This master should be used by designers working on Port of Portland construction projects and by designers working for PDX tenants (“Tenants”). Usage notes highlight a few specific editing choices, however the entire section should be evaluated and edited to fit specific project needs.

Additional landscaping standards detailing preferred plants and locations can be found at <http://www.portofportland.com/PDFPOP/Env_2009_WHMP_Lndscpng_%20Stndrds.pdf>.

SECTION 329300 - TREES, SHRUBS, AND GROUND COVERS

1. GENERAL
	* + 1. DESCRIPTION
				1. This section describes planting trees, shrubs, and ground cover, including mulching, pruning, guying, and staking.
			2. REFERENCES
				1. AAN: American Association of Nureserymen
				2. ANSI: American National Standards Institute

ANSI Z60.1: Nursery Stock

* + - * 1. National Arborist Association Standard No. 3
			1. RELATED WORK SPECIFIED ELSEWHERE
				1. Section 329000, Landscape Maintenance
				2. Section 329113, Soil Preparation
			2. SUBMITTALS
				1. Certify in writing, within five days of Notice to Proceed, confirmed orders for plants and provide the quantity, location, telephone number, and address of the grower who has agreed to provide any plant material.
				2. Submit sample of bark mulch for review 10 days prior to delivery to the work area.
				3. Certificates required by law shall accompany shipments. Deliver all certificates to the Port.
			3. QUALITY ASSURANCE
				1. The Contractor shall provide one person who:

Directs work performed under this section.

Is familiar with the materials and best methods for installation.

Is present at all times during execution of work in this section.

* + - * 1. Government Inspection: Plants and planting material shall meet or exceed the specifications of federal, state and county laws requiring inspection for plant disease and control.
				2. Industry Standards:

Sizes and Conditions: Quality definitions, grading tolerances and caliper to height ratios shall be no less than minimums specified in American Standards for Nursery Stock, published by American Association of Nurserymen, Inc., ANSI Z60.1.

Botanical Names: American Joint Committee on Horticultural Nomenclature, “Standard Plant Names” or “Hortus Third.”

* + - * 1. The Port may inspect plants and planting materials at a growing or holding site in addition to the work area. Approval of material at a growing or holding site is a qualified endorsement of general quality only, and does not certify compliance with the specifications in all cases. Such approval does not preclude the right of rejection at the work area.
				2. Nursery: Unless otherwise approved by the Port, obtain all plants of each type from the same nursery.
			1. PREPARATION FOR DELIVERY
				1. Bare root and balled and burlapped plants shall conform to ANSI Z60.1.
			2. DELIVERY
				1. Deliver fertilizer to the work area in original unopened containers bearing manufacturer’s guaranteed chemical analysis, name, trade name, and trademark.
				2. Notify the Port of delivery schedule 24 hours in advance to allow inspection upon arrival at the work area.
				3. Remove unacceptable plant material from the work area immediately.
				4. Do not deliver more plant materials than can be planted in one week.
				5. Protect plants during delivery to prevent damage to root ball or desiccation of leaves.
				6. Spray deciduous trees in leaf with anti-desiccant during hot weather (greater than 80°F) with winds exceeding 10 mph, or other conditions that could produce desiccation. Anti-desiccant shall be Wiltproof, or equal, applied to tops and bottoms of leaves per manufacturer’s recommendations.
			3. STORAGE
				1. Heel‑in bare-root or balled and burlapped plants immediately upon delivery if not planted within 4 hours.
				2. Store plants in shade and protect from harmful weather until planted.
				3. Water, maintain, and protect stored material from drying or other injury or damage.
				4. Store plants in upright position and allow sufficient ventilation.
			4. HANDLING
				1. Do not pick up containerized or balled plants by stems or trunks.
				2. Do not drop plants.
			5. PROTECTION
				1. See Section 015000, Temporary Facilities and Controls, for requirements for location and protection of underground utilities.
				2. Barricade or cover excavations as necessary to protect pedestrians, workers, equipment, and adjacent property.
			6. SITE CONDITIONS
				1. Plant after preparation of plant beds and when soil conditions are suitable in accord with locally accepted practice.
				2. Planting Conditions: Planting is not permitted under the following conditions, unless otherwise approved:

Cold Weather: Less than 32°F.

