

**SECTION 32 93 00
PLANTING**

PART 1 GENERAL

1.01 1.01 SECTION INCLUDES

- A. A. Plant Material, including trees, shrubs, and ground cover.

1.02 1.02 RELATED REQUIREMENTS

- A. A. Section 31 22 00 – Earth Moving (Excavation, Filling and Grading)

1.03 1.03 DEFINITIONS

- A. A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
- B. B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.
- C. C. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- D. D. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- E. E. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than sizes indicated.
- F. F. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- G. G. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- H. H. Finish Grade: Elevation of finished surface of planting soil.
- I. I. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- J. J. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- K. K. Perennial Plugs: Perennials and Grasses grown in a nursery liner. Liner sizes are determined by the root type. Plants with fibrous and/or tap roots shall be grown in a five (5") deep liners. Lateral forming root systems, shall be grown in four inch (4") deep liners.
- L. L. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- M. M. Planting Area: Areas to be planted.
- N. N. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- O. O. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

- P. P. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- Q. Q. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- R. R. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- S. S. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- T. T. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil

1.04 1.04 REFERENCE STANDARDS

- A. A. ANSI/ANLA Z60.1 - American Standard for Nursery Stock latest edition published by the American Association of Nurserymen (AAN)
- B. International Society of Arboriculture Appraisal Method
- C. C. American Joint Committee on Horticultural Nomenclature 1942 Edition
- D. D. USDA Agricultural Research Service, Plant Hardiness Zone Map
- E. E. American Association of Nurserymen, Inc. (American National Standards Institute) Nursery Stock (ANSIZ60. 1-latest edition)
 - 1. Manual of Vascular Plants of the Northeast United States and Canada, Gleason and Cronquist, 1991
 - 2. Checklist of New York State Plants, Contributions to a Flora of New York State, Checklist III, Bull. # 458, Richard S. Mitchell, State Botanist, New York State Museum, 1986.

1.05 1.05 SUBMITTALS

- A. See Section 01 33 00 – Submittal Procedures, for submittal procedures.
- B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, and maintenance information.
- C. Maintenance Data: Include cutting and trimming method; types, application frequency, and recommended coverage of fertilizer .
- D. Submit list of plant life sources.

1.06 QUALITY CONTROL

- A. A Primary Source. All trees must be obtained from commercial nurseries and from within 200 miles of the planting site. A reasonable effort shall be made to obtain sources of plants as close to the planting Site as possible. Any plants grown and/or originating from outside the 200-mile radius may be rejected. In addition, all plants must have been grown within the 6a to 7a planting zones, inclusive, USDA Plant Hardiness Zones as that of the planting Site. No substitutions of specified plants will be accepted without the written permission of Engineer.
- B. B. If specified landscape material is not obtainable, submit proof of non-availability, with written proposal for use of equivalent material to the Engineer.
- C. The Contractor shall provide trees of quantity, size, genus, species shown and scheduled for landscape Work and comply with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock" as referenced above (e.g., container size, plant height, number of stems, etc.). The Contractor shall provide healthy, vigorous stock, grown by a professional nursery in accordance with good horticultural practices, and free of diseases, insects, eggs, larvae and defects including, but not limited to, knots, sunscald, injuries, abrasions, or disfigurement.
- D. All plants furnished under this Item must be true to name. Plant names must agree with the nomenclature of "Manual of Vascular Plants of the Northeast United States and Canada,"

Gleason and Cronquist, 1991. Size and grading must conform to those of the American Association of Nurserymen.

1.07 DELIVERY, STORAGE AND HANDLING

1. A. Plants must be packed, transported, and handled with utmost care to ensure adequate protection against injury. Plant material must be delivered to the Site in such a manner as to not damage the bark, break branches, or destroy the natural shape of the plant.
2. B. When transported in closed vehicles, plants must receive adequate ventilation to prevent sweating. When transported in open vehicles, plants must be protected by tarpaulins or other suitable cover material.
3. C. Each shipment of plants must be declared and certified free of diseases of any kind with such necessary inspection certificates accompanying each shipment.
4. D. To protect plant material from desiccation, the Contractor shall, when deemed appropriate and only on appropriate plant material, apply an approved anti-desiccant forty-eight (48) hours prior to transporting and fully cover plant material during transportation to the planting Site.
5. E. Plant material must not be dropped or in any way be mishandled during unloading. Plants damaged during transportation to the Site will be immediately rejected. Unacceptable conditions include, but are not limited to, the following: loose burlap or rope, soil spilling from ball and burlap (B&B) or containers, plants that move independently of root ball or container, soil missing from B&B or containers, and irregularly shaped root balls.
6. F. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.
7. G. Notify the NYCHA Representative seven (7) day in advance of any delivery of plants to the site.
8. H. Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

