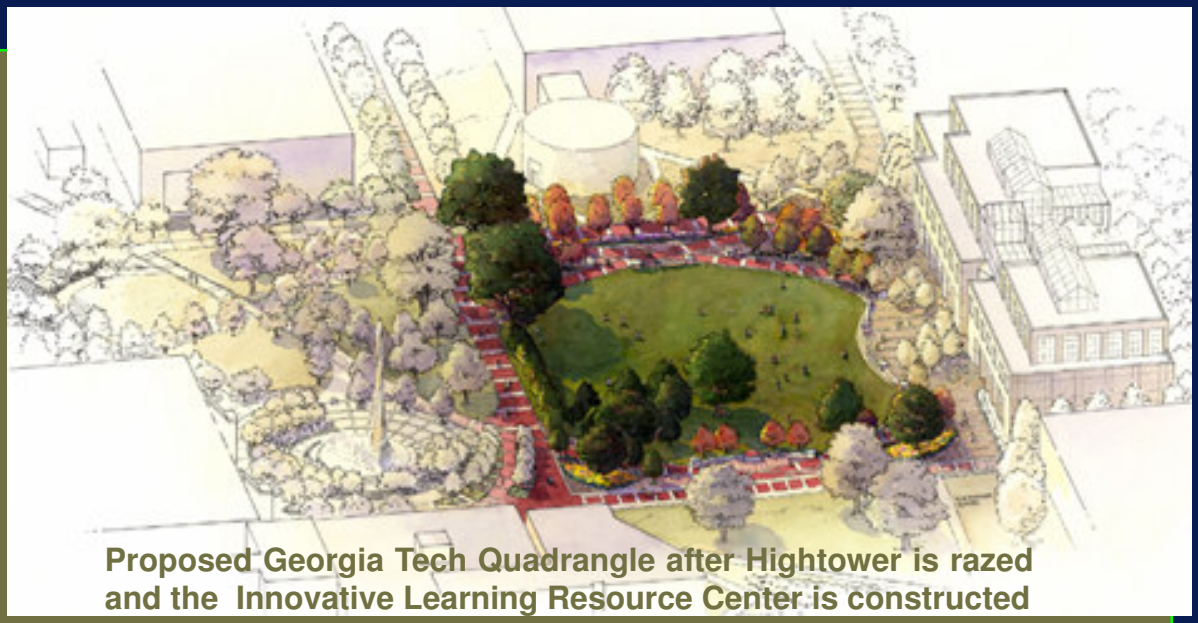
Georgia Institute of Technology

Capital Planning
& Space Management Office

Tree Management Plan for the Demolition of Hightower Building

November 8, 2001



Proposed Georgia Tech Quadrangle after Hightower is razed and the Innovative Learning Resource Center is constructed

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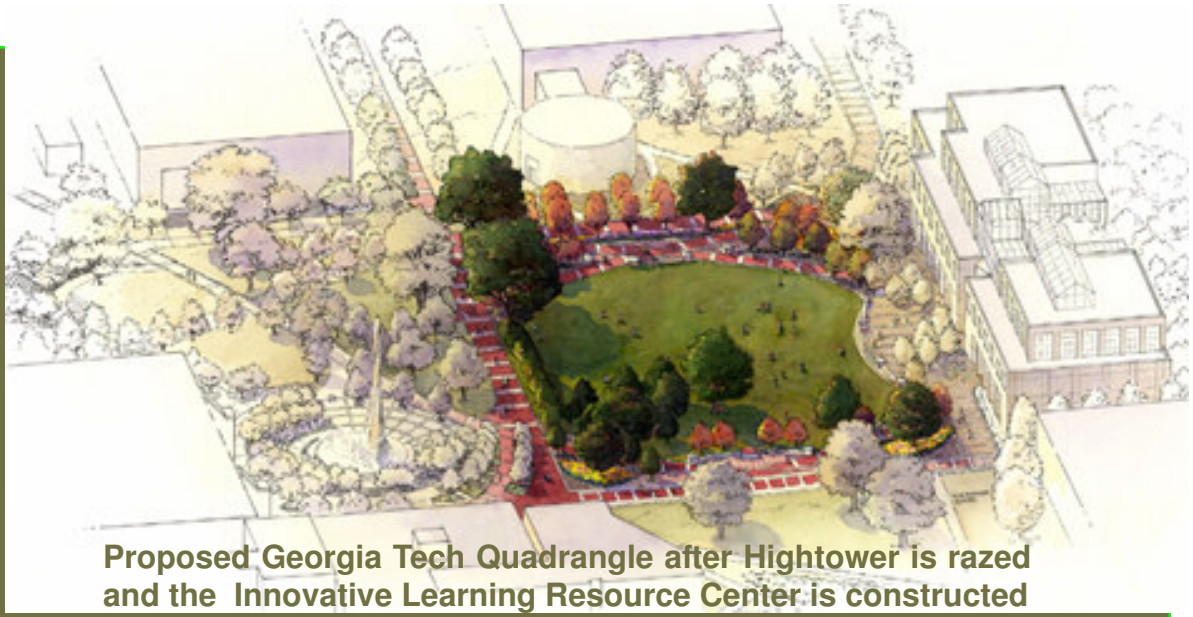