Hot Weather: Greater than 90°F.

Wet Weather: Saturated soil.

Windy Weather: Wind velocity greater than 20 mph.

* + - * 1. Irrigation system shall be operational prior to any planting.
			1. WARRANTY PERIOD
				1. The Contractor will not be held responsible for vandalism, theft, atypical weather conditions or hidden peculiarities of work area during the warranty period.
				2. Plant materials shall be in healthy condition at end of the warranty period.
				3. Remove dead and rejected material within five days of being so directed. Replace as soon as possible.
				4. Repair, at no additional cost to the Port, any damage to other plants or other property caused by the Contractor during replacement of plant materials during the warranty period.
1. PRODUCTS
	* + 1. GENERAL PLANT REQUIREMENTS
				1. Quality and Size:

Provide healthy nursery stock, well branched and rooted, full foliaged when in leaf, healthy, sound, vigorous, and free from insects, diseases, weeds, weed roots, injuries, and defects such as knots, sun‑scald, windburn, abrasions, or disfigurement, equal to or exceeding measurements specified in plant list.

Provide trees that are well shaped and properly pruned with normal branching configurations. Trees of the same species and size shall be headed to the same height unless noted otherwise.

Sizes and methods of handling shall be according to the American Standard for Nursery Stock recommended by the AAN.

Trees approved by the Port to be planted without the required tree wrap shall be marked with a small white dot of paint 12 inches from the ground at the nursery, on the true southern growing exposure. Trees not marked shall be wrapped.

* + - * 1. Root Protection:

Shrubs and trees over 1 1/2‑inch caliper shall be balled and burlapped or grown in the container in which they are delivered for a minimum of nine months.

Furnish small, container‑grown plants in removable containers or integral peat pots, well rooted to ensure healthy growth.

Container‑grown plants shall be in containers from six months to two years prior to delivery, with roots filling container but not root bound.

Greenhouse plants shall be acclimated outdoors for 30 days prior to delivery.

Bare‑root stock shall have well‑branched, fibrous root systems.

* + - * 1. Trees shall be well‑branched, with straight single leaders, tops, and trunks; no cross branches, dead or broken leaders or major branches; no fresh cuts over 1‑inch diameter; and not “topped” or sheared. Grafted trees shall be base grafted or base budded, unless indicated otherwise.
			1. PLANTING SOIL MATERIALS
				1. Prepared soil mix for pocket planting shrubs and trees shall be two parts by volume of soil from pit thoroughly mixed with one part by volume of yard debris compost.
				2. Bark mulch shall be standard commercial produce, medium‑coarse ground bark mulch. Bark shall be ground red fir of uniform color, free from weeds, seed, sawdust, and splinters and shall not contain resin, tannin, wood fiber or other compounds detrimental to plant life. Source shall be from freshwater mill.
				3. Fertilizer for trees shall be plant tablets 20‑10‑5, 21-gram size.
				4. Fertilizer for ground cover shall be plant tablets 20‑10‑5, 10‑gram size.
			2. TREE SUPPORTS
				1. Wood stakes shall be 2-inch round by 8 feet, Douglas fir, construction grade.
				2. Guying materials shall include 1/4 inch steel cable, U‑bolt fastener, rubber hose at tree crotch, 2 inches by 4 inches by 30 inches pressure‑treated Douglas fir stakes and 1 inch diameter by 18 inches long white PVC pipe at base of each cable.
				3. Tree ties shall be Chainlock or equal.
				4. Provide approved safety flagging for guy wires.
			3. TREE WRAP
				1. Corrugated or crepe paper, designed specifically to resist insect infestation and sun scald.
			4. SELECTIVE HERBICIDE
				1. Selective pre‑emergence, surface‑applied herbicide shall be Devrinol, Surflan, or equal.
1. EXECUTION
	* + 1. EXCAVATION
				1. Excavate pits for trees and shrubs as indicated in details and consistent with accepted horticultural practices.
				2. Provide rough, not smooth, walls in planting pits.
				3. Immediately notify the Port if an unusual condition is encountered which appears detrimental to the new planting.
			2. PLANTING TREES AND SHRUBS
				1. Field place trees and shrubs in locations shown on the drawings. If plants are marked with southern orientation, place same as grown in nursery. Placement shall meet approval of the Port prior to backfilling. The Port may request rotation of trees or shrubs to give a better appearance with respect to adjacent plants and structures.
				2. Excavate pit two times the width and 6 inches deeper than root ball or container.
				3. Place 6‑inch minimum firmly compacted layer of prepared planting soil under root system of trees.
				4. Plant upright and plumb.

