SECTION 02930 - EXTERIOR PLANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the layout, soil preparation, bed establishment, excavation for and planting of the following:
   1. Trees.
   2. Shrubs.
   3. Ground cover.
   4. Plants.

B. Related Sections include the following:
   1. Division 2 Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
   2. Division 2 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
   3. Division 2 Section "Turf and Grasses."

1.03 SUBMITTALS

A. General: Submit in accordance with Section 01330.

B. Product Data: For each type of product indicated.

C. Material List: Thirty days before any planting materials are delivered to the job site, submit to the Architect a complete list of plants, dark mulch and other items proposed to be installed:
   1. Include a complete data on source, size and quality.
   2. Demonstrate complete conformance with requirements of this Section.
   3. This shall in no way be construed as permitting substitution for specific items described in Drawings or these Specifications, unless substitution has been approved in advance by the Architect.

D. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
   1. Manufacturer's certified analysis for standard products.
   2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

E. Qualification Data: For landscape Installer.

F. Material Test Reports: For existing surface soil and imported topsoil.

G. Planting Schedule: Indicating anticipated planting dates for exterior plants.

H. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

1.04 QUALITY ASSURANCE

A. Source Quality Control:
1. General: Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.
2. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis and approval by a Maine Certified Landscape Professional (207-225-3998).

B. Standards:
1. Plants and planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
2. Quality and size shall conform to the current edition of "Horticultural Standards" for number one grade nursery stock, as adopted by the American Association of Nurserymen.
3. Plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of the plants, in accordance with the standards of practice of the American Association of Nurserymen. Botanical names shall take precedence over common names.
4. Substitutions:
   a. In the event that trees, shrubs, or other plant material specified in drawings are in the opinion of Contractor, impossible or unreasonably difficult to obtain, Contractor shall immediately notify Architect to discuss appropriate substitutions in writing. No substitutions of plant material may be made without prior written approval of Architect.
   b. Contractor shall notify Architect in writing of any plant material that is inappropriate for proposed site conditions in the opinion of Contractor. Substitutions shall be processed as per paragraph 4a. above.

C. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

D. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil, both existing and imported.
1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
2. Materials shall not be used in construction until Architect has reviewed test results.

E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take

caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

F. Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
   1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Digging Plant Material: Plants shall not be dug at nursery or approved source until Contractor is ready to transport them from their original locations to project site or acceptable storage location.

B. Transportation of Plant Material: Plants transported to project in open vehicles shall be covered 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.
   1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.
   2. Plants shall be kept moist, fresh, and protected at all times. Such protection shall encompass entire period during which plants are in transit, being handled, or are in temporary storage.
   3. Unless otherwise authorized by Architect, notify Architect at least two working days in advance of anticipated delivery date of any plant material. Provide Architect with legible copy of bill of lading, showing quantities, kinds, and sizes of materials included for each shipment.

C. Do not prune trees and shrubs before delivery, except as approved by Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.

D. Handle planting stock by root ball.

E. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.
   1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material. Keep balls moist and their solidity carefully preserved.
   2. Do not remove container-grown stock from containers before time of planting.
   3. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.
   4. Exterior plants shall not be allowed to dry out or freeze.

5. Both duration and method of storage of plant materials shall be subject to approval of Architect.

1.06 REJECTION OF MATERIALS

A. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage, shall be cause for rejection.

B. Upon arrival at temporary storage location or project site, plants shall be inspected for proper shipping procedures. Should the roots be dried out, large branches be broken, balls of earth broken or loosened, or areas of bark be torn, Architect will reject the injured plant.

C. When a plant has been rejected, remove it from project site and replace it with one of the required size and quality.

1.07 COORDINATION

A. Planting Season: Regardless of dates specified below, planting shall only be performed when weather and soil conditions are suitable for planting the material specified in accordance with locally accepted practice. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Potted and Container Grown Plants:
      a. Spring: April 1 to July 15.
      b. Fall: August 15 to November 15.
   2. Balled and Burlapped Plants:
      a. Spring: April 1 to June 15.
      b. Fall: August 15 to October 15.
   3. Planting season may be extended only with written permission of Architect.

B. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Architect.
   1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.08 INITIAL ACCEPTANCE

A. Notification: Architect will inspect all work of this Section for Substantial Completion upon written notice of completion. Written request shall be received by Architect per requirements of Division 1 but not less than ten calendar days before anticipated date of inspection.

