

City of Norcross
Department of Public Works, Utilities & Parks

Request for Proposal (DPW-11-007)
City of Norcross
Department of Public Works, Utilities and Parks
Annual Parks Maintenance

Purpose of this Request for Proposal (RFP)

The City of Norcross, located in Gwinnett County, is proposing to retain the services of a licensed firm to perform regular maintenance on and in all existing parks and grounds within the City limits. All sealed bids must be submitted by Friday, November 18, 2011 at 11:00a.m to the address below. Please submit two copies of your bid package to:

Craig Mims, Director
DPW-11-007
Department of Public Works, Utilities and Parks
345 Lively Street
Norcross, GA 30071

All bidders are required to attend pre-bid meeting on Wednesday, November 2, 2011 @ 10:00 am, City of Norcross Cultural Arts and Community Center, 10 College Street, Norcross, GA 30071. Please request bidding documents/specifications/information and submit all questions via **e-mail only**. Submit questions/requests to Mary Beth Bender via e-mail at mbender@norcrossga.net before Wednesday, November 9, 2011. Itemized proposal required.

Project Description

The City of Norcross park maintenance will consist of: see Appendix A of this RFP packet for full description/scope of required project. This is an annual contract to be bid annually. The bids must include full pricing based on the provided maintenance specifications including all “green” requirements. A second bid price is also required subtracting the “green” requirements within the maintenance specifications, based on industry standards of park maintenance. **Both require itemized bids for each section.**

All work must be conducted according to industry standards.

Response assessment based upon: Qualifications, experience, references, thoroughness of response and cost.

The City of Norcross reserves the right to reject any or all bids, to waive technicalities and to make an award as deemed in its best interest. We appreciate your interest in the City of Norcross.

The work to be bid shall consist of furnishing all materials, labor, tools, equipment and services required for annual park maintenance for the City of Norcross Public Works, Utilities and Parks.

Bid Bond

1. All bidders are required to submit a bid bond or a certified check made payable to the City of Norcross in the amount of five percent (5%) of the total bid amount.
2. Performance Bond: Amount of bond should be 100% of contract amount.
3. Payment, labor and materials bond. Amount of the bond should be 100% of the contract amount.
4. Bonding company must be authorized to do business by the Georgia Secretary of State and by the Georgia Insurance Department.
5. An original/certified copy of the bonding company's certificate of authority must be attached to the bond.
6. Bonding company must have a minimum AM best rating of A-6 or higher.
7. Bonding company must be listed in the Department of Treasury's Publication of Companies, holding certificates of authority as acceptable surety on federal bonds and as acceptable reinsuring companies.

Successful bidder must provide bonding as noted, no exceptions. All companies submitting bid documents must provide an e-mail address and office phone number for contact.

APPENDIX A

NORCROSS LANDSCAPE MAINTENANCE SPECIFICATION

NORCROSS LANDSCAPE MAINTENANCE SPECIFICATION

2011



Prepared by:
City of Norcross Public Works, Utilities
and
Parks & Recreation Department

Norcross Landscape Maintenance Specification

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Norcross Landscape Maintenance Specification

Section 1: GENERAL INFORMATION

1.1. Landscape Maintenance Contract

- A. Work of the contract consists of the maintenance and repair of City of Norcross (hereinafter referred to as “the City”) owned landscaping on City property as assigned by the contract. The work, as covered by the contract, specifically includes all work represented by the Norcross Landscape Maintenance Specification (hereinafter referred to as “Specification”) and subsequent work as authorized by directly related signed work orders.
- B. Any work required within the assigned area of work and not specifically described in the Specification needs written approval by the City Director of Public Works or designee (hereinafter referred to as “Representative”) prior to commencement of work.
- C. This Specification is made part of the contract for landscape maintenance services.
- D. Compliance with the requirements set forth in the Specification is mandatory for the Landscape Maintenance Contractor (hereinafter known as “Contractor”). If any part of the Specification is declared invalid for any reason, such invalidation shall apply only to the specific part declared invalid; it shall not nullify any of the requirements of any other part. In the event of question over applicability of any requirement, the requirement shall be assumed to apply, unless the Representative provides a written clarification stating that it does not.
- E. Cancellation: The landscape maintenance contract is subject to cancellation by either party, due to the failure of either party to meet the requirements of the Specification or contract, followed by further failure by either party to rectify the situation(s) quickly and reasonably, after having had an issue brought to their attention.
- F. In the event that the performance of the Contractor should fail to satisfy the expectations and standards set forth in the Specification as interpreted by the Representative, the City reserves the right to obtain others to perform such duties and deduct all costs from the Contractor’s payments.
- G. The landscape maintenance contract is subject to 30 day written notice of cancellation by the City and not less than 60 days by the Contractor.
- H. All modifications to the Specification must be in writing.
- I. The Contractor agrees that he/she shall assume sole and complete responsibility for his/her work, including safety of all persons and property; and that the Contractor shall defend, indemnify, and hold the City and tenants harmless from any and all liability, real or alleged, in connection with the Contractor’s performance of work on this project, excepting for liability arising from the sole negligence of the City or tenants.

1.2. Project Goals

- A. It is the intention of the City to receive the highest quality of service compatible with standard practice and to provide an attractive, colorful, and resource-efficient landscape for the benefit of the residents of the City.
- B. It is the intention of the City to contract with one general landscape contractor who will provide landscape maintenance services for the City’s properties used or seen daily by the general public. These properties include parks, facilities and general land areas.
- C. The Specification practices shall be employed to reduce maintenance costs, reduce maintenance labor, minimize waste, protect air and water quality, conserve energy and water, and protect natural ecosystems.

1.3. General Scope of Work

- A. The Contractor shall provide at his/her own risk all supervision, labor, materials, equipment, tools, transportation, hauling, dumping, supplies, insurance and services to maintain in a superior condition all landscape areas, playgrounds, irrigation, and drainage systems, and other related work outlined in the Specification and as agreed in writing. All work shall be performed in a workmanlike manner, using quality equipment and materials, and the Specification methods.
- B. The Contractor shall provide regular, weekly maintenance and inspection services as outlined in the Specification and the Weekly and Triannual Checklists for all of the project sites per the set schedule.

- C. The Contractor shall look for and note problems or potential problems that need to be addressed.
- D. The Contractor shall make minor replacements and repairs to the landscape facilities as part of the required weekly maintenance work. Major items needing replacement or repair shall be reported to the Representative in accordance with the Specification. A minor item would be something that takes less than 15 minutes to repair by skilled workmen, using minimal replacement parts. Some specific guidelines for determining if an item is minor or major are given in the sections pertaining to each item. The Contractor shall be available to perform additional work related to landscape maintenance as may be authorized in writing by the Representative. Such work shall be non-minor items relating to landscape care, which are not a part of the normal maintenance work as outlined in the Specification.
- E. Any facilities or property damaged or destroyed as a result of the Contractor's operations at the site shall be repaired or replaced at the Contractor's expense.
- F. The Contractor must perform the work as specified herein to the satisfaction of the Representative. The Representative shall make inspections from time to time to determine the Contractor's conformity with the Specification and the adequacy of the work being performed. The City has the authority to suspend the work wholly or in part, for such period as the City deems necessary due to unsuitable weather or other conditions. The Contractor shall be available for consultation with the Representative as needed.

1.4. Site Description

- A. Work to be done is located within the city limits of Norcross, as defined in Appendix I. These areas are owned or supervised by the City, with the Director of Public Works and Superintendent Parks and Recreation as Representatives. The Contractor MUST verify area sizes and conditions on his/her own.
- B. Sites are to be walked by the Contractor and Representative to identify any deficiencies in site conditions that need to be addressed before the start of the maintenance contract, unless otherwise approved by the Representative. Conditions to be noted include, but are not limited to, existing broken irrigation, shrubs or trees not to specified maintenance levels, turf conditions not to specified maintenance levels, pest damage, safety issues or concerns, other issues.

1.5. Limits of Work

Specified work does not include:

- Any areas outside and not adjacent to those specifically enumerated in the locations above unless otherwise agreed in writing
- The inside of any buildings or facilities
- Any private property not belonging to the City, unless specifically directed by the Representative to include as part of additional work
- Replacement or repair of any traffic control signs or other similar devices, except where specifically damaged by the Contractor or his/her employees
- Any buildings or structures within the locations being maintained except where specifically damaged by the Contractor or his/her employees
- Repair of utilities, furnishings, hardscapes, curbs, roads, or sidewalks, except where specifically damaged by the Contractor or his/her employees

1.6. Quality Assurance

- A. Reference standards – conform to recommendations, specifications and standards of the following:
 - 1. Standardized Plant Names, 1942 Edition, American Joint Committee on Horticultural Nomenclature.
 - 2. American Standard for Nursery Stock, 1980 Edition, American Association of Nurserymen.
- B. The selection of all materials and the execution of all operations required under the Specification and drawings shall be subject to the approval of the Representative. The Representative and the Contractor shall make site inspections **three times per year** (March 1, June 1, and October 1) to determine any work which, in the opinion of the Representative, does not meet the requirements of the Specification. All rejected work shall be corrected promptly by the Contractor. In addition to the triannual site inspections, the Contractor shall also submit the weekly inspection reports (see Appendix II) to the Representative with the billing invoices.

- C. The City shall be assured of a complete maintenance program for all trees, plants, lawn, and mulch areas such that the quality of all plantings and lawns shall not deteriorate, but shall obtain vitality and healthy new growth for the duration of the contract.
- D. The City shall be assured of a complete maintenance program for the site landscape irrigation system such that the performance of the system shall not deteriorate below the designed limits of operation and/or the manufacturer's performance specifications.
- E. The Contractor is hereby made aware that the City anticipates that the landscape maintenance at the sites shall be of the very highest quality possible. All work to be performed, such as pruning, mowing, fertilizing, watering, weeding, irrigation maintenance, edging, spraying, policing, plant installation, over-seeding, aerating, and mulching shall be strictly managed, executed, and performed by experienced personnel.

1.7. Supplemental Documents

- A. Site plans – Where available, an irrigation plan identifying locations of meters, valves, controllers, and types of irrigation equipment specified for the site shall be provided.
- B. Georgia DNR Rules for Outdoor Watering 391-3-30 are available at http://www.gaepd.org/Files_PDF/rules/rules_exist/391-3-30.pdf.

1.8. Contractor Requirements

- A. Qualifications - All work shall be performed by experienced personnel supervised by the Contractor. The Contractor must provide management and technical supervision as required to implement the work. The Contractor shall be responsible for the skills, methods and actions of his/her employees and subcontractors and for all work done.
- B. The Contractor must have a valid Business license.
- C. The Contractor must have at least one employee assigned to the project who is a 'Georgia Certified Landscape Professional'.
- D. The Contractor must have assigned to the project at least one employee or subcontractor possessing a Georgia Department of Agriculture Pesticide Division's Commercial Applicator License and a Pesticide Contractor License for the control of weeds, plant diseases and other pests.
- E. The Contractor must have assigned to the project at least one employee possessing a GSWCC Level 1B – Advanced Fundamentals Certification for Erosion Control.
- F. It is preferred that the Contractor have assigned to the project at least one employee who possesses a GSWCC – Level II Certification.
- G. Contractor must have assigned to the project at least one employee or subcontractor who is a Certified Irrigation Contractor (Irrigation Association).
- H. It is preferred that the Contractor have assigned to the project at least one employee who is a Certified Arborist or Certified Tree Worker (International Society of Arboriculture).
- I. Contractor must have assigned to the project at least one employee or subcontractor who has experience or training in Integrated Pest Management (IPM) techniques.
- J. It is preferred that the Contractor have assigned to the project at least one employee who has experience or training in Best Management Practices for Landscape Water Conservation, sponsored and managed by The University of Georgia Cooperative Extension Office.

1.9. Insurance

The Contractor shall provide the Representative an active policy with current Certificates of Insurance.

- Workers' Compensation Insurance
 - To insure the statutory limits as established by the General Assembly of the State of Georgia are met, the workers' compensation policy must include Coverage B Employer's Minimum Liability limits of:
 - Bodily Injury by Accident – \$100,000 each accident
 - Bodily Injury by Disease – \$100,000 policy limit
 - Bodily Injury by Disease – \$100,000 each employee
 - Excess liability coverage may be used in combination with the base policy to obtain these limits. The Contractor shall require all subcontractors performing work under this contract to obtain an insurance certificate showing proof of Workers' Compensation Coverage.

NOTE: A self-insurer MUST submit a certificate from the Georgia Board of Workers' Compensation stating the Contractor qualifies to pay its own workers' compensation claims.

- Commercial General Liability Insurance and Vehicle Liability Insurance
The Contractor shall procure and maintain Commercial General Liability and Vehicle Liability Insurance policies, including products and completed operations liability, and contractual liability coverage covering bodily injury, property damage liability, vehicle liability, and personal injury. The policy or policies must be on an "occurrence" basis ("Claims Made" coverage is not acceptable), insuring personal injury and property damage against the hazards of Premises and Operations, Products and Completed Operations, Independent Contractor's and Contractual Liability (specifically covering the indemnity) with minimum limits of:

\$1,000,000 per person

\$1,000,000 per vehicle

The Commercial General Liability and Vehicle Liability policies purchased by the Contractor must be issued by a company authorized to conduct business in the State of Georgia or by a company acceptable to the State if the company is an alien insurer. Excess liability coverage may be used in combination with the base policy to obtain the limits.

Insurance policies meeting these requirements shall remain in effect for the duration of the work. No payments to the Contractor will be authorized unless current Certificates of Insurance have been filed with the Representative.

1.10. Compliance with Laws, Ordinances and Policies

- A. All services rendered shall be provided in accordance with all ordinances, resolutions, statutes, rules, laws and regulations of the City, and any Federal, State, or local government having jurisdiction in effect at the time service is provided.
- B. The Contractor shall adhere to the Georgia Environmental Protection Division's Chapter 391-3-30 Rules Governing Outdoor Water Usage, http://www.gaepd.org/Files_PDF/rules/rules_exist/391-3-30.pdf.
- C. The Contractor shall adhere to the City's Tree Preservation and Protection Ordinance.
- D. The Contractor shall adhere to State and local storm water pollution prevention requirements for the site and any storm water management and erosion control policies.
- E. Any requirement of the Specification which conflicts with or is in violation of any government rule, ordinance, regulation, etc. shall be void. The Contractor shall notify the Representative immediately of any such requirement found in the Specification.
- F. The Contractor shall, throughout the course of this work, comply with all rules, ordinances, regulations, etc. set forth by agencies having jurisdiction, which apply to the work site, the Contractor, and/or his/her employees.

1.11. General Work Requirements

- A. Protection of existing property
 1. The Contractor shall protect all existing plant materials, site improvements, structures, facilities, utilities, and natural areas from damage, both above and below ground. Any damages shall be reported immediately to the Representative. Any damages caused by the Contractor shall be corrected and/or paid for by the Contractor at no cost to the City.
 2. The Contractor shall protect property from accidental chemical, fuel, oil or other contaminate spills.
 3. The Contractor shall not wash or blow soil, chemicals, litter, mulch, soil amendments or other materials into storm drains or streets.
 4. The Contractor shall replace at his/her own expense, any lawn area or other plant material requiring replacement due to negligence on his/her part. The Contractor is required to replace damaged areas considered strictly as normal maintenance conditions in accordance with accepted practice. The Contractor is not typically required to replace plants or entire lawns due to conditions totally beyond his/her control.
- B. Contractor's personnel and supervision
 1. All Contractors' employees assigned to the work site must be able to demonstrate they are United States citizens or have a legal right to work in the United States.

2. The Contractor shall assign, at a minimum, a qualified, trained 'crew leader' to oversee work performed at the work site and to act as work or task manager of the employees. This crew leader must inspect the work and provide direction to the Contractor's workers and/or subcontractors. This crew leader shall speak, write, read and understand English and be capable of communicating any deficiency that needs correcting.
 3. The Contractor's staff is to be personable, courteous, and presentable at all times. In areas where a decision is required, the Contractor's staff shall seek guidance from the Representative.
- C. Subcontracting
1. A portion of the work covered by the Specification may be subcontracted with prior approval of the Representative. The Contractor shall supervise subcontractors and guarantee work quality.
 2. All anticipated subcontractors and their qualifications must be submitted at the time of contract approval. All subcontractors assigned to the site must demonstrate they are United States citizens or have a legal right to work in the United States.
 3. All subcontractors are subject to follow and maintain the terms of the Specification.
- D. Work performance
1. The Contractor is responsible for:
 - Thoroughly investigating and considering the scope of services to be performed
 - Carefully considering how the services should be performed
 - Fully understanding the facilities, difficulties, and restrictions attending to the performance of the services required
 2. It is the Contractor's responsibility to inspect carefully the work sites prior to submitting the bid to become familiar with the particular concerns attributed to each individual site. No adjustments in payment or other contract provisions will be made due to failure to inspect sites and otherwise become informed of the particular characteristics of the work sites.
 3. Should the Contractor discover any latent or unforeseeable conditions, which will materially affect the performance of services, the Contractor shall immediately inform the Representative of such fact and shall not proceed, except at the Contractor's risk, until written instructions are received from the Representative.
 4. Plants, irrigation systems, etc., damaged by traffic accidents or vandalism, shall be reported immediately to the Representative.
 5. Within 30 days of the starting date for work under this contract, the Contractor shall make a thorough examination of the current conditions at the site (see Section 2.2.B).
 6. The Contractor shall make a list of all landscape items at the site that he/she believes are broken, missing, not healthy, or otherwise not in compliance with the Specification. A copy of this list, along with an additional itemized quote for correcting each item, shall be given to the Representative.
 7. Upon confirmation of each item, the Representative shall either give the Contractor written authorization to make the correction, or a written release from responsibility for the item.
 8. By the act of submitting a bid on this work, the Contractor shall be considered to have examined both the landscape and the Specification, and to have thoroughly familiarized himself/herself with the scope of the required work.
 9. By the act of submitting a bid on this work the Contractor shall be considered to have thoroughly read and examined the Specification and forms provided herein, including the requirements for regular inspections and triannual job walks. Further it shall mean that the Contractor understands that inspections and job walks will include evaluations and requirements to make revisions to the level and/or quality of services being provided in order to meet the terms of this contract. The Contractor's failure to make reasonable and timely corrections when requested shall constitute a breach of contract.
- E. Loss prevention: The City may take any reasonable action necessary to control damage or protect the health, safety, and welfare of the public in the event of problems involving the landscape. Such action on the part of the City shall not relieve the Contractor of any responsibilities related to the problem

1.12. Safety

- A. The Contractor shall at all times exercise necessary precautions to provide for the protection of the public and employees.
- B. Any unsafe conditions must be reported immediately to the Representative or designee. The Contractor must not block any roadway at any time without prior authorization by the Representative.
- C. Traffic lane closure - landscape maintenance services conducted in the roadway or center medians must be performed in a safe manner. The Contractor is required to perform traffic diverting lane closures prior to beginning any trimming operations in the center median. Litter pickup does not require a lane closure. All lane closure activities must comply with GDOT standard guidelines, and follow notification requirements of the City, Police, and Fire Departments.
- D. The Contractor is responsible for keeping equipment in safe working order and to monitor the safe use of the equipment on site.
- E. Do not use blowers around moving vehicles to avoid blowing debris into windows, etc.
- F. Proper training in the safe and proper operation of vehicles, mowers and equipment used is solely the responsibility of the Contractor.
- G. The Contractor's attention is directed to the fact that there are active utilities located within the limits of work. Before commencing any work required under the Specification, he/she shall find the location of all utilities, subsurface drainage, and underground construction and take proper precautions not to disturb or damage any subsurface improvements. The Contractor is responsible for all repairs to damaged utilities resulting from the work covered by the Specification without claims against the City for additional cost.
- H. Chemical applications
The Specification emphasizes Integrated Pest Management (IPM) practices to control pests and diseases in the landscape. IPM uses cultural, mechanical, physical, and biological control methods before using pesticides. Chemical controls are applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control is applied.
 - 1. Contractor shall apply all chemicals in a safe manner and according to label instructions and Federal, State, and local requirements.
 - 2. A Commercial Applicator License and a Pesticide Contractor's license are required by the Contractor/subcontractor for chemical applications.
 - 3. The Contractor/subcontractor shall mix and apply chemicals to protect against accidental spills and drift to non-target areas, and to insure safety of the applicator. Any spilled chemicals, as well as contaminated soil, water, and/or landscape materials must be removed from the site and disposed of in accordance with Federal, State and local requirements.
 - 4. The Contractor/subcontractor shall maintain applicator's licenses and records of applications as required by the State.
 - 5. A Chemical Work Report shall be completed for each chemical application. The Contractor is responsible for submitting the reports to the Representative. Copies are to be saved on file by the Contractor/subcontractor as part of the Contractor's triannual report.
 - 6. No part of this work shall be performed or installed in any location or manner which may endanger the health, safety, or welfare of the public now or in the future.

