ITEM 11611.50 M - TRANSPLANT TREES (LESS THAN 0.25M DBH)
ITEM 11611.51 M - TRANSPLANT TREES (0.25M DBH AND GREATER)

DESCRIPTION

Under this Item, the Contractor shall prepare, transplant and maintain trees in accordance with the plans, specifications, and directions of the Engineer-In-Charge (EIC). All plant material to be transplanted shall be as shown on the contract documents or as selected and tagged by the Regional Landscape Architect (RLA) from existing plant material on the site.

The Contractor shall be liable for any damage to property by transplanting operations; all areas disturbed shall be restored to their original condition, to the satisfaction of the EIC.

MATERIALS

Trees: Trees shall be existing plants as shown on the plans.

Burlap: Burlap and twine shall be natural fabrics. No synthetic burlap or twine shall be permitted.

Planting materials: Topsoil, mulch, antidessicants, wire, hose, twine shall be as specified in Section 713, Landscape Development Materials. Water shall be per section 712-01.

Mycorrhizal fungi mixture. This mixture shall be a dry granular product supplied in plastic packets each containing 85.05 grams of product. The packets shall not be stored for more than eighteen months following packaging and shall not be exposed to moisture, direct sunlight, or temperatures higher than 32 degrees Celsius (32^0C) or lower than 0 degrees Celsius (0^0C) prior to incorporation into the soil. Each packet shall containing the following:

1. A minimum of 1000 live spores of vesicular-arbuscular endomicorrhizal fungi including Entrephospora columbiana, Glomus etunicatum, Glomus clarum and Glomus sp.
2. A minimum of 60 million live spores of the ectomycorrhizal fungus, Pisolithus tinctorius.
3. Acrylamide copolymer water absorbent gel.
4. Water soluble dried Yucca schidigera extract.
5. Water soluble dried Ascophyllum nodosum (sea kelp) extract.
6. Water soluble dried leonardite humate (humic acid) extracts.

CONSTRUCTION DETAILS

General

Prior to performing any work, the Contractor shall submit for approval: the name and background materials of a qualified Transplanting Subcontractor who is a licensed arborist (International Society of Arboriculture or equivalent) with demonstrated experience in moving large trees, particularly those 0.25M in diameter breast height (dbh) and greater; and a detailed plan prepared by the same Subcontractor for moving the trees called for on this contract. The

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Transplanting Subcontractor's background information shall include a resume and descriptions, photographs and client contact names and phone numbers for at least three successful transplants of trees 0.25M dbh and greater. The Transplanting Subcontractor's plan shall describe and/or illustrate in detail:

- The method of preparing trees for transplant, including root pruning where called for;
- The method of excavating at the time of transplanting;
- The method of containing root balls for various sizes of trees;
- The proposed root ball width and depth for each size category of tree;
- The equipment proposed to move the trees, and its routing on the site for all aspects of the operation;
- The schedule for all work related to this specification;
- Any other details or suggestions which vary from the methods described in this specification;

Upon approval by the EIC in consultation with the RLA, the Contractor shall engage the services of the approved Transplanting Subcontractor and, through the EIC, shall arrange a field meeting with the RLA and any appropriate outside agency representatives prior to proceeding further with any work. All subsequent work under this specification shall be done only by or under the direction of this approved Transplanting Subcontractor.

The Contractor is alerted to the time-critical needs of "root pruning" as described below.

Season: Transplanting operations shall occur when the ground is not frozen or otherwise in an unsatisfactory condition for working, after leaf fall and before bud break on deciduous trees. This shall be October 15th to December 1st or March 1st to April 15th unless otherwise directed by the EIC in consultation with the RLA.

Allowable general methods: Trees less than 0.25M dbh may be hand dug or machine dug and may be moved by means of an hydraulic "tree spade". In case of a tree spade, the diameter of the spade must be sufficient to allow for an adequate root as described in "Transplanting Operation" below.
Trees 0.25M dbh and greater may not be moved by a mechanical tree spade and require root pruning and special digging considerations described in other sections of this specification.

Ground Preparation

Transplant location: The new locations to receive transplants shall be staked out for approval prior to digging the trees. In all cases, these pits shall be dug and prepared prior to completion of final digging of transplant trees. Pits shall be thoroughly watered on the day of transplanting prior to receiving plants.

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The excavated subsoil and topsoil shall be set aside in separate stockpiles for reuse in backfilling. Where, in the opinion of the EIC, the subgrade material is unsuitable, it shall be removed and replaced with adequate subgrade material and topsoil.

