

## 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, wrapping, 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 75	Transplanting Trees and Shrubs
Section 76	Compost Application

#### 74.2 MATERIALS

##### A. Plant Materials (Nursery Stock)

###### 1. Limitations on Source of Material

Plants furnished shall have been grown in western South Dakota or states or provinces located within the boundaries of Hardiness Zones 2, 3, or 4, 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 of the location of the proposed source for each item of plant materials. The Engineer 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 American Joint Committee on Horticultural Nomenclature and as this standard nomenclature is referred to in the current edition of Standardized Plant Names. Substitutions will not be permitted without the written consent of the Engineer.

#### 4. Form, Shape, and Condition of Plants

Trees furnished shall have been at least twice transplanted or root pruned, shall be well branched according to species or variety, and uniformly straight-trunked. Shrubs shall have been at least twice transplanted or root pruned and is heavily caned. 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 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. 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.

8. Inspection, Certificates, and Rejection of Plants

Before removal from the nursery, plant materials, must be inspected by authorized Federal or State authorities. 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 Plant Industry Representative or Nursery Inspector 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.

B. Incidental Materials

1. The topsoil shall conform to the requirements of Section 17.
2. Organic soil conditioners shall be granulated peat moss or other material as specified. The granulated peat moss 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 as specified.
4. Staking materials shall be six-foot (6 ft.) T type studded steel posts. Guy wire shall be a minimum of 12 gauge.
5. Wrapping material shall be a 2-ply asphalt cemented Kraft crepe paper in strips or burlap in strips and shall be secured to the trunk with a good-quality 6-ply cotton.
6. Tree ties shall be minimum one (1) inch wide heavy duty canvas with a steel grommet in each end to secure tie wire. Tie wire shall not be wrapped around tree, but shall be tied through the steel grommets in the canvas wrap. Lengths of garden hose shall not be used.
7. Tree trunk guards shall be minimum six (6) inch diameter by twelve (12) inch length flexible PVC drain tile pipe.

### 74.3 CONSTRUCTION REQUIREMENTS

#### A. General

The digging, transporting, storing, layout, planting, pruning, watering, mulching, wrapping, 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. Other methods of storage must be, approved by the Engineer. 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 Engineer 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. During planting operations, suitable warning signs shall be provided in accordance with Section 7.

#### F. The Planting Operation

##### 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 vertical sides and flat bottoms. The holes shall be of sufficient diameter to provide for not less than 12 inches of topsoil backfill around the root ball. The hole shall be no deeper than the root ball is tall. Set the rootball on firm soil so that the top of the rootball will sit slightly higher than the final grade.

##### 2. Mixing Backfill Soil

Prior to planting, topsoil to be used for backfilling plant holes shall be thoroughly mixed with twenty-five percent (25%) peat moss by volume.

##### 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 74.3.F.1.b, the bottom portion of the wire basket 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 shall be removed and the burlap cut six (6) inches below the top of the root ball. All twine and shipping tree wraps shall be removed from the trunk. Balled and burlapped plants shall have a minimum of 12 inches of top soil packed around the sides of the root ball.

c. Potted plants

Potted plant holes shall be dug as described in 74.3.F.1.b. All plants shall be removed from containers in a manner, which does not damage the root ball.

d. 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.

5. Cultivation

Shrub beds are to be cultivated as a unit two (2) feet on each side of rows before planting and the plants placed separately.

6. Watering

All plants shall be thoroughly watered within four (4) hours of planting and every seven (7) days thereafter until a letter of acceptance for the project is received from the Engineer. Each plant shall receive the gallon equivalent on the size of the root ball planted, at each watering.

7. Mulching

Mulch shall be placed between and around the plants within forty-eight (48) hours after planting and shall be applied uniformly to cover the cultivated areas inside dikes to a depth of three (3) inches. Mulch shall be pulled back a minimum of 1 foot from trunks and canes.

## 8. Wrapping

Newly transplanted deciduous trees shall be wrapped with strips of 2-ply Kraft asphalt crepe paper or burlap, starting at the bottom and lapping one-half (1/2) strip to a point well into the crown of the tree and not less than four (4) feet above the ground. Wrapping shall be secured with 6-ply cotton twine, starting at the top and wrapping toward the bottom, or with as many separate ties as necessary to hold the wrapping securely but loosely enough to allow a normal season's growth.

## 9. 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 three (3) 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. A tie wire, 12-gauge minimum, shall be used for each post. Canvas tree ties shall secure the tie wire to the tree as specified in 74.2.B.6. Three (3) ties per tree are required.

## 10. Guying

Deciduous trees over three (3) inches in diameter or conifers over eight (8) feet in height shall be guyed. Guy wires, minimum 12 gauge, shall be secured using canvas tree ties and six (6) foot "T" type studded posts. Three (3) guys per tree are required. Posts shall be driven a minimum of two (2) feet into the ground.

## G. 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.

## H. Establishment Period

An establishment period shall begin immediately after original planting is made and shall continue for one 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, landscape installer's control.

Contractor shall be responsible for watering all plants until a letter of acceptance for the project is received from the Engineer.

## I. 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 Engineer, it is advisable to extend the establishment period for a full growing season. The Engineer 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, wrapping, pruning, watering, necessary excavation, disposal of surplus materials, furnishing and placing topsoil, peat moss, staking, mulching material, and labor, equipment, tools, and necessary incidentals.

**END OF SECTION**