

**CITY OF ABILENE****ITEM 192****ROADSIDE PLANTING AND ESTABLISHMENT****192.1 DESCRIPTION.**

This Item shall govern for providing the specified plants and other materials, the initial installation of plants and other materials, any required repair or replacement of plants and other materials and establishment thereof as shown on the Plans.

**192.2 GENERAL.**

(1) **plant Standards.** Unless shown on the Plans, the following published standards will apply. Standards for nursery stock will be as stated in the "American Standard for Nursery Stock", as published by the American Association of Nurserymen, Incorporated. Botanical names as shown on the Plans will be as stated in the "Standardized plant Names" by the American Joint Committee on Horticultural Nomenclature. Pruning standards will be as set forth by the National Arborist Association in the "Pruning Standards for Shade Trees".

(2) **License Requirements.**

- (a) **Pesticide.** The Contractor shall be a licensed pesticide applicator or employ a licensed pesticide applicator for the treatment of insects, diseases, and animals as required by the Texas Pesticide Laws and Regulations of the Texas Department of Agriculture. The Engineer may require documentation of such certification as necessary for his records.
- (b) **Herbicide.** The Contractor shall possess a permit or employ a person who possesses a permit to apply herbicide as required by the Texas Herbicide Law of the Texas Department of Agriculture. The Engineer may require documentation of such certification as necessary for his records.
- (c) **Irrigation.** The Contractor shall possess an irrigator's license issued by the State of Texas and the Texas Board of Irrigators or employ such a licensed irrigator to perform the irrigation system maintenance. The irrigation system shall be maintained under the supervision of the licensed irrigator who shall be available on the site as required by the Engineer. The Engineer may require documentation of such license for his records. The Contractor shall verify and adhere to the requirements and codes of any controlling utility authorities.

**192.3. MATERIALS.**

(1) **Preservation of Cultural Resources.** When it is necessary to obtain material sources off the right-of-way, the Contractor's attention is directed to Part I General Provisions - Division I General Requirements and Covenants.

(2) **plant Material.** All plants shall be healthy nursery grown stock unless otherwise shown on the Plans. Nursery grown stock, either in containers or in the field, shall be nursery grown in accordance with accepted horticultural practices and under climatic conditions similar to those of the project site for at least twelve months, unless specifically authorized otherwise by the Engineer.

- (a) **Container plants.** Soil volume for containers shall be three-fourths (3/4) the depth of the container or greater and contain roots of the plant throughout the root ball.

- (i) **Containerized Stock.** This stock will be defined as nursery plant stock transplanted from a growing site with a ball of soil, containing the root system, left intact and placed into a container and grown in that container continuously long enough for the new fibrous roots to have developed so that the root mass retains its shape and holds together after removal from the container. Containerized stock shall have been grown in the delivered containers for at least six (6) months, but not over two (2) years.
- (ii) **Container Grown Stock.** This stock will be defined as nursery plant stock which has been planted in a container as a liner, seed or by other propagation method, and which has been systematically re planted or stepped up in larger containers as required, and which has developed a root system in a planting medium capable of sustaining acceptable plant growth, and which has become established in the container and exhibits a well rooted condition as evidenced by the soil ball remaining intact when removed from its container.
- (b) **Balled and Burlapped Stock.** This stock will be defined as nursery plant stock which has been removed from the growing site with a ball of soil, containing the root system, left intact and encased in burlap (or other approved similar material) to hold the soil in place. Ball sizes for balled and burlapped stock shall be as shown on the Plans.
- (c) **Bare Root Stock.** This stock will be defined as nursery plant stock, which has been removed from the growing site with the root system substantially free of soil. Bare rootstock shall have a well-branched root system, characteristic of the species. The approved minimum root spread and condition shall be as shown on the Plans.
- (d) **Collected Stock.** This stock will be defined as plant stock, which has been removed from its original native habitat. All collected stock shall have specific approval of the Engineer before it can be removed from its existing habitat. This shall include on site visual inspection, acceptance and tagging. Tags shall be furnished by the Contractor. Ball sizes for collected stock shall be as shown on the Plans, and shall be of such a diameter and depth to encompass enough fibrous and feeding root system as necessary for the full recovery of the plant. Collection may be by hand or mechanical method. For balled and burlapped or mechanical transplanting of collected plant materials refer to Item 192.4.
- (e) **Bag Grown Stock.** This stock will be defined as nursery plant stock transplanted into a non-woven fabric container which has been placed in the ground and the plant grown under nursery field conditions continuously long enough (normally one month for each inch of bag diameter, i.e., a plant with a 24" diameter bag, grown in its original planted location for 24 months) for the fibrous roots to have developed so that the root mass retains its shape and holds together after removal of the bag. The root ball shall be flat bottomed and straight sided. Ball sizes for bag grown stock shall be as shown on the Plans. Bag grown stock shall not be pruned before delivery.
- (f) **Other plant Materials.** Other plant materials shall be as shown on the Plans.

