

SECTION 808—PLANTS, PLANTING, AND TRANSPLANTING

808.1 DESCRIPTION—This work is the furnishing, planting, and transplanting of trees, shrubs, vines, and other woody or herbaceous plants, and includes shrub-bed preparation.

808.2 MATERIAL—Conforming to the current edition of “American Standard for Nursery Stock” (ASNS), ANSI, Z60.1 of the American Nursery and Landscape Association (ANLA), and as follows:

(a) Plant Stock. Conforming to the following requirements.

- True to type and name, according to the current edition of Standardized Plant Names of the American Joint Committee on Horticulture Nomenclature;
- Each bundle or each plant, if not bundled, labeled with not less than the plant's common name and size;
- Typical of the species or variety indicated;
- Free from disease and injurious insects, according to State and Federal laws;
- Free from mechanical injuries, cutback leaders, broken branches, decay, or other defects;
- Unless otherwise designated, nursery-grown plants, acclimated to Pennsylvania soil and climatic conditions; and
- Dormant, other than those specified as container grown.

1. Nursery Stock. Grown in a licensed nursery for a period of at least one full-growing season. The use of mechanical digging equipment at the nursery will be allowed only when its use is not detrimental to nursery stock survival.

Pennsylvania is located within U.S. Department of Agriculture (USDA) Plant Hardiness Zones 5 and 6 with winter temperatures ranging from -20F to -10F for Zone 5 and -10F to 0F for Zone 6. Provide plants that have been grown for a period of at least 1 year in a nursery located within the same USDA Plant Hardiness Zone or colder Zone that exists at the location of the planting project.

Submit for approval a complete and detailed source of supply for each plant item indicated in the contract at least 90 days before the anticipated start of the planting operations. The Department reserves the right to reject plants from nurseries that do not qualify for the USDA Hardiness Zone growing requirement.

2. Collected Plants. Plants collected from native or previously established plantings that have not been re-established in a nursery row or grown under regular nursery cultural practices for at least two full-growing seasons. Designate collected plants as such.

3. Balled and Burlapped (B&B) Plants.

- Firmly balled with the original and undisturbed soil in which the plant was growing.
- Wrapped with untreated, biodegradable burlap or similar acceptable material, then tightly laced with biodegradable lacing to hold the ball firm and intact.
- Plants delivered to the planting site with balls broken, loose, or manufactured will be rejected.
- Acceptable nursery trade root protection devices will be allowed in lieu of burlap wrap, as approved.

4. Container-Grown Plants. Grown for at least one year, but not more than 2 years, in the same container so that the roots and soil ball held together and retained its shape when removed from the container. The Department will reject plants that exhibit a “pot-bound” condition with girdling and encircling primary roots. Only ground-cover, vine-type plants with roots exhibiting a “pot-bound” condition will be accepted.

5. Herbaceous Plants.

5.a Rhizome. Resilient, underground propagule collected during dormant condition and exhibiting light colored buds or shoots.

5.b Bulb or Tuber. Firm, underground propagule collected during dormant condition and exhibiting light colored buds or shoots.

5.c Peat Pot. Generally 44 mm to 58 mm (1 3/4-inch to 2 1/4-inch) square, commercial peat pot, filled with an approved potting soil mixture. Containing at least three nursery-grown plants, each with a minimum active top growth of at least 150 mm (6 inches) and having roots sufficiently developed through the peat pot surface so as to be firmly contained.

5.d Plug (Grasses, Rushes, and Sedges). Cubical or cylindrical plant extracts, minimum of 100 mm (4 inches) wide by 100 mm (4 inches) deep, cut from existing plant communities containing stems, roots, associated underground parts, and soil. Keep plug moist and viable for planting. Plug may also be provided in 50 mm (2 inches) square nursery pots or 50 mm (2 inch) wide by 150 mm (6 inch) deep pre-molded plastic tubes (tublings) manufactured to encourage deep root development. Minimum active top growth development of 100 mm (4 inches).

