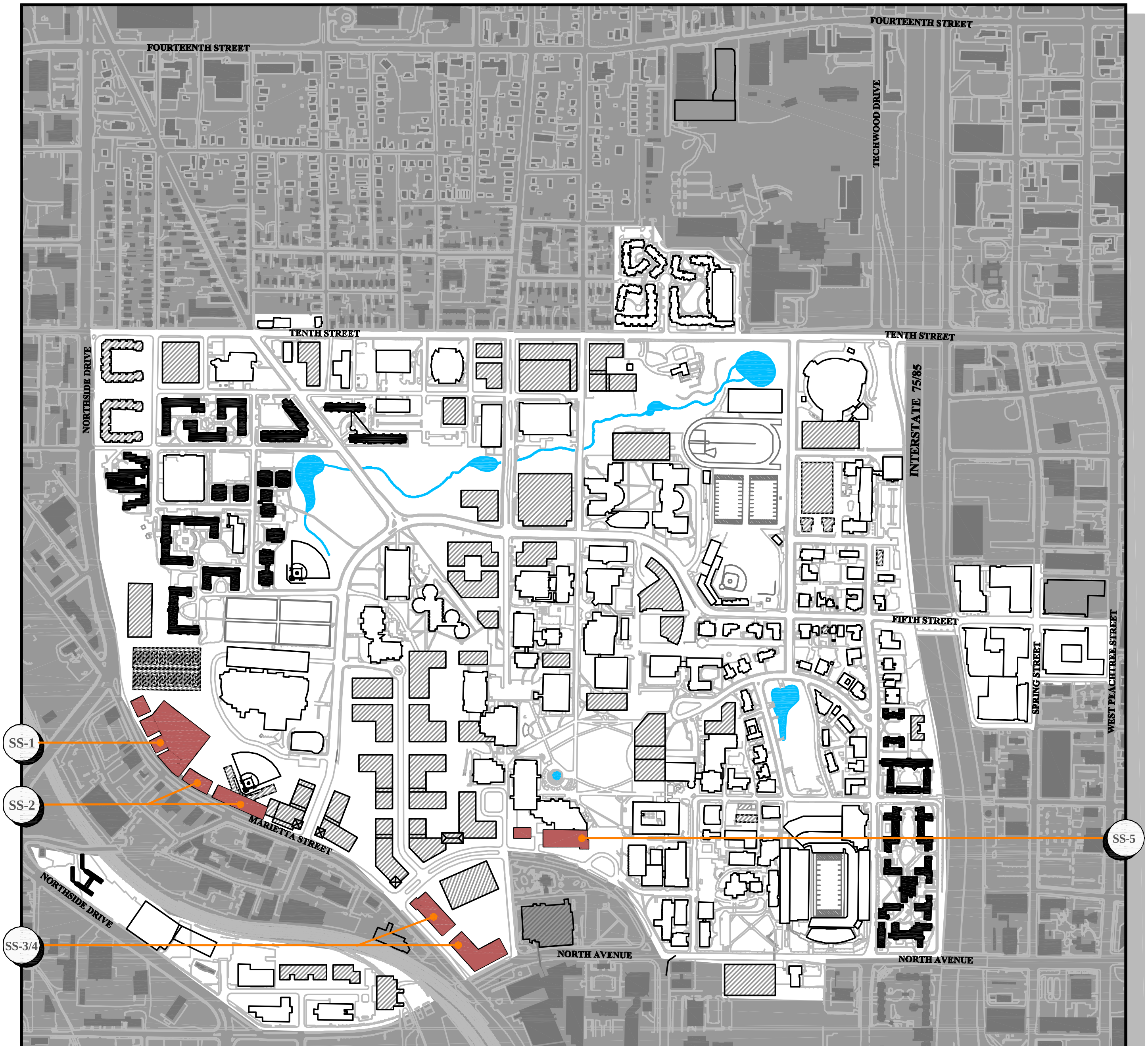
0 900
Scale: 1" = 900'

- Existing Parking Decks to Remain
- Sites for Future Parking Decks
- Future Parking Decks Located Below Future Facilities
- (P) Future Parking Site Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

Figure 10 Future Sites for Support Services



North

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Scale: 1" = 900'

Future Building Sites

Existing Georgia Tech Facilities to Remain

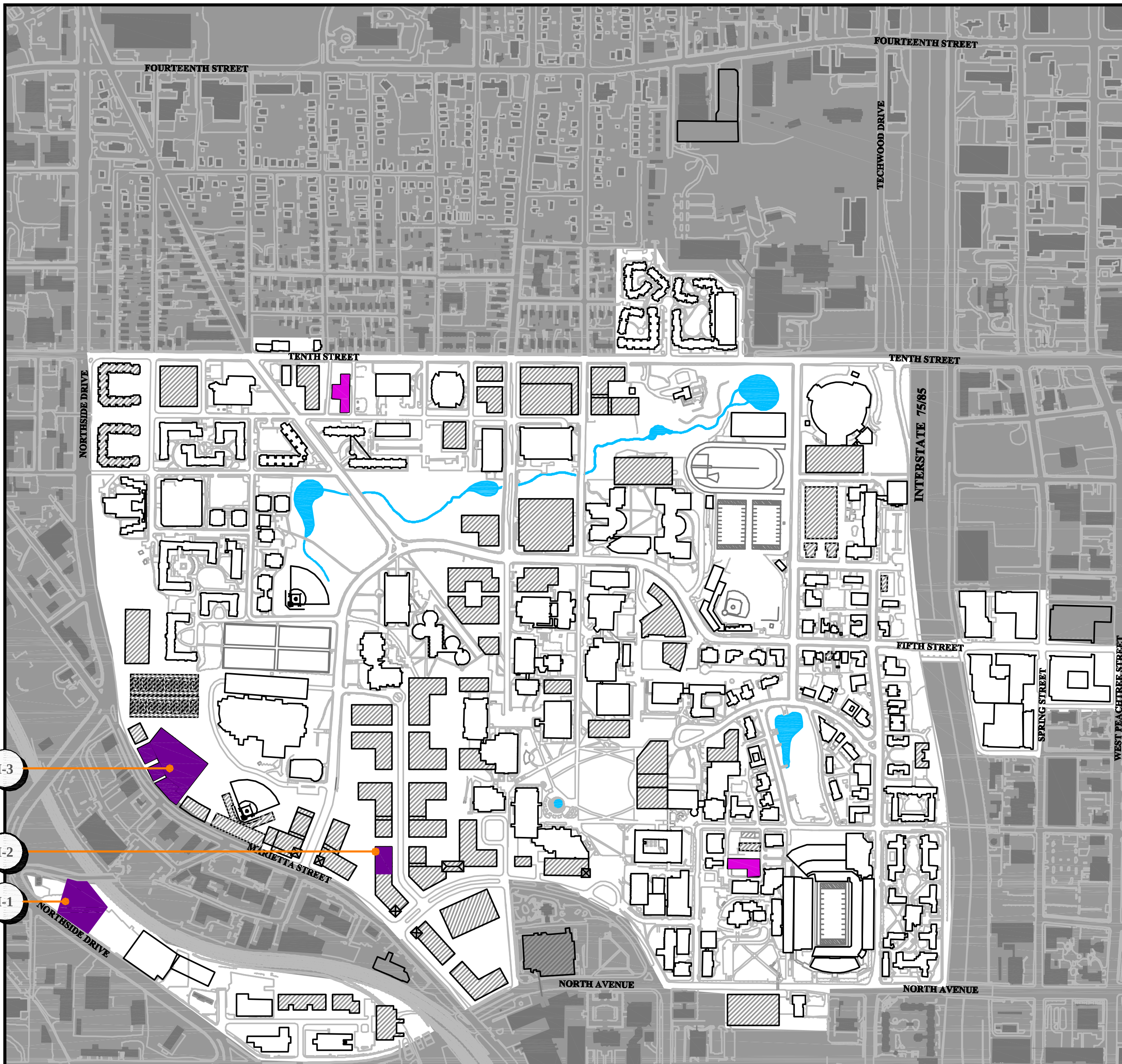
Future Sites for Support Services

SS Future Support Services Site Key (See Text)

In addition to the IT Hub sites, the CMPU identifies one potential candidate site for a future chiller plant to serve future development on the western side of campus. The location shown is a site that is accessible from a proposed future service drive, and is not considered an essential site for future academic or research functions. This facility may however be located elsewhere in the vicinity based on future more detailed infrastructure planning that will be conducted by the staff of the Institute.

See Section VI E.Campus Infrastructure, along with **Figure 11 Future Sites for Infrastructure Facilities** for more information about the proposed sites and facilities.

Figure 11 Future Sites for Infrastructure Facilities



North

0 450 900
Scale: 1" = 900'

- Existing Major Infrastructure Facilities to Remain
- Sites for Future Major Infrasture Facilities
- (I) Future Infrastructure Site Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

VI. Physical Master Plan
B. Vehicular Circulation and Parking

1. Vehicular Circulation

Existing Vehicular Circulation System
The Georgia Tech campus is served by an extensive set of roadways. At present there are nine roadways that provide access from the surrounding street system into the Tech campus. Inside the campus there are five major roadways that provide access to facilities located near the campus core. These include Ferst Drive, Cherry Street, Bobby Dodd Way, Techwood Drive and Fifth Street. In addition the campus is served by another level of streets which include Atlantic Drive, Fourth Street, Plum Street etc.These streets provide the local and service access to campus buildings. Several of these streets enter the major pedestrian areas of campus, especially Atlantic Drive and Fourth Street.

As a campus that was created within the framework of the City of Atlanta street system, the Georgia Tech campus retains much of the character of the city. Even though a number of the old city streets have been closed to auto traffic, there are remnants of the grid street system that existed prior to the major campus expansion in the mid 1960's. The fact that the campus was expanded into an area that had an urban street pattern has resulted in a campus with extensive automobile access and circulation facilities.

Proposed Campus Circulation System
Although the Master Plan identifies the need to reduce automobile traffic in certain sections of the campus to improve safety and campus character, roadways will continue to provide the backbone of the circulation system on campus. These roadways are needed to provide transit service, access for service vehicles, and access for emergency response vehicles. The intent of the Master Plan is to provide a rational, easily understood pattern for vehicular access, within the framework of the goals to create a more pedestrian campus. The CMPU incorporates all of the recommendations for vehicular circulation improvements and changes proposed in the 1997 Campus Master Plan, with some minor variations as described below.

Proposed Campus Street Network
The Master Plan retains an on - campus road network capable of providing necessary circulation and access within the campus. Although the historical development pattern of the campus does not allow for the creation of a complete internal campus loop road, the proposed street network does provide a clear system for moving through campus. The proposed circulation system consists of the following categories of streets **(Figure 12 Future Campus Circulation System)**:

Campus Collector Route: Ferst Drive will continue to serve as the campus collector, providing the major vehicular connection into and across the campus. Although this street already exists, some modification of its alignment is proposed, and will be necessary at its western end at Marietta Street. In that location Ferst Drive is proposed to be extended to Marietta Street when Tech Parkway is closed – providing a major new entrance on the west side of campus.

Campus Access Routes: These streets, along with the campus collector, provide the primary means of vehicular entrance to the campus. They provide direct access to the campus collector. Included among these are: Hemphill Avenue, State Street, Fowler Street, and Techwood Drive. These streets are either two or four lanes. Because of its increased importance as a campus access route, State Street was proposed to be widened to four lanes in the 1997 Campus Master Plan. This widening has been partially implemented.

Campus Neighborhood Streets: These streets provide localized access within the campus, and typically do not intersect the campus collector or the external street system. Included in this category are: Ninth Street, Eighth Street, Sixth Street, Fourth Street, Bobby Dodd Way (west of Techwood Drive), Curran Street, McMillan Street, Greenfield Street, Dalney Street, Techwood Drive (north of Fifth Street), Fowler Street (south of Fifth Street) and Brittan Street.These streets are, and are planned to remain, two lane roadways.

Campus Roadways Recommended For Closure

Roadways proposed to be closed to vehicular traffic include those that pass through high pedestrian areas, such as Atlantic Drive, or those impacted by future construction in expansion areas, such as Tech Parkway west of the Student Center. Emergency vehicle access will likely have to be maintained on some or all of the streets proposed to be closed. In addition, several of the closed roads will be need to provide periodic service access. The appropriate degree of emergency and service access that must be maintained will need to be confirmed when the road closures are implemented. The following on-campus streets are proposed to be closed to auto traffic:

Dalney Street - between Eighth Street and Ferst Drive
Atlantic Drive - from Tenth Street to its present intersection with Fourth Street
Fourth Street - from its present intersection with Atlantic Drive to the Rich Building
Eighth Street - between Atlantic Drive and Griffin Track

Recommendations for Off-Campus Roadways

The 1997 Campus Master Plan recommended the closure of the majority of Tech Parkway – to provide a large contiguous area for campus expansion. This recommendation is retained in the CMPU. As shown in **Figure 12 Future Campus Circulation System**, Tech Parkway is proposed to be closed from the entrance drive into the Student Center parking lot, northward to Northside Drive.Traffic analyses prepared during preparation of the 1997 Campus Master Plan indicated that this closure would not adversely affect traffic circulation if undertaken in conjunction with widening Marietta Street.

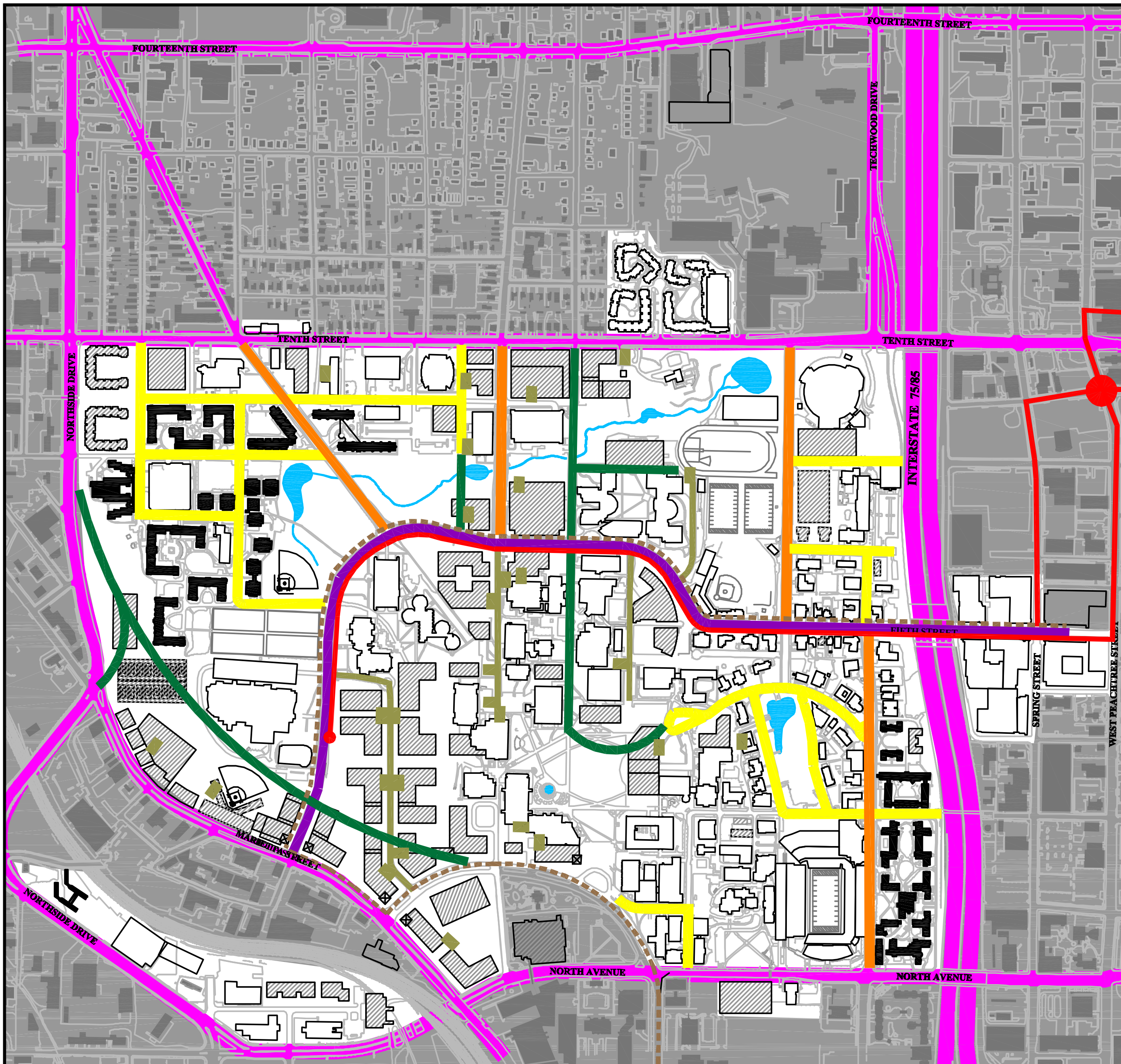
The southern portion of Tech Parkway is proposed to be retained, and provided with a new connection to Marietta Street. This is an important linkage, allowing North Avenue to be more directly connected to Marietta Street.

In addition it is proposed that the flyover that presently connects Northside Drive across Tech Parkway be removed. It is assumed that this flyover, which occupies a large land area, will no longer be needed once Tech Parkway is removed. However, this recommendation must be confirmed with further traffic analyses as part of the master plan implementation.

Intersection Improvements

To improve vehicular circulation, improvements are proposed at several intersections located on the campus perimeter. These enhancements fall into one of three categories: signalization, signal timing, and geometric improvements. Proposed improvements are discussed below.

Figure 12 Future Campus Circulation System



North

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Scale: 1" = 900'

- Future Building Sites
- Existing Georgia Tech Facilities to Remain
- Campus Collector
- Campus Access Routes
- Major Off-Campus Streets
- Campus Neighborhood Streets
- Campus Roadways Closed to all Traffic
- Service Drives
- Trolley
- PATH Foundation on Street Bike Route / Bike Lane

Signalization
An intersection operating under passive control, ie unsignalized, is considered for signalization when established thresholds with regards to traffic volumes or pedestrian volumes are exceeded or safety is a significant concern. The intersection of Atlantic Drive and Tenth Street is a major pedestrian link between campus and the Home Park neighborhood and is proposed to be signalized. Based on a study of auto and pedestrian use prepared for the City of Atlanta prior to the 1997 campus Master Plan completion, the peak hour volumes along 10th Street, the pedestrian volumes crossing 10th Street, and the attendant safety concerns provided sufficient justification for a signal at this location.

Geometric Improvements
Turn lanes are proposed in order to improve traffic operations at several locations on the campus perimeter. By separating left turn traffic from through - traffic, the disruption posed by left turning vehicles is reduced. An additional turn lane will also reduce the accident potential at the each location by reducing the amount of lane changing in the through lanes prior to the signal. Left turn lanes are proposed to be added at the following intersections:

10th Street/State Street (add a turn lane for westbound traffic turning into campus), and
10th Street/Atlantic Drive (add a turn lane for east - bound traffic turning north on Atlantic Drive)

In addition, studies undertaken of Ferst Drive prior to the completion of the CMPU indicated that turn lanes should be added to Ferst Drive in the following locations: Hemphill Avenue, State Street, and Fowler Street.

Campus Gateways
The intent of the Master Plan is to organize the system of signage, landscaping, paving and other special features on the streets and pedestrian walkways that provide access to the campus, to improve orientation and wayfinding into and through the campus. The definition of the campus system of gateways and wayfinding points is included in Section VI. C. Open Space and Pedestrian Circulation.

Wayfinding System
As recommended in the 1997 Campus Master Plan Georgia Tech undertook a wayfinding and signage study to develop a comprehensive plan for signage location and design. Test signage panels were prepared and the Institute began the implementation of the signage plan in 2003.

2. Service Vehicle Circulation
In the 1997 campus master plan it was envisioned that the campus could develop in such a way that pedestrian routes would be completely separated from vehicular service routes. Plum Street and the extension of State Street south of Ferst Drive were envisioned to be used exclusively for vehicular service, with Atlantic Drive providing the pedestrian – only route through the center of campus.

Development that has occurred since completion of the 1997 Campus Master Plan indicates that the complete separation envisioned in the earlier master plan is not practical. In practice, pedestrians will continue to want to follow the shortest, easiest routes to their destinations. Plum Street is a good example of this fact. With the construction of the Parker H. Petit Biotechnology Building and the Ford Environmental Science and Technology Building on the north side of Ferst Drive, a new center of activity was created. In spite of Atlantic being the major pedestrian north-south route on campus many students prefer to walk south along Plum Street – a service and parking corridor. This is in large part due to the fact that if a student is bound for the library or Tech Tower areas of campus, Plum Street is the shorter route. Conversely, if a student is walking northward to the Petit or Ford Buildings, Plum Street offers easier grades than does Atlantic. Given the topography of the Tech campus and the anticipated increase in student population and facilities it is likely that students, faculty, staff and visitors will continue to walk along or across service corridors as they cross the campus.

In response to these observations it is proposed that all service corridors on the campus be considered multi-purpose routes and be designed to accommodate pedestrian movement as well as service traffic.

This proposal may mean different things in different circumstances. Since the majority of service routes on-campus already exist in some form, improvements may need to be undertaken to them when new facilities are constructed adjacent to them. The construction of the Klaus Advanced Computing Building, as an example, prompted the need to redesign and improve the section of Plum Street adjacent to that site.

In some instances pedestrian movement will be the primary function of a corridor, and the improvements should be designed to reflect that purpose. As an example, when the auto traffic around Tech Tower was removed, the driveways had to remain to accommodate service and emergency vehicle traffic. However, the primary use of the driveways was, and is, for pedestrian movement. Consequently the driveway curb and gutters were removed and brick pavers installed. In other circumstances service access will be the dominant function of a corridor. The loading and service dock of the Ferst Center for the Performing Arts is such a location, where large trucks must have access at all times of the day. In these locations it will be more appropriate, and safe to provide standard curb and gutter with sidewalks to allow pedestrian movement. The common requirement for accommodating pedestrian movement in all service corridors is that the design must be safe, handicapped accessible and appropriate to the type and frequency of service vehicle and pedestrian traffic.

In addition the service corridors must, to the extent possible, be designed to visually screen the location of dumpsters and outdoor storage areas from the pedestrian movement paths. In existing locations it is likely this type of improvement will have to be implemented if and when new construction occurs adjacent to the service corridor. Screening may be provided in some instances by walls and gates enclosing service yards. In other locations a landscape screen may be all that can be accomplished. Both are acceptable. The most important aspect of the combined service/pedestrian movement concept is that pedestrians be provided safe routes, that are as visually pleasant as possible.

Existing Services Routes include**:**

Power Plant Drive: serving the power plant, A. French Building, Lyman Hall, Daniel Laboratory, Chapin Building and the D. M. Smith Building

Cherry Street and Bobby Dodd Way (from the Coon Building to the old Civil Engineering Building): serving the Coon Mechanical Engineering Building, Savant Building, Swann Building, Tech Tower, and the Library

Ferst Drive (between the Weber Building and Cherry Street): serving the Guggenheim Aeronautics Building, Weber Space Science Building, Building, and providing service access to the closed sections of Cherry Street and Bobby Dodd Way.

Bill Moore Student Success Center Service Drive : located under the west stands of the Bobby Dodd Stadium, between Bobby Dodd Way and North Avenue.

Rich Building Service Drive: located east of the Rich Building, extending from Fourth Street to Bobby Dodd Way, this route serves the Rich Building, the future building proposed on the site of the Hinman Building, the Library and the Fraternity houses along its east side

Brittain Dining Hall Service Drive: the extension of Bobby Dodd Way east of Techwood Drive which connects to Williams Drive

Eighth Street (east of Fowler): serving the O'Keefe Gymnasium Building, the Coliseum and the O'Keefe Building

Cherry Street (north of Ferst Drive): serving the Ford Environmental Science and Technology Building, the Parker H. Petit Biotechnology Building, the Molecular and the Materials Science and Engineering Building. A service tunnel is proposed to link all three of the buildings in this area.

Plum Street (south of Ferst Drive): serving the Emerson Building, College of Computing, Joseph M. Pettit Building, Van Leer Electrical Engineering Building, School of Architecture, Klaus Advanced Computing Building, and the future building site shown south of the Van Leer Electrical Engineering Building.

State Street (south of Ferst Drive): serving the Howey Physics Building, Mason Civil Engineering Building, Boggs Chemistry Building, Bunger Henry Chemical Engineering Building, the Center for the Arts and the MRDC building.

MRDC II Building Service Drive : located between the Groseclose Industrial and Systems Engineering Building and the planned MRDC II building.

SAC and Student Parking Deck Service Drive: located south of the SAC building. This driveway may use a portion of the existing Tech Parkway road bed.

Fourth Street: Fourth Street is proposed to be closed to auto traffic west of the Rich Building. The remaining portion of the street will provide service access to the Innovative Learning Resource Center (ILRC) building. This route will also have to provide service access to the north side of the Library.

In addition to the existing service corridors the CMPU proposes that a new corridor be added to serve the major group of new facilities located west of the Student Center. This is anticipated to be a major service route, providing access to 6-8 future buildings. The proposed corridor will extend from the eastern end of the existing service drive located on the south side of the Love Manufacturing Building, southward to Tech Parkway (proposed to be reconfigured to connect to Marietta Street). In addition this route will provide access to the proposed site of the future chiller plant that will serve this side of campus. Other buildings not provided with a service drive are, or will be served directly from an adjacent campus street.

3. Transit

The CMPU incorporates the newly created trolley route that runs east west across campus **(Figure 12 Future Campus Circulation System).** This route will have a major stop on Ferst Drive at the Campus Recreation Center on the west side of campus. The major stop on the eastern side of campus will be at Technology Square. Unlike the Stinger shuttle bus system that runs circular routes around campus, the trolley runs back and forth on Ferst Drive/Fifth Street to provide a high level of service for students bound to and from Technology Square.

