SECTION 02900 - LANDSCAPING

Description of the Work: The extent of landscaping shall consist of furnishing, storing, acclimatizing, delivering, and planting trees, shrubs, and groundcover plants of the type and size indicated on the drawings, including all materials and incidental operations completed in accordance with these specifications.

Related Work Specified Elsewhere:

Underground Irrigation System - Section 02810.
Lawns - Section 02930.

QUALITY ASSURANCE:

Applicable Standards: Comply with the latest provisions of ANSI Z60.1, "The American Standard for Nursery Stock". The Soil Science Society of America, The Association of Agricultural Chemists, The National Bureau of Standards Department of Transportation (NCDOT) and Agricultural Extension Service. All plant materials must be selected from nurseries that have been inspected and certified by state plant inspectors.

Plant Names and Labels: The nomenclature used in the plans and specifications conforms, with few exceptions, to that of the current edition of Standardized Plant Names as adopted by the American Joint Committe on Horticulture Nomenclature.

Furnish healthy, properly planted, fertilized, and maintained living plants at completion; all to insure the Owner a healthy and living landscape. Plant material must be free of disease, insects, eggs, larvae, and defects such as cancer, sun-scald, injuries, abrasions, dehydration, windburn disfigurement, leaf chlorosis, or defoliation. Guarantee that any chemicals used will not permanently damage or harm desired plants.

Plants shall be subject to inspection at any time for the duration of the project. Plant shall be inspected for their genus, species, variety, health, quality, size and color. Plants which are lacking compactness, lacking proper proportions, weak or thin, or plants injured by too close planting in nursery rows will not be accepted. Plant material which have been cut back from larger grades to meet certain specified requirements will be rejected. Rejected plants shall be removed from site and replaced immediately at no additional cost. Plants shall not be pruned prior to delivery. Plants shall be freshly dug at time of delivery unless being dug under an approved summer digging system. Architect will inspect trees and shrubs for size and condition of balls and root systems and latent defects at site.

Plant Selection Provide representative photograph of each of the selected B&B plant material. The photographs shall be 3" x 5" minimum, and portray the plant material with an instrument of scale (ruler or human). Approved photographs shall be used to measure delivered plant materials for quality.

Substitutions: Substitutions will be permitted only upon submission of proof that a specified plant is not obtainable. Propose the use of the nearest obtainable variety of the plan having the same essential characteristics that is equal to or greater in size. Include all costs of post bid substitutions in the base bid. Substitute material delays will not be considered justifiable grounds for an extension of construction time.

SUBMITTALS:

The contractor shall submit the following prior to construction:

* North Carolina Department of Agriculture certified topsoil analysis with soil amendment and fertilizer material recommendations for on site and borrowed material. The contractor shall collect samples from several areas of differing soils on the site, label as such and submit to the NCDOA for analysis. The soil analysis shall become the basis for base bid soil fertilization.

* Planting Schedule : The Contractor shall submit a proposed planting schedule, indicating dates for each type of landscape work.

The contractor shall submit the following upon request from the Architect:

* Imported topsoil sample, mulch sample, and soil conditioner sample.

* Submit manufacturer's data, inspection certificate, and maintenance instruction on all landscaping materials.

* Certificates of inspection as required by governmental authorities.
Maintenance Instruction: Typewritten instructions recommending procedures to be established by Owner for maintenance of landscape work. Meet with Owner, describe maintenance instruction at site prior to substantial completion.

* Chemical Application License: Application of herbicide, insecticides and other chemicals, shall be applied under the direction of a person licensed by the State of North Carolina to apply such chemicals. The License of the Applicator shall include certification for Ornamentals and Aquatic and be current.

DELIVERY, STORAGE AND HANDLING:

Nursery Storage: Provide for storage, acclimatize, and coordinate delivery with General Contractor or site superintendent or owner.

Trees and Shrubs: Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches, or destroy natural shape. Provide light colored, opaque, water tight protective covering during delivery. Do not drop balled and burlapped stock during delivery.

Deliver trees and shrubs after preparation for planting have been completed and plant immediately. Keep plants moist in transit, in storage and where staged on the site. If planting is delayed more than 24 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, water plants and keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture. Heel-in Balled and Burlapped plant material by completely covering the root ball with insulating material to prevent freezing of the root ball, and remove ties from branches.

JOB CONDITIONS:

Utilities: Determine the location of underground utilities and perform work in a manner which will avoid possible damage. Notify appropriate parties and arrange for the restoring of damaged utility services.

No planting shall be done in frozen ground, when snow covers the ground or when the soil is in an unsatisfactory condition for planting. If special conditions exist, which may warrant a

be submitted to the Architect stating the special conditions and the proposed variance.

SPECIAL PROJECT WARRANTY:

Establishing Date of Acceptance: Within two weeks of completion of all the landscaping requirements, request an inspection of all the work. Should the work be substantially complete, the inspection report will record the date. On the date at which non-complying items are observed and corrected, the landscape work will be accepted and the warranty period shall begin.

Plant Warranty and Replacement: All plants shall be warranted to be alive and healthy with sufficient growth from the date of acceptance for a period of one year. Eleven months into warranty period, the contractor shall request a year-end inspection by Owner and Architect. It is the contractor's responsibility to request year-end inspections, and the warranty continues indefinitely until such time as the inspection and potential required actions satisfactorily take place.

The contractor shall take immediate action to carry out the year-end inspection punch list. All work shall be carried out in a manner in conformance with these contract documents. All replacements shall be plants of the same kind as originally planted and shall be of size equal to that attained by adjacent plants of the same kind at the time replacement is made. Removal and replacement shall be at no cost to the Owner. Only one replacement (per plant) will be required at end of warranty period, except for losses or replacements due to failure to comply with specified requirements.

Damage due to vandalism, removal, relocation, or other activities by others will not be grounds for replacement. Owner's failure to water or maintain will not be grounds for replacement.

Tree wrap, stakes and guy wires shall be removed by the Contractor at the conclusion of the 1-year guarantee period.

MATERIALS:

Topsoil shall consist of loose, friable, sandy, topsoil free of admixture of subsoil, refuse, stumps, roots, rocks, brush, grass, weeds, and other material which would be detrimental to the proper development of vegetative growth. The term used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH range shall be 5 - 7.5 and shall be tested in conformance with the standards of the Association of Official Agricultural Chemists. Topsoil shall not contain stone 1" and over in diameter. Furnish a complete soil analysis of all topsoil, whether it is furnished from off site sources or stripped on site. The test and recommended actions shall be submitted to and approved by the Architect prior to final grading and any planting. Topsoil in its amended form shall be named "planting soil" in this specification.

Obtain topsoil from on site.

SOIL AMENDMENTS:

Lime: Natural dolomitic limestone complying with NCDOT 960.2.

Superphosphate: Soluble mixture of treated minerals; 20 percent available phosphoric acid.

