SECTION 02901

LANDSCAPE PLANTING

PART 1 G E N E R A L

1.01 SECTION INCLUDES

A. Furnishing all plants, labor, equipment, appliances and materials for landscape planting. Rough and finish grading is part of the landscape work.

1.02 UNIT PRICES

A. Measurement for Landscape Planting is on a Lump Sum.

1.03 PLANT SCHEDULE

A. The plant schedule gives quantities, scientific names, common names, sizes, and special remarks.

B. The plant list conforms with "Standardized Plant Names," 1942, and "American Standard for Nursery stock," 1949, revised January 2, 1969, as prepared by the American Joint Committee on Horticultural Nomenclature and the American Association of Nurserymen, Inc.

C. In case of discrepancies between the plant list and drawings, the working drawings shall govern.

1.04 SUBMITTALS

A. Submit samples of the plants and grasses to be used for approval prior to installation. Inspection will be done on the project site.

B. Provide materials from the same source and of the same quality and variety as those inspected and approved.

C. Soils and/or compost materials must be approved at their source prior to delivery.

1.05 DELIVERY AND STORAGE OF MATERIALS

A. Pack all plant material to provide protection against damage from wind, weather or other possible sources. Tie plants to prevent whipping when shipment is made by truck.

B. When shipment is made by rail, pack plants and ventilate cars as required to prevent sweating.

C. Provide a platform from all B&B root balls over 24 inches in diameter.

D. Store plants on the site as directed.

E. Spray with antitranspirant at time of delivery in warm season months. Apply at rates in accordance with manufacturer's recommendations.

1.06 SUBSTITUTIONS

A. Substitution of larger size or better grade than specified will be allowed, but with no increase in unit cost.

B. Substitution of an alternate species may be accepted upon written approval from the Owner’s Representative.

1.07 ACCEPTANCE AND APPROVAL

A. There will be no partial acceptance of grasses.

B. Upon Contractor's request, final approval will be made within 15 working days of date of notice if contracted work has been satisfactorily completed.

C. Final approval of grasses will be given when the following conditions are met:

1. There are no bare spots larger than 1 square foot.

2. The total area of bare spots does not exceed 5 percent of the entire grass area.

1.08 WARRANTY

A. Provide 1-year warranty on all plants and grasses. The warranty period commences after final completion.

B. Replace plants that fail during the warranty period according to the specifications governing the original plants.

C. Periodically inspect plants for proper watering and spraying, during warranty period.

D. Damage caused by natural hazards such as hail, high winds or storm is not covered by the guarantee.

E. Plant materials and grasses which die due to insects or diseases are included in the warranty.

F. Existing plant material required to be moved on the site will be protected under the warranty.

1.09 SOIL ANALYSIS

A. Submit for approval an analysis of all soils obtained from off-site sources prior to delivery.

B. Analysis of existing soil is not required.

1.10 PLANT CERTIFICATES

A. Submit inspection certificates approved by the Owner's Representative as required by law with the invoice for each shipment or order of stock:

1. Submit certificates to the Owner's Representative for review in ample time to be reviewed and meet installation schedule.

1.11 PROTECTION OF PERSONS AND PROPERTY

A. Take all reasonable precautions to prevent injury to people and to avoid damage to existing structures, plants and grasses. Keep the area free of hazardous obstructions.

B. Construct barricades where necessary for the protection of persons and property. Mark all barricades with red and white paint and with red reflectors. Erect barricades in the following locations:

1. Areas dangerous to workmen and passersby.

2. Along adjoining property that requires protection.

3. Across streets and walks that are temporarily closed or rerouted.

4. Around plants and trees to be protected.

C. Excavations larger than 1 foot deep and 1 foot wide must be covered when not attended.

D. Existing trees which may be subject to damage must be protected by fencing or boxing.

E. During the course of planting operations, protect all installed plants and lawns from damage. If heavy equipment or materials must be moved across lawns, use planks or pontoons to protect the turf. Similarly protect walks across which heavy equipment must pass.

1.12 DEFINITIONS

A. "In situ" refers to any soil which is existing and in place on the project site at the time landscape work commences.

B. "Establishment period" refers to a period of 45 days after installation during which time 5 percent of the construction costs will be withheld.

