

**COMPENSATION**

**770.80 Method of Measurement.**

The quantity of lawn and field sodding shall be the number of square meters based on actual measurements made over the general contour of the areas sodded, complete in place and accepted. The quantity of collected natural growth sods each conforming to M6.05.0 in a healthy condition, shall be the actual number of such sods at the time of acceptance of the project.

**770.81 Basis of Payment.**

The work involved in lawn or field sodding will be paid for at the contract unit prices per square meter, complete in place, under the respective items for Lawn Sodding or for Field Sodding, which prices shall include loam for filler and top dressing and seed, except loam used for foundation of sod which will be paid for as Loam Borrow, Plantable Soil Borrow or Topsoil Rehandled and Spread.

Collected natural growth sods will be paid for at the contract unit price, each, complete in place, under the item for Collected Natural Growth Sod.

**770.82 Payment Items.**

770.	Lawn Sodding	Square Meter
770.1	Field Sodding	Square Meter
770.2	Natural Growth Sod – Lowbush Blueberry	Each
770.3	Natural Growth Sod – Bearberry	Each
770.4	Natural Growth Sod – Mountain Laurel	Each
770.5	Natural Growth Sod – Sweet Fern	Each
751.	Loam Borrow	Cubic Meter
751.2	Plantable Soil Borrow	Cubic Meter
752.	Topsoil Rehandled and Spread	Cubic Meter

**SECTION 771**

**PLANTING TREES, SHRUBS AND GROUNDCOVER**

**DESCRIPTION**

**771.20 General.**

This work shall consist of furnishing, transplanting, planting and/or transplanting trees, shrubs, vines, ground cover and seedlings of varieties and sizes specified in locations as shown on the plans and/or as directed by the Engineer.

The work shall include excavation of pits, placing of backfill mixture, mulching, watering, staking or guying, wrapping, liming, fertilizing, seeding, care of the plants and replacement of unsatisfactory plants and materials during the life of the contract.

**MATERIALS**

**771.40 General.**

Materials shall meet the requirements specified in the following Subsections of Division III, Materials with the amendments and supplements contained herein:

Loam Borrow	M1.05.0
Peat Borrow	M1.06.0
Topsoil and Plantable Soil Borrow	M1.07.0

Lime Stone	M6.01.0
Fertilizer	M6.02.0
Bone Meal	M6.02.1
Woodchip Mulch	M6.04.3
General Planting	M6.06.0
Nursery Stock	M6.06.1
Tree Paint	M6.07.0
Materials for Guying & Staking	M6.08.0
Wrapping Material	M6.09.0
Water for Irrigation	M6.10.0

The Contractor shall furnish written certificates of compliance in triplicate for each load of plant material showing where the plants were grown and listing all transplantings, age or size as specified, grade and quantity. All plants shall be tagged so that proper identification can be made.

All trees and shrubs shall be balled and burlapped, unless otherwise provided by the plans and specifications.

The caliper, height, age and other dimensions as specified for all planting material shall apply at the time planting is done and the plants will be inspected by the Engineer at this time as to these requirements as well as the quality or grade and varieties required. All plants not approved by the Engineer shall be removed from the project by the Contractor.

The trees, shrubs, vines and evergreen seedlings shall be Northern Grown Nursery Stock. Botanical and common names shall conform with the current edition of Hortus Third, compiled by the staff of L. H. Bailey Hortorium, Cornell University.

The current edition of *U.S.A. Standard for Nursery Stock* sponsored by the American Association of Nurserymen, Inc., shall be the Department's standard for plants and for balling and burlapping sizes and requirements.

The term "plant" shall refer to any tree, shrub, seedling, vine or groundcover.

**771.41 Storing of Materials.**

Materials may be temporarily stored within the highway layout as directed by the Engineer. When materials are stored within the layout, the site shall be abandoned immediately upon completion of the project and the storage area returned to its original natural condition at the sole expense of the Contractor.