5.e Starter Plant. Bare root plants with developed root systems capable of being transplanted and generated from seed, rhizome, or rootstock. Starter plant may also be provided in 50 mm (2 inches) square nursery pots or 50 mm (2 inch) wide by 150 mm (6 inch) deep pre-molded plastic tubes (tublings) manufactured to encourage deep root development. Minimum active top growth development of 150 mm (6 inches).

6. Bare Root (BR) Plants. Plants that have been dug while dormant and have had the soil removed from the roots exhibiting a live, moist, and well-branched, fibrous root system characteristic of the species, free from rot, mold, and damage. Roots dipped into, and thoroughly covered with, a gel comprised of water and a superconcentrated, water-absorbent, nontoxic, neutral pH, starch graft/acrylate copolymer, insoluble material manufactured for this dipping purpose. Mix gel dip to manufacturer's recommended rate.

7. Crownvetch Plants.

7.a Crowns. No. 1, whole, field-grown crowns of certified variety at least one growing season old. Overall plant length of 150 mm to 230 mm (6 inches to 9 inches), including 15 mm (1/2 inch) of top growth. Measuring not less than 3 mm (1/8 inch) or more than 10 mm (3/8 inch) in caliper, at a point 25 mm (1 inch) below the root collar.

7.b Potted Plants. Certified variety, grown for a period of at least 100 days. In 58 mm (2 1/4-inch) or larger peat pots and “pot-bound,” with a top growth of not less than 150 mm (6 inches).

8. Storage, Packing, and Handling. According to good nursery practice. Plants showing signs of improper storage, packing, or handling will be rejected.

9. Inspection and Rejection. Plant materials will be inspected at the project planting site prior to planting. Complete form [CS 6104](#), Plant Material Inspection Report, for each shipment. When requested, provide certification as specified in [Section 106.03\(b\)3](#). A state nursery inspection certificate is required with each shipment, invoice, or order of plants to verify inspection for pest control, as well as freedom from disease and insect pests, before removal from the nursery or place of growth.

Inspection at the project site is to ensure that plant stock is from an approved source, is in healthy and undamaged condition, and conforms to size, type, quantities, and appropriate ANSI Z60.1 Standards.

Plants exhibiting the following defects or damage may be rejected:

- Decayed tissue on plant trunk, branches, or twigs.
- Sunscald or sunburn resulting in cambium tissue or bark damage.
- Mechanical damage/bark abrasions resulting in damage to cambium tissue.
- Frost cracks appearing as splits in bark or wood.
- Disease resulting in abnormal growth of leaves, twigs, fruit, bark, discoloration of leaves and bark, or sap discharge.
- Insect damage appearing as borer holes into bark or wood or insect eggs or larvae.
- Other damage or injury such as branch and twig die-back, dry buds, or dead leaves.
- Improper pruning resulting in improper stubs left on trunk, branches, or twigs, removal of excessive branches that leaves the plant asymmetrical or non-uniform in plant density, and pruning wounds larger than 25 mm (1 inch) in diameter.
- Girdling roots appearing as roots growing in a damaging, encircling configuration.
- Non-standard growth patterns for single or multiple stem plants, non-typical for their plant genus, species, or varieties.
- Sheared evergreen trees or shrubs not representative of full-foliaged, natural-growth plants.
- Evidence of undue damage to root ball structure causing broken root balls and plants loosened in the soil ball.
- Evidence of insufficient roots throughout the entire soil ball and with fewer than five undamaged, viable, balanced, primary roots.
- Excessive top growth not in acceptable balance with the root system.

Plant materials will be accepted, subject to responsibility for latent defects, as specified in [Section 107.16\(b\)](#).

Plants damaged during planting operations will also be rejected and require replacement with appropriate indicated plants.

Segregate and remove rejected plants from the planting site within 48 hours or as directed.

10. Substitutions. No substitutions will be allowed without authorization, as provided in [Form CS 616](#), Request for Plant Material Substitution.

