

**SECTION 02900 - LANDSCAPING**

**City of San Diego, CWP Guidelines**

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- NTS: 1. The Design Consultant must engage a specialized firm for on-site soils testing to determine the necessary soil amendments and fertilizers for healthy plant growth.
2. The Design Consultant should refer to Drawing Nos. L-1 through L-5 of City of San Diego Standard Drawings for landscaping details.

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**PART 1 -- GENERAL**

**1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing landscaping and all appurtenant work, complete.
- B. Landscaping as referred to herein shall include: soil preparation, installation of headers, weed control, finish grading, furnishing and installing plant materials, tree staking and tying, and all other pertinent work as required and as indicated.

**1.2 RELATED SECTIONS**

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
1. Section 02200 Earthwork
  2. Section 02810 Landscape Irrigation System

**1.3 STANDARD SPECIFICATIONS**

- A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the Standard Specifications for Public Works Construction (SSPWC), as specified in Section 01090 - REFERENCE STANDARDS.
- B. The City of San Diego Landscape Technical Manual (LTM), current edition.

**1.4 CODES**

- A. The WORK of this Section shall comply with the current editions, with revisions, of the following codes:
1. Agricultural Code of the State of California

**1.5 SPECIFICATIONS AND STANDARDS**

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. Federal Specifications:

O-F-241D Fertilizer, Mixed, Commercial

Q-P-166E Peat, Moss; Peat, Humus; And Peat, Reed Sedge

2. Commercial Standards:

ANSI/ASTM D 422 Method for Particle-Size Analysis of Soils

ANSI Z60.1 Nursery Stock

American Association of Nurserymen, Inc. Rules and Grading Provisions

## 1.6 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Topsoil report.

2. Catalogue information on fertilizers, peat, mulch, and seed mixes demonstrating compliance with the requirements.

3. Samples, in triplicate, of each variety and size of plants. These samples, if approved, shall be planted and maintained as standards for comparison with plants furnished.

4. A certified report by an approved analytical laboratory showing analyses of representative samples of topsoil proposed for use. The topsoil shall not be delivered to the site until approval is received from the CONSTRUCTION MANAGER. Approval of the laboratory report does not constitute final acceptance. Topsoil shall be subject to rejection by the CONSTRUCTION MANAGER on or after delivery if it is found not to meet the requirements of the Specifications or does not conform to the approved laboratory test results.

5. The CONTRACTOR shall notify the CONSTRUCTION MANAGER of the proposed hydro-seeding method, mulch, and type of equipment to be used and shall receive approval before beginning this operation.

## 1.7 CERTIFICATES TO BE FURNISHED WITH EACH DELIVERY OR SHIPMENT

A. The CONTRACTOR shall furnish a certificate with each delivery or bulk material delivery, stating source, quantity, and type of material. All materials shall conform to specification requirements. All certificates shall be delivered to the CONSTRUCTION MANAGER at time of each delivery. All bulk delivered materials shall be delivered with level load volume plainly marked on the truck bed.

B. Certificates of inspection of plant material concerning plant diseases and infestations, as required by federal, state, or other authorities having jurisdiction, shall be furnished with each shipment.

## 1.8 PERMITS

- A. Plants shall be grown in nurseries which have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the CONTRACTOR, who shall have secured the required permits or certificates prior to delivery of plants to site.

## 1.9 INSPECTION BY CONSTRUCTION MANAGER

- A. All indicated inspections will be made by the CONSTRUCTION MANAGER or its representative. The CONTRACTOR shall request inspection at least 24 hours in advance of the time inspection is required. Inspection will be required on the following stages of the WORK:
  - 1. During preliminary grading, soil preparation, and initial weeding.
  - 2. When trees are spotted for planting, but before planting holes have been excavated.
  - 3. When finish grading has been completed.
  - 4. When all specified work, except the maintenance period, has been completed.
  - 5. Final inspection at the completion of the maintenance period.
- B. Plants will be subject to inspection and approval or rejection by the CONSTRUCTION MANAGER at the place of growth and upon delivery to the site at any time before or during progress of the WORK. Plants will be inspected for:
  - 1. Quantity, quality, size, and variety;
  - 2. Ball and root condition; and
  - 3. Latent defects and injuries resulting from handling, disease, and insects.
- C. Plants approved at the place of growth shall be rejected at the site if found to have degraded ball and root conditions or latent defects and injuries.
- D. Rejected plants shall be identified in an obvious manner, removed from the site and replaced with acceptable equals.

## 1.10 CLEANUP

- A. Upon completion of all planting operations, the portion of the project site used for a work or storage area by the CONTRACTOR shall be cleaned of all debris, superfluous materials, and equipment. All such materials and equipment shall be entirely removed from the project site as specified in Section 01700.
- B. All walks or pavement shall be swept or washed clean upon completion of the WORK of this Section.
- C. During the entire Contract period, plant containers that have been cut or removed from plant materials shall be removed from the project site daily.

## 1.11 MAINTENANCE AND GUARANTEE

- A. The CONTRACTOR shall be responsible for maintaining all landscaping WORK for a period of one year after the date of final acceptance of all WORK.