PART 2 PRODUCTS

4.01 2.01 PLANTS

- A. A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.
- B. B. Topsoil shall be one grade only. It shall consist of natural loam topsoil free from subsoil, stones, sticks, roots, and debris of any kind. It shall be obtained from an area which has never been stripped and shall also be of uniform quality. It shall be removed to a depth of one (1) foot, or less if subsoil is encountered. If a truckload of topsoil is considered by the Authority to contain too much undesirable material to be corrected on site, the entire truck load shall be rejected. No topsoil shall be delivered in a frozen or muddy condition. Topsoil shall comply with the following requirements:
 - C. C. Acidity range - pH value 5.0 to 7.0
 - D. D. Organic content - 5% minimum not to exceed 14% as determined by weight loss on ignition of moisture free samples dried at 100 to 230 degrees Fahrenheit.
 - E. E. Sieve Analysis - ASTM designation C 117:
 1. 1. Passing 2" sieve 100%
 2. 2. Passing 1" sieve 95% to 100%
 3. 3. Passing #4 sieve 90% to 100%
 4. 4. Passing #100 sieve 30% to 60%

5. 5. Passing #200 sieve 10% to 30%
- F. F. The Housing Authority Inspector reserves the right to reject topsoil in which more than sixty-five percent (65%) of the material passing #100 sieve consists of clay as determined by the Buoyous Hydrometer or decantation method. All percentages are to be based on dry weight of sample. Electrical Conductivity shall be less than 1500 mhos/cm. A higher level indicates excessive salt content. The testing method shall be the saturated paste method.
- G. G. The Housing Authority Inspector may permit incorporation into the topsoil of additional humus to correct a deficiency of not more than one (1) percent in organic matter provided the topsoil otherwise complies with the requirements of the Specifications.
- H. H. Representative samples of the topsoil shall be taken by the Contractor at the source and delivered to a recognized testing laboratory. Samples and certified analysis shall be submitted by the Contractor at his own expense for approval by the Authority. The chemical and mechanical analysis shall show the acidity range, organic content, clay content, sieve analysis and electrical conductivity. A statement shall accompany the certified report giving the location where the topsoil is obtained, the name and address of the owner of the topsoil and the approximate quantity of the topsoil.
 1. 1. Approval of the tested sample shall not be construed as final acceptance of the topsoil. The Housing Authority Inspector reserves the right to take samples of the topsoil delivered to the site of the work and analyze them for comparison with the Specifications at ANY time during the contract period. The cost of this test will be borne by the Authority. Should the test show non-compliance with the Specifications, the Authority will charge the cost of any such tests to the Contractor. Topsoil delivered which does not comply with the Specifications will be rejected and shall be removed from the Development by the Contractor at no cost to the Authority.
- I. I. Approved topsoil shall be used for backfilling tree pits, shrub pits and shrub beds.
- J. J. PLANT INOCULATION SPECIFICATION
 1. 1. The Contractor shall furnish and incorporate MYCOR®TREE SAVER® PACKETS and HEALTHY START® MACRO TABS 12-8-8 as manufactured by: PLANT HEALTH CARE, INC. 440 William Pitt Way, Pittsburgh, PA 15238 telephone 1-800-421-9051, (OR EQUAL) for tree installations, quantities as noted under Planting Operations. Both shall be placed in the presence of the Housing Authority Inspector or designated NYCHA representative
 2. 2. THE CONTRACTOR SHALL SAVE ALL EMPTIED MYCOR®TREE SAVER® PACKETS AND SUBMIT THEM TO THE HOUSING AUTHORITY INSPECTOR to confirm the proper use of the TREE SAVER TRANSPLANT product. In order to check for the presence of HEALTHY START® MACRO TABS the Housing Authority Inspector may examine the backfill soil for the presence of hydrated gel after adequate rainfall has occurred.
 3. 3. FOR MYCORRHIZAL FUNGI INOCULANT (MYCOR®TREE SAVER or EQUAL)
 - a. a. *Must be 3 ounce packets of live spores which shall contain the following soil amending guaranteed analysis:
 - b. b. Live spores of VA Endomycorrhizal fungi: minimum 5,300 spores/lb. of Vesicular-Arbuscular fungi including 1,325 spores/lb. EACH of the following: Entrophospora columbiana, Glomus etunicatum, Glomus clarum and Glomus intraradices
 - c. c. Live spores of Ecotomycorrhizal fungi: minimum 95 million spores/lb. of Pisolithus tinctorius.
 - d. d. 33.3% Potassium polyacrylamide as a water absorbent gel.
 - e. e. 1.6% Yucca schidigera, a dry soluble yucca plant extract.
 - f. f. 23.6% soluble sea kelp meal, Ascophyllum nodosum.
 - g. g. 10.5% Humic acids
 - h. h. 3.7% Maltodextrin
 - i. i. 5.8% Leonardite humates (other than humic acids)
 - j. j. FOR FERTILIZER TABLETS (HEALTHY START® MACROTABS)
 - 1) Essential Element Ingredients % By Weight*