11. Shipment. Carefully pack the roots of bare-rooted stock in sphagnum moss, moist straw, or other suitable material that will ensure the plant's arrival in acceptable condition. For material shipped in open vehicles, cover with securely fastened canvas, burlap, or other material to prevent wind burn or drying. Plant material that has heated or “sweated” by reason of tight packing or poor ventilation will be rejected. For plants approved to be shipped during the active growing season, treat plants with antidesiccant and/or antitranspirant material, applied by spraying or dipping, to prevent excessive transpiration. Comply with local, State, and Federal laws relative to plant material shipment.

(b) Antidesiccant/Antitranspirant. [ASTM E 96](#) in liquid form.

(c) **Fertilizer.** 20-10-5 tablets (10 gram), 16-8-16 packets, and 19-6-12 fertilizers conforming to the requirements of [Section 804.2\(a\)2](#). When using packets, use in 113 g (4-ounce), individual, heat-sealed, polyethylene envelopes. Application rates are as shown on the [Standard Drawings](#) or as directed.

(d) **Mulch.** [Section 805.2\(a\)2](#)

(e) **Backfill Mix for Planting or Transplanting.** A uniform mixture of one part peat or compost material, as specified in [Section 808.2\(f\)](#), and three parts soil by volume that was removed from the planting pit.

Where it is determined by the Representative that wet and poorly drained planting conditions exist, backfill with soil removed from the planting pit.

The ratio of peat to soil for plants requiring an acid soil is one part peat to two parts soil by volume.

(f) **Soil Amendments.**

1. Peat. Shredded reedsedge peat or sphagnum moss peat, or a combination of both, from fresh water sites. Do not use peat material in an advanced stage of decay. Provide peat material, conforming to the following requirements:

- Minimum of 80% organic matter.*
- Maximum of 15% ash content.*
- Minimum of 400% water holding capacity.*
- Maximum delivered density of 500 kg/m³ (30 pounds per cubic foot).
- pH—4.5 to 6.0 (use laboratory analysis to indicate the liming required).

* Oven dry basis.

Submit a laboratory analysis of the peat intended for use. Do not ship peat material to the project until acceptance is received.

2. Paper Mill Compost. A blend of fibrous bark fines and wood-pulp fibers, composted, free of foreign material and substances toxic to plant growth, and conforming to the following requirements:

- Minimum of 70% organic matter.*
- Maximum of 25% ash content.*
- Minimum of 200% water holding capacity.*
- Particle size—13 mm (1/2 inch) maximum.
- Free of weeds.
- pH—7.0 ± 0.5.

* Oven dry basis.

Submit a certified laboratory analysis with each shipment.

3. Sewage Sludge Compost. A blend of composted sewage sludge and wood chips, conforming to the requirements specified in [Section 805.2\(a\)2.e](#), except the maximum size particle is 10 mm (3/8 inch).

4. Compost. Decomposed product derived from agricultural, food and yard organic matter source. Composted at a DEP, Bureau of Waste Management permitted site under industry standards and U.S. EPA regulations, to provide a stable, weed free, nontoxic, soil amendment with a non-objectionable odor, and conforming to the following requirements:

- moisture content—35 to 55%
- trace elements and heavy metals—meet U.S. EPA Part 503 Exceptional Quality Concentration Limits
- particle size—pass 25 mm (1-inch) standard screen
- pH—5.5 to 8.0
- soluble salt concentration—3.0 dS maximum
- man-made foreign matter—less than 1% by mass (weight)

For plants requiring an acid soil, provide only compost that has not received the addition of liming agents or ash by-products and having a pH value ranging from 5.5 to 7.0.