## 1.12 DELIVERY, STORAGE, AND HANDLING

- A. No plants other than the required samples shall be dug or delivered to the site until the required inspections have been made and the plant samples are approved.
- B. Plants shall not be pruned prior to delivery except upon approval by the CONSTRUCTION MANAGER.
- C. The CONTRACTOR shall protect the stock in a temporary nursery at the project site where it shall be protected from sun and drying winds and shall be shaded, kept moist, and protected with damp soil, moss, or other material. Plants shall be planted within 2 days after delivery.
- D. Fertilizers, additives, seed, peat, etc. subject to moisture damage shall be kept in a weatherproof storage place to preserve dryness.

## **PART 2 -- PRODUCTS**

### **2.1 GENERAL**

- A. Landscaping materials shall conform to the requirements of SSPWC Subsection 212-1 and the requirements of this Section of the Specifications.
- B. All landscaping materials for soil conditioning, weed abatement, or planting shall be first-grade, commercial quality and shall have certificates indicating the source of material, analysis, quantity, or weight attached to each sack or container or provided with each delivery. Delivery certificates shall be given to the CONSTRUCTION MANAGER as each shipment of material is delivered.
- C. All plants furnished by the CONTRACTOR shall be true to type or name as shown in the Contract Documents and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of California; however, determination of plant species or variety will be made by the CONSTRUCTION MANAGER.

### **2.2 TERMINOLOGY AND QUALIFICATIONS**

- A. Plants or plant material having characteristics not conforming to terms as defined will not be accepted. The terms "plant material" or "plants" refer to all vegetation, whether trees, shrubs, ground cover, or herbaceous vegetation.
- B. Quality refers to structure and form, as evidenced by density and number of canes and branches, compactness, symmetry, and general development without consideration of size or condition. Standard quality indicates the least acceptable quality. Plants shall be typical of the species and variety of good average uniform growth, shall be well formed and uniformly branched, and shall have the minimum number of canes specified, free from irregularities, or shall conform to minimum quality index. Where the number of canes is not specifically stated in describing this grade, the standards of the "Horticultural Standards" as adopted by the American Association of Nurserymen, shall apply. In this case, the number of canes and other factors for the appropriate classification under "quality definition" in the Horticultural Standards shall be the Quality index. Plant material below this standard will be considered "culls" and are not acceptable. All plants shall be nursery grown.

- C. Specimen means an exceptionally heavy, symmetrical, tightly-knit plant, so trained or favored in its development and appearance as to be outstanding, superior in form, number of branches, compactness, and symmetry.
- D. Size is the factor controlled by dimensions representing height or spread, or both, without consideration of quality or conditions. For standard quality, a dimension is given for height or container size, or a dimension is given for height as well as container size.
- E. Height is usually indicated with a tolerance. The smaller dimension is the minimum acceptable. The larger dimension represents the maximum permissible. The average dimension of all plants must equal the average of the tolerance figures shown on each item.
- F. Condition is the factor controlled by vitality and ability to survive and thrive and be comparable with normal plants of the same species and variety in the vicinity of the site, at the same season of the year. In addition, plants shall be free from physical damage or adverse conditions that would prevent thriving. Conditions also sometimes refer to state of growth, i.e., whether "dormant condition" or "growing condition." Leaves and formation of buds on plants required to be in either condition shall be comparable to plants of same species in the vicinity of the site.
- G. Cane means a primary stem which starts from the ground, or close to the ground, at a point not higher than 1/4 the height of the plant.
- H. Caliper shall be taken 12 inches above the finish grade or ground, as a guide, or where a dimension in trunk appears to form the head of the tree.
- I. Collected plants shall not be used.

## 2.3 TOPSOIL

- A. Topsoil shall be Type [A] [B] [C], [and shall be obtained from a naturally drained area].
- B. The topsoil shall be of uniform quality and free from materials that would be toxic or harmful to plant growth. Topsoil shall contain no noxious weeds or noxious weed seeds.
- C. The topsoil shall contain at least 6 percent organic matter as determined by loss of weight after ignition of dried (moisture-free) samples in accordance with current methods of the Association of Official Agricultural Chemists.
- D. The salinity level of topsoil shall be less than [3] milliohms/cm.
- E. Clay, as determined by the Bouyoucous hydrometer or by the decantation method, shall not exceed 20 percent of the topsoil material.
- [F. The soil mix for interior plants shall be sphagnum moss or a soil mix furnished in bags or other standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. The soil mix shall be a mix designed specifically for interior container or potted planting.]

## 2.4 FERTILIZERS AND ADDITIVES

- A. Fertilizer shall be furnished in bags or other standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon.
- B. Chemical fertilizers shall be a mixed commercial fertilizer conforming to FS O-F-241D, Type I, with percentages of nitrogen, phosphoric acid, and potash at [5-10-5] or [6-10-4], respectively. Fertilizers shall be uniform in composition, dry, and free flowing.
- C. Manure shall comply with SSPWC Subsection 212-1.2.2.
- D. Fertilizer tablets shall be 12 grams each, of [20-10-5] composition.
- E. Lime shall be dolomitic limestone containing not less than 85 percent of total carbonates. Limestone shall be ground to such fineness that 100 percent will pass a No. 200 sieve.
- F. Agricultural gypsum shall be a standard brand agricultural calcium sulfate ( $\text{CaSO}_4$ ) as applied to soils and shall contain 19 percent combined sulfur.