Proposed Georgia Tech Quadrangle after Hightower is razed and the Innovative Learning Resource Center is constructed

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1. INTRODUCTION

1.0 INTRODUCTION:

1.1 Executive Summary

The 1997 Campus Master Plan identifies the need to demolish the Hightower Building in order to construct a new building called the Innovative Learning Resource Center. This new signature building will define the eastern edge of a central campus open space, named the Georgia Tech Quadrangle.

Georgia Tech Quadrangle (proposed)

This Tree Management Plan evaluates the trees near the Hightower building demolition activities, defines methods to save significant trees and identifies trees that are transplantable to other sites on Campus.

Hightower Building - south facade

A total of 60 trees are in the Hightower demolition impact area. Of the 14 trees that are to be saved, 6 are specimen water oak trees ranging between 28" & 44" diameter breast height. These 6 are located either adjacent to the building or adjacent to the Demolition Limit Line. These trees are magnificent 60-90 year old monarchs that add considerable value to the quality of life in this area of campus. Therefore, all necessary precautions should be taken to preserve these trees from adverse impacts of demolition and future development. Finally, 7 Southern Magnolias and 1 Saucer Magnolia are worthy to save. These 8 trees could be transplanted if future design development for Yellow Jacket Park suggests they are inappropriately located for long-term benefit.

There are 28 ornamental trees that are valuable to transplant to other sites on campus if appropriate locations can be found where they will complement the existing landscape architecture. The remaining 18 trees are not worth saving or transplanting; therefore they are identified to be removed.

In order to retain nearly a century's worth of mature shade tree development and the environmental quality that they currently provide and can continue to provide for decades more, demolition of the Hightower building must be conducted according to This Plan. It is essential to keep the demolition contractor within the Demolition Limit Line defined in the enclosed TREE MANAGEMENT PLAN illustration and require the contractor to follow the demolition requirements specified in this Plan by including relevant portions in their contract.

Successive execution of this Plan will preserve the benefits of Georgia Tech's significant environmental resources in the pedestrian heart of campus for future generations.

1.2 Purposes of this Plan

The purposes of this Tree Management Plan are to:

- Inventory and evaluate trees on the Hightower building site,
- Define appropriate site management and specify demolition methods of the Hightower building that will protect the environmental resources on this site for the long-term benefit of the campus environs.
- Advance the practice of sustainable implementation of the Campus Master Plan.

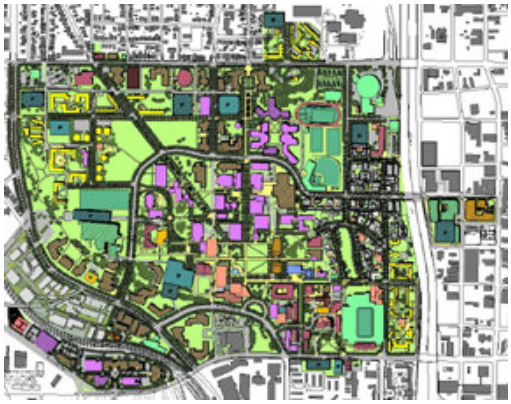
1.3 Background & Campus Master Plan Guidance

The Board of Regents building number for the Hightower Building is #44. This facility is located at 725 Atlantic Drive, N.W.

Both the 1991 & 1997 Campus Master Plans and the 1995 Facilities Condition Study identified the Hightower building as the #1 candidate for demolition due its poor condition and the excessive cost of adaptive reuse.

The Hightower building site is located in an area that has been identified to become a large central open space in several master plans. It is located in the pedestrian heart of the academic core of campus. The beginnings of creating this large central open space started in the 60's and early 70's by the removal of Campus Drive and Hemphill Avenue. The Georgia Tech Plaza's campanile and fountain, completed in 1996 in response to the need to create an International Zone for the Centennial Summer Olympic Games Village, is the focal point of this open space.

The vision of the 1985, the 1991 & the 1997 Campus Master Plans is for Hightower to be removed and the footprint area to be added to the existing



1997 Campus Master Plan

open space to create a 10 acre central campus green. The Student Services building, the Bookstore, Skiles Building, the GT Theater for the Arts and the Bunger Henry building define the north, west and part of the eastern edge of this proposed open space. The proposed Innovative Learning Resource Center, to be constructed in the near term, will form the remaining eastern edge of this space. When Hightower is razed, the Van Leer Building will define a portion of the northern edge. Subsequent studies and projects have named this area as the 'Georgia Tech Quadrangle' of which the Georgia Tech Plaza

Enlargement of Central Acacemic Core with proposed Geogia Tech Quadrangle in the center

and Yellow Jacket Park are components. Demolition of the Hightower building is a key to achieving the Campus Master Plan goals in the academic core.

