

SECTION 32 93 00 – PLANTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. General: Provide and install all trees and shrubs as shown on drawings. This work includes preparation of subsoil, planting, protection and maintenance of the plant materials.

1.2 RELATED SECTIONS

- A. Section 31 20 00 - Earthwork
- B. Section 32 92 00 - Lawns and Grasses

1.3 QUALITY ASSURANCE

- A. Standards: ANSI - Z60.1 "American Standards for Nursery Stock".
- B. Subcontract landscape work to a single firm specializing in landscape work.
- C. Do not make substitutions. If specialized landscape materials are not obtainable, submit proof or non-availability to Engineer, together with proposal for use of equivalent material.

Analysis and Standards: Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

Topsoil: Before delivery of topsoil, furnish Engineer with written statement giving location of properties from which topsoil is to be obtained, names and addresses of owners, depth to be stripped, and crops grown during past 2 years.

- D. Trees, Shrubs, and Plants: Provide trees and shrubs of quantity, size, genus, species, and variety shown and scheduled for landscape work.
- E. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Plant and Material Certifications:
 - 1. Manufacturer's or vendor's certified analysis for soil amendments and fertilizer materials.

- 2. Label data substantiating that plants, trees, shrubs and planting materials comply with specified requirements.
- C. Planting Schedule: Indicate dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.
- D. Maintenance Instructions: Typewritten instructions recommending procedures to be established by Owner for maintenance of landscape work for one full year. Submit prior to expiration of required maintenance period(s).

1.5 DELIVERY, STORAGE AND HANDLING

- A. Trees and Shrubs: Provide freshly dug trees and shrubs or those in containers for at least one season. Provide protective covering during delivery, cover to protect from wind exposure during delivery. Do not drop balled and burlapped stock during delivery.
- B. 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 by covering with mulch, burlap or other acceptable means of retaining moisture.
- C. Do not remove container-grown stock from containers until planting time.

1.6 JOB CONDITIONS

- A. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
- B. Do not install plants when ambient temperatures go below 35 degrees F. or above 90 degrees F.
- C. Do not install plants when wind velocity exceeds 30 mph.

1.7 SEQUENCING AND SCHEDULING

- A. Planting Time: Proceed with, and complete landscape work as rapidly as portions of site become available.
- B. Plant or install materials during normal planting seasons for each type of plant material required.
- C. Correlate planting with specified maintenance periods to provide maintenance from date of substantial completion.

1.8 PROJECT WARRANTY

- A. Warranty trees and shrubs, for a period of one year after date of substantial completion, against defects including death and unsatisfactory growth, except for

defects resulting from neglect by Owner, abuse or damage by others, or unusually phenomena or incidents which are beyond Landscape Installer's control.

- B. Remove and replace trees, shrubs, or other plants found to be dead or in unhealthy condition during warranty period. Make replacements during growth season following end of warranty period.
- C. A warranty inspection will be conducted at end of extended warranty period, if any, to determine acceptance or rejection.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. General: Use topsoil as provided in Section 32 92 00 - Lawns and Grasses.

2.2 SOIL AMENDMENTS

- A. Lime: Natural dolomitic limestone containing not less than 85 percent of total carbonates with a minimum of 30 percent magnesium carbonates, ground so that not less than 90 percent passes a 10-mesh sieve and not less than 50 percent passes a 100-mesh sieve.
- B. Aluminum Sulfate: Commercial grade.
- C. Peat Humus: Finely divided peat, so completely decomposed and free of fibers that its biological identity is lost. Provide in granular form, free of hard lumps and with pH range suitable for intended use.
- D. Bonemeal: Commercial, raw, finely ground; 4 percent nitrogen and 20 percent phosphoric acid.
- E. Superphosphate: Soluble mixture of treated minerals; 20 percent available phosphoric acid.
- F. Sand: Clean, washed sand, free of toxic materials.
- G. Perlite: Conforming to National Bureau of Standards PS 23.
- H. Vermiculite: Horticulture grade, free of toxic substances.
- I. Sawdust: Rotted sawdust, free of chips, stones, sticks, soil, or toxic substances and with 7.5 pounds of nitrogen uniformly mixed into each cubic yard of sawdust.
- J. Manure: Well rotted, unleached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust or other bedding materials and containing no chemicals or ingredients harmful to plants.
- K. Mulch: Organic mulch free from deleterious materials and suitable for top dressing of trees or shrubs, and consisting of ground or shredded bark.

- L. Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:
 - 1. For trees and shrubs, provide fertilizer with not less than 5 percent total nitrogen, 10 percent available phosphoric acid and 5 percent soluble potash.
- M. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of plants.