- 2) Nitrogen 12.0 (9.95% slow release)
- 3) Phosphorus 8.0%
- 4) Potassium 8.0%
- 5) Sulfur 3.0%
- 6) Iron 2.5%
- 7) *Organic forms derived from: Feather Meal, Blood Meal, Fish Meal,
- 8) Bone Meal, Ureaform, Methylene Ureas, Monoammonium Phosphate, Sulfate of Potash, Magnesium Sulfate, Iron Sucrate
- 9) Soil Conditioner Ingredients Derived From
- 10) Humic Acid (Minimum 12% by weight) Natural Humates
- 11) Beneficial Bacteria in MACRO TABS or equal
- 12) Rhizosphere Bacillus spp. 21 million cfu/lb. (971,000 cfu per 21gram tablet)
- 13) Bacillus licheniformis 3.5 million cfu/lb.
- 14) Bacillus megaterium 3.5 million cfu/lb.
- 15) Bacillus polymyxa 3.5 million cfu/lb.
- 16) Bacillus subtilis 3.5 million cfu/lb.
- 17) Bacillus thuringiensis 3.5 million cfu/lb.
- 18) Paenibacillus azotofixans 3.5 million cfu/lb.

- K. K. Fertilizer for planting beds shall be commercial fertilizer 5-10-5 mixture granular fertilizer, the elements of which are derived from organic sources and shall contain the following percentages by weight:
1. 1. 5% - Nitrogen 10% - Phosphoric acid 5% - Potash
 2. 2. One-quarter of the nitrogen shall be in the form of nitrates, one-quarter in the form of ammonia salts and one-half in the form of natural organic nitrogen. Available phosphoric acid to be from super phosphate, bone, or tankage. The potash to be in the form of sulphate of potash. The availability of the various elements shall conform to the standards of the Association of Official Agricultural Chemists.
 3. 3. Fertilizer shall be delivered, mixed as specified, in standard size bags, showing weight, analysis and name of manufacturer, and shall be stored in weatherproof storage place and in such manner that its effectiveness will not be impaired. Fertilizer shall be applied at a rate of 1/2 lb. per square yard and broadcast on top of the shrub bed.
- L. L. Mulch shall be natural forest product of 98% bark containing less than 2% wood or other debris and of a uniform grade with no additives or other treatment. Size of bark shall be from 5/8" to 1-1/4". The pH factor shall range from 5.8 to 6.2 inclusive. It shall be Pine Bark Mulch or Double Shredded Bark Mulch as supplied by Site One Landscape Supply, 323 Long Island Avenue, Holtsville, NY 11742-0386 (631) 289-3500 or equal.
- M. M. Permission to use Development hydrants must be obtained from the Development's Manager or Superintendent 48 hours prior to irrigating plants. Where water is supplied from City hydrants, the Contractor shall obtain a hydrant permit from the Department of Environmental Protection. Permits are issued for a thirty - (30) day period, and the Contractor is responsible for keeping the permits current. The permits are available from each DEP borough office.
1. 1. The Contractor must have all tools necessary for using city hydrants in his or her possession at time of planting to ensure that this specification is adhered to. If conditions do not allow the use of New York City water sources; the contractor must obtain their own source of water. No direct payment shall be made for water obtained from city or other sources, HOWEVER the cost thereof shall be deemed included in the item price bid of all plant materials in this contract.
- N. N. Tree stakes shall be secured to trees with 1" wide "Chain Lock Tree Ties" as manufactured by American Arborist Supplies, Inc., 1-800-441-8381 or an equal product.
- O. O. The Contractor shall deliver to the site only such plant material as can be planted each day, unless suitable areas on the site can be assigned by the Authority to the Contractor for heeling-in or preserving plant materials. All plants shall be handled so that the roots are adequately protected at all times. During shipment all bare root plants shall be properly protected by a