Georgia Tech Plaza

Yellow Jacket Park (proposed)

1.4 Trees' Value

This section is included to provide relevant information in order to justify in part the saving or transplanting of trees.

Humans derive far more than simply single-user value from community trees and forests. Trees provide a multitude of benefits. Trees significantly mitigate the affect of the urban heat island. They provide cooling by transpiration and shading, absorb heat, convert toxic CO2 gases to life sustaining O2, provide cleaner air by filtering out particulate matter, and clean up city pollutants like sulfur dioxide. According to Nature's Services, Daily 1997 "One 20 meter shade tree can mitigate 900,000 BTU's of heat, worth 3 tons of air conditioning costing $20/day in the USA (1994 data). Trees within the city limits of Atlanta, in the residential areas alone, save $4,600,000 a year in summer energy savings." In addition, trees prevent soil erosion, aid in aeration and build soil. In short, trees sustain life.

According to Dr. Kim Coder the following is a *partial* selected series of goods, services, and environmental benefits that community trees across the nation provide:

Temperature and Energy Use

- *Community heat islands exist because of decreased wind, increased high-density surfaces, and heat generated from human associated activities, all of which requires additional energy expenditures to offset. Trees can be successfully used to mitigate heat islands.*

Shade

- *Trees reduce temperatures by shading surfaces, dissipating heat through evaporation, and controlling air movement responsible for advected heat.*
- *20°F lower temperature on a site from trees.*
- *35°F lower hard surface temperature under tree shade than in full summer sun.*
- *27% decrease in summer cooling costs with trees.*

Wind Control

- *50% wind speed reduction by shade trees yielded 7% reduction in heating energy in winter.*
- *$50 per year decrease in heating costs from tree control of wind.*

Active Evaporation

- *65% of heat generated in full sunlight on a tree is dissipated by active evaporation from leaf surfaces.*
- *17% reduction in building cooling by active evaporation by trees.*

Air Quality
Trees help control pollution through acting as biological and physical nets, but they are also poisoned by pollution.

Oxygen Production
- *One acre of trees generates enough oxygen each day for 18 people.*

Pollution Reduction
- *Community forests cleanse the air by intercepting and slowing particulate materials causing them to fall out, and by absorbing pollutant gases on surfaces and through uptake onto inner leaf surfaces.*
- *Pollutants partially controlled by trees include nitrogen oxides, sulfur dioxides, carbon monoxide, carbon dioxide (required for normal tree function), ozone, and small particulates less than 10 microns in size.*
- *Pollen and mold spore, are part of a living system and produced in tree areas, but trees also sweep out of the air large amounts of these particulates.*
- *In one urban park (212 ha), tree cover was found to remove daily 48 lbs particulates, 9 lbs nitrogen dioxide, 6 lbs sulfur dioxide, and ½ lbs carbon monoxide. ($136 per day value based upon pollution control technology).*
- *60% reduction in street level particulates with trees.*
- *One sugar maple (one foot in diameter) along a roadway removes in one growing season 60 mg cadmium, 140 mg chromium, 820 mg nickel and 5200mg lead from the environment.*
- *Interior scape trees can remove organic pollutants from indoor air*

Carbon Dioxide Reduction
- *Approximately 800 million tons of carbon are currently stored in US community forests with 6.5 million tons per year increase in storage ($22 billion equivalent in control costs).*
- *A single tree stores on average 13 pounds of carbon annually.*
- *A community forest can store 2.6 tons of carbon per acre per year.*

Hydrology
- *Development increases hard, non-evaporative surfaces and decreases soil infiltration — increases water volume, velocity and pollution load of run-off — increases water quality losses, erosion, and flooding.*
- *Community tree and forest cover intercepts, slows, evaporates, and stores water through normal tree functions, soil surface protection, and soil area of biologically active surfaces.*

Water Run-Off
- *18% of growing season precipitation intercepted and evaporated by all trees.*
- *17% (11.3 million gallons) run-off reduction from a twelve-hour storm with tree canopies in a medium-sized city ($226,000 avoided run-off water control costs).*

Water Quality / Erosion
- *Community trees and forests act as filters removing nutrients and sediments while increasing ground water recharge.*
- *37,500 tons of sediment per square mile per year comes off of developing and developed landscapes — trees could reduce this value by 95% ($336,000 annual control cost savings with trees).*
- *47% of surface pollutants are removed in first 15 minutes of storm — this includes pesticides, fertilizers, and biologically derived materials and litter.*
- *10,886 tons of soil saved annually with tree cover in a medium-sized city.*

Noise Abatement
- *7db noise reduction per 100 feet of forest due to trees by reflecting and ab-*

sorbing sound energy (solid walls decrease sound by 15 db)