1.13. Contact Person – Communications

- A. The Contractor shall assign a qualified, trained supervisor to oversee work performed at the work site and to act as the Contractor's liaison with the Representative. This supervisor must inspect the site and provide direction to the Contractor's workers and/or subcontractors. This supervisor shall speak, write, read and understand English and be capable of writing schedules, triannual reports noting any deficiency that needs correcting and major projects for the coming trimester.
- B. The supervisor shall be a person in the employ of the Contractor who is familiar with, and regularly updated on, all the Contractor's activities at the site. The supervisor shall personally perform regular reviews of the Contractor's work at the site.

- C. The Contractor shall provide the Representative a personal mobile phone number where by the supervisor can be reached at any time between 8am and 6pm during the typical work week, except when he/she may be in a meeting or otherwise indisposed.
- D. The Contractor shall provide the Representative with a phone number where a message can be left for the Contractor and supervisor 24 hours a day, 7 days a week. An answering machine connected to the Contractor's normal phone line is an acceptable method of meeting this requirement. The Contractor shall check for messages left at this phone number every 24 hours or less.
- E. Regular communication between the Contractor and the Representative is encouraged. The Contractor is encouraged to ask questions, rather than make assumptions. As the landscape matures, some of the maintenance procedures will be eliminated and others may have to be added. For example, as the shrubs mature they will require less fertilization. Regular communication will eliminate most surprises to the City of changing maintenance costs, which will vary as the landscape grows.
- F. The Contractor shall instruct staff to accept work instructions **only** from Contractor's supervisor. The Contractor's staff is never to accept work instructions from residents, business owners or staff of the City other than the Representative. The Contractor shall be held liable for any unauthorized work.

1.14. Check Lists and Inspections

- A. The WEEKLY LANDSCAPE MAINTENANCE CHECKLIST is made a part of this specification as if repeated in full here.
- B. The TRIANNUAL LANDSCAPE INSPECTION CARD is made a part of this specification as if repeated in full here.
- C. The Contractor's supervisor shall conduct weekly site inspections to evaluate the work and complete the weekly checklist. Any issues or items completed that are not on the checklist shall be noted on the back of the checklist. The checklist shall be dated and contain the name and signature of the supervisor. The supervisor shall submit the weekly checklists with the Contractor's billing statement for that month's work.
- D. The Contractor's supervisor shall conduct triannual (March 1, June 1, and October 1) progress briefings with the Representative. These meetings are to be held in conjunction with the triannual job walks. The supervisor shall be prepared to discuss issues and concerns and respond to questions. The supervisor shall provide documentation of storm water and irrigation inspections, IPM monitoring, soil and pest management treatments and other chemical applications
- E. The Contractor and/or the Contractor's supervisor shall meet triannually with the Representative to conduct a job walk and site inspection to evaluate the work. A punch list shall be generated for items requiring attention. The Contractor shall be responsible for completing and reporting on correction of items on the punch list.
- F. At any time during work or any inspection that conditions are found, including but not limited to, pests, disease, and damages that are beyond the scope of the Contractor's responsibility, they shall immediately be brought to the attention of the Representative.
- G. The Representative may at any time make unannounced and unscheduled inspections to insure that complete and continuous maintenance is fulfilled and verify reported work. In addition, the City may obtain the services of a specialist (arborist, urban forester, landscape architect, etc) to inspect plantings and make recommendations for improvements in the maintenance program.

1.15. Hours, Schedules and Meetings

- A. Hours and schedules
 - 1. The Contractor shall conduct all operations during the hours of 8:00 a.m. to 6:00 p.m. Monday through Friday, unless otherwise approved by the Representative. The Contractor may not work on any Federal, State, or local holidays. Do not use blowers prior to 8:00 A.M. or after 6:00 P.M. or at any other hours restricted by law.
 - 2. The Contractor must perform all necessary work detailed in the Specification without unnecessarily interfering with normal operations.
 - 3. Any non-emergency work that may be deemed hazardous or disruptive (i.e., chemical spraying, tree pruning, etc.) shall be scheduled at least one (1) week in advance with the

Representative. For emergency work, the Contractor must obtain written approval from the representative prior to commencing work.

4. The City reserves the right to change schedules for special events or conflicts with adjacent property owners/tenants with one (1) week advance notice.
 5. Within 10 days after the Notice to Proceed is issued, the Contractor is responsible for submitting a written report outlining (see also Section 2.2):
 - Identified deficient or pre-existing conditions and proposal to repair these conditions, including costs
 - Proposed watering schedule including days, times, and length of cycle (i.e., watering frequency), areas covered by stations, and locations of clocks
 - A schedule for performing the landscape services outlined in the Specification, including the days the Contractor will work at each complex and any monthly or annual operations required by the Specification.
- B. Meetings
1. The Representative shall schedule and administer a kick-off meeting prior to start of the maintenance contract work. The Contractor shall schedule and administer triannual progress briefings and triannual job walks (inspections). Representatives of the Contractor, subcontractors, and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
 2. Usual attendees:
 - City Representative
 - Contractor and/or supervisor
 - Contractor's subcontractors as appropriate
 - Others as appropriate
 3. Kick-off meeting
 - a. Meeting shall include visits to each site where the Contractor is authorized to work.
 - b. Typical agenda:
 - Discussion of what is to be done and by whom
 - Work schedule of activities
 - Procedures for inspection and approval of work
 - Procedure for approval of extra work and emergency work
 - c. The Contractor shall submit to the Representative for review and acceptance the annual projected schedule(s) of activities for all sites in the Specification:
 - Intended mow days
 - Debris/trash inspection(s) and removal
 - Irrigation inspections
 - Fertilization schedules
 - All other seasonal and related work schedules
 - d. The Representative shall provide a schedule of annual special events to the Contractor for use in scheduling work activities.
 4. Triannual Progress Briefing and Job Walk (Inspection)
 - a. Contractor shall hold triannual progress briefings and site walks with key City staff and consultants. The intent of the walks is to ensure that City staff and other stakeholders get "eyes on the ground" and that there is a clear understanding of issues and areas needing attention. Much detail can be lost over the telephone and/or at a distance. Placing a group of stakeholders in the field forces everyone to acknowledge the real issues. Having more than one person conduct the inspection promotes objectivity and ensures a more comprehensive evaluation of conditions. Continuity is important; the same staff and stakeholders should conduct the inspection each time.
The job walk should involve a thorough inspection using the Triannual Evaluation form (Appendix III). It provides a score from 1 to 5 for each area of work, 1 being the lowest score and 5 being the highest.
 - b. Typical agenda:
 - Review of work done since last meeting/job walk
 - Review of extra work or special projects requested since last meeting/job walk
 - Review of upcoming scheduled work

- Review of any scheduled seasonal work
 - Review upcoming special events schedule and impact on work schedules
 - Problems which impede or may impede scheduled or requested work
 - Identify Contractor services needing improvement and methods to improve service
 - Any deductions the City has made or plans to make to monthly billing
 - Walk of all job sites, noting general and specific conditions that need attention
- c. Contractor shall:
- Review work performed since last meeting
 - Have revised monthly schedule(s) of all future work
 - Notify the Representative of any changes in work schedules or contact information
 - Notify the Representative of any issues with the specified work

1.16. Billing

- A. Weekly Checklists for the previous month shall be submitted with payment requests/invoices and must include the following information:
- Company name
 - Supervisor or Crew Leader completing checklist
 - Week ending date
 - Date sheet is submitted to City of Norcross
 - A place for the Representative to acknowledge receipt
- B. Receipts as proof of purchase for fertilizers and pesticides shall be submitted with monthly payment requests/invoices for reimbursement. **Fertilizers and pesticides are applied on a prescriptive basis only, not on a prescheduled basis** (see Sections 2.3.H.4 and 2.5.B.3).
- C. All checklists submitted with payment invoices must be approved by the Representative; sign-off of checklists with missing information is at the Representative's discretion. Any checklists without the Representative's approval will be subject to City discretion for possible non-payment.
- D. Unacceptable work
1. Any work deemed unacceptable will be noted on submitted checklists and will be corrected by the Contractor at the Contractor's expense before being signed off by the Representative as acceptable for payment by the City.
 2. The Contractor shall be given additional time at the Representative's discretion to correct deficient work.
 3. No unacceptable work shall be billed to the City nor paid for by the City.
- E. Progress payment
- Invoices shall be submitted no more than one time per month as stated in the contract. Payment for work done without approved checklists or without written approval by the Representative is at the City's discretion.

1.17. Additional Work and Emergency Work

- A. Additional work – New and unforeseen work will be classified as additional work when determined by the Representative that such work is not covered by the Specification. Upon notification that additional work will be required, the Contractor shall submit an itemized, written cost proposal for such work to the Representative. The City shall retain the right to reject such cost proposal and perform the additional work with City work force or other contractors. Should the proposal be acceptable to the City, the Contractor shall be advised in writing, and upon receipt of such written notification, shall begin the work within five (5) working days or as agreed to between the Contractor and the Representative.
1. The Contractor shall do such additional work in accordance with the agreement for the additional work and within the provisions of the Specification and shall furnish all labor, materials and equipment. Payment for additional work performed shall be as agreed to by Contractor and the City and as bid.
 2. All requests for work that will require additional payment must be in writing. The Contractor may not start work until the request for additional work has been approved in writing by the Representative. Failure to obtain advance approval before starting the work may result in non-payment or delays in processing payment.

3. No additional payments will be made for herbicide or fertilizer applications. The cost of all regular weed control and typical annual fertilization work shall be included in the contract price for landscape maintenance.
- B. Emergency work
 1. The Contractor shall provide office, pager, mobile and home phone numbers of the employee responsible for emergencies; said employee shall be fluent in English.
 2. City shall provide the Contractor with emergency numbers for the Representative and emergency personnel; said employees shall be fluent in English.
 3. The Contractor shall respond to the following categories as noted:
 - Emergency – respond within four (4) hours
 - Urgent – respond same calendar day
 - Regular – respond within three (3) calendar days

If the Contractor fails to respond within the appropriate time frame, City may charge Contractor for time and materials to perform the repair performed by others, including City maintenance staff.
 4. Emergency repairs may be made without authorization when immediate repairs are necessary to protect the health, safety, or welfare of the public, or immediate repairs are needed to prevent additional property damage. In these situations, make immediate repairs as needed to protect the public or stabilize the situation and immediately notify the Representative. Additional payment for the work will be negotiated with the Contractor by the Representative.

1.18. Uniforms, Appearances, Advertisements and Solicitations

- A. Uniforms and appearances for employees working within city limits
 1. The Contractor's staff are to wear clothing properly identifying them as contractors with the Contractor's name or logo clearly visible at all times when working at all locations. Shirts and pants are to be maintained in a neat and presentable condition.
 2. The Contractor's employees are to wear clothing, eye protection, ear protection and proper shoes or boots that meet Federal, State, local, or OSHA regulations pertaining to the type of work being performed.
 3. The Contractor's employees are to be dressed in a manner that would not be found offensive to the general public that Contractor's employees are working around. Torn, cut-off shirts or pants are never acceptable. At no time shall any employees work without their shirts on or any other typically prudent clothing.
 4. At no time shall any uniform give the impression to the general public that the Contractor's employee is a City of Norcross employee.
- B. Advertisements

At no time shall signage be placed in parks or landscaping promoting the Contractor's company.
- C. Solicitations
 1. At no time shall the Contractor's employees solicit work from the general public or commercial companies during regularly scheduled work for the City, unless a separate staff person or crew other than the ones assigned to the City work is used.
 2. At no time shall the Contractor's employees do work for others during regularly scheduled work for the City, unless a separate crew other than the ones assigned to the City work is used.

1.19. Supplies and Equipment

- A. Supplies and equipment
 1. The Contractor shall implement strategies in work operations to reduce fossil fuel consumption and emissions, such as:
 - Use hand-powered equipment when possible
 - Select smallest, most fuel efficient equipment to accomplish the task
 - Consider alternate fuel vehicles that operate on natural gas, electric batteries, solar power, biodiesel or some combination of these things
 - Maintain equipment properly and keep it well tuned
 - Emphasize employee carpooling to project sites
 2. Limit the use of large equipment around parked vehicles to avoid scratching vehicle paint.

3. Blowers shall not be used where prohibited by law.
 4. The Contractor shall use local products and suppliers (produced within 150 miles from the project site) to the extent possible to minimize fuel consumption and emissions.
 5. Equipment refueling and repair
The Contractor shall refuel and repair equipment in a safe manner to protect against accidental spills. Limit refueling to specific areas on a site. Measures shall be taken to prevent, control, and clean-up spills. Clean-ups should be immediate, automatic and routine and performed by a trained staff member or a licensed cleaning company. Contact the local emergency response team agencies to report all spills. Damage done by leaking of mower fluid shall be repaired at the Contractor's expense.
 6. Put away all tools and equipment at the end of each day. Leave no tools or equipment on site.
- B. Trucks, trailers and other equipment
1. All equipment used in the City of Norcross on a City approved project shall have the company name on the equipment.
 2. All Contractor vehicles shall have a readable sign with the Contractor's name or logo and telephone number. Trucks shall be maintained in a clean, safe and presentable condition.
 3. Any equipment that has the company name and the City of Norcross on it shall have the company name in larger lettering above the City of Norcross.
 4. At no time should a piece of equipment be marked as to give the impression to the general public that it belongs to the City of Norcross.
 5. Any equipment used in the City of Norcross must meet any qualifying Federal, State or Local laws, codes or ordinances, such as tagged, registration, GDOT registration, working lights, permissible advertising, etc.
 6. The Contractor may not store equipment in, or have access to, any City storage facilities unless authorized by the Representative.

1.20. Clean Up – Site Cleanliness

- A. General - Clean up is important for public safety, area-wide appearance, and plant health. It includes the removal of leaves, clippings, and any other debris. Cleanup should be done routinely as the final part of every task and as the season dictates. Excessive materials and waste should be removed each time the Contractor is on site or at a minimum of once per week. When planting has been completed, the Contractor must clean the area of all debris, spoil piles, and containers. Where grass has been damaged or scarred during planting or maintenance operations, it shall be restored to its original condition.
- B. All litter shall be removed from sidewalks, gutters, and all planted areas each week. All trash, litter, leaves, etc. shall be collected, hauled away, and disposed of legally. Do not sweep or blow trash, leaves, clippings, or landscape debris into **planting beds, storm drains, onto adjacent property, or into the road**. Collect and/or bag all debris swept or blown from landscape areas and remove from the site and place at an approved compost facility.
- C. Maintain at least one clear paved pedestrian access route to each building at all times during such work.
- D. In addition to removing all litter from sidewalks, gutters, and planted areas, the Contractor shall remove and dispose of any large miscellaneous debris or trash in the parking lot. For the purpose of the Specification, "large" shall mean items the size of a small beverage cup or larger. The intent of this requirement is that the Contractor's workers should take sufficient pride in the appearance of the site that they would pick up any significant litter they come across at the site. Sweeping of the parking lots is not included in the landscape maintenance. All litter shall be removed from planting areas and sidewalks, regardless of the size of the litter.
- E. If a job is not completed before the end of the workday, enough time shall be allowed to make the job site neat and safe. Do not plan work that cannot be completed before the weekend. Clean up shall include all components within each site including parking lots, ground cover, turf, bushes, walkways, and driveways.
- F. Any settling, washouts or damage that are created by the Contractor's employees due to vehicles or equipment must be filled, graded, replanted, and repaired to original condition. Any damage done by others shall be reported to the Representative and repaired after an agreed amount and scope of work is issued on an approved work order.

- G. Tarps – The Contractor shall employ the use of large tarps or ground cloths as much as possible to limit disturbance to other areas of the landscape and reduce labor efforts. For example, when repairing an irrigation head adjacent to a sidewalk, the Contractor shall place a tarp on the sidewalk and excavate the soil as needed, piling the soil on the tarp, thus enabling the soil to be easily and quickly deposited back into the pit when the work is complete. In the fall tarps shall be used in lieu of bags to collect mass amounts of large leaf litter and transport it to the nearest deposit area or vehicle.

