

TECHNICAL SPECIFICATIONS
FOR
TREES

1. Description of Work

The types of work required include the following:

- (a) Furnishing trees.
- (b) Preparation of planting pits and beds including excavation, backfilling, and disposal of surplus and unsuitable excavated material.
- (c) Planting of trees including fertilizing, mulching, trimming, guying, and wrapping.
- (d) Maintenance of trees.

2. General

- (a) Provide the quantity, size, and species of trees shown and scheduled for landscape work.

- (b) Measurements

Measure trees with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6" above ground for trees up to 4" caliper size, and 12" above ground for larger sizes. Measure main body of tree or shrub for height and spread dimensions, do not measure from branch or root tip-to-tip.

- (c) Inspection

The Engineer may inspect trees either at the place of growth or at the site before planting for compliance with the requirements for name, variety, size, and quality. The Engineer retains the right to further inspect trees and shrubs for the size and condition of balls and root systems, insects, injuries, and latent defect, and to reject unsatisfactory or defective material at any time during the progress of the work. Remove rejected trees or shrubs immediately from the project site.

- (d) Delivery of Trees

Provide freshly dug trees and shrubs. Do not use trees or shrubs which have been in storage or heeled-in. Do not prune prior to delivery, except as approved by the Engineer. Provide adequate protection of root system and balls from drying winds and sun. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlap stock during delivery.

3. Trees and Shrub Material

(a) Provide nursery grown trees and shrubs.

(b) Nursery Grown Stock

Provide trees and shrubs grown in a recognized nursery in accordance with good horticultural practice, with healthy root systems developed by transplanting or root pruning. Provide only healthy, vigorous stock grown for at least 2 years under climatic conditions similar to conditions in the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.

(c) Name and Variety

Provide trees and shrubs true to name and variety established by the American Joint Committee on Horticultural Nomenclature "Standardized Plant Names", Second Edition, 1942.

(d) Size

Provide trees and shrubs of the size shown or specified in the Planting List and in accordance with the dimensional relationship requirements of USAS Z60.1 for the kind and type of trees and shrubs required. Trees and shrubs of larger size than specified may be used if acceptable to the Engineer, in which case, increase size of roots and balls proportionately.

- 1) Provide the quantity of trees and shrubs required to complete the work shown on the drawings.
- 2) Label each tree and shrub with a securely attached waterproof tag bearing legible designation of botanical and common name.
- 3) Where formal arrangements or consecutive order of trees or shrubs are shown, select stock for uniform height and spread, and label with number to assure symmetry in planting.

(e) Quality

Provide trees and shrubs complying with the recommendations and requirements of USAS Z60.1 "Standard for Nursery Stock" and as further specified.

(f) Deciduous Trees

- 1) **Size:** Provide trees of the height and caliper listed or shown.
- 2) Where shade trees are required, provide single stem trees with straight trunk and intact leader, free of branches to a point about 60% of their height, as recommended by USAS Z60.1 for the size and kind of trees required.
- 3) Where small trees of upright or spreading type are required, provide trees with single stem, branched or pruned naturally according to species and type, and the relationship of caliper and branching recommended by USAS Z60.1, unless otherwise shown.

(g) Deciduous Shrubs

- 1) Form: Provide deciduous shrubs with not less than the minimum number of canes required by USAS Z60.1 for the type and height of shrub required.
- 2) Size: Dimensions shown or listed indicate required height.
- 3) Provide bare-rooted deciduous shrubs.
- 4) Container grown deciduous shrubs will be acceptable in lieu of bare rooted deciduous shrubs subject to specified limitations for container grown stock.

(h) Coniferous and Broad Leaf Evergreens

- 1) Size: Provide evergreens of the sizes shown. Dimensions indicate minimum spread for spreading and semi-spreading type evergreens and height for all other types, such as globe, dwarf, cone, pyramidal, broad up-right, and columnar. Provide evergreens with well-balanced form complying with requirements for other size relationships to the primary dimension shown.
- 2) Provide balled and burlap evergreens.
- 3) Container grown evergreens will be acceptable subject to the specified limitations for container grown stock.

(i) Requirements for B & B Stock

- 1) General: Where shown or specified to be balled burlap, provide trees and shrubs dug with firm, natural ball of earth in which they are grown.
- 2) Provide ball size not less than size shown.
- 3) Provide ball size of not less than the diameter and depth recommended by USAS Z60.1 for they type and size of tree or shrub required. Increase ball size or modify ratio of depth to diameter as required to encompass the fibrous and feeding root system necessary for full recovery of trees or shrubs subject to unusual or a typical conditions of growth, soil conditions or horticultural practice.
- 4) Wrap and tie earth ball as recommended by USAS Z60.1 for the size of balls required. Drum-lace balls with a diameter of 30" or greater.

(j) Requirements for Container Grown Stock

1) General

Where specified as acceptable, provide healthy, vigorous, well-rooted trees established in the container in which they are sold. Provide balled and burlap stock, when required trees exceed maximum size recommended by USAS Z60.1 for container grown stock.