5. Water Absorbent Polymer. A synthetic, nontoxic, granular polymer (polyacrylamide) product manufactured to increase the water holding capacity of the soil. Dry, free flowing granules capable of absorbing at least 200 times their mass (weight) in water, and conforming to the following requirements:

- Material—cross-linked modified acrylic polymer
- Granular size—1 mm to 4 mm (40 mils to 157 mils)
- Density—0.729 g/mL (45.5 lbs/ft³)
- Time to achieve 100% absorption—56 minutes
- Absorption—minimum of 400 g/g (grams of water per gram of product)
- Deionized water—minimum of 200 g/g (grams of water per gram of product)
- Tap water—(rated 160 mg NaCl/liter of water)

6. Mycorrhizal Inoculation.

6.a Trees. Premeasured 85 g (3-ounce) packets containing live endo and ectomycorrhizal fungi, plant biostimulants, and water absorbent polymers conforming to the following typical requirements:

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| • Endomycorrhizal fungi | Minimum 1000 live spores of Vesicular arbuscular (VA) fungi to include <i>entrephospora columbiana</i> , <i>glomus etunicatum</i> , <i>glomus clarum</i> , and <i>glomus</i> species |
| • Ectomycorrhizal fungi | Minimum 60 million live spores of <i>pisolithus tinctorius</i> |
| • Biostimulants | Dry soluble yucca extract (<i>yucca schidigera</i>); soluble sea kelp extract (<i>ascophylum nodosum</i>); and humic acid (leonardite humates) |

- Water absorbent polymer 0.7 mm to 1.5 mm particles of cross-linked polyacrylamide copolymer with certified free acrylamide monomer level of less than 0.05%

6.b BR Seedlings and Transplants. Root dip material containing live endo and ectomycorrhizal fungi, plant biostimulants, and water absorbent polymers conforming to the following typical requirements:

- Endomycorrhizal fungi Minimum 50 000 live spores of VA fungi per 0.45 kg (pound) of product to include *entrephospora columbiana*, *glomus etunicatum*, *glomus clarum* and *glomus* species
- Ectomycorrhizal fungi Minimum 140 million live spores of *pisolithus tinctorius* per 0.45 kg (pound) of product.
- Biostimulants Dry soluble yucca extract (*yucca schidigera*); soluble sea kelp extract (*ascophylum nodosum*); and humic acids (natural humates)
- Water absorbent polymer 0.2 to 0.8 mm sized particles of polyacrylamide copolymer

7. Spent Mushroom Soil Compost. Organic substrate used in mushroom production that has been steam sterilized, then composted for a minimum of 90 days in well-managed windrows, and on a properly surfaced and protected composting pad. Conforms to the requirements specified in [Section 808.2\(f\)4](#) except the soluble salt content is 20 dS maximum and the moisture content is 60% maximum.

(g) Stakes and Collar Strap Attachments. As shown on the [Standard Drawings](#) and conforming to the following requirements:

1. Wood Stakes. Rough-sawn, red or white cedar, southern yellow pine, or other acceptable hardwoods. Provide stakes free from knots, rot, or other defects that impair strength or render them unfit for the intended purpose.

2. Steel Stakes. [Section 1103.08\(a\)](#)

3. Collar Strap Attachments.

3.a Rubber Collar Strap. A wide, flexible rubber strip ranging in width from 40 mm to 75 mm (1 1/2 inches to 3 inches) with minimum length ranging from 350 mm to 480 mm (14 inches to 19 inches) made from recycled tire inner tube with a 13 mm (1/2-inch) minimum diameter brass plated grommet on each end.

3.b Fiber Collar Strap. High tenacity, flexible, non-stretch polypropylene or heavy-duty nylon fibers; or natural cotton fibers, woven into tubular or flat surfaced, soft edged, abrasion resistant straps with a minimum width of 20 mm (3/4 inch) manufactured for staking trees and conforming to the following requirements:

1. Straps made from a continuous roll of synthetic strap material cut to the appropriate length required to encircle the tree trunk and attach to the stake as specified in [Section 808.3\(g\)5](#).

2. A manufactured, synthetic strap with #1 brass grommets positioned 25 mm (1 inch) from each end and of an appropriate length to encircle the tree trunk and attach to the stake as specified in [Section 808.3\(g\)5](#).

3. A manufactured, synthetic strap with a 25 mm (1-inch) galvanized, ribbed nail within a

plastic retaining washer at one end of the strap and of an appropriate length to encircle the tree trunk and attach to the stake as specified in [Section 808.3\(g\)5](#).