PART 2 P R O D U C T S

2.01 TOPSOIL

A. Comply with Section 02920.

2.02 FERTILIZER

A. Provide an inorganic commercial fertilizer which is uniform in composition, dry and free flowing, in original unopened containers, each bearing the manufacturer's guaranteed analysis. Caked, damaged or otherwise unsuitable fertilizer will not be accepted.

1. For lawns: 20-10-5.

2. For ground cover areas, shrub beds and tree holes: 12-24-12.

2.03 ADDITIVES

A. Adjustment of pH: For topsoil to attain the specified pH level, furnish raw, ground agricultural limestone containing not less than 85 percent calcium carbonate of which 50 percent will pass through a 100-mesh sieve and 90 percent through a 70-mesh sieve. Wait 2 months after planting before application of fertilizer.

1. The following Table is a guideline to establish the pounds of limestone needed per 1,000 sq. ft. of turf:

Pounds of Limestone Needed per 1,000 sq. ft.

Soil pH	Sands, Loamy Sands	Sandy Loam	Clay Loam, Clay
>6.0	0	0	0

5.1 – 6.0	50	75	100
<5.0	100	125	175

B. Humus: Provide a rich humus material free of sticks, stones, weedy roots, or other foreign matter. Humus must have ample water holding capacity and plant food retention. Use a humus with a dark brown to black color.

C. Top Dressing Mulch: Provide pine or redwood bark that is evenly shredded, consisting of 90 percent organic matter, brown in color, and free of harmful minerals. Maximum particle size not to exceed 3 inch in diameter.

D. Sharp Sand: Obtain clean sharp sand of hard durable grains, free from dirt, organic matter or other impurities. Use sand with a grade between 0.05 mm and 2 mm.

E. Concrete Gravel: Provide clean, crushed stone consisting of hard, durable, uncoated particles free from injurious amounts of soft friable, thin or laminated pieces. Use gravel which conforms to ASTM C 33. The sieve size will be 3/4 inch, 90 to 100 percent passing.

2.04 CONSTRUCTION MATERIALS

A. Tree Guys:

1. Guy Wires. Use 10-gage galvanized annealed iron wire.

2. Hose will be 2-ply, fiber-reinforced dull green rubber at least 3/4 inch diameter.

3. Turnbuckles will be galvanized, with a 3-inch minimum lengthwise opening and fitted with screw eyes.

B. Stakes:

1. For use in identifying tree and shrub locations.

a. Use 1" x 2" pine, or equivalent, 18 inches long.

b. Use waterproof marker for identification.

2. Where applicable for anchoring trees, use wood deadmen of at least 2" x 4" stock, 36 inches long and buried 3 feet.

3. For supporting guyed trees, use stakes that are of at least 2" x 4" stock, 36 inches long. Notch stakes for guy wires 2 inches from the top.

4. Use tree stakes that are of sound and durable quality capable of withstanding aboveground and underground conditions either "T" Post or Treated Lodge Poles.

C. Edging:

1. Provide 1/2" x 4", Cypress, Redwood, Cedar or Treated Lumber header board.

2. Provide 1" x 2" x 12", Cypress, Redwood, Cedar or Treated Lumber stakes.

D. Paper for Wrapping Trees: Use first quality, 4-inch-wide bituminous impregnated tape, corrugated or crepe paper, specifically manufactured for tree wrapping and having qualities to resist insect infestation.

E. Materials for Flagging Trees:

1. Mark guyed trees with surveyors white plastic tape.

2. Use surveyor’s plastic tape for marking as follows.

a. Red to be removed.

b. Yellow to be transplanted.

c. Green to remain.

d. Blue to identify special handling.

F. Labels: Legibly label plants with durable labels that identify the plant by scientific and common name. Use waterproof ink.

G. Tree Seal: All pruning cuts, bruises, or scars over 3/4 inch in diameter on trees will be treated with a commercial tree wound dressing.