## 2.5 PEAT MOSS

- A. Peat shall be a domestic product conforming to FS Q-P-166E and may be reed peat, sedge peat, moss peat, reed muck, or sedge muck. Moss shall be of horticultural grade.
- B. Sphagnum peat moss shall be good quality baled peat moss free from injurious materials.

## 2.6 ORGANIC SOIL AMENDMENT

- A. Organic soil amendment shall be Type [1] [2] [3] complying with SSPWC Subsection 212-1.2.4.

## 2.7 MULCH

- A. Mulch shall comply with SSPWC Subsection 212-1.2.5 and shall be Type [1] [2] [3] [4] [5] [7] [8] [9] [10] mulch.
- [B. Wood chips (Type 7 mulch) in planting beds shall be clean, pulverized shavings, 2-inch minimum to 4-inch maximum length as produced by "chipping" tree branches or similar means.]

## 2.8 PLANTS

- A. Plants shall comply with SSPWC Subsection 212-1.4 and shall meet requirements of these Specifications and shall be in accordance with the botanical names and applicable standards of quality, size, condition, and type. They shall be true to name, genera, species, and variety in accordance with reference publications.
- B. Plant names are defined in "Standardized Plant Names" and "Bailey's Encyclopedia of Horticulture." When a name is not found in either reference, the accepted name used in the nursery trade shall apply.
- C. Plants shall be marked for identification. Each bundle of plants and at least 25 percent of each species and variety of separate plants in any one shipment shall have legible labels securely attached before delivery to the site.

- D. All trees and shrubs shall be measured while their branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch or root tip to tip. No trees will be accepted with their leaders cut, or so damaged that cutting is necessary.
- E. All plants shall be symmetrical and shall conform to the size, age, and condition as indicated on the Plant List. Exceptions are as follows:
  - 1. Plants larger than specified in the plant list may be used if approved by the CONSTRUCTION MANAGER, but use of such plants shall not constitute reason for an increase in the contract price. If the use of larger plants is approved, the spread of roots or ball earth shall be increased in proportion to the size of the plant. Bare root plants furnished in sizes greater than indicated shall be balled and burlapped when required by the CONSTRUCTION MANAGER.
  - 2. Where caliper or other dimensions of any plant materials are omitted from the Plant List, it shall be understood that such plant materials shall be normal stock for the type listed.
- F. Plants shall be of healthy, vigorous, and free from plant disease and shall be well-branched, shall have full foliage when in leaf, and shall have a healthy well-developed normal root system. Cold storage plants will not be accepted.
- G. Bare rooted plants shall have well-developed branch systems and vigorous root systems. They shall be dug to sufficient depth to insure full recovery and development of the plants. Roots of these plants shall be covered with a uniformly thick coating of mud being puddled immediately after they are dug.
- H. Balled and burlapped plants shall have firm, balls of natural earth, of diameter not less than that indicated and of sufficient depth to include all the fibrous and feeding roots. No plant moved with a ball will be accepted if the ball is cracked or broken before or during plant operations, except on special approval of the CONSTRUCTION MANAGER.
- I. Roots or balls of all plants shall be adequately protected at all times from sun and/or drying winds.
- J. Plants (indicated to be in marked cans, pots, or other containers on the plant list) shall have been grown in the containers for a minimum of 6 months and a maximum of 2 years. Roots shall fill the containers but show no evidence of being or having been root bound.
- K. Trees shall comply with SSPWC Subsection 212-1.4.2 and shall have straight trunks and all old abrasions and cuts shall be completely callused over. In no case shall trees be topped before delivery.
- L. Plants shall have been transplanted or root-pruned at least once in the last 2 years. Plants shall not be pruned prior to delivery except as authorized by the CONSTRUCTION MANAGER.

## 2.9 SEED MIXTURES

- A. All seed shall comply with SSPWC Subsection 212-1.3 and the applicable City, County, State, and Federal regulations. Seed shall be mixed by the dealer. The CONTRACTOR shall furnish dealer's guaranteed germination percentage of each variety. Grass seed shall not be delivered to the site until samples have been approved in writing by the CONSTRUCTION MANAGER or his authorized landscape representative. Approval of samples, however, shall not affect the right of the CONSTRUCTION MANAGER, or the authorized landscape representative, to reject seed upon or after delivery if it has become wet, moldy, or otherwise damaged prior to use or does not comply with the indicated requirements.
- B. Grass seed shall be fresh, clean, and new-crop seed, composed of the following varieties mixed in the proportions by weight, as shown, and tested for the minimum percentage of purity and germination indicated.