1.21. Warranty

The Contractor shall guarantee and completely replace at no additional cost to City 100% of the plants which fail to maintain a healthy, vigorous condition (excluding theft or vandalism) as a result of poor or improper maintenance procedures. Size of the replacement plant material shall be equal to or be as close as possible (using typically grown nursery stock not requiring a special order) to that of the plant which is being replaced and/or the size of existing adjacent like specimens.

Section 2: LANDSCAPE STANDARDS AND MAINTENANCE REQUIREMENTS**2.1. Overview – Norcross Landscape Maintenance Principles and Objectives**

- A. The Contractor shall maintain the specified landscape in an integrated approach, consistent with the principles set forth in the Norcross Landscape Maintenance Specification. The seven Maintenance Specification principles are:
1. Contextual landscape – The Project landscape is part of a larger natural ecosystem of the Georgia Piedmont areas and Chattahoochee River basin. The materials and methods used to maintain the Project should support the health, diversity and sustainability of these ecosystems.
 2. Reduce waste – Reduce plant debris by fertilizing, irrigating and pruning judiciously. Additionally, employ grasscycling, mulching and composting of plant debris.
 3. Nurture the Soil – Create a healthy soil that supports a healthy landscape by protecting the soil from compaction and erosion, replenishing organic matter and mulching, using slow-release and organic fertilizers, grasscycling and minimizing use of chemicals that harm beneficial soil organisms.
 4. Conserve water – Use Georgia's water supply efficiently by reducing irrigation requirements, irrigating according to plant needs, maximizing irrigation system performance, increasing the water holding capacity of the soils, and replacing plants with higher water demands with native drought tolerant varieties.
 5. Conserve resources – Conventional landscapes are fossil fuel consumptive. Nationally it is estimated that lawn mowers consume 400 million gallons of gas. Look for opportunities to conserve fuel and energy by choosing and maintaining materials and equipment for fuel conservation. Reduce meetings requiring travel by having teleconference meetings and on-line meetings when possible. Carpool to job site meetings and only bring truly necessary personnel. Using recycled content, salvaged, durable or local materials conserves resources and reduces the amount of energy consumed by the landscape.
 6. Protect water and air quality – Reduce runoff, reduce contaminants in runoff through an integrated pest management (IPM) program, and increase the soil's ability to remove pollutants from runoff through steps such as mulching bare soil. Reduce air pollution by reducing fossil fuel consumption, use modern and technological advancements in equipment that are designed to reduce harmful emissions and noise, recycle plant debris on-site and plant trees to remove CO₂ and absorb air pollutants.
 7. Protect and maintain natural habitats – The Project may provide food, water, shelter for plants, animals and beneficial insects that contribute to the ecological diversity of the region. Methods to protect them include minimizing application of chemicals by implementing an integrated pest management (IPM) program, and conserving flowers, berries, fruits, seed heads, low branch cover, and natural vegetation in open space areas.
- B. Applicable standards and Best Management Practices (BMPs)
The Contractor shall adhere to applicable professional standards as defined by a professional organization including:
- American National Standard for Tree Care Operations – ANSI A300, Parts 1 and 2
 - International Society of Arboriculture BMP for Tree and Shrub Fertilization and BMP for Tree Pruning
 - Irrigation Association BMPs
 - Gwinnett County Water Quality BMP's (Chapter 8)
 - Norcross Landscape Maintenance Specification
- C. Grounds maintenance standards
The Representative shall apply one of the following three designation types to each of the areas to be maintained under the contract.
1. **TYPE A AREA**: These areas include highly visible focal points, gateways into the city, heavily used areas and places frequented by citizens on a daily basis. They include parks, City Hall, the Community Center, downtown streetscapes, front entrances to public buildings and gateway areas. The Contractor shall maintain these areas at the highest level of expectations. Mulch is to be kept off walks; mulch added or refreshed as needed; grass neatly trimmed and free of weeds, edges well maintained and clearly demarked, weeds

removed from beds weekly, annuals and perennials to be 'dead headed', debris removed from landscape areas, etc.

2. **TYPE B AREA:** These areas include entry points to lesser public buildings (other than City hall and Community Center), parking lot islands, large areas of visible turf and similar areas that are not in main activity centers. The Contractor shall maintain these areas at a slightly lesser level than Type A. The removal of weeds, edging of beds, etc may be done bi-weekly or monthly rather than weekly. Mulch requires top dressing annually vs. bi-annually. Turf must still be cut as needed but may not require as much fertilization, etc. Annuals and perennials may be present but will not require dead heading, etc.
3. **TYPE C AREA:** These areas include lesser important areas, rears of buildings, landscaping that is generally not visible to the general public. Also includes naturalized wooded areas, etc. The Contractor shall maintain these areas by keeping the turf areas living but not necessarily weed free or vigorously growing, cut as needed, debris removed, clear and visible bed lines, etc. May only require mulching every two years or as specifically requested. No annuals will be placed in these areas.
4. **ALL AREAS:** In all areas regardless of Type, the Contractor shall maintain plants off and from under fence lines, curbing strips and property lines. In addition Contractor must keep storm drains, irrigation valve boxes, sewer clean outs, electrical boxes, cable boxes, telephone boxes, etc., clear for easy identification and accessible to service at all times in both the turf and ground cover areas.

2.2. Site Analysis

- A. The Contractor shall characterize the Project's microclimate(s) and range in exposures as a precursor for developing the water management program.
- B. The Contractor shall identify plants species present in the Project landscape.
 - Determine key plant species
 - Determine plant water use classification for each plant species present as a precursor for developing the water management program
 - Identify plants in the Project landscape that are protected from removal or damage by the tree or buffer ordinance, and adhere to all protection requirements
- C. Soil tests
 1. The Contractor shall collect and submit soil samples to an accredited and approved testing laboratory, spring and fall annually, and then when planning a renovation and when experiencing ongoing problems. At a minimum one soil sample shall be collected from turf and one from shrub/ground cover areas that are representative of site conditions. Sample collection procedures shall adhere to recommendations of the soil testing laboratory. Contractor shall request that the laboratory make recommendations based on an 'organic' approach to soil and landscape management. Submit soil lab report and any proposed soil amendments and cost adjustments to the Representative for written approval. The approved soils laboratory recommendations shall be considered a part of the Specification. Analyses to be performed include:
 - pH, electrical conductivity, nitrate, ammonium, phosphorus, potassium, calcium, saturation percent, sodium, chloride, sodium adsorption ratio, boron, % sand-silt-clay, lime, % organic
 2. The Contractor shall determine infiltration rate and drainage characteristics within the Project. This information shall be considered when scheduling irrigation.
- D. Topography and potential for runoff

The Contractor shall assess topography within the Project and evaluate potential for runoff. This information shall be considered when scheduling irrigation and determining need for mulching, additional ground covering plants or erosion control measures.

2.3. Soil and Nutrition Management

- A. Goals

A healthy, biologically diverse soil is required to sustain a healthy landscape. A basic concept of Norcross Landscape Maintenance is to cultivate a functional, living soil foodweb which shall then provide nutrient elements as needed to sustain healthy and attractive plants while avoiding

excessive growth that might attract pests and/or need to be removed through pruning, edging or mowing. Landscape maintenance activities shall be implemented to nurture beneficial biological activity, provide organic material, and protect soil from damage. Riparian water quality and soil and aquatic habitat shall be protected by controlling soil erosion.

- B. Protect soil from compaction by:
- Cultivating soil when it is moderately moist; wet and dry soils shall not be cultivated
 - Scheduling maintenance operations that require driving equipment over the soil (e.g. mowing turf) when the soil is dry
 - Confining heavy equipment to paved areas
 - When temporary access is needed over non-paved areas, distribute the load over the soil with 6" thick coarse organic mulch or reusable planks
- C. Protect the soil from erosion by:
- Maintaining vegetative cover over the soil to the extent possible
 - Placing compost berms, blanket, socks or tubes along slopes to slow water
 - Maintaining minimum of 2-3" mulch cover over bare soil
 - Using coarse mulch on slopes to avoid washing of mulch into storm drains
 - Create leaf repositories in planting beds as appropriate (TYPICALLY NOT IN PARKS)
- D. Soil and plant tissue analysis
1. The Contractor shall submit soil samples for testing as described in Section 2.2.C. The types and quantities of fertilizer and/or soil amendments to be applied shall be determined from the results of the soil analysis and shall be based on an 'organic' approach to soil management.
 2. Where plant micronutrient deficiencies are suspected, plant tissue analyses are recommended to determine need for fertilizer application.
- E. Incorporate organic soil amendments
- The Contractor shall incorporate composted organic amendments into soil prior to planting annuals or replanting damaged turf or ground cover (see Sections 2.9.B and C).
- Planting beds for annuals and ground covers: incorporate 2-4" of compost into the top 6-12" of soil
 - Turf: incorporate compost into the top 5-7" of soil at the rate of 200 CY per acre (approximately 1.5" of compost per 6" of parent soil depth or 25%)
- F. Maintain organic mulch cover (see Section 3.10)
- The Contractor shall maintain a minimum of 2-3" of coarse organic mulch at all times over soil surface that is not covered by vegetation.
 - Sheet mulching shall be employed where possible.
- G. Retain natural leaf litter and clippings
1. To conserve nutrients on-site and protect the soil surface, the Contractor shall retain natural leaf drop under trees or in shrub beds. Select only tree and shrub beds that will not allow leaf litter or mulch to wash out into storm drains. Where leaf litter detracts from landscape appearance due to large leaf size or heavy use of the area (such as parks), it is preferable that leaves be chopped and returned to landscape beds. Remove diseased leaves that would provide inoculums for plant infection.
 2. The Contractor shall practice grasscycling (see Section 3.2.B).
- H. Fertilizers and other soil amendments
1. Norcross Landscape Maintenance relies on organic fertilizers and soil amendments from natural sources that release elements slowly.
 2. Additional amendments and fertilizers that are approved for use by the Organics Materials Research Institute (OMRI) for use in crop production are approved for use in the landscape. The Contractor shall supply fertilizer and soil amendment labels including the guaranteed analysis, identifying components of the material and the percent nutrient content. The Contractor shall apply the appropriate amount of fertilizer to supply the specified quantity of nutrient as determined by soil analysis and/or plant tissue analysis.
 3. The Contractor shall apply and manage fertilizers and amendments to prevent pollution of surface and ground water and to avoid creating a nitrogen draft in the soil or toxicity to plants.

4. Application frequency
Fertilizers shall be applied on a prescription base only. Application frequency shall be determined by plant need and assessed through soil and/or tissue analyses. For bidding purposes the following maximum annual number of applications is provided.
 - Trees, shrubs, woody ground covers Two times per year
 - Herbaceous ground covers, perennials Two times per year
 - Annuals and turf Four times per year
5. Restricted materials
 Fertilizers that are **not organic** or are restricted for use by OMRI shall be applied when organic methods are clearly not working and with approval by the Representative.
6. Foliar applied fertilizer shall be water soluble and non-burning. Apply at manufacturer's maximum recommended concentration for plant type. Saturate the entire foliage of each plant with foliar spray until it runs off.
7. Granular fertilizer shall be slow release formulations or similar, applied at maximum label rate for plant type at 90 day intervals. Water immediately after applying to move the fertilizer into the soil and wash the fertilizer off plant surfaces.
 When applying granular fertilizers to drip-irrigated areas, the fertilizers shall be washed in by hand or rainfall before turning on the drip system. Running the drip system immediately after application will push the fertilizer away from the emitters, resulting in a high concentration of fertilizer at the edge of the wetted zone. This highly-concentrated fertilizer can kill or damage plants. It is recommended that granular fertilizers be applied to drip-irrigated areas only in early spring, just prior to a moderate rainfall.
8. All chemicals shall be used in accordance with label directions and the manufacturer's recommended handling methods. All chemicals shall be handled in accordance with all applicable regulations. Registered chemicals shall be used only on the advice of a qualified, licensed pest control advisor. Nothing in this specification shall be construed to be the advice of, or to substitute for the advice of, a pest control advisor.
9. The Contractor shall provide seven (7) calendar days' notice of fertilizer, pesticide, and/or herbicide applications to the Representative.

2.4. Water Management and Irrigation

A. General

1. It is the responsibility of the Contractor to conserve water and assure that all watering rules and regulations are followed. Any penalties, fines, or citations for watering ordinance violations shall be paid by the Contractor.
2. Irrigation shall be made by the use of the permanent irrigation systems. Primary watering will be done at night by automatic systems. Some hand watering may occasionally be necessary due to poor water coverage or malfunctioning sprinkler heads. The City is responsible for the cost of water.
3. Failure of the irrigations system to provide full and proper coverage shall not relieve the Contractor of the responsibility to provide adequate irrigation. It is the Contractor's responsibility to make sure that the irrigation system is maintained, provides adequate coverage and operates properly (see Section 2.2).
4. The Contractor is responsible for the complete operation and maintenance of the irrigation systems, except as noted below. The Contractor shall examine the irrigation system for damage or malfunction weekly and shall report damage or malfunction to the Representative in writing. If the Contractor fails to report the broken or malfunctioning irrigation system components within two weeks of the breakage or malfunction, the Contractor shall be responsible for all damages resulting from the broken irrigation system component.
5. Adjust watering times each week. Do not overwater plantings. Use multiple-start times and short run times to prevent run-off. Drip systems should be left on for sufficient time to allow for saturation of the root zone. Shorter runs with drip irrigation do not provide sufficient water penetrations for healthy root development. Avoid multiple-start times with drip systems if possible. Do not allow run-off from any irrigation.
6. When breakdowns or malfunctions exist, the Contractor shall hand water, if necessary, to maintain all irrigated plant material in a healthy condition. If the irrigation repairs are major and will be billed as additional work, the labor costs for hand watering may also be submitted

for payment as noted in the General Requirements section of the Specification. Do not wait for approval to begin hand watering if it is required to save the plantings.

7. Landscapes shall be irrigated to maintain plant appearance and health, and managed to conserve water and avoid overspray and water damage to the City's hardscape and property.
- B. Irrigation system assessment
1. Irrigation application rates and distribution uniformity are best assessed through an irrigation audit. The Contractor is encouraged to perform an irrigation audit bi-annually (refer to Landscape and Turf Irrigation Auditing at <http://pubs.caes.uga.edu/caespubs/pubs/PDF/B1253.pdf>, a UGA Cooperative Extension Office Publication).
 2. If a water audit is not performed, the Contractor shall inventory of the irrigation system at the start of the job. For each zone, determine the irrigation type and nozzle size, spacing and gallons per hour (from manufacturer's literature).
- C. Irrigation scheduling – water budget method
- The water budget approach to irrigation scheduling shall be used to match plant need with water application and avoid over-irrigation and overspray.
1. Irrigation intervals and frequency shall be suitable for weather conditions, soil infiltration rates, and plant species' rooting depth and water requirements within each irrigation zone. Calculation methods are described in *Irrigation Scheduling Methods*, available at <http://pubs.caes.uga.edu/caespubs/pubs/PDF/B974.pdf> or the UGA Cooperative Extension Office.
 2. Irrigation duration within each hydrozone shall be based on the soil infiltration rate, species water requirement and rooting depth within the hydrozone, and the application rate and distribution uniformity of the irrigation system within that zone. Enough water shall be applied at each irrigation cycle to wet through the depth of root zone. Where runoff occurs, the application time shall be divided into shorter time intervals and repeated as needed.
 3. Irrigation frequency for each hydrozone shall be adjusted a minimum of every four weeks to reflect Evapo-Transpiration (ET) expected in the next month.
 4. For sites with controllers that monitor ET and adjust schedules automatically, the Contractor shall program the controller according to manufacturer specifications, and monitor to ensure that frequency is appropriate.
 5. Whenever possible, landscape irrigation shall be scheduled between 4:00 a.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature and to limit the growth of mold or fungus on leaves.
 6. No watering Friday or Saturday nights unless prior approval is given in writing by the Representative.
- D. Irrigation monitoring
1. Contractor shall monitor soil moisture within plant root zones using a soil probe or shovel and adjust irrigation schedules accordingly.
 2. When possible a soil moisture sensor connected to the irrigation controller shall be used. However when a sensor is not signaling the irrigation controller or functioning as intended, the Contractor shall employ the manual use of a soil probe.
 3. The Contractor shall observe the irrigation system in operation to identify and correct water runoff or standing water problems.
 4. The Contractor shall determine irrigation run time demand monthly by recording water meter reading before and after irrigation (if site has a separate irrigation meter). This data should be reconciled with run times and flow rates to determine if there is unusual consumption which may indicate stuck valves or leaks.
 5. The Contractor shall maintain a site log. The log should contain the following information: weekly water consumption data, soil moisture data, weekly ET Data, rainfall data, plant health and vigor and reports on breakage of damaged to parts and equipment.
 6. Irrigation is to be carefully coordinated with all other maintenance activities including mowing, aeration and fertilization. For example irrigation should not be set to turn on the night before a typically scheduled mowing, but instead should follow it. The same can be said for fertilization.
- E. Irrigation system maintenance and repair

1. The Contractor shall check the entire irrigation system including each zone for items such as dry spots and missing or malfunctioning irrigation components. Check for leaking valves, water running across sidewalks, over spray, water standing in puddles, or any other condition which hampers the correct operation of the system or the public safety. The contractor shall carefully observe plant materials for signs of wilting, indicating a lack of water. Plants which die due to irrigation failure will be considered to have died due to the Contractor's negligence and shall be replaced at the Contractor's expense.
2. The Contractor shall replace or repair, at the Contractor's expense, any irrigation components damaged, unless due to excluded damage. Repair shall be made within two weeks of the day the damage occurred. If the damage was due to excluded damage, the irrigation repairs will be paid for as additional work. The Contractor shall make notification of needed repairs within two weeks of the day the damage occurred as noted in the General Requirements section of these specifications. Regardless of the cause of damage, the contractor shall take immediate action to prevent further damage by shutting off the damaged part of the irrigation system and commencing with hand watering as needed. As soon as possible after receiving written authorization to proceed, the Contractor shall make repairs. The following items are considered to be minor repairs:
 - Damaged or clogged sprinkler nozzles
 - Adjustment of sprinkler patterns or arcs
 - Adjustment of sprinkler position, i.e. raise, lower, or straighten sprinkler head
 - Replacement of clogged, broken, or missing barbed-style drip emitters
 - Replacement or repositioning of drip distribution tubing smaller than 1/2 inch or 15 mm diameterThese minor repair items shall be corrected by the Contractor at the Contractor's expense.
3. The Contractor shall inspect the irrigation system in operation to ensure proper function according to the following schedule:
 - April – October Weekly
 - November – March Monthly (when system operating)
4. All malfunctioning equipment shall be repaired prior to the next scheduled irrigation.
5. For safety, in turf or typical pedestrian access areas never install sprinklers on risers above the ground level, even if the risers are flexible. Always use spring-operated, pop-up style sprinkler heads. Sprinkler heads are available with pop-up heights up to 12 inches (30 cm) above ground level.
6. Plastic sprinkler nozzles with bad patterns shall be replaced with new nozzles of the same gallonage and arc as part of the regular maintenance of the sprinkler system. Do not attempt to clean plastic nozzles by sticking knife blades or wire into the openings. The plastic will be scratched and the pattern will be ruined. Brass nozzles may be carefully cleaned if needed.
7. The Contractor must be able to repair and maintain all irrigation equipment including but not limited to valves, controllers, pipe lines, low voltage electrical lines, etc., in a timely manner. Repair costs for repairs not deemed minor will need to be approved by the CITY and maps will need to be submitted for all repairs before payment will be issued. All repairs over \$250.00 will require a signed purchase order before physical work can begin. The Representative must be contacted immediately for actions resulting from an emergency that could result in severe damage.
8. All irrigation replacement parts shall be of the same manufacturer, material, type, and application rates as existing, unless an upgrade is advantageous and will not cost more.
 - a. Substitutions of materials other than original equipment will be approved only when the original equipment has been discontinued and is no longer available for purchase at any location. The substituted equipment must be completely compatible with the original and must be approved in advance by the Representative.
 - b. All repairs to the system shall be identical to the original installation, unless approved otherwise in advance by the Representative. If a change to the installation will result in lower future maintenance costs, less frequent breakage, or an increase in public safety, request authorization to make the change from the Representative.
9. Schedule 40 PVC or Class 315 pipe shall be used for making repairs based on manufacturer recommendations on size of pipe and amount of pressure / flow in the pipe.