4. A manufactured natural cotton strap with #1 brass grommets positioned 25 mm (1 inch) from each end and of an appropriate length to encircle the tree trunk and attach to the stake as specified in [Section 808.3\(g\)5](#).

3.c Strap Tie. All-purpose, biodegradable, 3 or 4-ply, non-stretch, cotton, hemp, jute, or sisal, natural fiber, twisted twine or rope that will pass through the grommet ends of the straps specified in [Section 808.2\(g\)3.b](#).

(h) **Water.** [Section 720.2](#)

(i) **Time-Release Water.** A nontoxic, pH neutral, poly cellulose gel form of water in a biodegradable carton that slowly liquefies in contact with soil micro-organisms as its container decomposes, and conforming to the following requirements:

1. Poly Cellulose Gel.

- 98% water
- 2% vegetable gum and alum

2. Carton. Biodegradable, 0.95 L (1-quart) standard size.

808.3 CONSTRUCTION—As shown on the [Standard Drawings](#) and as follows:

(a) **Plant Protection and Temporary Storage.** Untie and completely remove any binding materials from plants that were transported with bound branches.

Protect plants at all times. Plants will be rejected if left out of the ground, unprotected overnight; left with roots exposed to wind or sun; or left improperly protected during transit, unloading, storage, or during the planting operation.

Secure a suitable storage area near the planting site that is shaded, if possible, during the hottest times of the day.

Protect root systems from undue exposure to sun and wind during planting operations as follows:

1. B&B and Container Plants. Place the root balls and plant containers close together at the storage area without damaging the plants. Cover root systems with wet burlap, wet mulch, wood chips, straw, or other approved materials to keep the roots moist. Keep cover material moist.

2. BR Plants. Heel-in plants by digging a shallow trench and placing roots in the trench. Cover root systems with wet burlap, wet mulch, wood chips, straw, or other approved materials to keep the roots moist. Keep cover material moist.

(b) **Layout of Plantings.** Delineate the plant pit locations, plant bed, and planting area outlines as indicated. Identify the plants to be placed at the delineated location. Do not start excavation or cultivation until the locations and outlines are accepted. Use shrub bed preparation in all shrub beds.

If rocks or other obstructions prevent planting at indicated locations, the Representative will determine alternate locations or deletions.

(c) **Shrub Bed Preparation.** For all shrub bed areas, remove any existing sod or other vegetation growth from the bed areas. Add additional topsoil, if required, to re-establish grade.

Uniformly spread approved peat or compost material to an 80 mm (3-inch) depth, and thoroughly incorporate it into the soil to a depth of 150 mm (6 inches). Remove and dispose of undesirable material larger than 50 mm (2 inches) in any dimension as directed.

(d) Preparation of Plant Pits. Schedule digging operations, particularly on slopes, so that the actual planting operation occurs within 1 week of the digging, unless a delay is approved. Prepare planting pits to the size shown on the [Standard Drawing](#) and as follows:

1. Trees. Dig pits with tapered sides and flat bottom so that the pit is wider at the top than at the root mass depth and large enough to accommodate the roots without crowding. Allow for the placement of at least 300 mm (12 inches) of backfill mix around all sides at the bottom of the root mass. Scarify, loosen, or roughen the tapered pit sides for any glazed or hardened soil surfaces immediately before planting.

2. Shrubs and Seedling Transplants. Dig pits, except for slope plantings, with tapered sides and flat bottom so that the pit is wider at the top than at the root mass depth and large enough to accommodate the roots without crowding. Allow for the placement of at least 150 mm (6 inches) of backfill mix around all sides at the bottom of the root mass. Scarify, loosen, or roughen the tapered pit sides for any glazed or hardened soil surfaces immediately before planting. Dig pits for slope plantings with vertical sides and flat bottom.

3. Vines. Dig pits of appropriate size with tapered sides to accommodate the roots without crowding for vine plants such as periwinkle, pachysandra, and ivy. Provide at least 100 mm (4 inches) of backfill mix beneath and around all sides of the root system.

(e) Pruning.