- *Trees provide "white noise," the noise of the leaves and branches in the wind and associated natural sounds that masks other man-caused sounds.*

Glare Reduction

- *Trees help control light scattering, light intensity, and modifies predominant wavelengths on a site.*
- *Trees block and reflect sunlight and artificial lights to minimize eyestrain and frame lighted areas where needed for architectural emphasis, safety, and visibility.*

Animal Habitats

- *Wildlife values are derived from aesthetic, recreation, and educational uses.*
- *Lowest bird diversity is in areas of mowed lawn — highest in area of large trees, greatest tree diversity, and brushy areas.*
- *Highest native bird populations in areas of highest native plant populations.*
- *Trees are living systems that interact with other living things in sharing and recycling resources — as such, trees are living centers where living thing congregate and are concentrated.*

Economic / Social / Psychological Benefits
Economic Stability

- *Community trees and forests provide generate business and a positive real estate transaction appearance and atmosphere.*
- *Increased property values, increased tax revenues, increased income levels, faster real estate sales turn-over rates, shorter unoccupied periods, increased recruitment of buyers, increased jobs, increased worker productivity, and increased number of customers have all been linked to tree and landscape presence.*
- *9% increase in property value for a single tree. (1981)*

Property Values — Tree Value Formula (CTLA 8th edition)

- *Values of single trees in perfect conditions and locations in the Southeast range up to $100,000.*
- *$100 million is the value of community trees and forests in Savannah, GA*
- *$386 million is the value of community trees and forests in Oakland, CA (59% of this value is in residential trees).*

Product Gernation

- *Community trees and forests generate many traditional products for the cash and barter marketplace that include lumber, pulpwood, hobbyist woods, fruits, nuts, mulch, composting materials, firewood, and nursery plants.*

Aesthetic Preferences

- *Conifers, large trees, low tree densities, closed tree canopies, distant views, and native species all had positive values in scenic quality.*
- *Large old street trees were found to be the most important indicator of attractiveness in a community.*

Visual Screening

- *The most common use of trees for utilitarian purposes is screening undesirable and disturbing sight lines.*
- *Tree crown management and tree species selection can help completely or partially block vision lines that show human density problems, development activities, or commercial / residential interfaces.*

Recreation

- *Contact with nature in many communities may be limited to local trees and green areas (for noticing natural cycles, seasons, sounds, animals, plants, etc.)*

Health

- *Stressed individuals looking at slides of nature had reduced negative emotions and greater positive feelings than when*

looking at urban scenes without trees and other plants.

- *Stressed individuals recuperate faster when viewing tree filled images.*
- *Hospital patients with natural views from their rooms had significantly shorter stays, less pain medicine required, and fewer post-operative complications.*
- *Psychiatric patients are more sociable and less stressed when green things are visible and immediately present.*
- *Prison inmates sought less health care if they had a view of a green landscape.*

Human Social Interactions

- *People feel more comfortable and at ease when in shaded, open areas of trees as compared to areas of hardscapes and non-living things.*
- *People's preferences for locating areas of social interactions in calming, beautiful, and nature-dominated areas revolve around the presence of community trees and forests.*
- *Trees and people are psychologically linked by culture, socialization, and co adaptive history.*

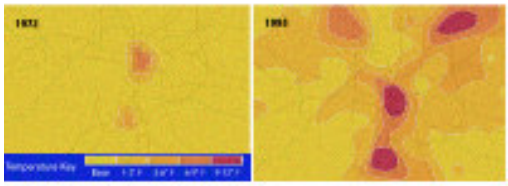
"Identified Benefits of Community Trees and Forests" by Dr. Kim D. Coder, Professor, Silvics/Ecology, Warnell School of Forest Resources, The University of Georgia - Literature Review for the QUANTITREE computer program — "Quantifiable Urban Forest Benefits and Costs; Current Findings and Future Research." In a white paper entitled *Consolidating and Communicating Urban Forest Benefits*. Davey Resource Group, Kent, OH. 1993. pp.25.

1.5 Issues

Sustainable development is an overarching concept of the 1997 Campus Master Plan (CMP). Environmental impacts due to implementation of the CMP are of concern to the Administration. Therefore, Georgia Tech seeks to conduct the demolition of Hightower building in an environmentally responsible way and to appropriately manage our urban forest and other physical resources.

Demolition of the Hightower building may impact a significant number of trees ranging from mature shade trees to dispensable ornamental trees. There are several mature shade trees in close proximity to the building that are a valuable resource to the campus. There are many ornamental trees that are in excellent condition and quality that should be transplanted to other parts of the campus.

The Atlanta urban heat island is growing in both area and temperature. From 1978-1993 65% of the urban forest was destroyed by development. Atlanta temperatures rose 9-12 degrees more during that time period than in the surrounding countryside. Consequently, air pollution rose 30% rendering Atlanta's air quality as non-compliant with the Environmental Protection Agency Clean Air Act.



