

SECTION 74

PLANTING TREES, SHRUBS, AND VINES

74.1 DESCRIPTION

A. General: This work consists of furnishing and planting or transplanting trees, shrubs, vines, or other plants of the species, grade, and size specified. Included is the preparation of the ground, storage, staking, furnishing and placing topsoil, peat moss, mulch, water, and other incidentals.

B. Related Work:

Section 7	General Conditions
Section 17	Salvaging, Stockpiling and Placing Topsoil
Section 70	Seeding
Section 71	Fertilizing
Section 72	Mulching
Section 73	Sodding
Section 76	Compost
Section 203	Submittals

74.2 MATERIALS

A. Plant Materials (Nursery Stock):

- 1. Limitations on Source of Material:** Plants furnished shall have a hardiness rating compatible to Zones 2, 3, or 4, or 5, if given authorization from Urban Forester or his/her designee as established by the United States Department of Agriculture.
- 2. Notification of Source of Supply and Verification of Origin:** As soon as possible and before any planting, the Contractor shall furnish written notification as a submittal of the location of the proposed source for each item of plant materials. The Urban Forester may require the Contractor to furnish written verification from the supplier and grower to establish the origin of plant materials, seed, or vegetative material. The source of supply and origin of plant materials will be subject to approval.
- 3. Names of Plants:** Plant materials furnished shall be of the genus, species, and variety specified and shall follow standard names of plant materials as adopted by the Integrated Taxonomic Information System (ITIS). Substitutions will not be permitted without the written consent of the Urban Forester or his/her designee.
- 4. Form, Shape, and Condition of Plants:** Trees and shrubs furnished shall be of standard nursery stock (i.e. balled and burlapped, potted, bare root), shall be well branched according to species or variety, and uniformly straight-trunked or heavily

caned, respectively. Trees, shrubs, and vines shall be number one (1), heavy-grade, nursery-grown stock, strong, healthy, clean, well-grown, free from insects, disease, rodents, mechanical injuries, disfiguring knots, sunscald, frost cracks, broken bark, broken or dead branches, broken roots, stubs, or any other objectionable features and shall possess a healthy, normal root system of sufficient size to permit successful establishment and good growth and shall be typical of the species or variety specified. Evergreen plants delivered to the project with new growth in an advanced stage of candling out will be rejected.

- 5. Size of Plants:** Plants shall be of uniform height and diameter. The figures shown on the plans indicate the minimum height of the plants called for. When such figures are used in connection with spread, they indicate the minimum and maximum spread of the plant to be furnished.

The height of each species or variety of plant shall be the vertical measurement of the plant from the ground upward as it stands in its natural position in the nursery without straightening branches or leaders. The measurements shall not include the fine or slender terminal leader, twig or branch growth, but shall stop where the main part of the plant ends. The spread of each species or variety shall be the horizontal measurement of the plant as it stands in its natural position in the nursery without straightening its branches. The measurements shall not include the fine or slender terminal shoots. Each plant shall be measured both in its smallest and greatest dimension and averaged. Caliper of trees shall be taken six (6) inches above the ground level, up to and including four (4) inches caliper size, and 12 inches above ground level for larger sizes.

- 6. Nursery Stock:** Plant materials shall be nursery grown unless otherwise specified, shall have been subjected to proper transplanting during growth in the nursery, shall bear evidence of proper top and root pruning, and shall be thrifty, well-grown, and hardy northern stock, grown under the same climatic conditions as exist at the location to be planted. Plants shall meet the standards as set forth in South Dakota Nursery Laws and in the edition of the American Standard for Nursery Stock. In all cases where grades are indicated in these standards, No. 1 or top grade will be required.
- 7. Labeling:** Legible labels must be attached to all specimens, boxes, bundles, bales, or other containers indicating the genus, species, size, grade, or age of each species or variety and the quantity contained.

B. Incidental Materials:

1. The topsoil shall conform to the requirements of Section 17.
2. Organic soil conditioners shall be sphagnum peat moss or other material as specified. The approved amended soil mix shall be furnished in an air-dry condition and shall be free from woody substances and mineral matter such as sulfur or iron.
3. Mulching material shall be shredded wood mulch, unless otherwise specified.