(3) **plant Size.** plants will be measured when branches are in their normal position. Height and spread dimensions as shown on the Plans, refer to the main body of the plant and not branch tip to tip. plants having a spreading or semi-spreading habit will be measured by the average diameter of the spread. plant heights will be measured by the mean height.

Caliper measurements will be taken at a point on the trunk six (6) inches above natural ground line for trees up to four (4) inches in caliper and at a point twelve inches above natural ground line for trees over four (4) inches in caliper. The caliper size for multi-trunked plants will be determined by adding the calipers of the largest cane and one-half the caliper(s) of the second and third largest cane(s).

When a range of size is shown on the Plans, no plant shall be less than the minimum size and at least 40% of the plants shall be as large as the maximum size shown on the Plans. The required measurements are the minimum sizes acceptable and are the measurements after pruning, when pruning is required.

Sizes of plants or plant types such as palms, roses, vines, groundcovers, seedlings, bulbs, corms, tubers, young plants, understock, etc. will be measured in accordance with the plant standards or as shown on the Plans.

**(4) Rejection of plants.** plant material having any of the following features will be subject to rejection:

1. An excessive amount of abrasions of the bark;
2. Dried or damaged root system;
3. Dried or damaged top wood of deciduous plants, or dried or damaged foliage and top wood of evergreens;
4. Prematurely opened or damaged buds;
5. Disease or insect infestation, including eggs or larvae;
6. Dry, loose, cracked, broken, and/or undersized balls or containers which do not conform to the sizes shown on the Plans;
7. Evidence of heating, molding, freezing, wind burn, sunscald, etc.;
8. Container plants that are overgrown or root-bound;
9. plants with bench balls (roots repacked with soil);
10. plant balls encased in non-biodegradable plastic or other impervious material;
11. Field grown or collected plants transplanted into containers less than six (6) months or more than two (2) years;
12. Trees which have damaged, pruned, crooked, or multiple leaders, unless multiple leaders are specified or are normal for the species;
13. plants with disfiguring knots or fresh cuts of limbs over three-quarters (3/4) inch that have not completely calloused;
14. plants that do not possess a normal balance between height and spread for the species;
15. plant containers that are not structurally sound (cracked, bent, etc.)
16. plants in containers with less than three-fourths (3/4) planting medium depth;
17. Any endangered or threatened plants; or plants of historical significance that have been collected;
18. Any other physical damage or adverse conditions that would prevent thriving growth or cause an unacceptable appearance; or
19. plants that do not meet the standards shown on the Plans.

**(5) Mulch.** Unless otherwise shown on the Plans, mulch material shall consist of loose organic residue derived from plants or granular material as approved by the Engineer. It shall be of such nature that adequate protection is provided against sun baking and quick drying of the soil, and shall not impede aeration or water penetration nor deplete the soil nitrogen. Mulch material shall be free of excess amounts of large leaves and sticks that would prevent proper dressing of the mulched surface, free of harmful substances and free of detrimental amounts of soil or other foreign matter that would promote early compaction, matting or deterioration of the mulch.

**(6) Peat Moss.** Peat moss shall be of sphagnum origin.

**(7) Backfill.** Backfill shall be a loose friable sterilized material secured from an approved source. It shall be virtually free of reproductive parts of noxious weeds and shall be thoroughly mixed in the proportions shown on the Plans. When shown on the Plans, material excavated from the planting pit (excluding any rocks) may be used as backfill.