However, some trolley service has been extended to the Tenth Street MARTA station to improve access from the MARTA rail system to campus. Given that trolley service has only recently been started, it is likely that the timing of the service and even the routes may undergo refinement over the next one to two years as the Institute monitors the service and adapts it to best serve the campus community.

The Stinger service continues to operate around the campus and will continue to do so in the future. Georgia Tech, as in the past will continue to monitor the performance of the system and make adjustments to routes and schedules to best serve the faculty, students and staff. As with the trolley service Georgia Tech should continue to seek ways to encourage students, faculty and staff to use the MARTA system, as recommended in the 1997 campus master plan.

4. Parking

The CMPU incorporates the parking supply ratio objective defined in the 1997 Campus Master Plan. Based on analysis of parking ratios in effect at other institutions, and the fact that Atlanta remains, for now, an auto dependant community, a target parking ratio of 52 spaces per 100 persons on campus (faculty, students, staff) was established in the 1997 Plan. This was a 15 percent reduction from the 1996 ratio of 61 spaces per 100 persons, and reflected a desire by the Institute to reduce the amount of land dedicated to parking and to reduce vehicular traffic on-campus. The target ratio also reflected an understanding of the difficulty of achieving a reduction in auto travel.

Table 4 Future Parking illustrates how the CMPU proposes to achieve the desired parking ratio objective. Of interest is the fact that due to the growth in the campus population that has occurred since the 1997 Campus Master Plan and the removal of some parking spaces the Institute achieved – for a short time in 2002 - a parking ratio of 46 spaces per 100 persons. Since that time the new parking deck located at Technology Square has been completed and opened, bringing the parking ratio back up again. As illustrated in the table the plan proposes the relocation of approximately 7,200 parking spaces, shifting them from surface parking lots to structured parking decks. This shift will make land available for additional building sites and reduce the amount of impervious surface devoted to parking. In addition the plan will require the construction of approximately 3,600 additional parking spaces to achieve the desired parking ratio by 2012.

Table 4 Future Parking

	1996 (fall)	2002 (fall)	2012
Total Supply Available	10,300	9,791	
Campus Population	16,958	21,088	29,336
Parking Ratio	61 spaces / 100	46 spaces / 100	52 spaces / 100
Parking Spaces Required			15,254
Existing Parking to Remain in Place			4,562
Surface Parking Proposed to be Relocated to Parking Decks			7,090
Parking Proposed to be Added			3,600

Table 5 Existing Parking to Remain In Place

Source: Georgia Tech Office of Parking and Transportation Services Internet Site Data

Location	Number of Spaces
Lot A01	35
Lot A02 (E 47)	74
Lot A14 (E63)	95
Lot A17 (W28)	50
Lot A23 (W31)(Partial)	57
Lot A25 (E70)	125
Lot A26 (W32)	15
Lot A29 (W08)	15
Lot A30 (E83)	60
B01 (E45)	30
B02 (E48)	85
B03 (E41)	86
B05 (W27)	42
B07 (W23 - State Street Deck)	850
P01 (E65)	365
R02 (ER64 – replacement deck)	270
R06 (WR 29-West resid. Deck)	600
E 81 Technology Square (Permits)	500
Student Center Visitor spaces	158
W10 Campus Recreation Center	550
Sub Total	**4,062**
Spaces Committed to Construction	
Klaus Advanced Computing Building	500
Grand Total Parking To Remain	**4,562**

The following table indicates parking spaces proposed to be relocated from surface lots to parking decks.

Table 6 Existing Surface Parking to be Relocated to Parking Decks
Source: Georgia Tech Office of Parking and Transportation Services Internet Site Data

Location	Number of Spaces
A03 (E 46)	110
A04 (W 01)	275
A05 (W 02)	1,250
A06 (W 03)	275
A08 (E 44)	105
A09 (E 43)	386
A11 (W21)	565
A12 (E64)	70
A13	435
A14 (E63)	95
A15 (W 24)	375
A16 (W 25)	250
A18 (W 26)	205
A20	35
A21 (W 30)	225
A22 (W 06)	80
A23 (W 31)(Partial)	30
A 24 (W 04)	55
A27 (W 07)	105
B04 (E 42)	120
B05 (W 27)	42
B06 (W 22)	64
R03 (WR 28)	950
R04 (E 52) (Peters Deck)	750
R05	65
Burge Visitor Lot	62
State Street Visitor Lot	111
Total	**7,090**

The spaces proposed to be removed should be considered a goal, not a requirement. Clearly the Institute desires to improve the campus visual environment by reducing the area devoted to surface parking. This reduction in surface parking will also reduce the amount of impervious surface, thereby improving campus sustainablity. However, the ability to remove surface parking will depend on the ability to construct the proposed new parking decks. As a result the Institute will have to manage the parking supply over the course of the planning period and make appropriate adjustments to balance supply and "need".

As a result of relocating approximately 7,000 parking spaces from lots to decks, and adding approximately 3,600 new parking spaces, also in parking decks, the CMPU calls for the construction of approximately 10,800 deck parking spaces. The locations of the proposed parking decks are shown in **Figure 9**

Future Sites for Parking Decks. The size of the proposed parking deck at each location in shown in **Table 7 Proposed Parking Decks.**

Table 7 Proposed Parking Decks

Deck Number	Number of Floors	Number of Spaces
P-1	2	500
P-2	6	780
P-3	5	750
P-4	5	1,250
P-5	5	1,250
P-6	5	1,200
P-7	5	1,500
P-8	2	300
P-9	2	150
P-10	2	500
Off-Campus Sites	To Be Determined	2,600
Total Spaces to be constructed		**10,780**

The proposed parking sites are located as follows: (Figure __ Future Sites for Parking Decks)
Parking Site P-1: This site is proposed to take advantage of the sloping topography of the site to construct one level of parking under the proposed graduate student housing.

Parking Site P-2: This site is located on Tenth Street adjacent to the existing Institute of Paper Science and Technology. The site is presently occupied by a surface parking lot.

Parking Site P-3: This site is located along Tenth Street between Atlantic and State Streets. This deck is proposed to be incorporated into an academic / research building fronting on Tenth Street

Parking Site P-4: This site is located on Fowler Street and is presently occupied by a surface parking lot.

Parking Site P-5: This site is located immediately south of the Coliseum, and will become available due to the proposed demolition of a portion of the Coliseum.

Parking Site P-6: This site is located on North Avenue and was proposed in the 1997 Campus Master Plan. The site is presently occupied by surface parking, the Burge student apartment building and the adjacent two level parking deck.

Parking Site P-7: This site is located in the area south of the existing campus that is proposed for campus expansion.

Parking Site P-8: This site is located on the west side of campus on the site proposed to develop the indoor tennis facility. The topography of the site allows construction of the deck under the tennis facility.

Parking Site P-9: This site is located adjacent to the Student Center. Although a small site it is shown to allow the provision of some parking immediately adjacent to the student center that could be reserved for visitors.

Parking Site P-10: This site is located on the west side of campus on the site proposed to develop the outdoor tennis complex. The topography of the site will allow construction of the deck under the proposed tennis facility.

Off – Campus Parking Sites: The prospective sites for these facilities are not shown in a particular location. They may be located east of I-75/85 in the area designated as potential contiguous campus expansion, or elsewhere in the adjacent Georgia Tech Area of Interest. The most advantageous site, or sites for Georgia Tech would be a parcel or combination of parcels located near the pedestrian tunnel that crosses the expressway at Third Street. In addition, a site located west of Northside Drive could, with a direct pedestrian connection across that wide street, serve the adjacent student residences. The sites selected for these decks should be capable of accommodating in total approximately 2,600 parking spaces.

Should off-campus parking prove infeasible due to cost or other factors, Georgia Tech will have to reevaluate the parking policies and plans contained in the CMPU. Several options are available, including: 1 - reduce the number of surface parking spaces relocated to parking decks; 2 - add additional parking decks on-campus (most likely in the southwest section of campus); or 3 - reduce the parking ratio policy from 52 spaces per 100 persons to a level that would match supply with "need" (a ratio of 43 spaces per 100 persons would reduce the year 2012 parking "need" to match the supply provided without the off-campus spaces).

The key factor that Georgia Tech can monitor and adjust as required to control the parking ratio is the supply of surface parking. In order to keep the ratio up to acceptable levels, the Institute can simply choose not to remove as much surface parking as described in the previous paragraphs of this section.

VI. Physical Master Plan

C. Open Space and Pedestrian Circulation

The Master Plan Update recommends that open space on the Georgia Tech campus play a significant role in achieving the goals of sustainability and livability. This requires a new approach to open space. First, the idea of campus open space must be broadened to include the total area of the campus. Second, the idea of landscape must be defined as the sum total treatment of all the open space, including roads, parking lots, and hardscape, as well as lawns, trees, and planting areas. Third, open space must be planned in both ecological and human dimensions. This new approach is based on ecology, whereby living and non-living elements within an environment are known to be inter-related. Through ecology the pervasive issues of environmental sustainability, such as storm-water management, can be effectively addressed. The goal of enhancing livability also requires an inclusive concept, because the human experience of the Tech campus knits everything together – walkways, roadways, gathering places, parking places, play places, etc. In summary the master plan discusses two aspects of a singular, total campus open space: the ecological landscape, which is based on biophysical processes, and the human landscape, which is based on human activity patterns. **(Figure __ The Ecological and Human Landscape).**

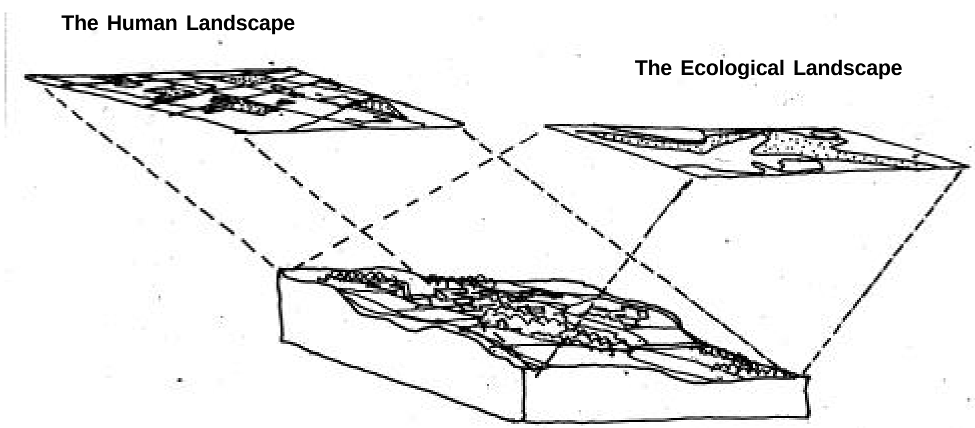


Figure 13 The Ecological and Human Landscape

1. The Ecological Landscape

The ecological performance of the campus today is very different from what it was in the past when it was a natural landscape. There is more storm-water runoff, less vegetation, less biological diversity, more microclimatic extremes, and more air pollution. While some of these effects are the general product of urbanization, their levels on campus are a result of campus land use. The history of storm-water runoff is particularly relevant at this time for the City of Atlanta and, by extension, Georgia Tech, because of the overburdened municipal sewer system. Before settlement, the campus area was covered with forest; by 1892 the campus area was a pastoral landscape of half fields and half forest; by 1927 the city grid crisscrossed it; by 2003 half of the

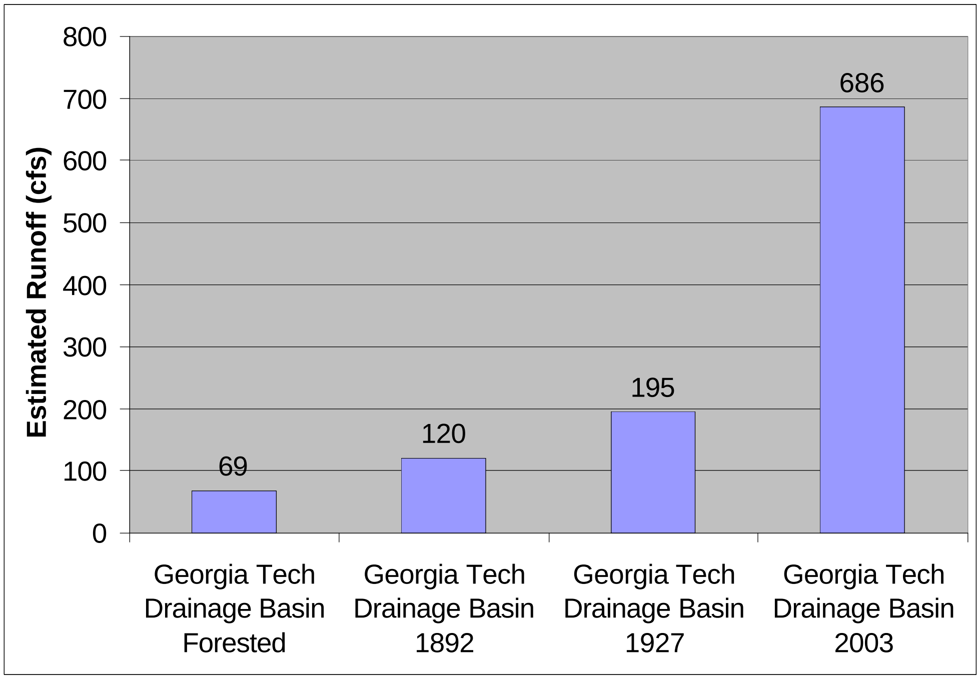


Figure 14 Estimated Storm-water Runoff To Present

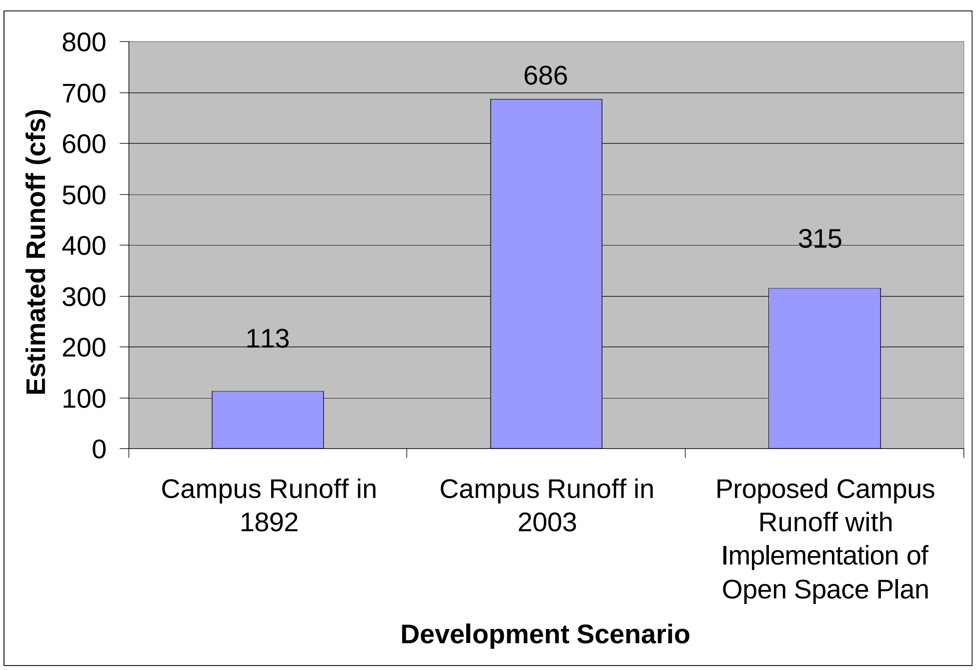


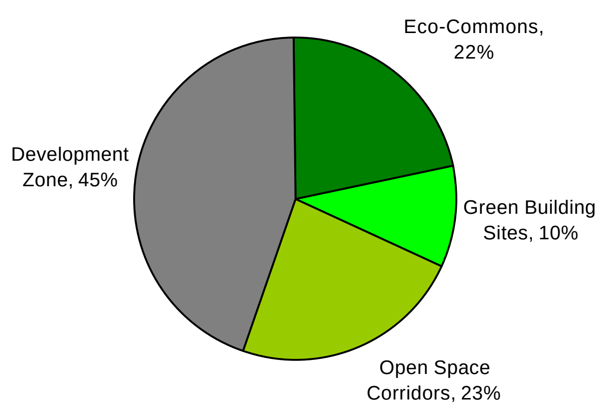
Figure 15 Estimated Effect of Open Space Plan on Storm-water Runoff

campus is covered with buildings and paving. The ecological landscape recommendations of the Campus Master Plan Update will return the campus to storm-water levels typical of the campus in 1950.
(Figure 14 Storm-water Runoff to present; Figure 15 Effect of Open Space on Storm-water Runoff).

In order to accomplish this objective and at the same time accommodate the necessary growth of the Institute, the CMPU makes three recommendations: (1) set minimum runoff performance for all campus areas including existing and proposed development; (2) require a percentage of campus to be covered with tree canopy and woodland to intercept and abosrb rainfall; and (3) establish an Eco-Commons to receive and actively manage storm-water

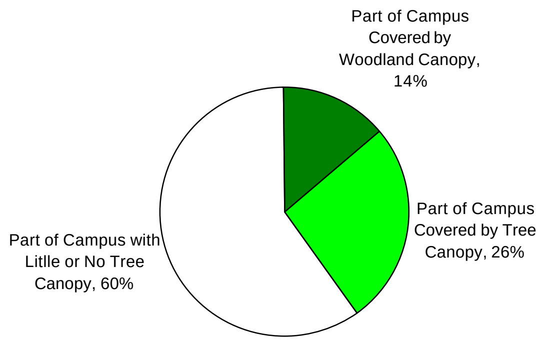
2. Runoff Performance
To achieve the storm-water reduction goals for the campus core the following minimum standards should be instituted for impervious surfaces and runoff coefficients. These standards are identified for four land use conditions that make up the campus: Development Zone, which include buildings and their site development; Green Building Sites, which are adjacent to the Eco-Commons for specially-designed "green" buildings; Open Space Corridors, which contain the campus's roads and walkways; and the Eco-Commons, which is dedicated open space for storm-water management.

3. Tree Canopy and Permanent Woodlands
An extensive tree canopy is the most vital part of ecological storm-water management. It intercepts rainfall and reduces the amount of water reaching the ground. Woodlands, which are multi-layered canopies of shrubs and trees, are even more effective and also have soils that readily absorb water. The Campus Master Plan Update recommends a minimum coverage of the campus by tree canopy and permanent woodland to achieve storm-water management benefits. They are given for several development and open space categories. It is important to note tree canopy coverage can and should extend over pavement areas, such as parking lots and streets.



4. Eco-Commons

The Eco-Commons is permanent open space that performs valuable ecological work for the campus. It is an essential part of the campus's infrastructure, because of its storm-water

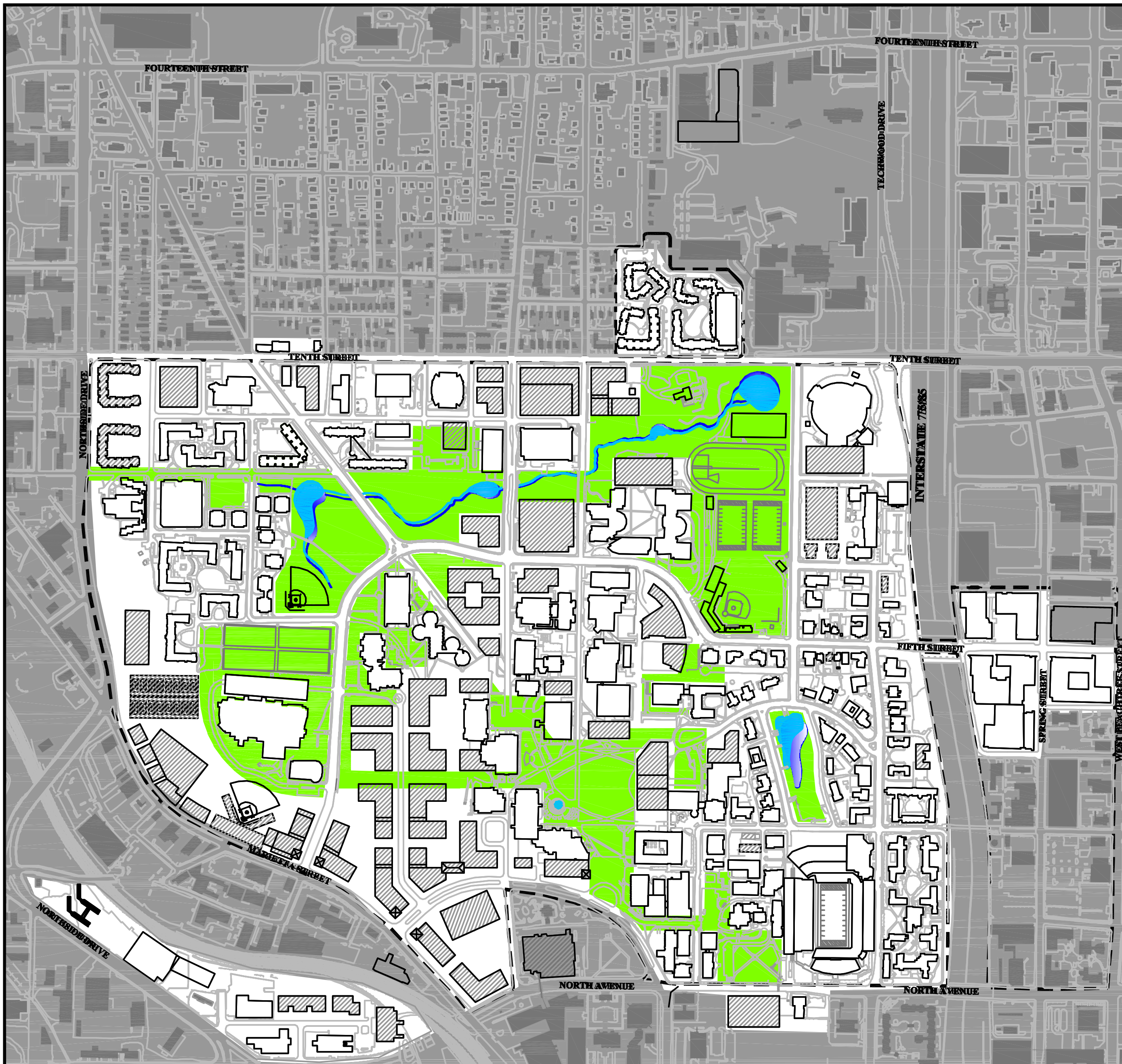


	Coverage Type	Area (Acres)	Percent of Campus	Tree Canopy Coverage	Canopy Area (Acres)
Development Zones	Existing Buildings	77	21%	0%	0
	Future Buildings	37	10%	0%	0
	Existing Parking	69	18%	50%	34.5
	Future Parking	17	5%	50%	8.5
	Roads	23	6%	50%	11.5
Open Space					
	Woodlands	50	13%	100%	50
	Parkland	50	13%	65%	32.5
	Law n/Fields	50	13%	25%	12.5
	Total Core Campus Area:	373		Total Coverage Area:	149.5

Figure 16 Proposed Minimum Tree Canopy Coverage

management benefits. **(Figure 17 Eco-Commons)** The Eco-Commons should receive the campus's storm-water and handle it in a non-structural way through the performance of its natural landscape. It should also harvest water for non-potable uses, such as irrigation. The Master Plan proposes that the Eco-Commons be established over the centerline of the two main drainage basins, known as Basin A and Basin B, which exist on campus. It contains eighty acres, which represents twenty-two percent of the core campus. Physical modification of the land within the Eco-Commons includes demolition of some existing buildings and parking lots, relocation of facilities, re-grading, re-vegetation, and manipulation of surface and subsurface

Figure 17 Eco-Commons



North

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Scale: 1" = 900'

Future Building Sites

Existing Georgia Tech Facilities to Remain

drainage. **(Figure 18 Required Demolition for the Eco-Commons)**

In a typical section of the Eco-Commons there are transfer zones, which form the edges of the eco-Commons and move storm-water from development areas into receiving zones, which absorb it for slow release**. (Figure 19 Typical Section of the Eco-Commons)** Where the transfer zone has an existing or proposed building on it, it is designated a Green Building Site.

Figure 18 Required Demolition for the Eco-Commons; L-R: Parking west of Hemphill, Physical Plant, and the Peters Parking Deck.

New construction or renovation on these sites must be specially designed to manage storm-water commensurate with the performance of a natural system. These sites are functionally part of the Eco-Commons and must intercept, evaporate, store, and utilize both the precipitation that falls on them and the storm-water that moves onto them from adjacent development. **(Figure 20 Green Building Sites**)

Similarly, elements of the human landscape, such as recreational facilities, walkways, and plazas, may occur within the Eco-Commons but must be designed to meet special requirements. While the Eco-Commons should address multiple environmental sustainability issues, its man-

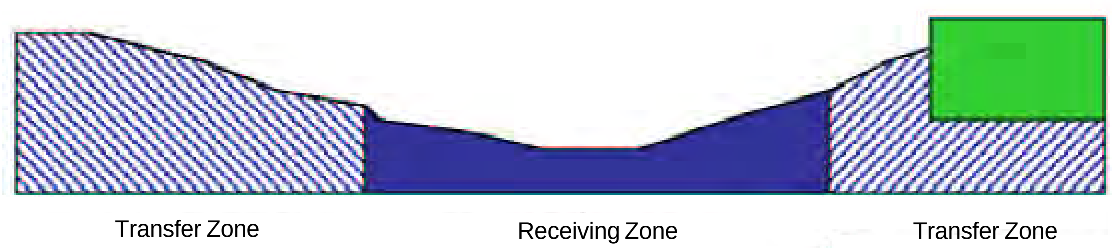


Figure 19 Typical Section of the Eco-Commons

agement of storm-water is pre-eminent. An overview of the storm-water aspect of the Eco-Commons is given below under the headings of its two drainage basins, A and B **(Figure 21 Storm-water Facilities)**.

a. Basin A

Basin A extends from the top of the watershed at Marietta Street to the Glade **(Figure 22 Detail of Basin A)**. This follows the course of an old stream that was flowing in the 1930's. It is now buried within a combined sanitary-storm-water sewer line. From the top of the basin to the bottom there are five sections.