Soil Conditioner: Well rotted, and composted pine bark mulch with a maximum particle size of 1/4" and containing no chemicals or ingredients harmful to plants.

Fertilizer: Complete fertilizers with some elements derived from organic sources. Fertilizers to be used shall have at least at least 50% of their nitrogen content in a slow-release form.

Soil Amendment Fertilizer (Granular Form): For mixing in planting backfill and shall have a ratio of nitrogen / phosphorous / potassium of 4-4-2.

Tablets will be a complete and balanced fertilizer in tabular form with 50%-80% of the nitrogen to be slow release form.

MULCH:

Long leaf pine straw delivered to the site in bales. Pine straw shall be free from high amounts of leaf matter, free of high amounts of pine cones and containing no chmicals or ingredients harmful to plants.

PLANT MATERIALS:

Balled and burlapped plants (B & B) shall be dug so as to retain as many fibrous roots as possible, and shall come from soil which will form a firm ball. The soil in the ball shall be original and undisturbed in which the plant has been grown. The root ball shall be of diameter not less than that recommended by the American Standard for Nursery Stock.

Balled and burlapped material shall be accomplished using open mesh jute (loomed) burlap material. Synthetic burlap will not be acceptable. Burlap surrounding ball shall be tied with organic twine. Reinforce balls on trees of 4.5" caliber and above with 6 x 6 W1.4 x. W1.4 welded wire fabric wired around ball with 10 ga. wire.

Plants with a cracked or broken ball will not be accepted.

Container stock shall have grown in the containers in which delivered for at least six months, but not over two years. Samples must prove no root-bound conditions exist. Do not plant container plants that have cracked or broken balls of earth when taken from the container. Do not remove container grown stock from containers until planting time.

Deciduous Trees: Provide B & B trees of height and caliper scheduled or shown and with branching configuration recommended by ANSI A60.1 for type and species required. Provide single stem trees except where special forms are shown or listed. Deciduous trees shall be straight and symmetrical with a crown having a persistent main leader. The amount of crown shall be in good overall proportion of the total height of the tree. Multi-trunk trees shall have the required number of trunks as called for on the plans, originating from a common base at the ground line.

Small tress and shrubs shall be well formed and have a crown typical of the species. Material shall be B & B, bare root or containerized as indicated in the plant schedule. Pruning plants to meet sizes called for on the plans will not be permitted.

MISCELLANEOUS LANDSCAPE MATERIALS:

Staking: Stakes for bracing or supporting trees shall be red ock, free from knots, rot, cross-grain or other defects that would impair the strength of the stoke. Stakes shall be 2" x 2" in size of adequate length as indicated by detail. Stakes shall be painted black.

Hose Bark Protection: To be used with wire for bracing and guying trees shall be 1/2" in diameter. Color shall be black.

Wire: Used to guy trees shall be new soft annealed galvanized steel wire. Trees shall be guyed with No. 12 double twisted wire.

Turnbuckles: Turnbuckles shall be galvanized and shall have screw eyes of 1/4" diameter or larger.

Wrapping Sock: For trees shall be of a stapled burlap sock, which is 1.5 times the diameter of the trunk.

Twine: Used for tying wrapping sock on trees shall be two-ply 1/8" diameter nylon twine.

Filter Fabric: Use Mirafi 140NSL non-woven 3.5 oz. polypropylene or polyester filter fabric in tree pits. Equals: Supak 4 NP by Phillips Fibers, Enkafilter Type E35 by Enka, or Amoco 4545 by Atlantic construction Fibers.

Decorative Stone: Evenly graded and washed natural stone consisting of the following:

Stone Type	Description	Diameter	Notes
Type I	River rock	1"	White to buff colored, naturally rounded quartz.

Metal Edging: Provide extruded 3/16" x 4" metal edging by Border Concepts Inc. (704.541.5509) or equal and stakes by an approved manufacturer. Color shall be black.
Provide prefabricated corners and tree rings where possible.

Water: NCDOT 960-8. Verify if water will be available at the site and make the necessary provisions to water if it is not available on site.

EXECUTION:

Do not proceed with landscaping if grade elevations are incorrect. If shape required by contours is not in place, or other unsatisfactory conditions exist.

Lay out individual tree and shrub locations and areas for multiple plantings. Make minor adjustments as may be required. Contact Architect with major revisions.

PREPARATION OF BACKFILL SOIL:

Backfill soil is the material used to create landscape planting beds or the material needed to backfill tree plantings.

Prior to placing Backfill Soil, Loosen compacted subgrade of planting, remove stones measuring over 1-1/2" in any dimension and remove sticks, stones, rubbish, and other extraneous matter.

Prior to mixing Backfill Soil clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.

Mix 50% topsoil and 50% subsoil at the following depths to create Backfill Soil:

AREA	DEPTH OF TOPSOIL / SUBSOIL MIX
Lawns	see Lawn Specifications
Annuals and Ground Cover Beds	6" deep for the entire bed.
Shrubbery Planting Beds	12" deep for the entire bed
Tree Plantings	12" deep by 2.5 times ball diameter

Place Backfill Soil in locations near the planting bed or hole. For annuals, groundcovers, and shrubbery beds, place according to details. For trees, place Planting Soil around hole.

ADDITION OF SOIL AMENDMENTS:

AREA	SOIL AMENDMENT FERTILIZER RATES	SOIL CONDITIONER DEPTH / RATE	AREA OF AND DEPTH OF CULTIVATION
Annuals	As per soil test.	3" over bed.	6" deep for entire bed.
Ground Cover Beds	As per soil test.	1" over bed.	6" deep for entire bed.
Shrubbery Plant Beds	As per soil test.	3" over bed.	12 deep for the entire bed.
Tree Pits	As per soil test.	One part soil conditioner to three parts Backfill soil.	Mix throughout Backfill soil.

Mix these materials thoroughly in the depths described.

Dispose of excess subsoil removed from planting holes or beds. Do not spread over topsoil areas.

PLANTING OPERATIONS:

GENERAL: Place fertilizer tablets in each planting hole at the quantity, depths, and arrangement recommended by the manufacturer.

B&B PLANTING

Set B & B stock plumb and in center of pit or trench with top of ball at the same elevation as adjacent finished landscape grades plus 4"(this distance should be adjusted by the contractor as drainage conditions warrant). Compact a cone of subsoil around the base of the root ball to provide support. Remove all ties around the plant's trunk and ball. Remove top 2/3 of wire basket and remove burlap from top 1/3 of ball. When set, place Planting Soil mixture around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of Planting Soil. Repeat watering until no more is absorbed. Water again after placing final layer of Planting Soil.

Form 4" high saucer (delete saucer with irrigation)around tree and shrub pits. Individual plant pits shall be finished with topsoil mix placed outside rim of pits to form saucer over entire area of pits. On all slopes except minor ones, soil mix shall be formed into an adequate dam or shoulder on downhill side to catch and hold water.