Spread of Atlanta Urban Heat Island 1978-1993

Therefore, saving trees, especially large shade trees, is an environmentally sustainable way to manage our urban forest resources that optimally benefits the quality of campus life.

2. EXISTING CONDITIONS

2.0 EXISTING CONDITIONS

2.1 Site Conditions

The Hightower building is located in a depression contour. The only site drainage is via a storm water drop inlet northeast of the building.

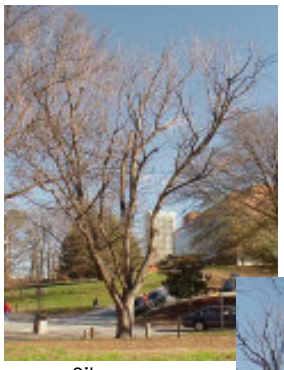
There are a significant amount of vegetation on site including specimen large trees, medium trees, small trees, ornamental trees, large shrubs, medium shrubs, small shrubs, ground covers and lawns. Inventory of the tree species and summary statements are found in following sections.

2.2 Tree Inventory & Evaluation (see spreadsheet)

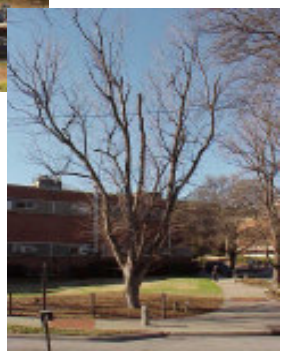
The tree inventory includes trees only. It does not include shrub categories, ground covers or lawn areas that are considered of relatively less importance in creating a sustainable environment.

This inventory correlates the TREE #'s with individual trees located on-site as mapped on the enclosed TREE MANAGEMENT PLAN. It further identifies the BOTANICAL NAME and a COMMON NAME for each tree and categorizes each tree into three broad TYPES; deciduous shade trees, evergreen shade trees & deciduous ornamental trees. It also evaluates each tree's CONDITION and VALUE as a park tree. Condition categories are 'excellent, good, fair or poor.' Value categories are 'high, medium and low.' Trees that are in excellent condition, have high value as a park tree and have exceptional dendroforms characteristic of the species grown in ideal conditions are also identified as 'specimens.' Each tree is also measured according to the American Standard for Nursery Stock. Diameters breast high (DBH) of large shade trees, height and spread of ornamental trees and where appropriate, numbers of trunks (canes) are noted. Finally, this inventory and evaluation recommends ACTION to be taken on each tree, whether they are to be saved, transplanted or removed.

Long-term benefits of all the characteristics of each tree are considered in recommending action to be taken. Therefore, some trees that rate 'good' condition may be recommended for removal based upon the quality of the species for intended use, ability to provide long-term benefits and factors other than condition. For example, Acer saccharinum (Silver Maple) trees are



Silver Maple



Silver Maple

structurally weak-wooded and have inherent weak crotch geometry in their dendroform. Therefore these trees are highly susceptible to cracking and falling in wind and ice storms. This propensity to fall increases as the trees mature and add mass to their crowns. Therefore, to more effectively manage risk to people, vehicles, features in the built environment, and to other trees, all Silver Maples are recommended for removal, regardless of their current condition.

The tree inventory and evaluation of the trees is presented in the following 2-page spreadsheet:

Hightower Building Demolition

TREE INVENTORY & EVALUATION

TREE #	BOTANICAL NAME	COMMON NAME	TYPE	CONDITION & VALUE	DBH/CALIPER HT./SPRD.	ACTION
1	Quercus nigra	Water Oak	DS	A/S/H	30"	S
2	Acer saccharinum	Silver Maple	DS	B/L	20"	R
3	Acer saccharinum	Silver Maple	DS	B/L	16"	R
4	Quercus nigra	Water Oak	DS	A/S/H	24"	S
5	Acer saccharinum	Silver Maple	DS	D/L	24"	R
6	Acer saccharinum	Silver Maple	DS	D/L	17"	R
7	Magnolia grandiflora	Southern Magnolia	ES	B/L	6"	R
8	Lagerstroemia indica	Crape Myrtle	DO	A/H	10' / 9'	T
9	Lagerstroemia indica	Crape Myrtle	DO	A/H	12' / 15'	T
10	Lagerstroemia indica	Crape Myrtle	DO	D/L	5' / 4'	R
11	Quercus nigra	Water Oak	DS	A/H	28"	S
12	Magnolia grandiflora	Southern Magnolia	ES	C/L	24"	R
13	Quercus nigra	Water Oak	DS	A/S/H	34"	S
14	Lagerstroemia indica	Crape Myrtle	DO	A/H	6"	T
15	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
16	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
17	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
18	Magnolia soulangeana	Saucer Magnolia	DO	A/S/H	22" cal.-24' / 21'	S
19	Acer rubrum	Red Maple	DS	A/H	3.5"	T
20	Lagerstroemia indica	Crape Myrtle	DO	A/S/H	5 cane-20' / 15'	T
21	Lagerstroemia indica	Crape Myrtle	DO	A/H	3-5 cane-12-14'/10-12'	T
22	Lagerstroemia indica	Crape Myrtle	DO	A/H	3-5 cane-12-14'/10-12'	T
23	Lagerstroemia indica	Crape Myrtle	DO	A/H	3-5 cane-12-14'/10-12'	T
24	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
25	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
26	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
27	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
28	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
29	Lagerstroemia indica Biloxi	Biloxi Crape Myrtle	DO	A/H	3-7 cane-18-20'/12-15'	T
30	Quercus nigra	Water Oak	DS	A/S/H	44"	S
31	Quercus nigra	Water Oak	DS	A/S/H	40"	S
32	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
33	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
34	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
35	Magnolia grandiflora	Southern Magnolia	ES	A/H	12 -24" cal. - 36' / 30'	S
36	Lagerstroemia indica	Crape Myrtle	DO	C/L	5-9 cane-10-15'/10-15'	R
37	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
38	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
39	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
40	Lagerstroemia indica	Crape Myrtle	DO	A/H	5-9 cane-10-15'/10-15'	T
41	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
42	Lagerstroemia indica	Crape Myrtle	DO	A/H	2 cane-10-15'/10-15'	T
43	Lagerstroemia indica	Crape Myrtle	DO	A/H	8-12 cane-10-15'/10-15'	T