4. Staking materials shall be six-foot (6 ft.) T type studded steel posts. Guy material shall be three-quarter (3/4) inch or greater tree tie webbing or one-quarter (1/4) inch or greater nylon rope.
5. Tree straps shall be minimum one (1) inch wide heavy-duty canvas with a steel grommet in each end to secure webbing or rope. Webbing or rope shall not be wrapped around tree, but shall be tied through the steel grommets in the canvas strap. Lengths of garden hose shall not be used.
6. Tree trunk guards shall be rigid plastic mesh at least twice the diameter of the trunk and forty-eight (48) inches high or six (6) inches below bottom branch, whichever is less.
7. In certain locations as designated by the Urban Forester extra protection may be required from deer damage. This may be in the form of wire cages around the newly planted material

74.3 CONSTRUCTION REQUIREMENTS

- A. **General:** The digging, transporting, storing, layout, planting, pruning, watering, mulching, staking, maintenance, and replacement of plants shall be performed by a qualified nurseryman, landscape specialist or by experienced crews under the direct supervision of a qualified nurseryman or landscape specialist.
- B. **Digging and Transporting Nursery Stock:** Plants shall be dug with care and skill immediately before shipping. Possible injury to the roots, particularly to the fibrous roots, shall be avoided. Balled and burlapped plants shall be dug to retain as many fibrous roots as possible and shall come from soil which will form a firm ball. The soil in the ball shall be the original undisturbed soil in which the plant has been grown. The plant shall be dug, wrapped, packed, and transported in such a manner that, upon delivery, the soil in the ball will not have been cracked, loosened, or caused to drop away from contact with the small and fine feeding roots.

As plants are dug and during transportation to the planting site, precautions shall be taken to prevent roots from drying out, balls of earth from being broken, and to otherwise assure the arrival of plants at their destination in good condition.

- C. **Temporary Storage:** Plant materials which cannot be immediately planted upon delivery shall be heeled in by placing the plants in a trench in a shaded location and covering the roots firmly with moist soil or by storing in a cool, moist cellar or similar enclosure with roots packed in wet sphagnum moss and covered with tarpaulins (tarps). Other methods of storage must be approved by the Urban Forester or his/her designee. Roots shall be kept thoroughly moist at all times, and stored plants shall be properly maintained by the Contractor.

Balled and burlapped plants shall be protected against drying of the ball by covering with wet sawdust, soil, or peat moss in a manner appropriate to the conditions.

Risks involved in storing and transporting plant materials shall be borne by the Contractor.

D. Staking and Layout of Planting: Planting holes shall not be dug until all plant locations have been staked. Plan-shown locations, spacings, and quantities may be adjusted by the Urban Forester or his/her designee to suit field conditions.

E. Planting - General Requirements:

1. The Contractor shall notify the Engineer at least one (1) week in advance of the beginning of the planting operation.
2. Upon arrival at site, plant materials must be inspected by Urban Forester or his/her designee. Plants must be declared and certified free of diseases and insects, and necessary inspection certificates to this effect must accompany each shipment, invoice, or order of plants. Plants not approved by the Urban Forester or his/her designee or otherwise not meeting these specifications will be rejected. Rejected plants shall immediately be removed and disposed of by the Contractor and replaced with approved nursery stock of like variety, size, and age at no additional cost.
3. During planting operations, suitable warning signs shall be provided in accordance with Section 7.

F. The Planting Operation: As specified in this Section and Section 74 Standard Details.

1. Digging of Planting Holes:

- a) The Contractor shall provide necessary safeguards to prevent accidents during the time the plant holes are open.
 - b) Planting holes shall have tapered sides and flat bottoms. Planting hole should be three times the width of root ball at the soil surface, sloping down to one and one half (1.5) times width of root ball at the base. The hole shall be no deeper than the distance from the trunk flare to bottom of root ball Set the root ball on firm soil so that the top of the root ball will sit at the final grade.
2. **Mixing Backfill Soil:** Backfill around tree using the same soil that was removed from the planting hole, if possible. If amendment is needed, original soil can be mixed with approved amended soil mix.
 3. **Care of Plants Prior to Planting:** When plants are taken from storage to the planting site, roots of plants shall be immersed in water immediately upon opening the bundle and kept in water until planted. The Contractor shall have sufficient tanks and pails to keep roots of plants from opened bundles in water until planted.

In transferring plants from the site of temporary storage to the planting site, only

plants that can be planted in that day shall be transferred. Material not planted the day it is taken from storage shall be rewrapped in the approved manner or the roots kept immersed in water at the storage site until planted.

Bare roots shall not lie exposed to the sun or air.