Staking: Trees shall be staked in a plumb position immediately after planting. Stakes shall be equally spaced about each tree and shall be driven vertically unless otherwise indicated, into the ground to a depth of 18" in such manner as not to injure the ball or roots. Trees shall be fastened to each stake as indicated in the planting detail.

Guying wires shall be encased in hose to prevent direct contact with bark of the tree and shall be placed around the trunk in a single loop. Wires shall be tightened and kept taut by turnbuckles.

Wrapping: Only deciduous trees shall require wrapping. Trunks of trees at least 1" over in caliber shall be wrapped beginning at the base of the tree and extending to the first branches. Wrap trees by forming a burlap sock from stapled strips of burlap to 1.5 times the diameter of the tree. Hang the sock from the lowest branch by tying with hemp twine.

PLANTING SHRUBS:

When planting shrubs, form a planting bed out of planting soil 6" above the proposed final grade of the surrounding area.

Set container grown stock on undisturbed subsoil to prevent settling. Set plant at height as specified in the details, or adjust to provide adequate drainage. Remove the container without damaging the root ball or the branches. Place plant in the hole in the proper location, backfill with planting soil, being sure to compact adequately to remove voids and air pockets.

Form 4" high saucer (delete saucer with irrigation)around tree and shrub pits. Individual plant pits shall be finished with topsoil mix placed outside rim of pits to form saucer over entire area of pits. On all slopes except minor ones, soil mix shall be formed into an adequate dam or shoulder on downhill side to catch and hold water.

PLANTING GROUND COVER:

Space ground cover plants as indicated in the plant schedule. Dig holes large enough to allow for spreading of roots and backfill with planting soil. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water. Water thoroughly after planting, taking care not to cover crowns of plants with wet soils.

MULCHING:

Mulch all pits, trenches, beds and planted areas. Provide not less than specified thickness of mulch, and work into top of backfill and finish level with adjacent finish grades. Remove extraneous wood matter from mulch. Mulch all planting areas and plants as follows:

AREA	DEPTH OF MULCH
Trees	3"
Shrubs and Shrubbery Beds	3"
Groundcover Plantings	3"
Annual Beds	2"

MISCELLANEOUS LANDSCAPE WORKS:

Install metal edging where indicated. Anchor with metal stakes as provided by the manufacturer and spaced on not more than 3'.

Install decorative gravel where indicated by first laying filter fabric continuously under gravel. Place specified depth of gravel, working into all voids. Provide smooth surface free of extraneous matter.

MAINTENANCE:

Begin maintenance immediately after planting and continue until Date of Final Acceptance by the Owner.

Watering: All plants shall be watered during and immediately after planting and a minimum of once a week unless unusual wet weather conditions exist or an irrigation system is operating.

At each watering the soil around each plant shall be thoroughly saturated. The contractor shall provide adequate water for proper plant health until Date of Final Acceptance.

Maintain trees, shrubs, and other plants by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy support and reset trees and shrubs to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease. The contractor shall provide maintenance for proper plant health until Date of Final Acceptance.

Maintain planting beds as required to fill depressions, repair erosion, smooth edges, and weed beds as required to provide clean planting areas at Date of Final Acceptance.

CLEANUP AND PROTECTION:

During landscape work, keep pavements and sidewalks clean and work area in an orderly condition. Remove tire marks from paved surfaces.

Protect landscape works and materials from damage due to landscape operations, operations by other contractors and subcontractors. Maintain protection during installation and maintenance periods until Date of Final Acceptance by the Owner.

All pavements, grassed and planted areas, structure and sub-structures disturbed due to the execution of this work shall be restored to their original conditions. Relandscape all eroded areas.

INSPECTION AND ACCEPTANCE:

When landscape work is substantially completed, including maintenance, the Architect will, upon request, make a Pre-Final Inspection to determine acceptability. From this inspection the Architect will develop a punch list based on failures to meet the quantities, qualities or conditions of the plans and specifications. The Punch-List may be added to as additional items are discovered. The contractor shall undertake correcting the punch-list items immediately.

When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Architect and found to be acceptable. Remove rejected plants and materials promptly from project site.

When all Punch-List items have been corrected according to the plans and specification, the contractor shall be granted final acceptance and this shall establish the Date of Final Acceptance.

END OF SECTION 02900

SECTION 02930 - LAWNS

Description of the Work: The scope of the work shall consist of seeding, sodding, fertilizing, liming and mulching on all areas designated for lawn establishment as shown on the plans.

Related Work Specified Elsewhere:

Underground Irrigation System - Section 02810.
Landscaping - Section 02900.

Quality Assurance:

Quality Standards: The Contractor shall furnish the Owner with a properly planted, fertilized, and maintained living lawn at the Date of Final Acceptance.

Owner's Responsibility: It is the Owner's responsibility to furnish water to the site and properly maintain the grass and lawn after Date of Final Acceptance.

Guarantee and Replacement: The Contractor shall guarantee that no area of lawn shall have bare spots or cover that is unacceptable totaling more than 2% of the individual lawn area at the Date of Final Acceptance. The Contractor shall reseed or resod at the appropriate season, any spots or portions of lawn at his own expense that fail to perform, in accordance with these specifications.

Submittals:

Topsoil Samples: The contractor shall submit topsoil samples and a topsoil analysis test for the Architect's review prior to grading and planting.

Materials:

Limestone: Agricultural ground limestone shall be dolomitic type NCDOT Section 960-2.

Fertilizer: NCDOT Section 960-1. Fertilizer composition shall be approved by the Architect prior to spreading and shall be dry and free flowing, and shall be delivered to the site in the guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged making it unsuitable for use, will not be accepted. Fertilizer shall not have been exposed to weather prior to delivery until used, it shall be completely protected at all times. It shall not be stored in direct contact with the ground.

Sod: Provide strongly rooted sod, not less than 2 years old, free of weeds and undesirable native grasses and machine cut to minimum pad thickness of 3/4", excluding top growth and thatch. Provide only sod capable of vigorous growth and development when planted (viable, not dormant). Provide sod of uniform pad sizes with maximum 5% deviation in either length or width. Broken pads or pads with uneven ends will not be accepted. Sod pads incapable of supporting their own weight when suspended vertically with a firm grasp on upper 10% of pad will be rejected.

Sod Mixture:

100% tall fescue mix.

Seed: The seed shall be "pure live" seed furnished in mixtures in sealed standard size containers, showing weight, analysis, name of vendor and germination test.

Lawn Seed Mixture:	Rate
Rebel II Tall Fescue	3 lb/1000 s.f.
Falcon Tall Fescue	3 lb/1000 s.f.
Creeping Red Fescue	1 lb/1000 s.f.

Seed Schedule: Seeding shall only occur during the following times of the year: March 1 - May 15 and August 15 - November 31.