TREE #	BOTANICAL NAME	COMMON NAME	TYPE	CONDITION & VALUE	DBH/CALIPER HT./SPRD.	ACTION
44	Lagerstroemia indica	Crape Myrtle	DO	A/H	5-9 cane-10-15'/10-15'	T
45	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
46	Lagerstroemia indica	Crape Myrtle	DO	A/H	5-9 cane-10-15'/10-15'	T
47	Lagerstroemia indica	Crape Myrtle	DO	D/L	5-9 cane-10-15'/10-15'	R
48	Lagerstroemia indica	Crape Myrtle	DO	A/H	5-9 cane-10-15'/10-15'	T
49	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
50	Lagerstroemia indica	Crape Myrtle	DO	B/M	5-9 cane-10-15'/10-15'	T
51	Lagerstroemia indica	Crape Myrtle	DO	C/L	5-9 cane-10-15'/10-15'	R
52	Acer rubrum	Red Maple	DS	D/L		R
53	Acer rubrum	Red Maple	DS	C/L		R
54	Acer saccharum 'Green Mt.'	Green Mt. Sugar Maple	DS	C/L		R
55	Acer saccharum 'Green Mt.'	Green Mt. Sugar Maple	DS	C/L		R
56	Acer saccharum 'Green Mt.'	Green Mt. Sugar Maple	DS	C/L		R
57	Acer rubrum	Red Maple	DS	C/L		R
58	Acer saccharum 'Green Mt.'	Green Mt. Sugar Maple	DS	D/L		R
59	Lagerstroemia indica	Crape Myrtle	DO	A/H	5-9 cane-10-15'/10-15'	T
60	Lagerstroemia indica	Crape Myrtle	DO	C/L	5-9 cane-10-15'/10-15'	R

TYPE CODE:
DS - DECIDUOUS SHADE
ES - EVERGREEN SHADE
DO - DECIDUOUS ORNAMENTAL

VALUE CODE:
H - HIGH
M - MEDIUM
L - LOW

CONDITION CODE:
A - EXCELLENT
B - GOOD
C - FAIR
D - POOR
S - SPECIMEN

ACTION CODE:
S - SAVE
T - TRANSPLANT
R - REMOVE

Tree locations in the spreadsheet inventory are shown on the illustration entitled HIGHTOWER BUILDING DEMOLITION / TREE MANAGEMENT PLAN on the following page.

2.3 Tree Summary & Conclusions
A total of 60 trees are inventoried in this Plan.

There are 14 trees worth saving, 6 are specimen water oak trees. Three of these trees measure 44", 40" & 34" diameter breast high (DBH) with 50'-70' crowns and are within 15 feet of the building.


Tree #30 - 44" DBH Water Oak


Tree #31 - 40" DBH Water Oak


Tree #13 - 34" DBH Water Oak

The other three trees measure 30", 30" & 28" DBH with 40'-60' crowns. They are within 30 feet of the building and are adjacent to the proposed Demolition Limit Line. Therefore are at risk of being destroyed.


Tree #1 - 30" DBH Water Oak


Tree #11 - 28" DBH Water Oak

Tree #4 - 30" DBH Water Oak

These six Water Oaks are magnificent 60-90 year old monarchs that add considerable value to the quality of life in this area of campus. They provide a stately presence, abundant shade and ecosystem services that cannot be replaced in a normal human lifetime. These six trees total a significant 238 caliper inches; nearly 20 feet of total diameter. The Water Oaks mitigate approximately 5,400,000 BTU's of heat and reduce temperature beneath their branches 10-15 degrees on a July day with a slight breeze. Transplanting these trees would involve a 2 year lead-time for horticultural preparation of the root system and the crown. Transplanting to nearby locations is estiamted at $1,000,000+. It is not likely that the Administration will choose to fund the transplanting 6 trees at this cost. Since these trees greatly benefit the quality of life in the heart of campus, every reasonable effort should be made to protect them from the adverse impacts of demolition.