Established container stock is defined as a tree or shrub transplanted into a container and grown in the container for a length of time sufficient to develop new fibrous roots so that root mass will retain its shape and hold together when removed from the container.

2) Containers

Use rigid containers which will hold ball shape and protect root mass during shipping. Provide trees and shrubs established in containers of not less than the minimum sizes recommended by USAS Z60.1 for the kind, type, and size of trees and shrubs required.

3) Miscellaneous Materials

- a. Mulch: Peat moss complying with the requirements of FS Q-P-166 for fibrous type and approximately neutral. Do not use finely divided or granular type. Contractor may submit other mulch examples for Engineer's approval.
- b. Wrapping: Tree wrap tape not less than 4" wide, designed to prevent borer damage, winter freezing, and sun scald.
- c. Stakes and Guys: Provide stakes of sound new hardwood, free of knot holes and other defects. Provide wire ties and guys of 2-strand, twisted, pliable galvanized iron wire not lighter than 12 ga. Provide new 2-ply garden hose not less than ½" in diameter, cut to required lengths to protect tree trunks from damage by wires or guys.

4. Planting of Trees

(a) Timing

Plant trees and shrubs during normal seasons for such work in the location of the project. Plant bare rooted and flowering trees and shrubs only during the spring planting season, except as may be otherwise acceptable to the Engineer.

Plant frost-tender trees and shrubs only after danger of frost is past or sufficiently before frost to allow for establishment before first frost. Do not plant in frozen ground.

(b) Coordination with Lawns

- 1) Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the engineer. If planting of trees and shrubs occur after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.
- 2) Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist as follows:
 - a. Set balled stock on ground and cover ball with soil, peat moss, or other acceptable material.
 - b. Do not remove container grown stock from containers until planting time.

(c) Excavation

- 1) Excavate pits, beds, and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.
- 2) For balled and burlap trees, make excavations at least twice as wide as the ball diameter and equal to the ball depth, plus the following allowance for setting of ball on a layer of compacted backfill:
Allow for 3" setting layer of planting soil mixture.
- 3) For container grown stock, excavate as specified for balled and burlap stock, except container width and depth shall govern.
- 4) Dispose of subsoil removed from landscape excavations. Do not mix with planting soil or use as backfill.

(d) Setting and Backfilling

- 1) Set balled and burlap stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides and tops of balls but do not remove from under balls. Remove platforms, if any, before setting. Do not use stock if ball is cracked or broken before or during planting operation. When set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3-full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.
- 2) Set container grown stock as specified for balled and burlap stock, except cut cans on 2 sides with an approved can cutter; remove bottoms of wood boxes before setting. Carefully remove cans and sides of wooden boxes after partial backfilling so as not to damage root balls. Do not cut or remove containers with spade.
- 3) Move and set large specimen trees with crane or other approved tree moving equipment.
- 4) Dish top of backfill to allow for mulching.
- 5) For spring planting, provide additional backfill berm around edge of excavations to form shallow saucer to collect water.
- 6) Mulch pits, trenches and planting areas. Provide not less than the following thickness of mulch and work into top of backfill and finish level with adjacent grades.
Provide 2" thickness of mulch.
- 7) Prune, thin out and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by the engineer, do not cut tree leaders, and remove only injured or dead branches from flowering trees, if any. Prune shrubs to retain natural character and accomplish their use in the landscape design. Required shrub sizes are the size after pruning.

- 8) Remove and replace excessively pruned or misformed stock resulting from improper pruning.
- 9) Paint cuts over ½" in size with standard tree paint or compound, covering all exposed, living tissue. Use paint which is waterproof, antiseptic, adhesive, elastic and free of kerosene, coal tar, creosote, and other substances harmful to plants. Do not use shellac.
- 10) Stake trees as shown immediately after planting.
- 11) Stake trees of less than 4" caliper. Use stakes of the length required to penetrate at least 18" below bottom of backfilled excavation and to extend to at least 6' above grade. Set stakes vertical and space to avoid penetrating balls or root masses. Support trees with 2 strands of wire encased in hose sections at contact points with tree trunk and twist securely. Provide not less than one stake for trees 10' to 12' high and 2" or less in caliper, except not less than 2 shorter stakes may be used for low-branched trees. Used not less than 2 stakes for trees over 12' high and less than 4" caliper size. Space stakes equally around trees.
- 12) Wrap tree trunks of 2" caliper and larger. Start at ground and cover trunk to height of first branches and securely attach. Inspect tree trunks for injury, improper pruning and insect infestation and take corrective measures required before wrapping.

5. Maintenance

- (a) Maintain trees and shrubs after planting for one full growing season.
- (b) During the maintenance period, prune, water, cultivate and weed, as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades of vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

6. Method of Payment

This item will be paid for at the Contract Unit Price per each as shown on the Bid Schedule which price shall be full compensation for furnishing, staking, wrapping, and planting trees as described in this Specification, including prepared backfill.