

**SECTION 32 90 00  
PLANTING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This work consists of furnishing and installing all planting materials required for restoration of the landscaping on the prospect site hereinafter specified in locations as shown.

**1.2 EQUIPMENT**

Maintain all equipment, tools and machinery while on the project in sufficient quantities and capacity for proper execution of the work.

**1.3 RELATED WORK**

Section 32 84 00, PLANTING IRRIGATION.

**1.4 SUBMITTALS**

A. Samples: Submit the following samples for approval before work is started:

Inert Mulch	2.3 kg (5 pounds) of each
Decomposed Granite	type to be used.

B. Certificates of Conformance or Compliance: Before delivery, notarized certificates attesting that the following materials meet the requirements specified shall be submitted to the Resident Engineer for approval:

- 1. Pre-emergent herbicide

C. Manufacturer's Literature and Data:

- 1. Pre-emergent herbicide

**1.5 APPLICABLE PUBLICATIONS**

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

B. American National Standards Institute (ANSI) Publications:

ANSI Z60.1-04.....Nursery Stock

ANSI Z133.1-06.....Tree Care Operations-Pruning, Trimming,  
Repairing, Maintaining, and Removing Trees and  
Cutting Brush- Safety Requirements

C. Hortus Third, A Concise Dictionary of Plants Cultivated in the U.S. and Canada.

D. American Society for Testing and Materials (ASTM) Publications:

C136-06.....Sieve Analysis of Fine and Coarse Aggregates

C516-02.....Vermiculite Loose Fill Thermal Insulation

- C549-06.....Perlite Loose Fill Insulation
- D2103-05.....Polyethylene Film and Sheeting
- E. U.S. Department of Agriculture Federal Seed Act.  
1998.....Rules and Regulations
- F. City of Tucson/Pima County standard specification for public  
improvements.

**PART 2 - PRODUCTS**

**2.1 GENERAL**

All plant and turf material will conform to the varieties specified or shown in the plant list and be true to botanical name as listed in Hortus Third.

**2.2 PLANTS**

- A. Plants shall be in accordance with ANSI Z60.1, except as otherwise stated in the specifications or shown on the plans. Where the drawings or specifications are in conflict with ANSI Z60.1, the drawings and specification shall prevail.
- B. Provide well-branched and formed planting stock, sound, vigorous, and free from disease, sunscald, windburn, abrasion, harmful insects or insect eggs with healthy, normal, and unbroken root systems. Provide trees, deciduous, that are single trunked with a single leader, unless otherwise indicated, display no weak crotches. Provide symmetrically developed deciduous trees and shrubs of uniform habit of growth, with straight boles or stems and free from objectionable disfigurements, and evergreen trees and shrubs with well developed symmetrical tops with typical spread of branches for each particular species or variety. Provide ground cover and vine plants with the number and length of runners for the size specified, and the proper age for the grade of plants specified. Provide vines and ground cover plants well established in removable containers, integral containers, or formed homogeneous soil sections. Plants shall have been grown under climatic conditions similar to those in the locality of the project. Spray all plants budding into leaf or having soft growth with an anti-desiccant at the nursery before digging.
- C. The minimum acceptable sizes of all plants, measured before pruning with branches in normal position, shall conform to the measurements designated. Plants larger in size than specified may be used with the approval of the Resident Engineer, with no change in the contract price. When larger plants are used, increase the ball of earth or spread of roots in accordance with ANSI Z60.1.

- D. Provide nursery grown plant material conforming to the requirements and recommendations of ANSI Z60.1. Dig and prepare plants for shipment in a manner that will not cause damage to branches, shape, and future development after planting.
- E. Balled and burlapped (B&B) plant ball sizes and ratios will conform to ANSI Z60.1, consisting of firm, natural balls of soil wrapped firmly with burlap or strong cloth and tied.
- F. Bare-root (BR) plants shall have the root system substantially intact, but with the earth carefully removed. Cover roots with a thick coating of mud by "puddling" after the plants are dug.
- G. Container grown plants shall have sufficient root growth to hold the earth intact when removed from containers, but shall not be root bound.
- H. Make substitutions only when a plant (or its alternates as specified) is not obtainable and the Resident Engineer authorizes a change order providing for use of the nearest equivalent obtainable size or variety of plant having the same essential characteristics with an equitable adjustment of the contract price.
- I. When existing plants are to be relocated, ball sizes shall conform to requirements for collected plants in ANSI Z60.1, and plants shall be dug, handled, and replanted in accordance with applicable sections of these specifications.