B. Acceptance of plant material by Architect shall be for general conformance to specified size, character, and quality, and shall not diminish Contractor's responsibility for full conformance to Contract Documents.

C. Upon completion and re-inspection of all repairs or renewals necessary in judgment of the Architect, the Architect will recommend to Owner that acceptance of work of this Section be given.

1.09 MAINTENANCE

A. Maintenance by Contractor shall begin immediately after each plant is planted and shall continue until Project Substantial Completion or 120 days, whichever is longer.
   1. When initial maintenance period has not elapsed before the end of the planting season, the maintenance period shall continue into the next planting season.

B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, fertilizing, tightening and repairing stakes and guy supports, resetting plants to proper grades or upright position, restoration of the planting saucer, as required to establish healthy, viable plantings. Restore or replace damaged tree wrappings. Spray plant materials as required to keep them free of insects and disease.

C. Planting areas and plants shall be protected against trespassing and damage for the duration of maintenance period. If plants become damaged or injured, they shall be treated or replaced as directed by Architect at no additional cost to Owner.

D. Provide equipment and means for proper application of water to those planted areas not equipped with an irrigation system.

E. Restoration: Pavements and planted areas, structures and substructures not specifically provided for in the contract, disturbed by the Contractor during the execution of the work shall be restored by Contractor, in a manner satisfactory to Architect, to their original condition at no cost to Owner.

F. Following Acceptance or Maintenance Period by Contractor, whichever comes last, maintenance of plant material shall become the Owner's responsibility. Contractor shall provide Owner with instructions and service as follows:
   1. Provide Owner with typewritten recommended maintenance program.
   2. Contractor shall make periodic inspections, not less than every month, at no extra cost to Owner, during warranty period to determine what changes, if any, should be made to Owner's maintenance program.
   3. Submit written report of each inspection to Architect outlining corrective measures required to keep warranty valid.

1.10 WARRANTY PERIOD AND REPLACEMENTS

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of Contract Documents, and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.

B. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
   1. Warranty Period for All Plant Materials: One year from date of Substantial Completion.
   2. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
   3. Replace exterior plants that are more than 25% dead or in an unhealthy condition at end of warranty period.

4. Replacement plants shall be free of dead or dying branches and branch tips and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of same species. Replacements shall be subject to requirements stated in this Specification.
5. Warranty of replacement plants shall extend for an additional one year period from date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at end of said extended guarantee period, Owner may elect subsequent replacement or credit for each item.

C. At the end of warranty period, and no less than five days prior to final inspection, staking and guying materials and ties shall be removed from site.

1.11 MAINTENANCE

A. Trees and Shrubs: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.
1. Maintenance Period: 90-days from date of Substantial Completion.

B. Ground Cover and Plants: Maintain for the following maintenance period by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings:
1. Maintenance Period: 90-days from date of Substantial Completion.

C. When full maintenance period has not elapsed before the end of planting season, maintenance shall continue in the spring at the beginning of the next planting season.

1.12 FINAL INSPECTION AND ACCEPTANCE OF PLANT MATERIAL

A. Notification: At the end of warranty period, provide Architect with written notice of end of warranty period requesting inspection of work for Final Acceptance. Request shall be received per the requirements of Division 1 but not less than ten calendar days before the anticipated date for Final Inspection.

B. Upon completion and re-inspection of full repairs or replacements necessary in the judgment of the Architect at that time, the Architect will recommend to Owner that Final Acceptance of Work of this Section be given.

PART 2 - PRODUCTS

2.01 PLANT MATERIALS

A. General: Materials shall be true to species and variety specified and shall be nursery grown in accordance with good horticultural practice under climatic conditions similar to those in the locality of project for at least two years. They shall have been root-pruned within last two years and shall be freshly dug. No heeled-in plants or plants from cold storage will be accepted.

B. Unless specifically noted otherwise, plants shall be of specimen quality; exceptionally heavy; and symmetrical, heavily branched with an even branch distribution, densely foliated and/or budded, and a strong, straight, distinct leader where this is characteristic of species. Plants shall possess a normal balance between height and spread. The Architect will be the final arbiter of acceptability of plant form.

C. Plants shall be sound; healthy; vigorous; and free of disease, insects, pests and their eggs or larvae.

D. Plants shall have a well-developed fibrous root system.

E. Plants shall be free of physical damage such as scrapes, broken or split branches, scars, bark abrasions, sunscalds, fresh limb cuts, disfiguring knots, or other defects. These defects shall not interrupt more than 25% of the circumference of the plant cambium.

