

SECTION 029000 - PLANTING

PART 1 - GENERAL

1.1 SUMMARY

1.2 Section Includes

1. Preparation and excavation of planting beds.
2. Planting of trees, shrubs, sod, seed, and associated materials.

1.3 REFERENCES

- A. American National Standards Institute (ANSI)
 1. ANSI Z60.1 - American Standard for Nursery Stock
- B. American Sod Producer Association (ASPA)
- C. American Nursery and Landscape Association (ANLA)

1.4 SUBMITTALS

- A. Before ordering or purchasing materials, provide samples upon request.
- B. Submit certification tags from trees, shrubs, sod, and seed verifying type and purity.
- C. Unless otherwise authorized by Owner, notify Owner or Landscape Architect at least 48 hours in advance of anticipated delivery date of plant materials. Legible copy of invoice, showing kinds and sizes of materials included for each shipment, shall be furnished to Owner.
- D. Inform Owner of date when planting shall commence.
- E. As installation occurs, prepare accurate record drawings. Submit one full size copy prior to final inspection. Drawing shall include detail and dimension changes made during construction.

1.5 QUALITY ASSURANCE

- A. Condition of new plant materials is responsibility of Contractor and shall be approved by Owner or Landscape Architect. Owner or Landscape Architect reserves right to inspect and reject plants at any time and place.
- B. Measure plants when branches are in their normal position.
- C. Trees and shrubs shall meet requirements for spread, height, or container size stated in The Drawings.
 1. Measurements shall be taken from ground level to average height of shrub and not to longest branch.
 2. Height and spread dimensions specified herein refer to main body of trees measured from crown of roots to tip of top branch.

- D. Caliper measurements shall be taken at point on tree trunk 6 inches above natural ground line for trees up to 4 inches in caliper, and at point 12 inches above natural ground line for trees exceeding 4 inches in caliper.
- E. If range of sizes is given, no plant shall be less than minimum size, and at least 50 percent of plants shall be as large as upper half of range specified.
- F. Measurements specified are minimum size acceptable and, where pruning is required, are measurements after pruning.

1.6 PROJECT CONDITIONS

- A. Work shall be performed only during weather conditions favorable to landscape construction and to health and welfare of plants. Owner or Landscape Architect shall determine suitability of such weather conditions.

1.7 MAINTENANCE SERVICE (Optional services to be approved by Owner)

- A. Provide Owner with 3 written proposals prior to possession date for landscape maintenance from experienced local nursery businesses capable of performing work specified herein. Accepted proposal and maintenance contract will be for period of 1 year and renewable in 1- year increments. Maintenance will begin immediately after final acceptance of landscaping by Owner. During the first-year warranty period, the Contractor shall be responsible for ensuring that the maintenance contract is being followed. Proposals shall be submitted for work as specified in paragraph "Maintenance After Construction" in Part 3 hereinafter.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

- A. Plant material (trees and shrubs) shall conform to requirements of ANSI Z60.1 of rules and grading upgraded to meet the following:
 - 1. Plants shall be of selected specimen quality, exceptionally heavy, symmetrical, tightly knit, so trained or favored in their development and appearance as to be superior in form, number of branches, compactness and symmetry. Plants shall have normal habit or sound, healthy, vigorous plants with well-developed root system.
 - 2. Plants shall be free of disease, insect pests, eggs, or larvae.
 - 3. Plants shall not be pruned before delivery.
 - 4. Trees with abrasion of bark, sunscalds, disfiguring knots, or fresh cuts of limbs over 1 1/4-inch, which have not completely calloused, shall be rejected.
 - 5. Plants shall be typical of their species or variety and shall have normal habit of growth and be legibly tagged with proper name. Plants shall have been grown under climatic conditions similar to those of site or have been acclimated to such condition for at least 2 years.
 - 6. Root system of each plant shall be well-provided with fibrous roots. Parts shall be sound, healthy, vigorous, well-branched, and densely foliated when in leaf.
 - 7. Plants designated ball and burlap shall be moved with root systems as solid units with balls of earth firmly wrapped with burlap and comply with the following:
 - a. Diameter and depth of balls of earth shall be sufficient to encompass fibrous root feeding systems necessary for healthy development of plant.