### **2.3 LABELS**

Each plant, or group and bundles or containers of the same species, variety, and size of plant, shall be legibly tagged with a durable, waterproof and weather-resistant label indicating the correct plant name and size specified in the plant list. Labels shall be securely attached and not be removed.

### **2.4 TOPSOIL**

- A. Topsoil shall be a well-graded soil of good uniform quality. It shall be a natural, friable soil representative of productive soils in the vicinity. Topsoil shall be free of admixture of subsoil, foreign matter, objects larger than 25 mm (one inch) in any dimension, toxic substances, weeds and any material or substances that may be harmful to plant growth and shall have a pH value of not less than 5.0 nor more than 7.5.
- B. The Contractor shall furnish additional topsoil. At least 10 days prior to topsoil delivery, notify the Resident Engineer of the source(s) from which topsoil is to be furnished. Obtain topsoil from well drained areas. Additional topsoil shall meet the general requirements as stated above and comply with the requirements specified in Section 01 45 29, TESTING LABORATORY SERVICES. Amend topsoil not meeting the pH range specified by the addition of pH adjusters.

## **2.5 SOIL CONDITIONERS**

- A. Peat shall be a natural product of sphagnum moss peat, or peat moss derived from a fresh-water site conforming to Fed. Spec. Q-P-166, except as otherwise specified. Peat shall be shredded and granulated to pass through a 13 mm (1/2inch) mesh screen and conditioned in storage piles for at least six months after excavation.
- B. Coarse Sand  
Coarse concrete sand, ASTM C-33 Fine Aggregate, shall be clean, sharp, free of limestone, shale and slate particles and of toxic materials.
- C. Organic Matter shall be commercially prepared compost, composted sufficiently to be free of all woody fibers, seeds, and leaf structures, and free of toxic and nonorganic matter.
- D. Fertilizer: Agricultural fertilizer of a formula indicated by the soil test. Fertilizers shall be organic, slow-release compositions whenever applicable

## **2.6 PLANTING SOIL MIXTURE**

The planting soil mixture shall be composed of one parts topsoil, and one parts sand, and one part peat or organic material.

## **2.7 BIOSTIMULANTS**

Biostimulants shall contain soil conditioners, VAM fungi, and endomycorrhizal and ectomycorrhizal fungi spores and soil bacteria appropriate for existing soil conditions

## **2.8 PLANT FERTILIZER**

- A. Provide plant fertilizer that is commercial grade and uniform in composition and conforms to applicable state and federal regulations.
- B. For new plant material, provide packet, table, or pellet forms of slow release fertilizers, bearing the manufacturer's warranted statement of analysis. Slow release fertilizers shall contain a minimum percentage by weight of 5 percent nitrogen (of which 50 percent will be organic), 10 percent available phosphoric acid, and 5 percent potash.
- C. For existing trees, provide granular fertilizer bearing the manufacturer's warranted statement of analysis. Granular fertilizer shall contain a minimum percentage by weight of 5 percent nitrogen (of which 50 percent shall be organic), 10 percent available phosphoric acid, and 5 percent potash.

## **2.9 MULCH (DECOMPOSED GRANITE)**

- A. Mulch shall be free from deleterious materials and shall be stored as to prevent inclusion of foreign material.

- B. Inert mulch materials shall be decomposed granite conforming to the City of Tucson/Pima County standard specifications for public improvements section 803. Color and gradation to match existing decomposed granite or adjacent to tile site.

**2.10 STAKES AND GUYING WIRES**

- A. Provide stakes for tree support of rough sawn wood, free from knots, rot, cross grain, or other defects that would impair the strength. Stakes shall be a minimum of 50 mm by 50 mm (2 inches by 2 inches), or 65 mm (2-1/2 inches) in diameter, by 2400 mm (8 feet) long and pointed at one end.
- B. Guying wire shall be 2.7 mm (12 gage) annealed galvanized steel.
- C. Hose chafing guards shall be new or used 2-ply reinforced rubber or plastic hose of all the same color on the project.
- D. Flags to be fastened to guys shall be surveyor's plastic tape, white in color and 150 mm (6 inches) in length.