Choose “2 inches above level of” for non-PDX or “to the level of” for PDX.

* + - * 1. Tamp sufficient prepared soil mix under plants to bring top of root ball [2 inches above level of] [to the level of] finished soil subsurface.
				2. When setting balled plants, loosen and remove twine or wire binding and burlap from top two thirds of root balls after setting in pit. Do not pull wrapping from under ball. Do not plant if ball is cracked or broken. Remove all synthetic twine and wire cages.
				3. When setting container grown plants, carefully remove from container without injury or damage. Superficially cut edge roots on three sides with knife. Do not plant if root ball breaks or loosens.
				4. Backfill pit with prepared soil mix until 2/3 full and thoroughly mud‑in each tree with water.
				5. When pit is 2/3 full, insert fertilizer tablets evenly around perimeter of root balls of trees and shrubs.

For trees, insert 6 tablets, plus one per foot of tree height, to a maximum of 12 for each tree.

For 5-gallon size shrubs, insert 4 tablets.

For 1- to 5-gallon size shrubs, insert 2 tablets.

For ground cover, insert 1 tablet per plant.

* + - * 1. Place and compact prepared soil mix carefully to avoid injury to roots, filling all voids.
				2. When soil settles, fill pit with soil mix and water again.
				3. Initial watering‑in of trees by underground sprinkler system will not be permitted.
				4. Hose down planted areas with fine water spray to wash leaves of plants if required.
				5. Remove tags from plants.
			1. HERBICIDE
				1. Apply herbicide in planting areas per manufacturer’s recommendations.
			2. MULCH
				1. Apply 2‑inch layer of bark mulch over a properly cleaned and graded subsurface.
				2. Around trees and shrubs, apply within two days after planting.
				3. In ground cover areas, apply prior to planting.
			3. PLANTING GROUND COVER
				1. See Section 329113 for preparation of soil prior to applying herbicide and bark mulch.
				2. Apply herbicide and mulch as specified above.
				3. Plant ground cover in areas shown on the drawings.
				4. Plant ground cover deep enough so that plant roots are embedded in soil.
				5. Insert one fertilizer tablet adjacent to each plant when backfilling is halfway complete. Locate one inch from roots and at mid‑depth.
			4. WRAPPING AND INSTALLATION OF SUPPORTS
				1. Wrap trees promptly after planting to prevent sun scald. Wrap as approved by American Association of Nurserymen. Wrap spirally from ground line to the height of the first branch. Wrap in neat and snug manner and secure with tape at bottom, top, and in the middle. Wrap before staking or guying.
				2. Stake deciduous trees up to 2 1/2-inch caliper. Stake from three directions.
				3. Guy deciduous trees larger than 2 1/2‑inch caliper and guy all evergreen trees. Guy from three directions. Provide guying the same day trees are planted.
				4. Install with an angle of approximately 120 degrees between guys or stakes.
			5. FIELD PRUNING
				1. Prune trees and shrubs to remove damaged branches, dead wood, and suckers to improve natural shape. Prune per National Arborist Association Standard No. 3.
			6. ADJUSTMENT AND CLEANING
				1. Remove and replace plants or materials not meeting specified standards.
				2. Reinstall plants not located as indicated on the drawings.
				3. Keep the work area clean during progress of the work until completion.
			7. MAINTENANCE
				1. Irrigate when necessary to avoid drying out of plant materials and to promote healthy growth, until date of substantial completion.
				2. See Section 329000 for one‑year maintenance program.

END OF SECTION 329300