F. Plants shall conform to measurements indicated on Plant List. Plants larger than specified may be used only if accepted by Architect. Use of such plants shall not increase Contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.

G. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than minimum size, and not less than 50 percent of the plants shall be as large as maximum size specified. Measurements specified are minimum size, acceptable after pruning where pruning is required. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.

H. Plants shall not be pruned before delivery. Trees with multiple leaders, unless specified, will be rejected.

I. Plants indicated as "B&B" shall be balled and Burlapped. They shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar material and bound with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform. In no case shall ball size be less than 11 inches in diameter for each inch of caliper.

1. Plants shall be grown for at least two years under climatic conditions similar to those in the locality of the Project.

J. Container grown plants shall be well rooted and established in container in which they are growing. They shall have grown in the container for a sufficient length of time for root system to hold planting medium when taken from container, but not long enough to become root bound. Container grown plants exceeding the sizes indicated in ANSI Z60.1 shall have containers that are not less than 75% of ball sizes for comparable B&B plant material. Each container plant shall be inspected and root pruned as needed.

1. Canes or Trunk(s) and Branches:
   a. Very well formed and sturdy.
   b. Branching plentiful and uniformly distributed to form a well-balanced plant.
   c. Scars shall be free of rot and not exceed 1/4 the diameter of the wood beneath in greatest dimension unless completely healed (except pruning scars).
   d. Pruning scars clean cut leaving little or no protrusion from the trunk or branch.

e. Graft union completely healed.
f. No mechanical or pest damage.
g. No extreme succulence.

2. Foliage:
   a. Densely supplied with healthy, vigorous leaves of normal size, shape, color, and texture (except shrubs moved bare-root or deciduous shrubs when dormant).
   b. No holes, cavities, or depressed areas caused by broken or dead branches or insufficient foliage.
   c. No chlorosis.
   d. Pest or mechanical damage barely perceptible with no more than 5% of total foliage affected.
   e. No frost or cold damage discernible.
3. Root System:
   a. Sturdily established in container.
   b. Shall not be excessively root bound except plants deliberately grown root bound to produce a dwarf plant.
   c. No large roots growing out of container.
   d. No noxious weeds in container.

K. Tagging: Plants shall be tagged with waterproof label bearing legible designation of correct plant name and size. Labels shall be attached securely to all plants, bundles and containers of plant materials delivered with care that those attached directly to plants will not restrict growth.

L. Certificate of Inspection: Shall accompany invoices for plants as may be required by law for transportation. File certificates with Architect prior to acceptance of material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at project site.

2.02 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.03 TOPSOIL

A. Topsoil shall be obtained from a previously established stockpile on project site, to extent that suitable material is available. Additional topsoil required shall be obtained from off-site sources.

B. Topsoil, whether stripped from site or supplied from off-site, shall be a loam as defined by the USDA Soil Conservation Service, Soil Classification System, and shall have the following mechanical analysis:

Textural Class	% of Total Weight	Average %
Sand (0.05 - 2.0 mm dia. range)	50 to 70	60
Silt (0.002 - 0.05 mm dia. range)	18 to 35	25
Clay (less than 0.002 mm dia. range)	5 to 20	15

C. Topsoil shall comply with following characteristics:
1. Shall be free of earth clods, plant parts, stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.

2. 95% shall pass a 2.0-mm sieve.
3. Organic matter content shall be 6 to 12% of total dry weight.
4. pH Range: 5.5 to 6.5 phosphorus/potassium; low to medium range.
5. Soluble Salt: Not greater than 500 ppm.

2.04 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing minimum 90 percent total calcium carbonate by weight. Provide ground dolomitic limestone graded within the following limits:

Sieve Size	% Passing by Weight
No. 10	100
No. 20	90
No. 100	50

B. Aluminum Sulfate: Commercial grade, unadulterated. Deliver in containers with name of material and manufacturer, and net weight of contents.

2.05 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Dark brown to black in color.
3. Shall be low in content of mineral and woody material.
4. Shall be granulated or shredded.
5. Product: Benson Earth Products, Gorham, Maine.

B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.06 PLANTING SOIL

A. Planting soil shall be a mixture of 4 parts topsoil and 1 part compost by volume.

B. Planting soil shall have pH value range of 5.5 to 7.0.
1. If planting soil mixture does not fall within required pH range, limestone or aluminum sulfate shall be added to bring pH within specified limit.
2. To remedy deficiencies, implement amendments as recommended by soil analysis for planting beds.