**2.11 WATER**

Water shall not contain elements toxic to plant life. It shall be obtained from the existing irrigation system as specified in Section 01 00 00, GENERAL REQUIREMENTS.

**2.12 HERBICIDES**

All herbicides shall be properly labeled and registered with the U.S. Department of Agriculture. Keep all herbicides in the original labeled containers indicating the analysis and method of use.

**PART 3 - EXECUTION**

**3.1 LAYOUT**

Stake plant material locations and bed outlines on project site for approval by the Resident Engineer before any plant pits or beds are dug. The Resident Engineer may approve adjustments to plant material locations to meet field conditions.

**3.2 EXCAVATION FOR PLANTING**

- A. Prior to excavating for plant pits and bed, verify the location of any underground utilities. Damage to utility lines will be repaired at the Contractor's expense. Where lawns have been established prior to planting operation, cover the surrounding turf before excavations are made in a manner that will protect turf areas. Barricade existing trees, shrubbery, and beds that are to be preserved in a manner that will effectively protect them during the project construction.

- B. Remove rocks and other underground obstructions to a depth necessary to permit proper planting according to plans and specifications. Where underground utilities, or construction, are encountered, the Resident Engineer may select other locations for plant material.
- C. Dig plant pits by any approved method so that they have vertical sides and flat bottoms. When pits are dug with an auger and the sides of the pits become glazed, scarify the glazed surface. Size the plant pits as shown, otherwise, the minimum allowable dimensions of plant pits shall be regardless of width, 150 mm (6 inches) deeper for shrubs and 225 mm (9 inches) deeper for trees than the depth of ball or root spread; for ball or root spread up to 600 mm (2 feet), pit diameters shall be twice the ball or root spread; for ball or root spread from 600 to 1200 mm (2 to 4 feet), pit diameters shall be 600 mm (2 feet) greater; for ball or root spread over 1200 mm (4 feet), pit diameters shall be 1-1/2 times the ball or root spread.
- D. Using topsoil, form earth saucers or water basins for watering around plants. Basins to be 2" high for shrubs and for trees.
- E. Treat plant saucers, shrub, and ground cover bed areas, prior to mulching, with an approved pre-emergent herbicide.

### **3.3 SETTING PLANTS**

- A. Handle balled and burlapped and container-grown plants only by the ball or container. Remove container-grown plants in such a way to prevent damage to plants or root system. Set plants plumb and hold in position until sufficient soil has been firmly placed around the roots or ball. Set plants so that the root crown is 1" higher than the surrounding grade. Plant ground cover plants after the mulch is in place. Avoid contaminating the mulch with the planting soil. Add slow release packet, tablet or pellet fertilizer as each plant is installed as per manufacturer's recommendation for method of installation and quantity.
- B. Backfill balled and burlapped and container-grown plants with planting soil mixture as specified to approximately half the depth of the ball and then tamp and water. For balled and burlapped plants, carefully remove excess burlap and tying materials and fold back. Where plastic wrap or treated burlap is used in lieu of burlap, completely remove these materials before backfilling. Tamp and water remainder of backfill Planting Soil Mixture; then form earth saucers or water basins around isolated plants with topsoil.

- C. Plant bare-root stock arranging the roots in a natural position. Remove damaged roots with a clean cut. Carefully work Planting Soil Mixture in among the roots. Tamp and water the remainder of Planting Soil Mixture; then form earth saucers or water basins around isolated plants with topsoil.

#### **3.4 STAKING AND GUYING**

- A. Stake and guy plants as shown on the drawings and as specified.
- B. Drive stakes vertically into the ground to a depth of 800 to 900 mm (2-1/2 to 3 feet) in such a manner as not to injure the ball or roots, unless otherwise shown on the drawings.
- C. Fasten flags securely on each guy wire approximately 2/3 of the distance up from ground level.
- D. Remove stakes and guy wires after one year.