Seven of the trees to be saved are Southern Magnolias that are large, healthy specimens.

Southern Magnolias

Tree #33, 32, 34 & 35 - Southern Magnolias

One tree to be saved is a Saucer Magnolia; one of the largest and best specimens of its kind that the author has seen in Georgia. It is truly a magnificent tree that makes its most dramatic display of pink and white tulip-like flowers in February; the first ornamental tree to announce the arrival of Spring. Its existence was successfully defended against the NBC Today Show team that wanted to remove it to film the 1996 Summer Olympic Games.

Tree #18
Saucer Magnolia

Tree #18 - Saucer Magnolia

These specimen trees may add significant environmental value to future Yellow Jacket Park; however, future design development is required to determine long-term value in this location. Due to the size and quality of these trees, due diligence in design should be given to make use of these trees where they are. If design dictates a better location elsewhere, they could be transplanted with one years advance preparation. Whether these trees are to be saved in their current location or transplanted, all necessary precautions should be taken to preserve these trees from adverse impacts of demolition.

There are 28 ornamental trees that are judged to be worthy of transplanting to other sites on campus if appropriate locations can be found where they will complement the existing landscape architecture. Tree #'s 24-29 are matched Biloxi Crape Myrtles.

The remaining 18 trees are not valuable enough to save due to inappropriate species, misshapen crowns, and other physiological reasons, therefore they are scheduled to be removed.

3.0 TRANSPLANTING

3.0 TRANSPLANTING

3.1 Analysis & Cost Estimate

There are 28 crape myrtle trees and one red maple tree that are worth transplanting to other sites on campus if appropriate locations can be found where they will complement the existing landscape architecture.

Tree # 24-29 - Biloxi Crape Myrtles

Tree #59 - Typical

Tree #44 - Typical

In addition, 7 Southern Magnolias and 1 Saucer Magnolia could be transplanted, but the cost would be more than other trees since they could not be moved by a 90" tree spade.

The cost of transplanting the 28 ornamentals can be accomplished at reasonable cost compared to the cost of replacing these trees. The size of these trees requires a 60 or 80-inch tree spade that can be rented for $800-1,200 per day. Two-four days rental should suffice to accomplish the transplanting. The cost of purchasing the ornamental trees at a Nursery and having them planted by a landscape contractor is estimated at $26,000+/-. Therefore, transplanting is far more cost effective than buying and planting new trees.

It is important to include a liability clause in the transplanting contract so that damages to the campus are covered under the contractor's liability insurance.

3.2 Potential Sites

Potential transplanting sites include the remaining streetscape around the NW housing area, the I75/85 corridor, and other in-fill areas of campus. In order to determine how many of the potential transplants can be incorporated into the existing campus landscape, representatives from Capital Planning, Facilities, POD/Landscape Services and Housing should conduct field staking prior to incorporating transplanting requirements into the Hightower demolition contract.

4.0 DEMOLTION SITE MANAGEMENT & METHODS

4.0 DEMOLITION SITE MANAGEMENT & METHODS

In order to save the trees that are to remain in place several tasks must be included in the Hightower building demolition contract. They are:

4.1 Tree Care

Arborguard, Inc., or a similar high quality professional arborist service should be retained to develop and implement a plan to protect the specimen trees to be saved, to monitor transplanting activities, and to provide tree care services during transplanting and after demolition. The tree care plan should have similar components to the recent Technology Square transplanting contract, including fertilization, watering, pruning, and disease control. In addition, it should include penalty clauses to the contractor to cover damage to trees to be saved like Arborguard specified in the Olympic tree management plans.

Trees to be removed should include removal of the stumps, except for tree #3 & 5 which are to be cut level with the ground surface only.

4.2 Demolition Limit Line Fencing & Tree Save Fencing

Demolition Limit Line Fencing is the line within which the demolition contractor must work. Only the arborist or the transplanting contractor may work outside this fence line in order to transplant, save or remove trees. This means that the west wall of Hightower must be pulled eastward to demolish. The location of this fence is illustrated on the enclosed plan entitled HIGHTOWER BUILDING DEMOLITION – TREE MANAGEMENT PLAN. The fence shall be an 8-foot high chain link fence with posts driven into the ground 3 feet minimum (not set in concrete footings).

Tree Save Fencing is to be installed to protect trees to be saved. Its location is also illustrated on the enclosed Plan. In some sections, the tree save fencing is the same as the demolition limit line fencing, in other sections it is separate. It is the same type of fence as the demolition limit line fencing.