- b. No plant shall be accepted when ball of earth surrounding its roots has been badly cracked or broken preparatory to or during process of planting. Balls shall remain intact during all operations.
 - c. Plants that cannot be planted at once shall be heeled-in by setting in ground and covering balls with soil or mulch and then watering.
 - d. Hemp burlap and twine is preferable to treated. If treated burlap is used, twine shall be cut from around trunk and burlap shall be removed.
8. Trunk of each tree shall be single trunk growing from single unmutilated crown of roots. No part of trunk shall be conspicuously crooked as compared with normal trees of same variety.
9. Thickness of each shrub shall correspond to trade classification "No.1". Single-stemmed or thin plants shall not be accepted. Side branches shall be generous, well-twigged, and plant as whole well-branched to ground. Plants shall be in moist condition, free from dead wood, bruises, or other root or branch injuries.

2.2 LAWN SEED

- A. Lawn seed mixture shall be fresh, clean new crop seed. Furnish to Owner or Landscape Architect dealers guaranteed statement of composition of mixture and percentage of purity and germination of each variety.
- B. Seed Mixture: Provide seed of grass species and varieties, proportions by weight and minimum percentages of purity, germination, and maximum percentage of weed seed. Seed mixtures vary by region and season and shall comply with State DOT and Local Soil Conservation Service Standards for lawn turf.

2.3 SOD

- A. Sod shall be ASPA certified, species suitable as lawn turf for the region. Sod shall be strongly rooted, weed, disease, pest free and uniform in thickness.

2.4 TOPSOIL

- A. Natural, friable, fertile, fine loamy soil possessing characteristics of representative topsoil in the vicinity that produces heavy growth. Topsoil shall have a pH range of 5.5 to 7.4 percent, free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1-inch in diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations.
- B. Verify amount stockpiled if any, and supply additional as needed from naturally well-drained sites where topsoil occurs at least 4 inches deep. Do not obtain topsoil from bogs or marshes.

2.5 FERTILIZER

- A. Deliver fertilizer, mixed as specified, in original unopened standard size bags showing weight, analysis and name of manufacturer. Containers shall bear manufacturer's guaranteed statement of analysis, or manufacturer's certificate of compliance covering analysis shall be furnished to Owner or Landscape Architect. Store fertilizer in such manner that it shall be kept dry.
- B. Base percentages of nitrogen, phosphorus, and potash on laboratory test recommendations as approved by Owner or Landscape Architect. For bidding assume 10 percent nitrogen, 6 percent phosphorus, and 4 percent potash by weight. At least 50 percent of total nitrogen

shall contain no less than 3 percent water-insoluble nitrogen. At least 60 percent of nitrogen content shall be derived from super-phosphate containing not less than 18 percent phosphoric acid or bone meal containing 25 - 30 percent phosphoric acid and 2 - 3 percent nitrogen. Potash shall be derived from muriate of potash containing 55 - 60 percent potash.

2.6 PEAT MOSS

- A. Peat moss shall be Michigan peat moss or approved equal in color and consistency.
- B. Peat moss shall be moss peat, finely shredded to pass 1/2-inch mesh and shall be no less than 90 percent organic material by weight, with ash content by ignition of no more than 10 percent.
- C. Material shall contain 35 - 66 percent moisture by weight, but shall have water-holding capacity of 150 - 200 percent.
- D. Material shall have pH value of 4 to 5.
- E. Material may be imported supplied in bales or domestic furnished in bulk. If furnished in bulk, material and its source shall be acceptable to Owner or Landscape Architect.

2.7 SHREDDED HARDWOOD BARK MULCH

- A. Mulch shall be of sufficient character as not to be easily displaced by wind or water runoff.

2.8 STAKING MATERIAL

- A. Stakes shall be #3 rebar, 4 ft long. Three stakes shall be used for each tree.
- B. Arbor Tie may be used for staking trees. Follow manufacturer's instructions for tying and staking Arbor Tie material. If wire is used for tree staking, it shall be pliable No. 12 galvanized soft steel wire.
- C. Hose shall be 2-ply fibred-bearing rubber garden hose, not less than 1/2-inch inside diameter, black or green, and of suitable length.

