

SECTION 7400 – TREES, SHRUBS AND GROUNDCOVERS

7401 **SCOPE.** This section covers the furnishing of all labor, equipment, tools, and materials necessary for the installation of all trees, shrubs and groundcovers as required by the project plans and specifications. Groundcover planting shall mean all woody ground cover plants as well as annual and perennial plant materials.

7402 **GENERAL.** The planting of trees, shrubs and ground covers shall consist of furnishing and installing all plant materials by an experienced Contractor familiar with planting in the Midwest. All plant material delivered to the site for approval and installation shall be identified and tagged, so as to ensure the plants are as specified and indicated on the contract documents.

Prior to planting, the Contractor shall locate all existing underground utilities and irrigation systems. The Contractor shall request direction from the City Engineer when there are conflicts between existing or proposed underground utilities and the location of the planting material.

The Contractor shall maintain all plant material until final acceptance of the project. Plant material guarantees shall be as stipulated in the warranty section of this document.

7403 **MATERIALS.** All plant material shall be nursery-grown stock, unless specified otherwise, and shall be equal to or larger than the sizes specified. It shall be certified by all federal and state regulations, conform to the American Standards for Nursery Stock Document (ANSI Z60.1) latest edition and shall be free of disease and hazardous insects.

Plants shall comply with USDA Plant Hardiness Zone 6a, or farther north. Plants shall be typical of their species or variety, and shall have a normal habit of growth. They shall be sound, healthy, vigorous, well-proportioned and well-branched. Evergreens shall have full foliage; other plants shall be densely foliated when in leaf. All plant material shall have healthy, well-developed root systems. Plants shall be free from mechanical injury, cultural injury, injury by animals and free of noticeable injury due to insect attack or blight.

The Contractor shall apply a commercial root stimulator approved by the City Engineer at rates recommended by the manufacturer following the initial plant watering.

Composted soil material shall be a well-rotted mix of organic materials free of any deleterious materials including stones over one (1) inch diameter, twigs, trash, etc.

Wood mulch material shall be shredded wood material free of dirt, rocks, weeds or other deleterious materials.

Transplant additive shall be a mycorrhizal fungal transplant inoculant containing the minimum mixture of appropriate species of mycorrhizal fungi and bacteria fungi stimulant, water retaining agents, mineral and organic nutrients and inert ingredients shown in Table 7403-1.

Table 7403-1 - Transplant Additive Mixture Rates

Additive	Rate
Ectomycorrhizal Fungi	95 million
spores/lb	
Pisolithus. Tintorius	95 million spores/lb
VA Mycorrhizal Fungi	
Entrophospora columbiana	1,325 spores/lb
Glomus clarum	1,325 spores/lb
Glomus etunicatum	1,325 spores/lb
Glomus intraradices	1,325 spores/lb
Rhizosphere Bacillus spp.	
Bacillus licheniformis	54 million
cfu/lb Bacillus megaterium	54 million
cfu/lb Bacillus polymyxa	54
million cfu/lb Bacillus subtilis	54
million cfu/lb Bacillus thuringiensis	54
million cfu/lb Paenibacillus azotofizans	54
million cfu/lb	
Terra-Sorb Hyrdogel (potassium polycarcrylamide)	33.3%
Formononetin	0.007%
Microbian Nutrients	39.4%
Kelp Mean	23.60%
Humic Acids	10.50%
Maltodextrin	3.70%
Soluble Yucca Extract	1.60%
Inert Ingredients	27.293%
Greensand	17.60%
Leonardite (other than hulmic acids)	5.80%
Clay	1%
Talc	0.023%
USPS Mineral Oil	2.87%

The Contractor shall demonstrate installation of all transplant additives, and shall provide the actual quantity of transplant additive product applied to the City Engineer.

The number of transplant additive packets per tree/shrub shall be applied according to the manufacturer’s recommended rates and instructions. The packet mix shall be evenly distributed into the upper eight (8) inches of backfill soil next to the rootball. Additive mixture shall not be placed in the bottom of the planting pit.

Tree stakes shall be studded steel fence posts. No wood stakes shall be used when staking trees.

7404 **TIME OF PLANTING.** Trees and shrubs shall be installed within the following time periods, unless otherwise approved by the City Engineer:

Spring	Fall
March 15 – May 15	September 15 – November 15

Perennial/Annual plants shall be installed within the following time periods, unless otherwise approved by the City Engineer:

Spring	Fall
April 15 – May 30	September 15 – November 15

7405 **EXECUTION.** Prior to planting operations, the Contractor shall schedule an onsite meeting with the City Arborist or representative to verify that subsoil and topsoil are properly prepared and ready to receive the planting material. The Contractor shall verify location of all underground and above ground utilities that may interfere with the installation of plant materials.

A. Excavation of planting pit for trees and shrubs:

The Contractor shall excavate a hole a minimum of four (4) feet in diameter or at least two times wider than the root ball diameter of the tree. There shall be a minimum of one (1) foot clearance on each side of the root ball. The depth of the pit shall be such that the top of the root ball where root flare begins is two (2) inches above finish grade with the root ball resting at the bottom of the pit.