**(8) Nursery plant Containers.** The sizes and volumes for the more common larger containers shall be as shown in Tables 1A and 1B:

**TABLE 1A  
POT SIZES**

Container Class or Nominal Size*	Minimum Vertical Depth	Minimum Inside Top Diameter	Minimum Inside Bottom Diameter	Minimum True Volume Cu. In.	Minimum True Volume Gallons
1 gallon	6.0"	6.0"	5.0"	142.6	0.62
2 gallon	7.5"	7.5"	6.5"	288.6	1.25
3 gallon	8.5"	9.5"	8.5"	540.7	2.34
4 gallon	10.5"	9.75"	8.75"	705.6	3.05
5 gallon	11.0"	9.75"	8.75"	740.0	3.20
7 gallon	11.0"	12.25"	11.0"	1,167.5	5.05
10 gallon	14.0"	14.0"	13.0"	2,004.0	8.68
15 gallon	15.0"	15.0"	13.5"	2,392.5	10.36
20 gallon	16.0"	18.5"	16.0"	3,740.0	16.19
25 gallon	16.0"	22.0"	17.5"	4,900.0	21.21
30 gallon	17.0"	22.0"	19.0"	5,608.0	24.28
45 gallon	17.5"	30.0"	23.5"	9,835.0	42.58
50 gallon	20.0"	29.0"	23.0"	10,619.0	46.00
55 gallon	22.0"	29.0"	23.0"	11,781.0	51.00
65 gallon	22.0"	31.0"	26.0"	14,035.0	60.75
95 gallon	23.0"	37.0"	31.0"	20,882.0	90.40
100 gallon	23.0"	36.0"	30.0"	19,670.0	85.00
200 gallon	28.0"	48.0"	40.0"	42,575.0	184.30

\*Sized by trade designation which is not equal to true gallon volumes.

**TABLE 1B  
BOX SIZES**

<b>Nominal Box Size (Approx. Inside Square Top Dimensions)</b>	<b>Approx. Vertical Depth</b>	<b>Approx. Inside Square Bottom Dimensions</b>	<b>Approx. True Volume  Cu. In</b>	<b>Approx. True Volume  Gallons</b>
14" box	12"	12"	2,028	8.8
20" box	18"	16"	5,832	25.0
24" box	22"	20"	10,648	46.0
30" box	27"	24"	19,683	85.0
36" box	32"	30"	34,848	150.0
42" box	32"	30"	41,472	180.0
48" box	36"	36"	63,504	275.0
60" box	42"	42"	109,242	475.0

Any container that does not meet the minimum specifications for pots or the approximate specifications for boxes as shown in Tables 1A and 1B will be considered unclassified and must be approved by the Engineer prior to plant installation.

**(9) Water.** Water shall conform to the requirements of Item 168.2.

**(10) Supports.** plant supports shall be of the type shown on the Plans.

**(11) Flagging Tape.** Flagging tape shall be highly reflective, visible at night, and approved by the Engineer.

**(12) Tree Wrapping.** Tree wrapping shall be of the type shown on the Plans.

**(13) Pesticides including Herbicides.** Pesticides including herbicides shall be of the types that are commercially available and shown on the Plans.

**(14) Antitranspirants.** Antitranspirants, intended to prevent evaporation, shall be of the types that are commercially available and approved by the Engineer.

#### **192.4. CONSTRUCTION METHODS.**

**(1) General.** The limits, for the purpose of site preparation, mowing, installation, cleanup and establishment operations, as required under this Item, will include all area(s) shown on the Plans. All planting operations and associated work shall be confined to these areas and such other areas of the right-of-way that may be required to gain access to the site(s) specified herein. Insofar as possible, the Contractor shall vary access routes across the right-of-way to prevent any damage to slopes and existing vegetation. The Contractor shall be responsible for the repair and replacement of damaged slopes and vegetation which, in the opinion of the Engineer, could have been avoided.

**(2) Site Amenities and Protection.** During the execution of the work, utmost care shall be exercised to prevent damage to any utilities, structures, right-of-way or other site amenities.

The Contractor shall not repair or service any equipment or perform any operations on the right-of-way which may mar the landscape by rendering the soil sterile, damage existing vegetation or which may have an adverse effect on the proposed use of the land. The Contractor shall be responsible for maintaining the work site in a neat appearance and safe condition at all times.