#### **3.5 MULCHING (DECOMPOSED GRANITE)**

- A. Mulch planting areas within 48 hours after planting and applying a pre-emergent herbicide.
- B. Placing Inert Material (decomposed granite): Spread inert mulch to a uniform thickness over the membrane as shown.
- C. Placing Organic Material: Spread a mulch of decomposed granite to a uniform minimum thickness of 50 mm (2 inches).
- D. Keep mulch out of the crowns of shrubs and off buildings, sidewalks, light standards, and other structures.

#### **3.6 PRUNING**

- A. Prune new plant material in the following manner: Remove dead, broken and crossing branches. Prune deciduous trees and shrubs to reduce total amount of anticipated foliage by 1/4 to 1/3 while retaining typical growth habit of individual plants with as much height and spread as is practicable. Make cuts with sharp instruments as close as possible to the branch collar. Do not make flush cuts. Do not make "Headback" cuts at right angles to line of growth. Do not pole trees or remove the leader. Remove trimmings from the site. Paint cuts 13 mm (1/2 inch) in diameter and larger with the specified tree wound dressing.
- B. Existing trees to be pruned are shown on the drawings. Perform tree pruning and cavity work by an arborist in accordance with ANSI Z 133.1. Remove dead wood 13 mm (1/2 inch) or more in diameter, branches interfering with or hindering the healthy growth of the trees, and diseased branches with a clean cut made flush with the parent trunk. Cut back or remove branches as necessary to give the trees proper shape and balance. In removing large limbs, make the initial cut on the underside at a safe distance from the trunk or lateral, to prevent ripping of bark. Ensure branches and trimmings do not endanger traffic or cause

damage to property during removal. Section large branches or limbs that cannot be removed in one piece without endangering traffic or property. Lower sections by ropes. Repair any damage resulting from the Contractor's negligence during pruning. Workmen are not permitted to climb trees with climbing spurs. To promote proper healing, cut off flush stubs or limbs that have resulted from improper cuts or broken as a result of former pruning. Remove girdling roots. Clean cuts or wounds measuring 13 mm (1/2 inches) or more in diameter, and exposed wood and scars resulting from previous work or damage. Remove decayed wood to expose healthy tissue. Shape cavities to provide drainage.

### **3.7 FERTILIZATION OF EXISTING TREES**

Apply fertilizer to existing trees shown on the drawings at the rate of 36 g/mm (2 pounds per inch) caliper. Apply in 300 mm to 450 mm (12 inch to 18 inch) deep holes 40 to 50 mm (1-1/2 to 2 inches) in diameter, made by an earth auger, distributed evenly at not more than 600 mm (2 feet) on center throughout the outer half of the branch spread zone of each tree. Fertilize to within 100 mm (4 inches) of the surrounding grade. Use topsoil to bring the surface up to the surrounding grade. When using fertilizer in packet, tablet, or wedge form, apply in accordance with manufacturer's recommendations.

### **3.8 FINISH GRADING**

Finish grade to the design elevations, providing positive drainage. Correct irregularities in finished surfaces to eliminate depressions. Protect finished areas from damage by vehicular or pedestrian traffic.

### **3.9 WATERING**

Apply water to the turf areas immediately following installation at a rate sufficient to ensure thorough wetting of the soil to a depth of at least 100 mm (4 inches). Supervise watering operation to prevent run-off. Supply all pumps, hoses, pipelines, and sprinkling equipment. Repair all areas damaged by water operations.

### **3.10 PROTECTION OF LANDSCAPE**

Immediately after installation of the landscape, protect against traffic or other use by erecting barricades, as required, and placing approved signs at appropriate intervals until final acceptance.

### **3.11 RESTORATION AND CLEAN-UP**

Where existing or new landscape areas have been damaged or scarred during planting and construction operations, restore disturbed area to their original condition. Keep at least one paved pedestrian access route and one paved vehicular access route to each building clean at all times. In areas where planting work have been completed, clear the area

of all debris, spoil piles, and containers. Clear all other paved areas when work in adjacent areas is completed. Remove all debris, rubbish and excess material from the Medical Center.

**3.12 ENVIRONMENTAL PROTECTION**

All work and Contractor operations shall comply with all governing rules and requirements.

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