B. Excavation of shrub planting bed(s):

All balled and burlapped or container-grown shrubs shall have a planting pit diameter sufficient in size to provide a minimum of six (6) inches clearance on each side of the container or ball of the shrub. The base of the plant shall be flush with the adjacent grade.

C. Excavation of groundcover planting bed(s):

The area designated for groundcover plantings shall be tilled to a minimum depth of twelve (12) inches in order to provide a plantable area for groundcovers.

D. Planting of trees and shrubs:

The top of the root ball where root flare begins shall be two (2) inches above the finish grade on all trees. All trees and shrubs shall be plumbed before backfilling and the Contractor shall maintain plumb while working backfill around roots. Remove all wire, twine and burlap from the top two-thirds of the root ball. Soil used in the tree pit shall consist of 3 parts excavated soil to 1 part compost, thoroughly mixed before planting. Firm the soil so the tree is plumb and adequately supported, but do not pack soil.

Saturate the entire backfilled soil with water, and add additional soil as needed to compensate for settling. Create a two (2) inch depression in the soil to hold water around the perimeter of the pit. Mulch a 5-foot diameter tree ring at the base of the tree with two (2) inches of mulch over root ball and three (3) to four (4) inches of mulch over the remainder of the tree ring. Do not allow mulch to cover the tree trunk by more than ½ inch. Pruning of broken or dead branches shall only be conducted by, or under the direct supervision of, a Certified Arborist.

Stake all trees with two steel studded fence posts driven a minimum of eighteen inches (18") into soil outside of the planting pit. The post height above the finish grade shall be a minimum of five (5) feet. The tree tie system shall be approved by the City Engineer prior to installation. Nylon straps shall be located above the first branch and shall typically consist of three (2) 12-gauge soft galvanized wire ties per tree. Where possible, stakes shall be installed on a northeast to southwest orientation.

For non-irrigated trees, install watering bag with the tree planting. Install two (2) 20-gallon slow-release watering bags for each shade or ornamental tree per the manufacturer's recommendations. For Evergreen trees, not irrigated, install similar bag which does not interfere with the lower branches of the unlimbed evergreen trees with similar dispersion rates.

For container plant material, the Contractor shall remove the container and spread-out roots horizontally in the planting pit. Plant the roots as shallow as possible in a flared-out, horizontal position. Slice or shave the roots vertically down the sides of the root ball to release container-bound root material. Follow the same soil backfill installation as above for trees.

All shrub beds shall have a shoveled edge unless otherwise noted. Edge shall be six (6) inches in depth with consistently straight lines and smooth curves

E. Planting of groundcovers:

The soil in areas designated for groundcovers shall be loosened by roto-tilling or other approved method to a minimum depth of twelve (12) inches prior to the planting operation. The backfill material shall be thoroughly mixed topsoil and composted peat moss. No more than 10% of the soil mix shall consist of clods one (1) inch or larger.

Plants shall be evenly spaced at the specified distance in a triangular pattern, unless otherwise noted on the plans. Spacing shall dictate the final quantity of plants per bed. Spacing from pavement, curb, similar hard surfaces and edges of plant bed shall be ½ the specified plant spacing. Spacing between different species shall be the sum of ½ the space for each species.

All groundcover beds shall have a shoveled edge unless otherwise noted. Edge shall be six (6) inches in depth with consistently straight lines and smooth curves.

All mulch shall be applied to a depth of two (2) inches in all ground cover planting bed areas and to a depth of three (3) inches in all annual, perennial, and shrub planting bed areas.

All ground cover beds shall be thoroughly watered immediately after planting is completed. For beds in areas of existing vegetation, the Contractor shall verify the location and remove all vegetation. An herbicide treatment may be necessary to eradicate existing vegetation. Round-up or similar herbicide shall be applied a minimum of two (2) weeks prior to planting, and plant material shall not be installed in planting beds within two (2) weeks of the herbicide treatment. All shrub and ground cover beds shall be roto-tilled as described above.

7406 **MAINTENANCE.** Contractor shall maintain all planted areas until the final acceptance of the project.

For shrubs and groundcovers, without watering bags, each watering shall provide a deep soaking of the entire plant bed including the plant root zones and soil areas between the plants.

For plants with watering bags, each watering shall fill the watering bag to full capacity as recommended by the manufacturer.

Contractor shall guarantee that all plant material is alive and in an acceptable form at the time of final acceptance.

7407 RECORD KEEPING. Contractor shall maintain a log of his watering operations and rain events to show compliance with the watering requirements, and shall submit the records to the City Engineer at the end of the required maintenance period. The plantings shall not be accepted until the watering log has been approved by the City Engineer.

7408 WARRANTY. Contractor shall guarantee all plant material on the project for a minimum of one (1) year from final acceptance of the project. Any dead or dying plant material found during the guarantee period shall be removed from the project site by the Contractor and replaced. If the Contractor does not remove the plant material within a reasonable time, the City will remove the plant and add it to the list of replacement materials. The Contractor shall report to the City and log those removals and the specific locations of replacements. Replacement of any dead or removed material shall occur within the planting periods as described in these Technical Specifications.