H. Polyethylene: Use virgin base, resin blended polyethylene sheeting with carbon black concentrate of 2.5 percent.

2.05 SPRAYS

A. Sterilization:

1. Use approved solution of "Dyclomec 4G" or equal for areas to be planted.

2. Use 'Pramitol' or equal for areas to be paved.

B. Herbicides:

1. Use round-up or an approved equal systemic Non-Selective, Post Emergent Herbicide on specified areas to kill all vegetation.

2. Use "Confront" or equal for general control of broadleaf weeds in lawns.

3. Use "Preemerg, Eptam, Dryclomec" or equal for ground cover.

4. Use an approved pre-emergent to control seed germination in specified areas.

C. Antitranspirant:

1. Use approved antitranspirant for all plant material that is stored and/or heeled-in on the site.

2. Use approved antitranspirant on all planted trees and shrubs.

D. Root Stimulant: Use approved root stimulant on all newly planted trees, shrubs, vines and/or ground cover areas.

2.06 PLANT CHARACTERISTICS

A. Provide plants which are true to type and name, and typical of their species or variety. Plants must have a normal, well-developed branch structure, with a vigorous root system, and must be generally sound and healthy. Use plants which are free from defects, including:

1. Disfiguring knots.

2. Sun scald.

3. Injuries.

4. Bark abrasions.

5. Plant diseases.

6. Insect eggs.

7. Borers.

8. Infestations.

B. Select well formed plants balanced between height and spread typical of the species or variety with branches in normal position. Heading back plants to meet size limits will not be permitted.

C. Unless otherwise specified, all plants will be nursery grown and at least twice transplanted. Use plants which have been growing under similar climatic conditions to those of the project for at least 2 years prior to the date of the contract. Recently stepped-up plants will not be acceptable. All B&B or bare root plants must be freshly dug; heeled-in or cold storage plants will not be accepted.

D. Balled, bare root and container-grown plants will conform to the definitions given in the American Standards for Nursery Stock.

E. No tree will be accepted which has had leaders cut or damaged, or which has a thin, weak trunk and/or poorly formed tops.

F. Regardless of sample selection, a plant may be rejected at the site by the Owner's Representative.

2.07 NURSERY STOCK

A. Deciduous Trees: Provide trees which are straight and symmetrical and have a persistently preferred main leader. The crown must be in good overall proportion to the entire height of the tree. Where a clump is specified, a plant having a minimum of three stems originating from a common base at the ground line will be furnished. Measure trees by average caliper of trunk.

1. For trees up to 4 inches in diameter, measure caliper 6 inches above ground.

2. For trunks larger than 4 inches, measure caliper 12 inches above ground.

B. Evergreen Trees: Form of the top will be typical of the species and not unnaturally sheared or color-treated. Measure by average caliper. Caliper will be taken 6 inches above the ground on trees up to 4 inches in diameter and 12 inches above the ground on trees larger than 4 inches.

C. Vines and Ground Cover: Provide plants which are container-grown for sufficient time to ensure adequate root growth to hold the soil in place and retain the original shape when removed from the container.

2.08 FIELD-COLLECTED PLANTS

A. Field-collected plants must be grown in favorable locations that ensure fibrous roots and vigorous growth. Such plants will be selected on site by the Landscape architect.

B. Provide balls at least 1/3 greater in diameter than those specified for nursery stock.

C. If dug in dormant season and bare root is acceptable, the spread of roots must be at least 1/3 greater than the spread of roots for bare root nursery stock.

2.09 SEED

A. Seasonal Limitations:

1. Bermuda:

a. Hulled seeds may be planted between October and March.

b. Unhulled seeds may be planted between April and September.

2. Rye:

a. Plant between October and February.

B. Bermuda: Provide common Bermuda seed that is extra-fancy, treated, lawn type. Deliver in original, unopened container showing weight, analysis, name of vendor and germination test results. Wet, moldy, or otherwise damaged seed will not be accepted.

C. Rye: Deliver annual Winter Rye seed in original unopened containers. Seed must be fresh, clean, and mixed in labeled proportions. As tested, minimum percentages of impurities and germination must be labeled.