Transplant pit diameter and depth: Where a "tree spade" is used; the excavated hole may be made with the same spade used to excavate and remove the tree, and shall be the same diameter and depth as the root ball of the transplanted tree.

Where a tree spade is not used, the diameter shall be a minimum of 1M greater than the diameter of the root ball. Depth shall be sufficient to ensure that the root ball will sit in its new location on undisturbed soil such that the surface of the root ball will bear the exact relationship to adjacent new finish grades as it did in its original location.

Preparation of Plants

All precautions customary in good trade practice shall be taken in preparing plants for moving, and workmanship that fails to meet the highest standards will be rejected.

Root Pruning: For all plants 0.25M dbh or greater, at least one calendar year prior to transplanting, and only during the approved seasons as described herein, the Contractor shall delineate, with chalk, stake and twine or other approved method, a circle around each tree at the approved limit of the anticipated root ball. This circle shall be divided into 8 equal-length sections. The Contractor shall, in every other section of the perimeter (a total of four sections), excavate a circular wedge area 1 meter wide, extending from 0.1M less than the root ball perimeter to 0.9M beyond the perimeter, by 0.5M deep, setting aside the topsoil and subsoil separately. In each of these sectors, all exposed roots shall be cleanly severed at the inside edge of the excavation by an approved means with clean, sharp tools, to promote callus formation and wound closure.

Excavated areas shall be backfilled beginning with stockpiled subsoil and ending with stockpiled topsoil, to 0.1M below final grade, firming soil at approximately 0.15M intervals and thoroughly settling with water to avoid leaving air pockets. Two (2) 85.05 gram packets of Mycorrhizal Fungi Mixture shall be evenly spread on the soil surface within each excavated sector. Each sector shall then be brought to finish grade with remaining topsoil and the top 0.2M of soil shall be thoroughly mixed to incorporate the Mycorrhizal Fungi Mixture.

If the EIC in consultation with the RLA determines that the one-year lead time is infeasible, root pruning shall be done the season prior to transplanting.

Marking orientation of trees: Prior to transplanting, the Contractor shall tie a flag of cloth or plastic ribbon to a branch to mark the north side of the plant as a guide for positioning the plant in

the new location.

Tying of Branches If necessary, to facilitate positioning of equipment and help avoid injury to the tree, tying up the branches of low-branched plants using heavy twine or burlap strips is allowable, if approved in advance by the EIC in consultation with the Regional Landscape Architect. Each point of contact of twine on tree trunks or branches shall be protected with burlap.

Crown Pruning: Dead, injured or diseased wood shall be removed in accordance with good horticultural practice. Additional pruning may be required as determined by the Transplanting Subcontractor to preserve aesthetic balance. Any pruning shall preserve the natural character of each plant and shall be done in a manner appropriate to its particular requirements. Any crown pruning shall be done during the transplanting season and may be performed either before or after transplanting, at the Subcontractor's discretion. If done before, additional pruning may be required to correct any damage incurred during the transplanting operation. In no case shall leader branches be removed or harmed.

Transplanting Operation

Root ball: In all cases, the diameter of the ball of native soil to be preserved intact shall be at least 10 times the diameter of the tree trunk at breast height (dbh) unless otherwise approved by the EIC in consultation with the RLA. The depth of the root ball shall be sufficient to preserve the majority of large roots characteristic of the given tree growing in that particular soil type as determined by the approved Transplanting Subconsultant in consultation with the RLA. Unless otherwise specified, the depth shall be approximately 60% of the ball width for root balls up to 2M and a minimum of 1.2M for root balls greater than 2M in diameter.

Precaution: Exposed roots shall never be allowed to dry out. If for any reason the plant will sit with roots or root ball exposed, roots shall be protected by packing them in moist straw, sphagnum, peat moss, bark or other suitable material and then wrapping with moist burlap.

Where a tree spade is used:

- A tree spade of sufficient size must be used to meet the root ball diameter specifications stated above.
- The approved destination hole shall first be excavated (it is assumed that this shall be with the same spade to be used to move the tree) and thoroughly watered.
- The tree shall then be excavated, moved and planted, taking care to avoid damage to tree branches and trunk. The tree trunk shall be protected as necessary with burlap or protective padding. The tree shall be set with the same compass orientation and at the same depth as its original location.
- In a ring 0.5M wide extending from the edge of the root ball, the top 0.2M of soil shall be

loosened. Mycorrhizal Fungi Mixture shall be evenly spread in this zone at the rate of one packet per 0.75 square meters and throughly incorporated into the loosened layer.
- This zone and the root ball of the tree shall be watered thoroughly.