tarpaulin or other suitable covering. All balled and burlapped plants which cannot be planted immediately on delivery shall be set on the ground and well protected with soil or other acceptable material.

1. 1. Bare root plants shall be planted or heeled-in immediately upon delivery. If heeled-in, all bundles of plants shall be opened and the plants separated before the roots are covered and care shall be taken to prevent air pockets among the roots. Until planted, all material shall be properly maintained to the satisfaction of the Housing Authority Inspector.
 2. 2. Immediately after completion of the use of the heeling-in ground, the Contractor shall restore the disturbed area to its original condition and grade elevations.
- P. P. Plant names shall agree with the nomenclature of the "Standardized Plant Names" as adopted by the American Joint Committee of Horticultural Nomenclature; size and grading standards shall conform to those of the American Association of Nurserymen, unless otherwise specified. No substitutions shall be permitted, except by written permission of the Authority's Senior Landscape Architect.
- Q. Q. All plants shall be typical of their species or variety. They shall have normal, well-developed branches, densely foliated and vigorous fibrous root systems. They shall be first quality, sound, healthy, vigorous plants; free from defects, disease, borers and all forms of infestations. Tree trunks shall have a single, straight trunk (UNLESS OTHERWISE SPECIFIED) and with lowest branches limbed up as per the detail drawings. Tops shall be well branched, symmetrical with central leader intact, and reasonably straight from crown to tip. No abrasions or fresh cuts over 3/4 inches in diameter on nursery grown material must show, which have not completely calloused over. Twisted, split crotch or de-horned trees will not be accepted.
- R. R. All plants shall have grown within a 200 mile radius of New York City, or have been acclimated to the conditions of the locality for at least two years. All plants shall be nursery grown unless otherwise stated; (material collected from the wild is unacceptable). Plants shall be dimensioned as they stand in their natural position. Trees up to and including four (4) inches in caliper shall be measured six (6) inches above ground; trees over four (4) inches shall be measured one (1) foot above ground. Stock furnished shall be a fair average of the minimum and maximum sizes specified. Plants that meet the requirements specified in the plant list but that do not possess a normal balance between height and spread will not be accepted. No plants shall be pruned prior to delivery. Large plants cut back to sizes will not be accepted. Plants for use where symmetry is required shall be matched as nearly as possible.
- S. S. All plants and all tree trunks shall be measured when the branches are in their normal position. Dimensions for height and spread as contained herein refer to the main body of the plant and not from branch-tip to branch-tip. The height of tree trunks need not be as specified if the required height can be obtained by pruning the lower branches without leaving unsightly scars or otherwise damaging the trunk. No pruning of the branches to obtain the height, however, shall be done before the plants are delivered to the site unless so approved by the Authority's Representative.
1. 1. Plants marked "B&B" in the Plant List shall be adequately balled and burlapped with firm balls of soil, of diameter not less than that specified and sufficient depth to include all the roots. No plants required to be balled and burlapped shall be accepted if the ball is cracked or broken, either before or during the process of planting, or when burlap, stakes, ropes or platforms required in this connection have been removed. Only natural burlap mesh shall be acceptable for the balling of trees and shrubs. Plastic and other non-degradable materials shall not be used.
 - a. a. Plants marked "B.R." shall be furnished with roots, which shall have a spread of no less diameter than specified in the Plant List. The roots of these plants shall be covered with a uniformly thick coating of mud by being puddled immediately after they are dug. The roots shall not be cut within the minimum spread specified in the plant list under "Diameter" or "Spread".
 - b. b. All plants shall be freshly dug; no heeled-in plants and no plants from cold storage will be accepted. All plants shall have been transplanted or root pruned at least once