2.10 HYDROMULCH

A. Provide hydromulch second as noted in Section 02932 - Hydromulch Seeding.

2.11 GRASS

A. Grass used should match existing or as specified on the drawings.

B. Obtain certified sod from an approved source.

C. Provide material which is true to type and name, and is typical of the species or variety.

D. Delivery:

1. Identify and tag sods with correct scientific and common name for each species.

2. Do not deliver more sods than can be planted within 8 hrs.

3. Transport and deliver sods in/on pallets.

4. Protect sods against dehydration, overheating or contamination during transportation and delivery.

5. Cover unplanted sods with moistened burlap to prevent dehydration or overheating while awaiting installation.

6. Sods must be harvested within 12 hours of planting and arrive at the project site in a moist condition.

E. Products:

1. Material to be uniform in color, leaf texture and density.

2. Material to be graded #1 or better.

3. Uniform mowed height at time of harvesting material: 1 1/2 inches.

4. Inspected and certified free of diseases, nematodes, and undesirable insects by authorized representative of State Department of Agriculture.

5. Material will not be acceptable if it contains any quack grass, Johnson grass, poison ivy, nut grass, thistle, common bent grass, wild garlic, morning glory, perennial sorrel or bromegrass.

6. Turf will be considered weed free when found to contain less than 1 percent of dandelion, jimson weed, mustard, chickweed, per 100 square feet.

PART 3 E X E C U T I ON

3.01 WORK CONDITIONS

A. Site Availability: Begin no landscape work where conflicting site work by Owner is incomplete or as otherwise directed by the Owner's Representative.

B. Weather Restrictions: Stop all work during inclement weather such as drought, high winds, excessive rain, extreme heat, cold or freeze. Obtain authorization before resuming work.

3.02 PLANTING PROCEDURES

A. Temporary Nursery: A temporary nursery may be used to store plants, but no more than 5 days before planting. Keep plants well watered and protected.

1. Immediately upon delivery. Apply spray from top to bottom. Thoroughly cover plants, but not to the point of run-off. Spray block units and not

individual plants. Use a low-pressure, fine-mist applicator. Spray at rates recommended in the manufacturer's directions.

2. Handle all balled and burlapped plants by the ball only.

3. Upon delivery, immediately heel-in bare root plants. Open bundles, separate plants, set roots in trenches and cover with topsoil. Water plants with an approved root stimulant containing vitamin B.

4. Handle container plants by the container.

5. Handle ground cover plants in flats. Pack flats tightly together and sprinkle plants everyday.

6. Special plants so designated must be kept in an approved enclosure or planted the day of delivery.

7. Store soils and additives on approved platforms.

B. Digging and Handling:

1. The actual planting operation must proceed without delay and in a manner to avoid undue drying of the roots because of exposure to air and sun. Keep an ample supply of sawdust available to cover the roots. Keep the roots well covered and moist until the plants can be placed in the final location and permanently planted.

2. Handle all plant stock with care to prevent injuries to the trunk, branches and roots.

3. Dig bare root plants when fully dormant. Keep all of the root system intact; do not prune the root system. However, any roots that are broken, crushed, or bruised must be cleanly cut back to sound wood. Make the cut on an angle so that the exposed end faces downward. Seal any cut root exceeding 3/4 inch in diameter with an approved tree wound dressing.

4. Balled and burlapped plants must have the root system encased in a firm, solid ball of natural earth, wrapped in burlap and tightly bound. Each ball must be of sufficient size to encompass all the fibrous feeding roots and not smaller than required by the American Standards for Nursery Stock. The ball must remain firm and compact throughout the planting operations.

3.03 SITE PREPARATION

A. Existing Trees:

1. Protection: Protect tops, trunks and roots of trees to remain on the site. Before starting work, box, fence or otherwise protect trees subject to construction damage. Remove boxing when directed. Permit no stockpiles of heavy equipment within the branch spread of trees.

2. Removal: Remove trees marked for removal. Do not remove any tree without proper authorization. Stumps within 36 inches of final grade must also be removed.

3. Pruning: Cut and trim trees only as directed; do not cut any tree without proper authorization. Trim existing trees of dead or diseased limbs. Cut limbs close to the trunk. Cover cuts with an approved tree wound dressing.