<u>Common Names</u>	<u>by Weight (percent)</u>	<u>Proportion Purity (percent)</u>	<u>Germination (percent)</u>
<b>Type 1:</b>			
Fescue Blends	100	90	90
<b>[Type 2:</b>			
Baron Kentucky Blue Grass	100	90	90]
<b>[Type 3</b>			
Buffalo Grass	33	90	90
Creeping Red Fescue	25	90	90
Fuccinellia	25	90	90
Penn Fine Rye Grass	17	90	90]
<b>[Type 4:</b>			
Western Wheat Grass	33	90	90
Fairway Crested Wheat Grass	33	90	90
Buffalo Grass	34	90	90]

2.10 SOD GRASS

- [A. Sod shall contain at least 85 percent permanent grass suitable to the climate in which it is to be placed; not more than 25 percent nursing grass; not more than 10 percent weed and undesirable grasses, and shall be of good texture, free from obnoxious roots, stones and foreign materials. The sod shall be cut in 16-inch squares, 16-inch wide strips, 4-ft wide strips or 4-ft wide squares, uniformly 3/4-inch to 1-1/2 inches thick with clean cut edges.]
- [B. The sod shall be nursery grown [Kentucky Bluegrass] sod. It shall be uniformly cut approximately 3/4-inch to 1-1/2 inches or more thick and shall be well rooted, 2-year old growth of permanent and desirable grasses indigenous to this general location. The sod shall be practically free from weeds and undesirable grasses.]



## 2.11 GRASS STOLONS

- A. Grass stolons shall comply with SSPWC Subsection 212-1.4.5.

## 2.12 HEADERS, STAKES AND TIES

- A. Headers, stakes and ties and ancillary materials shall comply with SSPWC Subsection 212-1.5, except as otherwise indicated.

## 2.13 STAKING MATERIALS

- A. [Stakes for supporting trees shall be sound No. 2 redwood of uniform size not less than 2-inch x 2-inch or 2-1/2-inch min diameter wood posts of lengths specified in staking details. All knots shall be solid]. [Stakes shall be galvanized iron pipe, 1-inch (ID) with 2 coats of olive green flat enamel paint]. [Stakes shall be standard "T" 6-ft high steel fence posts dark green in color. Stakes for guying pines and spruce shall be 30 inches long (5-ft steel "T" posts cut in half)].

## 2.14 MISCELLANEOUS MATERIALS

- A. Wrapping material for trees, 2-inch diameter or larger, shall be 2 thicknesses of crinkled paper cemented together with bituminous material in strips 4-inch wide. Twine for tying shall be medium or coarse sisal yarn with a light impregnation of oil condensate from asphalt or tar.
- B. Cobble shall be clean, rounded river cobble, size 5 to 7 inches. Setting bed shall be 4 inches deep (below grade) with filter fabric under the cobble.
- C. Gravel in planter areas shall be 1-1/2-inch to 2-inch clean, washed gravel. Setting bed shall be 4 inches deep (below grade) with filter fabric under the gravel.
- D. Boulders shall be 2-ft to 3-ft minimum diameter dark colored native moss rock defined as lichen covered stone on side to be exposed and substantially free from breaks, gouges, and other imperfections. The CONTRACTOR shall obtain approval of rock or boulders on the site prior to installation, removing rejected boulders from the site.
- E. Metal edger for planter beds shall be of steel, min 1/8-inch x 6-inch with steel stakes or pins for supports spaced at 5-ft or as per manufacturer's printed recommendations. All steel shall be painted with a rust inhibiting paint with color to be approved by the CONSTRUCTION MANAGER.
- [F. Jute mesh shall be new and shall be of a uniform, open, plain-weave, flame-retardant mesh. The mesh shall be [natural brown-tan] [dyed green] and shall be made from unbleached single jute yarn. The yarn shall be of loosely twisted construction and shall not vary in thickness by more than 1/2 its normal diameter. Jute mesh shall be furnished in rolled strips and shall meet the following requirements:
  1. Width - 48 inches, with a tolerance of one-inch wider or narrower.
  2. Not less than 78 warp ends per width.
  3. Not less than 41 weft ends per yard.
  4. Weight shall average 1.22 pounds per linear yard, with a tolerance of 5 percent heavier or lighter.]

- G. Erosion control blanket shall be made up of aspen fibers held together by a soybean netting. The blanket shall be capable of retaining moisture for seed germination, providing nutrients and protecting and holding seed and fertilizer in place. Blanket rolls shall be 48 inches wide, 180 feet long, and shall weigh 78 pounds (minimum) each.

## 2.15 MANUFACTURERS

- A. Landscaping materials shall be of the following brand names (or equal):
  - 1. Fertilizer tablets: "Agriform" or "Leslie"
  - 2. Wood fiber mulch: "Silva-fiber" by Weyerhaeuser Company
  - 3. Metal edger (for planter beds): "Ryersons"
  - 4. Erosion control blanket: "Curlex" by American Excelsior Company

## PART 3 -- EXECUTION

### 3.1 GENERAL

- A. Landscape work shall be performed in compliance with SSPWC Section 308 and as indicated herein.
- B. The landscape work shall not be performed at any time when it may be subject to damage by climatic conditions.
- C. The CONTRACTOR shall carefully scale or otherwise verify all dimensions in the Contract Documents. Dimensions and plant locations shown shall be coordinated with the CONSTRUCTION MANAGER and the final location shall be site-oriented by the CONTRACTOR and CONSTRUCTION MANAGER. Any discrepancies or inconsistencies discovered shall be brought to the attention of the CONSTRUCTION MANAGER.
- D. In case of conflict between the plant list totals and total plant count of the Contract Documents, the CONTRACTOR shall provide the higher number of plants.
- E. Delivery of materials may begin only after samples and test results have been approved by the CONSTRUCTION MANAGER. All materials furnished for the WORK shall be not less than the approved sample.
- F. The CONTRACTOR shall provide temporary fencing, barricades, covering, or other protection to preserve existing landscaping items indicated to remain and to protect the adjacent properties and other structures when they may be damaged by the WORK of this Section.
- G. The CONTRACTOR shall retain the services of a tree surgeon approved by the CONSTRUCTION MANAGER to repair damage to existing trees. Damaged existing trees which are required to be saved and which cannot be restored to full growth, as determined by the tree surgeon, shall be removed and replaced with a new similar tree of 24-inch box size unless otherwise approved by the CONSTRUCTION MANAGER.
- H. The CONTRACTOR shall remove or relocate landscape items such as trees, shrubs, grass, other vegetation, improvements, and obstructions as indicated.