- in the past three years. Balled or burlapped plants must come from soil which will hold a firm ball. Loose, broken or manufactured balls will be rejected. Bare root plants shall be puddled after digging to completely coat the roots with clay.
2. All plants required for the work shall be selected, inspected and tagged by the Contractor at the place of growth before being dug. Plants shall be selected for quality, size, variety, color and all other requirements of the Specifications. Inspection and tagging by the Contractor at the place of growth shall not affect the Authority's right to reject such plants on or after delivery to the site.
 - a. A bill of lading, invoice, bill of purchase or other evidence of source of purchase must accompany each delivery of plant material to the site. This evidence shall be on the vendor's stationery or printed form and shall state the name, address of vendor, date of purchase, detail listing of each item purchased; quantity and size of each item. This evidence of source of purchase shall be given to the Authority Inspector at the time the delivery of plant material is made to the Development. The Contractor shall notify the Authority Inspector when plant materials are to be delivered to a Development so he may be present at the time of delivery.
 - b. The Authority Inspector shall inspect the plant material at the time of delivery to the Development. The plants shall be inspected for quality, size, variety, color, size and condition of roots or root ball and all requirements of the Specifications. All plants that are rejected shall be immediately removed from the site by the Contractor and replaced with acceptable ones at no additional cost to the Authority.
 - c. Each shipment shall be certified by State and Federal Authorities to be free from disease and infestation, and inspection certificates required by law shall be filed with the Authority.

T. PLANTING OPERATIONS

1. Unless otherwise directed by the Authority, the seasons for planting materials are as follows:
 - a. -----SPRING-----
 - b. Deciduous and Evergreen - March 1st to May 1st
 - c. -----FALL-----
 - 1) Deciduous - Oct. 15th to Dec. 15th
 - 2) Evergreen - Sept. 1st to Nov. 15th
2. Prior to the excavation of planting areas or plant pits and the driving or placing of stakes or deadmen, etc., the Contractor shall ascertain the location of all electrical cables, conduits, utility lines, oil tanks and supply lines, so that proper precautions may be taken not to disturb or damage any subsurface improvements. In the event any subsurface improvements are uncovered, the Contractor shall promptly notify the Authority who shall arrange to relocate the plant material. Failure to follow this procedure places upon the Contractor the responsibility of making, at his own expense, all the requisite repairs to damaged utility lines resulting from work hereunder.
 - a. The Contractor shall be liable for any damages to property caused by construction or planting operations. All areas and construction disturbed shall be restored to their original condition. All pavements, gutters, sidewalks and roads, littered with dirt, stones and other objectionable material due to construction or planting operations shall be thoroughly cleaned each day by the Contractor before leaving the site.
3. The Contractor shall excavate all plant pits, hedge trenches and/or massed shrub beds or ground cover areas, remove dead trees or stumps and remove blocks where they occur and shall furnish, plant, and maintain all plant material in accordance with the Contract Drawings and Specifications or Directions of the Authority.
 - a. The cost of excavation of blocks, tree pits, removal of dead trees, stumps, roots, shall be included in the base bid price of the Contract and no additional payment shall be made for any of the items. The cutting of dead trees to be removed shall be done in moderate stages to insure the fullest protection to pedestrians and property. All cut branches, limbs and trunks, shall be lowered to the ground with stout rope. Dropping branches, limbs and sections of the trunk to the ground or felling of the entire tree in

one operation will not be permitted. The stump and root shall be entirely removed from the area of the tree pit to allow the replacement tree to be properly planted. Stump and root removal shall be performed with a stump grinder capable of reaching 24 inches below the existing grade with its cutter wheel or a backhoe or mini-excavator if feasible.