1. Branches. Prune any dead, dying, broken, or undesirable branches not adequately pruned at the nursery or damaged during transport or installation. The removal of too many damaged branches that leaves an asymmetrical or non-uniform sided plant will be grounds for rejection of the plant. Prune according to best horticultural practice for the health of the plant and the natural or designed form and growth characteristics of the individual species.

2. Roots. Cut damaged or broken primary roots immediately above the damage with a clean, oblique cut.

(f) Transplanting Existing Plants. Relocate plant material designated for transplanting to areas indicated. Move plants while dormant unless otherwise approved.

Apply an approved antidesiccant/antitranspirant, according to the manufacturer's application recommendations, to all evergreen plant material and any deciduous trees or shrubs in leaf before digging.

Dig plants with root balls of sufficient diameter and depth to encompass enough fibrous and feeding roots for the full recovery of the plant. Root ball sizes and depths to correspond to the next largest size nursery grown stock listed in the ASNA Standard for deciduous and evergreen trees and shrubs. Dig root ball to have a flat bottom. Keep roots protected and moist at all times during transplanting procedures. Ball and burlap roots using tightly sewn, untreated, biodegradable burlap laced with heavy twine as specified in [Section 808.2\(a\)3](#) and approved nursery industry practices.

Prune any damaged, broken, or diseased main roots as specified in [Section 808.3\(e\)2](#).

Carefully transport plants to the transplant site within 24 hours after digging. Handle plants only by the root ball. Pad trunks and major branches to prevent damage.

Replant, prune, water, and maintain transplanted material in the same manner as new stock.

As specified in [Section 808.3\(a\)](#), locate and prepare an acceptable, secured, temporary site for heeling in or above ground storage of all plants that cannot be replanted within 24 hours at their designated transplant site due to construction sequencing. Keep all root balls moist during the storage period.

(g) Planting. Plant when soil and climatic conditions are favorable, according to the following schedule:

- Deciduous trees and shrubs: October 15 to November 30 and April 1 to May 15
- Evergreen trees and crownvetch plants: March 1 to May 15 and August 1 to September 15
- Seedlings and seedling transplants: March 1 to May 15

- Rhizomes, bulbs, tubers, and starter plants: March 1 to May 15
- Plugs and peat pots: March 1 to September 15

Where local conditions warrant, these dates may be extended, if directed in writing by the District Executive.

1. Placing Plants. Set plants plumb and at the required depth as shown on the [Standard Drawings](#) and conforming to the following requirements:

1.a B&B. Handle B&B plants by the ball or other root protective device, not by the stem or branches. Cut or untie the root ball lacing and lay back or cut off the burlap wrap from the top one-third of the root ball. Remove the top one-third of any root ball wire protective baskets.

1.b BR. Carefully handle BR plants by the main plant stem and any packaging material to avoid damage to the bark and roots. Form a raised soil mound in the planting pit of sufficient size to match the lateral spread of the root mass and to bring the plant up to the proper planting depth. Spread roots evenly over the mound before backfilling.

1.c Container Grown. Handle plants by the packing container, not by the stem or branches. Remove the container from the root mass formed by the container. Separate and spread any compacted roots outward in the planting pit before backfilling.

2. Fertilizing and Backfilling. Fertilize, according to the fertilizer schedule and as detailed. Mix the specified quantity of water absorbent granules into the backfill material spread around the plant roots in the bottom half of the planting hole. Use 15 g (0.5 ounce) of water absorbent polymer granules for each 100 mm (4-inch) width of root ball for shrubs and 60 g (2 ounces) for each 25 mm (1-inch) caliper of trees. Cultivate and completely tamp backfill mix around the ball or roots, in a manner that fills voids and eliminates air pockets. Avoid breaking or damaging roots during backfilling and tamping operations. When backfilling is two-thirds complete, lay back or cut off and remove the top one-third of the root ball wrapping material on B&B plants. Cut off and remove any wire root protection devices from the top one-third of the root ball. Thoroughly water the backfill material around the roots. Complete backfilling and broadcast mycorrhizal fungi around the perimeter of the root ball and incorporate into the top 250 mm (10 inches) of the backfill mix. Thoroughly water again after the initial watering has been completely absorbed. Firm backfill material around the top of the planting hole and plant stem. Fill in any surface irregularities of the planting hole and level soil. Apply one fungi packet of material for each 25 mm (1 inch) of tree caliper measured 150 mm (6 inches) above the top of the root ball. Fungi application is not required for shrub or ground cover plants.