- I. Open excavations shall be provided with barricades and warning lights which conform to the requirements of governing authorities and the Cal-OSHA safety requirements from dusk to dawn each day and when needed for safety.

### 3.2 SOIL PREPARATION

- A. Landscaping shall not begin until all areas of settlement, erosion, rutting, etc., have been repaired, and the soils have been re-established, recompact, and refinished to finish grades. The CONSTRUCTION MANAGER shall be notified of all areas which prevent the landscape work from being executed.
- B. Areas requiring grading, including adjacent transition areas, shall be uniformly level or sloping between finish elevations to within 0.10-ft above or below required finish elevations.
- C. Landscaping shall not proceed until after walks, curbs, pavings, edging, and irrigation systems are in place. Other WORK shall be completed to a degree where the landscape areas will not be disturbed when the other WORK is completed. The subgrade shall be cleaned free of waste materials of all kinds.
- D. During grading, waste materials in the planting areas such as weeds, rocks 2 inches and larger, building materials, rubble, wires, cans, glass, lumber, sticks, etc., shall be removed from the site. Weeds shall be dug out by the roots.
- E. After removal of waste materials the planting areas subgrade shall be scarified and pulverized to a depth of not less than 6 inches and all surface irregularities below the cover of topsoil removed.
- F. Finish grading shall consist of:
  1. Final contouring of the planting areas.
  2. Placing [4] inches of topsoil over all areas to be planted unless indicated otherwise.
  3. Placing all soil additives and fertilizers.
  4. Tilling of planting areas.
  5. After tilling, bring areas to uniform grades by floating and/or hand raking.
  6. Making minor adjustment of finish grades as directed by the CONSTRUCTION MANAGER.
- G. Any unusual subsoil condition that will require special treatment shall be reported to the CONSTRUCTION MANAGER.
- H. Topsoil shall be uniformly distributed over all areas where required. Subgrade and topsoil shall be damp.
- I. Surface drainage shall be provided as shown by molding the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with topsoil and graded to drain properly.
- J. Finish grade of all planting areas shall be 1-1/2 inches below finish grades of adjacent pavement of any kind.
- K. In all shrub planting areas, 1-1/2 inches of peat moss or soil-aid shall be raked into the top 3 inches of soil.

NTS: The area to receive jute mesh shall be shown on the Drawings.

- [L. Jute mesh shall be installed loosely up and down the slope. The installed mesh shall fit the soil surface contour and shall be held in place by 12-inch long, 11-gauge (minimum) steel wire staples driven vertically into the soil at approximately 24-inch spacing. Jute mesh strips shall overlap along the sides at least 6 inches. Ends of strips shall be buried into the soil at least 6 inches. Staples shall be driven into side overlap at 2 points per side overlap.]
- M. Erosion control blanket shall be installed as per manufacturer's recommendations. Anchorage devices shall be two-legged steel staples manufactured for the blanket material.

### 3.3 PROTECTION AND HANDLING OF PLANTS

- A. Plants shall be planted on the day of delivery, if possible.
- B. All balled and burlapped plants which cannot be planted immediately on delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. Bare rooted plants, which cannot be planted immediately, shall be planted on heeled-in trenches immediately upon delivery. No material heeled-in more than one week may be used. Bundles of plants shall be opened and the plants separated before the roots are covered. Care shall be taken to prevent air pockets among the roots.
- C. During planting operations, bare roots shall be covered with canvas, wet straw, or other suitable materials. No plants shall be bound with wire or rope at any time so as to damage the bark or break branches.
- D. Plants shall not be picked up or moved by stem or branches, but shall be lifted and handled from the bottom or sides of the containers.
- E. Plants shall be lifted and handled from the bottom of the ball. Plants with balls cracked or broken before or during planting operations will not be accepted and shall be immediately removed from the site.

### 3.4 TREE AND PLANT LOCATIONS

- A. The CONTRACTOR shall locate and stake all tree and shrub locations and have the locations approved by the CONSTRUCTION MANAGER before starting excavation for same. The plant locations shall be observed, and their locations shall be adjusted as directed by CONSTRUCTION MANAGER before final approval.
- B. No trees shall be located closer than 72 inches to structures unless otherwise indicated. Ground covers and shrubs may be planted up to structures or curbs.