2.9 WATER

- A. Potable water shall be furnished by the Contractor. Contractor shall furnish hose and other watering equipment.

2.10 WEED MAT

- A. Weed mat shall be 4.1 oz., woven polypropylene, needle-punched fabric, Weed Barrier by Dewitt Company, Sikeston, MO, (800) 888-9669.

2.11 STEEL EDGING

- A. Steel edging shall be 1/8-inch x 4-inch interlocking steel edge, staked with metal stakes sufficiently to hold in place.

2.12 EROSION CONTROL BLANKET

- A. Blankets, biodegradable, enclosed in a photodegradable plastic mesh, including steel wire staples, 6 inches long. Curlex blankets by American Excelsior Company, or Polyjute Style 465 GT by Synthetic Industries.

PART 3 - EXECUTION

3.1 PREPARATION

- A. If project completion date prohibits in-season planting, prepare for out-of-season seeding or sodding so that lawns shall be completed and ready for acceptance at time of project completion.
- B. Locations containing unsuitable subsoil shall be treated by one or more of the following:
 - 1. Where unsuitability is deemed by Owner or Landscape Architect to be due to excessive compaction caused by heavy equipment and where natural subsoil is other than AASHTO classification of A6 or A7, loosen such areas with spikes, discing, or other means to loosen soil to condition acceptable to Owner or Landscape Architect. Loosen soil to minimum depth of 12 inches with additional loosening as required to obtain adequate drainage. Contractor may introduce peat moss, sand, or organic matter into the subsoil to obtain adequate drainage. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 - 2. Where unsuitability is deemed by Owner or Landscape Architect to be due to presence of boards, mortar, concrete, or other construction materials in sub-grade and where natural subsoil is other than AASHTO classification of A6 or A7, remove debris and objectionable material. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 - 3. Where unsuitability is deemed by Owner or Landscape Architect to be because natural subsoil falls into AASHTO classification of A6 or A7 and contains moisture in excess of 30 percent, then installation of sub-drainage system or other means described elsewhere in Specifications shall be used. Where such conditions have not been known or revealed prior to planting time and they have not been recognized in preparation of The Drawings and Specifications, then Contractor shall issue cost proposal to install proper remedial measures.
- C. Perform planting operations at steady rate of work unless weather conditions make it impossible to work. No plant material shall be planted in frozen ground.
- D. Disk, drag, harrow, or hand rake subgrade to depth of 4 inches and removed stones larger than 1-1/2 inches to provide bond for topsoil. Topsoil, which must be transported across finished sidewalks, shall be delivered in such manner that no damage will be done to sidewalks.
- E. Do not place topsoil until subgrade has been approved by Owner or Landscape Architect. Before placing topsoil, rake subsoil surface clear of stones, debris, and roots. Compact topsoil to form layer with minimum depth of 4 inches in lawn areas and 12 inches in shrub beds. Place topsoil so that after final settlement there will be positive drainage conforming to elevations shown on the Drawings.

F. Tree and Shrub Preparation

1. Dig bare-rooted shrubs with adequate fibrous roots. Cover roots with uniformly thick coating of mud by being puddled immediately after they are dug, or packed in moist straw or moss.
2. Dig ball and burlap plants with firm natural balls of earth of diameter and depth to include fibrous roots.
3. Protect roots or balls of plants at all times from sun and drying winds.
4. Ball and burlap plants which cannot be planted immediately upon delivery shall be set on ground and protected with soil, wet moss, or other acceptable material. Heel-in bare rooted plants that cannot be planted immediately upon delivery. All shall be kept moist.
5. Open and separate bundles of plants before roots are covered. Prevent air pockets among roots. During planting operations, cover bare roots with canvas, hay, or other suitable material. Plants shall not be bound with wire or rope which will result in damage to bark or branches.