Mulch: A protective cover shall be placed over all newly seeded areas. It shall consist of either hay, straw, wood cellulose fiber and non-toxic asphaltic emulsion. All mulch shall be free of noxious weeds, mold, or other objectionable material. Straw and hay shall be in an air-dry condition and suitable for placing with mulch blower equipment.

Topsoil shall consist of loose, friable, sandy loam topsoil free of admixtures of subsoil, refuse, stumps, roots, rocks, brush, grass, weeds, and other material which would be detrimental to the proper development of vegetative growth. The term "topsoil" used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH range shall be 5-7.5 and shall be tested in conformance with the standards of the Association of Official Agricultural Chemists. Topsoil shall not contain any stones 1 inch and over in diameter. All topsoil either furnished by the Contractor or stripped from on site shall have a complete soil test performed at the expense of the Contractor. The test and recommended actions shall be submitted and approved by the Architect prior to final grading and any seeding or sodding.

Water: Clean, drinkable.

Installation - General:

Topsoil Preparation: All areas to receive lawns shall have topsoil spread and cultivated to provide a reasonably firm, but friable bed. Clean topsoil of debris, roots, and stones from 1" diam. to 3" in diameter. Depth of cultivation shall be 4" minimum. Limestone, if needed, and fertilizer shall be applied uniformly, prior to soil preparation at the rate suggested by the soil analysis results and recommendations.

Under dripline of existing trees, use hand cultivation methods to cultivate to 1" depth.

Fertilizer: Fertilizer shall be distributed evenly by mechanical spreader, worked into the top 4 inches of topsoil not more than one week prior to seeding or sodding operations. Spread at the rate of 500 lb. per acre. Broadcast 1/2 of fertilizer in one direction and the remaining 1/2 in a direction at right angles to the first direction.

Limestone: The limestone for all lawn areas shall be spread at a rate of 4000 lb. per acre.

Installation - Sodding for Lawns:

General: Lay sod within 24 hours from time of stripping. Sod shall be cut no thicker than 1". Do not plant dormant sod or if ground is frozen. Never lay sod on dry, powdery soil. Irrigate or hand water prior to laying sod. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod without overlapping. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod and remove excess.

Sodding at other than the specified dates will be allowed only upon the written permission of the Architect.

Water Sod thoroughly with a fine spray immediately after planting and repeat every day until the roots have grown into the soil. (Normally, rooting requires 2-3 weeks.)

Installation - Seeding for Lawns:

General: Seed, fertilizer, limestone and mulch material shall be placed by one of the following methods:

Hydraulic Method: The seed and fertilizer and suitable mulch materials shall be mixed in the specified amount of water to produce a slurry and then applied under pressure at the rates recommended by the seed manufacturer. When wood cellulose mulch materials are to be incorporated as an integral part of the slurry mix, it shall be added after the seed and fertilizer, and ground limestone if required.

Dry Method: Mechanical seeders, landscape seeders, cultipacker seeders, fertilizer spreaders or other approved mechanical seeding equipment may be used when seed and fertilizer are to be applied in dry form.

Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in two directions at right angle to each other. Rake seed into top 1/8" of soil, roll lightly and water with fine spray.

Seeding at other than the specified dates will be allowed only upon the written permission of the Architect. Seeding shall not be done during windy weather or when the ground is excessively wet, frozen or otherwise untillable.

Application of Mulch: Straw, hay or other mulch, shall be spread uniformly over seeded areas at the rate of 75 to 100 lbs./1,000 sq. ft. The mulch shall be anchored with the mulch tiller, or if the area is not accessible, asphalt emulsion may be used as a tiedown or adhesive. Type SS-1 or approved equal shall be applied either simultaneously with the straw or hay or in a separate operation. The Contractor shall take precautionary measures to prevent asphalt adhesive materials from marking or defacing structures, pavements, utilities or plants.

Repair and Maintenance:

Repair for Damaged Lawn Areas: Any lawn area that is damaged due to work under this Contract shall be repaired as required with the type lawn as required to match adjacent area.

Maintain lawn areas for not less than the period stated below, and longer as required to gain Date of Final Acceptance from the Architect and Owner.

All lawn areas, not less than 60 days after first required mowing.

If seeded in fall and not given full 60 days of maintenance, or if not acceptable to the Owner and the Architect at that time, continue maintenance the following spring until acceptable lawn is established in the opinion of the Owner and the Architect.

Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish acceptable lawns, free of eroded or bare areas until final acceptance by the Owner.

Clean-up:

Upon completion of the work, remove from the site all remaining mulch, equipment, and other articles used and leave the areas in a clean and neat condition. Any damages caused by this operation shall be repaired to the satisfaction of the Owner at the Contractor's expense.

INSPECTION AND ACCEPTANCE:

When landscape work is substantially completed, including maintenance, the Architect will, upon request, make a Pre-Final Inspection to determine acceptability. From this inspection the Architect will develop a punch list based on failures to meet the quantities, qualities or conditions of the plans and specifications. The Punch-List may be added to as additional items are discovered. The contractor shall undertake correcting the punch-list items immediately.

When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Architect and found to be acceptable.

When all Punch-List items have been corrected according to the plans and specifications, the contractor shall be granted establish the Date of Final Acceptance.

Upon establishment of Date of Final Acceptance by the Owner and the Architect, the Owner will assume maintenance of the lawn areas.

END OF SECTION 02930

SECTION 02810 - UNDERGROUND IRRIGATION SYSTEM

Description of the Work: The extent of the underground irrigation system includes the furnishing of all labor, materials and equipment for a complete system installation. The work includes trenching, backfilling, piping automatic controller installation, testing, and making system operative. Provide owner operation and maintenance instruction and record drawings.

Related Work Specified Elsewhere:

Lawns - Section 02930.
Plumbing - Division 15.
Electrical - Division 16.

Quality Assurance:

Manufacturer Qualifications: Provide underground irrigation system produced by a single manufacturer, including heads, valves, controls, and accessories.

Installer: Shall have successfully installed three irrigation systems in this area for a minimum of five (5) years.

Submittals:

Product Data: Submit manufacturer's technical data and detailed installation instructions for underground sprinkler system.

Shop Drawings: If the intended installation differs from the supplied irrigation design, submit shop drawings for the system including plan layout and details illustrating location and type of heads, valves, electrical splice kits, piping circuits, controls, and accessories.

Record Irrigation Drawings: Provide to Architect and Owner a record mylar reproducible drawing which shall show lines, controller location, valves, all sprinkler head locations and types, wiring diagram, revised dimensions and locations as installed, if the installation varies from the contract documents.

Job Conditions:

Location of Existing Utilities: The Contractor shall verify location of any underground utilities in the area of irrigation work prior to the start of the installation operation.

Coordinate and cooperate with other subcontractors to enable to the work to proceed as rapidly and efficiently as possible. Coordinate irrigation work with landscape work, site lighting and signage, fine grading, sleeving installation, and wall penetrations.

