

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z60.1	(1990) Nursery Stock
ANSI Z133.1	(1994) Tree Care Operations - Pruning, Trimming, Repairing, Maintaining, and Removing Trees and Cutting Brush

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136	(1995; Rev. A) Sieve Analysis of Fine and Coarse Aggregates
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COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1909	Fertilizer
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DEPARTMENT OF AGRICULTURE (DOA)

DOA SSIR	(April 1984) Soil Survey Investigation Report No. 1, Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples, Soil Conservation Service
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L.H. BAILEY HORTORIUM (LHBH)

LHBH	(1976) Hortus Third
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1.2 RELATED REQUIREMENTS

Division 2, Section 02935, "Landscape Maintenance" applies to this section for pesticide use and plant establishment requirements, with additions and modifications herein.

1.3 SUBMITTALS

Submit the following in accordance with Division 1, Section 01330, "Submittal Procedures."

1.3.1 SD-02, Manufacturer's Catalog Data

- a. Organic mulch
- b. Inert mulch
- c. Fertilizer

- d. pH Adjuster
- e. Soil Conditioner
- f. Weed control fabric

Include physical characteristics, application and installation instructions and recommendations.

1.3.2 SD-07, Schedules

- a. Nursery certifications

Indicate names of plants in accordance with the LHBH, including type, quality, and size.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery

1.4.1.1 Branched Plant Delivery

Deliver with branches tied and exposed branches covered with material which allows air circulation. Prevent damage to root balls and desiccation of leaves.

1.4.1.2 Fertilizer, pH adjuster and soil conditioner delivery

Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal laws. Instead of containers, soil conditioner may be furnished in bulk with a certificate indicating the above information.

1.4.1.3 Plant Labels

Deliver plants with durable waterproof labels in weather-resistant ink. Provide labels stating the correct plant name and size as specified in the list of required plants. Attach to plants, bundles, and containers of plants. Groups of plants may be labeled by tagging one plant. Labels shall be legible for a minimum of 60 days after delivery to the planting site.

1.4.2 Storage

1.4.2.1 Plant Storage and Protection

Store and protect plants not planted on the day of arrival at the site as follows:

- a. Shade and protect plants in outside storage areas from the wind and direct sunlight until planted.
- b. Protect balled and burlapped plants from freezing or drying out by covering the balls or roots with moist burlap, sawdust, wood chips, shredded bark, peat moss, or other approved material. Provide covering which allows air circulation.
- c. Keep plants in a moist condition until planted by watering with a fine mist spray.

- d. Do not store plant material directly on concrete or bituminous surfaces.

1.4.2.2 Fertilizer, pH Adjusters, Soil Conditioner, and Mulch Storage

Store in dry locations away from contaminants.

1.4.2.3 Topsoil

Prior to stockpiling topsoil, eradicate on site undesirable growing vegetation. Clear and grub existing vegetation three to four weeks prior to stockpiling existing topsoil.

1.4.2.4 Weed Control Fabric

Store materials on site in enclosures or under protective covering in dry location. Store under cover out of direct sunlight. Do not store materials directly on ground.

1.4.3 Handling

Do not drop or dump plants from vehicles. Avoid damaging plants being moved from nursery or storage area to planting site. Handle balled and burlapped container plants carefully to avoid damaging or breaking the earth ball or root structure. Do not handle plants by the trunk or stem. Remove damaged plants from the site.

1.5 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.5.1 Planting Dates

1.5.1.1 Deciduous Material

Deciduous material from March 1 to June 15 for spring planting and from September 15 to December 15 for fall planting.

1.5.1.2 Evergreen Material

Evergreen material from March 1 to June 15 for spring planting and from September 15 to December 15 for fall planting.

1.5.2 Restrictions

Do not plant when ground is frozen, muddy, or when air temperature exceeds 90 degrees Fahrenheit.

1.6 GUARANTEE

All plants shall be guaranteed for one year beginning on the date of inspection by the Contracting Officer to commence the plant establishment period.

PART 2 - PRODUCTS

2.1 PLANTS

2.1.1 As specified on plan.

2.1.2 Shape and Condition

Well-branched, well-formed, sound, vigorous, healthy planting stock free from disease, sunscald, windburn, abrasion, and harmful insects or insect eggs and having a healthy, normal, and undamaged root system.

2.1.2.1 Deciduous Trees and Shrubs

Symmetrically developed and of uniform habit of growth, with straight boles or stems, and free from objectionable disfigurements.

2.1.2.2 Evergreen Trees and Shrubs

Well developed symmetrical tops with typical spread of branches for each particular species or variety.

2.1.2.3 Ground Covers and Vines

Number and length of runners and clump sizes indicated, and of the proper age for the grade of plants indicated, furnished in removable containers, integral containers, or formed homogeneous soil section.