Section A-1: Marietta Street to Sixth Street

There are no proposed modifications in this section at this time other than reforestation of the slopes adjacent to Ferst Drive to act as transfer zones. The guidelines and principles of the Eco-Commons in this area should inform the planning and design of future recreational and athletic facilities.

Section A-2: Sixth Street (Couch Park) to Hemphill Avenue

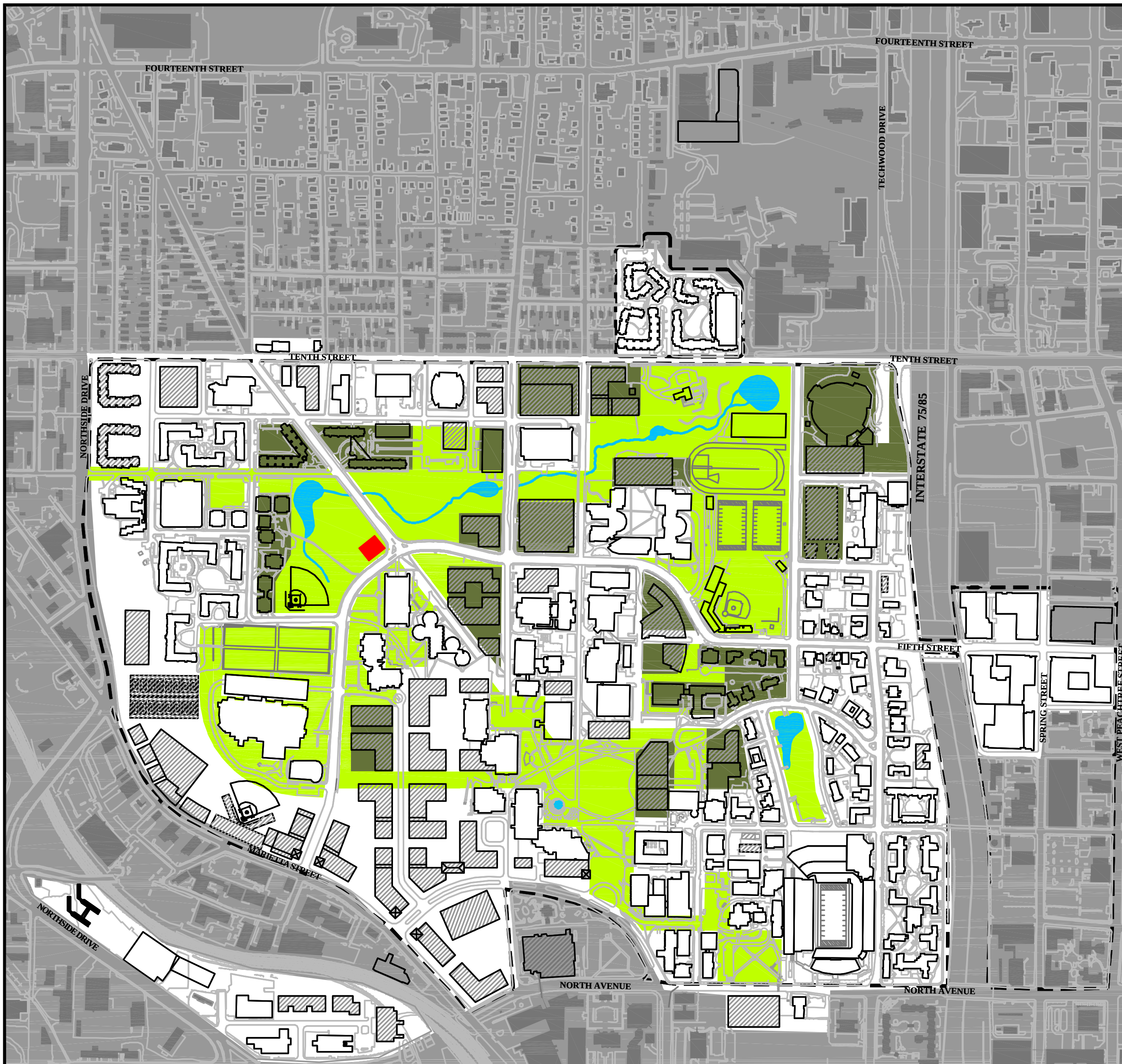
Couch Park should be divided into two areas with a women's softball field on one part and an informal recreation area with a pond downstream from it. The field should be built upon porous material, such as crushed concrete from demolition, to provide subsurface storage for storm-water draining from the higher areas of the basin. It should act like an aquifer slowly releasing water into a spring-fed stream that nourishes the pond. Storm-water from the Eighth Street corridor should also enter the pond through a wooded absorption/filtration zone, where parking in front of Hefner and Armstrong halls currently exists. The Central Receiving-Property Control building should be removed in order to provide park space adjacent to the pond. The pond should not only be a scenic feature for the park, but should also function as wet retention to improve water quality, provide recirculating water to the stream during dry periods, and supply irrigation water. During heavy rain events, water should be pumped from the pond to a water tower located on the rock outcrop where an existing electrical substation is recommended for removal. The water tower can be a landmark for the Hemphill corridor and incorporated into a recreational belvedere overlooking the Eco-Commons. The slopes below the Manufacturing Research Center and the McMillan Street residence halls should be reforested and soil-engineered to act as transfer zones for water from adjacent development.

Section A-3: Hemphill to State Street **(Figure 23 North South Section through the Eco-Commons at Hemphill Avenue)**

This section lies between Hemphill Avenue and State Street and includes the slopes south of Ferst Drive. Demolition and removal are proposed for the Ajax and Beringause buildings and surrounding parking. A stream channel should be created to pickup the flow from Section A-2 and carry it to a wetland retention pond on the west side of State Street, which can supply re-circulation water to the stream for low base flow **(Figure 24 Typical Stream Section, Figure 25 Example of Pond)**. The stream channel should carry the two-year storm, with larger flows spreading onto adjacent fields which act like a floodplain.

The field at the corner of 9th and Dalney streets should be constructed in a manner similar to the softball field in Couch Park to allow water collected along the 9th Street corridor to be stored and slowly released into the system. The transfer zones associated with Section A-3 consist of the slopes to the south of the stream that crest at Manufacturing Research and Physics. They should be reforested to slowdown and infiltrate overland flows and to distribute runoff from buildings and

Figure 20 Green Building Sites



North

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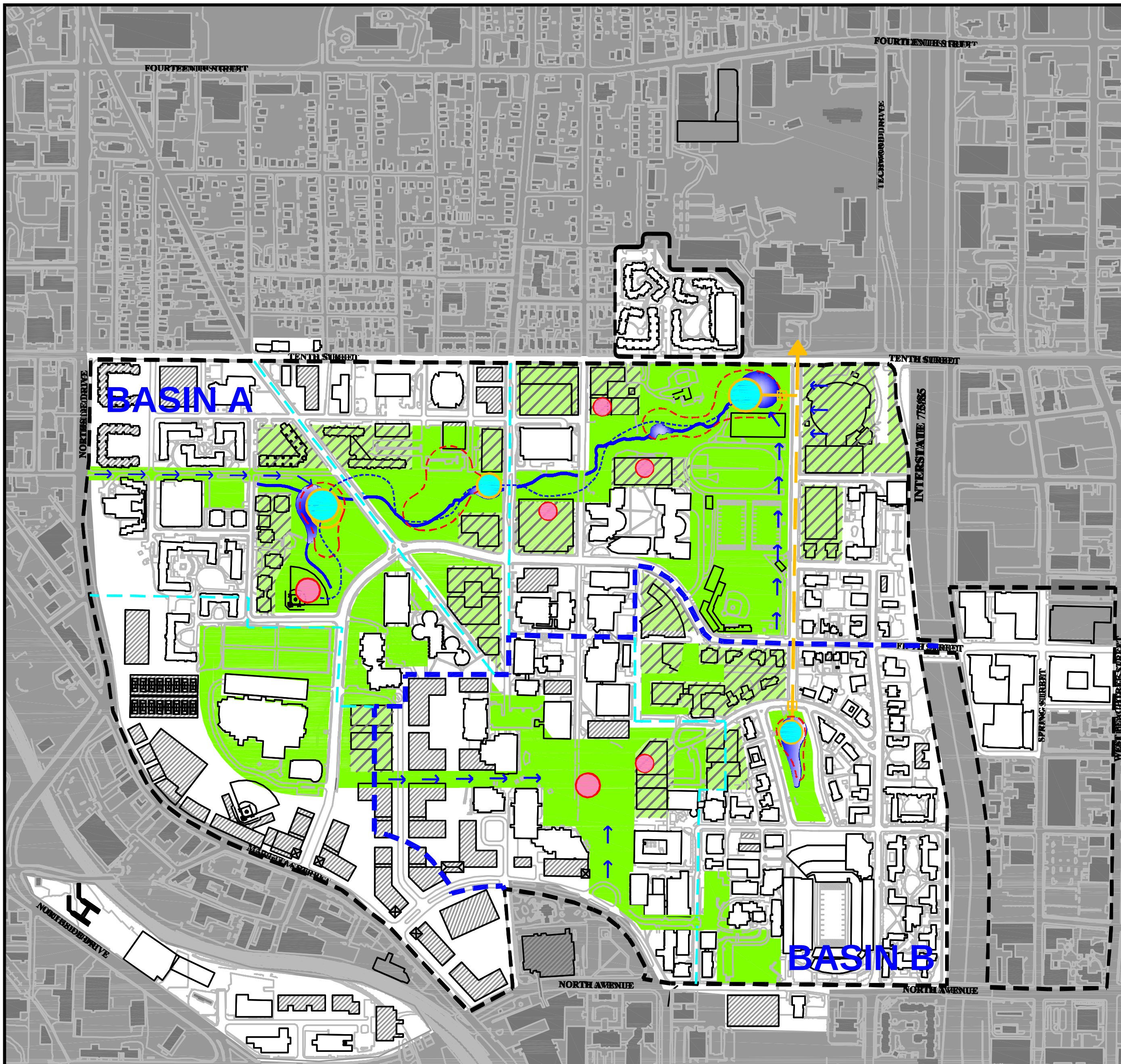
- Eco-Commons
- Green Building Sites
- Future Building Sites
- Existing Georgia Tech Facilities to Remain
- Proposed Water Tower

Figure 21 Storm-Water Facilities



North

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Scale: 1" = 900'

- Eco-Commons
- Green Building Sites
- Future Building Sites
- Existing Georgia Tech Facilities to Remain
- Main Drainage Divide
- Minor Drainage Divide
- Stream
- Drainway
- Sewer Interface
- Surface Storage
- Subsurface Storage
- Re-circulating Flow Loop
- Sewer Trunk Line

paved areas into the Eco-Commons. Likewise, a wooded bio-swale on the east side of Hemphill Avenue should be made to filter street water.

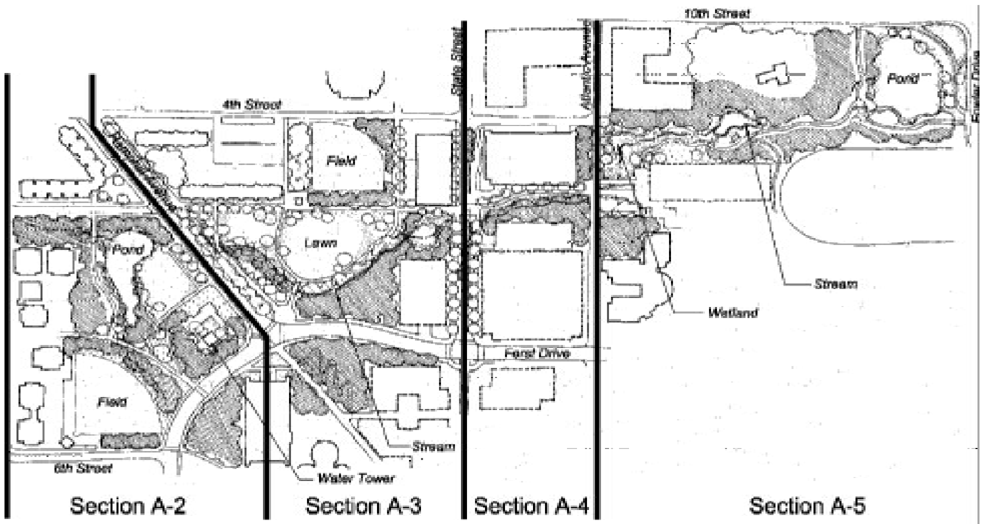


Figure 22 Detail of Basin A

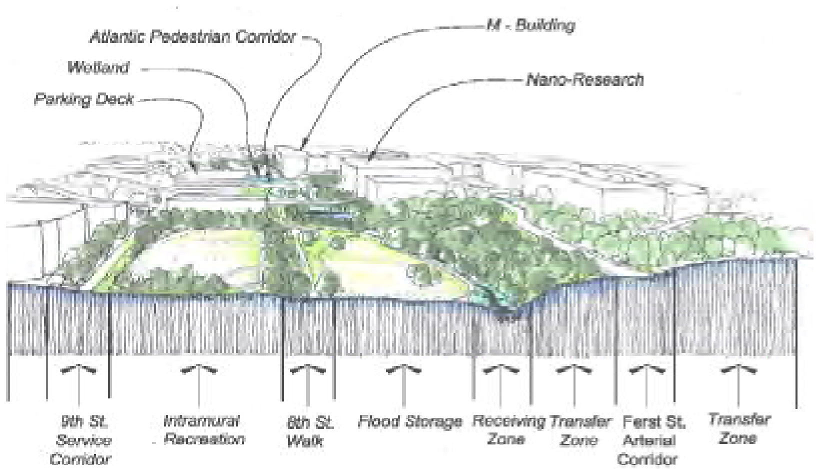


Figure 23 North-South Section through the Eco-Commons at Hemphill Ave.

Section A-4: State Street to Atlantic Avenue
This section flows from State Street to Atlantic Avenue and is flanked by the North Campus Parking Deck and the proposed nano-technology building on a "green" building site on the south. While very constricted, it is essential that storm-water be able to flow through this section on the surface. A cistern near Atlantic Avenue should store water during normal rainfall for slow release. During heavier rains,

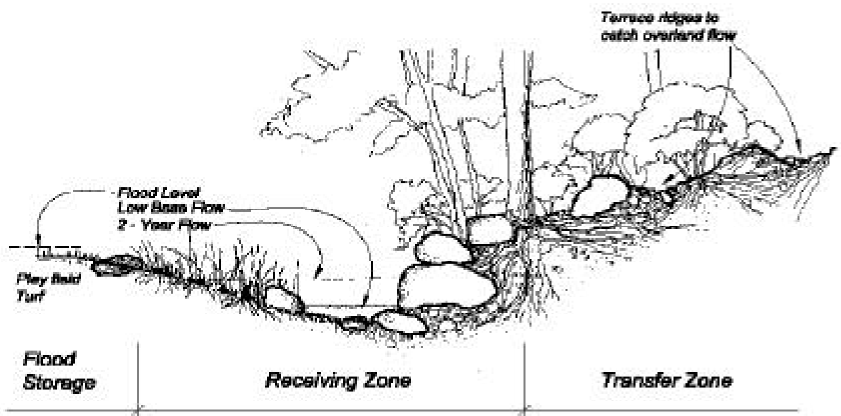


Figure 24Typical Stream Section in Eco-Commons

Figure 25 Example of Pond

water should be pumped to a holding tank on top of the parking deck for a gravity-fed irrigation system. The service yard of the proposed nano-technology building should provide subsurface storage to contain runoff generated from the building and its site. Stream channel recirculation as proposed in section A-2 and A-3 is also an option in this section.

Section A-5: Atlantic Avenue to Fowler Drive

This section occupies the bottom of Basin A and extends from Atlantic Avenue to Fowler Drive. The low point is in The Glade, where a wet retention pond should be constructed as the last point of storm-water collection and storage prior to entering the city sewer system. Two stream channels should flow to it: one from Atlantic Avenue and one from a constructed pond at the corner of Fowler and Tenth. Two recirculation systems should operate in this section. The first will feed the stream channel from Atlantic Avenue through a constructed wetland on the site of the existing physical plant. The second should nourish the pond at Fowler and the stream that flows from it. The Fowler Pond should take groundwater from the historic stream bed under the Coliseum, which is currently pumped into the sewer system. It should be part of a landscape gateway to campus that showcases Tech's environmental initiatives. The adjacent practice fields and track are also part of the Eco-Commons because they contribute large quantities of runoff. At any time in the future when they are reconstructed they should promote groundwater infiltration, storm-water storage, and irrigation water recycling.

b. Basin-B

While Basin B is comparable in size to Basin A and accounts for approximately one third of the core campus area, its storm-water reduction possibilities are more limited, because of existing land use and historic setting. Nonetheless, it has a significant role to play in ecological and storm-water sustainability. The Eco-Commons in this basin is defined largely by Tech Green, Peter's Park and the open space corridors that connect them. It can be divided into two major sections, both of which end in low points that connect to the city's combined sewer system **(Figure 26 Detail of Basin B).**

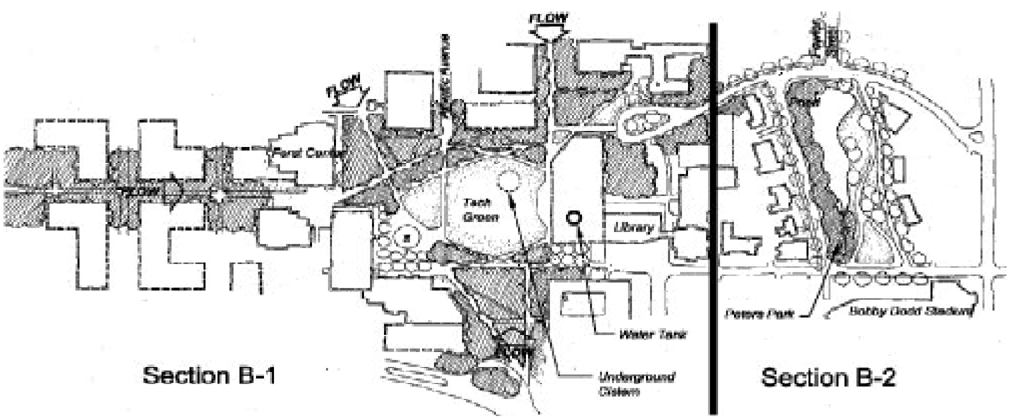


Figure 26 Detail of Basin B

Section B-1:

The basin of this section is defined by Tech Parkway to the south, Cherry Street and the GTRI Research Building to the east, and the School of Architecture, the Lamar Allen Sustainable Education Building and the Instruction Center/ISE Complex to the north. The low point is Tech Green, toward which four major corridors direct water. It is proposed that each corridor be planted with woodland vegetation to intercept, absorb and filter rainfall, runoff, and rooftop water. A cistern should be constructed at the low point of the basin beneath the lawn of Tech Green to harvest average monthly rainfall. Solar panels should be incorporated on the proposed student learning center to pump harvested water to a tank on top of the building for a gravity-fed irrigation system in the surrounding landscape. This is not unlike the effect of leaves on trees lifting water from in the ground. The area that includes the west side of Architecture, the Fourth street corridor, and the slope north of the Library should be re-forested to function as storm-water transfer zones. Human uses, of course, may be incorporated within these woodlands.

Section B-2:
Section B-2 consists mainly of Peters Park and the landscape areas of The Hill. The greatest improvement to the Eco-Commons in this section should be the replacement of Peters Parking Deck with an informal park setting and a permanent pond. Existing storm-water pipes from Bobby Dodd Way and other streets in the area should be re-directed for outfall to the pond. The pond should function as wet retention to improve water quality, and accommodate intermittent detention of water from heavy rains. Pond water can be pumped for irrigation. Collection facilities should be built for the overflow from the pond prior to its entry into the city combined sewer system. The Hill should function as a storm-water transfer zone and as such, its vegetation should be infilled with additional understory and trees to increase canopy density. Unnecessary lawn areas should be replaced with a more diverse herbaceous layer and the soil should be re-constructed to increase infiltration. The other transfer zone that moves water toward Peters Park extends through the Greek area to Fifth Street. The low point of the Fifth Street Corridor near the baseball complex is particularly critical insofar as it directly accesses the combined sewer system. Its position requires the fraternity houses between Fifth and Fourth Streets west of Fowler Street to be retrofitted to decrease, if not eliminate, the storm-water that leaves their individual sites. The Klaus Building site should also strive for zero runoff.

5. Storm-water and Landscape Management
To augment the effect of the Eco-Commons in meeting sustainability goals, the Master Plan Update recommends a campus-wide program of storm-water and landscape management. The two are highly interrelated and should be administered in a coordinated manner to achieve a living landscape made up of topography, soils, vegetation and water that is both attractive and functional. In the words of the ecologist Paul Sears, a healthy landscape is a beautiful landscape. The living landscape not only shapes campus scenery and human activities, but also microclimate, air quality, soils, drainage, and wildlife. For an institution of higher education, it can also create dialectic with the natural world - a setting for teaching and a laboratory for the natural sciences.

a. Vegetation
The key to the effective and appropriate use of vegetation on the campus is landscape ecology, which focuses on communities of plants and their relationship with the environment. This is a different approach than horticulture, which tends to focus more on the cultivation of individual specimens. Landscape ecology emphasizes plant adaptation, biogeography and the environmental effects of vegetation. The Master Plan Update recommends that landscape management be a blend of urban forestry, horticulture, and turf management. Urban forestry techniques focus on total canopy and plant communities, while horticulture pursues the maintenance and care of individual plants, decorative effects, and turf management.

Campus vegetation should be planned in terms of four plant community types: Woodland, Parkland, Meadow, and Lawn. Of these the woodland represents the greatest amount of biomass, carbon-sequestering, rainfall interception, positive air quality effect, soil moisture storage, and climatic amelioration. Sport turf and flower beds represent the least of all of these effects, but cost the most in maintenance. Therefore, the Master Plan recommends the use of lawn only where it is actually needed for human activities.

Woodland

The woodland type is a multi-layered plant community, typified by the Glade. **(Figures 27, 28)** It has an overstory of canopy-forming trees, an understory of small trees and immature trees, a shrub layer, a ground layer of herbaceous plants and leaf litter, a soil layer of detritus and humus, and an organic soil root zone. Woodlands contain a diversity of species and ages that relate to physiography and successional stage. While climax species are predominantly deciduous, pines dominate earlier successional stages. Plant spacing is irregular with clumps and gaps. Edges are typically dense from ground to canopy. In a woodland, the general climate is ameliorated by shade, higher relative humidity, and greater soil moisture. Nutrient recycling is very active.

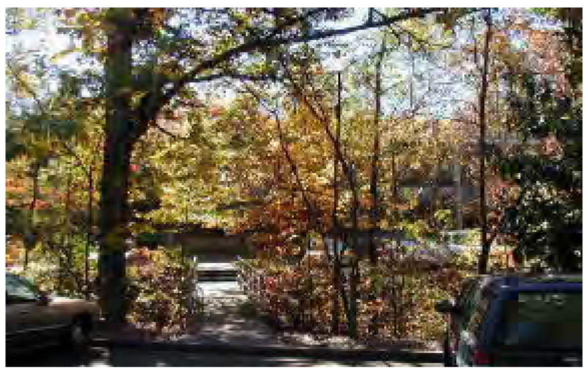


Figure 27 Typical Woodland

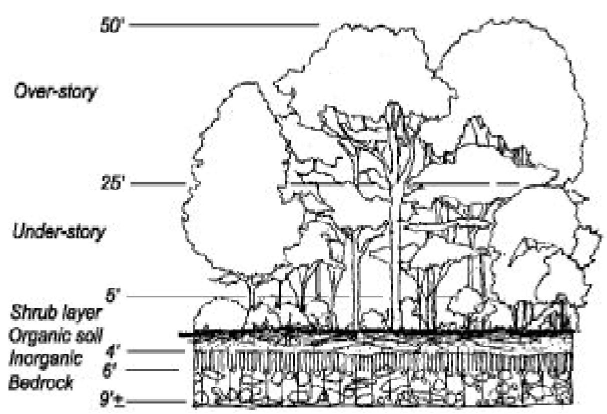


Figure 28 Section of Woods

The key to woodland planting is to mimic a natural forest by planting several species in every layer, different ages of each species used, and irregular spacing.

For a 100’x 100’ plot, a typical planting population should be 12 overstory trees, 18 understory trees, and 150 shrubs. Before planting, soil compaction in the top 36” should be eliminated. The key to establishment will be a one to two year fertilization and irrigation program in order to build canopy to shade the ground and root mass to structure the soil. Woodland maintenance thereafter should phase out irrigation, enhance the build-up of leaf litter, and allow natural regeneration by suckers and seeds.

Parkland
The parkland type layer consists of an intermittent tree canopy over an herbaceous ground. **(Figure 29)** Understory tree and shrub layers are largely absent. While this type can occur under natural conditions, it is typified at Georgia Tech by the area between Skiles and Houston Bookstore, which is a managed landscape with a high canopy of trees and lawn beneath. Both hardwoods and evergreens occur.

Figure 29 Typical Parkland

Meadow
The meadow type is an herbaceous community of grasses and forbs. In a natural state it consists of tall grasses and forbs with a seasonal blooming of flowers in the warmer months and dried stalks and seed heads in winter. There can be occasional mounds of woody plant material and, where it meets woodland, there is a transition to taller woody plant material. In a cultivated state, meadows are mown or grazed to become lawn or pasture.