10. Proper solvent weld with primer or compression fitting with proper clamps shall be used to hold pipe together.
11. Main line fittings shall be schedule 80 for all threaded fittings and schedule 40 or schedule 80 as needed for glued fittings per manufacturer's recommendation or instructed by the Representative.
12. Lateral lines shall be either schedule 40 or 80 fittings per manufacturer's recommendation or as instructed by the Representative.
13. Valves shall be repaired or replaced within week after work is approved by the Representative.
14. Irrigation heads, bubblers or drip lines shall be repaired within week after work is approved by the Representative.
15. All open holes not manned physically shall be secured as to prevent accidental injury by passersby. Holes to be covered with plywood and "coned off" with a-frames, warning cones and or caution tape as needed. No holes are to be left open and exposed without staff being present at the site.
16. No holes are to be left open longer than 1 week unless prior written approval is given by the Representative.
17. Do not over tighten threaded fittings. Hand tighten fittings together until firm and tight then tighten no more than 1/2 more turns with appropriate hand tools so as not to leak.
18. Irrigation system pressure shall be checked and adjusted at least monthly during season of operation
19. Twice a year, at a minimum, the Contractor shall:
 - Ensure all flush valve/cap locations are visible
 - Ensure valve boxes are visible and can be opened
 - Inspect valves, filters and pressure regulators for damage or leaks; check wire splices
 - Clean valve boxes of dirt and debris
 - Flush filters; a hose can be attached to the flush cap to keep water out of the valve box
 - Inspect and clean filters; replace damaged or torn filters
 - Flush laterals
 - Ensure plants have adequate numbers of drip emitters for their size
 - Test backflow preventers
20. Where possible and appropriate, recommend to the Representative where sprinklers could be converted to drip or bubblers
21. Drip irrigation systems need periodic flushing to remove sediment. When flushing is necessary, it shall be performed as part of the contract. Drip systems shall be flushed at least once a year. Open ends of drip lines and run for at least 15 minutes at full flow to flush. It may be necessary to install flush outlets in order to flush the drip system.
22. The Contractor shall maintain and submit triannual documentation of irrigation checks and as built plans of any changes or adjustments to the system.
23. Spring start-up
System will receive a spring start-up to determine any problems and in an effort to make system operational. Any repairs needed will be brought to the attention of the Representative and performed upon approval.
 - a. Replace battery in wireless rain sensor (locations vary by property).
 - b. For potable water systems, skip to 'd' below.
 - c. For wells:
 - 1) Reconnect unions at well, pressure tank, and sand separator.
 - 2) Turn on power to well.
 - 3) Open at least one hose bib (locations vary by property).
 - 4) Open actuator valve in well housing. Verify actuator valve is properly set. Do not tamper with settings, requires professional input.
 - 5) Switch on pump (circuit typically in well housing).
 - 6) Once water is noted coming out of the hose bib, close valve on the hose bib.
 - 7) Wait several minutes as pump fills main lines to see that the pump shuts off when the appropriate pressure is reached in the system.
 - 8) NOTE: If the pump does not turn off, there may be a leak in the main line or a bad pressure switch.

- 9) Check for leaks in the main line (walk property along known mainline routing).
- d. Open main valve slowly (1/4 turn per minute) until fully opened. Fill main line gradually to reduce the possibility of water hammer. Expel all air from manual valve (hose bib) and test all components.
- e. Test water pressure in mainline at a minimum of three (3) different locations via hose bib or quick coupling valves. Determine if leaks exist, repair if needed.
- f. Test pressure compensation valves for correct release into lateral lines, as indicated in the contract documents.
- g. Re-adjust pressure regulators and flow regulators where applicable, to volumes indicated in the contract documents. Test output to confirm proper operation.
- h. Balance and adjust the various components of the irrigation system so that the overall operation of the system is most efficient. This includes synchronization of the controllers, adjustments to pressure regulators, part circle sprinkler heads, and individual station adjustments on the controllers. The Contractor has the right to call in the designer or the Representative to aid in the balancing and adjustment of the system.
- i. Turn on irrigation clock and open one zone at a time. Check each zone.
- j. Perform system check, re-adjust, repair, and replace components as necessary. Walk the entire system looking for leaks. Adjust each head as needed.
- k. For heads that are not functioning correctly, clean crud and particles out of spray heads, screens, etc. Adjust heights, spray angles, etc.
- l. Notify the Representative in writing within five (5) working days of start-up completion, that the irrigation system is fully operable within design specifications and able to resume watering operations.

24. Winterization

A winterization will be performed to insure system will not operate in cold weather and to help alleviate damage to system by freezing. The winterization includes shutting off of water main, turning off of clocks and/or power if applicable, opening all valves and down draining the system.

- a. Blow the system clear of water using compressed air (80 PSI maximum) admitted into the piping at a quick coupling valve or hose bib located at the highest elevation on the system piping.
- b. Activate individual zones, higher elevation zones first, then proceed toward lower elevation. Proceed through all zones twice.
- c. Open hose bib at lowest elevation on main line after zones have been cleared. Allow all water in main line to be expelled before closing ball valve and removing air compressor.
- d. The air compressor used to winterize the system must have an engine separate from the compressor tank to prevent high temperature from being injected directly into the PVC piping, and have a displacement large enough to volumetrically equal operating condition of the irrigation system to ensure complete evacuation of the piping system.
- e. For wells:
 - 1) Turn the power off to the well only (breaker is typically in the well housing).
 - 2) Open the actuator valve at the pump manually to allow air into the system
 - 3) Open the three threaded unions in the pump housing: well union, pressure tank, and sand separator.
 - 4) Drain well system, leave unions open. Blow out fittings as needed using 80 psi maximum.
 - 5) Follow items 'a' through 'd' above.
 - 6) Cover well with housing.
- f. Notify the owner's representative in writing within five (5) days of completed winterization.

F. Drought conditions

1. As a general guideline if irrigation is restricted at any time by the State, County or other local jurisdiction, the Contractor is responsible for resetting and/or adjusting all irrigation clocks to an appropriate time setting to meet any change in requirements.
2. If watering with automatic irrigation is banned or restricted in such a manner as to possibly result in permanent damage to existing plantings and watering "by hand" is still permissible, the Contractor shall meet with the Representative to discuss and determine the best course

of action and if needed will provide a competitive proposal for hand/pump truck watering the most drought susceptible plantings as needed.

2.5. Integrated Pest Management (IPM)

A. Goals

1. **An integrated pest management program shall be implemented to:**
 - **Maintain healthy, attractive plants, maximize resistance to pests and out-compete weeds**
 - **Monitor for presence of pests and to evaluate pest impact on plant health and appearance and nuisance to the public**
 - **Provide control treatments that have minimal negative effects on all but the pest and that protect air and water quality**
2. **Contractor shall assume pesticides are potentially hazardous to human and environmental health. Preference shall be given to reasonably available non-pesticide alternatives when considering the use of pesticides on City property.**

B. Insects and diseases

1. Target plants and pests

The Contractor shall identify the problematic plant species and cultivars in the landscape (target plants) and the pests that commonly cause significant harm to these plants (target pests).

2. Monitoring

The Contractor shall monitor landscape areas to identify presence of beneficial insects and pests, determine populations, life stage, and degree of damage to plants. Target plants and pests will be monitored closely during normal periods of pest activity. This information will be the basis on which pest control methods are initiated. Records of monitoring activity shall be kept.

3. Controls

Norcross Landscape Maintenance seeks to control pests without harming non-target organisms, or negatively affecting air and water quality and public health. It relies on IPM which uses a range of cultural, mechanical, physical, and biological control methods **before using pesticides**. Chemical controls are applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control is applied. **Pesticides are not to be applied on a prescheduled basis.**

a. Cultural/mechanical/physical methods

A number of maintenance practices or modifications of them can make the environment unfavorable for pest reproduction, movement, or survival. Often simply modifying an existing maintenance practice, such as timing of pruning or fertilization, can produce positive results. Other mechanical or physical practices may specifically combat plant pests or increase host resistance. Key treatments include:

- Fostering a healthy soil, judicious fertilization only when needed, and managing irrigation appropriately
- Pruning to remove infected or infested branches and shoots; time pruning to avoid periods of insect infestation, for example prune pines in the winter (December-February) when bark beetles and borers are inactive
- Removing fallen twigs, leaves, and fruit that contains disease inoculums
- Mulching soil surface to reduce weeds and to reduce splashing and the drops of mud that would protect spores deposited on plant surfaces
- Trapping insects using sticky surfaces (also used for monitoring); using mechanical traps to control rodents
- Bringing to attention of Representative 'target plants' that are disease or insect prone and suggesting resistant plant replacements or those better suited to the site and microclimate

b. Biological methods

Biological controls are pesticides of natural origin that have limited or no adverse effects on the environment or beneficial organisms. Determining the effective biological control

and proper timing of application are critical to success in pest control. The Contractor shall consider the following biological control methods when cultural/mechanical/physical methods are not adequate to lower pest populations to the target level.

- Bacillus thuringiensis (bt)
- Parasitic nematodes
- Pheromone traps
- Beneficial insect release and conservation

c. Pesticides

The term pesticide applies to insecticides, fungicides, and other substances used to control pests. Antimicrobial agents are not included in this definition of pesticides.

- 1) Pesticides shall not be applied within one hour of the start of operating hours for businesses at the site. In the event that it is not possible to complete the application by one hour prior to business hours (ie; 24 hour operations), applications shall be made at times when customer presence is minimal. Areas to be treated shall be blocked off and warning signs posted.
- 2) The Contractor shall take precautions to keep persons away from pesticide and herbicide-treated areas until the applied material is fully dry and the treated area is safe for entry. Follow the recommendations of the pesticide manufacturer and all applicable governmental and industry regulations.
- 3) Least toxic pesticides
When cultural, mechanical, physical and biological controls have provided inadequate pest control, the Contractor may select and apply an appropriate least-toxic pesticide as a last resort. **Least-toxic pesticides have a high LD-50, low residual and narrow range of toxicity.** Application must be timed to the appropriate life stage of the pest. Examples are:
 - Insecticidal soaps
 - Horticultural oils
 - Herbicidal soaps
 - Neem
 - Pyriproxyfen insect growth regulator (e.g. Distance IGR)
- 4) **Restricted chemicals**
Organophosphate-containing pesticides have been found to persist in the environment and cause water quality impairment of some creeks, streams, and rivers. They are restricted from use. Examples include:
 - diazinon (trade names Spectracide®, Knox-out®)
 - chlorpyrifos (trade names Dursban®, Pageant®)
 - malathion and carbaryl (trade name Sevin®)
- 5) Water quality agencies recommend against using pyrethroids and pyrethrins containing piperonyl butoxide (PBO). These chemicals are restricted from use. Pyrethrins are toxic to birds, fish, and beneficial insects, should be used only as a last resort, and carefully applied to avoid runoff and contact with non-target plants
- 6) **Contractor shall not apply any Toxicity Category I or II Pesticide Product, any pesticide containing a chemical identified by the State of Georgia as a chemical known to the State to cause cancer or reproductive toxicity and any pesticide classified as a human carcinogen, probable human carcinogen or possible human carcinogen by the United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances.**
- 7) All chemical applications shall be performed by a licensed, trained technician. The Contractor (or subcontractor) must be a licensed Pest Control Operator as required by the State of Georgia, and strictly adhere to all laws.

4. Notice of pesticide use

a. Signs shall be posted at time of application of the pesticide product.

- 1) Signs shall be posted (i) at every entry point where the pesticide is applied if the pesticide is applied in an enclosed area, and (ii) in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.

- 2) Signs shall be of a standardized design that is easily recognizable to the public and workers.
 - 3) Signs shall contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the date for re-entry to the area treated, and the name and contact number for the City department responsible for the application.
 - b. The Contractor shall not be required to post signs in right-of-way locations that the general public does not use for recreational purposes. However, the Contractor shall notify the Representative in writing (7) seven days prior to pesticide applications in the right-of-way areas.
 - c. The Contractor may obtain authorization from the Representative to apply a pesticide without providing a (7) seven-day advance notification in the event of a public health emergency or to comply with worker safety requirements.
 5. Recordkeeping and reporting
 - a. The Contractor shall maintain records of all pest management activities. Each record shall include the following information:
 - Target pest
 - Type and quantity of pesticide used
 - Site of the pesticide application
 - Date the pesticide was used
 - Name of the pesticide applicator
 - Application equipment used
 - Prevention and other non-chemical methods of control used
 - b. The Contractor shall submit the pest management record to the Representative with the triannual checklist.
- C. Weed management
1. Landscapes shall be maintained in a healthy and attractive manner using Norcross Landscape Maintenance methods. Weeds in planted areas, sidewalks, curbs, gutters, or pavement shall be removed or killed weekly as the weeds emerge. Weeds shall be removed (not just killed) if they are larger than 2 inches (5 cm) in height or diameter. Dispose of weeds off-site.
 2. Identify key weeds.

The Contractor shall identify target weeds (pests) present and plan a weed management program to target those species.
 3. Invasive and poisonous plants.

Invasive and poisonous plant species may have been included in the plantings inadvertently. Seedlings and/or suckers from those plants shall be removed by the Contractor. Refer to <http://www.gainvasives.org/> for a list of invasive species. Remove all invasive and poisonous plants not planted intentionally as noted below in Section 2.5.C.4. When invasive and poisonous plants are an intended part of the landscape the Contractor shall notify the Representative and propose a replacement option.
 4. Controls
 - a. Cultural/mechanical/physical methods shall be used as the first choice in weed management.
 - 1) Monitor planting areas frequently to identify and eradicate weeds early in the growth stage prior to their setting seed.
 - 2) Cut or pull weeds using hand operated equipment where possible.
 - 3) Mow large areas to reduce weed growth, and eliminate species that are not tolerant of mowing. Mowing is especially effective when done prior to seed set. Mowing also reduces fire hazard in open space.
 - 4) Mulches shall be maintained at all times over soil surface that is not covered by vegetation.
 - 5) Propane-fueled flamers may be used in winter and spring with required permits and approval by the Fire Marshall to kill early-season, non-grass weeds by heating the cells until they burst. The weed quickly wilts and dies.

- b. Least toxic herbicides may be employed by the Contractor as a last resort. Examples are:
 - Fatty acid potassium salts (herbicidal soaps), e.g. Safer's Superfast Weed and Grass Killer® and Dr. Bronner's Peppermint Anti-Bacterial Soap
 - Acetic and citric acids, e.g. Nature's Glory Weed and Grass Killer RTU®
 - Clove, citrus, mint and thyme oil, e.g. Matran II®, Xpress®
 - Corn gluten
 - Low-toxic, low-residual herbicide, e.g. glyphosate (Round-up®), glufosinate-ammonium (Finale®), or pelargonic acid (Scythe®)
 - c. Restricted herbicides that may not be used because they have been identified as ground water contaminants are:
 - Atrazine (Aatrex)
 - Simazine (Princep)
 - Bromacil (Hyvar, Krovar)
 - Prometon (Basagran)
 - Bentazon (Basagran)
 - Norflurazon (Soliacam, Predict, Zorial)
 - d. Restricted herbicides that may not be used because they have been identified as a compost contaminant are.
 - Picloram
 - Clopyralid
 - e. Pre-emergent herbicides – **In no case will soil pre-emergent or other types of weed killers be permitted without prior approval of the Representative.**
- D. Vertebrate pests
1. Identify key pests that significantly affect plant health and appearance. Accurate identification is critical to appropriate control. Common vertebrate pests are:
 - Rodents including rats, mice, voles, moles, gophers
 - Rabbits
 2. Controls
 - a. Mechanical/physical/cultural methods shall be implemented as a first course of action. Preferred treatments include:
 - Exclusion – Protect plants from damage by grazing animals with fences or cages
 - Habitat modification – Reduce cover at the periphery of the project as needed to solve problem
 - Application of repellents that are suitable for use in public areas
 - Traps may be used where mechanical/physical/cultural methods have been insufficient to control moles, voles, gophers, rats and mice
 - Encouragement of predators e.g. installing owl boxes
 - b. Least toxic rodenticides.