Do not expose fungi packets to direct sunlight until ready to use at the planting pit.

Provide documentation of delivery to planting site of approved fertilizer(s) and fungi product. Certify that fertilizer and fungi requirements were installed as specified in the aforementioned paragraphs.

3. Crownvetch Plants. Plant crownvetch crowns or plants using Reforestation Method A. For areas planted with crownvetch plants, treat the soil before planting with lime and fertilizer at the rates specified in [Section 804.3\(c\)](#). Apply Formula E seed at the rate of 3.0 kg/m² (5 pounds per 1,000 square yards). Mulch with hay as specified in [Section 805](#).

4. Reforestation Methods. Space and arrange plants as indicated or as directed. Puddle plants in a mud slurry immediately before planting.

4.a Method A—Crownvetch Plants. Make a vertical hole in the soil 150 mm to 200 mm (6 inches to 8 inches) deep, but do not excessively loosen the soil. Insert the root in a vertical position in the hole with the root collar resting at the same depth as it grew originally. Firmly tamp to close the hole and exclude air pockets without damaging the plant. Thoroughly water the planted area after installation.

4.b Method B—Seedling Material and Seedling Transplants. Prepare plant pits as specified in [Section 808.3\(d\)](#). Dig pits as large as necessary to accommodate plant root system and gel water carton.

Dip all BR seedling and transplant roots into the mycorrhizal fungi root dip inoculant gel immediately prior to planting. Thoroughly cover root surfaces.

Insert plant in a vertical position in the plant pit with the root collar positioned at the same depth as it grew originally. Place fertilizer tablet or fertilizer contact packet(s) and gel water carton(s) at, but not below, the root zone. Cut bottom of gel carton before installation to facilitate gel contact with the soil. Backfill the pit with excavation material from the plant pit. Thoroughly water the plant and firm soil around the plant root collar and gel carton to hold both in an upright position.

Use one gel carton for plants up to 300 mm (12 inches) in height; two cartons for plants from 300 mm to 600 mm (12 inches to 24 inches) in height; and three cartons for plants from 600 mm to 900 mm (24 inches to 36 inches) in height.

5. Staking. Stake trees using either rubber or fiber collar straps immediately after completion of the backfilling operation of the tree pit as shown on the [Standard Drawing](#) and as follows:

5.a Rubber Collar Strap. Use the size of collar strap shown on the [Standard Drawings](#) for the appropriate tree caliper size. Wrap straps around the tree trunk so that the rubber strap lies flat against the trunk. Securely fasten strap ends to stake with approved natural fiber twine or rope run through the grommet hole at each end of the strap and wrapped, tightened, and knotted around the stake.

5.b Fiber Collar Strap. Wrap collar strap around the tree trunk so that the fiber material lies flat against the trunk. Follow the strap manufacturer's attachment instructions for the type of collar strap used. Securely fasten the strap ends with either a tied knot; approved natural fiber twine or rope run through the grommet holes at each end of the strap and wrapped, tightened and knotted around the stake; or nailed to the stake. Use polypropylene straps with grommets for trees 75 mm (3-inch) caliper and smaller. Use heavy-duty nylon straps with grommets for trees over 75 mm (3-inch) caliper. Polypropylene straps without grommets can be used for all tree calipers 100 mm (4 inches) and smaller. Cotton straps can be used for trees 75 mm (3-inch) caliper and smaller.

6. Period of Establishment. Maintain all plants in a living, healthy condition until the entire project has been accepted. Plants are required to have been growing in place at least 60 days before project acceptance. During this period of establishment, perform the necessary watering, weeding, applying of acceptable insecticides or fungicides, cultivating, remulching to maintain a depth of 75 mm (3 inches), and adjusting stakes, all as directed.