Lawn
The lawn is a mechanically managed plant type – by mowing. It can, however, be a pure monoculture or a more diverse collection of grasses and forbs. The degree of monoculture reflects the level of management with water and chemicals, sports turf requiring the greatest level of management. Typically the root zone is very shallow and soil is primarily for structure.

b. Tree Selection
The Master Plan Update includes a chart in the appendix that identifies tree species for each plant community type. It identifies trees that are regionally adapted and tolerant of urban conditions. The use of any of these trees on the Tech campus must be combined with a strict specification of a specimen's provenance, which is its geographic place of origin in a naturally-occurring population. A red maple, for example, is an acceptable species for Georgia Tech, but the specimen to be planted must come from a population in the same growth and geographic zone as the campus. Plants should come from nurseries within 250 miles of the campus, which insures the use of adapted plants and reduces the fossil fuel consumption of long distance shipping **(Appendix: Acceptable Trees for the Georgia Tech Campus).**

c. Forty Percent Vegetated Cover
By stipulating the total amount of open space and specifying its vegetative cover, the core campus can achieve a 50% decrease in existing storm-water runoff, while accommodating a 25% increase in development area, which is required to accommodate Georgia Tech's need for new buildings and facilities. Forty percent of the campus, roughly 150 acres, must remain as vegetated open space with the following stipulated cover types: 1/3rd woodland (0.20 runoff coefficient), 1/3rd parkland or meadow (0.30 runoff coefficient), and 1/3rd lawn or sports fields (0.40 runoff coefficient). The remaining 60% of the core campus that will accommodate development should meet a minimum runoff coefficient of 0.90, which mandates a modest accommodation of storm-water in the design and construction of buildings and pavement.

d. Surface Storm-water Storage
Due to the desire for additional open space on campus, conventional surface storm-water storage should be minimized and used only for the larger rain events. Within Basin A, the smaller more frequent rain events should be contained within the proposed stream channel. Surface storage should only occur on the playing fields east of Hemphill. Wet surface storage (retention) can occur in the proposed ponds, but fluctuation levels should be carefully designed with the proposed landscape along the edge. Within Basin B, the surface storage should be kept to a minimum in the Tech Green sub-basin and used primarily within Peters Park. The amount of storage should be designed to minimize the visual effect of fluctuating water levels.

e. Subsurface Storm-water Storage
Subsurface storage facilities should be used to collect and store storm-water for re-use in irrigation and/or to supplement the proposed Eco-Commons stream channel. Storm-water should be collected near its source to prevent downstream facilities from exceeding practical storage possibilities. Storage requirements must be based on site specific criteria and facility location within the watershed. Storage should be accomplished using underground vaults/cisterns or within the porous space of graded aggregates or recycled demolition materials. Subsurface storage within vaults should be pumped to elevated tanks for re-use in the landscape.

f. Athletic Field Subsurface Storage
Due to their size and location within the drainage basins, athletic fields should be constructed to store storm-water under their playing surface**. (Figure 30)** Due to the highly porous nature of a typical athletic field surface, storm-water can easily reach the subgrade level where it can be collected within the pore space of a graded aggregate

base. Water should be retained for infiltration or directed for slow release into a nearby receiving zone so that chemicals and pesticides typically associated with the management of playing fields can be absorbed and/or filtered by the landscape.

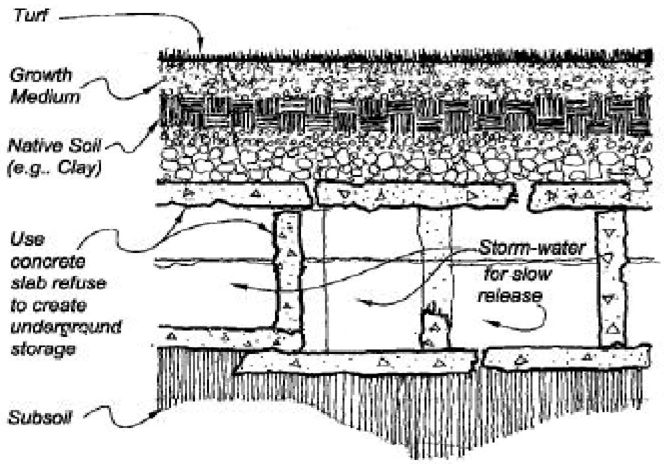


Figure 30 Sub Field Storm-Water Storage and the Recycling of Refuse

g. Porous Pavement

Porous paving should be utilized to decrease storm-water runoff, but cost analysis should be performed for each application to determine its benefits versus standard paving combined with subsurface storage and/ or discharge into a landscape receiving zone. Measures should be taken to promote infiltration into the underlying soil.

h. Parking Lot Treatment

Landscape design requirements within parking areas are as important as porous paving to storm-water management. **(Figure 31)** All parking lots should incorporate a minimum of 15% planting area to provide an extensive tree canopy that will effectively reduce the amount of water that reaches the parking lot surface. “First flush” discharge from the lot surface should be directed to vegetated swales within continuous tree islands to filter runoff and improve water quality. If discharge to a receiving zone is not possible, water should be collected in subsurface storage within the parking. Cisterns should be incorporated into each parking area to collect storm-water once it has been filtered by the vegetation for slow seep release or irrigation.

i. Street Corridor Treatment

Due to the poor water quality associated with first flush conditions of roadways, storm-water within the major street corridors of campus should be kept isolated in existing storm-water systems. The landscape adjacent to the roadways should direct water away from the road to prevent cleaner water from entering the roadway system **(Figure 32).**

If road water is to enter the Eco-Commons, receiving zones should be designed to accept and filter it. Bioswales should be incorporated into street medians or along the street edge to receive direct runoff.

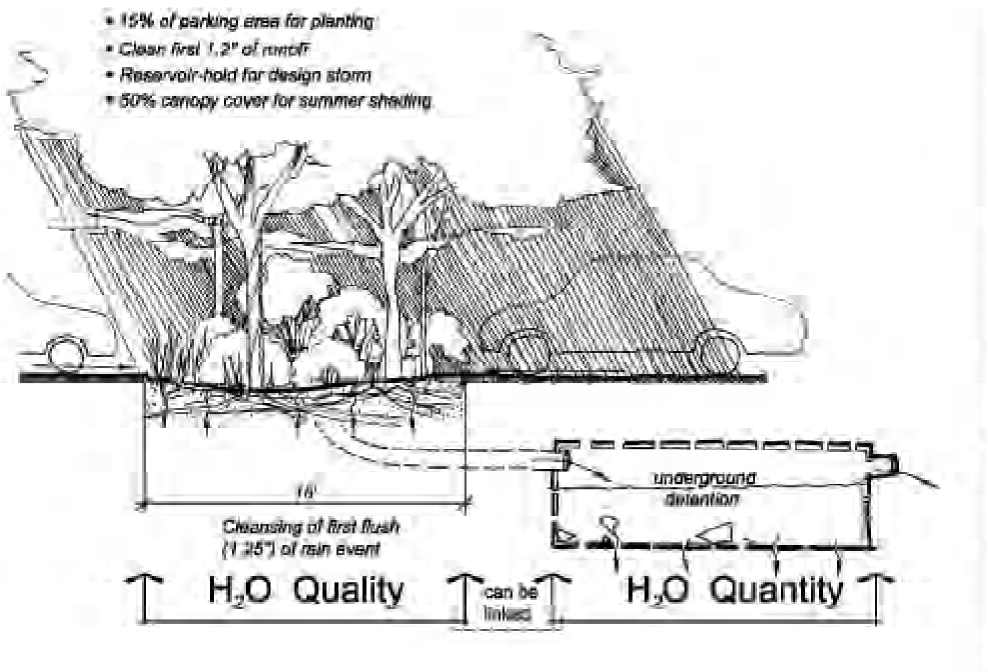


Figure 31 Parking Lot Performance

Street trees should be spaced according to species chosen such that canopies will overlap by 33% at maturity (35'-70'). Densely planted receiving zones should also be incorporated into the corridor to absorb runoff. Because of their linear form, corridors can be effective conduits of harvested water from building roof tops.

j. Pedestrian Corridors:

Pedestrian corridors that involve the conversion of existing streets, such as the Atlantic Street pedestrian corridor, should be treated similarly to a typical roadway corridor where the existing storm sewer system is used to collect storm-water for discharge into a receiving zone. Stormwater from the landscape should be directed away from the paved portion of the corridor in order to encourage infiltration and filtration that would not occur in the piped system. **(Figure 33 Drainage on the Street Side of a Sidewalk; Figure 34 Drainage on the Building Side of a Sidewalk)**Proposed pedestrian corridors within receiving zones should be constructed with a "soft" medium that will diminish runoff while providing a useable, low maintenance surface. Walkways should be lined with a cobblestone gutter/French drain system that allows water from the path and surrounding landscape to infiltrate. An outfall pipe should carry water to collection facilities.

Figure 32 Street Corridor

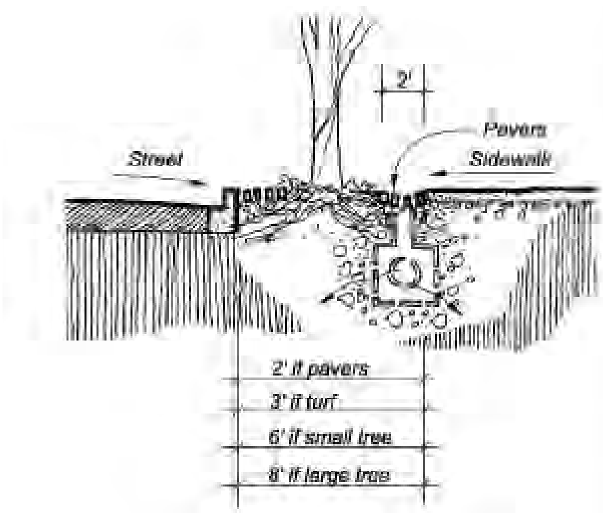


Figure 33 Drainage on the Street Side of a Sidewalk

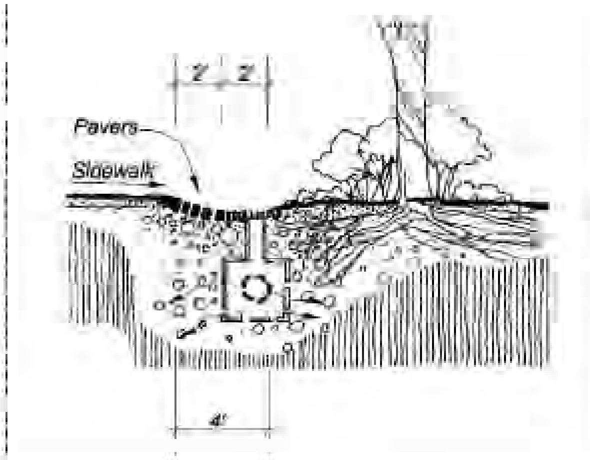


Figure 34 Drainage on the Building Side of a Sidewalk

6. The Human Landscape

While the Ecological Landscape represented by the Eco-Commons is shaped by natural processes, the Human Landscape, which overlays it, is shaped by human activities. The master plan designates three components of the human landscape: Corridors, Places, and Interstices.

a. Open Space Corridors and Pedestrian Circulation

Corridors are the linear open spaces used for campus circulation. The Master Plan identifies an interconnected grid of corridors, which are associated with different modes of travel – motor vehicles, walking, and bicycles **(Figure 37 Open Space Corridors)**. Some carry city traffic, while others carry local traffic, and still others provide service access. Regardless all should accommodate pedestrians. There should be no "service only" corridors. While the mode of movement within a corridor may change over time, such as a street being closed to motor vehicles, a corridor's spatial characteristics should persist by virtue of its urban design and landscape. Its ecological characteristics should also persist. Five corridor types are identified in the Master Plan Update. They are Off-Campus Street, Campus Arterial, Campus Street, Walkway, and Service Lane. Waypoints are also identified. These designations are for landscaping purposes and do not reflect traffic functions. These are important places within the corridors that provide orientation for people moving to and through the campus. There are four types: Campus Entrances, Pedestrian Gateway, Crossroads, and Orientation-Landmarks **(Figure 38 Corridor Types).**

b. Off-Campus Streets

It is recommended that the city streets surrounding the campus provide gracious, tree-lined and lighted sidewalks, safe pedestrian crosswalks, commodious transit stops and well-marked bicycle routes designated by the PATH Foundation. The sidewalk environment directly adjacent to campus facilities should be specially designed to express Tech's presence to the passing public. The following streets should be so designated: Fifth, Spring, North, Marietta, Northside, and Tenth. While design treatment need not be identical, there should be some consistency of materials, lighting and signage to unify the campus edge and the intersections that lead into the core campus.

c. Campus Arterials (Figure 35 Section Looking North on the Hemphill Street Corridor North of Ferst Drive)

It is proposed that Fifth, Ferst, Hemphill (between Ferst and Tenth), and State (between Ferst and Tenth) be designated Campus Arterials, which are the principal roadways that lead from the city into and through the campus. All are wide corridors that carry general traffic, transit, bicycles, and pedestrians. To contribute to sustainability and the expression thereof, they should visibly and graciously serve pedestrians and public transit. To promote orientation for users, Campus Arterials should be recognizable through unifying design elements, including paving, planting, lighting, signage, and street furniture.

d. Campus Streets

Campus Streets are more intimate than the Campus Arterials, but they still carry most transportation modes, albeit of a more local nature and with less volume. It is proposed that the following streets are so classified: Techwood, Bobby Dodd, Fowler, Fourth, Sixth, Seventh, Eighth, Ninth, and McMillan. Large trees are an important part of the existing character of this corridor type, which should be actively cared for. A street tree planting replacement program should also be put in place.

e. Campus Walkways (Figure 36 Atlantic Drive Pedestrian Corridor)

These corridors are the major pedestrian routes through the campus. They should be designed primarily for pedestrians, but must also handle maintenance carts, bicyclists walking their bikes, and emergency vehicles. To do this the walkway corridors should be the scale of a street with a pavement width of 15 to 22 feet. Cherry Street near the library is a good prototype. The Master Plan Update identifies the following walkway corridors: Atlantic Drive from Tech Green to Tenth, Hemphill from Tech Green to Ferst, Cherry from North Avenue to Tech Green, and Tech Green west to Ferst. All converge

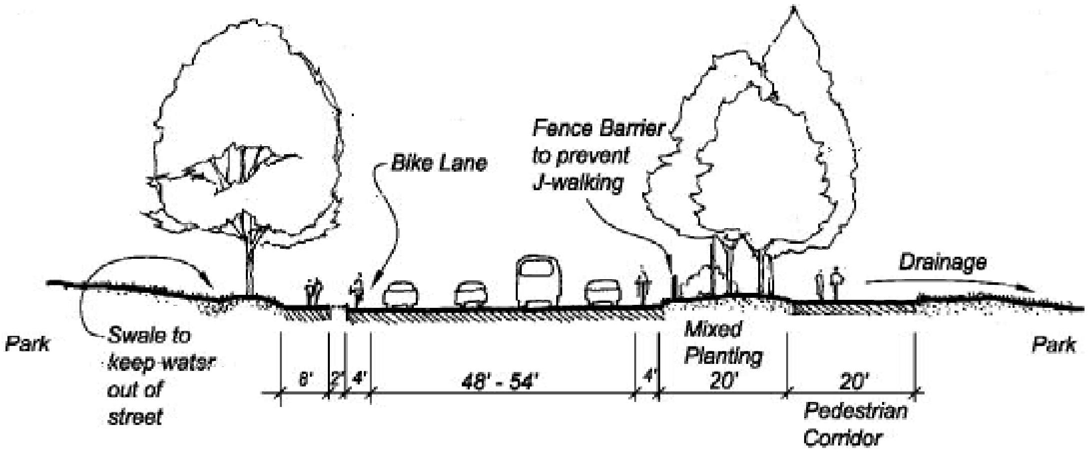


Figure 35 Section looking north of the Hemphill Street Corridor north of Ferst Drive

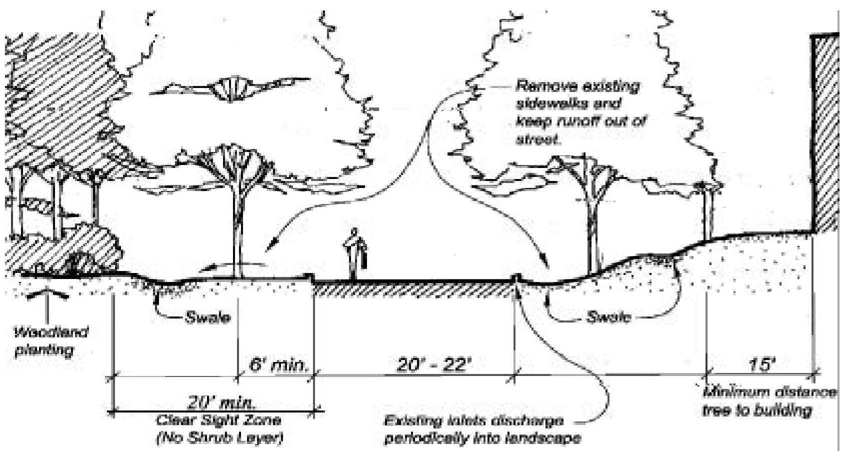


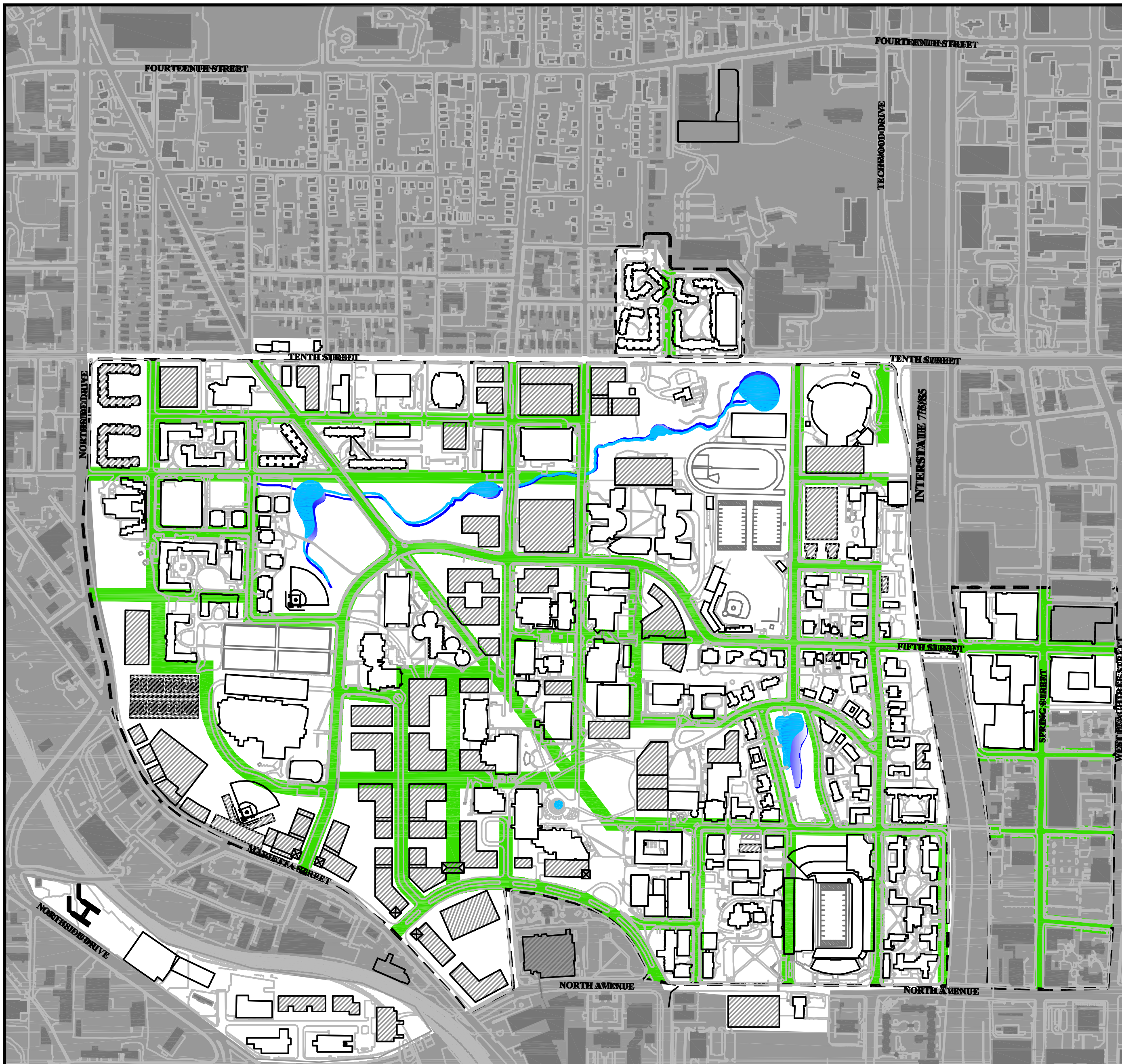
Figure 36 Atlantic Drive Pedestrian Corridor

on Tech Green. Another campus walkway corridor should be designated through the Eco-Commons from the intersection of Hemphill and Ferst to Fowler Drive. The utility of walkway corridors relies on their interconnection with the overall grid of streets and their linkage to important buildings.

f. Service Lanes

Service lanes are small streets that give slow-moving service vehicles and permitted-cars access to buildings and special-permit parking. They should also accommodate

Figure 37 Open Space Corridors



North

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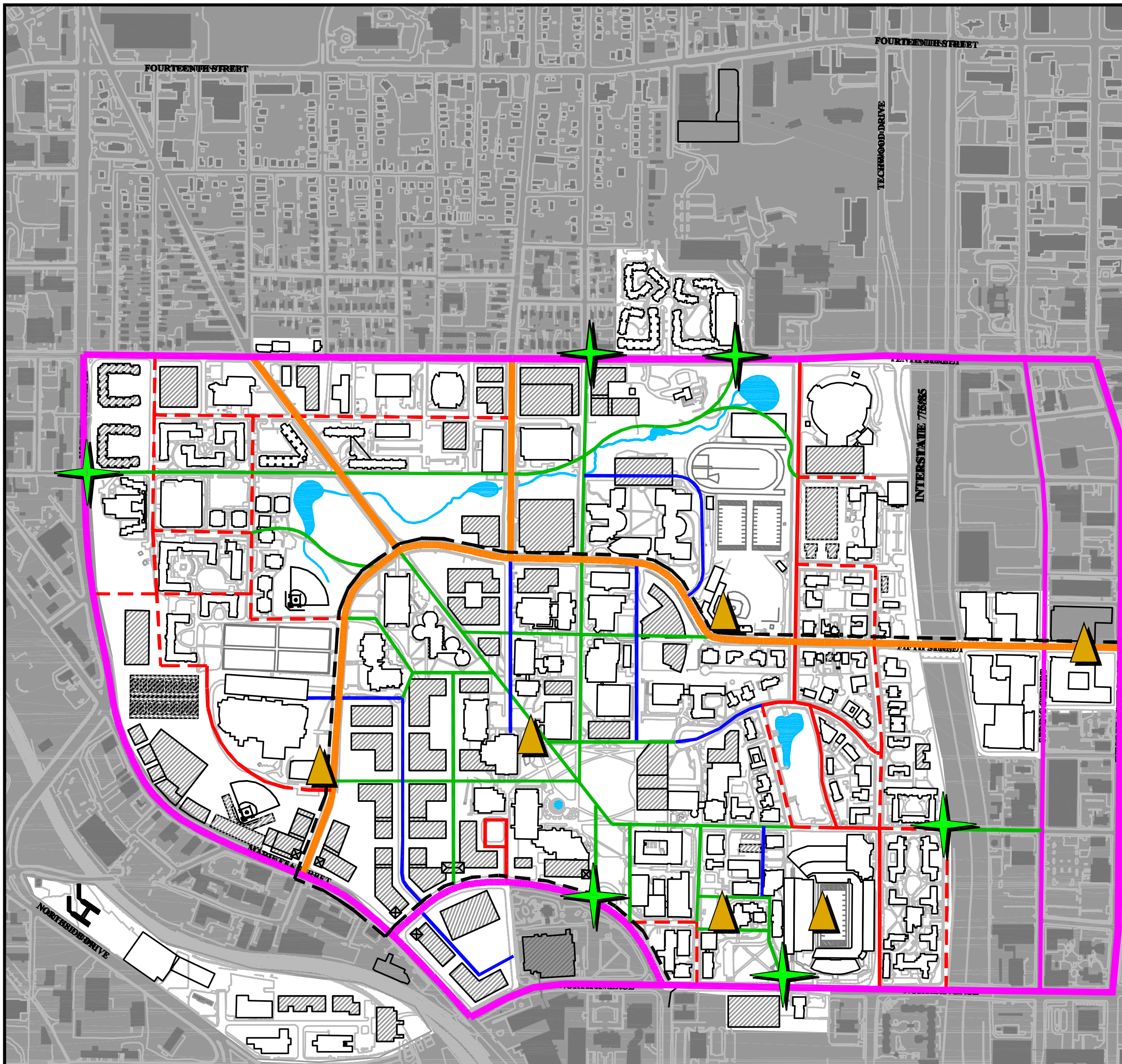
Scale: 1" = 900'

- Open Space Corridors
- Future Building Sites
- Existing Georgia Tech Facilities to Remain
- Water Features / Storm Retention Areas

Figure 38 Corridor Types



North

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Scale: 1" = 900'

- Off-Campus Street
- Campus Arterial
- Campus Street
- Minor Campus Street
- Walkway
- Service Lane
- Bicycle Routes
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

Waypoints

- Campus Entrance
- Pedestrian Gateway
- Crossroad
- Orientation-Landmark

heavy use by pedestrians. The Master Plan Update designates the following service lane corridors: State from Ferst Drive to the Ferst Center, the street behind the College of Computing from Ferst to Fourth, Cherry Street behind Ford Environmental Science, the corridor behind Holland, and a proposed corridor south of Erskine Love to Tech Parkway.

g. Bicycle Routes

The campus is connected to the City of Atlanta by bicycle routes, which have been designated by the PATH Foundation. On campus, it should be anticipated that all corridors will be accessed by bicyclists, because of the convenience that the corridor grid offers. For this reason all corridors should be considered multi-purpose and available for regulated bicycle use. Rules governing bicycles should be appropriate to context. In congested pedestrian corridors bicyclists should walk their bikes. On others, proper warning of walkers by bells should be adequate for safety. On roadways carrying vehicular traffic cyclists should follow the rules of the road.

h. Campus Entrance Waypoints

Seven existing and proposed spaces are identified as Campus Entrances. They are located at existing and proposed major automobile entrances. First among these is the Fifth Street Bridge, which is a gateway to both Tech Square and the main campus. Its design should signify Georgia Tech to motorists below on I-75/85. The other entrances are at Techwood and North Avenue; Tech Parkway and North Avenue; Ferst Drive and Marietta Street; Hemphill Avenue and Tenth Street; State Street and Tenth Street, and Fowler Drive and Tenth Street. While entrances do not need to be identical, they should share some unifying similarities of site features, signage, lighting, or planting.

i. Pedestrian Gateway Waypoints

There are six Pedestrian Gateways in addition to the campus entrances listed above. They are the Third Street Tunnel, Fowler Street at North Avenue, the area between the Skiles Building and Houston Bookstore, Eighth Street at Northside Drive, Atlantic Avenue at Tenth Street, and the entrance to the Glade at Tenth Street. Each should be marked with some recognizable element, contain way-finding signage, and be lighted for safety.

j. Crossroad Waypoints

Crossroads are important corridor intersections, where pedestrians make directional decisions. All should have way-finding signage/maps. The two major campus crossroads are at Tech Green, where numerous pathways converge, and at Hemphill and Ferst, where several walkways intersect campus arterials. Four other important crossroads are at Techwood/Bobby Dodd, Cherry/Bobby Dodd, Atlantic/Ferst, and Atlantic/Eighth, where the east-west walkway of the Eco-Commons crosses Atlantic Avenue.

k. Orientation-Landmark Waypoints

Orientation-Landmarks are recognizable places or iconic buildings that help orient newcomers and visitors. The Master Plan identifies six of these, which should be featured in way-finding signage and maps: Tech Square, Bobby Dodd Stadium, Tech Tower, Tech Green, Student Activities Center, and the Men's Baseball Field.