2.07 WATER

A. Water shall be suitable for irrigation and shall be free from ingredients harmful to plant life.

2.08 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, phosphorous, and potassium. Fifty percent of fast- and slow-release nitrogen shall be derived from natural organic source of urea formaldehyde. Available phosphorus shall be derived from super phosphate, bone meal, or tankage. Potassium shall be derived from muriate of potash containing 60% potash. Amounts of nitrogen, phosphorous, and potassium shall be in amounts recommended in soil reports from a qualified soil testing agency.

B. Fertilizer shall be delivered to site in original, unopened containers, each bearing name of manufacturer and product name, and showing weight and manufacturer's guaranteed analysis. Fertilizer that becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50% water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
2. Product: Osmocote Slow Release 14-14-14 analysis.

D. Controlled-Release Fertilizer: Provide on of the following products:
1. Agrilform 20-10-5; Sierra Chemical Co.
2. Planting Tablets: Milpitas, CA 95035.
3. EZY-Grow Fertilizer Packet; EZY-Grow Landscape Specialties.

2.09 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of 100% fine-shredded dark composted pine bark, of uniform size and free from rot, leaves, twigs, debris, stones, or any material harmful to plant growth. Bark shall have been shredded and stockpiled no less than two months and no more than two years before use.

2.10 STAKES AND GUYS

A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2- by 2-inches by length indicated, pointed at one end.

B. Guy and Tie Wire: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106-inch in diameter.

C. Guy Cable: 5-strand, 3/16-inch diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3-inches long, with two 3/8-inch galvanized eyebolts.

D. Hose Chafing Guard: Reinforced rubber or plastic hose at least 3/4-inch in diameter, black, and cut to lengths required to protect tree trunks from damage.

E. Turnbuckles: Galvanized steel having 3-inch minimum lengthwise opening fitted with screw eyes.

F. Eyebolts shall be galvanized, having a 1-inch opening fitted with screw length of 1-inch.

G. Deadman: Sound, rough sawn lumber 2 x 4-inches, or other material approved by the Architect. Duckbills may be used, with approval from the Architect.

H. Tree Paint: Tree paint shall be an approved waterproof adhesive and elastic paint, manufactured and customarily used for painting cuts on trees. It shall contain an antiseptic ingredient and be free from kerosene, creosote, coal tar or any other injurious material.

I. Flags: Standard surveyor's plastic flagging tape, white, 6-inches long.

2.11 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
1. Product: Wilt-Pruf; Wilt-Pruf Products, Inc., Essex, CT 06426.

B. Fungicide: Shall be zinc ethylene bisdithiocarbonate (Zineb), or equal.

C. PHC Tree Saver: Mycorrhizal Fungi with Rhizosphere Bacteria for trees and shrubs.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance.
1. Verify subgrade is at proper elevation and has uniform grade.
2. Notify Architect in writing of unacceptable rough grading or subgrade.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION OF PLANTING SOIL

A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth. Mix specified soil amendments with topsoil at the rates specified. Delay mixing if planting will not follow placing of planting soil within a few days.
1. Mix PHC Tree Saver evenly into the upper 8-inches of the backfill soil next to the root ball of trees and shrubs. Pack around the root ball then mulch and water until soil is saturated.

B. Unless otherwise specified or indicated on the Drawings, the mixture (thoroughly mixed by volume) shall be used for backfill around trees and shrubs:
1. Compost to Topsoil: 1 to 4 parts.

C. Pit and Trench Type Backfill: Mix planting soil prior to backfilling and stockpile at the site. For planting beds, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.

3.03 PREPARATION OF PLANTING AREAS

A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Locations of plant material as shown on drawings are approximate. Final positioning of plant material shall be made under supervision of Landscape Architect.

D. Separate subgrade soils from the upper topsoil portions and remove immediately wherever encountered during planting operations.

E. Notify Architect in writing of soil or drainage conditions that Contractor considers detrimental to growth of plant material. State condition and submit proposal in writing to Architect for correcting condition.

F. Test drainage of five plant beds and pits, chosen by the Architect, shall be done by filling with water twice in succession. Time at which water is put into pit or bed for a second filling shall be noted. Architect shall then be notified of the time it takes for pit or bed to drain completely. Planting operations shall not proceed until Architect has reviewed test drainage results.