G. Seed Bed Preparation

1. Grade areas to finish grades, filling as needed or removing surplus dirt. Float areas to smooth, uniform grade as indicated on the Drawings. Lawn areas shall slope to drain.
2. Where no grades are shown, areas shall have smooth and continual grade between existing or fixed controls, such as walks, curbs, catch basin, steps, or building, and elevations shown on The Drawings. Roll, scarify, rake, and level as necessary to obtain true, even lawn surfaces. Finish grades shall meet approval of Owner or Landscape Architect before grass seed is sown.
3. Loosen soil to depth of 6 inches in lawn areas by approved method of scarification and grade to remove ridges and depressions. Remove stones or foreign matter over 2 inches in diameter from top 2 inches of soil. Float lawn areas to finish grades.
4. Seed beds shall be permitted to settle or shall be firmed by rolling before seeding begins.

H. Sod Bed Preparation: Grade areas to finish grade, filling as needed or removing surplus dirt, stones, debris, etc. and floating areas to smooth, uniform grade as indicated on The Drawings. Lawn areas shall be graded to drain.

I. Fertilizer Application: Apply fertilizer in two applications and water immediately following each application. The first application shall be one week prior to seeding/sodding at the rate of 25 pounds per 1000 square feet and barrowed into the top two inches of topsoil. The second application shall be at the rate of 10 pounds per 1000 square feet immediately following the second mowing.

3.2 PROTECTION

- A. Before commencing work, trees and shrubs that are to be saved shall be protected from damage by placement of fencing flagged for visibility or some other suitable protective procedure approved by Owner or Landscape Architect.
- B. Trucks or other equipment shall not be driven or parked within drip line of any tree unless tree overspreads paved area.
- C. Use precautionary measures when performing work around trees, sidewalks, pavements, utilities, and other features either existing or previously installed.

- D. Adjust depth of earthwork and topsoil when working immediately adjacent to aforementioned features in order to prevent disturbing tree roots, undermining sidewalks and pavements, and damage in general to other features either existing or previously installed.
- E. Cover plants transported to project in open vehicles with tarpaulins or other suitable covers securely fastened to body of vehicle to prevent injury to plants. Closed vehicles shall be adequately ventilated to prevent overheating of plants. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage shall be cause for rejection. Plants shall be kept moist, fresh, and protected. Such protection shall encompass entire period during which plants are in transit, being handled, or are in temporary storage.
- F. Where excavating, fill, or grading is required within drip line of trees that are to remain, work shall be performed as follows:
 - 1. Trenching: When trenching occurs around trees to remain, tree roots shall not be cut but trench shall be tunneled under or around roots by careful hand digging without injury to roots.
 - 2. Raising Grades:
 - a. Where fill not exceeding 16 inches is required, clean, washed gravel graded from 1 inch to 2 inches in size shall be placed directly around tree trunk. Extend gravel out from trunk on all sides minimum of 18 inches and finish approximately 2 inches above finished grade at tree. Install gravel before any earth fill is placed. New earth fill shall not be left in contact with trunks of trees requiring fill.
 - b. Where fill exceeding 16 inches is required, construct dry-laid tree well around trunk of tree. Tree well shall extend out from trunk on all sides minimum of 3 feet and to 3 inches above finish grade. Place coarse-graded rock directly around tree well extending out to drip line of tree. Place clean, washed gravel graded from 1 inch to 2 inches in size directly over coarse rock to depth of 3 inches. Place approved backfill material directly over washed gravel to desired finish grade.
 - 3. Lowering Grades: Existing trees in areas where new finish grade is to be lowered shall have re-grading work done by hand to elevation indicated on The Drawings. Roots as required shall be cut cleanly 3 inches below finished grade and scars covered with tree paint.
 - 4. Trees marked for preservation that are more than 6 inches above proposed grades shall stand on broad rounded mounds and graded smoothly into lower level. Trees located more than 16 inches above proposed grades shall have dry-laid stone wall or other retaining structure as detailed on The Drawings constructed minimum of 5 feet from trunk. Exposed or broken roots shall be cut clean and covered with topsoil.

3.3 TREE AND SHRUB PLANTING

- A. Plants too large for 2 persons to lift in and out of holes shall be placed with sling. Do not rock trees in holes to raise.
- B. If rock or other underground obstruction is encountered, Owner may require plant pits to be re-located, pits enlarged, or plants deleted from project.
- C. Make adjustments in locations as directed. In event that pits or areas for planting are pre- pared and backfilled with topsoil to grade prior to commencement of lawn operations, they shall be so marked that when planting proceeds, they can be readily located. In case under- ground obstructions such as ledges or utilities are encountered, change location under direction of Owner without charge.