7. Pedestrian Accessiblity

The purpose of the accessibility portion of the Campus Master Plan Update is as follows: review the accessibility recommendations made in the 1997 Campus Master Plan; evaluate current campus accessibility; and make recommendations for campus accessibility for both the present and the future.

a. Background

The 1997 Campus Master Plan addressed accessibility only in general terms stating simply that the campus would be made accessible, with very few specific recommendations. It should be noted that the Americans with Disability Act (ADA) was enacted in 1992 and requires all institutions and businesses to provide facility access for those with various disabilities. Further, the implementation of the ADA was to be accomplished over a designated period of time. Though governmental institutions were on a slightly different time-table than the private sector, compliance was required nonetheless.

b. Current Campus Accessibility Context: Issues and Findings

The campus has changed and developed over the past five years in a rapid manner. In relation to the ADA campus attitudes about accessibility have also changed significantly. The current administration has mandated that the campus shall be accessible. To this end, various student and faculty advisory committees have been created. Academic and administrative departments now have student and faculty representatives for the purpose of evaluating the campus and its complexities. Liaisons between administration and advocate groups have also been established with periodic meetings held to discuss current issues and how to solve problems that arise.

c. ADA and FHAA Design Requirements

The ADA and the Fair Housing Amendments Act (FHAA) are the two broad federal civil rights laws that address accessible design and construction of both public and private facilities. The FHAA covers multifamily housing. The ADA is applied to a wide range of public accommodations offered by private entities (Title III) and municipal facilities (Title II). Other federal laws, such as the 1973 Rehabilitation Act, may also apply to some projects.

The Americans with Disabilities Act includes design requirements for new facility construction and for additions to and alterations of existing facilities that are owned, leased, or operated by both private entities and local governments. However, design standards and management responsibilities differ between the two owner groups. Standards and responsibilities are described in the ADA in Title III for private entities and in Title II for local governments. ADA Title III includes design standards and guidelines for general application and also for certain specific building types, including transient lodging, medical care facilities, and libraries. Specific regulations are contained in 28 CFR, Part 36.

e. Current Campus Accessibility

Overview

It is important to note that the Georgia Institute of Technology is both an old campus as well as topographically a very hilly campus. As such, accessibility has been and is a challenge. Since the enactment of the ADA, awareness of the needs of the disabled community has risen. The intent of the ADA is not to make all settings and facilities fully accessible, but rather to provide reasonable accessibility to facilities and programs. In response to the ADA, Georgia Tech has made efforts to establish a transition plan to bring the campus into compliance with the law. That compliance is an ongoing effort on the part of Georgia Tech.

There has been great progress in these areas, including modifying and renovating facilities as well as requiring future development and design to comply with the ADA. Additionally, there are many programs in place to provide for the needs of the campus community and provide access to the campus in general, including provision of accessible transportation, additional accessible parking spaces and areas, etc. In addition, the administration is making every effort to address – on an ongoing basis - the needs of the campus community (students, staff, and faculty). To this end, they evaluate both periodically and on an ongoing basis the status of accessibility needs. The administration desires the campus to comply with the letter of the law, and to exceed that requirement where possible and practical.

f. Current Problem Areas

Definitions

The campus is topographically challenging. Due to grades that range from excessive (defined as greater than 8% slope) to extreme (nearly vertical slopes), there are many areas that are not and will not be accessible.

Slope analysis is based on a percentage calculation (vertical measure or rise / horizontal distance or run). For example, the ADA defines the maximum ramp slope to be 1:12, or for every 1" rise there shall be 12" run. To comply with this criteria a ramp at a 6" high curb would have to be 6' in length. The slope definition of a 1:12 ramp is 8.3%, which falls into the Excessive Grade definition above and discussed below. The ADA requires that for ramps with slopes between 1:12 (8.3% slope) and 1:16 (6.3% slope), the maximum horizontal run shall be 30'. For ramps with slopes that measure between 1:16 (6.3% slope) and 1:20 (5% slope) the maximum horizontal run shall be 40'. Either of these horizontal runs must have a level landing at the end of the run for resting. The campus slopes are difficult when viewed in light of this discussion because the slopes tend to over long horizontal distances, even for those that are less than Excessive.

Inaccessible Areas are those parts of the campus topography that may be described by one or more of the following conditions: 1 – areas of slope/grade that may be less than 8% but in which the slopes are extremely long with no resting area; 2 - access areas to buildings/facilities that are too steep; 3 - facilities where stairs provide the only access. Direct accessible routing in these areas will most likely be unavailable.

Examples of these areas include the driveways behind the Library, in front of the Hinman Building and Bobby Dodd Drive from the Library to Fowler Street.

The driveway that circles on the north side of the Library, adjacent to the Hinman Building, is very steep on both sides of the hill, with the steepest paved driveways (9.2% and 16.7% respectively) on campus. The distances along these slopes - at 125'+, though, are not as great as other Inaccessible Areas on campus. Even so, the only reasonable handicapped access is via some type of motorized vehicle.

Bobby Dodd Drive, from Cherry Street on the south side of the Library, extending east to the stadium at Fowler Street is another inaccessible area. The slope along this stretch of road is 8.8% for a distance of about 900'. The combination of the slope and distance makes this route unusable for accessibility except with motorized vehicles of some description.

Extreme Grades or Slopes are those areas that are for all intents and purposes primarily vertical circulation, without immediate direct accessible routes available. These areas may be able to be circumnavigated via adjacent buildings, or site ramps reasonably nearby. The following are examples of conditions that are considered extreme grade areas.

Library and Skiles Classroom Building

Access to the Library is difficult, as it occupies a prominant hill-top surrounded by steep slopes. Vertical access to the facility is provided either by steps or long / steep slopes. The adjacent Skiles Classroom Building is also an accessibility problem due to the slopes around the buildng and the multi-level organization of the building.

Student Center and Campanile Area

The access and circulation around the Student Center and the Campanile areas are also very difficult. The transition area is considered to be Extreme because of no immediate exterior circulation path from the upper to lower area of the Student Center.

Excessive Grades or Slopes **(Figure 39 Pedestrian Accessibility Action Areas)** are those described as having a slope in excess of 8% (see "Slope" analysis above for discussion). These areas and slopes are generally steeper than disabled accessible ramps (maximum 1:12 slope) and usually will have horizontal runs much greater than the 30' to 40' allowed by the ADA for resting landings. Like the extreme grades, access through these areas may require motorized vehicles of some description, or the provision of accessible routes through nearby buildings or walks. The following are some examples of excessive grades.

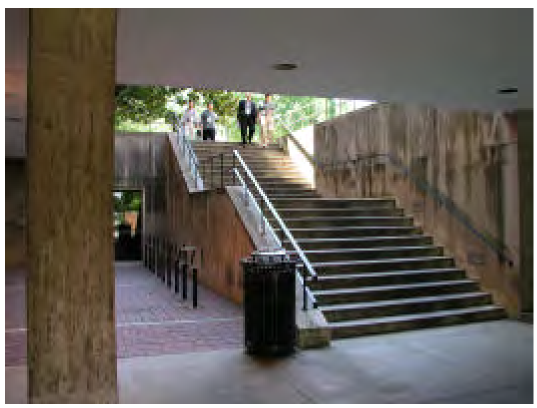
The slope along Ferst Drive adjacent to the Frank Groseclose and MRDC II buildings is less than the 8% slope definition. However, due to the length of run of more than 900' combined with the fact that there are no resting landings, make this a difficult route for those with mobility impairments.

The route along 5th Street eastward from Fowler Street toward Tech Square is over 7% slope, but less than the 8% described as being excessive. However, this is a major east/west pedestrian route connecting the Tech Square complex to the rest of the campus and is considered excessive due to the combination of the slope and the large volume of pedestrian traffic.

g. Recommendations

The recommendations for improving the pedestrian accessibility are limited by the fact that there is significant topographic variation across the campus. As a result there are some areas of campus that will remain inaccessible. However, the administration wants the campus to be accessible in accordance with the ADA. In addition the administration desires that the campus be disabled "friendly," and not only meet, but exceed the ADA as much as reasonable and

These photos show the approach to the Skiles Classroom Building from the Student Center. Note the stairs, that provide access to Skiles as well as access to the Cherry Street entry to the Library.



Stairs provide the only exterior grade transitionfrom the lower level in front of the Hinman Building to the main entrance level fronting on Cherry Street.

Panorama of the Student Center and Campanile areas, seen from the bus stop at the bottom of Atlantic at Bunger-Henry Building. Note severe grade changes.

possible.

Short Term Recommendations **(Figure 39 Pedestrian Accessibility Action Areas)**

The following are recommendations that can be followed to improve accessibility in the short range:

1. Provide a signage program that specifically addresses and defines accessible and less-steep routes into the center of campus including: 1 - a route that extends from the Peters Park Parking Deck along Brittain Drive to Fourth Street; 2 – a route that extends between the Student Services Building and the Ferst Arts Center along the walks on the east side of the Ferst Center for the Arts, to the Bunger-Henry Building and back to the Campanile area. This existing walkway provides a gentle transition from the upper level area of the Student Center to the lower level of the Campanile area; 3 - a route that extends from the west student residential area between MRDC I and MRDC II, and then between the Ferst Center for the Arts and the Bunger-Henry Building; 4 - routes that uses State Street and Plum Street as alternate north - south routes into the center of campus.

2. Explore the possibility to install a site elevator at the Library, from the level in front of the Hinman Building, to the Cherry Street level to provide access to designated disabled parking in the Hinman Building drive area. This elevator may be located in the breezeway area where the stairs now pass under the Library tower.

3. Provide a site elevator, or accessible interior elevator in the Molecular Science and Engineering Building now in design, to provide an accessible route from Atlantic Drive to the upper courtyard level framed by the MSE, the Ford Motor Company Environmental Science and Technology building, the U. A. Whitaker Biomedical Engineering Building, and the Parker H. Petit Biotechnology Building.

4. Explore the opportunity to install a site elevator, or accessible interior elevator in the Nanotechnology Research Center Building (NRCB), now in design, to provide an accessible route from the north end of that building site on Atlantic Drive, to the south end of the building site at the intersection of Atlantic and Ferst Drives.

6. Insure that campus transit systems are accessible and that personnel understand how the systems operate.

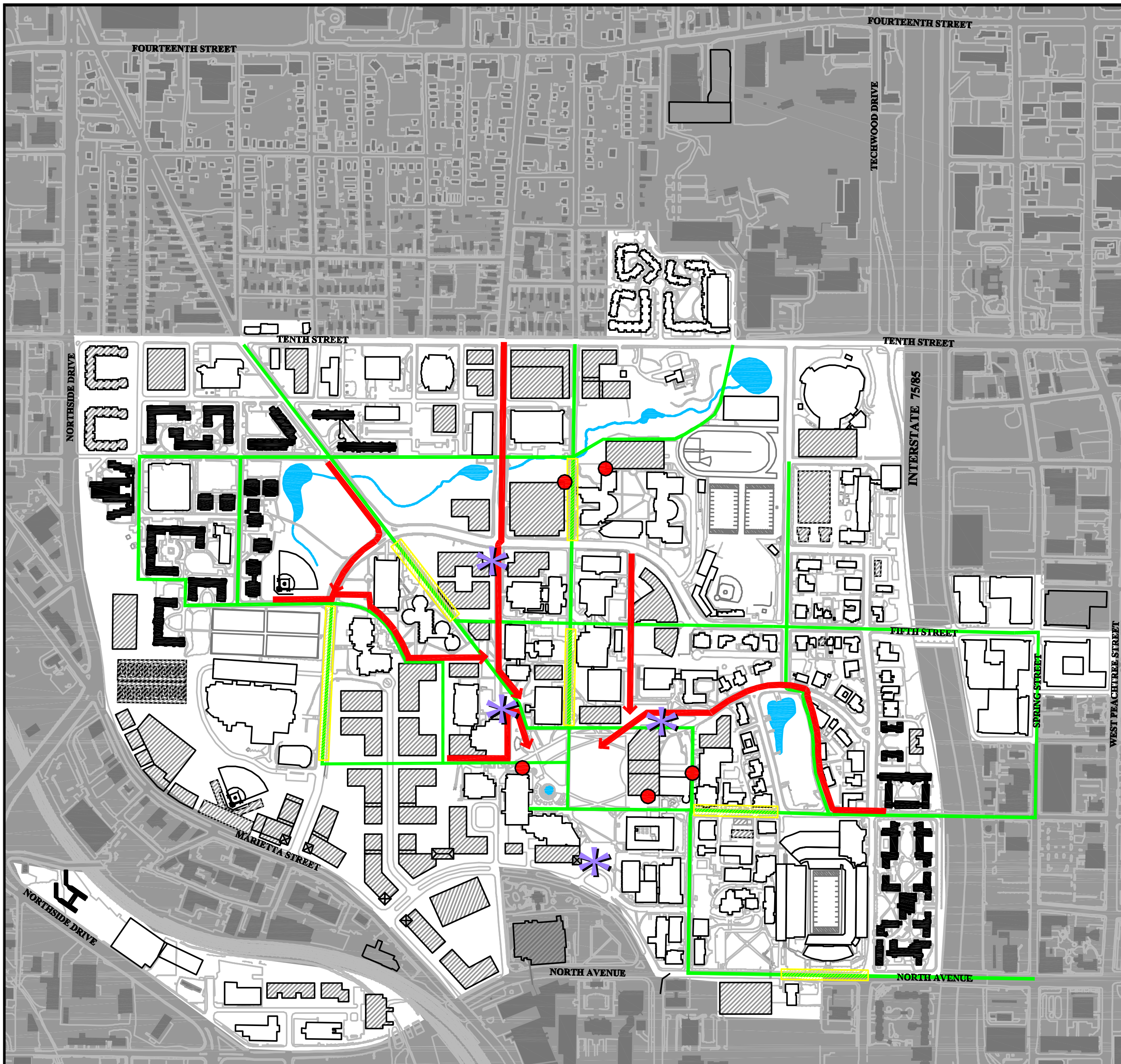
7. Insure that on-call campus transit systems are available for use on an as needed basis.

Future Development Recommendations **(Figure 39 Pedestrian Accessibility Action Areas))**

1. As surface parking is relocated to parking decks, and the campus becomes more pedestrian – oriented, designate various areas on campus to remain disabled parking.

2. Use the designated disabled parking areas (above) as secured/protected parking for after-hours parking.

Figure 39 Pedestrian Accessibility Action Areas



North

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Scale: 1" = 900'

- Future Building Sites
- Existing Georgia Tech Facilities to Remain
- Excessive Grades
- Accessible / Less Steep Routes
- Existing / Planned Major Pedestrian Routes
- Site or Accessible Interior Elevators
- Potential Handicapped Parking Locations

3. Require all new development (buildings, etc) to have exterior access to elevators for grade level transition that remain open and available at all times of the day.

4. Investigate the feasibility of installation of motorized chair charging stations around campus.

5. Investigate technology to quick charge batteries.

6. Investigate the feasibility of using accessible golf carts for on-call transportation use for easier campus mobility.

7. At such time as the Student Center is renovated, designate a route through the building to the accessible interior elevator for floor level transitions.

8. Incorporate a site elevator or accessible interior elevator in the ILRC building to provide an accessible route from the Library to the Student Center.

9. Rework the grade transition on the north side of the Student Center to incorporate more comfortable steps and a site elevator to improve and make accessible the extreme grade transition at this location.

8. Places

Places are the part of the human landscape where people come together for spontaneous interaction, organized events, or for sports and recreation. The Master Plan Update identifies three kinds of places: Campus Greens, Quadrangles, and Fields **(Figure 40 Open Space Places).**

a. Campus Green

A campus green is a sizable outdoor public area that integrates a distinctive campus sector and serves as a campus-wide gathering place and special events venue. There are six of these: Tech Green, Tech Square, Tech Park (the portion of the Eco-Commons adjacent to Hemphill Avenue), the Hill, Peters Park, and the Glade. Each should provide a unique and memorable campus impression and their design character should reflect its role in campus life. Tech Green should be the central park of the campus - a “town green” filled with people socializing in small groups or massed in a rally. Tech Square should be the “Times Square” of the campus - a lively urban street environment. Couch Park should be the “Central Park” of the campus with outdoor recreation and space for a concert. The Hill should be what it already is – a lovely, historic precinct surrounding Tech Tower with big trees, an eatery, and a park-like setting. Peters Park should be “Bobby Dodd’s Backyard” – a park space for football congregating and picnics. The Glade should also remain what it is – picturesque woodland. All except the Hill lay within the Eco-Commons and should be designed accordingly to meet ecological criteria.

b. Quadrangle/Courtyard

A quadrangle is an outdoor space that is shaped by a group of buildings and functions as a place for informal gathering and interaction. They are the "neighborhoods" of open space and are associated with either residential or academic settings. A courtyard is smaller and may be formed by a single building, but its neighborhood function is similar. It is recommended that the design or re-design of quadrangles and courtyards be done in concert with architecture and landscape. The master plan identifies thirty-six existing and proposed quadrangles, half of which are associated with residential settings and half with academic settings.

West Residential Quadrangles

- Center Street Apartments
- Eighth Street Apartments
- Graduate Residence (Proposed)
- Hemphill Avenue Apartments
- Maulden Residence Hall
- Sixth Street Apartments
- Undergraduate Living Center
- Woodruff Residence
- West Commons

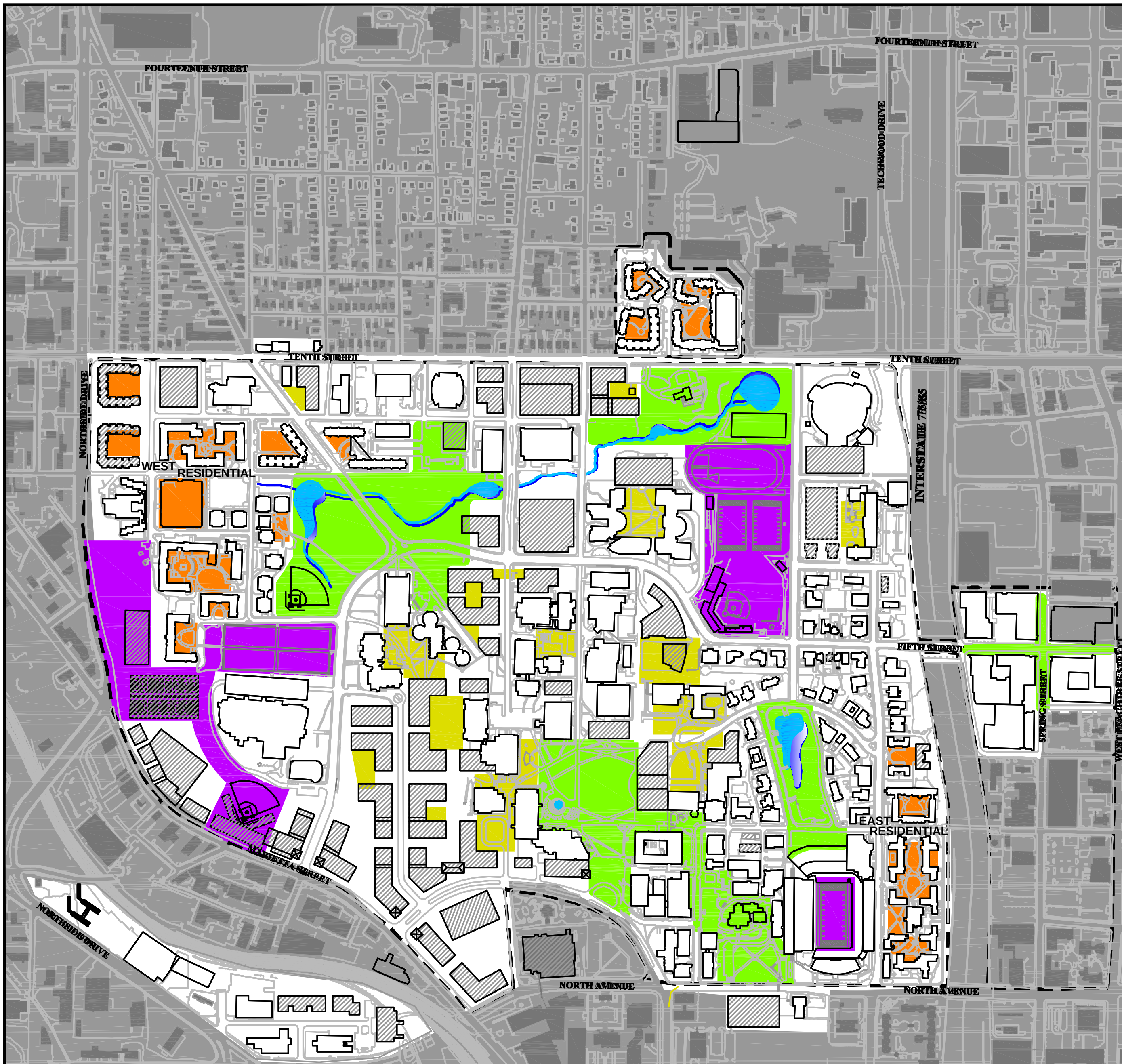
East Residential Quadrangles

- Britton
- Cloudman Harrison
- Field Perry Matheson Hopkins Hansen
- Glenn Towers
- Jack C. Stein
- Smith Brown Howell Harris

Academic Quadrangles

- Architecture
- Biotechnology Environmental Science
- Civil Engineering
- Ferst Center
- Library Learning Center (proposed)
- Manufacturing
- MRDC2-East
- Skiles
- Smithgall Houston Bookstore
- State and Ferst Buildings (proposed)
- Tenth and Atlantic (proposed)
- Others shown but unnamed on the CMPU

Figure 40 Open Space Places



North

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Scale: 1" = 900'

- Campus Green
- Academic Quadrangle/Courtyard
- Residential Quadrangle/Courtyard
- Field
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

c. Field

Fields are outdoor facilities for sports and athletics. The Master Plan Update designates three field complexes in the core campus: the East Fields (baseball, track, and football fields along Fowler Drive), the West Fields (proposed softball field in Couch Park, all-weather soccer fields south of Couch Park and proposed tennis center, soccer and baseball fields adjacent to the Student Activity Center), and Grant Field/Bobby Dodd Stadium. All of these field groups lay within the Eco-Commons and their design or re-design should meet hydrological performance criteria.

9. Open Space Interstices

After accounting for Corridors, Places, and the Eco-commons, a significant amount of open space remains between buildings, parking lots, service areas, etc. While none of these interstitial “between” spaces are large, they collectively represent a significant outdoor acreage that affects the campus’ attractiveness, and livability. They include some existing gradens and sitting areas and offer opportunities for many more. Their landscape treatment should also contribute to positive microclimate and reduced storm-water runoff.

VI Physical Master Plan
D. Athletic and Recreational Facilities

Intercollegiate Athletic Facilities
During the CMPU planning process the need for several additional athletic facilities was identified. Included was: the need for a new NCAA regulation women's softball facility that would ideally be located on campus; the need for relocation of the Tennis Center; and the need for a women's/men's soccer field.

The CMPU has responded to two of these issues. Three sites for future athletic facilities have been located in the master plan. Two of the sites, located on the western edge of campus **(Sites A/Re 2,3 in Figure 41 Future Sites for Athletic and Recreational Facilities**), will accommodate both indoor and outdoor tennis courts. These sites are located on land that is recommended to become part of the Georgia Tech campus, and is now occupied by Tech Parkway and the Northside Drive overpass. This site should, with significant regrading, accommodate the desired 15 outdoor and 6 indoor courts.