Both the demolition limit line fencing and the tree save fencing shall have a 6-foot wide international orange web fabric attached, and where the fence is up-hill of trees to be saved, a 4-foot wide silt fence is to be attached to the fence on the up-hill side with 6 inches buried in the ground.

Locations of both fences must be field located by GIT and the Contractor. All fencing must be installed and approved by GIT before any building demolition occurs.

4.3 Drainage

Storm water drainage from the site must be managed by the contractor to prevent siltation within the dripline of trees to be saved. Filter fabric, siltation ponds and other devices must be installed and maintained in operating condition until site restoration is complete.

4.4 Below-Grade Demolition Requirements

Demolition of the Hightower building presents a serious risk to, and ironically at the same time, an opportunity for, three specimen trees to be saved. Specimen trees #13, 31 & 32 are within 15+/- feet of Hightower. As a consequence, approximately 25% of the these tree's root system development have been severely restricted by the building foundation wall. Demolition of the foundation wall and its footing may cause severe physical damage to the tree #31 & 32 root systems and may also undermine the soil beneath the trees. This action may cause soil-bearing structural failure, which, with an encouraging wind, could cause the trees to fall putting life and property at risk.

One opportunity that the Hightower building demolition presents is that this risk condition can be significantly improved if demolition is executed according to this Plan. Followed carefully, the result will be increased root zone for expansion of the trees' root systems. An expanded root system will produce healthier and more structurally stable trees.

To achieve these goals, it is required that demolition of the building near these trees be accomplished by pulling the building eastward, away from the trees. Also, the foundation wall must be saw-cut horizontally 4 feet below existing grade and the top section removed. The portion of the foundation wall and footing below the 4-foot level can remain in place. Finally, it is critical that the basement floor slab be broken up to restore the ground water hydrologic cycle.

4.5 Construction Access Routes

The construction access route for the demolition activity is to be restricted to either Atlantic Drive or 4th Street as determined by the GT Facilities Office. The access route should be chosen based upon minimizing impact on Georgia Tech's academic and research missions and after considering other construction activity schedules and access needs.

5.0 SITE RESTORATION PLAN

5.0 SITE RESTORATION PLAN

There are two phases of site restoration required; interim and permanent.

The interim site restoration includes backfilling the site with friable, clean mineral soil compacted to 80% standard proctor compaction to within 3 feet of the finished grade. The final 3 feet of backfill should be back filled with friable top soil compacted to 80% standard proctor compaction. The site should be graded at 2-4% to the existing drop inlet in this depression contour area of campus. The site should be seeded with annual rye at 12#/1,000sf from September-March, or with common Bermuda at 2#/1,000sf from April-August.

The permanent site restoration will be in the form of Yellow Jacket Park (YJP). Georgia Tech currently has a preliminary design for YJP. Additional design development needs to occur in concert with the design of the Innovative Learning Resource Center. A consultant will be commissioned to develop this design. The design should accommodate the ANAK Society's plans to install swings in this part of the campus. The ANAK plans are being developed with the Capital Planning Office as of this writing.

6.0 SCHEDULE CONSIDERATIONS

6.0 SCHEDULE CONSIDERATIONS:

The best planting season to insure survivability of most shade trees is from November through February depending on seasonal weather variations. However, there are some important variations. Specifically, maples transplant best from November-January, magnolias transplant best in June-July, and oaks, zelkovas, hornbeams, tulip poplar, and sweetgums transplant best in February.

The current Hightower demolition is scheduled for the first quarter of 2002. Transplanting of most of this sites' trees is best accomplished from November through February. However, successful planting of these relatively hardy species can be accomplished almost any season of the year, providing adequate maintenance is supplied. Summer transplanting of most species will increase maintenance cost significantly.

If the future Yellow Jacket Park design calls for the Southern and Saucer Magnolias to be transplanted, they should be horticulturally prepared one year prior to transplanting.

7.0 PUBLIC RELATIONS PLAN

7.0 PUBLIC RELATIONS PLAN:

Tree removal has been a very sensitive issue in the Tech community.

The Hightower site has an unusual number of large specimen trees that Tech family members have enjoyed for generations. The central campus location of this project gives it a high profile in people's consciousness. Therefore, a well strategized and presented Public Relations Plan is essential.

Public announcements should not only inform the community of the Hightower building demolition, but should empahsize plans to improve this section of campus with the future construction of the Innovative Learning Resource Center and Yellow Jacket Park. Announcements should also highlight plans to care for the environmental resources of the site for long-term benefit and the sustainability principle that the Administration is following in implementing the Campus Master Plan. These factors combined will result in a constantly improving quality of campus life as the Camus Master Plan is implemented. The article announcing this project should be written by the Communication Office writers and reviewed by Captial Planning & Facilities.

Announcements should be made in the Technique, The Whistle, Tech Topics and posted on the Georgia Tech website.

END OF REPORT