4. 4. All areas indicated on the Contract Drawing as hedge trenches, ground cover area or massed shrub beds shall be excavated to a depth of at least 12 inches and backfilled with topsoil unless otherwise specified.
 - a. a. Street trees in 4 feet wide planting strips shall be planted in a pit 4 ft. wide x 6 feet long x 3 feet deep and street trees in 5 feet wide planting strips shall be planted in a pit 5 ft. wide x 5 long x 3 ft. deep, unless otherwise dimensioned on the Drawings.
5. 5. The Contractor shall refer to the planting details of the Contract drawings for planting of shrubs and trees. The Contractor shall remove all materials from tree pits for the full length and width of the tree pit to depth of the tree's root ball. For excavation of a landscape tree pit; the Contractor shall excavate an area at least three times the diameter of the root ball. Extreme care shall be taken not to excavate to a depth greater than required. All excavated materials shall be removed from the site and disposed of by the Contractor. All tree pits are to be closed and filled with topsoil or backfill and made to meet flush with existing finished grades or as otherwise indicated in the planting details of the Contract drawing for planting of shrubs and trees. All newly planted areas are to be made secure and safe at the end of the work day.
6. 6. All plants shall be satisfactory to the inspector. All plants shall stand, after settlement at the same level at which they have grown. Care shall be exercised in setting the plants plumb. The rootball shall rest on the bottom of the pit at such a level that the root crown of the tree is at finished grade. If soil is covering the root crown, it must be removed so that the root crown meets flush with the finished grade. All ropes, stones, etc. shall be removed from the pit before backfilling. Soil for backfilling shall be loose and friable and not frozen.
7. 7. Balled and burlapped or balled, burlapped and platformed plants shall be carefully handled. The Contractor shall only carry B & B or B,B & P material by the rootball or the platform so that the ball will not be loosened. The platform, if any, shall be removed. Any wire basket enclosed root ball shall have at least 2/3 of the wire basket cut away from the sides and top of the ball, and removed from the site. Remaining lateral wires must be cut to prevent future root interference. Wire must not be galvanized or aluminum wire. After the soil has been thoroughly firmed under and around the ball the burlap shall be cut away from the upper 1/2 of the ball and the remaining burlap adjusted to prevent the formation of air pockets. Soil shall be firmed at six (6) to eight (8) inch intervals (lifts) and thoroughly settled with water.
8. 8. Plants with exposed roots (bare root) shall be placed in the proper position in the center of the pit after the soil in the bottom of the pit has been firmed. Roots shall be arranged in their natural position and loose, friable topsoil worked in among them, firmed at intervals and thoroughly settled with water. Care shall be taken to avoid bruising or breaking the roots when tamping the soil. Any large and fleshy roots, which are bruised or broken, shall be pruned with a clean cut before planting.
9. 9. Plant Inoculation Operations:
 - a. a. FOR TREES and SHRUBS:
 - b. b. The Contractor shall furnish and incorporate a minimum of 3 (three) packets of: MYCOR®TREE SAVER® and 6(six) tablets for a 3" stem caliper tree of HEALTHY START® MACRO TABS, into the upper 2 inches of backfill soil of each planting pit approximately 2 inches from the root tips. For plant sizes greater than 5 gallon refer to the table below.
 - 1) Planting Specifications for MYCOR®TREE SAVER®
 - 2) per Manufacturer:
 - (a) One 3oz. packet per inch of stem caliper OR
 - (b) One 3oz. packer per foot of root ball diameter