The third site is proposed to house a new Softball Facility, and is located immediately south of the Campus Recreation Center. Like the proposed Tennis Center site it is located on land recommended to become part of the Georgia Tech campus, and is now occupied in-part, by privately owned business. The Softball Facility is shown in the master plan as part of a building that faces Marietta Street, and which may house athletic office, lockers etc. as well as other support facilities serving the campus. This site places the facility on-campus and in close proximity to the Campus Recreation Center, proposed Tennis Center and intramural fields, forming a large contiguous athletic/recreation zone.

In addition to the permanent, long-range site for the Softball Facility described above, the CMPU also includes a site for a short-term temporary site for an on-campus facility that can be implemented prior to additional land acquisition. This site **(A/Re 1-A in Figure 41 Future Sites for Athletic and Recreational Facilities)** is located in Couch Park, in an area that is already used for informal softball games. Following – in the long range – construction of the permanent facility adjacent to Marietta Street, this facility can be returned to informal recreational use. In the short term, the loss of this site for recreational use can be offset by the addition of the informal recreation sites described below.

There is an implementation issue attached to the concept of developing the temporary site for an on-campus Softball Facility. Couch Park, though completely within the Georgia Tech campus, and already used by Tech students for informal recreation, is still owned by the city – a remnant of the neighborhood that was acquired in the 1960's to expand the Tech campus. Consequently the Institute will have to develop an agreement with the city if it intends to undertake any substantial construction as part of the Softball Facility in this location.

Recreational Facilities
The 1997 Campus Master Plan incorporated several recommendations to increase the amount of informal recreational play areas available to students living on campus. Those recommendations were largely the result of a study undertaken in 1996 that analyzed the then-existing recreational facilities on campus and compared them with other similar institutions and found Georgia Tech to be deficient in these types of facilities.

Since the completion of the 1997 Campus Master Plan the Institute has undertaken significant actions to improve recreational facilities on campus. The Campus Recreational Center (CRC - formerly called SAC – Student Athletic Center), that was the site of the 1996 Olympic swimming and diving competition, has been substantially upgraded (construction completion anticipated August 2004) to incorporate additional recreational facilities. New facilities, in addition to the intercollegiate swimming and diving facilities, include:

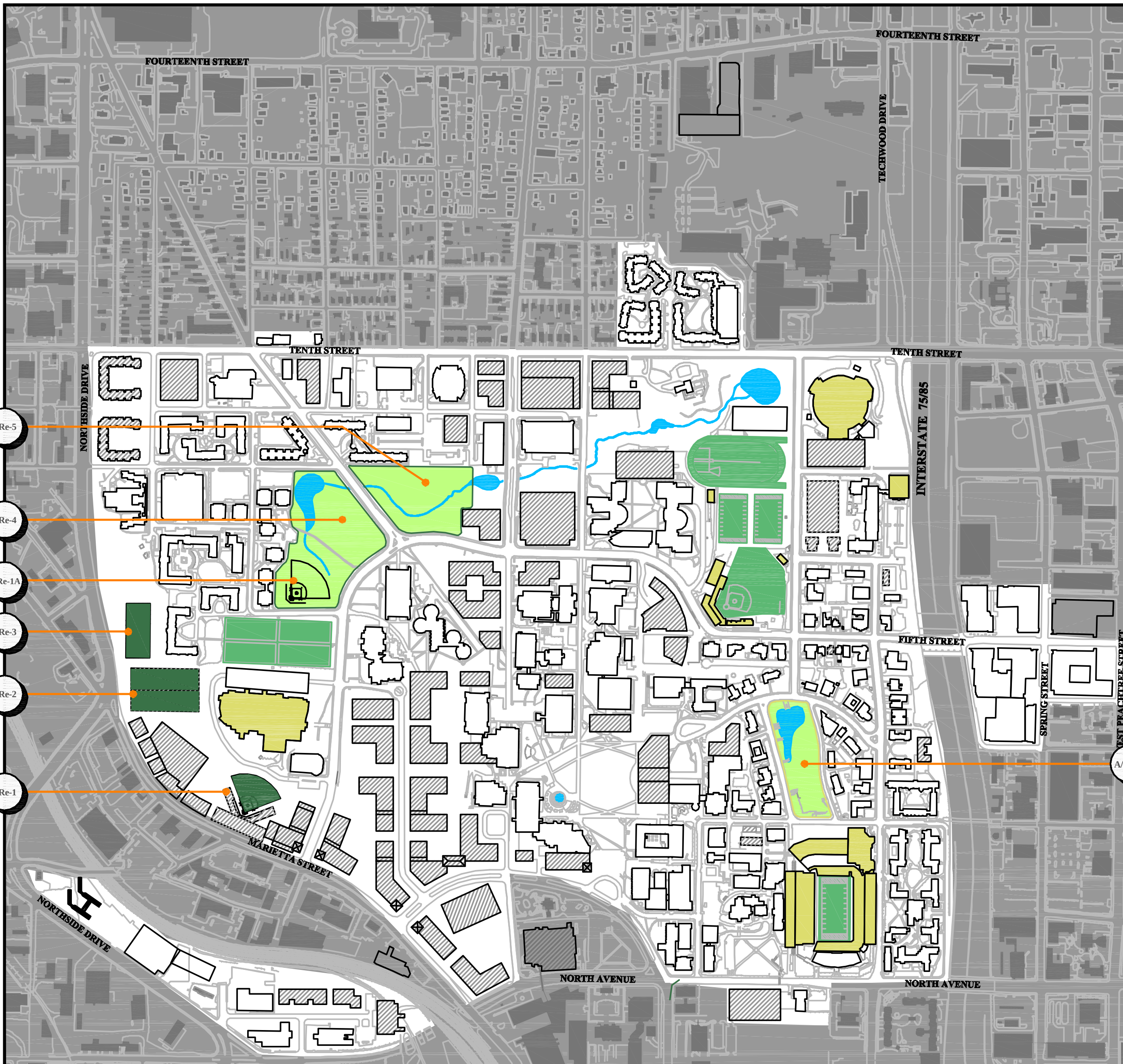
4 racquetball / 1 squash court
Climbing Wall
14,000 Square Foot Fitness Area
Leisure Swimming Pool with 6 - 25 yard lanes, water slide and hot tub
Café
6 Basketball Courts
3 Multipurpose Exercise Rooms
Auxiliary Gymnasium (for roller hockey, indoor soccer etc.)
Game Room
4 Lane Running Track

Although considerable new facilities have been constructed in the CRC, the Institute has not yet moved to add outdoor informal recreation space. Consequently the CMPU incorporates the essential elements of those earlier recommendations, that include the following.

As part of the Eco-commons development the CMPU proposes to add informal outdoor recreation space in three locations. Two of these, **sites A/Re 4,5 shown in Figure 41Future Sites for Athletic and Recreational Facilities** are recommended to be constructed in conjunction with development of the Eco-commons open space on the northwestern side of campus. Both of these sites are now occupied by facilities and parking that are proposed to be removed. The electrical substation (site A/Re 4) will be relocated and expanded to a site several blocks west of campus. The Ajax Purchasing Building (site A/Re 4) and the Beringause Police / Parking Building (site A/Re 5) are also proposed to be relocated – possibly to the Support Service areas indicated in the CMPU. These relocations will make the sites available for open space development as part of the Eco-commons. As part of that significant open space and water management initiative, these sites will remain as open grass areas, available for informal play.

A third site recommended for informal open space is Peters Park **(site A/Re 6 in Figure 41 Future Sites for Athletic and Recreational Facilites)**. Once a significant open space on the east side of campus, this site is now occupied by Peters Parking Deck, a multi-level parking deck. Although the deck has outdoor tennis and basketball courts on its upper level they are not easily accessed. Nor does the parking deck contribute to the residential scale and functions that surround the park. The CMPU, echoing the recommendations of the 1997 Campus Master Plan proposes that the parking be relocated, and the deck demolished. This will allow the “reconstruction” of Peters Park for informal outdoor recreation space. Since the park occupies an area of campus that once contained a stream flowing toward Tenth Street, it too will also serve a storm water management function as part of the Eco-commons development. In addition the reconstructed park will also provide a significant space for pre-football game events and gathering.

Figure 41 Future Sites for Athletic & Recreational Facilities



North

450
0 900
Scale: 1" = 900'

- Existing Athletic Fields to Remain
- Existing Athletic Facilities to Remain
- Future Sites for Athletic Fields and Facilities
- Future Sites for Recreational Use
- A/Re Future Athletic / Recreational Site Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

VI Physical Master Plan

E. Campus Infrastructure

Future Sites for Infrastructure Facilities

The 1997 campus master plan identified the future need for a new electrical substation to serve the growing electrical needs of the campus. As of the writing of this report a site for the new substation has been identified on the North Avenue Research Area (NARA) site located west of the main Georgia Tech campus **(Site I-1 in Figure 42 Future Sites for Infrastructure Facilities)**. Electrical transmission lines will connect back to the existing electrical service on-campus along Ferst Drive. This facility is committed to be constructed, and is necessary to support the several buildings now in the planning and design.

The CMPUC has also identified the need for two IT Hubs – one each on the west and east sides of campus. The purpose in having two is to provide a redundant loop, should one Hub become incapacitated. Both of these Hubs exist today. On the west side of campus the building located at 845 Marietta Street houses one of the Hubs. The east side Hub is located in the Technology Square facilities. Both of these Hubs are located along existing IT cable corridors that run into downtown Atlanta.

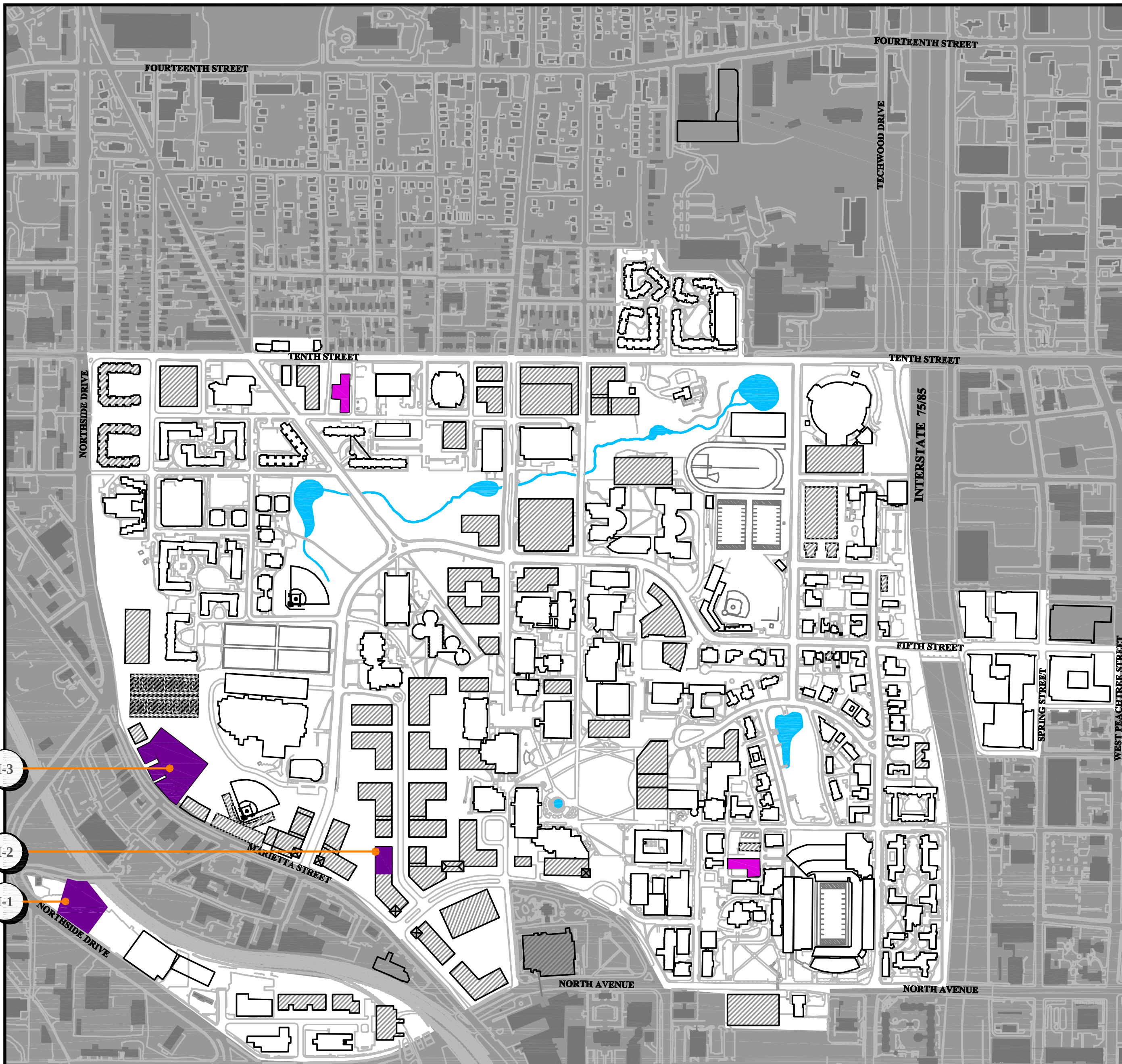
To accommodate future expansion of the western Hub, the CMPU incorporates the building and site now occupied by the Georgia Tech printing services (**Site I-3 in Figure 42)**. As illustrated the facility could reuse and expand the existing building or be housed in all new construction.

The location of this facility along Marietta Street also allows for inclusion of office space or other mixed-use functions along the street frontage to contribute to the activity and vitality of this important street.

The location for the eastern IT Hub is not specifically indicated in the CMPU. It may either remain in its present location or be included in future mixed use development in the vicinity of Technology Square.

In addition to the IT Hub sites, the CMPU identifies one potential candidate site is a future chiller plant **(Site I-2 in Figure 42)** to serve future development on the western side of campus. The location shown is a site that is accessible from a proposed future service drive, and is not considered an essential site for future academic or research functions. This facility may however be located elsewhere in the vicinity based on future more detailed infrastructure planning that will be conducted by the staff of the Institute.

Figure 42 Future Sites for Infrastructure Facilities



North

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0 900
Scale: 1" = 900'

Existing Major Infrastructure Facilities to Remain

Sites for Future Major Infrasture Facilities

I Future Infrastructure Site Key (See Text)

Future Building Sites

Existing Georgia Tech Facilities to Remain

VII. Implementation

Introduction

The analyses and recommendations contained in the CMPU are based on a planning horizon of 2012, or essentially a ten year period (2002 – 2012). The potential amount of growth that may occur over that time period is substantial – as evident in the +/- 3.5 million gross square feet of additional instructional and research space projected to support the Institute's enrollment objectives. To fully achieve all that the CMPU recommends will take careful coordination along with several major actions. The following section discusses the relative sequence of actions that will be required to implement the CMPU recommendations in the various sectors of the campus.

A. Cost Estimates for Buildings, Infrastructure and Site Improvements

1. Buildings and Site Improvements

The long time frame for the CMPU and the strategic nature of the plan make the preparation of precise cost estimates for future development impractical. However, it is possible, based on the general estimates of future development prepared by the Georgia Tech Office of Capital Planning and Space Management, to project an order of magnitude of cost for facility construction and site improvements. As described by the Office of Capital Planning and Space Management the total amount of future development required to support the enrollment assumptions on which the CMPU is approximately 3.5 million gross square feet of classroom, labs, office and support spaces. At a cost range of $200 - $400 dollars per gross square feet that amount of building would cost $700,000,000 - $1,400,000,000. Assuming site development costs equal to five percent of the building cost would require an additional $35,000,000 - $70,000,000 for site improvements.

2. Eco-Commons Implmentation Costs

The Eco-Commons consists of approximately 80 acres, some of which will be easy and inexpensive to configure for required ecological performance, while others will be complex and more expensive. Development cost will be the product of required demolition, utility relocation, land reconstruction, hydrological features, vegetation, and facilities for human activities. A typical situation might consist of removing a parking lot and adjusting utilities to put in a recreation area that contains an intramural field with subsurface water storage, porous sidewalks, and multi-layered woodland vegetation. The cost range for the Eco-Commons is 150,000 to 750,000 dollars per acre. It is estimated that there are 20 acres @ $150,000 per acre, 20 acres @ $450,000 per acre, and 40 acres @ $750,000 per acre for a total cost of 42 million dollars. These costs should be viewed in the perspective of creating a sustainable storm-water utility infrastructure that has significant recreational and scenic benefits.

3. Infrastructure

Georgia Tech will continue to pursue the planning for the campus infrastructure that will be required to serve the additional facilities projected in the CMPU, at which time estimates of the cost of those facilities can be calculated.

B. Capital Improvements Program and Phasing Plan

Georgia Tech has undergone virtually continuous growth and development since the construction began for the 1996 summer Olympic games – for which the campus served as the Olympic Village. In the years immediately following the Olympic games development of new instructional and research space was largely focused in the northern sector of campus. Construction there included the Parker H. Petit

Biotechnology Building, the Ford Motor Company Environmental Science and Technology Building, and the U. A. Whitaker Biomedical Engineering Building. In 2003 Technology Square was completed and opened – concluding a significant development east of the expressway. Looking to the future and the development anticipated in this CMPU, much of the future development of campus will occur in three major campus sectors – the central campus, the northern campus and the southwestern campus. The following paragraphs describe the major actions that must be undertaken to phase in the future development projected in these three major campus sectors. In addition, off campus development of Georgia Tech facilities, or related functions will likely continue to occur in the Georgia Tech "Area of Interest" defined in the CMPU.

1. Central Campus Implementation Factors

The development of the central campus shown in the CMPU encompasses several potential new buildings. These include the following buildings and actions that must be undertaken prior to their construction. **(See Figure 43 Central Campus Implementation Factors)**

Construction of the Innovative Learning Resources Center (connected to the Library) - Future Instructional/Research facility site I/R-14

Construction of this building will require the following major actions:

- *Relocation of parking from lots E42, E43 and E14*
- *Closure of Fourth Street to automobile traffic, and reconfiguration of the driveways on the north side of the Library*
- *Relocation of underground utilities: fiber communications, electrical, natural gas, sanitary/storm sewers*

Construction of a new building on the site of the Rich Computer Center Building - Future Instructional/Research facility site I/R-36

Construction of this building will require the following major actions:

- *Relocation of OIT functions and hardware to the west IT "Hub" indicated in the CMPU*
- *Demolition of the existing Rich Computer Center Building (approximately 42,000 gross square feet)*

Construction of a new building on the south side of Van Leer EE CmpE Building - Future Instructional/Research facility site I/R-13

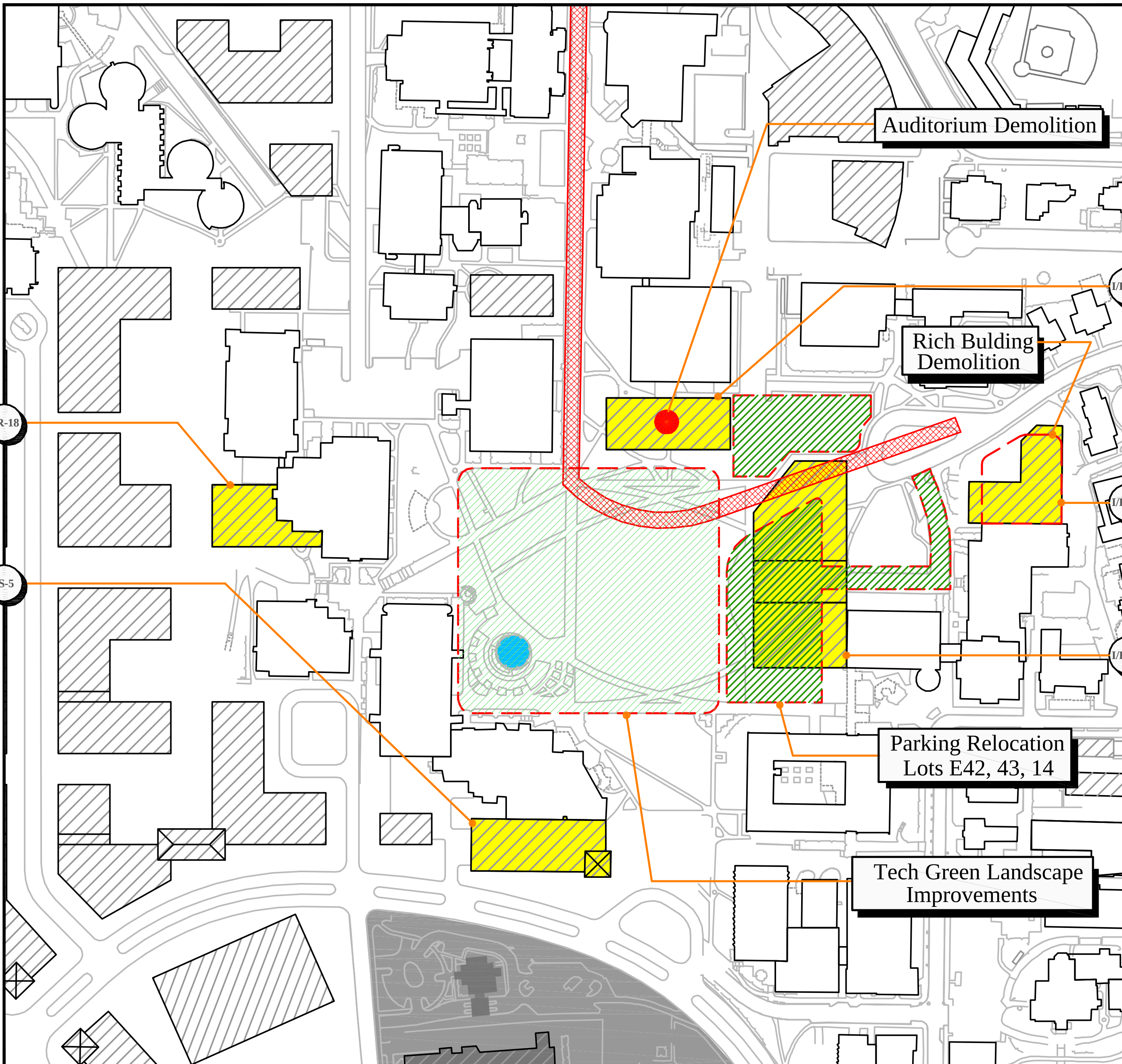
Construction of this building will require the following major actions:

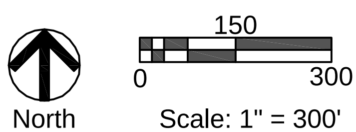
- *Demolition of the existing Auditorium on the south side of the Van Leer Building*
- *Potential utility relocations (depending on building footprint): fiber, gas, electrical, telephone, sanitary/storm sewer*

Construction of additions to the Student Center and the Ferst Center for the Arts - Future Instructional/Research facility site I/R-18, - Future Support Services facility site SS-5

- *Construction of the addition to the Ferst Center will require the following major actions:*

Figure 43 Central Campus Implementation Factors





- Existing Major Infrastructure Facilities to Remain
- Central Campus Major Facilities
- I/R Future Facility Key (See Text)
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

- *Potential relocation of underground utilities: sanitary / storm sewer, domestic water*
- *Construction of the addition to the Student Center will require the following:*
- *Relocation of underground utilities: sanitary/storm sewer, domestic water*

In addition the CMPU calls for the closure of Atlantic Drive to auto traffic and its conversion to a pedestrian "boulevard", and the redesign of the Tech Green that was created by the demolition of the Hightower Textile Engineering Building. Due to the central location, size and spatial significance of the Innovative Learning Resource Center Building it would be desirable to construct the proposed open space improvements to Tech Green and reconfigure the driveways on the north side of the existing Library simultaneous with construction of this important building.

2. North Campus Implementation Factors

Although a significant amount of development has already occurred in the northern sector of campus, the CMPU indicates several sites for additional development. These include the following buildings and actions that must be undertaken prior to their construction. **(See Figure 44 North Campus Implementation Factors)**

Construction of the Molecular Science and Engineering Building - Future Instructional/Research facility site I/R-6

This building is in design as of the writing of this report.

Construction of this building will require the following major actions:

- *Relocation of physical plant operations functions that occupy a portion of the site*
- *Relocation of underground utilities: Fiber communications, sanitary/storm sewer, electrical, natural gas*

Construction of the Nanotechnology Research Center Building - Future Instructional/Research facility site I/R-7

This building is in design as of the writing of this report.

Construction of this building will require the following major actions:

- *Relocation of functions and demolotion of the Neely Nuclear Research Center Building*
- *Relocation of underground utilities: Steam, electrical*

Construction of a new building at the northwest corner of Ferst Drive and State Street - Future Instructional/Research facility site I/R-8

Construction of this building will require the following major actions:

- *Relocation of parking from lot W24*
- *Closure of a portion of Dalney Street between Ferst Drive and Eighth Street*
- *Relocation of underground utilities (depending on building footprint): Fiber communications, sanitary/storm sewer, domestic water, natural gas*

Construction of new buildings on three sites along Tenth Street extending from Dalney Street on the west to the president's residence site on the east – Included are future Instructional / Research facility sites I/R-2, 3, 4, and 5

Construction of these buildings will require the following major actions:

- *Property acquisition/demolition - residences to be acquired*
- *Relocation of functions from the Roy S. King Plant Operations Building and adjacent structures, and demolition of those facilities*
  Construction of parking deck (Parking site P-3) in conjunction with construction on Instructional/Research site I/R-4
- *Extension of underground utilities: steam, chilled water, electrical, telephone*
- *Relocation/ reconfiguration of sanitary/storm sewer*

Also a major component of the implementation of development on the north campus is the construction of the Eco-commons, which is described in a following section of this document. In addition, the CMPU recommends the closure of Atlantic Drive to automobile traffic, which could occur simultaneous with any of the above projects, or could be undertaken as an independent project.