- D. Holes for trees shall be at least 2 feet greater in diameter than spread of root system and at least 6 inches deeper than root ball. Holes for shrubs and vines shall be at least 12 inches greater in diameter than spread of root system and at least 2 feet deep.
- E. During backfilling of tree holes and shrub beds with topsoil, manure, ground limestone (if soil tests indicate it is needed), and commercial fertilizer at rate of 3 pounds for trees up to 3 inches in caliper, 1 pound per inch caliper for larger trees, 6 ounces for small shrubs and 8 ounces for each shrub 4 feet or over shall be added as progress of work permits. Omit ground limestone and manure in case of acid soil plants. Manure, limestone, and fertilizer shall be thoroughly mixed with topsoil in planting operation. Manure shall not come in immediate contact with- roots.
- F. Plants shall be planted in center of holes and at same depth as they had previously grown. Backfill topsoil in layers of not more than 8 inches and each layer watered sufficiently to settle before next layer is placed. Tamp loam under edges of balled plants. Use enough topsoil to bring surfaces to finish grade when settled.
 - 1. Provide saucer around each plant as shown on The Drawings.
 - 2. Soak plants with water twice within first 24 hours after time of planting. Apply water with low pressure so as to soak in thoroughly without dislodging topsoil.

3.4 MISCELLANEOUS INSTALLATIONS

- A. Shredded Hardwood Bark Mulch
 - 1. Use 3 inches of shredded hardwood bark mulch or approved equal as top dressing in planting beds. Mulch single trees or shrubs to outside edge of saucer.
 - 2. Place weed mat under planting areas not to be seeded, or as directed on The Drawings. Cover mat with mulch and secured in place with soil anchor.
- B. Use peat moss for planting soil mixture only and not be used as mulch, except on ground cover.
- C. Peg sodded slopes greater than 3:1 to hold in place.
- D. Areas to be covered with erosion control blankets shall be properly prepared, fertilized, and seeded before blanket is applied. When blanket is unrolled, netting shall be on top and fibers in contact with soil. In ditches, apply blanket in direction of flow of water. On slopes, apply blankets vertically on slope. Butt ends and sides snugly and staple to manufacturer's recommendations.

3.5 SEEDING

- A. Do not perform seeding in windy conditions.
- B. Seeding shall be dispersed in 2 directions at right angles to each other.
- C. Seed lawn areas by sowing evenly with approved mechanical seeder at rate of minimum of 3 pounds per 1,000 square feet. Culti-packer or approved similar equipment may be used to cover seed and to form seedbed in 1 operation. In areas inaccessible to culti-packer, lightly rake seeded ground with flexible rakes and roll with water ballast roller. After rolling, seeded areas shall be lightly mulched with wheat straw.

- D. Surface layer of soil for seeded areas shall be kept moist during germination period. Water seeded areas twice first week to minimum depth of 6 inches with fine spray and once per week thereafter as necessary to supplement natural rain to equivalent of 6 inches depth.

3.6 SODDING

- A. Cut and lay sod on same day. Only healthy vigorous growing sod shall be laid.
- B. Lay sod across slope and tightly together to result in solid coverage free of gaps.
- C. Roll or firmly but lightly tamp new sod with suitable wooden or metal tamper sufficiently to set or press sod into underlying soil.
- D. After sodding has been completed, clean up and thoroughly water newly-sodded areas.