B. Grading Around Trees: As required, fill or grade within the branch spread of trees to remain, observing the following requirements.

1. For trenching beneath trees, tunnel under the tree roots with careful hand digging. Avoid cutting or injuring roots.

2. Do not raise or lower the grade around an existing tree in any way, unless so directed.

C. Placing Topsoil:

1. Refer to Section 02920.

D. "In Situ" soil Preparation:

1. Cross-till in two directions all existing soil in designated areas to be planted, as follows:

a. In lawn areas to a minimum depth of 6 inches.

b. In shrub areas to a minimum depth of 10 inches.

2. Evenly broadcast fertilizers and soil additives and thoroughly work into soil.

a. Smooth all tilled and amended areas to establish a rough gradient.

b. Deeply irrigate all tilled and amended areas to thoroughly wet soil particles and promote settlement.

c. After a settlement period of not less than 5 days, and before proceeding with any planting, smooth and rake as necessary to establish finish gradient as required.

3. In all areas which have been utilized for parking, storage or construction lots and/or where heavy equipment has been used, cross-rip the entire compacted areas in two directions to a depth of 10 inches before tilling and amending the soil as specified. A heavy float or drag harrow should be used to smooth all surface areas.

   a. Verify location of all underground utilities before ripping.

   b. Ripping teeth should not be set at more than 10-inch spacing.

E. Fertilizer: Evenly broadcast and work fertilizer into soil at the following rates:

1. Lawns: 1 1/2 N pounds per 1,000 square feet.

2. Ground Cover, Shrub, and Tree Areas: 1 1/2 N pounds per 1,000 square feet.

F. Additives:

1. Humus. Evenly broadcast and work into in-situ soil at a rate of 1 cubic yard per 200 square feet.

2. Sharp Sand. Evenly broadcast and work into in-situ soil at a rate of 1 cubic yard per 200 square feet.

3. Concrete Gravel. Utilize as a drainage course as shown on construction drawings.

3.04 PLANTING TREES, SHRUBS, AND GROUND COVER

A. Layout: Before proceeding with planting operations, notify the Owner's Representative 3 working days in advance to coordinate a site visit. Set stakes and/or all 5-gallon and larger sized plants in their permanent locations and acquire approval from Landscape Architect. Do not place plant and/or stakes in planter areas until soil has been placed and approved.

B. Excavation: Excavate holes for placement of plants.

C. Setting Trees and Shrubs:

1. Set all plants plumb or straight and centered in the pit or hold.

2. Form a 6-inch-deep ring around the inside perimeter of the bottom of the tree pit to facilitate drainage away from the roots and/or ball of the plant. Place the plant upright on the remaining mound of undisturbed soil. Spread the

roots of bare root plants to their natural position and cut off all broken or frayed roots. Place balled and burlapped plants with their balls still wrapped.

3. When balled and burlapped plants are being set, loosen all burlap, ropes and wire from the tops and the sides of the ball before backfilling with soil. Do not remove burlap from beneath the ball.

4. For boxed trees, remove all box sides, bottom and bands, taking care not to injure the root ball.

D. Backfilling Around Trees and Shrubs:

1. Backfilling each plant hole with a planting soil mixture for all "in situ" planted areas as follows: 60 percent soil, 20 percent humus, and 20 percent sand.

2. Construct a minimum 4-inch-high soil berm to form a watering basin around newly planted trees and shrubs. On all slopes except minor ones, form soil into an adequate dam or shoulder on the downhill side to catch and hold water and prevent erosion. Properly regrade the slope on the uphill side.

3. Hedge plants may be planted in a continuous trench instead of pits. Evenly space plants true to line and regrade after settlement.

E. Guying, Staking and Wrapping: Support all trees immediately after planting by the use of guys and/or stakes as noted in the plant list.

1. Guy each tree with three guys equally spaced around the tree. Where possible, attach each guy to the tree trunk at major branch crotches of the tree at least 4 feet above ground height. Encase guy wires in cloth-reinforced rubber hose to prevent cutting into the bark. Place encased guy wire around the trunk in a single loop. Stretch the guy at a 60-degree angle to a notched stake driven completely into the ground or to a deadman buried at least 3 feet below finished grade. Use a deadman where underground utilities are within 4 feet of finished grade. Wire should be equally taut to prevent the tree from swaying in wind. Mark each wire 3 feet above the ground with a 12-inch streamer of plastic white surveyors tape.

