

PART 1 GENERAL

1.1 SCOPE:

- A. This Section covers the work necessary to establish lawns by means of seeding or sod, planting of ground covers, fertilizing, weeding, placement of top soil - trees, shrubs and plants, maintenance of planted areas, irrigation systems and drain-ways complete.

PART 2 PRODUCTS

2.1 GRASS SEED:

- A. All seed products shall be handled in accordance with Oregon State laws and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act.
- B. Seed shall be from the latest crop available and further shall be tested blue tag stock.
- C. Containers shall bear a label showing the seed variety, percentage of purity, germination, maximum weed content, date of test (within nine months of the delivery date), as set forth in the General Seed Certification Standard by the Oregon State University Certification Board.
- D. Mold or evidence of container having been wet or otherwise damaged will be cause for rejection of each lot of seed.

2.2 GRASS SOD:

- A. Provide grass sod from certified or approved source, strongly rooted and free of pernicious weeds.

2.3 PLANTS:

- A. Provide plants which are nursery grown and are sound, healthy, vigorous, and free from insects, diseases, and equal to or exceeding measurements specified. Provide sizes and methods of handling according to the code of standards recommended by the AAN.
- B. Names specified and/or shown on the drawings conform to standardized names of the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform to names generally accepted in the nursery trade.

2.4 IMPORTED TOP SOIL:

- A. Where imported topsoil is specified in the Contract Documents, provide natural, fertile, friable topsoil, representative of local productive soil, and 90-percent free of clay lumps or other foreign matter larger than 2-inch diameter, not frozen or muddy, with a pH 5.0 to 7.0, and not less than 3-percent humus as determined by loss on ignition of moisture-free samples dried at 100^o C.
- B. Imported topsoil shall be free of quack grass, horsetail, and other noxious vegetation and seed.

Should such regenerative material be present in the soil all resultant growth, both surface and root, shall be removed by Contractor within one (1) year of acceptance of the work at no expense to the Owner.

2.5 SAND:

- A. Sand shall be inert material, washed and reasonably free of clay, loam, shale, alkali, vegetable matter, and other deleterious matter occurring either free or as coating particles.
- B. Do not mix sand from differing geological sources.

2.6 PEAT:

- A. Use a peat consisting of natural residue formed by decomposition of reeds, sedges, or mosses from freshwater site, free from lumps, roots, and stones, absorbing at least four times its dry weight of water, organic matter not less than 90-percent on a dry weight basis, and maximum moisture content at time of delivery of 65-percent by weight.

2.7 LIME:

- A. Provide a lime composed of ground dolomitic limestone not less than 85-percent total carbonates and magnesium, ground so that 50-percent passes #100 sieve and 90-percent #20 sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing #100 sieve.

2.8 UNDERDRAINS:

- A. Underdrains shall be of PVC slotted drainpipe, Schedule 80 and 4-inch diameter. Pipe shall have a minimum of 4 rows at 0.010-inch openings minimum and spaced at a maximum of 0.025-inch per opening. Aardvark, flush joint thread, conforming to ASTM F480 or equal will be acceptable.
- B. All fittings, bends and appurtances shall be of same manufacturer or approved as a substitute by the Manufacturer.

2.9 IRRIGATION SYSTEMS:

A. PIPE.

1. Use PVC pipe (SDR-PR), conform to ASTM D2241, and use fittings of PVC with deep socket dimensions conforming to ASTM D2466.
2. When using copper pipe, Type K soft copper, conforming to ASTM B88, with commercially pure wrought copper solder joint fittings. Make joints with 95-5 wire solder, ASTM B 32, Grade 95 TA. The use of cored solder will not be permitted.

B. GATE VALVES.

1. Install the following gate valves: to and including 3-inch with bronze bodies, 4-inch and larger with either bronze or iron bodies, all with bronze, all with bronze stems, bronze seat rings, and bronze disc faces, conforming to ASTM B62.

C. PRESSURE REDUCING VALVES.

1. Use adjustable, heavy duty bronze, with approved stainless steel or Monel strainer to permit quick cleaning or replacement without dismantling or removing the valve from the line and with integral or independent union.

D. CONTROL VALVES.

1. Provide manual control valves of brass or bronze for underground installation, with cross or slot type handle for operation with a standard key, removable bonnet and stem assembly, adjustable packing gland, rising stem to assure full opening of valve, renewable disc-type washer seat, and integral or independent union for supply line connections.

E. QUICK-COUPLING VALVES.

1. Supply one-piece body type, locking cap, body of approved heavy duty brass or bronze, watertight before and after the coupler is inserted, and designed so that the valve seat is closed before the coupler is removed. Provide valve couplers, keys, and hose swivels of compatible design to quick-coupling valves.

F. RISERS.

1. Connect sprinkler heads and quick-coupling valves to galvanized steel pipe water supply lines with galvanized steel pipe risers. Heads and valves connected to plastic pipe water supply lines shall, in addition, be provided with an approved swing joint.