2.6. Plant Growth Control

- A. Goals

The goals of plant growth control are to maintain healthy, attractive plants within the planting space allotted with minimal removal and disposal of vegetative growth.
- B. Pruning
 1. The cutting blades on pruning shears, clippers, blades, saws, etc. shall be sterilized between groups or species of trees/shrubs to minimize the possibility of spreading disease. When pruning trees/shrubs known or suspected to be diseased, the cutting blades shall be sterilized after each cut. Sterilize blades by spraying them with hydrogen peroxide. After spraying, wait 20 seconds before using again.
 2. Selective pruning
 - a. Plants shall be pruned selectively to remove individual stems or branches that extend beyond the natural conformation of the plant to a lateral branch or at the point of attachment.
 - b. Woody groundcovers shall be selectively pruned to control growth towards pavements rather than edged.

3. Wound dressing or paint shall NOT be used on pruning cuts or injuries.
 4. Injuries to trunks and limbs should be treated with 'Tree Trunk Goop', a mix 1/3 of each of the following mixed in water: soft rock phosphate, diatomaceous earth and manure compost.
 5. Where plant size must be controlled because of inadequate space for the plant, prune to reduce size by cutting individual branches or stems to interior lateral branches at appropriate locations.
 6. Shaping of plants
Plants shall not be shaped except when hedges were intended. It was never the designers' intent nor is it beneficial for any plant to be regularly sheared to rectilinear or ball shape.
- C. Irrigation and fertilization programs shall be designed to avoid excessive plant growth that would require additional pruning or mowing to manage.

2.7. Waste Management

- A. Goals
Norcross landscapes are maintained to minimize producing waste and to use as much of the plant debris generated on-site as is possible and to recycle plant debris and discarded materials to the maximum extent feasible at appropriate recycling centers to avoid adding it to landfill.
- B. Retain natural leaf litter
To conserve nutrients on-site and protect the soil surface, the Contractor shall retain natural leaf drop and other organic materials in shrub beds. Select sites where leaves will not enter the storm drain. Where leaf litter detracts from landscape appearance due to large leaf size, it is preferable that leaves be chopped and returned to landscape beds. Remove diseased leaves that would provide inoculum for plant infection.
- C. Grasscycle
The Contractor shall leave grass clippings on the lawns after mowing, from at least April through October. Sports turf may be excluded 'in season' when clippings will interfere with play.
- D. Debris removal and clean-up
The Contractor shall keep all landscaped areas, walkways, building entries and exits free from trash and debris. Debris clean up with brooms and rakes is preferred to blowers.
- E. Producing mulch from site-generated, untreated and unpainted wood and plant debris.
The Contractor is encouraged to chip all vegetative materials and wood and use on site as mulch (see Sections 2.9. and 3.10).
- F. Producing compost from site-generated plant debris
Where appropriate space is available, the Contractor is encouraged to compost site-generated green waste and reuse on site.
- G. Recycle waste
The Contractor shall separate all plant debris that cannot be reused on site and other discarded materials that are readily recyclable. If lawn clippings, shrub and tree trimmings, or prunings must be removed from the site, they must be kept free of other types of debris and transported to a green waste recycling facility (see Section 2.9).

2.8. Landscape Repair and Refurbishment

- A. When landscapes are repaired and/or refurbished, the Contractor shall employ Norcross Landscape Maintenance principles to enhance the sustainability of the landscape, reduce waste and protect watersheds.
- B. Replace high input plants with species better suited to location and use. Species should be selected that are:
- Appropriate size at maturity for planting site
 - Native to region and/or drought tolerant
 - Resistant to significant pests
 - Non-invasive
 - Increase diversity and seasonal interest of the plant palette
- C. Reduce amount of area occupied by high water use plantings where possible (e.g. replace turf with drought-tolerant ground cover). Suggest alternative plantings to Representative for decorative turf, especially turf areas less than 8 feet wide.
- D. Reuse materials removed from the landscape that are in good condition.
- E. When buying new materials, select local and recycled content materials where possible.

- F. When irrigation systems are replaced or upgraded, install high efficiency systems.

2.9. Composting

- A. The Contractor shall transport all suitable plant debris that it cannot use in its own composting operations to a green waste recycling facility
- B. Compost shall be a well decomposed, stable, weed free organic matter source. The product shall be certified through the US Composting Council's (USCC) Seal of Testing Assurance Program (STA) Program (a compost testing and information disclosure program). It shall be derived from agricultural and/or food waste and/or yard trimmings. The product shall contain no substances toxic to plants, will possess no objectionable odors and shall not resemble the feedstock (the original materials from which it was derived).
- C.. Before delivery of the compost, the supplier will submit proof of STA certification and a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council's CAP and using the approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify:
1. Feedstock materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
 2. Organic Matter Content: 50% - 60% by dry wt. preferred, 35-70% acceptable.
 3. Carbon and Nitrogen Ratio: C:N < 25:1 plus at least one measure of stability and at least one measure of toxicity.
 4. Maturity/Stability: shall have a dark brown color and a soil-like odor. In addition any one of the following is required to indicate stability.
 - Oxygen Test < 1.3 O₂ / unit TS / hr
 - Specific oxy. Test < 1.5 O₂ / unit BVS / hr
 - Respiration test < 8 C / unit VS / day
 - Dewar test < 20 Temp. rise (°C)
 - Solvita® > 5 Index value
 5. Toxicity: any one of the following measures is sufficient to indicate non-toxicity.
 - NH₄⁻ : NO₃-N < 3
 - Ammonium < 500 ppm, dry basis
 - Seed Germination > 80 % of control
 - Plant Trials > 80% of control
 - Solvita® > 5 Index value
 6. Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
 - Total Nitrogen content 0.9% or above preferred
 - Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm
 7. Salinity: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should also be tested: <2.5 mmhos/cm is preferred for soil/compost blend but may vary with plant species.
 8. pH shall be between 6.5 and 8.
 9. Particle size: 95% passing a 1/2" screen.
 10. Bulk density shall be between 500 and 1100 dry lbs/cubic yard.
 11. Moisture Content shall be between 35% - 55% of dry solids.
 12. Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
 13. Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.
 14. Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.
 15. Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations.
- D. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, heat (120F) upon delivery or rewetting will not be accepted.

Section 3: LANDSCAPE SPECIFICATIONS FOR PLANT TYPES AND LANDSCAPE ZONES

3.1. Protect Environmental Resources

For all plant types, the Contractor shall use materials and methods that protect environmental quality and human health, conserve water and energy, minimize waste, and reuse and recycle materials to the extent possible.

3.2. Turf

A. Standards for health and appearance

Turf shall be maintained to sustain a healthy vigorous condition with deep roots, uniform green color, uniform density, no bare or brown spots, and free of disease and significant pests, except as noted below.

B. Mowing and edging

1. Turf shall be mowed (Thrasher and Brundage Parks with reel mower only) and edged at regular intervals to maintain a neat appearance and healthy growth. All turf areas shall be mowed weekly except for the period of November 1 through February 15, during which time mowing shall be done every two weeks depending on weather conditions.
2. The Contractor, prior to mowing, shall remove and properly dispose of paper, rubbish, and debris.
3. Grasscycling shall be employed for all turf areas, except sports fields. Grasscycling requires an integrated management system of irrigation, mowing height, and mowing frequency. Key components are:
 - a. Mow often, at least once a week during the growing season.
 - b. Mow when the turf is dry. Turf areas shall not be mowed when soil is so wet as to promote compaction and destruction of soil structure.
 - c. Maintain equipment to keep blades sharp and balanced; usually sharpen once a week. Keep area under the mower deck clean. Mulching mowers are more effective, but not required for grasscycling.
 - d. Leave clippings on the turf. A second pass over clumps or windrows may be necessary if clippings are long. Clippings may not be left on turf in clumps or windrows.
 - e. Seasonal rains may require temporarily halting of grasscycling because of excessive moisture. The clippings shall be picked up and used as mulch or transported to a green waste recycling facility. Do not use grass clippings as mulch if an herbicide has been applied to the turf.
4. Turf shall be mowed at a height appropriate for the species of turf. Lawn height shall not exceed 5 inches (13 cm) at any time (heights are measured from a hard surface to the bottom of the blade):

• Tall fescue	2" – 3"
• Bluegrass, ryegrass, red fescue	1.5" – 2.5"
• Centipede or Augustine	2" – 3"
• Bermuda	1.0" – 1.5"
• Zoysia	1.5" – 2"
5. Turf shall be cut with appropriately sized equipment which shall give a neat appearance without rutting, sliding over or scalping the turf. Bruising or rough cutting of grass shall not be permitted. Mowers shall be adjusted and operated so that grass is cut at uniform height. Scalping of mound areas shall not be permitted.
6. Mowing patterns shall be changed weekly to avoid rutting. Areas shall be mowed at a minimum of 45 degrees and a maximum of 90 degrees to previous mowing so that turf blades do not grow in one direction, creating an uneven stand.
7. Turf areas adjacent to pavements shall be edged on a vertical plane with every mowing.
8. All edges must be trimmed after every cutting. This trimming shall be accomplished using string trimmer, hand shears or mechanical edger. Trimming must include cutting all grass along walls, fences, foundations, shrubs, curbs, sidewalks, pathways, header boards, planters, tree trunks, poles, wires, or any other object within or immediately adjacent to the lawn area. Be sure to trim around valve boxes in the turf on a regular basis to maintain a neat appearance.

9. Turf shall be maintained away from the base of features in the turf at the following distances:
 - a. Trees 24"
 - b. Signs and similar features 4"
 - c. Buildings and other structures 4"

Care must be taken to avoid damage to tree trunks, shrubs, sprinklers, buildings and other structures. Damage shall be reported to the Representative and the Contractor shall make repairs immediately.
 10. Tree islands shall be circular in shape and kept free from tree suckers and annual and perennial weeds.
 11. Clippings shall be removed from paved surfaces within three hours of the mowing and edging in that same area.
 12. Bagged grass clippings shall be composted at a green waste recycling facility.
 13. The Contractor shall take care to avoid damaging plants, equipment, signs, buildings, vehicles, etc. during turf maintenance operations. Any trees which have more than 30% of the circumference of the trunk tissue removed or damaged by string trimmers or mowers shall be considered destroyed and shall be replaced at the Contractor's expense with like species and size.
- C. Leaf litter
1. Mulch leaf litter with mowers as needed throughout the fall and winter months. Large concentrations of leaves may require pickup and redistribution. Rakes are preferred for leaf litter removal over blowers.
 2. Leaf litter shall not be allowed to accumulate to the point that it will damage or kill turf.
 3. Leaf litter that is removed from turf shall be either chopped and used on-site or transported to a green waste recycling facility.
 4. Tarps are encouraged to be used in lieu of bagging or blowing masses of leaves. Tarps may be placed temporarily on the surface of the ground and leaves raked and piled onto the tarp. The tarp can then be easily dragged to a suitable location and dumped.
- D. Aerating and de-thatching
1. Aerate turf twice annually with fertilization application. Use equipment with hollow tines that removes a soil core. Top dress with 1/4 inch fine compost; over-seed to fill in thin spots and to crowd out weeds.
 2. De-thatch turf when thatch accumulates to a 1/2 inch thickness by cutting with a vertical mower. Thatch shall be raked and either composted for use elsewhere, or transported to a green waste recycling facility.
 3. Any excessive damage to turf from aerating shall be repaired immediately after discovery.
 4. Aeration and de-thatching activities shall be scheduled to coincide with the active growth period of the turf species, avoid hot weather conditions and avoid peak time of crabgrass and other weed seed germination.
- E. Water management (see Section 2.4)
1. Turf shall be irrigated to provide adequate water to maintain an attractive, green, healthy turf, and moderate growth rate during its growing season, without stimulating excessive growth rates.
 2. The water budget approach to irrigation scheduling shall be used to match turf need with water application and avoid over-irrigation.
 3. Irrigation frequency under normal conditions should not exceed three times per week.
- F. Soil and nutrition management (see Section 2.3)
1. Fertilizer applications shall be made during the growing season only on a prescription basis, when soil and/or plant tissue analyses identify specific deficiencies. For bidding purposes plan to apply approximately 4 lbs./1000sf of actual nitrogen to all turf grasses per year in a total of four (4) applications. Include the available nitrogen from grass-cycling and applying compost as a top dressing in the calculations of actual nitrogen.
 2. Fertilization shall be managed to provide moderate, not excessive, turf growth, and to avoid polluting surface and ground waters. Grasscycling reduces the fertilization requirement of turf grass by 15 – 20%.
 3. To ensure that a fertilizer with the right Nitrogen / Phosphorus / Potassium percentages is used, the Contractor shall perform tests at a minimum of three sites.

4. When organic fertilizers are not sufficient, it has been found that an application of a slow-release fertilizer in late September and early April are the best for these properties. Suggested products include Scotts Turf Builder Lawn Fertilizer with 2% Iron (29-3-4) for the September application and Scotts Turf Builder with Plus 2 Weed Control (28-3-3) for the April application. Application shall be in accordance with manufacturer's direction.
 5. Only apply ammonium sulfate or nitrate as required to keep the lawns healthy and green if soil or tissue tests show a deficiency. Apply fertilizer evenly to ensure even lawn color.
 6. Provide minor over-seeding to maintain good turf as needed.
 7. The Contractor shall incorporate composted organic amendments into soil prior to replanting damaged turf as per Sections 2.3.D and 2.3.E.
- G. Pest management (see Section 2.5)
1. The Contractor shall employ integrated pest management procedures.
 2. The Contractor is responsible for monitoring turf to identify and assess pest problems, and for taking action to control pests that affect turf health and appearance when pest populations or damage exceed established thresholds.
 3. The Contractor shall select pest controls to provide adequate pest control without harming non-target organisms, or negatively affecting air and water quality and public health. Pest management shall rely first on cultural, mechanical, physical, and biological control methods. Chemical controls may be applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control shall be applied. **Pesticides may not be applied on a prescheduled basis.**
 4. The Contractor shall not apply restricted chemicals that may harm water resources.
- H. Weeds (see Section 2.5.C)
1. Use regular frequent mowing to limit weeds that do not survive under these conditions.
 2. Be sure to bag grass when weather or seasonal conditions have led to a situation where weeds have grown long enough to produce seed heads that could be detrimental if allowed to fall back into the turf after mowing.
 3. Apply selective least toxic herbicides in turf areas within two visits of initial recognition.
 4. Manage weeds that are resistant to the "weed-and-feed" applications with an application of a weed killer such as Round Up. This product may be used on individual plants and in isolated areas in moderation. The lawn must not be significantly adversely affected, e.g., left with lots of dead patches in viable grass.
- I. Replacement
1. Any lawn found to be dead or severely yellowed shall be replaced with turf grass of identical species at the Contractor's expense, unless the loss was due to excluded damage.
 2. If the loss resulted from excluded damage, replacement shall be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss, as outlined in the General Requirements section of this Specification.
 3. Replacement sod shall be similar in all respects to the existing grass. Except for fescue species, do not seed dead lawn areas; use sod only for replacement, unless directed in writing by the Representative.

3.3. Ground Cover

- A. Standards for health and appearance
- Ground covers shall be maintained to sustain an attractive, healthy, normal color for the species, and uniform density with little or no bare spots. Ground covers shall be kept free of trash and debris.
- B. Trimming, edging and mowing
1. Ground covers shall be trimmed on a monthly basis to maintain pavements, bed lines and other features clear of vegetation. Keep groundcover trimmed back from sidewalks, curbs, meter and utility boxes, transformers, and paved areas. Do not create vertical edges when pruning groundcover. Cut the edges at an angle for a more natural appearance and healthier plants.
 2. The edge of woody ground covers (e.g. juniper, rosemary and cotoneaster) shall be maintained by pruning individual branches or stems to interior lateral branches a minimum of 6" and maximum of 12" from the edge of pavement. Do not shear these types of plants.

3. The edge of herbaceous ground covers (e.g. liriopse, hederia helix) may be maintained using turf edging equipment.
 4. When ground covers become excessively woody or develop thatch in excess of 4", the Contractor shall prune the planting severely to rejuvenate it. For most woody ground covers, prune to approximately 6 – 8" height. Herbaceous ground covers may be mowed at an appropriate height, generally 4 – 6". This treatment shall only be applied in the late winter/early spring when evapo-transpiration is low and re-growth will occur quickly.
 5. Handling plant debris
The Contractor is encouraged to chip all vegetative materials for use on site as mulch and/or compost and use as soil amendment. If ground cover pruning's must be removed from site, they shall be kept free of other types of inorganic debris and transported to a green waste recycling facility.
 6. Ground cover shall be kept off walls, fences, buildings, etc., except where specifically intended. Trim ground cover at least 12" from buildings.
- C. Mulching (see Section 3.9)
- D. Water management (see Section 2.4)
1. Ground cover shall be irrigated to provide adequate water to maintain attractive, green, healthy plants, and moderate growth rate during its growing season.
 2. The water budget approach to irrigation scheduling shall be used to match plant need with water application and avoid over-irrigation.
 3. Maximum irrigation frequency under normal conditions should not exceed three times per week.
- E. Soil and nutrition management (see Section 2.3)
1. The Contractor shall incorporate composted organic amendments into soil prior to planting ground cover as per Sections 2.3.D and 2.3.E.
 2. Fertilizer applications shall be made on a prescription basis only when soil and/or plant tissue analyses identify specific deficiencies. For bidding purposes plan to apply 1 – 2 lbs. of actual nitrogen to ground cover areas in two applications annually.
 3. Fertilization shall be accomplished by mechanically spreading material uniformly over area and immediately watering in to remove any material on foliage that may cause chemical burn.
- F. Pest management (see Section 2.5)
1. The Contractor shall employ integrated pest management procedures.
 2. The Contractor is responsible for monitoring ground cover to identify and assess pest problems, and taking action to control pests that affect ground cover health and appearance when pest populations or damage exceed established thresholds.
 3. The Contractor shall select pest controls to provide adequate pest control without harming non-target organisms, or negatively affecting air and water quality and public health. Pest management shall rely first on cultural, mechanical, physical, and biological control methods. Chemical controls may be applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control shall be applied. **Pesticides may not be applied on a prescheduled basis.**
 4. The Contractor shall not apply restricted chemicals that may harm water resources.
- G. Weeds (see Section 2.5.C)
- Weeds shall be controlled in ground cover areas as noted under the weed-control section. In general, weeds shall be removed by hand on a monthly basis.
- H. Replacement
1. Any ground cover found to be dead or missing shall be replaced with plant material of identical species at the Contractor's expense, unless the loss was due to excluded damage.
 2. If the loss resulted from excluded damage, replacement will be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss as outlined in the General Requirements section of this Specification.
 3. Replacement groundcover shall be planted at a spacing appropriate to encourage quick coverage. Prior to planting replacement groundcover, the soil (where possible and advantageous) shall be tilled to a depth of 6 inches (15 cm) to prepare it for the new plants.
 4. If regular foot traffic through a planter is preventing the groundcover from reaching full coverage of the soil, contact the Representative to discuss options for redirecting the foot

traffic. Consider installing pavers, stepping stones, a concrete walk, a gravel path, and/or barriers to redirect pedestrians. Provide costs for these options to the Representative.