2. Use three stakes for trees with a trunk 3- to 4-inch caliper; two for trunks with less than 3-inch caliper. Space stakes equally about each tree and drive vertically into the ground 2-1/2 to 3 feet. Avoid injuring ball or roots. Attach strands of wire around the trunk at the meeting of the primary branches and to each stake. Encase the wire around the trunks with cloth-reinforced rubber hose to prevent cutting into the bark.

F. Top Dressing Mulch: Provide a 1-inch layer of shredded hardwood mulch top dressing mulch for all ground cover and planter areas. Provide a 2-4 inch layer of mulch in the basis of all shrubs and trees.

3.05 PLANTING GRASS

A. Preparation. Prepare imported topsoil and/or "in situ" soil. Hand rake to remove all sticks, stones and clods larger than 1 inch. Apply the final grade but do not mechanically compact the soil.

B. Seed.

1. Evenly broadcast seed specified in 2.09 at the following rates:

a. Bermuda: 1 pound per 1,000 sq. ft.

b. Rye: 6 pounds per 1,000 sq. ft.

2. Roll the entire seeded area in two directions with a dry/weighted roller.

3. Evenly top dress the entire seeded area with an approved sterilized commercial steer manure. Apply at 2 cubic feet per 100 square feet.

4. Lightly but thoroughly sprinkle the entire seeded area with water after top dress application.

C. Sod.

1. Use Bermuda (common), Buffalo (609 or Prairie), or St. Augustine sod in accordance with 2.11a.

2. Prepare soil in accordance with 3.03.

3. Apply eptam (or approved equal) to all areas to be sodded. Follow manufacturer's recommended rates and apply during soil preparation period.

4. Lay sod in a running bond pattern. Pieces should be consistently cut with joints tightly butted together. Water the in-place sod liberally and roll it in two directions with a heavy roller. Areas not level due to fluctuations in the sod depth should be covered and leveled with a 50/50 mix of sharp sand and topsoil. Fertilize in 6 weeks as directed by landscape Architect.

3.06 CLEANING AND MAINTENANCE

A. Maintenance. Requirements for maintenance begin when the work commences and continue until substantial completion and written provisional acceptance. Plant maintenance includes all necessary watering, cultivation, weeding, pruning, wound dressing, disease and insect pest control, protective spraying, and replacement of unacceptable materials. Maintenance also includes straightening plants which lean or sag, adjusting plants which settle or are planted at an improper height, and implementing any other procedure consistent with good horticulture practice and necessary to ensure normal, vigorous and healthy growth of all plantings.

1. Watering. Water until acceptance. The quantity of water applied at one time must be sufficient to penetrate the soil to a minimum depth of 8 inches at a rate which will prevent saturation of the soil. Use water that is free of impurities or any substance which might injure the plants.

2. Weeding. Keep all planting areas free of weeds and undesirable grasses. Use approved methods and materials.

3. Disease and Insect Pest Control. Inspect all plant materials at least once a month to locate any disease or insect pest infestation. Identify or have identified the nature or species of the infestation. Submit the proposed method of control for approval prior to application of control measures.

4. Fertilizing. Fertilize at the rates indicated in these specifications. Time of application will be as directed by the Owner's Representative.

B. Cleaning.

1. During planting, remove excess and waste materials regularly. As work in an area is completed, thoroughly clean the area. Remove debris, rubbish, subsoil and waste materials from the site and dispose of in a legal manner. Trash burning on the site will not be allowed.

2. Any paved areas where products are placed must be cleaned periodically to prevent damage or the accumulation of debris.

3. Existing grass areas damaged by planting operations must be cleaned, regraded, sodded and left in an acceptable condition.

4. Upon completion of construction and before final acceptance, remove all temporary facilities, tools, equipment, surplus materials, and debris. Broom clean and wash all paved areas. Leave the premises neat and clean.

END OF SECTION