### 3.5 PLANT PITS

- [C. Plant pits, centered on location stakes, shall be excavated circular pits with vertical sides and flat or saucer shape bottom in accordance with the following sizes unless shown otherwise:

1. Tree pits shall be at least 2 feet greater in diameter than the diameter of the ball or spread of roots, and at least 6 inches below the depth of ball or roots. A 3-inch layer of manure shall be worked thoroughly to a depth of 6 inches below the pit bottom.
2. Shrubs shall be planted in pits or holes 24 inches deep below finished grade, or as much deeper as necessary to properly set the plant at finished grade with a minimum of 6 inches of planting soil under balls of all plants. Shrubs with balls shall be planted in pits that are at least 24 inches greater in diameter than the bottom of ball. Bare root shrubs shall be planted in pits at least 12 inches below the roots of the plant.]

[D. Tree and shrub plant pits shall be as indicated.]

### 3.6 PREPARED BACKFILL

- E. Tree and shrub pit backfilling soil shall consist of [3] [4] parts topsoil, and 1 part peat or soil-aid by volume. Commercial fertilizer shall be mixed with the prepared topsoil, using [5] lb/cu yd or as required by manufacturer's printed recommendations.
- F. Planting pit, bin, and trench filling and bedding soil shall consist of [4] parts by volume topsoil mixed with [1] part manure and [5] lb of commercial fertilizer per cubic yard.
- G. Materials shall be thoroughly rotary-mixed on the site before placement. Mixing of materials in pits, bins, trenches or beds will not be permitted.
- H. Tree and shrub pits shall be provided with fertilizer tablets as follows:
  - 1 per one-gallon can plant
  - 3 per 5-gallon can plant
  - 5 per 15-gallon can plant

### 3.7 ROCKS OR UNDERGROUND OBSTRUCTIONS

- A. In the event that rock or underground obstructions are encountered in the excavation of plant pits, alternative locations shall be selected by the CONSTRUCTION MANAGER. Moving of trees to alternative locations shall not entail additional costs to the OWNER.

### 3.8 SETTING PLANTS, SHRUBS AND TREES

- A. The soil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form or that clods will not break readily. Water shall be applied if necessary to provide ideal moisture for filling and for planting as herein indicated.
- B. Plants shall be set in center of pits as indicated. They shall be set plumb and straight, and at such a level that after settlement the crown of the plant will be 2 inches above the finished grade.
- C. Balled and burlapped trees shall have planting soil placed and compacted around the base of the ball to fill all voids. All burlap ropes or wires shall be removed from the sides and tops of balls.
- D. Roots of bare root plants shall be properly spread out and planting soil carefully worked in among them. All broken or frayed roots shall be cut off clean.

- [E All vines shall be removed from stakes, untied, and securely fastened in an approved manner to wall or fence next to which they are to be planted.]
- F. All ground cover plants shall be evenly spaced, staggered in rows, and set at the intervals indicated, so as to produce a uniform effect. Plants shall be watered immediately after planting operations have been completed.
- G. All shrubs and vines shall be pruned to remove damaged branches. All bare root shrubs shall be pruned and shaped to compensate for transplant root loss.
- H. Planting soil around roots or balls shall be thoroughly compacted and watered. After planting, the soil in the shrub beds shall be cultivated between shrubs, raked smooth, and neatly outlined. Muddy soil shall not be used for backfilling. All broken or frayed roots shall be properly cut off.
- I. Trees and shrubs on slopes steeper than 6 to 1 shall be provided with watering dams or berms at least 6 inches high and 8 inches wider than planting pit (hole) unless indicated otherwise.
- J. All trees shall be thoroughly watered immediately after planting.
- K. Remove all tags and labels when directed by CONSTRUCTION MANAGER.

### 3.9 STAKING AND GUYING

- A. Staking of trees shall be done immediately after they are planted. Plants shall stand plumb after staking. Staking shall be as specified unless indicated otherwise.
- B. No balled and burlapped specimen "tree-like" shrubs shall be staked.
- C. Trees of 2-inch or greater caliper shall be guyed at points of branching with 3 wire guys spaced equally around and outside the perimeter of the ball. Guy wires shall be covered with rubber hose at the bark. Each guy shall be positioned below crotches and fastened to a 4-inch diameter by 18-inch wood deadman driven 12 inches below grade. One turnbuckle shall be provided for each guy.
- D. Trees less than 2-inch caliper shall be supported by 2 stakes placed diametrically opposite at the perimeter line of the ball and to sufficient depth to hold tree rigid. Stakes shall be driven vertically and not twisted or pulled. Trees shall be wired to each stake as indicated on staking details. Trees shall be protected with rubber hose over wires at points of contact. All evergreen trees shall be guyed.
- [E Staking and guying shall comply with SSPWC Subsection 308-4.6.1. Use Method [A] [B] for tree staking.]

### 3.10 PRUNING AND MULCHING

- A. Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve the natural character of the plant in the manner fitting its use in the landscape design, as approved by the CONSTRUCTION MANAGER.
- B. All dead wood or suckers and all broken or badly bruised branches shall be removed by thinning out and shortening branches. Deciduous bare-rooted plants shall have not less

than 1/3 of their respective leaf surfaces removed. All cuts shall be made just above a healthy bud. Pruning shall be done with clean, sharp tools.