Protection of Work and Property: Maintain protection of all irrigation work from damage. Take care to avoid damage to any existing buildings, equipment, piping pipe coverings, electrical systems, sewers, sidewalks, landscaping, paving, aboveground or underground installations or structures of any kind. The Contractor shall securely protect all pipe openings being worked on to prevent obstructions in the pipe and breakage, misuse, or disfigurement of the equipment. Should damage be incurred, replace the damaged item at no cost to the Owner.

Handling of Materials: The installer shall be responsible for correct procedures in loading, unloading, stacking, transporting, and handling all materials to be used in the system.

Excavation: Trench excavation is unclassified; remove all materials in trenches.

Warranty: Warrant system and installation to be in good working condition for a year beginning at Date of Final Acceptance. Adjustments, repairs and replacement of defective parts shall be done as necessary at no additional cost to the Owner. Just prior to year end, inspect and adjust heads and controller after cycling system, in presence of Owner.

Products:

Acceptable Manufacturers: Complete systems by Rain Bird Sprinkler Mfg. Corp., TORO Co., Irrigation Div.; or Hunter Irrigation Company.

Materials:

PVC pipe (1" dia to 2.5"), PR 200 (SDR 21), maximum working pressure of 200 psi at 73 degrees F., with Schedule 40, Type 1, ASTM D 2466 socket fittings, and ASTM D 2564 solvent cement. Use Schedule 80 fittings on swing joint assemblies and sleeves.

Valves:.

Gate valves: Cast bronze 150 psi with 2 keys, or tee handle if more than 12" below grade.

Automatic Circuit Valves: Plastic globe valves operated by low-power solenoid, normally closed, manual flow adjustment.

Automatic Drain Valves: Designed to open for drainage when line pressure drops below 3 psi.

Backflow Preventer: Manufacturer's double check valve assembly the no smaller in size than the sprinkler system supply line. Assembly must meet FCCC and HR Institute, and local codes and standards. Equals by Watts, Wilkins, or Febco. Whenever possible place underground as required by local codes, support on masonry piers.

Sprinkler Heads: Manufacturer's standard unit designed to provide uniform coverage over entire area of spray down on drawings at available water pressure, as follows:

General: All plastic components shall be constructed from a non-corrosive, impact resistant, UV-resistant, heavy-duty plastic material. The sprinkler shall utilize a riser screen filter. All parts shall be removable from the top of the sprinkler. The sprinkler shall have a single piece riser/body seal, that flushes only upon retraction, and a stainless steel spring.

Shrub Riser: Fixed pattern, with screw-type flow adjustment.

Pop-Up Spray: Fixed pattern, designed for in-ground installation. The optimum operation pressure shall be 20 to 75 PSI. The sprinkler shall be capable of nozzle alignment and fitted with various nozzles to allow for arc flexibility. Radius from 1' to 22', flow rate from 6.5 GPH to 4.58 GPM, available replacement nozzles for various patterns.

Pop-Up Stream Rotor: A variable pattern, adjustable radius nozzle head with water lubricated, planetary gear drive assembly with nozzles capable of delivering water to shrub or lawn areas with true precipitation rates and various arcs. Radius from 15' to 30', flow rate from .57 to 1.51 GPM, for medium to large lawn and shrub areas.

Pop-Up Rotary Spray: Full or part circle by accessories, water lubricated, planetary gear driven rotary type spray head, with stainless steel adjustment screws or accessories capable of adjusting radius and trajectory. Radius from 36' to 52', flow rate from 1.43 to 10.81 GPM, with accessories to provide various arcs for medium to large lawn and shrub areas.

Valve Box: Furnish high strength, UV resistant plastic box and cover of size necessary to house and maintain the valve assembly. Color to be green.

Funny Pipe: Flexible polyethylene pipe with a 400 psi burst rating. Connect with external barb type fittings capable of retaining a flexible polyethylene pipe with an inside diameter of

Automatic Control System: Furnish low voltage system manufactured expressly for control of automatic circuit valves of underground irrigation systems. Provide unit of capacity to suit number of circuits and stations shown. System shall include the following:

Exterior Control Enclosure: Manufacturer's standard weatherproof enclosure with locking cover, complying with NFPA 70 (National Electric Code).

Power supply: Hardwire the time clock to the power supply. Exterior plugs are not allowed.

Transformer: To convert building service voltage to control voltage of 24 volts.

Circuit Control: Each circuit variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each circuit.

Timing Device: Adjustable, 24-hour and 7 or 14 day clocks to operate any time of day and skip any day in a 7 or 14 day period. Allow for manual or semi-automatic operation without disturbing preset automatic operation.

Grounding Device: 5/8" x 8' copper ground rod at each controller location. Connect to controller with 6 gage bare copper wire. If controller is located inside a building, ground to plumbing. Galvanized rods will not be accepted.

Control Wires: UL approved for direct burial in ground. Insulation and covering to be high molecular weight polyethene insulation 3/64" thick. Conductor shall be a single soft drawn copper wire meeting the requirements of ASTM B-3 or B-8. Minimum wire size 14 gauge. Multi-strand wire is not allowed.

Splice Kits: All underground wire connections shall be completed with direct burial splice kits by 3M, Scotch Lock, or equl.

Execution:

Install irrigation system in landscape areas as shown on the irrigation plan. Installation shall be in strict compliance with the manufacturer's instructions and recommendations.

Location of Heads: Design location is approximate. Stake out heads for Architect's approval prior to beginning trenching for piping. Make minor adjustments as necessary to avoid structures, rock, plantings and other obstructions. Adjustments shall not reduce the following minimum coverages: Turf areas, 95% and other planting areas, 85%.

Trenching: Excavate straight and true with bottom uniformly sloped to low points for drainage.

Trench Depth: Excavate trenches to a depth of 3" below invert of pipe, and provide 18" minimum cover over top of all mainline piping and 12" over lateral lines.

Backfill: Backfill early in morning when pipe is cool. Backfill with clean material from excavation. Remove organic material as well as rocks and debris larger than 1" diameter. Place acceptable backfill material in 6" lifts, thoroughly compacting each lift to not less than 90% of maximum dry density in accordance with Standard Proctor, ASTM D 698.

Controller: Install controller in the location specified on the plans according to manufacturer's specifications and State and local codes. When exposed to weather, hardwire the power supply to controller using rigid waterproof conduit. Install grounding device.

Backflow Preventer: Install as per governing local code's criteria for mounting heights and locations. Provide positive drainage away from backflow preventer. Locate as indicated on the drawings.

Circuit Valves: Install in valve box, arranged for easy adjustment and removal. Provide union on downstream side. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

Valve Boxes: Install flush with grade and as per the manufacturer's instructions. Place a minimum of 4" of aggregate at the base of each box. Locate outside lawn areas where possible.

Piping: Lay pipe on solid subbase, uniformly sloped without humps or depressions. For circuit piping, slope to drain valve at least 1/2" in 10' of run. Snake PVC pipe into trench bottom.