3.4. Annual Color Beds and Perennials

- A. Standards for health and appearance
 - 1. Annual color beds/perennials shall be maintained to sustain attractive, healthy plants and uniform density with no bare spots. All beds shall be kept free of weeds, trash and debris.
 - 2. Upon delivery, annual plants shall be 80% in bloom; annuals and perennials shall be free of insects and diseases, uniform in height and size and have a fully developed root system.
- B. The Contractor shall suggest to Representative where annual color beds could be converted to perennial beds that provide color over several seasons and minimize waste.
- C. Annual color shall be planted only in designated beds and hydrozoned. Provide two installations per year, one in spring and one in late fall. Select species appropriate for the exposure and micro-site conditions. Avoid species requiring excessive irrigation and fertilization to sustain health.
 - 1. *Spring Annuals*: April/May installation of summer annuals; beds shall be tilled and amended if required. Four inch plant material shall be spaced at 12" on center. Specific number of units shall be defined in plant approval letter which shall be presented to the Representative approximately four (4) weeks prior to installation.
 - 2. *Fall Annuals/Bulbs*: October installation of pansies; November/December installation of tulips. Beds shall be prepped well and amended if required. Four inch plant material shall be spaced at 6 to 8" on center. Grade A bulbs shall be planted on 6" centers. Specific numbers of units shall be defined in plant approval letter which shall be presented to the Representative approximately four (4) weeks prior to installation.
- D. Mulching

The Contractor shall maintain a minimum of 2" of pine mini-nugget mulch at all times over bare soil areas that are not covered by ground cover (see Section 3.9).
- E. The Contractor shall prune annual plants weekly to remove spent flowers before seed is formed, also known as "dead heading." Perennials shall be pruned/cut back as appropriate for each variety.
- F. Water management (see Section 2.4)
 - 1. Annual color shall be irrigated to provide adequate water to maintain attractive, green, healthy plants and moderate growth rate during the growing season.
 - 2. The water budget approach to irrigation scheduling shall be used to match plant need with water application and avoid over-irrigation.
 - 3. Maximum irrigation frequency under normal conditions should not exceed three times per week.
- G. Soil and nutrition management (see Section 2.3)

The Contractor shall incorporate composted organic amendments into soil prior to planting annuals as per Sections 2.3.D and 2.3.E.
- H. Pest management (see Section 2.5)
 - 1. The Contractor shall employ integrated pest management procedures.
 - 2. Contractor is responsible for monitoring annual color to identify and assess pest problems, and for taking action to control pests that affect annual color health and appearance when pest populations or damage exceed established thresholds.
 - 3. The Contractor shall select pest controls to provide adequate pest control without harming non-target organisms, or negatively affecting air and water quality and public health. Pest management shall rely first on cultural, mechanical, physical, and biological control methods. Chemical controls may be applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control shall be applied. **Pesticides may not be applied on a prescheduled basis.**
 - 4. The Contractor shall not apply restricted chemicals that may harm water resources.
- I. Weeds (see Section 2.5.C)

Weeds shall be controlled in annual color and perennial beds as noted under the weed-control section. In general, weeds shall be removed by hand on a weekly basis.
- J. Fall/Winter debris removal

All perennials which go dormant in winter shall be examined closely. Dead twigs, spent flower buds, fallen leaves, spent seed pods, etc. shall be carefully removed and disposed of appropriately.

K. Handling plant debris

The Contractor is encouraged to use all vegetative materials as a feedstock for compost. If plant debris must be removed from site, it shall be kept free of other types of inorganic debris and transported to a green waste recycling facility.

L. Replacement

1. Any annuals or perennials found to be dead or missing shall be replaced with plant material of identical species at the Contractor's expense, unless the loss was due to excluded damage.
2. If the loss resulted from excluded damage, replacement will be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss as outlined in the General Requirements section of this Specification.

3.5. Shrubs

A. Standards for health and appearance

Shrubs shall be maintained to sustain attractive and healthy plants that are characteristic of the species. The goal is to develop a lush, natural appearance, promote flowering and keep pruning and trimming to a minimum for cost effectiveness.

B. Pruning

1. Selective pruning

Shrubs shall be pruned to remove branches that are dead, broken, extending beyond the face of curbs or sidewalks, or are climbing building walls (unless they are intended to climb the wall, such as climbing vines). Prune only as necessary to remove dead material, pests, or maintain the shrub off an adjacent structure or plant.

2. Hedging and shearing

- a. Shrubs uniformly planted in rows, where it is clear the intent was to create a hedge, shall be pruned so as to encourage a hedge. Shrubs in hedges shall be encouraged through pruning to form a dense, continuous, hedge, branching fully to the ground.
- b. Existing hedges that have been maintained by shearing in the past and that do not have adequate space to grow to mature plant size can continue to be maintained by shearing.
- c. The Contractor shall suggest to the Representative alternative plantings to these existing hedges that can be maintained in their natural shape.
- d. Formal hedges and topiary shall be regularly pruned to maintain a uniform height and width.
- e. For hedges that have not yet been maintained by shearing: shearing of plants into formal shapes shall be avoided as this destroys the natural form of the plant and generates excessive waste.
 - 1) Plants having adequate space for development shall instead be selectively pruned on an as needed basis.
 - 2) Where plant size must be controlled because of inadequate space for the plant, prune to reduce size by cutting individual branches or stems to interior lateral branches at appropriate locations. The Contractor shall recommend to the Representative where hedges could be replaced with size-appropriate plants to eliminate requirement for shearing.

3. Handling plant debris

Trimnings generated by pruning shall either be chipped and used as mulch on the site or transported to a green waste recycling facility.

4. Allow shrubs three (3) months to rejuvenate following a hard frost prior to pruning or replacing.
5. Dead or dying shrubs shall be removed as part of the pruning cycle.
6. Proper training of workers in the safe and proper operation of any pruning tools is the sole responsibility of the Contractor.

C. Mulching (see Section 3.9)

D. Water Management (see Section 2.4)

1. Shrubs shall be irrigated to provide adequate water to maintain attractive, healthy plants and moderate growth rate during their growing season.
2. The water budget approach to irrigation scheduling shall be used to match shrub need with water application and avoid over-irrigation.
- E. Soil and nutrition management (see Section 2.3)
 1. Fertilizer applications shall be made on a prescription basis only when soil and/or plant tissue analyses identify specific deficiencies.
 2. Additional fertilization of mature shrubs maintained with mulch may not be necessary.
 3. Fertilization shall be accomplished by spreading material around base of plant.
- F. Pest management (see Section 2.5)
 1. The Contractor shall employ integrated pest management procedures.
 2. Shrubs and vines shall be kept in a healthy, vigorous condition, free from disease and large concentrations of pests. The Contractor is responsible for monitoring shrubs to identify, assess pest problems and taking action to control pests that affect shrub health and appearance when pest populations or damage exceed established thresholds.
 3. The Contractor shall select pest controls to provide adequate pest control without harming non-target organisms, or negatively affecting air and water quality and public health. Pest management shall rely first on cultural, mechanical, physical, and biological control methods. Chemical controls may be applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control shall be applied. **Pesticides may not be applied on a prescheduled basis.**
 4. The Contractor shall not apply restricted chemicals that may harm water resources.
- G. Weeds (see Section 2.5.C)

In general weeds or vines found growing up through or inside shrubs and shrub beds shall be removed by hand. Only herbicides that will not damage the shrubs may be used if the condition requires use of such chemicals.
- H. Replacement
 1. Any shrub found to be dead or missing shall be replaced with plant material of identical species at the Contractor's expense, unless the loss was due to excluded damage.
 2. If the loss resulted from excluded damage, replacement will be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss as outlined in the General Requirements section of this Specification. When possible (reasonable availability considered), replacement shrubs shall be as close as possible to the existing size of the lost shrubs. No shrub replacement shall be less than 3 gallons.
 3. Replacement shrubs shall be at least 18 inches (45 cm) in height when planted, unless otherwise approved by the Representative. Place two (2) slow-release fertilizer tablets in backfill material, 6 inches (15 cm) deep on opposite sides of the root ball, but not touching the root ball.

3.6. Trees

- A. Standards for health and appearance

Trees shall be maintained in a healthy, vigorous growing condition, free from disease and large concentrations of pests. The ideal is a structurally stable plant that is characteristic of the species.
- B. Pruning (see Section 2.6.B)
 1. Prune trees only to remove dead, diseased, broken, dangerous, or crossing branches, and as required below. Pruning of this type is a minor, non-reimbursable, cost to be included as part of the regular maintenance.
 2. All tree pruning shall be performed only by trained, experienced personnel. An I.S.A. Certified Arborist or Tree Worker is recommended to be present at all times during pruning. The Contractor must have insurance covering the type of tree service required. If the Contractor does not have the requisite insurance he or she may hire a subcontractor who has the required insurance to do the work (see Sections 1.9 and 1.11.C).

3. All pruning shall be in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).
 4. Young trees shall receive annual pruning for up to five years after planting by personnel trained in pruning to develop tree structure. The purpose of the pruning is to direct the tree into the appropriate form for the species and the site and to develop a strong branch structure. Trees with co-dominant trunks and multiple branch attachments shall be pruned to correct those defects over a period of several years.
 5. Trees shall be pruned in the following manner (except species typically maintained full to ground such as Holly spp., Magnolia spp., Deodar Cedar, etc):
 - a. Clear the crown of diseased, crossing, weak and dead branches. Trees shall not be routinely thinned.
 - b. Provide 14' vertical clearance over roads, 8' over parking, and 8' over walkways.
 - c. Reduce end weight on heavy, horizontal branches.
 - d. Create a strong central trunk with lateral branches spaced vertically and horizontally.
 - e. Interior branches shall not be stripped out.
 - f. No more than 20% of live foliage shall be removed within the trees.
 - g. Trees shall not be climbed with spurs.
 - h. Branch removal or reduction cuts (thinning cuts) are to be employed rather than heading cuts. Trees shall not be topped or headed back.
 - i. No green palm fronds shall be removed above a horizontal line drawn across the base of the crown.
 6. Schedule pruning to avoid time of bud break, flowering and leaf drop on live branches, and to avoid peak periods of insect and disease activity for pests to which the tree species is susceptible.
 7. Pruning operations shall be conducted in a manner that does not damage surrounding and understory plants and structures.
 8. Trimmings generated by pruning shall either be chipped and used as mulch on the site, or transported to a green waste recycling facility.
- C. Staking
1. Tree stakes, ties and guys shall be checked regularly to ensure trees are not being damaged. Adjust ties and stake as necessary to prevent girdling and wounding.
 2. Tree stakes shall be removed within two years of planting. For trees unable to stand alone after two years, the Contractor will shorten the stakes and lower the ties to 3 – 4' height. If after the third year the tree will not stand without a stake, the Contractor will inspect to determine cause of instability, and make recommendations to the Representative for corrective action.
 3. If new ties are needed to secure tree to stake, use ties composed of recycled materials. The tie must be broad, have a smooth surface where it contacts the trunk, and provide some elasticity. Wire covered with hose, tubing or other materials, and covered electrical wire are not acceptable materials.
- D. Mulching (see Section 3.9)
- E. Water management (see Section 2.4)
1. Trees shall be irrigated to encourage deep root growth and to provide adequate water to maintain attractive, healthy plants, and a moderate growth rate during their growing season.
 2. The water budget approach to irrigation scheduling shall be used to match shrub need with water application and avoid over-irrigation.
- F. Soil nutrition and management (see section 2.3)
1. Fertilizer applications are to be made on a prescription basis only when soil and/or plant tissue analyses identify specific deficiencies.
 2. Additional fertilization of mature trees may not be necessary.
 3. All trees planted in planting beds shall be fertilized by spreading fertilizer below canopy of tree at drip line and working into soil.
 4. All trees planted in lawn areas shall be fertilized below grade by boring 1 1/2" diameter holes to a depth of 8" – 12" (8 - 10 holes per tree) and applying dry fertilizer, or by liquid fertilizer injection. All holes shall be immediately backfilled and repaired following fertilization.
- G. Pest management (see Section 2.5)

1. The Contractor shall employ integrated pest management procedures (see Section 2.5).
 2. The Contractor is responsible for monitoring trees to identify and assess pest problems and taking action to control pests that affect tree health and appearance when pest populations or damage exceed established thresholds.
 3. The Contractor shall select pest controls to provide adequate pest control without harming non-target organisms, or negatively affecting air and water quality and public health. Pest management shall rely first on cultural, mechanical, physical, and biological control methods. Chemical controls may be applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control shall be applied. **Pesticides may not be applied on a prescheduled basis.**
 4. The Contractor shall not apply restricted chemicals that may harm water resources.
- H. Weeds
Vines found growing up through or inside trees shall generally be removed by hand. Only herbicides that will not damage the tree may be used if the condition requires use of such chemicals.
- I. Replacement
1. Any tree found to be dead or missing shall be replaced with plant material of identical species at the Contractor's expense, unless the loss was due to excluded damage.
 2. If the loss resulted from excluded damage, replacement will be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss as outlined in the General Requirements section of this Specification. Replacement trees shall be equal in size to the originally installed tree at the time it was planted at the site. In no case shall replacement trees be less than 1.5" caliper size as defined by the American Nursery Association.
 3. Replacement trees shall be approved for size and appearance by the Representative prior to planting. Replacement trees shall be double staked with 2 inches (5 cm) diameter stakes unless otherwise approved by the Representative. Place 6 slow-release fertilizer tablets in backfill material, evenly spaced around root ball, but not touching the root ball.
 4. Trees shall have their stakes and ties maintained in a condition to provide proper support. Any broken stakes or ties must be replaced. All tie and stake replacements shall be similar to original installation. Remove tree stakes from trees when the trunks are larger than 2 inches (5 cm) caliper and the trees are able to support themselves. Remove stakes from site and dispose of by a legal method. Recycle used stakes if possible.

3.7. Urban Street Planters and Sidewalks/Pavers

- A. Standards for health and appearance
Urban street level planters are installed to provide pedestrian scale plantings that are aesthetically pleasing and provide healthy green space in an otherwise paved environment. They shall be maintained to continue to be effective, attractive and healthy. Planters shall be kept free of trash and debris.
- B. Monitoring and Inspection
1. Examine soils to ensure they are receiving adequate irrigation. Report conditions to the Representative if upgrades to irrigation are required. Repair existing irrigation as needed.
 2. Where beds are subject to foot traffic, note concerns to the Representative and suggest alternatives to rectify the situation, such as raised beds, grates, raised planters, etc.
 3. Prune large trees and shrubs as per previous sections on growth and waste management.
- C. Soil and nutrition management (see Section 2.3)
Check that the soil is at the appropriate depth so as mulch and water do not immediately wash off the tops of beds in light rain events. Confirm that water is draining through soil within 3 – 4 hours after a storm event. Alleviate compaction or replace soil as needed, with soil that includes compost at a rate of one (1) part compost to three (3) parts soil.
- D. Weeds (see Section 2.5.C)
Weeds found growing in planters **and sidewalks/pavers** shall generally be removed by hand. Only herbicides that will not damage adjacent plants may be used if the condition requires use of such chemicals.

E. Replacement

1. Any plants found to be dead or missing shall be replaced with plant material of identical species at the Contractor's expense, unless the loss was due to excluded damage.
2. If the loss resulted from excluded damage, replacement will be paid for as additional work. The Contractor shall submit a quote for replacement to the Representative within two weeks of the loss as outlined in the General Requirements section of this Specification. Replacement plants shall be equal in size to the originally installed plant at the time it was planted at the site.
3. Replacement trees shall be approved for size and appearance by the Representative prior to planting. Replacement trees shall be double staked with 2 inches (5 cm) diameter stakes unless otherwise approved by the Representative. Place 6 slow-release fertilizer tablets in backfill material, evenly spaced around root ball, but not touching the root ball.

3.8. Sports Fields

A. Standards for Health and Appearance

Sports Turf and skinned areas shall be maintained to sustain a safe and healthy uniformity. Turf shall have no bare or brown spots, and shall be free of disease and significant pests. Skinned areas shall be uniform and free from grass or weeds.

B. Turf

Turf shall be maintained as per Section 3.1 except as noted below:

- Turf shall be cut with a reel mower not less than once a week and scheduled so that the cut date and time are as close as reasonably possible to the next planned/schedule game/play date, typically the day before when possible.
- Turf height:

Bermuda	1/2 – 1"
Zoysia	1/2 – 1"
- Grasscycling is not permitted. All grass on the sports field is to be bagged.
- Each field shall be scheduled for aeration two (2) times per year (spring and fall) and is to be top dressed in spring only.
- Each field shall be scheduled for fertilization three (3) times per year between March and October.
- Each field shall be limed once per year in November or December.
- Fall interseeding - patch bare spots and fill in spots that are showing wear.
- Bermuda shall be verticut to remove thatch layers once a year.
- Irrigation shall be scheduled so the fields will not be wet on scheduled days and times of play. The Contractor shall consult with the Representative about the field schedule at the Kick off meeting and thereafter each year as needed. In the event of special events the Contractor shall modify the irrigation schedule accordingly at no extra charge.
- Remove any debris, including grass clippings, rocks, weeds, etc. from all skinned areas.

3.9. Mulch and Rock

- A. The Contractor shall add additional mulch and/or decorative rock regularly as needed to maintain a layer no less than 2 inches (5 cm) deep at all times in ground cover and shrub planters and 9 inches in playgrounds. Decomposition of organic mulch is considered normal wear and tear and replacement of decomposed mulch shall be made by the Contractor as part of this contract. See items G and H below for schedule. Mulch and/or decorative rock is not required in areas where plant foliage completely covers the soil surface, such that the soil is not visible through the foliage. Note: only 2 inches (5 cm) of mulch is required, however maintaining a deeper layer of mulch and/or decorative rock greatly reduces the labor and chemicals needed to control weeds, reduces water use, and helps the plants stay healthy.
- B. Replacement of large amounts of mulch and/or decorative rock (over one cubic yard or 0.75 cubic meter) which has been stolen, vandalized, or washed away by a single storm will be paid as additional work. Submit a quote for the work as noted in the General Requirements section of the Specification.
- C. Mulch shall be applied so that it is below grade (curb, edging, etc.) by half an inch. Some additional grading preparation and grading of areas adjacent to sidewalks or edging, etc. may be required to keep the finish grade of the mulch at an appropriate level. Mulch materials shall be

chipped or shredded green waste, wood chips from pruning operations, or chipped landscape prunings. When available, use materials generated on-site. Cypress, rubber, synthetic, color or dyed wood, and large pine nuggets shall not be used. Synthetic weed barriers or plastics of any kind shall not be placed under the mulch.