**(3) Inspection and Certification Prior to Delivery.** All plants inspected by the Engineer at the nursery and at the original native habitat of the collected stock shall be tagged with serialized self-locking tags if required by the Engineer. plants delivered to the site without these tags or with broken tags may be sufficient reason for rejection. Tags shall be furnished by the Contractor.

The contractor shall provide certification that all plants conform to the requirements of Subarticle 192.3.(2).

**(4) Delivery and Storage.** The Engineer shall be notified of a proposed plant material delivery time at least 48 hours prior to its arrival at the project. Each plant material shipment shall be accompanied by an invoice showing the number, size and name (common and botanical) of each of the kinds of plant material. All plants shall be individually tagged with nursery name tags designating the genus, species and variety of the plant.

The Engineer will make an inspection of the plant stock upon delivery to ensure that the plants comply with these specifications. Any plants rejected shall be immediately removed and replaced. Unless plants are planted in a timely manner as specified herein, they shall be properly "heeled in" or stored.

plants shall be properly maintained during delivery, handling, storage and planting. The Engineer may inspect any phase of work and may reject any plant material improperly maintained.

**(5) Staking of planting Locations.** All locations of trees, shrubs and beds shall be staked in the field by the Contractor. All locations will be approved by the Engineer prior to any excavation of plant pits or bed preparation. Stakes shall be placed and coded to denote the type of plant material.

**(6) Excavation of planting Pits.**

**(a) General.** The Contractor shall not excavate plant pits more than 24 hours in advance of planting operations. Any plant pits left unattended for any length of time, which may present a hazard, shall be covered and/or clearly flagged as approved by the Engineer. The walls and bottoms of all plant pits shall be scarified immediately prior to the placement of plants.

**(b) Pit Sizes.** planting pits may be dug by hand or by mechanical means and shall be circular or square (according to the shape of the root ball) with vertical sides, unless otherwise shown on the Plans. planting pit sizes shall be as follows, unless otherwise shown on the Plans:

**(i)** A minimum horizontal dimension of 12 inches between the root ball and the sides of the planting pit for the following plant specifications.

\*Containers of 15 gallon size or larger

\*Boxes of 14 inch size or larger.

\*Balled and burlapped or bag grown plants with a root ball diameter larger than 14 inches.

**(ii)** A minimum horizontal dimension of two (2) times the diameter of the root ball for the following plant specifications.

\*Containers of less than 15 gallon size.

\*Balled and burlapped or bag grown plants with a root ball diameter of 14 inches or less.

- (iii) A minimum diameter for bare root plants to permit the roots to spread without crowding or curving around the walls of the pit.
- (iv) planting pits shall be excavated to a depth of at least four (4) inches but not more than eight inches greater than the depth of the root ball of balled and burlapped, containerized, container grown or bag grown plants; or the depth of the root system of bare root plants. Pits dug to excess depths shall be backfilled and compacted to bring the pits to the specified depth. The depth of pits on slopes will be measured at the lower side.
- (v) When performing mechanical transplanting the receiving plant pit shall be excavated with the same type of equipment used to remove the plant material as approved by the Engineer.

(7) **planting Season.** All planting shall be performed as shown in Table 2 or as approved by the Engineer.

**TABLE 2  
PLANTING SEASONS**

STOCK	PLANTING DATES
Containerized or Container Grown	None Specified
Balled and burlapped	November 15 to March 15
Bare Root	January 15 to March 15
Bag Grown	September 15 to April 15
Collected	As shown on the Plans or as approved by the Engineer

(8) **planting and Backfilling.** In general, the top of the root ball shall stand, after settlement of the backfill, approximately level with the finish grade. When shown on the Plans, fertilizer of the type and quantity specified shall be added to the backfill material prior to backfilling. Unless otherwise shown on the Plans or approved by the Engineer, planting and backfilling shall be as follows:

- (a) **plant Basin.** A basin, 8 to 10 inches deep, shall be formed by constructing a neat levee around the planting pit. The inside measurement of the basin shall not be less than the minimum specified diameter of the planting pit, unless otherwise shown on the Plans. On slopes, the backfill on the lower side shall be graded in such a manner that an adequate basin will be provided.