3.7 MAINTENANCE DURING CONSTRUCTION

- A. Begin maintenance immediately after planting. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated, and otherwise maintained and protected until acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored, and dead material removed and replaced. Tighten and repair stakes and wires. Correct defective work as soon as possible after it becomes apparent and weather and season permit.
- B. Maintain lawns for at least 30 days after sodding and 60 days after seeding, or as long as is necessary to establish uniform stand of the specified grasses, or until substantial completion of project, or until acceptance of lawns, whichever is later.
- C. In event that lawn operations are completed too late in Fall for adequate germination and/or growth, maintenance shall continue into following growing season or until uniform stand of specified grasses has been established.
- D. Make weekly inspections to determine moisture content of soil and adjust watering schedule established by irrigation system installer to fit conditions.
- E. After grass growth has started, areas that fail to show uniform stand of grass for any reason whatsoever shall be reseeded in accordance with The Drawings and as specified herein. Such areas shall be reseeded repeatedly until areas are covered with satisfactory growth of grass at no additional cost to Owner. Topsoil conditioning or removal and replacement shall be performed if required to facilitate establishment of grass at no cost to Owner.
- F. Watering shall be done in such manner and as frequently as is deemed necessary by Owner to assure continued growth of healthy grass. Water areas of site in such a manner as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to finished surface due to watering equipment.
- G. Water for execution and maintenance shall be provided by Contractor at no expense to Owner. Contractor shall furnish portable tanks, pumps, hose, pipe, connections, nozzles, and any other equipment required to transport water from available outlets and apply it to seeded areas in approved manner.
- H. Initiate mowing of seeded areas when grass has attained height of 3 inches. Maintain grass height at 2 1/2 to 3 inches at subsequent cuttings depending on time of year. Not more than

1/3 of grass leaf shall be removed at any cutting and cutting shall not occur more than 10 days apart.

- I. Heavy cuttings shall be removed to prevent destruction of underlying turf. If weeds or other undesirable vegetation threaten to smother planted species, such vegetation shall be mowed or, in case of rank growths, shall be uprooted, raked and removed from area by methods approved by Owner or Landscape Architect.
 - J. Protect seeded areas from pedestrian or vehicular trespassing while grass is germinating. Provide fences, signs, barriers, or other necessary temporary protective devices. Repair damage resulting from trespass, erosion, washout, settlement, or other causes.
 - K. Remove fences, signs, barriers, or other temporary protective devices after final acceptance.
 - L. If substantial number of plants are diseased, distressed, or dead at time of inspection, acceptance will not be granted and Contractor's responsibility for maintenance of plants shall be extended until replacements are made.
 - M. Replacements shall be plants of same variety and size specified on The Drawings. Furnish and plant as specified herein. Cost shall be borne by Contractor. Replacements resulting from removal, loss, or damage due to occupancy of project in any part, vandalism, physical damage by animals, vehicles, etc., and losses due to curtailment of water by local authorities will be approved and paid for by Owner.
 - N. Remove and replace dead, defective and/or rejected plants as required before final acceptance. Replacement of plant materials that may be necessary shall be at expense of Contractor.
 - O. Grassed areas damaged during process of work shall be responsibility of Contractor, who shall restore disturbed areas to condition satisfactory to Owner. This may include filling to grade, fertilizing, seeding, and mulching.
 - P. Guarantee plants for period of 1 year after inspection and acceptance.
 - Q. At end of Establishment Period, inspection shall be made again. Remove from site any plant that is dead or unsatisfactory to Owner. Replace plants during normal planting season.
- 3.8 MAINTENANCE AFTER CONSTRUCTION (Optional services to be approved by Owner)
- A. Maintenance after construction shall be commenced upon completion of a Maintenance Agreement based on proposal submitted by the Contractor specified in Part 1 above. The Maintenance Agreement and the maintenance work shall conform to the following requirements.
 - B. General Landscaping
 - 1. Landscape maintenance shall include necessary watering, cultivation, weeding, pruning, wound dressing, disease and insect pest control, protective spraying, labor for replacement of dead plant material, straightening plants which lean or sag, adjustments of plants which settle or are planted too low, mowing, replacement of mulch that has been displaced, repairing and reshaping of saucers, and reseeding or replanting of those areas affected. Remove rubbish, waste, tools, and equipment used at end of each work

day. Other procedures consistent with good horticultural practice necessary to ensure vigorous, healthy growth of plant material are also part of Maintenance Contract.