- C. Cuts over 3/4-inch diameter shall be painted with a tree paint. The paint shall cover all exposed cambium as well as other living tissue. The paint shall be waterproof, adhesive, elastic antiseptic, shall be free from kerosene, coal tar, creosote, or other materials injurious to the tree; and shall be approved before it is used.
- D. Plants shall be mulched after planting and cultivating have been completed. A layer of mulch materials shall be spread on the finished landscaping grade within all planting areas to a depth of [4] inches. The mulch around isolated plants shall be 6 inches greater in diameter than the planting hole. All shrub and ground cover beds shall be completely covered with the mulch.
- E. All deciduous tree trunks shall be thoroughly sprayed with a methoxychlor or similar insecticide, and wrapped immediately after planting, with wrapping material overlapping (1-1/2 inches, wound from ground line to the second branch, and securely taped in at least 5 places, including the top, middle, and bottom).

### 3.11 SODDING

- A. Grass sod shall be provided where indicated.
- B. The soil shall be prepared and fertilized before sodding. The CONTRACTOR shall prepare only enough ground that can be planted within 24 hours thereafter.
- C. Topsoil required at areas to be sodded shall be [1-1/2] inches. The soil additives and fertilizer for finish grading shall consist of mulch at 5 cu yd/1000 sq ft and commercial fertilizer at 20 lb/1000 sq ft.
- D. Sod shall be cut and laid on site the same day.
- E. The sod shall be placed over leveled, compacted, and prepared finish graded soil. The topsoil and sub-base shall be moist enough to resist shifting.
- F. The surface on which the sod is to be laid shall be firm and free from footprints or other depressions.
- G. Joints between the individual sod pieces in two courses of sod shall not coincide. Sod joints shall be closely laid and filled with a mixture of grass seed and screened topsoil at the rate of 2 lbs of seed to each cu yd of topsoil. Sod fill soil shall be thoroughly tamped to a true and even surface at the required finished grade.
- H. Sod on slopes should be staked down by driving a wooden peg through the sod. Wire stakes shall not be used for pegging sod.
- I. Sod shall always be laid across slopes.
- J. All new sod shall be rolled or firmly but lightly tamped with a suitable wooden or metal tamper, sufficiently to set or press the sod into the underlying soil.
- K. After sodding has been completed, the sodded area shall be cleaned up and thoroughly moistened by sprinklers.

### 3.12 SEEDING

#### A. **General:**

1. Grass seeding shall be provided where lawn is indicated.
2. The soil shall be prepared and fertilized before seeding or shall be prepared per hydro-seeding instructions. The CONTRACTOR shall prepare only enough ground that can be seeded within 24 hours thereafter.
3. All lawn slopes greater than 5 percent, or places where erosion is a problem, shall be protected with an erosion control blanket.

#### B. **Dry Seeding:**

1. Soil additives and fertilizer for finish grading shall consist of commercial fertilizer at [20] lb/[1000] sq ft.
2. Sow seed at the rate of [2] lbs to [1000] sq ft of area. Equal quantities of seed shall be sown in the directions at right angles to each other to produce an even distribution of seed over the entire area.
3. No seeding shall be done when wind velocity exceeds 4 mph, within 24 hours after rain, or if the surface has been compacted, without first loosening the ground.
4. The seed shall then be covered with a fine layer of soil to a depth not greater than 1/4-inch.
5. All lawn areas shall be covered with sphagnum peat moss or clean straw uniformly at a rate of [1-1/2] standard bales per [1000] sq ft.
6. After covering the seeds with soil and peat or straw, the planted area shall be rolled in 2 directions with a 200-lb roller or other roller designed for lawn seeding.
7. This seeding method may be utilized between [March 1] and [September 15].

#### C. **Hydro-Seeding:**

1. One-step hydro-seeding may be utilized between [May 1] and [September 15]. This method shall consist of preparing the seed bed as specified; combining specified seed mixture at the rate of [6 lb per 1000 sq ft for LAWN MIX] [16 lb per acre for NATIVE SEED MIX]; fertilizer at the rate of [15] lb per [1000] sq ft; mulch at the rate of [1400] lb per acre and water in tanks; agitating these compounds into a well-mixed slurry suspension; and spraying the mixture under pressure onto the prepared areas to be seeded.
2. Two-step hydro-seeding may be utilized between [March 1] and [September 15]. This method shall consist of preparing the seed bed as specified; sowing specified seed mixture at the rate of [6 lb per 1000 sq ft for LAWN MIX] [16 lb per acre for NATIVE SEED MIX] in 2 directions with an approved mechanical seeder; incorporating fertilizers; and spraying under pressure a mixture of water and mulch at the rate of [1400] lb per acre onto prepared, seeded, and fertilized areas. Fertilizer can be applied with the water and mulch mixture if desired.



### 3.13 MISCELLANEOUS ITEMS

- A. After all steel edging, plants, and sprinkler emitters are in place, and the existing sod in all wood mulch, cobble, and gravel areas has been removed to a depth of 4 inches, place filter fabric over the entire area to receive wood mulch, cobble, or gravel.
- B. Wood chip mulch shall be placed in all shrub areas where indicated, spread carefully and evenly to a minimum depth of 4 inches over planted areas.
- C. Gravel shall be placed in the planting areas indicated, spread carefully and evenly to a minimum depth of 4 inches over the entire area.
- D. Cobble shall be hand placed where indicated. Care shall be taken to fill all spaces, placing small cobble in the voids between the large cobble. When complete, the CONTRACTOR shall fill all voids with sand and water thoroughly to ensure settlement of sand into all cracks and voids. Repeat as necessary to prevent the cobble from shifting.
- E. Boulders shall be located as indicated.