Sleeves: Bury schedule 80 PVC pipe a minimum of 18" below surface and 18" beyond back of curbs and sidewalks, and tape geotextile fabric over ends to keep soil out.

At wall penetrations, pack the opening around pipe with non-shrink grout. At exterior face, leave a perimeter slot approximately 1/2" wide by 3/4" deep. Fill this slot with backer rod and an acceptable elastomeric sealant. Repair below grade waterproofing disturbed by this work and make penetration watertight.

Install PVC pipe in dry weather when temperature is above 40 deg. F in strict accordance with manufacturer's instructions. Remove all burrs from pipe cutting and clean both pipe surfaces with solvent prior to gluing. Allow joints to cure at least 24 hours at temperature above 40 deg. F (4 deg. C) before testing.

Install Wire in mainline trenches only by taping to the underside of the static pressure line at 10' O. C. Splice wires using splice kits, use a valve box at all splice locations. Provide excess wire at all splice locations.

Install Spray Heads plumb, at proposed grade level, and 1-2" behind paving surfaces. Use no more than 2' of funny pipe to connect spray head to the lateral line.

Install Rotor Heads plumb, at proposed grade level, and 2"-4" behind edge of paving surfaces. Use maximum of 2' of funny pipe to connect to lateral lines up to 5 GPM water consumption. At 5 GPM and beyond use PVC swing joint assembly.

Post Installation Procedures:

The Contractor shall provide operating manual for controller and a small laminated map of zones with descriptive labels inside the controller. The contractor shall program the timeclock for the appropriate season.

The Contractor shall repair any settling of backfilled trenches which may occur prior Date of Final Acceptance or during the warranty period. The Contractor will restore or replace all damaged plantings, or improvements.

Emergency repairs, if required, may be made by the Owner without relieving the Contractor of his guarantee obligation.

Cleaning Premises: The Contractor shall continuously keep a neat and orderly area in which he is installing the system. Disposal of rubbish and waste from the installation shall be continual. Upon completion of the system, the Contractor shall remove from the Owner's property, at his own expense, all temporary structures, rubbish, and waste materials resulting from the installation of the system.

Flagging: The irrigation subcontractor shall be responsible for flagging each buried sprinkler head at the completion of the installation. Coordinate this effort with finish grading by landscape subcontractor.

PROJECT END SUBMITTALS:

Submit one reproducable copy and three copies of as-built layout of the system showing piping, valves, head locations, and connection to building plumbing system, if the installation varies from the contract documents.

Submit Service Manuals: The Contractor shall furnish two service manuals to Owner. Manuals may be loose leaf and shall contain drawings and specifications of all equipment installed with catalogue numbers together with manufacturer's names and addresses. Additional sheets shall cover operational instructions simple enough to be understood without specialized knowledge. Operational instructions shall include winterization procedures and month by month schedule for setting zone duration and frequency.

Submit Loose Equipment including two quick coupler keys per installed quick coupler, two keys for each installed controller cabinet, two sets of specialized tools for removing, adjusting or operating the irrigation system.

INSPECTION AND ACCEPTANCE:

When irrigation work is substantially completed, including maintenance, the Architect will, upon request, make a Pre-Final Inspection to determine acceptability. From this inspection the Architect will develop a punch list based on failures to meet the quantities, qualities or conditions of the plans and specifications. The Punch-List may be added to as additional items are discovered. The contractor shall undertake correcting the punch-list items immediately.

When inspected irrigation work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Architect and found to be acceptable.

When all Punch-List items have been corrected according to the plans and specification, the contractor shall be granted final acceptance and this shall establish the Date of Final Acceptance.

END OF SECTION 02810

SECTION 02940 - LANDSCAPE MAINTENANCE

Description of the Work

Extent of the landscape maintenance work is described herein. This work shall include the general care and maintenance of all plant material, fertilization, mulching, pruning, weed removal, bed edging, installation of annuals, irrigation systems, lawn care, snow and ice removal, trash removal, programming, monitoring, and maintaining the irrigation system.

It is intended that the services described herein, will augment the delivery of a satisfactory landscape at the one year inspection punch. The contractor shall provide the service necessary to fuful the requirement of the landscape warranty as described in Section 2900. Provisions described in this section may not represent the full extent of work required to provide an acceptable landscape at the one year inspection punch.

Contract Period

The Contractor shall provide maintenance services for a period of one year post completion of final inspection punch list items, or as determined by the Landscape Architect.

Safety Rules

The contractor is responsible for his employee safety and shall be expected to maintain a safe and clean working environment at all times both for his employees and for Owner's employees and visitors. He shall comply with the industry standard rules, regulations, and procedures concerning equipment use, proper clothing, chemical use, and ear/eye protection. He shall also comply with all Federal, State, and local laws and regulations. All chemical applications shall be supervised by a licensed foreman who has studied the regulatory agency's rules and regulations for commercial herbicide and pesticide. Proper clothing, wind conditions, and other factors shall be considered before any spraying occurs on the site. Contractor shall have a sole responsibility for determining and providing required protective equipment and clothing.

Requirements

Personnel Requirements: This work shall require a crew capable of managing and successfully carrying out the complete maintenance of the site. One person with supervisory responsibility shall be on the site at all times when landscape maintenance activities are underway. He shall be responsible for directing and supervising the crew's work and for coordinating daily work efforts with the Owner. The contractor shall be responsible for providing whatever labor and equipment are necessary to maintain the site to the satisfaction of the Owner. Workers are not allowed to remove shirts during operations on the bank property.

Contractor Qualifications:

The contractor shall have operated a landscape maintenance business for at least three consecutive years as a primary business.

Insurance Requirements: Contractor shall obtain from the Owner their minimum insurance requirements as specified below. A certificate of insurance shall be submitted to the Owner for review at a time specified by the Owner.

General Liability: $ 500,000   Excess Liability: $ 500,000   Workmans Compensation $ 500,000

Owner Approval: The Owner reserves the right to inspect and approve or reject any or all materials brought to the site by the contractor. The Owner also reserves the right to inspect contractor's work and approve based on the specifications herein. Work not acceptable to the Owner shall be repaired at the contractor's expense.

Soil Test:

Contractor shall perform soil tests every two years on existing soil to determine the proper lime and fertilizer applications. Samples shall be obtained from areas of one type of plant material. For example: lawns shrub beds and annual beds would be sampled separately. The Owner shall be presented with a copy of the soils report.

Submittals:

Delivery, Storage and Handling of Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site. No plant materials, other supplies, or equipment shall be stored at the site without owner approval.

Job Conditions:

Business Hours: The contractor shall minimize landscape maintenance operations during normal bank hours. Special care shall be taken not to conduct noisy, dangerous, or obnoxious work during bank operation. The contractor shall not conduct chemical spraying operations during business hours. The contractor shall not conduct any operations which are not acceptable to the branch manager.