2.3 PLANT MATERIALS

- A. Quality: Provide trees, shrubs, and other plants of size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock".
- B. Deciduous Trees: Provide trees of height and caliper scheduled or shown and with branching configuration recommended by ANSI Z60.1 for type and species required. Provide single stem trees except where special forms are shown or listed.
 - 1. Provide balled and burlapped (B&B) deciduous trees.
 - 2. Container grown deciduous trees will be acceptable in lieu of balled and burlapped deciduous trees subject to specified limitations of ANSI Z60.1 for container stock.
- C. Deciduous Shrubs: Provide shrubs of the height shown or listed and with not less than minimum number of canes required by ANSI Z60.1 for type and height of shrub required.
 - 1. Container grown deciduous shrubs will be acceptable in lieu of balled and burlapped deciduous shrubs subject to specified limitations for container grown stock.
- D. Coniferous and Broadleafed Evergreens: Provide evergreens of sizes shown or listed. Dimensions indicate minimum height. Provide normal quality evergreens with well balanced form.
 - 1. Provide balled and burlapped (B&B) evergreens.
 - 2. Container grown evergreens will be acceptable, subject to specified limitations for container grown stock.
- E. Miscellaneous Landscape Materials:
 - 1. Anti-Erosion Mulch: Provide clean, seed-free salt hay or threshed straw of wheat, rye, oats, or barley.
 - 2. Wrapping: Tree-wrap tape not less than 4 inches wide, designed to prevent borer damage and winter freezing.
 - 3. Stakes and Guys: Provide stakes and deadmen of sound new hardwood, treated softwood, or redwood, 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. with zinc-coated turnbuckles. Provide not less than 1/2 inch diameter rubber or plastic

hose, cut to required lengths and of uniform color, material, and size to protect tree trunks from damage by wires.

PART 3 - EXECUTION

3.1 PREPARATION OF PLANTING SOIL

- A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.
- B. Mix specified soil amendments and fertilizers with topsoil at rates specified. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.
- C. For planting beds and lawns, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.
 - 1. Mix lime with dry soil prior to mixing of fertilizer.
 - 2. Prevent lime from contacting roots or acid-loving plants.
 - 3. Apply phosphoric acid fertilizer (other than that constituting a portion of complete fertilizers) directly to subgrade before applying planting soil and tilling.

3.2 PREPARATION OF PLANTING BEDS

- A. Loosen subgrade of planting bed areas to a minimum depth of 6 inches using a culti-mulcher or similar equipment. Remove stones measuring over 1-1/2 inches in any dimension. Remove sticks, stones, rubbish, and other extraneous matter.
- B. Spread planting soil mixture to minimum depth required to meet lines, grades, and elevation shown, after light rolling and natural settlement. Place approximately 1/2 of total amount of planting soil required. Work into top of loosened subgrade to create a transition layer, then place remainder of the planting soil.

3.3 EXCAVATION FOR TREES AND SHRUBS

- A. Excavate pits 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.
 - 1. For balled and burlapped (B&B trees and shrubs), make excavations at least half again as wide as the ball diameter and equal to the ball depth, plus following allowance for setting of ball on a layer of compacted backfill: Allow for 3 inch thick setting layer of planting soil mixture.
 - 2. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.
- B. Dispose of subsoil removed from planting excavations. Do not mix with planting soil or use as backfill.

- C. Fill excavations for trees and shrubs with water and allow water to percolate out prior to planting.

3.4 PLANTING TREES AND SHRUBS

- A. Set balled and burlapped (B&B) 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 of balls; retain on bottoms. 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.

- B. Set container grown stock, as specified, for balled burlapped stock, except cut cans on 2 sides with an approved can cutter; remove bottoms of wooden boxes after partial backfilling so as not to damage root balls.

- C. Dish top of backfill to allow for mulching.

Mulch pits, trenches, and planted areas. Provide not less than 4" thickness of mulch, and work into top of backfill and finish level with adjacent finish grades.

- D. Prune, thin out, and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to retain required height and spread. Do not cut tree leaders. Remove only injured or dead branches from flowering trees, if any. Prune shrubs to retain natural character.

- E. Remove and replace excessively pruned or misformed stock resulting from improper pruning.

- F. Wrap tree trunks of 2 inches 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 before wrapping.

- G. Guy and stake trees immediately after planting, as indicated.

3.5 MAINTENANCE

- A. Begin maintenance immediately after pruning.

- B. Maintain trees, shrubs, and other plants until final acceptance.

- C. Maintain trees, shrubs, and other plants by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

3.6 CLEANUP AND PROTECTION

- A. During landscape work, keep pavements clean and work area in an orderly condition.

- B. Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

3.7 INSPECTION AND ACCEPTANCE

- A. When landscape work is completed, including maintenance, Engineer will, upon request, make an inspection to determine acceptability.

- 1. Landscape work may be inspected for acceptance in portions provided each portion of work offered for inspection is complete, including maintenance.

When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Engineer and found to be acceptable. Remove rejected plants and materials promptly from project site.

* END OF SECTION 32 93 00 *