**771.42 Delivery and Protection.**

Arrangements shall be so made so far as practicable to have plants delivered as the pits or beds are ready for them. Whenever plants cannot be planted on the day of arrival, all those with bare roots shall be "heeled-in" in moist soil in a satisfactory manner. All "heeled-in" plants shall be properly maintained by the Contractor until they are planted. In the event that "heeled-in" plant material must be held over until the next planting season, such material shall be lifted and replanted in a satisfactory manner in nursery rows as directed by the Engineer. The ball of roots of balled and burlapped plants, if not planted immediately after delivery and inspection, shall be adequately protected by the loam covering until removed for planting and in a satisfactory manner appropriate to the condition. Throughout the work, care shall be exercised to keep the roots of all plants from drying out, to preserve the solidity of the balls of balled and burlapped plants, and to prevent plants from being broken, scarred or damaged in any way. All emergency storage of materials shall be at the entire risk of the Contractor.

**771.43 Backfill Mixture for Bare-Rooted, and Balled and Burlapped Plants.**

**A. Evergreen Trees and Evergreen Shrubs**

- 1 part peat borrow
- 2 parts loam borrow

**B. Deciduous Trees and Deciduous Shrubs**

- 1 part peat borrow
- 3 parts loam borrow
- 6 kilograms bone meal per cubic meter of mixture

**C. Roses, Vines and Ground Cover**

- 1 part peat borrow
- 2 parts loam borrow
- 12 kilograms bone meal per cubic meter of mixture

The Contractor shall notify the Engineer in writing at least 15 days in advance when he/she intends to use the backfill mixture, the source and amount of material available and reserved for backfilling. Samples for testing will be taken in the field at the source. The Contractor shall furnish facilities and assistance to the Engineer for collecting and forwarding these samples.

**771.44 Container Grown Plants.**

All container grown plants shall be healthy, vigorous, well-rooted and established in the container in which they are sold. They shall have tops which are of good quality and are in healthy growing condition. An established container grown plant shall have roots penetrating the plantable container, or, on removal of the container, shall reveal roots that thoroughly penetrate the soil mass to the extent that the soil mass does not crumble apart on handlings.

The container shall be sufficiently rigid to protect the root mass during shipment.

The container sizes shall be provided in accordance with the *U.S.A. Standard for Nursery Stock* specifications by the American Association of Nurserymen, Inc.

The potting mixture in containers shall be 1 part peat, 1 part loam and 1 part coarse sand. If necessary, ground limestone shall be added to raise the pH value to 6.0. Superphosphate shall be added at the rate of 3.5 kilograms per cubic meter.

The potting mixture for sweet fern shall be equal parts of peat and sand, with no additives required.

Plants of Liner size and Sweet Fern root cuttings shall have been grown in the container for a minimum of twelve (12) weeks.

The certificate of compliance for container grown plants shall contain, in addition to the requirements listed in Subsection 771.40, the guaranteed composition of the potting mixture and the date of planting in the container. A random sample may be required from each delivery for soil and root inspection upon request of the Engineer.

**CONSTRUCTION METHODS****771.60 General.**

Balled and burlapped plants may be planted in the spring until June 15 and in the fall from August 15 to November 1.

Container grown plants may be planted at any time the ground is not frozen (provided specified minimum time of growth and root development have been met).

Bare rooted plants shall be planted only from the time ground thaws in spring until May 15.

**771.61 Turf Removal.**

In areas of mass shrub planting where there is an established turf the Contractor will be required to excavate the sod, as indicated on the plans or as directed by the Engineer, to a depth sufficient to remove the root system (approximately 100 millimeters).

The shape and dimensions of the areas to be so treated shall be determined in the field by the Engineer.

It shall be the Contractor's responsibility to dispose of all material removed in a manner satisfactory to the Engineer.

**771.62 Excavation of Planting Pits.**

The dimensions of the planting pits for bare rooted or balled and burlapped plants shall be as follows:

**A. Trees more than 1.2 meters high**

Diameter at least 600 millimeters larger than the diameter of the ball or root spread; depth at least 300 millimeters greater than the depth of the ball or root system.

**B. Trees 1.2 meters high or less**

Least dimension 600 millimeters.

**C. Shrubs**

Least dimension 600 millimeters.