As shown on the Plans, either material excavated from the planting pit (excluding any rocks) or backfill, as specified in Subarticle 192.3 (7), may be used to form a basin around the plant. Excess excavated material may be scattered thinly and leveled off provided it is of such consistency and character that it can be readily scattered in an acceptable manner. If scattering of the material may interfere with drainage or mowing, all such material shall be removed and disposed of as approved by the Engineer.

- (b) **Bare Root plants.** After the backfill in the bottom of the planting pit has been firmed and the plant placed in the proper position, as shown on the Plans, loose friable backfill shall be worked about the roots and thoroughly settled with water as the backfill is made. Care shall be taken to avoid bruising or breaking the roots. No sticks, sod, clods or other material which may form large air pockets in the soil or backfill shall be included in the backfill.

- (c) **Balled and Burlapped plants.** plants of this type shall not be handled by the stems or in such manner that the soil of the ball may be loosened. The burlap shall not be removed from the ball. After the backfill in the bottom of the pit has been firmed and the plant placed in the proper position as shown on the Plans, loose friable backfill shall be worked about the ball in twelve-inch layers until the pit is two-thirds (2/3) full. The burlap shall then be opened on top of the root ball to expose the top one-third of the root ball. The pit shall be filled with water and the backfilling completed, working the backfill and water well to prevent any air pockets.

For ball supporting devices such as wire baskets, the basket shall not be removed. The plant shall be placed in the prepared planting pit in the proper position and backfill shall be placed around the ball until the pit is about one-third (1/3) full. The basket shall be carefully removed to just above the backfill, leaving the bottom portion intact. Backfilling shall be completed as shown above.

- (d) **Containerized or Container Grown plants.** At the time of planting the root ball shall be carefully removed from the container to prevent damage to the plant and root ball. Container plants shall be placed and backfilled in the same manner as balled and burlapped plants.
- (e) **Bag Grown plants.** Prior to planting, the fabric bag shall be removed by using a knife to cut the side of the bag from top to bottom in three (3) or four (4) places of equal distance around the root ball. The bag shall be carefully peeled down and roots that do not easily peel away from the bag shall be pruned. The plastic bottom shall then be pulled from under the root ball. Bag grown plants shall be placed and backfilled in the same manner as balled and burlapped plants.

**(9) Mechanical Transplanting.**

- (a) **Equipment.** Machinery shall be maintained in good operating condition. All blades shall be true to their designed spade and free of bends which could interfere with its operation. The tree spade shall be mounted on a suitable, stable machine capable of supporting the weight of all excavated materials and heavy enough to force all blades into the soil to the proper depth.
- (b) **Transplanting Methods.** Mechanical transplanting of trees shall be in accordance with the equipment manufacturer's recommendations.

Root balls, which disintegrate, or plants which cannot be secured within their root balls will be rejected. This shall include plants with excessive taproots, which cannot be thoroughly cut with the blades of the transplanting machine.

Roots, which protrude beyond the limits of the transplant machine blades, shall be neatly cut with an instrument specifically designed for this procedure before transplanting plants to their final planting location. The Contractor shall secure tops of plants to minimize drying during transplanting and to minimize structural damage due to wind, passing vehicles, overhead structures or other circumstances.

- (c) **planting and Backfilling.** After the backfill in the bottom of the planting pit has been firmed and the plant placed in the proper position, as shown on the Plans, sand shall be worked about the roots and thoroughly settled with water as the backfill is made. Care shall be taken to avoid bruising or breaking the roots. No sticks, sod, clods or other material which may form large air pickets in the soil or backfill shall be included in the backfill.

**(10) Vegetative Watering.** During the planting operations, the Contractor shall keep the ground and backfill material moist to at least 12 inches around the root ball. The Contractor shall be required to meet the minimum watering requirements shown for all circumstances by a method approved by the Engineer.



When an irrigation system is shown on the Plans, the Contractor shall coordinate his work to insure that the irrigation system is operational as the plants are installed.

**(11) Antitranspirants.** When shown on the Plans, the Contractor shall apply antitranspirants in accordance with the manufacturer's recommendations and as approved by the Engineer.

**(12) Pruning.** plants shall not be pruned immediately before delivery to the project site, unless otherwise shown on the Plans or as approved by the Engineer. Common nursery pruning practices are acceptable. Any necessary pruning shall be done at the time of planting as approved by the Engineer and shall be appropriate to the various types of plants and the special requirements of each.