3. Southwest Campus Implementation Factors

The 1997 Campus Master Plan indicated the potential for extensive expansion of campus facilities toward the southwest. The CMPU incorporates and expands the potential for development in this region of campus. Potential development in this area includes the following buildings and actions that must be undertaken prior to their construction. **(See Figure 45 Southwest Campus Implementation Factors)**

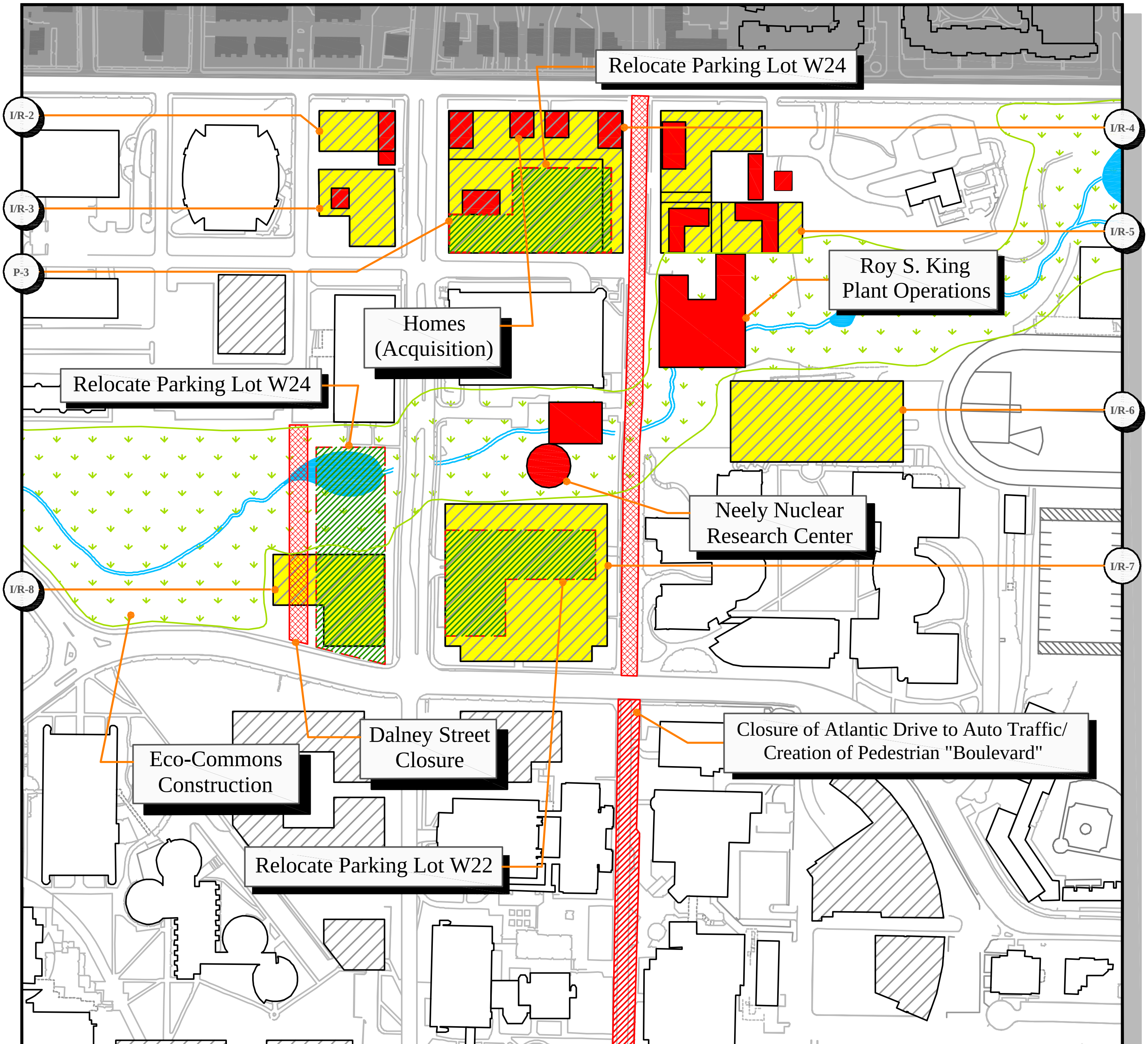
Construction of a number of instructional / research buildings on sites located between Ferst Drive and the Student Center – Included are future Instructional / Research facility sites I/R-17,19, 20, 21, 22, 23, 24, 25 and 32.

Construction of these buildings will require the following major actions:

- *Relocation of functions from three existing buildings – 55 Instructional Center, 56 Frank F. Groseclose, and 57 School of Industrial and Systems Engineering, and demolition of these facilities (approximately 144,000 gross square feet)*
- *Demolition of the existing Student Center parking deck W02, and parking lot W03, and relocation of parking*
- *Construction of a new chiller plant (Required to provide chilled water to future development on the west side of campus)*
- *Relocation of underground utilities: steam, natural gas, chilled water, fiber communications, electrical and sanitary/storm sewers*

Construction of several instructional / research, support buildings and athletic facilities along the east side of Marietta Street - Included are futureInstructional / Research facility sites I/R-33,34, and 35, future Support Services facility sites SS-1,2,3, and 4, and future Athletic Fields and facility sites A/Re-1,2, and 3.

Figure 44 North Campus Implementation Factors



North

150
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Scale: 1" = 300'

Building Demolition

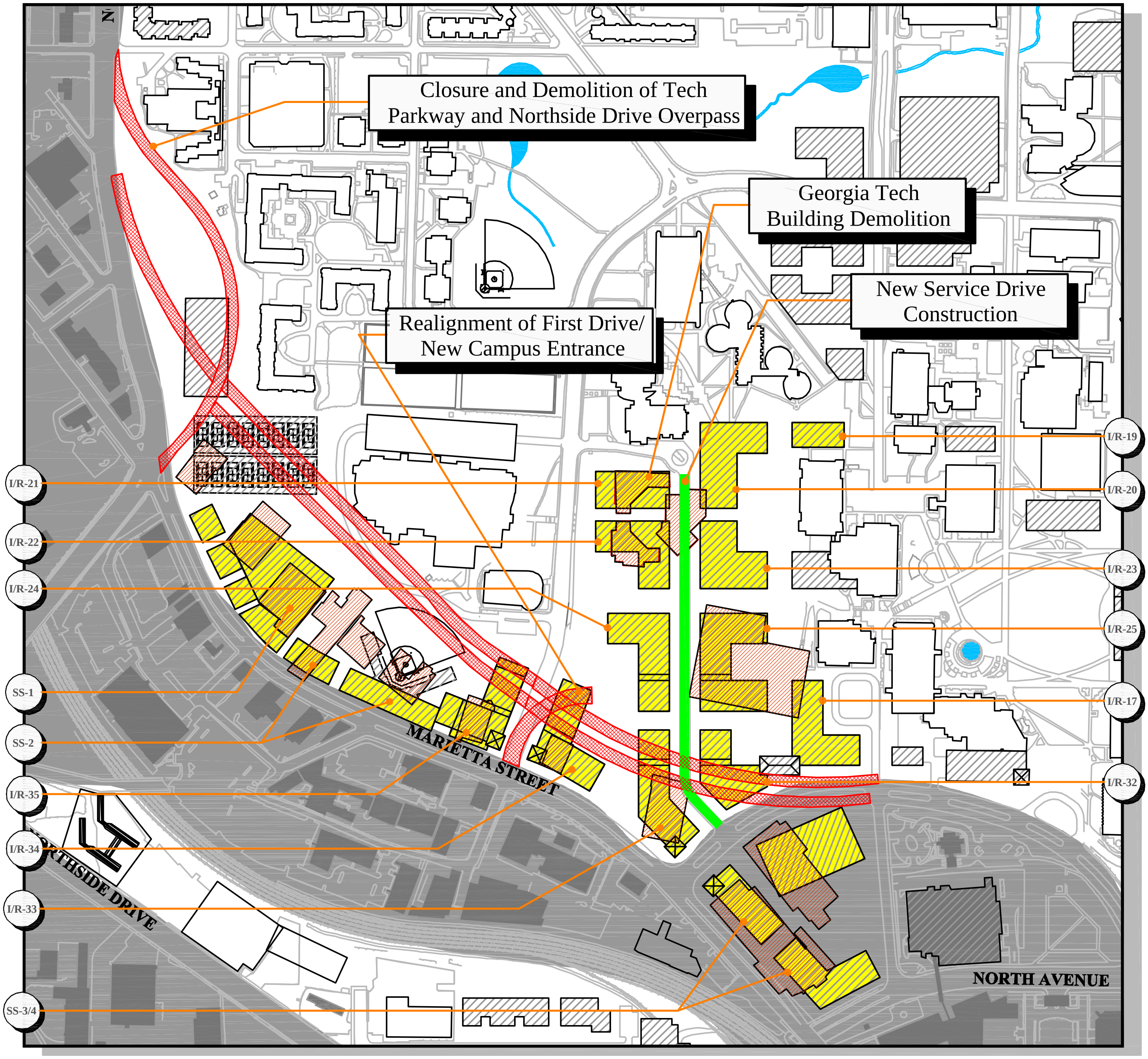
North Campus Major Facilities

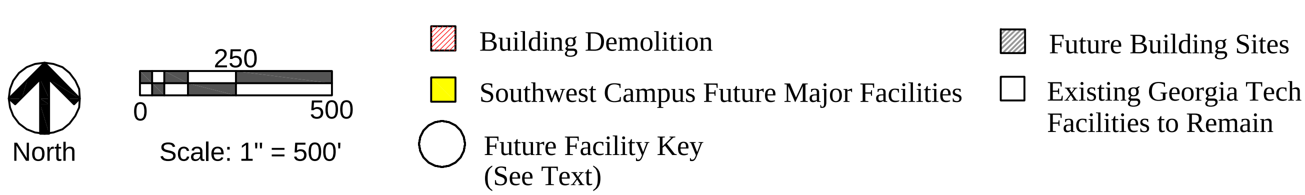
I/R Future Facility Key (See Text)

Future Building Sites

Existing Georgia Tech Facilities to Remain

Figure 45 Southwest Campus Implementation Factors





Construction of these facilities will require the following major actions:

- *Acquisition of private properties, relocation of businesses and demolition of existing fa cilities*
- *Demolition of existing parking lots W01, 04, 06, 07, WR29*
- *Closure and removal of Tech Parkway from Wallace Street to its intersection with Northside Drive*
- *Construction of a new connection between Tech Parkway and Marietta Street (Wallace Street alignment)*
- *Removal of the Northside Drive flyover where it crosses Tech Parkway*

Realignment of Ferst Drive to connect directly to Marietta Street

4. Eco-Commons Implementation

The Eco-Commons will be implemented incrementally as campus development relocates inappropriate facilities out of the designated Eco-Commons, Green Building Sites are built on or redeveloped, and existing utilities are re-configured. **(Figure 46 Eco-Commons Implementation)** The CMPU identifies six impending actions that will facilitate the realization of the Eco-Commons:

(1) The development of the Molecular Sciences and Engineering Building, which is on a green building site.
(2) The development of the Nano Research Building, which is on a green building site.
(3) The development of green building sites at Atlantic and Tenth Street, Ferst and State, and the construction of a women's softball field in Couch Park.
(4) Relocation of the tennis center from Tenth and Fowler to the Student Activity Center complex.
(5) The development of Tech Green and the Student Learning Center.
(6) The removal of the parking deck in Peter's Park.

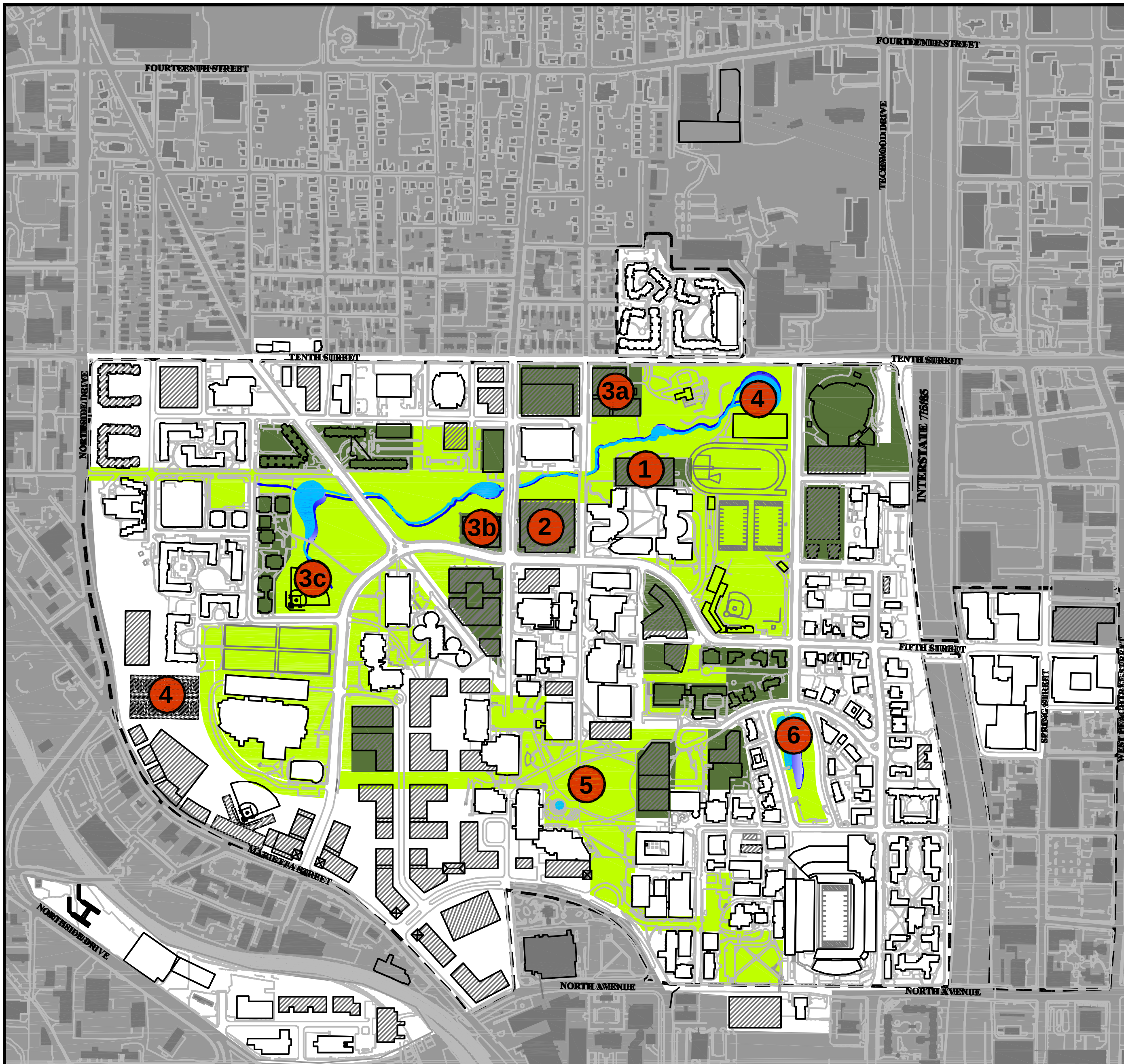
C. Physical Master Plan Design Standards

General architectural / campus development guidelines were developed as part of the 1997 Campus Master Plan and are described in that document. They address "Building Organization and Architectural Guidelines", and include the following elements: 1. Ensemble, 2. Building Orientation, 3. Building Services, 4. Existing Landscape, 5. Topography, and 6. Architecture. Supplementing these general guidelines, Georgia Tech has architectural design standards that are published in the "Architectural and Engineering Design Standards for Building Technology " available on the Internet at the following address: http://www.facilities.gatech.edu/dc/GTSPECS.pdf. Campus landscape standards are published in the document "Georgia Institute of Technology Campus Landscape Standards" available on the Internet at the following address: http://www.facilities.gatech.edu/dc/LANDSCAPE.pdf. In addition, Section VI C Open Space and Pedestrian Circulation of this document includes a description of guidelines for development of the Eco Commons and major elements of the campus open space structure proposed in the CMPU.

D. Planning and Review Process

Following recommendations in the 1997 Campus Master Plan Georgia Tech established in 2001 the "Planning and Design Commission" whose purpose is to review on a regular basis the planning and design activities undertaken by the Institute. The Commission is lead by the Senior Vice President for Administration and Finance and includes the Associate Vice President for Budget and Planning, the Associate Vice President for Facilities, the Dean of the College of Architecture, a student representative, and four professionals (currently two architects and two landscape architects). The Commission meets quarterly to review, discuss and make recommendations to the administration regarding planning and design projects. This Commission is an on-going activity of the Institute.

Figure 46 Eco-Commons Implementation



North

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Scale: 1" = 900'

- Eco-Commons
- Green Building Sites
- Implementation Sequence
- Future Building Sites
- Existing Georgia Tech Facilities to Remain

1. Green Building Site Development
2. Green Building Site Development

3a. Green Building Site Development
3b. Green Building Site Development
3c. Field with Subsurface Storage
4. Relocation of Tennis Center
5. Tech Green with Subsurface Storage
6. Peter Park Reclamation

Appendices
A. Index

Index to be added following review of draft plan document

Appendices
B. Description of Future Academic Programs

This appendix to be added by the staff of Georgia Tech.

C. Glossary

Americans with Disability Act (ADA)	Legislation enacted in 1992 and requires all institutions and businesses to provide facility access for those with various disabilities.
Area of Interest	Areas outside the Georgia Tech campus - defined in the CMPU within which Georgia Tech may seek to partner for future development related to Georgia Tech functions and operations, and/or to acquire property for Georgia Tech functions.
Campus Arterial	A term used in describing landscape treatments that apply to those roadways that provide auto entrances to the Georgia Tech campus.
Campus Entrances	Seven existing and proposed spaces are identified as Campus Entrances. They are located at existing and proposed major automobile entrances
Campus Streets	A term used in describing landscape treatments that apply to those roadways that provide auto routes internal to the Georgia Tech campus.
Crossroad	Crossroads are important corridor intersections, where pedestrians make directional decisions
Ecology	The science of the relationships between organisms and their environments. Also, the relationship between organisms and their environment
Eco-Commons	The Eco-Commons is permanent open space defined in the CMPU that performs valuable ecological work for the campus. It is an essential part of the campus infrastructure because of its storm-water managment benefits.
Fair Housing Amendments Act of 1988	An Amendment to Title VIII of the Civil Rights Act of 1968 that expands the coverage of Title VIII to prohibit discriminatory housing practices based on handicap and familial status. The Act also establishes design and construction requiremnets for certain new multifamily dwellings.
Federal Register	Published by the Office of the Federal Register, National Archives and Records Administration (NARA), the Federal Register is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents.
Green Building	Buildings that incorporate sustainable design principles, practices, systems and materials.

Interstices	Open spaces on campus that are not included in either the Corridor, Places or Eco-Commons defined in the CMPU.
IT Hub	A physical facility that both receives and distributes incoming data from off-campus sources, and provides centralized computing and data services and distribution internally to the various Georgia Tech facilities.
Micro-Climate	The local climate, which may vary from location to location based on the characteristics of the immediate environment in regard to building coverage and height, amount of pavement and extent of landscaping, and compass orientation.
Mixed-Use Facility	A facility that contains more than one type of use.
National Rehabilitation Act of 1973	The purpose of this ACT is to provide a statutory basis for the Rehabili tation Services Administration, and to authorize programs to - develop and implement comprehensive State plans for providing vocational REHABILITATION services to handicapped individuals and, among other things, to evaluate existing, and develop new approaches to architectural and transportation barriers confronting handicapped individuals, and enforce statutory and regulatory standards and require ments regarding barrier-free construction of public facilities.
Off-Campus Street	A term used in describing landscape treatments that apply to those major roadways that border the Georgia Tech campus.
Orientation-Landmarks	Recognizable places or iconic buildings that help orient newcomers and visitors.
Pedestrian Gateways	Significant points of entrance for pedestrians coming to the Georgia Tech Campus.
Places	Part of the human landscape where people come together for spontaneous interaction. Places on the Georgia Tech campus are identified in the CMPU.
Rise	The vertical distance of a step or slope.
Run	The horizontal distance of a step or slope.
Service lanes	Small streets that give slow-moving service vehicles and permitted-cars access to buildings and special-permit parking.
Storm-water management	The process and physical techniques used to control the collection and disposal, or dispersal of rainwater.

Sustainability/ Sustainable Design	"Sustainable design is the set of perceptual and analytic abilities, ecological wisdom, and practical wherewithal essential to making things that fit in a world of microbes, plants, animals, and entropy. In other words, (sustainable design) is the careful meshing of human purposes with the larger patterns and flows of the natural world, and careful study of those patterns and flows to inform human purposes." -David Orr, Ecological Literacy
Title II/Title III	Subsections of the Americans with Disabilities Act that relate to municipal facilities (Title II), and private entities (Title III).
Transfer Zones	Areas which form the edges of the Eco-Commons and move storm-water from development areas into receiving zones.
Walkway	Major pedestrian routes through campus as defined in the CMPU.
Waypoints	Campus entrances that incorporate way-finding signage.

D. Acceptable Trees for the Georgia Tech Campus

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	STREET TREES		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
MOST URBAN TOLERANT	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
	Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Gingko biloba	Ginkgo	H		X		X	X	X	X			X			S	M	X
	Ilex x attenuata 'Fosteri'	Holly Fosters	H				X	X	X	X	X			X	X	S	H	X
	Lagerstroemia indica	Crapemyrtle, Common	H				X	X	X	X					X	F	H	X
	Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
	Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
	Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
	Myrica cerifera	Waxmyrtle, Southern	H				X	X	X	X	X				X	M	H	X
	Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
	Pistacia chinensis	Pistache, Chinese	H	X			X	X	X	X				X	X	M	H	X
	Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
	Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus parvifolia "Allee"	Elm, Chinese	H	X	X	X	X	X	X	X			X	X		F	H	X
	Zelkova serrata	Zelkova, Japanese	M					X	X	X			X			M	H	X
HARDSCAPE TOLERANT	Celtis laevigata	Sugarberry	H	X	X	X	X	X	X			X	X			F	H	X
	Platanus x acerifolia 'Yarwood'	Planetree, London	H		X	X	X	X	X			X	X			F	H	X
	Quercus nigra	Oak, Water	H		X	X	X	X	X			X	X			F	H	X
	Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
	Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
	Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
	Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
	Parrotia persica	Parrotia	M				X	X		X		X			X	S	M	
	Quercus coccinia	Oak, Scarlet	H		X		X	X		X		X	X			M	H	
	Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
	Quercus hemisphaerica 'Darlington'	Oak, Laurel 'Darlington'	H	X	X		X	X		X			X			M	H	
	Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
	Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
	Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
	Ulmus parvifolia 'Allee'	Elm, Chinese	L		X	X	X	X				X	X			F	H	

	LATIN NAME	COMMON NAME	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	DRY WOODLAND		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
OVERSTORY	Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Carya glabra	Hickory, Pignut	H	X	X							X	X			S	H	
	Carya pallida	Hickory, Sand	M	X	X							X	X			S	H	
	Celtis laevigata	Sugarberry	H	X	X	X	X	X	X			X	X			F	H	X
	Celtis occidentalis	Hackberry, Common	H	X	X	X	X		X			X	X			F	H	X
	Celtis tenuifolia	Hackberry, Georgia	H	X	X	X						X	X			F	M	
	Fraxinus pennsylvanica	Ash, Green (use only clones)	M	X	X	X						X	X			F	H	
	Gleditsia triacanthos	Honeylocust	L	X								X	X			F	H	X
	Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
	Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
	Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
	Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
	Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
	Prunus serotina	Cherry, Black	M	X	X							X	X			F	H	
	Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
	Quercus hemisphaerica 'Darlington'	Oak, Laurel 'Darlington'	H	X	X		X	X		X			X			M	H	
	Quercus muehlenbergii	ChinkapinOak	H	X	X		X					X	X			M	H	
	Quercus prinus	Oak, Chestnut	H	x			X					X	X			M	H	
	Robinia pseudoacacia	Locust, Black	M	X							X	X	X			F	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus parvifolia "Allee"	Elm, Chinese	H	X	X	X	X	X	X	X			X			F	H	X
UNDERSTORY	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Acer leucoderme	Maple, Chalk	H	X	X		X		X					X	X	M	H	
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cercis reniformis 'Oklahoma'	Redbud, Oklahoma	H	X	X		X		X	X				X	X	F	H	X
	Cercis reniformis 'Texas White'	Redbud, Texas White	H	X			X		X	X				X	X	F	H	X
	Diospyros virginiana	Persimmon, Common	M	X	X		X							X	X	F	H	X
	Pistacia chinensis	Pistache, Chinese	H	X			X	X	X	X				X	X	M	H	X
	Sassafras albidium	Sassafras	M	X	X	X						X		X	X	M	H	
	Vaccinium arboreum	Farkleberry	M	X	X									X		S	H	
EDGE/OPEN	Ilex vomitoria	Holly, Yaupon	H	X					X	X	X				X	S	H	X
	Juniperus virginiana	Cedar, Red	H	X	X		X		X		X	X			X	F	H	X
	Maclura pomifera	Orange, Osage	M	X					X		X				X	S	H	X
	Pinus virginiana	Pine, Virginia	H	X					X		X	X			X	F	H	X
	Prunus angustifolia	Plum, Chickasaw	M	X	X						X	X			X	M	H	
	Quercus georgiana	Oak, Georgia	M	X			X					X			X	M	H	