- D. Any mulch or decorative rock found outside planter areas shall be returned to the planter on a weekly basis using a rake or broom.
- E. Mulch and/or decorative rock shall be uniform in color and appearance, and free of leaves, sticks, or trash. Mulch may be chipped or shredded wood, bark, or decorative rock. When replacing existing mulch, use a mulch product that is matching in appearance to that already at the site.
- F. In areas of the site where wood-based mulch frequently washes away, submit a quote for replacement of the organic mulch with decorative rock having a similar color. Replacement rock shall be same size and color as existing decorative rock on site. In the event no rock is existing, the decorative rock used shall have a maximum diameter of 3/4 inch (2 cm) and a minimum diameter of 3/8 inch (1 cm).
- G. *Spring Application:* Mulch application shall be made in March or April. Mulch will be fresh, clean, and free of debris or litter. Beds will be edged with a distinctive edge or "rolled" to enhance appearance. Excess of spilled mulch will be cleaned up and removed from site.
- H. *Fall Application:* Mulch applications shall be made in September or October. Mulch will be fresh, clean, and free of debris and litter. Beds will be edged with a distinctive edge or "rolled" to enhance appearance. Excess of spilled straw will be cleaned up and removed from site.

Section 4: PLAYGROUNDS and HARDSCAPES**4.1. Playground Maintenance**

- A. The Contractor is not responsible for a detailed inspection of playground equipment. The intent of playground maintenance is to help the City as an extra pair of eyes and hands. It is also to assist in monitoring and maintaining the playground area.
- B. Debris removal and clean-up
The Contractor shall keep all play areas, walkways, area entries and exits free from trash and debris. This may be accomplished by mechanical blowers or by hand.
- C. Playground-grade engineered wood fiber
The Contractor shall replace the playground-grade engineered wood fiber annually, in the months of February and September each year, as needed. The cost of such shall not be extra work and shall be included in the contract. The Contractor shall guarantee that manufacturer-recommended levels are maintained for the fall heights of the various pieces of equipment. In most cases this is 9" minimum. The Contractor shall consult with the Representative for exact requirements.
- D. Safety
The Contractor shall make note of any potentially hazardous conditions in the play area and bring them immediately to the attention of the Representative.
 - 1. Examples of conditions worth noting include trip hazards, unsafe conditions in trees or surrounding landscape, etc.
 - 2. Pests – ants, wasps, bees and hornets or any similarly dangerous insects found in or near a play area shall be treated immediately when found and by any legally permissible means necessary as long as it does not create a concern for the safety or health of the users of the park.
 - 3. Preference should be given to physical and non-chemical treatments and methods of removal of pests when possible and prudent (see Section 2.5).

4.2. Walking Paths (not paved)

- A. Debris removal and clean-up
The Contractor shall keep all walkways and paths free from trash and debris.
- B. The Contractor will clean gravel and mulch pedestrian surfaces as needed to remove accumulation of materials that distract from the visual impact of the area or creates a safety hazard.
- C. Washouts
The Contractor shall correct and/or repair minor washouts as needed. If an area continually washes out, the Contractor shall note the conditions and report them to the Representative along with a proposed plan for corrective measures and an estimate to make such repairs. Note minor washouts are those that are less than 1 cubic yard in materials.
- D. Root interference
The Contractor shall report potential root damage to the Representative. Corrective action will be determined and directed as an extra service

4.3. Pedestrian Hardscapes

- A. Debris removal and clean-up
The Contractor shall keep all hardscape areas adjacent to landscaping including, sidewalks, walkways, terraces, amenity areas, pavilion slabs, site furnishings slabs, building entries and exits free from trash and debris. Contractor must use the Gwinnett County Water Quality BMPs required for surface cleaning.
- B. Root interference
The Contractor shall report potential root damage to hardscapes to the Representative. Corrective action will be determined and directed as an extra service.
- C. Safety
Any obvious previously un-reported or new surface flaws including large cracks in paved surfaces, heaving concrete or pavers, or other similar conditions that create an imperfection in two adjacent surfaces of greater than 1/4" shall be brought to the attention of the Representative in the weekly or triannual reports.

Section 5: DEFINITIONS

Antimicrobial agent – Any substance or mixture of substances intended for inhibiting the growth of or destroying any bacteria, fungi pathogenic to human and other animals, or viruses declared to be pests under Section 12754.5 of the Georgia Food and Agricultural Code, except slime control agents. Antimicrobial agents include, but are not limited to, disinfectants, sanitizers, bacteriostats, sterilizers, fungicides and fungistats.

Approved – The term “approved”, where used herein, shall mean accepted for general conformance with the general concept and general compliance with the information included in the Maintenance Contract Document/Standards and the Landscape Maintenance Specification.

Authorized – The term “authorized”, where used herein, shall mean accepted for general conformance with the general concept and general compliance with the information included in the Maintenance Contract Document/Standards and the Landscape Maintenance Specification.

Biodiesel – A fuel produced through a process in which organically-derived oils such as soybean or vegetable oil are combined with alcohol.

Bioswale – Channel constructed to improve the water quality of runoff, usually while also conveying it, through filtering by vegetation and other mechanisms that capture and hold water pollutants.

Blanket – Mat of organic, biodegradable materials such as coir fibers, straw or curled wood fiber, on or between photodegradable polypropylene or degradable natural fiber netting. The blanket is placed on the soil surface to protect from surface erosion.

Compost berm – An erosion control device composed of linear mounds of compost placed along a slope to slow water movement and retain sediment.

Contractor – The person, partnership, or corporation that will perform the landscape maintenance work. The term “Contractor”, where used herein, shall mean the primary contractor as specified in the signed contract and any or all subcontractors used by the primary contractor to perform assigned work as required in the Maintenance Contract Document/Standards and the Landscape Maintenance Specification.

Directed – The terms “if directed”, “when directed”, or “as directed”, where used herein, shall mean if, when, or as directed by the City Representative.

Evapotranspiration (ET) – The combined loss of water from a given area, and during a specified period of time, by evaporation from the soil surface and by transpiration from plants.

Excluded damage – Damage caused by vandalism, pedestrians, vehicles, animals (except insects and rodents), or other unusual factors. It does not include damage caused by the Contractor's actions, lack of reasonable care, pest damage (such as insects), diseases, or plant loss due to lack of water caused by an irrigation system programming error, irrigation system breakage, or irrigation malfunction. It is assumed that most plants can survive for at least one week without irrigation, during which time any irrigation problems should become apparent to the contractor. Exceptions may be made if the Owner's authorized representative determines that unusual circumstances contributed to a loss.

Grasscycling – A turf management technique in which turf is mown frequently and clippings are left on the turf to return nutrients to the soil, thereby reducing fertilizer requirements by as much as 50%.

Hardscape – The hard-surface components of the landscape such as sidewalks, pavements, non-living features.

Hydrozone – A portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

I.S.A. – International Society of Arboriculture, www.isa-arbor.com.

Integrated Pest Management – A holistic approach to managing insects, plant disease, weeds and other pests so that their populations do not exceed a tolerable level by fostering an environment favorable for plants and other beneficial organisms and unfavorable for pests. If pest problems arise a variety of control techniques are considered, with least toxic pesticides being applied as a last resort.

Owner – The person, partnership, corporation, or City that contracted for the performance of the landscape maintenance work. The terms “Owner”, “City”, and or “City Representative”, where used herein, shall mean the City of Norcross and/or specified person(s) as a City of Norcross representative.

Pesticide – As defined in Section 12753 of the Georgia food and Agricultural Code, a pesticide includes any of the following: (a) any spray adjuvant; (b) any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever. Antimicrobial agents are excluded from the definition of pesticide.

“Toxicity Category I Pesticide Product” – Any pesticide product that meets United States Environmental Protection Agency criteria for Toxicity Category I under Section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations.

“Toxicity Category II Pesticide Product” – Any pesticide product that meets United States Environmental Protection Agency criteria for Toxicity Category II under Section 156.10 of Part 156 of Title 40 of the Code of Federal Regulations.

Sheet Mulching – The practice of preparing a bed or turf area by trimming or mowing any high weeds and removing woody plants followed by placement of a layer of recyclable paper products such as cardboard and news print and then covering with organic mulch. The practice typically reduces the amount of weeds that would come up if only mulch was added.

Sock – Sleeve filled with mulch, straw, or other organic, biodegradable material to create long tube placed along a slope to slow water movement and retain sediment.

Subcontractor - The term “subcontractor”, where used herein, shall mean any company or person employed by the authorized contractor to perform work on City property as assigned by the contract.

Tube – See sock.

Wattle – See sock.

Appendix

- I. Project Site Locations**
- II. Weekly Landscape Maintenance Checklist**
- III. Tri-annual Landscape Inspection Card**
- IV. Calendar of Monthly Maintenance**
- V. Estimated Annual Maintenance Schedule**
- VI. Fertilization Summary – Monthly Application Rates**
- VII. Insect Control Chart**
- VIII. Disease Control Chart**
- IX. Pest Control for Fescue Lawns**
- X. Soil pH Adjustment Chart**
- XI. Species Pruning Guidelines**

PROJECT SITE LOCATIONS

SITE NAME	LOCATION	TYPE*	COMMENTS
BETTY MAULDIN PARK	45 Jones Street	A	Includes landscape area behind Iron Horse Tavern
CITY HALL	65 Lawrenceville Street	A	Includes entire area from Wingo Street entrance to Lawrenceville Street entrances; from Betty Mauldin Park to north side of large parking lot (ditch).
FIRE MUSEUM	165 Lawrenceville Street	A	
HERITAGE PARK	100 Lawrenceville Street	A	
LILLIAN WEBB COMMUNITY PARK	47 College Street	A	Turf areas must be reel mowed.
NORCROSS CULTURAL ARTS & COMMUNITY CENTER	10 College Street	A	Includes all areas around Center and all buildings on the NCACC campus.
WELCOME CENTER	189 Lawrenceville Street	A	

* See TYPE descriptions at Section 2.1.C – Grounds maintenance standards

WEEKLY LANDSCAPE MAINTENANCE CHECKLIST

Place a check mark by each item completed during the past week.

- Mow and edge lawns if needed.
- Prune back any shrubs overhanging curbs or sidewalks.
- Prune back any groundcover overhanging curbs or sidewalks.
- Remove litter and leaves from plants, planters, and parking lots.
- Remove any broken or fallen branches from trees. Remove sucker growth from tree trunks.
- Remove any weeds larger than 2 inches (5 cm) high or wide from planters. Weeds 2 inches (5 cm) and larger must be removed, not just killed.
- Replace bark mulch which has been knocked or washed out of planters. Smooth mulch layer if it has been disturbed.
- Replace decorative rock which has been knocked or washed out of planters. Smooth decorative rock surface if it has been disturbed.
- Check plants for signs of stress or disease. Replace any plants that meet conditions for replacement at the contractor's expense. Request authorization to replace other dead or missing plants. Note: You must request authorization to make replacements within one week of the damage becoming evident!
- Sweep or blow clean all walkways, curbs, and gutters.
- Treat for any signs of disease or pest infestation.
- Complete any items required on the Tri-annual Checklist.
- Hand water any plants that are dry and stressed.
- Check the irrigation system. Make emergency repairs as needed or request authorization to make major repairs. Note: you must request authorization for repairs within one week of the damage becoming evident!
- Adjust the irrigation controllers for current water needs of plants.

Checked by: _____ (Print Name)

Signature: _____ Date: _____

**TRIENNIAL LANDSCAPE INSPECTION CARD
(MARCH 1, JUNE 1, OCTOBER 1)**

Place a check mark by each item needing attention and note the location(s).

Score each service area between 1 and 5 with 1 being the lowest score and 5 being the highest.

1= Needs immediate improvement; significant failure to meet minimum expectations and specifications. **Note: Failure to bring this score up by the next job walk may result in termination of the agreement.**

2 = Needs improvement soon; failing to meet some minimum expectations and specifications.

3 = Needs minor improvements barely meeting minimums.

4 = Meets minimal and typical expectations.

5 = Top quality work meeting or exceeding expectations.

SCORE (1-5):	ITEM:	COMMENTS:
<input type="radio"/> _____	<u>Mowing turf:</u>	_____
<input type="radio"/> _____	<u>Edging turf:</u>	_____
<input type="radio"/> _____	<u>HS Bed edges:</u>	_____
<input type="radio"/> _____	<u>Fire ants:</u>	_____
<input type="radio"/> _____	<u>Pruning of trees:</u>	_____
<input type="radio"/> _____	<u>Pruning of shrubs:</u>	_____
<input type="radio"/> _____	<u>Pruning of groundcover:</u>	_____
<input type="radio"/> _____	<u>Leaf litter:</u>	_____
<input type="radio"/> _____	<u>Trash/debris:</u>	_____
<input type="radio"/> _____	<u>Surface weeds:</u>	_____
<input type="radio"/> _____	<u>Weeds in planters:</u>	_____
<input type="radio"/> _____	<u>Weeds in turf:</u>	_____
<input type="radio"/> _____	<u>Vines:</u>	_____

TRIANNUAL LANDSCAPE INSPECTION CARD (page 2)

_____ Invasive and poisonous plants: _____

_____ Mulch: _____

_____ Pests or disease: _____

_____ Cleanliness: _____

_____ Irrigation controls: _____

_____ Irrigation heads, etc: _____

_____ Seasonal color: _____

_____ Sports turf: _____

_____ Play surface mulch: _____

_____ Detention Ponds Etc: **Not Applicable** _____

Other: _____

TOTAL _____ **Score out of a possible 110 Points.**

Checked by: _____ (Print Name)

Signature: _____ Date: _____

CALENDAR OF MONTHLY MAINTENANCE

JANUARY

- Mowing and trimming of cool season turf as needed.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Prune uneven top or sucker growth and dead limbs.
- Inspection of turf, trees and shrubs for pests and disease followed by control applications as necessary.
- Policing all shrub beds and lawn areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Prune any tree branches that interfere with public safety.
- Prune all parking lot and street trees to encourage strong upward growth.
- Dead head all flowers.

FEBRUARY

- Mowing and trimming of cool season turf as needed.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Prune uneven top or sucker growth and dead limbs.
- Inspection of turf, trees and shrubs for pests and disease followed by control applications as necessary.
- Policing all shrub beds and lawn areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Pruning of Liriope to 2" to 3" in height. This will rejuvenate its appearance and encourage the groups to fill in.
- Pre-emergent Weed Control
 - Shrubs
Pre-emergence herbicide of Snapshot or similar alternate will be applied to all shrub beds to prevent any new weed germination. This will greatly reduce any appearance of weeds later in the season, saving time and the unsightly appearance of mature weeds before they can be controlled.
 - Turf
Pre-emergence application of Ronstar WP to warm season turf areas, and Ronstar G to cool season turf areas, to suppress weed germination.
Scalp warm season turf to 1" height to remove previous year's dead growth, improve pre-emergent effectiveness, and allow quicker spring green-up.
- Fertilization - See Monthly Application Rates Table.
- Add new mulch to planters where the mulch depth has been reduced to less than 2 inches (5 cm) thick. Mulch not required where shrubs or groundcover completely hide the soil surface from view.
- Dead head all flowers.

MARCH

- Mowing and trimming of cool season turf as needed.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Prune uneven top or sucker growth and dead limbs.
- Inspection of turf, trees and shrubs for pests and disease followed by control applications as necessary.
- Policing all shrub beds and lawn areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.

CALENDAR OF MONTHLY MAINTENANCE (cont'd.)

- Fertilization - See Monthly Application Rates Table.
- Irrigation System
 - Start up of irrigation system and wells and notify owner of any broken heads or lines, and coordinate repairs.
 - Flush out irrigation systems as needed and check for proper operation of each valve zone.
 - Remove and clean WYE filter screens.
 - Clean or replace plugged sprinkler nozzles. Replace plugged drip emitters.
 - Replace irrigation controller program back-up batteries.
 - Revise irrigation is needed to cover all planting areas.
- Dead head all flowers.

APRIL

- Mowing - Warm Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower as needed.
- Mowing - Cool Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash, and debris from curbs and gutters after mowing.
- Edging - Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas as needed.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Warm Season Turf - Application of 3-way to control broadleaf weeds on an as needed basis.
- Prune uneven top or sucker growth and dead limbs.
- Inspection of turf, trees and shrubs for pests and disease followed by control applications as necessary.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Monitor irrigation system for proper operation to ensure even soil moisture.
- Fertilization - See Monthly Application Rates Table.
- Add new mulch to planters where the mulch depth has been reduced to less than 2 inches (5 cm) thick. Mulch not required where shrubs or groundcover completely hide the soil surface from view.
- Plant annual color for spring/summer bloom.
- Dead head all flowers.

MAY

- Mowing - Warm Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower as needed.
- Mowing - Cool Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash, and debris from curbs and gutters after mowing.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by liquid application of post-herbicide and hand removal as necessary to control weed growth in turf and beds. Remove all weeds.

CALENDAR OF MONTHLY MAINTENANCE (cont'd.)

- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization - See Monthly Application Rates Table.
- Pre-emerge - Cool Season Turf - Second application of Ronstar G to inhibit germination of crabgrass.
- Dead head all flowers.

JUNE

- Mowing turf to achieve a uniform, even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash, and organic debris from curbs and gutters after mowing.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization - See Monthly Application Rates Table.
- Prune spring & winter-flowering shrubs as needed to maintain proper shape.
- Add new mulch to planters where the mulch depth has been reduced to less than 2 inches (5 cm) thick. Mulch not required where shrubs or groundcover completely hide the soil surface from view.
- Dead head all flowers.

JULY

- Mowing turf to achieve a uniform even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash and organic debris from curbs and gutters after mowing.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Pruning of uneven top or sucker for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for organic debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization – See Monthly Application Rates Table.
- Dead head all flowers.