From 20% to 40% of all foliage of mechanically transplanted plants shall be removed by pruning interior branching, entangled limbs and small branches. Structural branching shall not be removed prior to planting. Branch tips shall not be removed to attain the above percentage.

Balled and burlapped deciduous plants shall be pruned to ultimately reduce foliage by approximately one-third of that existing prior to digging and shall be performed in such a manner as to retain the natural shape of the plant. Containerized, container grown and bag grown plants shall not be pruned for shape or foliage reduction. All plants shall be pruned as necessary to remove damaged twigs, branches and roots and as much additional as required by the Engineer. All pruning shall be accomplished with tools specifically designed for this purpose. All pruned material shall become the property of the Contractor and shall be disposed of in a manner approved by the Engineer.

**(13) plant Supports.** plant supports such as staking, guying, and bracing shall be as shown on the Plans or as required by the Engineer.

Trees shall be staked, guyed or braced for support during the same day as planted. Unless otherwise shown on the Plans, plants shall stand approximately vertical after staking, guying, or bracing. The Contractor shall be responsible for material remaining approximately vertical and straight for all given conditions and shall repair plant supports as often as required until final acceptance of the project.

**(14) Safety Flagging Tape.** Staking, guying, or bracing which present a hazard shall be clearly flagged as shown on the Plans or directed by the Engineer.

**(15) Tree Trunk Protection.** All trees shown on the Plans to be wrapped shall be neatly and securely wrapped with a commercial tree wrapping material approved by the Engineer. The wrapping shall begin at the base of the trunk and extend upward with a 50% overlap to the second whorl of branches. Wrapping material shall be secured at the top of the wrap with soft twine or weatherproof tape, or any suitable method as approved by the Engineer. Wire, metal bands or other material for this purpose that may cause injury or damage to plants shall not be used.

**(16) Mulching.** All plants shall receive mulching to a depth of two (2) to three (3) inches within the water basin or across the beds unless otherwise shown on the Plans. A small amount of backfill shall be sprinkled on top of the organic mulch to hold it in place if directed by the Engineer.

**(17) plant Material Removal and Replacement.** A plant shall be removed and replaced as directed by the Engineer at any time during execution of the work under this Item including the Establishment Period if, in the judgment of the Engineer, a plant is found to be in any of the following conditions:

- (a) Dead;
- (b) Dying;
- (c) Wilted for forty-eight hours or more; or

- (d) Any other signs of detrimental consequence.

All replacement plants shall be the same species, size and quality as originally specified. The Contractor shall make every effort to ensure that the replacement material receives any additional care and maintenance required for the replacement plants to become well established. The Engineer will require replacement of plant material until satisfied that all of the plants on the project are in a healthy, vigorous condition. This is subject to the exception noted in Section 192.4 (18).(i).

**(18) Establishment Period.** The Contractor shall perform all of the activities listed below during placement of all of the plants. After completion of the project installation, as shown on the Plans and as approved by the Engineer, the Contractor shall perform the following activities for a period of 90 calendar days:

- (a) **Mulching, plant Basin and Bed Maintenance.** The Contractor shall reshape or reform the existing plant basins and beds as necessary to conform to the Plans and as approved by the Engineer. As a part of the plant basin and bed maintenance, weeds and grass shall be removed prior to the application of mulch. Unless otherwise shown on the Plans, the mulch shall be maintained to a minimum depth of two (2) to three (3) inches.

The Contractor shall maintain the plant basins, beds and site fixtures generally free of weeds and grass or other materials detrimental to the growth of the plants or appearance of the site. Herbicides (glyphosate or others as approved by the Engineer), if used by the Contractor, shall be limited to the plant basin and perimeter thereof or around site fixtures as approved by the Engineer. Extreme care shall be taken to insure that the herbicide does not come into contact with any part of the desirable plants. Under no circumstances shall the herbicide be used on days where the wind could cause drift hazard to desirable plants. The Contractor shall also follow the manufacturer's instruction for the use and application of any herbicide.

- (b) **plant Irrigation.** The Contractor shall be required to meet the minimum watering requirements for all circumstances by a method approved by the Engineer as stated under Subarticle 192.4 (10) and/or as shown on the Plans.