G. VACUUM BREAKERS.

1. Install bronze-bodied machined valve seat, with working pressure rating to 150 psi. Provide pressure type vacuum breaker as an assembly consisting of vacuum breaker as an assembly consisting of vacuum breaker, two gate valves, check valve union, and nipples, as approved.

H. BACKFLOW PREVENTERS.

1. Use either reduced pressure or double check valve assemblies, as shown, of a type and size approved by the Engineer and in compliance with State and local Plumbing Codes.

2.10 FERTILIZER:

- A. Fertilizer shall be non-chemical, organic type.

- B. Contractor shall submit his proposal for organic fertilizer to the Engineer for approval at or before the Pre-Construction Conference.

2.11 TIE-DOWNS:

- A. Use one or more of the following as needed:
 - 1. Wood stakes, 2-inch by 2-inch by height as needed, clear straight cedar, or approved equal.
 - 2. Wire for guys, or for fastening trees to stakes, of 12-gauge, pliable galvanized steel.
 - 3. Hose for guy wire encasement, of 2-ply reinforced rubber garden hose, minimum 1/2-inch diameter new or used.
 - 4. Turnbuckles, zinc-coated, with a 6¹/₂-inch lengthwise opening, 3/8-inch diameter threaded openings fitted with screw eyes.
 - 5. Wrapping material of first quality, burlap, minimum 8-ounce weight, 6-inches to 10-inches in width.
 - 6. Eye-bolt masonry anchors of galvanized steel, with galvanized shield of slush shield for setting into masonry joint or concrete.

PART 3 EXECUTION

3.1 GENERAL:

- A. Conform to manufacturer's and supplier's recommendations and instructions and to accepted industry standards.

3.2 DELIVERY, HANDLING, AND STORAGE:

- A. Deliver sod immediately on lifting and after lawn bed is prepared for planting. Protect sod from drying by covering during delivery to protect from sun and wind. Store materials only in areas of site designated.
- B. If sod is not laid within two days of delivery, spread out flat with grass side up in a cool place and kept moist. Rolled or stacked sod that becomes yellow will not be accepted.

3.3 SOIL TEST

- A. If it is deemed necessary, by the Engineer, a soil test will be made on a sample of the native material by a certified laboratory for chemical analysis and recommendations for soil improvement.
- B. If required, the soil test will be done at no expense to the Contractor.

3.4 PREPARATION OF SUBGRADE:

- A. After rough grading is completed and before topsoil is spread, apply lime and/or super phosphate as determined by soil analysis.

3.5 UNDERDRAINS:

- A. Underdrains shall be sloped at 1/4-inch per foot, unless otherwise shown on plans.
- B. Underdrains shall be enveloped in filter fabric and drain rock as specified in SECTION 2200 of these specifications.

3.6 SEEDING:

- A. Plant grass seed only at times when local weather and other conditions are favorable to the preparation of the soil and to the germination and growth of grass seed. Sow grassed areas evenly with a mechanical spreader at a rate of one pound per 300 square feet, roll with cultipacker to cover seed, and water with fine spray. Method of seeding may be varied, as approved, however, responsibility to establish a smooth, uniformly grassed area will not be waived.

3.7 SOD:

- A. Before sod is laid, correct soft spots and irregularities in grade of prepared bed, as approved. Lay so that no voids occur and tamp or roll, brush or rake screened topsoil with no lumps or stones larger than 3/4-inch over sodden area. Water sod thoroughly. Complete sod surface true to finish grade even and firm. On slopes steeper than 1:2, fasten sod with wooden pins 6-inches long driven through sod into soil flush with top of sod at approved intervals.

3.8 TREES, SHRUBS, AND GROUND COVER:**A. DELIVERY, PREPARATION, AND STORAGE.**

1. Dig plants with firm, natural balls of earth of diameter and in depth sufficient to encompass the fibrous and feeding root system required for full recovery of plant. Firmly wrap balls with burlap and bind with twine, cord, or wire mesh. Where necessary, to prevent breaking or cracking of ball during process of planting, or where the tree exceeds 4-inches in diameter, secure ball to a platform.
2. Dig bare root plants to remove earth with the least possible injury to fibrous root system. Cover roots with thick coating of mud by submerging or wrapping in wet straw, moss, or other suitable packing material immediately after digging for protection until delivery.
3. Furnish container grown plants with self-established root systems sufficient to hold earth together after removal from container but not root-bound, grown for at least three months in container.
4. If plants are not in dormant state, spray with anti-desiccant to cover foliage as

recommended by manufacturer, prior to digging plants. During shipment, protect plants with tarpaulin or other approved covering to prevent excessive drying from sun and wind.

5. Cover balls of balled and burlapped plants, and containers of container grown plants which cannot be planted immediately upon delivery with moist mulch to protect from drying. Plant or heel-in bare root plants immediately upon delivery. Water plants as necessary to prevent drying until planted. Do pruning only at time of planting.
6. Open and separate all bundles of heeled-in bare root plants before the roots are covered. Avoid leaving air pockets among roots.