Utilities: The contractor shall familiarize himself with the entire site and determine the location of all underground utilities and perform work in a manner which will avoid damage. When utilities are damaged, notify the Owner and pay for repairs.

Exceptions : The contractor shall not be responsible for acts of God (high winds, floods, ice storms, heavy snow, tornados, hurricanes, or abnormal cold weather, contractor shall inform the Owner.

Products:

Replacement Plant Material: Provide plants that have normal well-developed branches and are free from defects, decay, disfiguring roots, sun-scald injuries, abrasions of the bark, plant diseases, insect pest, and all forms of infestations or objectionable disfigurements. Plants shall be subject to inspection for quality, size and color. Plants lacking compactness or proper proportions, plants which are weak or thin, or plants injured by close planting in nursery rows will not be accepted. Plant materials which have been cut back from larger grades to meet certain specified requirements will be rejected. The Owner reserves the right to reject plants considered as unsatisfactory. Rejected plants shall be removed from site. Plants shall not be pruned prior to delivery. Plants damaged during delivery to the site will not be accepted.

Lime: Natural dolomitic limestone containing not less than 85% of total carbonates with a minimum of 30% magnesium carbonates, ground so that not less than 90% passes a 10 mesh sieve and not less than 50% passes a 100-mesh sieve.

Soil Conditioner: Well composted and finely ground pine bark mulch, not more than 1/4" in diameter, free of deleterious materials to plant growth.

Mulch: Organic mulch free from deleterious materials and suitable for top dressing of trees, shrubs or plants. The type of material used shall match existing material after construction, unless otherwise directed by the Owner.

Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing the following percentages of available plant nutrients:

For trees and shrubs, provide fertilizer with not less than 5% total nitrogen, 10% available phosphoric acid and 5% soluble potash.

For lawns, provide fertilizer with percentage of nitrogen required to provide not less than 1 lb. of actual nitrogen per 1000 sq. ft. of lawn area and not less than 4% phosphoric acid and 2% potassium. Provide nitrogen in a form that will be available to lawn during initial period of growth, with at least 50% of nitrogen to be in organic form.

Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination. Seed which has become wet, moldy or otherwise damaged will not be accepted. Use seed to match existing stand of grass, and submit seed types to Owner for approval.

Irrigation Equipment: Provide new irrigation equipment for the servicing and repair of the irrigation system. The products shall match the existing products installed on site.

Metal Edging: Provide new metal edging by Border Concepts, Inc.(Charlotte, NC) for repair and replacement of installation. Match size, thickness and color of material on site.

Maintenance Operations

Site Trash Pickup   Frequency: Once a Week

The site shall be policed for trash, cigarette butts, leaves and other debris on a weekly basis.
Sidewalks, parking lots, lawn areas, and curbs and gutters shall be blown off or swept on a weekly basis to remove trash, cigarette butts, gravel, and dirt, and to insure a neat appearance.

Fertilizing and Liming   See Frequency Below

Fescue, Bermuda, Centipede: Fertilize throughout the growing season with a high nitrogen 24-4-12.
Trees and Shrubs: Fertilize once in the spring with 18-4-12.
Annuals: Fertilize fout times throughout the growing season with 18-4-12

Amounts of fertilizer and lime shall vary according to the soil test analysis.

Shrubs shall be fertilized according to the variety type. Acid-loving plants such as azaleas, rhododendrons and camelias shall be fertilized with a commercial grade specifically formulated for these plants. Other shrubs shall be fertilized with a slow release fertilizer. The rate shall be as recommended by the local Agriculture Extension Service or soil testing. Shrubs shall be fertilized after blooming in the spring, and again in July and August from the center of the shrub to the drip line. Apply water immediately.

Trees shall be fertilized with a slow-release fertilizer at a rate of 1 pound per 1 inch caliper of tree. The fertilizer shall be broadcast from the center of the tree to the drip line. Apply water liberally.

Lawn shall be fertilized with a complete (N-P-K) turf-grade fertilizer in which 1/4 to 1/2 of the nitrogen is slowly available and has a 3-1-2 or 4-1-2 analysis. Soil pH should be maintained 6.5 and 7.0. In the absence of a soil report, lime should be applied to the lawn at a rate of 1 ton per acre.

Controlling weeds   Frequency: Weekly

Landscape Beds: Undesirable weeds and other growth shall be removed from landscape beds as soon as detected, on a weekly basis. The contractor shall use hand methods, mechanical or chemical methods to achieve healthy and weed free lansdscape beds.

Pre-emergent herbicides in granular form shall be applied to groundcover, shrub and tree areas during February, May and September.

Post emergent herbicides shall be applied throughout the growing season (March-November) in all mulched areas. The application rates and the list of herbicides used are as suggested by the North Carolina State Agriculture Extension Services.

The contractor will guarantee that any of the herbicides used will not damage plant life of desired plants permanently. If permanent damage does occur, the contractor will take full responsibility for this damage provided such has been caused by chemical treatments, and replace the damaged material at his cost.

Lawn Areas: Herbicides may be applied using the same techniques and equipment as fertilizers. Due to late fall seeding of some lawns, a pre-emergent herbicide would not be recommended the first year for lawns, however, a post-emergent herbicide could be applied in spring.

Post emergent herbicides shall be applied in March and May in lawn areas. The application rates and the list of herbicides used are as suggested by the North Carolina State Agriculture Extension Services.

The contractor will guarantee that any of the herbicides used will not damage plant life of desired plants permanently. If permanent damage does occur, the contractor will take full responsibility for this damage provided such has been caused by chemical treatments, and replace the damaged material at his cost.

Application of all herbicides will be by or under the direction of a person licensed by the state regulatory agency to apply herbicides. The License of the Applicator shall be in good standing and valid.

Pavements, sidewalks, curbs and gutters, and gravel areas: All sidewalk cracks and curb expansion joints will be sprayed to eliminate weeds growing in them as required.

Spraying Pesticides: Frequency: As Required

Pesticides should be used only after notification and approval by the Owner. Pesticides are to be applied only after manual methods of control or other less severe methods have failed. Application of pesticides shall follow the strict recommendation of the manufacturer and the regulating agency. A spray program will be used to control the major insects and disease of plants as proposed by the contractor and approved by the Owner prior to application.

Between April and September contractor shall inspect plants for signs of insect and disease damage on a monthly basis. Proper diagnosis is required before controls are initiated. The Owner shall be notified immediately if diseases, pests, or lack of vigor are observed.

Fungi Control: If needed, a preventative application for fungus control will be applied in early Spring. No sooner than March 15th and no later than April 30th.

Pruning: Frequency: As Required

Plant material shall be inspected weekly for wind, equipment and possible insect or disease damage. In general, all site shrubs shall be kept below 3' in height for the life of the plants. The only exceptions are specimen hollies which should be limbed up, and shrubs around HVAC enclosures which can grow 4' high.