Watering equipment other than an existing irrigation system shall have adequate and accurate measuring devices as approved by the Engineer.

- (c) **Mowing and Trimming.** The Contractor shall mow and trim the areas shown on the Plans. The work shall be performed at the frequency as shown on the Plans. The initial cycle shall begin when directed by the Engineer. Mowing heights shall be as shown on the Plans or approved by the Engineer.

The Contractor shall use power equipment as approved by the Engineer. Nylon cord trimmers shall not be used inside the plant basins or beds around plant material.

- (d) **Restaking, Reguying, and Rebracing of plants.** The Contractor in accordance with the details shown on the Plans shall replace any damaged or destroyed stakes, guys or braces. This shall include any adjustment to the staking or guying to prevent girdling of plants.

- (e) **Pruning.** When directed by the Engineer or shown on the Plans, plants shall be pruned by the Contractor to the satisfaction of the Engineer. Dead or damaged limbs on trees and shrubs, including suckergrowth on trunks of trees, shall be removed. All pruning shall be accomplished with tools specifically designed for this purpose. All pruned material shall become the property of the Contractor and be disposed of in a manner approved by the Engineer.

- (f) **Insect, Disease and Animal Control.** The Contractor shall inspect plants and the planted areas once each two (2) weeks as approved by the Engineer. The Contractor shall be required to notify the Engineer in writing of problems with insects, diseases, or animals as such problems arise. The Contractor also shall recommend corrective measure in writing.

The Contractor shall treat the plants and/or the planted areas in accordance with accepted methods of horticultural practices and the Texas Department of Agriculture guidelines regarding the use of pesticides. The Contractor also shall follow the manufacturer's instructions for the use and application of any pesticides.

- (g) **Litter Pick-Up.** Unless otherwise shown on the Plans, the Contractor shall collect and dispose of all litter within the landscaped areas. The work shall be performed at the frequency shown on the Plans or as directed by the Engineer. All litter shall become the property of the Contractor and shall be disposed of in a manner acceptable to the Engineer.
- (h) **Fertilization.** During the 90-day establishment period, the Contractor shall furnish and apply fertilizer only to those plants as shown on the Plans. The analysis, times, and rates of application shall be as shown on the Plans. The type of fertilizer and method of application shall be as shown on the Plans or as approved by the Engineer.
- (i) **plant Removal.** In the judgment of the Engineer, any plant which is dead or dying for reasons beyond the control of the Contractor and is not to be replaced shall be removed by the Contractor to the satisfaction of the Engineer. This shall include repair of the plant pit and surrounding area.

### **192.5 ACCEPTABILITY OF PLANTS AND OTHER MATERIALS, INSTALLATION AND ESTABLISHMENT.**

The Engineer will make an inspection of the project to determine its acceptability as shown on the Plans at or near the end of the 90 day establishment period. At this time, an inventory of missing, dead or rejected plant material will be made and the Contractor notified as to which plants on the inventory shall be replanted within the time limits for replacement as specified by the Engineer. plant material for the replacement planting shall meet all the requirements specified for the original plant material and shall be planted in accordance with Item 192.4.

### **192.6 MEASUREMENT.**

This Item will be measured as each plant of the type and size as specified complete and in place.

### **192.7 PAYMENT.**

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for each plant of the type and size specified complete and in place, as follows:

- (1) When the initial planting and any required replanting is satisfactorily accomplished, 55% of the unit price bid for each plant will be paid;
- (2) When the first 30 days of the 90-day establishment period is satisfactorily accomplished, 15% (for a total of 70%) of the unit price bid for each plant will be paid.
- (3) When the second 30 days of the 90-day establishment period is satisfactorily accomplished, another 15% (for a total of 85%) the unit price bid for each plant will be paid; and

(4) When the final 30 days of the 90-day establishment period is satisfactorily accomplished and after final inspection and acceptance, the final 15% (for a total of 100%) of the unit price bid for each plant will be paid.

This price shall be full compensation for furnishing all labor, pruning, mowing, insect control, disease control, animal control, watering, fertilizing, herbiciding, litter pick up, maintenance, tools, equipment, materials, supplies, and incidentals necessary to complete the work.

When an "Irrigation System" is specified, it will be paid for in accordance with Item 170, "Irrigation System".