2. During first year of Maintenance Contract, replacement of plant material shall be responsibility of Contractor with exceptions as listed herein.
 3. Landscape maintenance contractor shall purchase and maintain Contractor's general liability insurance in amount of \$1,000,000 for protection from Contractor's operations under Maintenance Contract. Certification of such insurance shall be filed with Owner prior to commencement of work.
- C. Watering
1. The Owner's irrigation system shall be used by landscape maintenance contractor for watering. Failure of system does not relieve landscape maintenance contractor's responsibility of maintaining desired level of moisture necessary to maintain vigorous, healthy growth.
 2. Water shall be applied in quantities sufficient to penetrate soil to minimum depth of 8-inches in shrub beds and 6-inches in turf areas at rate that will prevent saturation of soil.
 3. On-site water will be furnished by Owner. Contractor shall furnish hose and other watering equipment.
- D. Weeding: Landscape maintenance contractor shall keep areas free from weeds and undesirable grasses by approved methods and materials.
- E. Disease and insect pest control: Inspect plant material at least once each month to locate any disease or insect pest infestations. Upon discovery of infestation, nature or species of infestation shall be identified. Control in accordance with industry standards shall be immediately implemented.
- F. Fertilizing: Landscape maintenance contractor shall fertilize on regularly scheduled program to fit requirements of plant material to maintain vigorous, healthy growth. Spilled or excess fertilizer shall be swept and properly disposed. Flushing into storm sewer is prohibited.
- G. Pruning and repair: Amount of pruning shall be limited to minimum necessary to remove dead or injured branches, to compensate for loss of roots as result of transplanting operations, and to maintain safety in traveled areas. Pruning shall not change the natural habit or attractive, balanced shape of plant. Cuts shall be made flush, leaving no stubs.
- H. Mowing: Mow grass areas at regular intervals to keep grass height from exceeding 3-inches. Mow in such manner as to prevent clippings from blowing onto paved areas and sidewalks. Cleanup after mowing shall include sweeping or blowing to clear mowing debris.
- I. Clean up: During course of maintenance, excess and waste materials shall be continuously and promptly removed at end of each workday.
- J. Maintenance report and schedule of activities: Landscape maintenance contractor shall provide schedule and report to Owner that details planned maintenance activities including names of any subcontractors.
- K. General Irrigation:
1. After 1-Year Maintenance Agreement has expired, landscape maintenance contractor shall maintain irrigation system in good operating condition through monthly inspections of system components and make repairs as necessary. This includes checking and verifying

operation in each zone, alignment of heads, rain sensors, controller, and checking leaks.

2. Landscape maintenance contractor shall make every effort to conserve water by adjusting programming to allow for weather changes and growth seasons. Irrigation should be conducted between 2:00 a.m. and 6:00 a.m. unless requested by Owner.
- L. Winterization:
1. When cold weather approaches and chance for freezing conditions exist, the irrigation system shall be drained after each use.
 2. Winterization procedure shall include the following:
 - a. Shut water off at main gate valve
 - b. Open manual drain valves
 - c. Blow out each section twice with compressed air
 - d. Set controller to cycle through each section minimum time available, once each day through winter months.
 - e. If backflow preventer is installed with unions, remove and store out of weather.
- M. Spring Start-up: Spring start-up procedure shall include the following:
1. Reinstall backflow prevention
 2. Close manual drain valves
 3. Slowly turn water on
 4. Check for leaks and proper alignment of heads
 5. Repair and adjust system as required for proper operation
- N. Component Replacement: If replacement of component parts becomes necessary after normal use and after original warranty has expired, Owner is responsible for expense of replacements, provided there has been no mishandling of these items on part of landscape maintenance contractor.
- O. Termination Of Maintenance Contract:
1. If Owner fails to make payment for period of 90 days without written clarification, landscape maintenance contractor may, upon 12 additional days written notice to Owner, terminate contract and recover from Owner payment for work executed and for proven loss sustained upon materials, equipment, or tools, including reasonable profit and damages applicable to Maintenance Contract.
 2. If landscape maintenance contractor defaults, persistently fails, or neglects to carry out work in accordance with Maintenance Contract, Owner, after 12 days written notice to landscape maintenance contractor and without prejudice to any other remedy Owner may have, may make good such deficiencies, including compensation for additional services made necessary, and deduct cost from payment due landscape maintenance contractor or Owner may terminate Maintenance Contract.

END OF SECTION