CALENDAR OF MONTHLY MAINTENANCE (cont'd.)**AUGUST**

- Mowing turf to achieve a uniform, even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash, and organic debris from curbs and gutters after mowing.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for organic debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization - See Monthly Application Rates Table.
- Add new mulch to planters where the mulch depth has been reduced to less than 2 inches (5 cm) thick. Mulch not required where shrubs or groundcover completely hide the soil surface from view.
- Dead head all flowers.

SEPTEMBER

- Mowing turf to achieve a uniform, even cut and trimming around beds and small areas with a small mower.
- Removal of clippings, trash and organic debris from curbs and gutters after mowing.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by liquid application of post-herbicides and hand removal as necessary to control weed growth in lawns and beds. Remove all weeds.
- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization - See Monthly Application Rates Table.
- Over seeding - Cool Season Turf Re-seed turf areas to maintain a healthy, thick, and attractive appearance.
- Aerate turf areas subject to compaction with a mechanical aerator in order to minimize soil compaction and allow absorption of water and nutrients.
- Pre-Emerge - Warm Season Turf - Application of Surflan.
- Prune perennial bulbs back to ground level as soon as leaf blades yellow and wilt due to cold weather. Apply 3 inches of mulch on ground surface over bulbs to insulate from cold.
- Plant annual color for fall/winter bloom.
- Dead head all flowers.

CALENDAR OF MONTHLY MAINTENANCE (cont'd.)**OCTOBER**

- Mowing - Warm Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower as needed.
- Mowing - Cool Season: Mowing lawn to achieve a uniform, even cut and trimming around beds and small areas with a small mower. May be performed infrequently to help establish seed germination.
- Removal of clippings, trash and organic debris from all curbs and gutters after mowing.
- Leaf removal – Begin policing fall leaf litter from turf, ground cover and shrub areas where appropriate.
- Edging with metal blade type push edger and removal of organic debris from all curbs, walks, and roadways where adjacent to turf areas.
- Weed control by hand removal as necessary to control weed growth in lawns and beds. Remove all weeds. If necessary for large outbreaks of weeds utilize weed control by liquid application of post-herbicides in areas where needed.
- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for organic debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Fertilization - See Monthly Application Rates Table.
- Prepare irrigation system and wells for winter. Turn off irrigation system at main line to winterize system and prevent winter freeze damage. Make sure backflow preventer is well insulated or drained prior to first freeze. Blow out pipes using compressed air in areas where freezing could result in breakage.
- Add new mulch to planters where the mulch depth has been reduced to less than 2 inches (5 cm) thick. Mulch not required where shrubs or groundcover completely hide the soil surface from view.
- Dead head all flowers.
- Trim and shape trees by a licensed arborist. No landscape maintenance shall prune trees higher than 15' ft.

NOVEMBER

- Mowing and trimming of cool season turf as needed.
- Weed control by hand removal as necessary to control weed growth in lawns and beds. Remove all weeds. If necessary for large outbreaks of weeds utilize weed control by liquid application of post-herbicides in areas where needed.
- Pruning of uneven top or sucker growth to promote lateral branching, fullness, and uniform growth of shrubs. Pruning sucker growth or dead limbs from trees.
- Inspection of trees and shrubs for pests and control by spray applications of fungicide and insecticide as necessary.
- Policing all shrub beds and turf areas for organic debris, leaves and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Remove leaves that have fallen on turf, parking lots, walkways, and shrub beds as per frequency chart.
- Fertilization - See Monthly Application Rates Table.
- Dead head all flowers.
- Closely examine all perennials which go dormant in winter. Carefully remove dead twigs, spent flower buds, fallen leaves, spent seed pods, etc. and dispose of properly.

CALENDAR OF MONTHLY MAINTENANCE (cont'd.)

DECEMBER

- Mowing and trimming of cool season turf as needed.
- Weed control by hand removal as necessary to control weed growth in lawns and beds. Remove all weeds. If necessary for large outbreaks of weeds utilize weed control by liquid application of post-herbicides in areas where needed.
- Pruning of dead or downed limbs from trees or shrubs.
- Policing all shrub beds and turf areas for organic debris, leaves, and trash.
- Replace any mulch that has spread out of beds. Excavate trench edges as needed.
- Remove leaves that have fallen on turf, parking lots, walkways, and shrub beds as per frequency chart.
- Prune any tree branches that interfere with public safety.
- Prune summer and fall-blooming shrubs as needed.
- Dead head all flowers.
- Closely examine all perennials which go dormant in winter. Carefully remove dead twigs, spent flower buds, fallen leaves, spent seed pods, etc. and dispose of properly.

ESTIMATED ANNUAL MAINTENANCE SCHEDULE

Functions	Frequency												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
WARM SEASON TURF/COOL SEASON TURF													
Mow	2/4	2/4	4/4	5/5	4/3	4/3	5/4	4/3	4/3	4/4	2/4	2/5	42/46
Edge	2/4	2/4	4/4	5/5	4/3	4/3	5/4	4/3	4/3	4/4	2/4	2/5	42/46
Monofilament Trim	2/4	2/4	4/4	5/5	4/3	4/3	5/4	4/3	4/3	4/4	2/4	2/4	42/46
Fertilization		1				1				1			3
Post-Emergent Weed Control	1					1				1			3
BED AREAS													
Post-Emergent Weed Control	2	2	2	2	2	2	2	2	2	2	2	2	24
Annual Color Install	1			1			1			1			4
Shrub & Ground Cover Fertility		1				1				1			3
Shrub & Ground Cover Prune	1	1	1	1	1	1	1	1	1	1	1	1	12
SITE SPECIFIC SERVICES													
Orn. Tree Prune (up to 12)		1							1				2
Orn. Tree Fert. (up to 6" cal.		1											1
Insect & Disease Inspection			2	4	4	4	4	4	4	4	2	2	34
Insect & Disease Control	As Needed												
Soil Analysis									1				1
IRRIGATION MANAGEMENT													
Weekly Management	2	2	4	4	4	4	4	4	4	4	2	2	40
Technical Inspections													3
DEBRIS	4	4	4	5	4	4	5	4	4	4	4	5	51

FERTILIZATION SUMMARY - MONTHLY APPLICATION RATES

The following are routine maintenance tasks which would occur each month during an average year. Climatic conditions will often dictate when certain tasks are best done.

LINE ITEM DESCRIPTIONS

Fertility

Warm Season Turf: Maintain a proper fertility and pH level of the soil at a range of 5.5 to 6.5 to provide an environment conducive to plant growth on turf grass.

Cool Season Turf: Maintain a proper fertility and pH level of the soil at a range of 5.5 to 6.5 to provide an environment conducive to plant growth on turf grass.

Round	Warm	Cool
1 - February/March	0.5 lb K/acre	1.0 lb N/acre
2 - April/May	1.5 lb N/acre 0.5 lb.K/acre	0.75 lb N/acre 0.5 lb K/acre
3 - June/July	24-6-12 (50% SCU)	.5 lb N (liquid or dry)
4 - July/August	24-6-12 (50% SCU) 6-7 lbs/1000 sq. ft/	-----
5 -Sept./Oct.	1.0 lbs N/acre 0.5 lbs K/acre	24-6-12 (50% SCU) 6-7 lbs./1000 sq. ft.
6 - Nov./Dec.	-----	24-6-12 (50% SCU) 8 lbs./1000 sq. ft.

FERTILIZATION SUMMARY - MONTHLY APPLICATION RATES (cont'd.)

Lime (pH)

Warm Season Turf: Application of lime annually to adjust a low pH as specified by soil analysis, September or October.

Cool Season Turf: Application of lime annually to adjust a low pH as specified by soil analysis, September or October (prior to aeration and overseed.)

Round	Warm	Cool
1 - February/March	-----	-----
2 - April/May	-----	-----
3 - June/July	-----	-----
4 - July/August	-----	Limestone 20 lbs/1000 sq. ft.
5 -Sept./Oct.	-----	-----
6 - Nov./Dec.	Limestone 20 lbs/1000 sq. ft.	-----

Lime: Ground limestone containing not less than 85% total carbonates. Sieve Analysis: 50% passing 100 mesh sieve and at least 90% passing 20 mesh sieve.

FERTILIZATION SUMMARY - MONTHLY APPLICATION RATES (cont'd.)

Pre-emerge

Warm Season Turf: Apply pre-emergent herbicide to turf areas.

Cool Season Turf: Apply pre-emergent herbicide to turf areas.

Round	Warm	Cool
1 - February/March	2.5 lbs (A.I.) Pre-M/acre	2.5 lbs (A.I.) Pre-M/acre
2 - April/May	2.5 lbs (A.I.) Pre-M/acre	2.5 lbs (A.I.) Pre-M/acre
3 - June/July	-----	-----
4 - July/August	-----	-----
5 -Sept./Oct.	Surflan	-----
6 - Nov./Dec.	-----	-----

FERTILIZATION SUMMARY - MONTHLY APPLICATION RATES (cont'd.)

Weed/Pest Control

Warm Season Turf: Apply post-emergent herbicide as needed to turf areas to control crabgrass and broadleaf weeds.

Apply pesticide to turf as necessary to control insects and disease.

Cool Season Turf: Apply post-emergent herbicide as needed to turf areas to control crabgrass and broadleaf weeds.

Apply pesticide to turf as necessary to control insects and disease.

Round	Warm	Cool
1 - February/March	3-way	3-way
2 - April/May	3-way Ferramec (as needed)	3-way Ferramec (as needed)
3 - June/July	Ferramec (as needed)	Ferramec in liquid Fertility (as needed)
4 - July/August	Ferramec (as needed)	Ferramec (as needed)
5 -Sept./Oct.	3-way	-----
6 - Nov./Dec.	-----	-----

INSECT CONTROL CHART

Only use chemicals listed below in the event that reasonable attempts at least toxic IPM control methods have failed. Use of the following chemicals requires written approval from the owner or owner’s representative. The owner requires, as a part of any request to use toxic chemical, a copy of the site log stating what other efforts and methods were undertaken, when they were implemented and what effect they had.

<u>Name of Pest</u>	<u>Insecticide</u>	<u>Hydraulic Sprayer Formula (Per 100 Gal. Water)</u>	<u>Plants Commonly Susceptible</u>	<u>Comments</u>
Aphids	Malathion	1 quart 50% Emulsion	Photinia, Crape Myrtle, Holly, Ivy	Apply when noticed
Lace Bugs	Malathion	1 quart 50% Emulsion	2 sprays, 2-3 weeks apart.	
Leaf Hoppers	Methoxychlor	3 pounds 50% Wettable Powder	Oak, Maple	Repeat if necessary
Scale Insects - Crawling Stage	Methoxychlor 25% B.C.	2 quarts	Ligustrum, Holly, Ivy, Crape Myrtle	First spray in early June. Repeat in 3 weeks
Scale Insects - Dormant	Superior Type Dormant Oil	3 gallons	Ligustrum, Holly, Ivy Crape Myrtle	Spray only when temp. is above 45° F.
Spider Mites	Malathion	1 quart 50% Emulsion	Juniper, Holly	Two sprays 3 weeks apart
	Other special Miticides	Manufacturer's directions		
Leaf Miner	Malathion	1 quart 50% Emulsion	Holly	When new growth has 4 or 5 leaves showing or when miners are 2/3" in diameter
White Flies	57% E.C.	1 quart Malathion	Ligustrum	When noticed in summer

INSECT CONTROL CHART (cont'd.)

<u>Name of Pest</u>	<u>Insecticide</u>	<u>Hydraulic Sprayer Formula (Per 100 Gal. Water)</u>	<u>Plants Commonly Susceptible</u>	<u>Comments</u>
Web Worms	Sevin	2 pounds 50% Wettable Powder		When first noticed
Leaf Roller	Sevin	As directed		When noticed
All other Leaf-Eating Caterpillars	50% Wettable Powder Methoxychlor	3 pounds	Many ornamentals	When noticed
Bag Worms	Diazinon	1 pound Malathion 50% Emulsion	Juniper 1 quart	Early to middle June; when adults emerge
Japanese Beetle	Sevin	2 pounds	Many ornamentals	When adults emerge
Leaf-Eating Beetles	Sevin 50% Wettable Powder	2 pounds	Many ornamentals	When noticed
Saw Flies	Isotox	As directed	Pine	When noticed
Pine Weevils	Lindane	As directed	Pine	When noticed
Bark Beetles	Lindane	As directed	Pine	Usually attack weak trees

DISEASE CONTROL CHART

<u>Name of Disease</u>	<u>Insecticide</u>	<u>Directions</u>	<u>Commonly Susceptible</u>	<u>Comments</u>
Fungus Control	Benlate Manzate	As directed	Many ornamentals	
Leaf Spot	Benlate Manzate	As directed	Maple, Ivy, Photinia	
Anthracnose	Daconil, Captan, Phaltan, Dithane M22	As directed	Dogwood, Maple	Spray when blossom begins to open
Powdery Mildew	Benlate	As directed	Crape Myrtle	10 - 14 day intervals

TYPICAL PEST CONTROL FOR LAWNS

<u>I.</u>	<u>DISEASES</u>	<u>TREATMENT</u>
	Brown Patch	Daconil, Benomyl, Fore
	Leaf Spot	Daconil, Captan
	Dollar Spot	Daconil, Fore
	Rust	Zineb, Maneb
	Fusarium Blight	Benomyl, Fore
	Anthracoese	Daconil, Fore
	Pythium	Dexon, Koban
<u>II.</u>	<u>INSECTS</u>	<u>TREATMENT</u>
	Army Worms	Diazinon
	Sod Webworms	Diazinon
<u>III.</u>	<u>WEEDS</u>	<u>TREATMENTS</u>
	To kill growing	2-4-D plus Dicamba
	To prevent weeds (pre-emergent)	Balan or Dachtal

SOIL pH ADJUSTMENT CHART

To raise soil pH one point, spread ground limestone as follows:

SOIL TYPE	LIMESTONE <i>(Per 1,000 s.f.)</i>	LIMESTONE <i>(Per Acre)</i>
Sandy Loam	80 lbs.	3,000 lbs.
Loam	110 lbs.	4,000 lbs.
Clay Loam	120 lbs.	5,000 lbs.

To lower soil pH one point, spread powdered sulfur and aluminum sulfate as follows:

SOIL TYPE	POWDERED SULFUR <i>(Per 1,000 s.f.)</i>	POWDERED SULFUR <i>(Per Acre)</i>
Sandy Loam	7 lbs.	300 lbs.
Loam	10 lbs.	430 lbs.
Clay Loam	14 lbs.	600 lbs.

SOIL TYPE	ALUMINUM SULFATE <i>(Per 1,000 s.f.)</i>	ALUMINUM SULFATE <i>(Per Acre)</i>
Sandy Loam	50 lbs.	2,000 lbs.
Loam	70 lbs.	3,000 lbs.
Clay Loam	90 lbs.	3,500 lbs.

Note: Use one-half (1/2) the above applications to lower pH one point on established plantings (preferably in the dormant season). Cultivate materials thoroughly, by hand, into the 1 to 2 inches of soil above the plant roots, carefully avoiding damage to the root systems.

SPECIES PRUNING GUIDELINES

- A. **Chinese/American Elm, Oak, Maple, Pine and Tulip Poplar spp., etc. (Large Canopy Trees):** Allow these tree to form a canopy head (for shade), maintain a clear trunk of approximately 8 ft. - 10 ft. , including the lowest branches. These trees need little to no pruning except for dead wood or growth on the main tree trunk and branches falling below the specified height. **NOTE: The Georgia Champion American Elm located in Betty Mauldin Park has been “adopted” by Downey Tree Service. All care for this tree is performed by that company.**
- B. **Redbud, Dogwood, Sourwood, etc. (Understory Trees):** Allow these trees to grow virtually unpruned, remove only suckering branches from the root flare. Secondary branches that are low are acceptable on these species except in parks, along roads and in parking lots. Prune where tree branches would conflict with pedestrian or vehicular traffic trim as needed.
- C. **River Birch, Trident Maple, etc. (Multi-Trunk Canopy Trees):** Allow tree to form dense canopy. Remove suckering branches below 8'. Trim to maintain 3 to 5 main trunks. Remove dead or dying trunks as needed. Thin the canopy head annually to improve health removing 10-20% of the growth to encourage light penetration.
- D. **Zelkova and Pear spp:** These multi-trunked trees typically branch from a central location that quickly becomes weak and subject to catastrophic failure. Remove large branches from the crotch connection point to create a more open canopy and reduce the amount of branches extending from one single connection point. Try and stagger cuts to create a stronger trunk. Keep canopy light and airy to ensure health of tree is maintained. When trees of these species split or become sick do not try and save them. Replace the trees with a more suitable urban tree.
- E. **Crape Myrtle: DO NOT CUT BACK SEVERELY EVERY YEAR!** In general the Contractor is to allow this plant to form its natural shape. Remove all sucker growth from the lower branches weekly during the growing periods. Maintain three to seven main trunks (five is best) except for standards. Allow the tree to achieve a maximum height, often greater than 15 to 20 feet. Typically prune all stems of the tree only when the branches are creating a hazard or flowering has subsided significantly from previous seasons. Some minor thinning of the crown or topping may be beneficial to encourage a better rounded and even appearance. A good plan is to prune crape backs a few feet each season so that it is bigger and bigger each year, then on the fourth or fifth year cut all the way back just below the knuckle of the pruning from the four or five previous years. This reduces the creation of large unsightly nodes and keeps the tree healthy and full. **Never** are these trees to be cut back to 1/3 or 1/2 of their previous height leaving only the main canes/trunks.
- F. **Tree-Form Burford Holly, Wax Myrtle and Photinia:** Always remove sucker growth from the stems of these plants to 1/3 of the overall height of the plant. The plants should form a spreading canopy head and the plants are best when the branching character is allowed to be seen. Prune the plants approximately two (2) times each summer by removing the new shoots from the top of the plants and causing them to thicken up and spread out. (Do not shear the tops to create “mushroom” style shapes out of these trees).
- G. **Evergreen Shrubs: (Except Hedges):** Do not prune into individual shrubs. Allow to form a dense mass of plants at a height determined by Landscape Architect. Trim twice annually only to remove dead wood, and atypical shoots. Do not shear (except for boxwoods). Cut individual branches deeper within the shrub to encourage light within and promote fullness at lower areas of the hedge.
- H. **Evergreen Shrubs: (Used as a hedge type plant):** Prune two (2) times a year, 1st after initial spring growth spurt and second at the beginning of dormancy before new buds are set. Keep fairly tight in character. Height to be determined by Landscape Architect.