B. SOIL CONDITIONING.

1. If soil test is required by the Engineer and indicates soil conditioning is required, Contractor shall thoroughly mix topsoil with conditioning agent as directed by soil report and manufacturer's directions.

C. PLANTING PROCEDURE.

1. Locate new planting where shown, except make approved adjustments where obstructions below ground are encountered or where changes have been made in the construction. Place no planting, except ground cover, closer than 18-inches to pavements and structures. Dig plant pits and have soil mixture for planting ready before plants are delivered. Excavate circular pits with vertical sides a minimum of 1-foot greater than the diameter of the ball. For trees, shrubs, and vines excavate pits to depth sufficient to accommodate ball or roots when plant is set to finished grade. Place 3-inches of compacted soil mixture in the bottom of pit. Set plants upright and face as approved to give the best appearance or relationship to adjacent structures. Do not pull burlap from under balls. Remove wire and surplus binding from top and sides of balls. Spread roots in normal position. Cut all broken or frayed roots off cleanly. Place prepared soil mixture and compact carefully to avoid injury to roots and to fill voids. When hole is nearly filled, add water as necessary and allow it to soak in. Fill hole to finished grade and form shallow saucer around plant by placing ridge of topsoil around edge of pit 2-feet greater than diameter of ball. After ground settles, fill with additional soil to level of finished grade.
2. Plant trees before surrounding smaller plants and covers are placed. Position trees as shown or, where spacing dimensions or locations are not clear, as approved
3. Plant shrubs on centers as shown, with spacing adjusted if required to evenly fill bed using specified quantity of plants.
4. Plant hedges on centers as shown. Excavate trenches a minimum of 4-inches deeper and 12-inches wider than spread of roots or diameter of balls. Make adjustments to spacing if necessary to fill trench evenly with the quantity of plants shown.
5. Plant ground covers in beds having minimum 8-inches of prepared soil mixture. Treat

ground cover beds after preparation for planting, but before any plants are installed within bed area, with soil sterilant to destroy weed seeds. Apply according to manufacturer's directions delaying planting for the recommended minimum period to allow dissipation of herbicide. Space plants as shown. Mulch and water immediately after planting.

6. Plant bulbs in ground cover beds to recommended depths for each bulb type as shown.
7. Provide trees and planting beds with 2-inch layer of organic within two days after planting and keep at this depth throughout maintenance period. Cover beds with stone mulch where shown to a depth of 4-inches. Mulch to entirely cover area of saucer around each tree.

D. DRAINAGE OF PITS AND BEDS.

1. Furnish subsoil drainage where shown. Dig trenches with vertical sides and smooth bottoms a minimum of 12-inches wide and 6-inches below tree balls, or 18-inches below finished grade at highest end of drain.
2. Lay filter fabric snugly in trench against native excavation and the place drain rock bedding material to grade. Bed drainpipe firmly, lay true to grade with minimum slope of 0.0208-feet-per-foot (1/4-inch per foot) and connect to approved outlet or discharge at grade.
3. Backfill trench with drain rock to a minimum of 4-inches above the top of drain pip, or as shown on plans, then overlay filter fabric on top.
4. Complete backfilling with approved native material and topsoil to finish grade as shown on plans.

E. PRUNING AND REPAIR.

1. At completion of planting work, prune and repair injuries to all plants. Limit amount of pruning to minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of planting operations. Do not change natural habit or shape of plant. Make cuts flush, leaving no stubs. On all cuts over 3/4-inch in diameter and bruises or scars on bark, trace the injured cambium back to living tissue and remove. Smooth and shape wounds so as not to retain water. Coat with approved tree wound paint.

3.9 IRRIGATION SYSTEMS

A. GENERAL.

1. Install components of the irrigation system as shown and as recommended by the equipment manufacturers. All sprinkler run outs shall be evenly graded to the drain points shown. Piping beneath paved areas shall have a minimum cover of 30-inches.

B. PVC PIPE.

1. Cut, make up, and install PVC pipe, sprinkler heads and valves in accordance with the manufacturer's recommendations, as approved.
2. Bed PVC pipe in sand, as shown and backfill to a minimum of 2-inches above the pipe with sand.
3. Flush out system thoroughly before installing sprinkler heads. Adjust flow on each head for proper coverage.
4. Do not lay pipe when ambient temperature is less than 40 degrees F.

3.10 MEASUREMENT AND PAYMENT:

- A. All landscaping work and products shall be paid for at the unit price established in the Bid for work completed and field verified and/or measured.

PART 4 TESTING**4.1 GENERAL:**

- A. **IRRIGATION SYSTEM** - When irrigation system is installed, complete, a line test of the working pressure will be performed in accordance with SECTION 5000 of these specifications.
- B. All other products shall be tested at the discretion of the Engineer for conformance with these specifications and in accordance with standard testing and lab practices.

END OF SECTION