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	MESIC WOODLAND		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
OVERSTORY	Acer negundo	Boxelder	H		X	X			X		X	X	X			F	H	X
	Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
	Acer saccharinum	Maple, Silver	L		X	X	X		X				X			F	H	
	Acer saccharum	Maple, Sugar	H		X		X					X	X			M	M	
	Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
	Carya cordiformis	Hickory, Bitternut	H		X	X						X	X			F	L	
	Carya glabra	Hickory, Pignut	H	X	X							X	X			S	H	
	Carya illinoensis	Pecan	H		X		X						X			S	L	
	Carya ovata	Hickory, shagbark	H		X		X					X	X			M	M	
	Carya ovata var. australis	Hickory, Southern Shagbark	H		X		X					X	X			S	M	
	Carya pallida	Hickory, Sand	M	X	X							X	X			S	H	
	Carya tomentosa	Hickory, Mockernut	H		X							X	X			S	H	
	Castanea mollissima	Chestnut, Chinese	H		X		X						X			S	M	X
	Celtis laevigata	Sugarberry	H	X	X	X	X	X	X			X	X			F	H	X
	Celtis occidentalis	Hackberry, Common	H	X	X	X	X		X			X	X			F	H	X
	Celtis tenuifolia	Hackberry, Georgia	H	X	X	X						X	X			F	M	
	Fagus grandifolia	Beech	H		X		X					X	X			S	L	
	Fraxinus americana	Ash, White (use only clones)	L		X							X	X			M	L	
	Fraxinus pennsylvanica	Ash, Green (use only clones)	M	X	X	X						X	X			F	H	
	Gingko biloba	Ginkgo	H		X		X	X	X	X			X			S	M	X
	Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
	Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
	Liriodendron tulipifera	Poplar, Yellow (Tuliptree)	H		X	X	X					X	X			M	M	
	Magnolia acuminata	Magnolia, Cucumber	L		X							X	X			M	L	
	Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
	Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
	Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
	Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
	Platanus occidentalis	Sycamore	M		X	X	X					X	X			F	H	
	Platanus x acerifolia 'Yarwood'	Planetree, London	H		X	X	X	X	X			X	X			F	H	X
	Prunus caroliniana	Cherrylaurel, Carolina	H		X	X	X		X		X	X	X			M	H	X
	Prunus serotina	Cherry, Black	M	X	X							X	X			F	H	
	Quercus acutissima	Oak, Sawtooth	L		X		X						X			F	H	X
	Quercus alba	Oak, White	H		X		X					X	X			S	M	
	Quercus coccinia	Oak, Scarlet	H		X		X	X		X		X	X			M	H	
	Quercus falcata	Oak, Southern Red	H		X		X					X	X			M	H	
	Quercus falcata var. pagodifolia	Oak, Cherrybark	H		X	X	X					X	X			M	M	
	Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
	Quercus hemisphaerica 'Darlington'	Oak, Laurel 'Darlington'	H	X	X		X	X		X			X			M	H	
	Quercus laurifolia	Oak, Diamond Leaf (Laurel)	H		X								X			M	M	
	Quercus michauxii	Oak, Swamp Chestnut	H		X	X	X					X	X			M	M	
	Quercus muehlenbergii	ChinkapinOak	H	X	X		X					X	X			M	H	
	Quercus nigra	Oak, Water	H		X	X	X	X	X			X	X			F	H	X
	Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
	Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
	Quercus rubra	Oak, Northern Red	M		X		X					X	X			F	M	
	Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
	Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus Parvifolia 'Allee'	Elm, Chinese	L		X	X	X	X				X	X			F	H	
	Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X			F	H	X
	Ulmus rubra	Elm, Slippery	L		X	X						X	X			F	H	
	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Acer ginnala	Maple, Amur	H		X		X							X		M	M	

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	MESIC WOODLAND 2		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
OVERSTORY	Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
	Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
	Quercus rubra	Oak, Northern Red	M		X		X					X	X			F	M	
	Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
	Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus Parvifolia 'Allee'	Elm, Chinese	L		X	X	X	X				X	X			F	H	
	Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X			F	H	X
	Ulmus rubra	Elm, Slippery	L		X	X						X	X			F	H	
UNDERSTORY	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Acer ginnala	Maple, Amur	H		X		X							X		M	M	
	Acer leucoderme	Maple, Chalk	H	X	X		X		X					X	X	M	H	
	Acer palmatum	Maple, Japanese	M		X		X							X		S	L	X
	Aesculus sylvatica	Buckeye, Painted	L		X							X		X		M	L	
	Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
	Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
	Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cephalanthus occidentalis	Buttonbush, Common	H		X	X					X	X		X	X	M	L	X
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	
	Cercis canadensis var. alba	Redbud, Eastern White	H		X	X	X			X				X		F	M	
	Cercis reniformis 'Oklahoma'	Redbud, Oklahoma	H	X	X		X		X	X				X	X	F	H	X
	Chionanthus virginicus	Fringetree	H		X	X						X		X		M	M	
	Cladrastis kentukea	Yellowwood, American	L		X		X							X		M	M	
	Cornus florida	Dogwood	M		X		X					X		X		S	L	
	Cornus kousa	Dogwood, Kousa Japanese	H		X		X							X		M	L	
	Diospyros virginiana	Persimmon, Common	M	X	X		X							X	X	F	H	X
	Halesia carolina	Silverbell, Carolina	M		X	X						X		X		S	L	
	Hamamelis virginiana	Witchhazel, Common	H		X	X	X			X		X		X		M	M	
	Ilex decidua	Holly, Deciduous(Possumhaw)	H		X	X						X		X	X	S	H	
	Ilex opaca	Holly, American	H		X		X				X	X		X	X	S	H	X
	Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
	Juglans, nigra	Walnut, Black	L		X	X						X		X		M	L	
	Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
	Magnolia virginiana	Magnolia, Sweetbay	H		X	X	X		X		X	X		X		F	L	
	Osmanthus americanus	Osmanthus, Devilwood	M		X	X						X		X		M	M	
	Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
	Sassafras albidium	Sassafras	M	X	X	X						X		X	X	M	H	
	Vaccinium arboreum	Farkleberry	M	X	X									X		S	H	

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	MESIC WOODLAND 3		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
EDGE/OPEN	Juniperus virginiana	Cedar, Red	H	X	X		X		X		X	X			X	F	H	X
	Osmanthus x fortunei	Fortune's Osmanthus	H		X						X				X	S	M	
	Prunus angustifolia	Plum, Chickasaw	M	X	X						X	X			X	M	H	
	Quercus bicolor	Oak, Swamp White	H		X	X	X					X				M	H	
	Rhamnus caroliniana	Buckthorn, Carolina	H		X	X					X	X			X	M	M	

WET WOODLAND

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
			Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
OVERSTORY	Acer negundo	Boxelder	H		X	X			X		X	X	X			F	H	X
	Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
	Acer saccharinum	Maple, Silver	L		X	X	X		X				X			F	H	
	Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
	Carya cordiformis	Hickory, Bitternut	H		X	X						X	X			F	L	
	Catalpa bignoniodes	Catalpa, Southern	L			X	X					X	X			F	M	
	Celtis laevigata	Sugarberry	H	X	X	X	X	X	X			X	X			F	H	X
	Celtis occidentalis	Hackberry, Common	H	X	X	X	X		X			X	X			F	H	X
	Celtis tenuifolia	Hackberry, Georgia	H	X	X	X						X	X			F	M	
	Fraxinus pennsylvanica	Ash, Green (use only clones)	M	X	X	X						X	X			F	H	
	Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
	Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
	Liriodendron tulipifera	Poplar, Yellow (Tuliptree)	H		X	X	X					X	X			M	M	
	Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
	Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
	Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
	Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
	Platanus occidentalis	Sycamore	M		X	X	X					X	X			F	H	
	Platanus x acerifolia 'Yarwood'	Planetree, London	H		X	X	X	X	X			X	X			F	H	X
	Populus deltoides	Cottonwood, Eastern	L			X					X	X	X			F	H	
	Prunus caroliniana	Cherrylaurel, Carolina	H		X	X	X		X		X	X	X			M	H	X
	Quercus falcata var. pagodifolia	Oak, Cherrybark	H		X	X	X					X	X			M	M	
	Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
	Quercus lyrata	Oak, Overcup	M			X						X	X			M	M	
	Quercus michauxii	Oak, Swamp Chestnut	H		X	X	X					X	X			M	M	
	Quercus nigra	Oak, Water	H		X	X	X	X	X			X	X			F	H	X
	Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
	Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
	Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
	Salix nigra	Willow, Black	M			X						X	X			F	M	
	Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X	X		F	H	X
	Ulmus rubra	Elm, Slippery	L		X	X						X	X			F	H	
STORY	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cephalanthus occidentalis	Buttonbush, Common	H		X	X					X	X		X	X	M	L	X
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	
	Cercis canadensis var. alba	Redbud, Eastern White	H		X	X	X			X				X		F	M	
	Chionanthus virginicus	Fringetree	H		X	X						X		X		M	M	
	Cornus racemosa	Dogwood, Grey	M			X					X	X		X	X	F	L	

	Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
	WET WOODLAND 2		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
UNDERSTORY	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cephalanthus occidentalis	Buttonbush, Common	H		X	X					X	X		X	X	M	L	X
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	
	Cercis canadensis var. alba	Redbud, Eastern White	H		X	X	X			X				X		F	M	
	Chionanthus virginicus	Fringetree	H		X	X						X		X		M	M	
	Cornus racemosa	Dogwood, Grey	M			X					X	X		X	X	F	L	
	Halesia carolina	Silverbell, Carolina	M		X	X						X		X		S	L	
	Hamamelis virginiana	Witchhazel, Common	H		X	X	X			X		X		X		M	M	
	Ilex decidua	Holly, Deciduous(Possumhaw)	H		X	X						X		X	X	S	H	
	Ilex verticillata	Winterberry, Common	H			X	X					X		X	X	S	M	
	Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
	Juglans, nigra	Walnut, Black	L		X	X						X		X		M	L	
	Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
	Magnolia virginiana	Magnolia, Sweetbay	H		X	X	X		X		X	X		X		F	L	
	Osmanthus americanus	Osmanthus, Devilwood	M		X	X						X		X		M	M	
	Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
	Sassafras albidium	Sassafras	M	X	X	X						X		X	X	M	H	
EDGE/OPEN	Alnus serrulata	Alder, Hazel (tag)	H			X			X		X	X			X	F	M	
	Quercus bicolor	Oak, Swamp White	H		X	X	X					X				M	H	
	Rhamnus caroliniana	Buckthorn, Carolina	H		X	X					X	X			X	M	M	
	Sambucus canadensis	American Elderberry	M			X						X			X	F	H	

	PARKLAND		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
OVERSTORY	Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
	Acer saccharinum	Maple, Silver	L		X	X	X		X				X			F	H	
	Acer saccharum	Maple, Sugar	H		X		X					X	X			M	M	
	Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
	Carya illinoensis	Pecan	H		X		X						X			S	L	
	Carya ovata	Hickory, shagbark	H		X		X					X	X			M	M	
	Carya ovata var. australis	Hickory, Southern Shagbark	H		X		X					X	X			S	M	
	Castanea mollissima	Chestnut, Chinese	H		X		X						X			S	M	X
	Catalpa bignoniodes	Catalpa, Southern	L			X	X					X	X			F	M	
	Celtis laevigata	Sugarberry	H	X	X	X	X	X	X			X	X			F	H	X
	Celtis occidentalis	Hackberry, Common	H	X	X	X	X		X			X	X			F	H	X
	Cercidiphyllym japonica	Katsuratree	L				X						X			M	L	
	Fagus grandifolia	Beech	H		X		X					X	X			S	L	
	Gingko biloba	Ginkgo	H		X		X						X			S	M	X
	Liquidambar styraciflua	Sweetgum	H	X	X	X	X	X	X	X	X	X	X			F	H	X
	Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
	Liriodendron tulipifera	Poplar, Yellow (Tuliptree)	H		X	X	X					X	X			M	M	
	Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
	Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
	Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
	Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
	Platanus occidentalis	Sycamore	M		X	X	X					X	X			F	H	
	Platanus x acerifolia 'Yarwood'	Planetree, London	H		X	X	X	X	X			X	X			F	H	X
	Prunus caroliniana	Cherrylaurel, Carolina	H		X	X	X		X		X	X	X			M	H	X
	Quercus acutissima	Oak, Sawtooth	L		X		X						X			F	H	X
	Quercus alba	Oak, White	H		X		X					X	X			S	M	
	Quercus bicolor	Oak, Swamp White	H		X	X	X					X	X			M	H	
	Quercus coccinia	Oak, Scarlet	H		X		X	X		X		X	X			M	H	
	Quercus falcata	Oak, Southern Red	H		X		X					X	X			M	H	
	Quercus falcata var. pagodifolia	Oak, Cherrybark	H		X	X	X					X	X			M	M	
	Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
	Quercus hemisphaerica 'Darlington'	Oak, Laurel 'Darlington'	H	X	X		X	X		X			X			M	H	
	Quercus michauxii	Oak, Swamp Chestnut	H		X	X	X					X	X			M	M	
	Quercus muehlenbergii	ChinkapinOak	H	X	X		X					X	X			M	H	
	Quercus nigra	Oak, Water	H		X	X	X	X	X			X	X			F	H	X
	Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
	Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
	Quercus prinus	Oak, Chestnut	H	x			X					X	X			M	H	
	Quercus rubra	Oak, Northern Red	M		X		X					X	X			F	M	
	Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
	Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
	Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
	Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X	X		F	H	X
	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Acer ginnala	Maple, Amur	H		X		X							X		M	M	
	Acer leucoderme	Maple, Chalk	H	X	X		X		X					X	X	M	H	
	Acer palmatum	Maple, Japanese	M		X		X							X		S	L	X
	Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
	Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
	Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	

Group	PARKLAND 2		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
UNDERSTORY	Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
	Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
	Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
	Acer ginnala	Maple, Amur	H		X		X							X		M	M	
	Acer leucoderme	Maple, Chalk	H	X	X		X		X					X	X	M	H	
	Acer palmatum	Maple, Japanese	M		X		X							X		S	L	X
	Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
	Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
	Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
	Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
	Castanea pumila	Chinquapin, Allegheny	M	X	X	X	X					X		X	X	S	H	
	Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
	Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	
	Cercis canadensis var. alba	Redbud, Eastern White	H		X	X	X			X				X		F	M	
	Cercis reniformis 'Oklahoma'	Redbud, Oklahoma	H	X	X		X		X	X				X	X	F	H	X
	Cercis reniformis 'Texas White'	Redbud, Texas White	H	X			X		X	X				X	X	F	H	X
	Cladrastis kentukea	Yellowwood, American	L		X		X							X		M	M	
	Cornus florida	Dogwood	M		X		X					X		X		S	L	
	Cornus kousa	Dogwood, Kousa Japanese	H		X		X							X		M	L	
	Diospyros virginiana	Persimmon, Common	M	X	X		X							X	X	F	H	X
	Hamamelis virginiana	Witchhazel, Common	H		X	X	X			X		X		X		M	M	
	Ilex opaca	Holly, American	H		X		X				X	X		X	X	S	H	X
	Ilex verticillata	Winterberry, Common	H			X	X					X		X	X	S	M	
	Ilex x attenuata 'Fosteri'	Holly Fosters	H				X	X	X	X	X			X	X	S	H	X
	Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
	Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
	Magnolia stellata	Magnolia, Star	M				X							X		S	M	
	Magnolia virginiana	Magnolia, Sweetbay	H		X	X	X		X		X	X		X		F	L	
	Magnolia x soulangiana	Magnolia, Japanese (Saucer)	M				X							X		M	L	
	Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
	Pistacia chinensis	Pistache, Chinese	H	X			X	X	X	X				X	X	M	H	X
EDGE/OPEN	Cryptomeria japonica	Cedar, Japanese	M				X			X	X				X	M	H	X
	Juniperus virginiana	Cedar, Red	H	X	X		X		X		X	X			X	F	H	X
	Koelreuteria bipinnata	Flametree, Chinese	M				X		X						X	F	H	
	Koelreuteria paniculata	Goldenraintree	M				X		X						X	M	M	
	Lagerstroemia indica	Crapemyrtle, Common	H				X	X	X	X					X	F	H	X
	Myrica cerifera	Waxmyrtle, Southern	H				X	X	X	X	X				X	M	H	X
	Parrotia persica	Parrotia	M				X	X		X		X			X	S	M	
	Prunus serrulata	Cherry, Japanese Flowering	M				X								X	F	L	
	Prunus x yeoensis	Cherry, Yoshino	M				X								X	F	L	
	Quercus georgiana	Oak, Georgia	M	X			X					X			X	M	H	
	Salix babylonia	Willow, Weeping	L				X					X			X	F	M	
	Vitex agnus-astus	Vitex (Chastetree)	H				X		X	X					X	M	H	X

Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
PARKING LOTS		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
Acer leucoderme	Maple, Chalk	H	X	X		X		X					X	X	M	H	
Acer negundo	Boxelder	H		X	X			X		X	X	X			F	H	X
Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
Acer saccharinum	Maple, Silver	L		X	X	X		X				X			F	H	
Alnus serrulata	Alder, Hazel (tag)	H			X			X		X	X			X	F	M	
Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
Celtis laevigata	Common Hackberry	H	X	X	X	X	X	X			X	X			F	H	X
Celtis occidentalis	Hackberry, Common	H	X	X	X	X		X			X	X			F	H	X
Cercis reniformis 'Oklahoma'	Redbud, Oklahoma	H	X	X		X		X	X				X	X	F	H	X
Cercis reniformis 'Texas White'	Redbud, Texas White	H	X			X		X	X				X	X	F	H	X
Gingko biloba	Ginkgo	H		X		X	X	X	X			X			S	M	X
Ilex vomitoria	Holly, Yaupon	H	X					X	X	X				X	S	H	X
Ilex x attenuata 'Fosteri'	Holly Fosters	H				X	X	X	X	X			X	X	S	H	X
Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
Juniperus virginiana	Cedar, Red	H	X	X		X		X		X	X			X	F	H	X
Koelreuteria bipinnata	Flametree, Chinese	M				X		X						X	F	H	
Koelreuteria paniculata	Goldenraintree	M				X		X						X	M	M	
Lagerstroemia indica	Crapemyrtle, Common	H				X	X	X	X					X	F	H	X
Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
Maclura pomifera	Orange, Osage	M	X					X		X				X	S	H	X
Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
Magnolia virginiana	Magnolia, Sweetbay	H		X	X	X		X		X	X		X		F	L	
Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
Myrica cerifera	Waxmyrtle, Southern	H				X	X	X	X	X				X	M	H	X
Nyssa sylvatica	Blackgum	H	X	X	X	X	X	X			X	X			S	M	
Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
Pinus virginiana	Pine, Virginia	H	X					X		X	X			X	F	H	X
Pistacia chinensis	Pistache, Chinese	H	X			X	X	X	X				X	X	M	H	X
Platanus x acerifolia 'Yarwood'	Planetree, London	H		X	X	X	X	X			X	X			F	H	X
Prunus caroliniana	Cherrylaurel, Carolina	H		X	X	X		X		X	X	X			M	H	X
Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
Quercus nigra	Oak, Water	H		X	X	X	X	X			X	X			F	H	X
Quercus nuttalli	Oak, Nuttall	H		X	X	X	X	X			X	X			M	M	
Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X	X		F	H	X
Ulmus parvifolia 'Athena'								X									
Vitex agnus-astus	Vitex (Chastetree)	H				X		X	X					X	M	H	X
Zelkova serrata	Zelkova, Japanese	M					X	X	X			X			M	H	X

Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
URBAN HARDSCAPE		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
Acer barbatum	Maple, Southern Sugar (Florida Sug	H	X	X	X	X		X	X		X		X		M	H	X
Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
Acer rubrum	Maple, Red	H		X	X	X	X	X	X		X	X			F	M	
Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
Bosque'									X								
Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
Cercis canadensis 'Forest Pansy'	Redbud, Forest Pansy	H		X	X	X			X				X		F	M	
Cercis canadensis var. alba	Redbud, Eastern White	H		X	X	X			X				X		F	M	
Cercis reniformis 'Oklahoma'	Redbud, Oklahoma	H	X	X		X		X	X				X	X	F	H	X
Cercis reniformis 'Texas White'	Redbud, Texas White	H	X			X		X	X				X	X	F	H	X
Cryptomeria japonica	Cedar, Japanese	M				X			X	X				X	M	H	X
Gingko biloba	Ginkgo	H		X		X	X	X	X			X			S	M	X
Hamamelis virginiana	Witchhazel, Common	H		X	X	X			X		X		X		M	M	
Ilex vomitoria	Holly, Yaupon	H	X					X	X	X				X	S	H	X
Ilex x attenuata 'Fosteri'	Holly Fosters	H				X	X	X	X	X			X	X	S	H	X
Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
Lagerstroemia indica	Crapemyrtle, Common	H				X	X	X	X					X	F	H	X
Liquidambar styraciflua	Sweetgum	H	X	X	X	X				X	X	X			F	H	X
Liquidambar styraciflua 'Rotundiloba'	Sweetgum, Fruitless	H	X	X	X	X	X	X	X			X			M	M	X
Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X
Myrica cerifera	Waxmyrtle, Southern	H				X	X	X	X	X				X	M	H	X
Ostrya virginana	Hophornbeam, American	H		X	X	X	X	X	X		X		X	X	S	H	X
Parrotia persica	Parrotia	M				X	X		X		X			X	S	M	
Pistacia chinensis	Pistache, Chinese	H	X			X	X	X	X				X	X	M	H	X
Quercus coccinia	Oak, Scarlet	H		X		X	X		X		X	X			M	H	
Quercus hemisphaerica	Oak, Laurel	H	X	X	X	X	X	X	X			X			M	H	
Quercus hemisphaerica 'Darlington'	Oak, Laurel 'Darlington'	H	X	X		X	X		X			X			M	H	
Quercus phellos	Oak, Willow	H		X	X	X	X	X	X		X	X			F	H	X
Quercus shumardii	Oak, Shumard	H		X	X	X	X	X	X		X	X			F	H	
Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
Ulmus alata	Elm, Winged	H	X	X	X	X	X	X	X		X	X			M	H	X
Ulmus parvifolia	Elm, Chinese	H	X	X	X	X	X	X	X			X	X		F	H	X
Vitex agnus-astus	Vitex (Chastetree)	H				X		X	X					X	M	H	X
Zelkova serrata	Zelkova, Japanese	M					X	X	X			X			M	H	X

Latin Name	Common Name	RECOMMENDED USE									ENVIRONMENTAL FACTORS						
BUFFERS		Recommended Level of Use	Dry Woodland	Mesic Woodland	Wet Woodland	Parkland	Street Frontage	Parking Lots	Urban Hardscape	Buffers	Native Tree to Atlanta	Overstory Tree	Understory Tree	Edge or Open	Growth Rate	Drought Tolerance	Notable Urban Tolerance
Acer buergeranum	Maple, Trident	H	X	X	X	X	X	X	X	X	X		X	X	F	M	X
Acer campestre 'Evelyn'	Maple, Hedge	H	X	X	X	X	X	X	X	X	X		X	X	S	H	X
Acer negundo	Boxelder	H		X	X			X		X	X	X			F	H	X
Alnus serrulata	Alder, Hazel (tag)	H			X			X		X	X			X	F	M	
Amelanchier arborea	Serviceberry, Downy	H		X		X	X		X	X	X		X	X	S	M	
Amelanchier x grandiflora	Autumn Brilliance Serviceberry	H		X		X	X		X	X	X		X	X	S	M	
Betula nigra 'BNMTF'	Birch, River Dura Heat	H	X	X	X	X	X	X	X	X	X	X			F	H	X
Betula nigra 'Heritage'	Birch, River 'Heritage'	H		X	X	X	X	X	X	X	X	X			F	M	X
Carpinus betulus	Hornbeam, European	H		X		X	X	X	X	X	X		X	X	S	H	X
Carpinus caroliniana	Hornbeam, Am. Ironwood	H		X	X	X	X	X	X	X	X		X	X	S	M	X
Cephalanthus occidentalis	Buttonbush, Common	H		X	X					X	X		X	X	M	L	X
Cercis canadensis	Redbud, Eastern	H		X	X	X	X		X	X	X		X		F	M	
Cornus racemosa	Dogwood, Grey	M			X					X	X		X	X	F	L	
Cryptomeria japonica	Cedar, Japanese	M				X			X	X				X	M	H	X
Cupressocyparis leylandii	Leyland Cypress	M								X				X	F	M	X
Ilex opaca	Holly, American	H		X		X				X	X		X	X	S	H	X
Ilex x attenuata 'Savannah'	Holly, Savannah	H		X	X	X	X	X	X	X			X	X	M	H	
Maclura pomifera	Orange, Osage	M	X					X		X				X	S	H	X
Magnolia grandiflora	Magnolia, Southern	H		X	X	X	X	X	X	X	X		X	X	M	H	
Magnolia virginiana	Magnolia, Sweetbay	H		X	X	X		X		X	X		X		F	L	
Myrica cerifera	Waxmyrtle, Southern	H				X	X	X	X	X				X	M	H	X
Osmanthus x fortunei	Fortune's Osmanthus	H		X						X				X	S	M	
Pinus echinata	Pine, Shortleaf	H	X	X	X	X		X		X	X	X			M	H	
Pinus taeda	Pine, Loblolly	H	X	X	X	X		X		X	X	X			F	H	X
Pinus virginiana	Pine, Virginia	H	X					X		X	X			X	F	H	X
Populus deltoides	Cottonwood, Eastern	L			X					X	X	X			F	H	
Prunus angustifolia	Plum, Chickasaw	M	X	X						X	X			X	M	H	
Prunus caroliniana	Cherrylaurel, Carolina	H		X	X	X		X		X	X	X			M	H	X
Rhamnus caroliniana	Buckthorn, Carolina	H		X	X					X	X			X	M	M	
Robinia pseudoacacia	Locust, Black	M	X							X	X	X			F	H	X
Taxodium distichum	Baldcypress	H		X	X	X	X	X	X	X	X	X			M	H	X
Ilex vomitoria	Holly, Yaupon	H	X					X	X	X				X	S	H	X
Ilex x attenuata 'Fosteri'	Holly Fosters	H				X	X	X	X	X			X	X	S	H	X
Juniperus virginiana	Cedar, Red	H	X	X		X		X		X	X			X	F	H	X
Metasequoia glyptostroboides	Redwood, Dawn	H		X	X	X	X	X	X	X		X		X	F	M	X

E. Building Reference Number List
To be added following review of draft plan document