- 3) Planting Specifications for HEALTHY START® MACRO TABS
- 4) per Manufacturer:
- 5) 21 gram Plant Tablet 12-8-8 (24 month release) for trees and shrubs
 - (a) PLANT SIZE Caliper NUMBER OF TABLETS
 - (b) 5 Gallon Plant - 3 Tablets
 - (c) 10 Gallon Plant - 4 Tablets
 - (d) 15 Gallon Plant - 5 Tablets
 - (e) 20-24" Ball 2- 2 ½" 5 Tablets
 - (f) 30-36" Ball 3 to 4" 6 Tablets
 - (g) 42-48" Ball 4 to 4 ½" 8 Tablets
 - (h) 54-60" Ball - 10 Tablets
 - (i) Larger size for ea. add' 1 ½" 2 Tablets
10. 10. After shrub, ground cover and tree planting is complete, mulch shall be spread to a uniform depth of three inches on the surface of planting beds. Mulch shall be placed around tree pits as shown on the detail drawings. Mulch shall finish level with adjacent finish grades. Do not place mulch within 6 inches of tree trunks or within 3 inches of shrub stems.
11. 11. Where trees are to be planted in block paved areas, the blocks shall be removed to the dimensions as outlined in the schedule of plant pit sizes or as directed by the Authority. All removed blocks are to be stored by the Contractor at the direction of the Development Superintendent and are to remain the property of the Authority. Where removed blocks are to be reset, the Contractor shall plant the tree so that the top of the ball will be slightly below grade so that when block paving is reset or the tree grate is set in place it shall be flush with adjoining paving.
12. 12. The Contractor shall thoroughly water and puddle all plants immediately after planting. After planting, trees shall be pruned and shaped, removing at least one-third of the wood by thinning or shortening branches but in such a manner as to preserve the natural character of the trees. No leaders shall be cut. All pruning shall be done with sharp, clean tools.
13. 13. No tree trunks shall be wrapped. Remove all nursery tags and protective wrapping before or after planting.
14. 14. All staking of deciduous and evergreen trees shall be done at the time of planting. For deciduous tree, stakes shall be driven into the ground at a sufficient distance from the trunk to clear the root ball. Trees 2-1/2 to 4 inches caliper shall be staked with two stakes. Trees 4 to 5 inches caliper shall be staked with three stakes and larger trees shall be staked with four stakes. Trees must stand plumb after staking. All stakes shall be white cedar with bark attached and shall show no sign of cracking or decay, 8 feet long, 3 inches in diameter, 5 feet above grade, guyed from tree to stakes, with "Chain Lock Tree Ties", unless otherwise shown on the Drawings.
 - a. a. Evergreen trees shall be anchored by their rootballs. The root ball anchoring system shall be Model 68 RBK Kit (plus the DS-68 Drive Steel) as manufactured by Foresight Products, LLC, 6430 East 49th Street, Commerce City, CO 80022, phone 800.325.5360 or equal. The product is distributed by Bissett Nursery Corporation, 631.289.3500.
15. 15. The Contractor shall cultivate and rake over finished planting areas and shall leave them in an orderly condition. All debris, branches, rubbish, poor soil, and waste are to be immediately removed from grounds of the Development. On level ground or slight slopes, a shallow basin a little larger than the diameter of the plant pit shall be left around each plant as directed by the Authority. On steep slopes, the soil on the lower side of the plant shall be graded in such a manner that it will catch and hold water as directed by the Authority.
 - a. a. No deduction in the quantity of topsoil to be furnished shall be made for the volume of topsoil displaced during the removal of existing tree root system. This displaced topsoil shall be used in its entirety to build basins (saucers) around each plant. The

- topsoil required for the construction of basins (saucers) around trees shall be deemed included in the total price of the Contract.
16. 16. The Contractor shall establish a neat edge where planting areas meet grass areas as shown on the plans or as directed by the Authority. Edging shall be done by competent mechanics in workmanlike manner with spade or edging tool immediately after all planting is completed. Particular care shall be exercised in edging, to establish good flowing curves as shown on the plans or as directed by the Authority. The Contractor shall maintain edging until one (1) year after the final acceptance and completion of the work.
 17. 17. Any old masonry, old concrete, rock or brickbat excavation, which may occur in tree pits or adjacent to them to such an extent that the future growth or extension of the tree roots is impaired shall be excavated only upon written order from the Authority and the Authority's representative on the Development has made the required measurements.
 - a. a. The terms "old masonry, old concrete, rock or brickbat excavation", wherever used in this Contract shall mean old masonry, old concrete, rock or brickbat which is in excess of one-half cubic yard in size and which cannot be excavated by standard power equipment without drilling or blasting.
 - b. b. The term "earth excavation", wherever used in this Contract, shall mean all excavation other than "old masonry, old concrete, rock or brickbat excavation" and shall include the excavation of old masonry, old concrete, rock or brickbat which in one-half cubic yard or less in size, old masonry, old concrete, rock or brickbat which can be excavated by standard power equipment without drilling or blasting. All earth excavation is included within the Base Bid.
 - c. c. Computation of quantities of old masonry, old concrete, rock or brickbat excavation and topsoil necessary for backfilling voids left by such excavation shall include the volume excavated in excess of the minimum requirements for installation of the trees and all such computation shall be based on bank or in-place measure.