7. Watering. Water during the period of establishment as directed. Perform watering promptly with sufficient personnel and equipment to complete the watering requirements within 5 calendar days after having been directed. Apply water using an open-end hose supplied by gravity or low-pressure pump rated less than 70 kPa (10 pounds per square inch). Allow water to thoroughly soak and percolate into the soil without run-off. Furnish measurements and capacities of water tanks used in this operation. Submit source of water and watering schedule for acceptance.

8. Clean-Up. Remove and dispose of any subsoil, rock, debris, and other undesirable planting excavation materials from the planting site. Leave planting sites with a clean and acceptable groundcover condition. An acceptable groundcover condition may include seeding bare soil or damaged ground areas with Formulas B, D, or L as directed and mulching with straw at rates typical for the affected areas.

9. Plant Replacements.

9.a Nursery Stock. Plants not alive or showing declining health and having died back beyond a normal recognize pruning point at the time of final inspection will be rejected and require replacement within the next specified planting dates. Replace the rejected plants with plants of the same species, size, and quality as originally indicated and specified unless plant substitutions have been approved for these plants. The Representative will determine plants that are not acceptable. Remove unacceptable plants from the project and replace with approved plants within 30 days of official notification in writing from the District Executive and before acceptance of the entire project. Make replacements at the beginning of the next planting season if directed, or if agreed upon in writing, the unacceptable material will be deleted from the contract. Only living, healthy plants are accepted at the time of final inspection.

9.b Transplanted Material. Replace any dead or unhealthy transplanted material with approved nursery grown plants of the same species and general size before final acceptance of the project. If directed, make replacements at the beginning of the next planting season.

10. Mulching. When indicated, mulch the entire individual plant pit or the entire planting bed as specified in [Section 805.3\(c\)](#). Use coarse aggregate mulch for all individual plant pits to be located in non-maintained, unmowed areas. In maintained, mowed areas, use shredded bark, tanbark, wood chips, or approved compost mulch for the individual plant pits.

11. Herbaceous Plants.

11.a Peat Pots and Plugs. Loosen soil to a depth of 150 mm (6 inches). Wet peat pot surfaces and root masses to saturation before planting. Plant pot or plug approximately 75 mm (3 inches) deep, in wet soil, leaving the growing stems above the surrounding soil. Firm soil by hand around each plant. Water thoroughly.

11.b Tubers, Bulbs, and Rhizomes (Roots). Loosen soil around each planting site to a depth of at least 100 mm (4 inches). Push roots 25 mm to 50 mm (1 inch to 2 inches) into the soil and firm soil around each root. When planting under standing water, add sufficient mass (weight), such as #8 penny nails held with rubber bands, or place several roots into a loose knit, biodegradable, mesh bag along with several small stones in order to submerge roots to bottom of planting site.

11.c Fertilization. Side dress each plant with 30 g (1 ounce) of 19-6-12 controlled release fertilizer at the time of planting. Apply fertilizer in furrow around each plant and cover with at least 25 mm (1 inch) of soil. Do not fertilize when planting under standing water.

11.d Starter Plants. Keep roots of plant moist during the planting operation. Loosen soil at planting site to a depth of at least 100 mm (4 inches). Make a vertical hole in the soil deep enough to accommodate the root depth. Insert roots in a vertical position with the root collar at the proper soil depth. Firmly tamp soil to close the hole and expel air pockets. Water thoroughly.

808.4 MEASUREMENT AND PAYMENT—

(a) Plants, Planting and Transplanting. Each

The Department will not pay for plants deleted from the contract by the Representative.

(b) Shrub Bed Preparation. Square Meter (Square Yard)

(c) Mulching.

1. Individual Plant Pits. Incidental to the planting operation.

2. Planting Beds. [Section 805.4\(b\)](#)

(d) Watering. Watering done at the time of planting or transplanting will be incidental to the planting or transplanting. Any subsequent watering indicated or directed, to keep the plants alive will be measured and paid for by the 1000 Liters (1,000 (M) Gallons).