**D. Roses, Vines and Ground Cover**

Least dimension 300 millimeters.

The shape of the pits may vary from square to round with the approval of the Engineer. In all cases the least dimension of the pit shall be sufficient to easily accommodate the root system without crowding. The excavated material shall be disposed of as directed.

**771.63 Planting Bare Rooted Plants (Except Seedlings).**

The backfill mixture of soil placed beneath the plant shall be firmed prior to setting the plant.

The plant shall be set in the planting pit at a depth within 25 millimeters below the depth at which it was previously growing. The root system shall be carefully spread and the pit partially backfilled, making sure that the soil filters in among the roots. The backfill shall be formed with care taken not to injure or bruise the roots.

When the pit is between 2/3 and 3/4 full it shall be puddled to eliminate air pockets and settle the soil. After the water has percolated into the soil, the rest of the pit shall be filled in. A mound shall be formed around the edge of the pit to form a shallow saucer to aid watering. The pit area shall then be puddled again and any depressions occurring as a result filled in with the backfill mixture. The plant shall be woodchip mulched, after watering, to a depth of 100 millimeters as provided in Subsection 771.71.

**771.64 Planting Balled and Burlapped Plants.**

The plant shall be set in the planting pit at a depth within 25 millimeters below the depth at which it was previously growing. The burlap shall then be untied, loosened and spread away from the ball. Any excess burlap shall be cut away and disposed of as directed. Roots that have been wrapped around the ball shall be made to lay in as natural a manner as possible. Backfill shall then be placed around the ball and firmed.

The planting procedure shall also include that as specified in the first and third paragraphs of Subsection 771.63, entitled Planting Bare Rooted Plants (except Seedlings).

**771.65 Planting Container Grown Plants.**

The plant shall be placed in a hole that is 150 millimeters larger than the diameter of the container and the surface of the soil of the container shall be level with the surrounding ground. Any part of a plantable container projecting above the level of the soil shall be removed. All metal, plastic or other non root-thru type container shall be completely removed during the process of planting. The part of the hole outside the container shall be backfilled with the excavated soil and thoroughly firmed and puddled with water to eliminate air pockets. A mound of soil shall be formed on the ground around the container to form a shallow saucer to aid watering. On steep slopes, the mound around the saucer may be omitted on the uphill side. The plant shall be woodchip mulched, after watering, to a depth of 100 millimeters as provided in Subsection 771.71.

**771.66 Planting Bare Root Seedlings.**

Bare root seedlings of the variety indicated on the plan shall be planted by opening a wedge-shaped hole in the slope of a sufficient size to take the seedling's roots that are to be directed downward and without kinks. The seedling shall be placed at a depth in the hole approximately 25 millimeters below its previously planted depth. The planting hole shall be closed by making a second wedge-shaped hole about 50 millimeters from the first in order to force the first closed, which then shall be closed and compressed with the heel.

Bare root seedlings shall be given a liquid mud bath prior to planting.

For seedlings to be planted on grass covered slopes, it will require removal of the sod on a 300 millimeter square area for a maximum depth of 50 millimeters at each seedling location prior to planting.

Seedlings must be delivered to the project in a dormant condition. If there is any evidence that growth has started, the entire load or lot will be rejected.

Evergreens will be rejected if the fine roots were lost in digging.

**771.67 Staking and Guying.**

Type I(a) Evergreen trees 1.0 meters to 1.2 meters  
Deciduous trees 1.5 meters to 2.0 meters

These trees shall be supported by one stake driven firmly 600 millimeters to 1 meter into the ground. The stake shall be located far enough from the tree to avoid damaging the roots and so that the top of the stake shall be about 2/3 the height of the tree. The point of attachment to the stake shall not be more than 150 millimeters from the trunk. If the stake must angle toward the tree, it shall be driven at such an angle to cross the trunk and shall extend about 100 millimeters past the trunk.

Secure the tree to the stake with 2.7 millimeters in diameter hose-covered wire twisted to provide tension. The length of the hose shall be 200 millimeters.