### 3.14 MAINTENANCE OF LANDSCAPING PRIOR TO ACCEPTANCE OF PROJECT

- A. **General:** The CONTRACTOR shall be responsible for protecting, watering, and maintaining all planting and irrigation systems until final acceptance of all WORK under the Contract.
- B. Upon completion of lawn seeding, the entire area shall be soaked to saturation by a fine spray. The new planting shall be kept watered by the sprinkling system during dry weather or whenever necessary for proper establishment of the lawn. Care shall be taken to avoid excessive washing or puddling on the surface and any such damage caused thereby shall be repaired by the CONTRACTOR at no additional cost to the OWNER.
- C. **Protection:** The CONTRACTOR shall provide adequate protection to all newly seeded areas including the installation of temporary fences to prevent trespassing and damage, as well as erosion control, until the end of the one-year correction period.
- D. **Watering:** Trees and shrubs shall be thoroughly soaked after planting and provided with additional water at intervals as necessary to provide for good health and growth.
- E. **Mowing of Lawn Areas:** First mowing of lawn areas shall begin as soon as the grass has reached a height of 3 inches and subsequent mowing shall be as often as necessary to maintain all lawn areas at a uniform height of 1-1/2 to 2 inches.
- F. All lawns shall be fertilized every three weeks with 6 lb of 16-16-8 commercial fertilizer per 1000 sq ft for the first 7 weeks and fertilized thereafter once every four months prior to acceptance and during the maintenance and correction period.
- G. At time of acceptance of the complete project, the lawn shall be totally established with no bare spots, mowed a minimum of 4 times, and the grass shall be at least 1-1/4 to 2 inches in height.
- H. Plants shall be maintained in a vigorous, thriving condition by watering, cultivating, weeding, pruning, spraying, and other operations necessary. No trees or shrubs will be accepted unless they are healthy and show satisfactory foliage conditions.

- I. All planted areas shall be cultivated at least every two weeks and raked smooth, to present a neat appearance, and additional mulch shall be added where necessary.
  - J. Maintenance shall include, in addition to the foregoing, cleaning, edging, repairs to stakes, wire, and wrappings, the repair of erosion, and all other necessary work of maintenance. Sidewalks and other paved areas shall be kept clean while planting and maintenance are in progress.
  - K. Any materials, equipment or sprinkler lines broken, disrupted or damaged during construction shall be replaced to proper working order.
- 3.15 FINAL INSPECTION PRIOR TO CORRECTION PERIOD
- A. Inspection of lawns and planting will be made at the time of final acceptance.
  - B. Written notice requesting inspection shall be submitted to the CONSTRUCTION MANAGER at least 10 days prior to the anticipated inspection date.
- 3.16 MAINTENANCE DURING CORRECTION PERIOD FOLLOWING ACCEPTANCE OF PROJECT
- A. **General:** The CONTRACTOR shall be responsible for a period of one year after date of acceptance of all WORK under the Contract, for maintaining all plantings, including all necessary plant or tree replacements, weeding, cultivating, fertilizing, pruning, controlling insects and diseases, re-guying, and performing all other operations incident thereto [as well as maintenance of the irrigation system specified in Section 02810].
  - B. The WORK covered by the maintenance and correction period consists of providing all replacements of plants, labor, materials, equipment, and supplies and in performing all operations in connection with maintenance and guarantees.
  - C. Any delay in the completion of any item of WORK in the planting operation which extends the planting into more than one season shall extend the correction period in accordance with the date of completion.
  - D. The CONTRACTOR shall replace, as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition which are noted during and at the end of maintenance and the one-year correction period.
  - E. Plants used for replacement shall be of the same size and variety indicated in the plant list. Plants shall be furnished, planted, staked, and mulched as indicated.
  - F. After the lawn has been accepted and has been mowed 4 or more times, the responsibility for mowing and irrigation will be turned over to the OWNER. Watering and mowing of the lawn during the maintenance and correction period will be performed by the OWNER in accordance with written instructions which shall be furnished by the CONTRACTOR. However, the weeding, fertilizing, and controlling of diseases of the lawn areas shall remain the responsibility of the CONTRACTOR for the remainder of the one-year maintenance and correction period.
  - G. All water required during the maintenance and correction period will be furnished by the OWNER.

- H. All lawn and planting areas shall be fertilized during the maintenance and correction period with 16-16-16 chemical fertilizer. The amount of fertilizer applied shall be per the manufacturer's written instructions on the bag. Fertilizers applied to planting areas shall be cultivated into the top 2 inches of topsoil.
  - I. The CONTRACTOR shall clean-up and remove unused or waste materials from the site and leave the area in a neat condition whenever it performs work during the maintenance period.
- 3.17 FINAL INSPECTION AT THE END OF CORRECTION PERIOD
- A. The OWNER and CONTRACTOR shall make a final inspection at the end of the one-year correction period. Any trees, shrubs, plants and any materials found defective at the time of final inspection shall be replaced within a time agreed upon by both parties. If it is too late in the planting season for replanting, the replacements shall be made during the next planting season even though such planting may occur after the maintenance and correction period ends.

\*\* END OF SECTION \*\*