4. Method of Planting:

- a) **Bare-Rooted Plants:** Plants shall be set in the bottom of the planting holes on a compact cone of soil constructed by backfilling the planting hole with topsoil. Trees and shrubs shall be placed at the same depth as they grew in the nursery.

Roots shall be carefully spread over and around this cone of topsoil in their natural position.

Roots, which are broken or damaged, shall be cut back to firm tissue. After placing the plant in the hole and spreading the roots, topsoil shall be tamped in place carefully but firmly to insure that topsoil is around all of the roots and air pockets are not present. Care shall be taken to avoid bruising or breaking the roots when firming the soil around them.

- b) **Balled and Burlapped Plants:** Plants shall not be handled by the plant stem. After the planting hole is dug as described in this section, the bottom portion of the wire basket and burlap shall be cut away prior to setting the plant in the hole. After setting plant in planting hole, the remaining portion of the wire basket and burlap shall be removed from the root ball. All twine and shipping tree wraps shall be removed from the trunk.

Holes shall be backfilled in not less than two (2) lifts, the first lift shall not exceed one-half (1/2) total hole depth. Each lift shall be heel tamped and watered to remove air pockets.

- c) **Potted Plants:** Potted plant holes shall be dug as described in this section. All plants shall be removed from containers in a manner which does not damage the root ball.

Holes shall be backfilled in not less than two (2) lifts, the first lift shall not exceed one-half (1/2) total hole depth. Each lift shall be heel tamped and watered to remove air pockets.

5. **Watering:** All plants shall be thoroughly watered during planting operation, within four (4) hours of planting and every two (2) days thereafter for a minimum of three (3) weeks. Each plant shall receive a rate of ten (10) gallons per diameter inch of the tree's trunk at each watering.
6. **Mulching:** Shall be placed between and around the plants during planting and shall be applied uniformly to cover the cultivated areas to a depth of four to six (4-

6) inches. Mulch shall be pulled back a minimum of six (6) inches from trunks and canes.

7. **Staking:** Each newly-planted deciduous tree under three (3) inches in caliper or conifer tree under eight (8) feet in height shall be staked with two (2) standard "T" type studded posts. The posts shall be driven an adequate distance away from the trunk of the tree so they are not driven into the root ball of the newly planted tree. Webbing shall be used for each post. Canvas tree straps shall secure the webbing to the tree as specified in this section. Two (2) straps per tree are required.

Three (3) posts and straps are required for deciduous trees over three (3) inches in diameter or conifers over eight (8) feet in height.

8. **Cleanup:** When planting has been completed, debris and waste materials shall be removed from the area, excess earth materials graded or otherwise removed, damaged turf reseeded, and the area left in a neat, orderly, and finished condition.
9. **Property Owner Notification:** After completion of the minimum three (3) weeks of watering, the contractor shall notify the property owner of their responsibility for care of the planted tree, shrub, or vine. This notification shall be in writing and verification shall be provided to the Engineer.
10. **Establishment Period:** An establishment period shall begin immediately after completion of that phase(s) planting, and shall continue for one (1) year. The plants shall be guaranteed during this period against defects, including death and unsatisfactory growth, except for defects resulting from neglect by owner, abuse, or damage by others, or unusual phenomena or incidents, which are beyond the landscape installer's control.
11. **Replacement of Plants:** The Contractor shall remove and replace trees, shrubs, or other plants found to be dead or in unhealthy condition during establishment period. The Contractor shall also plant missing trees, shrubs, and plants, make replacements during growing season following end of establishment period, and furnish and plant replacements which comply with requirements shown and specified. The Contractor shall also replace trees and shrubs, which are in doubtful condition at end of the establishment period, unless, in the opinion of the Urban Forester, it is advisable to extend the establishment period for another full growing season. Some maintenance of the tree or shrub may be required if the plant is allowed to remain past the establishment period. The Urban Forester will make another inspection at the end of the extended establishment period to determine acceptance or rejection. Only one (1) replacement will be required at the end of the establishment period, except for losses or replacements due to failure to comply with specified requirements.

74.4 METHOD OF MEASUREMENT

Quantities of each species or variety of trees, shrubs, and vines will be determined from count of each.

74.5 BASIS OF PAYMENT

Upon satisfactory completion of planting, payment will be made at the contract unit price per tree, shrub, or vine. Payment will constitute full compensation for furnishing, transporting, handling, storing, planting, pruning, watering, necessary excavation, disposal of surplus materials, furnishing and placing topsoil, amended soil mix, staking, mulching material, and labor, equipment, tools, and necessary incidentals.

END OF SECTION