2.1.3 Plant Size

Minimum sizes measured after pruning and with branches in normal position, shall conform to measurements indicated, based on the average width or height of the plant for the species as specified in ANSI Z60.1. Plants larger in size than specified may be provided with approval of the Contracting Officer. When larger plants are provided, increase the ball of earth or spread of roots in accordance with ANSI Z60.1.

2.1.4 Root Ball Size

2.1.4.1 Balled and Burlapped (B&B) Plants

Root ball sizes and ratios shall conform to ANSI Z60.1. Ball plants with firm, natural balls of soil. Wrap B&B plants firmly with burlap or strong cloth, and tie securely. Wrappings and ties shall be biodegradable.

2.1.4.2 Container Grown Plants

Root growth shall be sufficient to hold earth intact when removed from containers. Root bound plants will not be accepted.

2.2 SOIL

2.2.1 Existing Soil

Modify to conform to requirements specified in paragraph entitled "Composition."

2.2.2 On-Site Topsoil

Surface soil stripped and stockpiled on the site, that meet requirements specified for topsoil in paragraph entitled "Composition."

2.2.3 Composition

From 8 to 10 percent organic matter as determined by the topsoil composition tests of the Organic Carbon, 6A, Chemical Analysis Method described in DOA SSIR. Maximum particle size, 3/4 inch, with maximum 3 percent retained on 1/4 inch screen. Topsoil shall be free of sticks, stones, roots, and other debris and objectionable materials. Other components shall conform to the following limits:

pH	5.5 to 7.0
Soluble Salts	600 ppm maximum
Silt	25 to 50
Clay	10 to 30
Sand	20 to 35

2.3 pH ADJUSTER

2.3.1 Sulfur

100 percent elemental

2.4 SOIL CONDITIONERS

Provide as required to meet specified requirements for topsoil. Soil conditioners shall be nontoxic to plants.

2.4.1 Composted Derivatives

Ground bark, humus free of stones, sticks, and soil stabilized with nitrogen and having the following properties:

2.4.1.1 Particle Size

Minimum percent by weight passing:

No. 4 mesh screen	95
No. 8 mesh screen	80

2.4.1.2 Nitrogen Content

Minimum percent based on dry weight:

Pine Bark	1.0
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2.5 PLANTING SOIL MIXTURES

2.5.1 Amendments in Shrub Planting Areas

Amendment material shall compose a minimum of one third by bulk of all planting beds. Amendment material is defined in paragraph ASoil Preparation@. Thoroughly mix all parts of planting soil mixture to a uniform blend.

2.5.2 Backfill material in Shrub and Tree Pits

Backfill material shall compose a minimum of one third by bulk of all shrub and tree pits. Backfill material is defined in paragraph ASoil Preparation@. Thoroughly mix all parts of planting soil mixture to a uniform blend.

2.6 FERTILIZER

2.6.1 Pre-Plant Fertilizer Mixture

Fertilizer mixtures not to exceed one percent granular dust and CID A-A-1909, as specified below.

2.6.1.1 Fertilizer "A"

Organic, granular fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

- 40 percent available nitrogen
- 40 percent available phosphorus
- 20 percent available potassium

2.7 WEED CONTROL FABRIC

2.7.1 Roll Type Polypropylene

Fabric shall be woven, needle punched and treated for protection against deterioration due to ultraviolet radiation. Fabric shall be minimum 99 percent opaque to prevent photosynthesis and seed germination from occurring, yet allowing air, water and nutrients to pass thru to the roots. Minimum weight shall be 3.5 ounces per square yard.

2.8 MULCHES TOPDRESSING

Free from noxious weeds, mold, or other deleterious materials.

2.8.1 Inert Mulch Materials

As specified on the Drawings.

2.8.2 Organic Mulch Materials

Wood chips ranging in size from 2" to 4".

2.9 EDGING MATERIAL

As specified in the Drawings.

2.10 WATER

Source of water to be approved by Contracting Officer and suitable quality for irrigation.

2.11 SOURCE QUALITY CONTROL

The Contracting Officer will inspect plant materials at the project site and approve them. Tag plant materials for size and quality.

PART 3 - EXECUTION

3.1 EXTENT OF WORK

Provide soil preparation, tree, shrub, groundcover, planting, edging, weed control fabric, installation and a mulch

topdressing of all proposed plant beds.

3.2 PREPARATION

3.2.1 Layout

Stake out approved plant material locations and planter bed outlines on the project site before digging plant pits or beds. The Contracting Officer reserves the right to adjust plant material locations to meet field conditions. Do not plant closer than 36 inches to a building wall, fence or wall edge and other similar structures.

3.2.2 Soil Preparation

Remove existing topsoil to a minimum depth of 2 inches and stockpile. After areas have been brought to finish subgrade elevation, thoroughly till to a minimum depth of 6 inches by scarifying, disking, harrowing or other method approved by the Contracting Officer. Remove debris and stones larger than one inch in any dimension remaining on surface after tillage. Spread stockpiled topsoil evenly to provide positive drainage. Do not spread topsoil when frozen. Thoroughly mix subgrade and topsoil to a depth of 8 inches by disking, harrowing, tilling or other method approved by Contracting Officer. Correct irregularities in finished surfaces to eliminate depressions. Protect finished prepared soil areas from damage by vehicular or pedestrian traffic.