Type I(b) Trees higher than type 1(a) and less than 75 millimeters caliper

These trees shall be supported with two (2) stakes on opposite sides and driven into the ground at least 600 millimeters. The stakes shall be cut off at a height in aesthetic proportion to the height of the tree. The stake shall not be higher than three fourths (3/4) the height of the tree. Secure the tree to stakes with 2.7 millimeters in diameter wire with hose and twist the wire to provide tension. The length of the hose shall be 200 millimeters.

Type II Trees 75 millimeters to 100 millimeters caliper

These trees shall be securely guyed by wire, protective material and anchors. Three guys shall be equally spaced around the tree. Each guy shall be fastened around the tree trunk immediately above a substantial limb located 1/2 to 2/3 of the tree height above the ground and anchored at a distance from the trunk equal to 2/3 of the height of attachment to the tree. The anchor shall be a hardwood stake. The anchor stake shall be firmly driven at an angle and to a depth of at least 375 millimeters and the excess length of stake shall be cut off 75 millimeters above the ground.

The guy wire with protective hose shall be placed around the tree trunk, secured at the hose by a single twist, extended with both wires to the anchor stake and securely fastened with enough slack in the guy to permit ten to twenty twists for tensioning. After installation of all guys, the wires shall be twisted by a lever in the same direction as previous twists to provide tension, as directed by the Engineer.

**771.68 Wrapping.**

Only deciduous trees will require wrapping. Trunks of trees 25 millimeters caliper and over shall be completely wrapped with burlap or other approved material beginning at the base of the tree and extending to the first branch. Wrapping shall be tied at the top and bottom and at 600 millimeter intervals. Wrapping of tree trunks shall not be completed until after inspection and approval by the Engineer. Wrapping of tree trunks shall be completed within five (5) calendar days after planting.

**771.69 Protective Screen.**

All Euonymous, Flowering Cherries and Flowering Crabs shall be protected to a height of 300 millimeters to 450 millimeters above the ground from animals and rodents by a protective cage. The cage shall be of wire or plastic mesh or other approved material and shall not make any direct contact with the tree. Standard practice shall apply.

**771.70 Mulching.**

No mulch shall be applied prior to the first watering of the plant. Trees and shrubs shall be mulched not later than one week after planting.

Mulch material shall be furnished and placed over all pit or saucer areas of individual trees and shrubs and over the entire area of shrub beds to the depth indicated on the plans.

In areas to be planted with roses, vines, or ground cover, the entire area shall be mulched before planting. The mulch shall be parted at the location of each hole and carefully replaced around the plant immediately after planting.

Preparation for mulch areas of mass planting shall conform to the provisions of Subsection 767.60.

Mulch material may be wood chips, aged pine bark or other material as indicated on the plans or approved by the Engineer.

**771.71 Pruning.**

Pruning of all plants shall be done only by persons skilled in this work, as follows: Initially, all broken or dead or injured branches shall be cut flush with the trunk or limb, and broken roots shall be pruned on the plant side of the break. Additional pruning shall be done in accordance with accepted nursery practice for the variety of plant involved. The foregoing shall be done at the time of planting.

Dieback shall be pruned before final acceptance.

Pruning shall not deform or otherwise destroy the typical shape or symmetry of the tree and shall not reduce the height by more than 1/3. The leader of the tree shall not be cut back unless otherwise directed.

Cuts larger than 25 millimeters in diameter shall be painted with approved tree paint.

**771.72 Care and Maintenance.**

The Contractor will be held responsible for all planted material until the project is completed and accepted, at which time all plants shall be in a healthy, growing condition and free from weeds or other obnoxious materials or conditions. All plants shall be cared for during the course of the project by weeding, cultivating, pruning, trimming, tightening of guys, resetting or replacement of plants where necessary, and by performing other operations to keep the plants healthy and growing.

**771.73 Weeding.**

The Contractor will be responsible for weeding around planted materials mulched with wood chips. All weeding shall be completed before the acceptance of the project. At no time shall weeds attain the height of 150 millimeters during the period of contract prior to acceptance.