Where a tree spade is not used:
- The destination hole shall be prepared to the approved size and depth prior to digging the tree to be transplanted. Topsoil and subsoil shall be set aside in separate piles. The soil surface in the hole shall be thoroughly watered.
- A circle shall be inscribed around each tree to the approved anticipated size of the root ball. Where trees have been previously root pruned, the limit shall be that established at the time of first root pruning, which is 0.1M further from the trunk than the line of root pruning.
- The ground shall be cleanly cut along the ball limit with a saw, sharp spade or other means to a minimum depth of 0.3M.
- A trench shall be dug outside and adjacent to this limit to a minimum width of 0.5M and as deep as necessary to shape a root ball of the approved size.
- The root ball shall be trimmed to proper size and shape.
- Loosening of the soil around the roots shall be avoided by cutting remaining woody roots cleanly with a sharp spade, saw, shears or other approved means. Extreme care shall be exercised to preserve any new fibrous roots which have developed in root-pruned zones.
- Root balls shall be securely contained by: wrapping in burlap secured tightly with"drum-laced" twine; a wooden "soil crate"; or other approved means which shall ensure a solid, secure root ball. The lower 1M of tree trunk shall be wrapped in burlap if it is anticipated that any twine will be in contact with the trunk.
- Trees shall be moved by crane, winch or other approved means per the Subcontractor's approved plan to new location. Plants shall be handled so that the ball will not be loosened or broken and shall be set with same compass orientation and at the same relative elevation as in their original location.
- The pit around the ball shall be backfilled, beginning with stockpiled subsoil. After the soil has been thoroughly firmed around the lower half of the ball, any burlap shall be cut away from upper half of the ball and the remaining burlap adjusted to prevent the formation of air pockets. Soil shall be firmed at 0.15M intervals and thoroughly settled with water the same day of planting, to within 0.2M of the finish grade.
- Topsoil shall then be added from on-site stockpiles to within 0.10M of the finish grade.
- Mycorrhizal Fungi Mixture shall be evenly spread on the surface of the excavated area at the rate of one packet per 0.75 square meters. Excavated areas shall then be brought to grade with stockpiled topsoil, and the top 0.20M shall be thoroughly mixed to incorporate the Mycorrhizal Fungi Mixture.
- The planting area including the root ball of the tree shall be watered thoroughly.

Finishing Surface After Backfilling: The Contractor shall cultivate and rake over finished planting areas and shall leave them in an orderly condition.

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Staking: All staking shall be done immediately after planting and all stakes and wire maintained. Plants shall stand plumb after staking. Stakes shall be placed outside of the root ball and shall be driven a minimum of 1M into the ground. Stakes shall be fastened to the tree with wire protected by hose and shall be set plumb unless otherwise directed by the EIC. Each tree shall have four (4) stakes.

Spraying with Anti-Desiccant: The Contractor shall spray all Plant Material with an anti-desiccant, using an approved power sprayer to apply an adequate film over trunks, branches, twigs, and/or foliage, as directed by the EIC. Anti-desiccants shall be delivered in containers of the manufacturer, shall be mixed according to directions, and applied to plant material within forty-eight (48) hours of each day's planting that is completed.

Mulching: The Contractor shall place 0.1M of mulch over each tree's entire transplant area to the limit of disturbance.

Maintenance

The Contractor shall maintain all transplanted areas within the limits of this contract in accordance with the plans and specifications per NYSDOT Standard Specification Sections 611-3.05 "Care of Planting" and 611-3.05 "Period of Establishment", except that no replacement trees will be required. At the expiration of the period of establishment, unless specifically directed by the EIC, the Contractor shall leave the entire area cultivated and weed free and shall remove all stakes, burlap, wires and hoses.

METHOD OF MEASUREMENT

Transplanting shall be measured by the number of trees of each size that has been satisfactorily relocated in accordance with the plans and specifications, to the satisfaction of the Engineer.

BASIS OF PAYMENT

The unit price bid per each transplant shall include the cost of all labor, equipment, materials including Mycorrhizal Fungi Mixture and water, and maintenance incidentals necessary to complete the work in accordance with this specification.