3.2.2.1 pH Adjuster Application Rates

Apply pH adjuster at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

- a. Amending Rate:

Sulfur 20 pounds per 1,000 square feet.

- b. Backfill Rate: Sulfur 2 lbs./cy.

3.2.2.2 Soil Conditioner Application Rates

Apply soil conditioners at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

- a. Amendment Rate:

9.25 cubic yards per 1,000 square feet.

- b. Backfill Rate: 1 cu ft./cy.

3.2.2.3 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

- a. Amendment Rate:

2.5 pounds per 1,000 square feet.

3.2.3 Plant Bed Preparation

Verify location of underground utilities prior to excavation. Protect existing adjacent turf before excavations are made. Where planting beds occur in existing turf areas, remove turf to a depth that will ensure removal of entire root system. Measure depth of plant pits from finished grade. Depth of plant pit excavation shall be as indicated and provide proper relation between top of root ball and finished grade. Install plant material as specified in paragraph entitled "Plant Installation."

3.2.3.1 Ball Diameter Greater Than 12 Inches

Balled, potted or container plants, with ball or container greater than 12 inches in diameter, excavate pits at least 24 inches larger in diameter and 6 inches deeper than the size of ball or container.

3.2.3.2 Trees

Excavate pits at least twice as large in diameter and 6 inches deeper than the size of ball or spread of the root system.

3.2.4 Earth Mounded Watering Basin

Form with topsoil around each plant by placing a mound of topsoil around the edge of each plant pit. Watering basins shall be 6 inches deep for trees and 4 inches deep for shrubs. Construct watering basin in a 4 1/2 foot diameter circle around specimen (not planted in a close group) trees and shrubs.

3.3 PLANT INSTALLATION

3.3.1 Handling and Setting

Move balled and burlapped container-grown plant materials only by supporting the root ball or container. Set plants on hand compacted layer of prepared backfill soil mixture 6 inches thick and hold plumb in the center of the pit until soil has been tamped firmly around root ball. Set plant materials, in relation to surrounding finish grade, depth at which they were grown in the nursery, collecting field or container. Replace balled and burlapped and container plant material whose root balls are cracked or damaged either before or during the planting process.

3.3.1.1 Mulch Topdressing

Provide mulch topdressing over entire planter bed surface including earth mound watering basin around plants to a depth of 3 inches after completion of plant installation and before watering. Keep mulch out of the crowns of shrubs.

3.3.2 Balled and Burlapped Stock

Backfill with prepared soil mixture to approximately half the depth of ball and then tamp and water. Carefully remove or fold back excess burlap and tying materials. Tamp and complete backfill, place mulch topdressing, and water. Remove wires and non-biodegradable materials from plant pit prior to backfill operations.

3.3.3 Container Grown Stock

Remove from container and prevent damage to plant or root system. Cut root ball vertically in two to three places with sharp knife before planting.

3.4 FINISHING

3.4.1 Edging

Uniformly edge beds of individual plants to provide a clear cut division line between planted area and adjacent turf areas. Form bed shapes as indicated. Make individual plant pits circular in shape. Install edging materials as specified.

3.4.2 Mulching

3.4.2.1 Placing Inert Mulch Topdressing

Install weed control fabric with edges lapped 6 inches to receive inert mulch topdressing. Inert mulch shall be installed throughout shrub beds.

3.4.2.2 Placing Organic Material

Spread to a uniform depth of 3 inches around trees in turf areas.

3.4.3 Installation of Edging

Uniformly edge beds of plants to provide a clear cut division line between planted area and adjacent lawn. Construct bed shapes as indicated. Install edging material as specified.

3.4.4 Weed Control Fabric Installation

Remove grass and weed vegetation, including roots, from within the area enclosed by edging. Completely cover areas enclosed by edging with specified polypropylene weed control fabric. Overlap cut edges 6 inches. Turn down perimeter edges 6 inches.

3.4.5 Placement of Mulch Topdressing

Place specified mulch topdressing on top of weed control fabric covering total area enclosed by edging. Place mulch topdressing to a depth of 3 inches.

3.4.6 Pruning

Prune in accordance with safety requirement of ANSI Z133.1.

3.4.6.1 Trees and Shrubs

Remove dead and broken branches. Prune to correct structural defects only. Retain typical growth shape of individual plants with as much height and spread as practical. Do not cut central leader on trees. Make cuts with sharp instruments flush with branch collars so that collars remain in place. Do not flush with trunk or adjacent branches requiring collars to be removed.

3.4.6.2 Wound Dressing

Do not apply tree wound dressing to cuts.

END OF SECTION