**771.74 Watering.**

All plants shall be watered during planting and all plants, except seedlings, shall be watered at least twice each week for a minimum of twelve (12) waterings. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Engineer, the required watering may be reduced.

Trees will require a minimum of 40 liters of water each, and shrubs a minimum of 20 liters each.

Trees or shrubs planted after October 15 shall be thoroughly watered at the time of planting, after which subsequent watering will not be required.

**771.75 Period of Establishment.**

The Contractor shall employ all possible means to preserve the plants in a healthy growing condition. The plant establishment period shall be for at least one year following the satisfactory completion of all planting on the contract or for the duration of contract, whichever is later. Care during the establishment period includes watering, cultivating, pruning, repair and adjustment of guys and stakes, and such other work as specified or ordered by the Engineer.

**771.76 Replacement of Defective Plant Material.**

The Contractor shall replace all plant material that has not shown satisfactory evidence of growth. A semi-final inspection by the Engineer and the Contractor will be made to determine the acceptability of the plant material at a date no later than September 20 prior to a November project completion date. Each tree shall show at least 75% healthy growth and any other plants, except seedlings, shall show at least 50% healthy growth. All dead and unsatisfactory plants shall be replaced in kind and size with plants as originally specified, or on approval by the Engineer in writing, by alternate or substitute varieties of plant material of equal value. Replacement plantings of evergreens shall be in place by October 15 and of deciduous by November 1. Replacement plantings shall conform to the provisions of this section, except the requirements for establishment.

Seedlings shall be allowed a tolerance of 25% for dead or defective plants, provided there are no prominent bare spots. If the number of seedlings in any planting area are less than the allowable tolerance, sufficient replacement

plantings shall be made to eliminate the bare spots and also meet the specified tolerance.

All dead and unsatisfactory plants, except seedlings, shall be promptly removed from the project.

A final inspection of all plant material for acceptance will be held after the replacement planting has been completed.

**COMPENSATION**

**771.80 Method of Measurement.**

The quantity of plants to be paid for will be the number of living trees, shrubs, vines and ground cover plants of specified kinds and sizes furnished, planted and accepted in accordance with these specifications.

The quantity of seedlings to be paid for will be the number of seedlings originally planted, provided the establishment rate of the replacement plantings are acceptable in accordance with the specifications.

Turf removal will be measured in its original position on the designated surface area and by a depth of 100 millimeters.

Woodchip mulch used on areas other than over tree or shrub planting pits will be measured by truck-load volume on delivery at the project. The mulch taken from this measured volume and used for mulching trees and shrubs will be deducted on the basis of the volume of chips placed over the rated size of each planting pit at a depth of 100 millimeters.

**771.81 Basis of Payment.**

The quantity of trees, shrubs, vines, seedlings and ground cover plants measured as provided above will be paid for at the contract unit prices each for planting of the types, species and sizes called for in the bid schedule. The unit price per planting item shall include furnishing and delivering all plants, furnishing and delivering prepared backfill soil, mulch, fertilizer, digging plant pits, planting, pruning, guying and staking, wrapping, mulching, weeding, watering, cleanup, plant establishment work and care including replacements, and for all labor, equipment, tools and incidentals necessary to complete the work prescribed in this section, except that mulch for vines and ground cover plants will be paid for under the contract unit price for the mulch specified.

Turf removal will be paid for at the contract unit price per cubic meter under the item for Earth Excavation.

Wood chips for mulching areas other than specified for trees and shrubs will be paid for at the contract unit price per cubic meter in place, under the item for Wood Chip Mulch.

No payment will be made for mulching specified as required and included in payment for other contract items.

**771.82 Payment Items – General Categories.**

772. to 774.	Evergreen Trees Balled and Burlapped	Each
775. to 784.	Deciduous Trees Balled and Burlapped	Each
785. to 787.	Evergreen Shrubs Balled and Burlapped	Each
788. to 795.	Deciduous Shrubs Balled and Burlapped	Each
796.	Vines and Groundcover, Pot-Grown	Each
798.	Seedlings	Each
120.	Earth Excavation	Cubic Meter
767.4	Wood Chip Mulch	Cubic Meter