Trees shall be pruned during their dormant period. Pruning shall remove dead wood, rubbing branches, suckers and water sprouts and maintain overall form. Cuts to plants shall be clean and executed at a crotch or leaf bud angled in the appropriate direction. Cone bearing trees shall be pruned at their candles to control form.

Evergreen shrubs shall be selectively pruned to maintain form, specified height and plant health. These shrubs shall be pruned in late spring, mid summer and late fall, as required.

Deciduous shrubs shall be pruned similarly to evergreen shrubs except for cane type shrubs. Every year remove 1/3 of the oldest canes at ground level. Prune the tops only as needed. Prune flowering shrubs after they flower. The time of year for pruning will vary.

Ground Covers: Remove any portions of the plants that have died. Mow liriope to 3"-4" ht. in February or early March.

Buffer / Natural Areas: The contractor will maintain buffers and natural areas to promote views into and through the remaining vegetation. Remove dead material, bruch, vines, small trees and debris as allowed by governing municipality.

Stake and Wire Monitoring and One-Time Removal
Frequency: As Required

Bracing and Anchoring: Maintain stakes and guys for bracing or supporting trees until such time as the plants no longer require support in resisting seasonal winds. Plants that are staked and guyed shall be monitored and guywires loosened as necessary to prevent girdling or tightened, as necessary, to secure the plant.

The maintenance contractor is solely responsible for the removal and disposal of all staking and guying material above grade. This is to occur at the most, one year after planting.

Mulching   Frequency: Once in spring, once in fall
Pricing :   Include in Base Bid

Maintain 3" of mulch in ornamental tree rings and shrub beds or replace mulch in the early spring and the late fall. Add mulch to bare areas (only in wooded areas) as defined by woods cleanup limit. Change mulch type only after approval by the Owner.

Place mulch in a neat manner removing pine cones and branches or other debris.

Edging   Frequency: Weekly

All fences, walls, utility poles, and other immovable objects will be trimmed around at every mowing.

Edging: All walk edges and back of curb edges shall be edged with an approved edger a minimum of once each month during the growing season.

Chemical Edge: Plant beds may be edged with a chemical herbicide as required to maintain a smooth line.

Metal Edging: Maintain metal edging by adjusting height and alignment as settlement or grade changes occur. Correct mower damage without cost to the owner.

Lawn Maintenance   Frequency: As Required

Mowing: The contractor shall maintain a mowing height of all lawn areas at the optimum height for the species of grass planted. The contractor shall use the proper equipment to remove the grass clippings and maintain a uniform height. Grass shall not be mown when wet or damp.

Lawns will be mowed throughout the year in order to keep the lawn areas well established and groomed. The first mowing shall not be made until the turf has become established. No more than 1/3 of the grass leaf shall be removed by the initial or subsequent cuttings. Bare spots and damaged areas in lawn which occur by natural or accidental forces will be re-seeded.

Thatching: The contractor shall monitor the build up of thatch at the lawn base and remove periodically with the proper equipment and in the proper season.

Aeration: The contractor shall annually aerate all lawns with the proper equipment each fall. The remaining soil plugs shall be broken and integrated into the lawn base.

Lawn Clippings: Lawn clippings need only be removed if the result of mowing leaves an unsightly amount of clippings on the surface of the lawn, or, because the grass is wet, cutting results in clumps. The contractor shall use rakes, bagging, or other methods to remove clippings from lawn areas. Clippings shall be removed from the site. Determination of lawn clipping shall be by the Owner.

Leaf Removal: The contractor shall remove leaves on a weekly basis throughout the fall and winter as necessary, and/or as directed by the Owner. All raking will be done as necessary to maintain a neat and attractive appearance in lawn areas. Wet grass areas will be raked by hand methods.

Overseeding   Frequency: As required in Summer

The contractor shall overseed lawn areas using a 'slit-seeder' or equal device, which removes thatch, loosens soil and delivers seed in such a way that the seed has good contact with the soil.

The contractor shall use the appropriate seed to match centipede grass.

In areas where winter dormant grasses are used, overseed with an annual rye grass. In fall, kill with herbicide prior to centipede growth.

Irrigation Servicing and Adjustment   Frequency: As Required

The irrigation system shall be calibrated by the contractor. Individual stations shall be adjusted to the particular plants being watered as well as soil structure and location of that particular station. Normal irrigation operation shall take place between 12am to 7 am. The contractor shall monitor weather conditions and season, and adjust system as appropriate. Spray irrigation systems shall be tested once a month during maintenance operations for spray effectiveness and efficiency. Drip irrigation systems shall be maintained by monthly inspection of drip emitters for delivery of intended amounts of water. The drip irrigation system may be abandoned two years after construction, if appropriate. The contractor shall perform winterization as required to protect the irrigation system from freezing during the winter. Remove or protect backflow devices and store on premises.

Contractor shall take full responsibility in programing and maintaining the Irrigation System. Any damage to the system due to maintenance contractor's negligence shall be repaired at contractor's expense. Contractor shall also repair damage caused by others on a time and materials basis.

The contractor shall adjust the system at lease three times a year for seasonal changes in precipitation.

The contractor shall maintain the irrigation system so that foundations, roads, sidewalks, buildings, signs, and other structures are not damaged by direct spray or by repeated wetting of soils.

Seasonal Services

Snow and Ice Removal: Frequency: As Required
Pricing : Negotiated extra work

Clean-Up: Frequency: As Required
Pricing : Include in Base Bid up to 6" diameter material.

The maintenance contractor will remove broken and damaged limbs which are on the ground from the premises if called upon by the Owner to do so. The maintenance contractor will comply with this provided the Owner gives reasonable time and notice to this firm that work is needed or desired.

Annual Plantings   Frequency: Two times a year.

Provide annuals in areas as shown on the plans. Provide strongly rooted but not root bound in 4" pots. Provide healthy, hardened-off sturdy annuals. Insure that the annuals are not leggy. Provide protection during delivery.

Annual Rotation:

Potential annual selection include

From May 15-September: Vinca Rosea (white) in the sun and Impatiens (mixed colors) in the shade.
From September through May: Giant Pansy (blues and whites).
Other annual species are acceptable but install monocultures of plants with simple mixes of colors.

Deliver annuals after preparation of beds has been completed and existing plant material has been properly removed and disposed. Plant new material immediately. If planting is delayed more than 2 hours, set annuals in the shade and provide water as needed. Do not remove annuals from containers until planting time.

Plant annuals in 8" raised landscape beds consisting of 1 part topsoil and 1 part organic soil conditioner. Incorporate a slow release nitrogen fertilizer as required. Install new plants at the specified on-center spacing and at the level as grown. Respread the mulch to a depth of 2". Add fresh mulch as needed to bring to a 2" depth. Water promptly and frequently to prevent wilting.

Maintaining Annuals: Remove dead flowers or leaves weekly. Head back (trim) flowers as they get leggy.

END OF SECTION 02940

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