G. Apply anti-desiccant to Rhododendrons using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
   1. If deciduous trees or shrubs are moved in full leaf, spray with anti-desiccant at nursery before moving and again two weeks after planting.

3.04 FILTER FABRIC

A. Filter fabric shall be installed where indicated on the Drawings. Unless otherwise indicated, filter fabric shall be overlapped 6-inches along all edges.

3.05 JUTE EROSION CONTROL FABRIC

A. Biodegradable, 1-inch, open weave jute erosion control fabric shall be installed on slopes equal to or exceeding 1:3 indicated on Drawings to be planted with ground cover. Fabric shall be overlapped 6 inches along all edges and pinned with galvanized steel wire pins, minimum 6 inches long. Top edge shall be turned under minimum 6-inches and backfilled.

3.06 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 12-inches. Cultivate all plant beds to depth of not less than 18-inches where there are construction activities, i.e. adjacent structures and compacted soils. Remove stones larger than 1½-inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply fertilizer directly to subgrade before loosening.
   2. Apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
b. Mix lime with dry soil before mixing fertilizer.

3. Spread planting soil mix to a depth of not less than 12-inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.07 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate circular pits in accordance with Typical Planting Details. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
1. Excavate approximately three times as wide as ball diameter for balled and Burlapped stock.

B. Subsoil removed from excavations may not be used as backfill.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

3.08 TREE AND SHRUB PLANTING

A. Protect plants from sun and drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss, or other acceptable material and shall be kept well watered. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.

B. Set balled and Burlapped stock plumb and in center of pit or trench with top of root ball in same relationship to finish grade as they bore to ground from which they were dug.
1. Remove burlap and wire baskets from tops of root balls and 1/3 of the way down the sides, but do not remove from under root balls. If non-biodegradable wrap is used, remove totally. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Place planting soil mix around root ball in layers, tamping lightly every 6 inches to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
3. Remove nursery plant identification tags.
4. Form shallow saucer around tree as indicated on Drawings.

C. Containerized plants shall be removed from container taking care not to damage roots. Side of root ball shall be scarified to prevent root bound condition. Set stock plumb and in center of pit or trench with top of root ball 1-inch above adjacent finish grades.
1. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly

before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

D. Bring finish grade in planting areas to grades indicated on Drawings.

E. Organic Mulching: Apply 3-inch average thickness of organic mulch extending 12-inches beyond edge of planting pit or trench. Do not place mulch within 3-inches of trunks or stems.

F. Immediately after planting, water plants thoroughly.

3.09 APPLICATION OF FERTILIZER

A. Fertilizer shall be applied when planting pits are backfilled two-thirds full. Fertilizer application shall be of the type, rate, and timing recommended by the testing agency for each plant type.

B. Slow-Release Fertilizer:
1. Fertilization schedule for trees and shrubs using slow release 4 oz. packet system shall be per manufacturer's recommendations.
2. Fertilizer packets shall be placed 6 to 8 in. deep below top of planting soil around root balls of plants. Packets shall be spaced evenly depending on the number of packets required.

3.10 STAKING, GUYING AND WRAPPING

A. Each tree shall be staked or guyed only if indicated on planting plan immediately after planting. Drive ground anchors into ground by manual or machine method at approximately 45 degree angle to ground plane and distributed at 120 degree intervals around trunk of tree. Preload anchors after driving until anchor turns in the ground at 90 degree angle to line of driving force. Anchor assembly will rise 2 to 6-inches during pre-loading. Attach guying cables, turnbuckles and hose, and secure until tree is rigidly guyed. On all guys, 1/3 distance up from ground to trunk, secure white plastic flagging 1-inch x 18-inches, tied securely.
1. Trees 3"in caliper or greater shall be guyed using 120 degree, three-guy method, or as shown on the Drawings.
2. Trees less than 3" in caliper shall be staked using 180 degree, two-stake method.
3. Plants shall stand plumb after staking or guying.
4. Maintain supports in place during entire guarantee period.

3.11 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs only at time of planting and as directed by Architect.

B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.
1. Use only clean, sharp tools.
2. Cuts shall be made flush, leaving no stubs. No tree paint shall be used.

3.12 GROUND COVER AND PERENNIAL PLANTING

A. Set out and space ground cover and plants as indicated.

B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.

C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.13 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds, tree pits, and other areas indicated within two days of planting.
   1. Organic Mulch: Apply 2-inch average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.
      a. Mulch shall be applied to entire mulch area. Mulch area is the bed area.

3.14 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.15 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02930