Compensation for old masonry, old concrete, rock or brickbat excavation and necessary backfill shall be paid for as an extra and only upon a written order from the Authority.
 18. 18. The Contractor shall protect all plants and planted areas against trespassing by tenants or others and from damage at all times. If any plants are injured, they shall be treated or replaced as required by the Authority. No work shall be executed in or over prepared planting areas or adjacent to plants without proper safeguards and protection.
 - a. a. The Contractor shall also make good all damages to person or property caused by defective workmanship or materials.
 19. 19. The Contractor shall maintain all newly planted trees and shrubs and ground cover within the limits of this Contract in accordance with the Drawings and Specifications and directions of the Authority, until one (1) year after the final acceptance and completion of the work. The cost of maintenance shall be included in the item price bid for all plant materials in this Contract.
 - a. a. Maintenance shall include watering, fertilizing, protection of planting, edging, control of insects, fungus and other diseases by means of spraying with an approved insecticide or fungicide; pruning, adjustment and repair of stakes, anchors and wires, repair of minor washouts and gullies up to twelve (12) inches in depth and other horticultural operations. Watering shall be done by the Contractor from the time of planting until the end of one (1) year after the Certificate of Final Acceptance is issued by the Authority and the completion of the whole work of the Contract. At least 20 gallons of water per tree or 3 gallons of water per shrub shall be applied at approximately 2 week intervals from May 1 to October 31. Watering shall not be done for any given week if the soil is saturated from recent rains or snowmelt. Watering shall be applied in such a manner as to not damage plants or remove mulch.

Watering shall not cause the uprooting or the exposure of plant roots. The Authority's Representative may increase or reduce the frequency of watering based on weather conditions, resulting soil water content or other factors. All planting areas must be cultivated and weeded with hoes or other approved tools. Completely remove all

weeds within mulch areas. Under no circumstances are weeds to attain more than two 20 inches of growth. Weeding and cultivating may be done by others, but this shall in no way affect the responsibility of the Contractor in the guaranteeing and replacing of plant material. The cost of maintenance shall be included in the base bid for the various items of the Contract.

- b. b. The Contractor shall replace, in accordance with the Contract Drawings and Specifications, any planted trees, shrubs or vines that are dead or in the opinion of the Authority, and in an unhealthy or unsightly condition and/or have lost their natural shape due to dead branches, excessive pruning, inadequate or improper maintenance, or other causes, during a period of one (1) year after the Authority issues the Certificate of Final Acceptance and completion of the whole work of the Contract.
- 20. 20. The Contractor shall supply all plants shown on the Drawings and as specified in the Plant Lists. The Plant Lists are included on the Drawings and/or in the Amendments to these Specifications. Plant pit sizes are included in the Plant Lists.
 - 21. 21. All excess excavation as well as material not required or in the opinion of the Authority unsuitable for fill in connection with the work under this Contract is to be immediately removed from the site by the Contractor on the same day of excavation.
 - 22. 22. The Contractor shall install "new" (where indicated on the Drawings) supplemental water devices (Tree Gators or equal) of the appropriate size for the plant material. The device shall be maintained (kept filled with water) by the Contractor until the "Substantial Completion of Contract" has been issued. When the one year plant material warranty period has passed, the devices shall then become the property and responsibility of the Development to maintain.

PART 3 EXECUTION

5.01 3.01 EXAMINATION

- A. A. Verify that prepared subsoil and planters are ready to receive work.
- B. B. Saturate soil with water to test drainage.
- C. C. All trees must be branched 6' from the ground; trees must not have any limb cuts over $\frac{3}{4}$ " which have not completely calloused over.
- D. D. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions or obstructions, notify NYCHA Representative before planting.

END OF SECTION 32 93 00