

Seattle-Tacoma International Airport

Landscape Design Standards



28 October 2020

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I. INTRODUCTION

A. Overview

The following Landscape Design Standards are to be used to guide the design, implementation and management of exterior landscape areas at Sea-Tac International Airport (SEA). Building interior landscape applications shall refer to the SEA Architectural Standards.

The Port of Seattle (Port) Landscape Standards Committee (see Appendix C) shall determine whether additional or less landscaping is required as follows:

- to build on the Port Landscape Design Guidelines and comply with the Landscape Master Plan.
- to minimize or to mitigate visual impacts of projects developed on “edges” of properties, or
- to ensure proposed landscaping meets the highest and best use from a natural resource standpoint.

Alternative landscaping may be required to mitigate wildlife attractants as determined by the Airport Wildlife Manager and in accordance with FAA Certificate requirements. Less landscaping shall require approval by the Landscape Standards Committee via the variance process.

To request changes, additions or removal of any portion of these Standards, refer to the Landscape Standards Update Request form on the Port of Seattle SharePoint site (see Appendix B).

All special or unique conditions not explicitly covered by these Landscape Standards will be addressed on a case-by-case basis through the Landscape Standards Committee.

B. Goals

The goals of these Landscape Standards are:

1. To enhance the aesthetic character of SEA resulting in improved appearance to the surrounding community;
2. To improve the quality of the built environment;
3. To integrate SEA into the surrounding community;
4. To promote the retention and conservation of existing natural vegetation;
5. To promote ecological function and habitat availability impacted by development;
6. To promote the safety and security of pedestrian, vehicular and aircraft traffic;
7. To promote land use compatibility; and
8. To promote the “Vision” for SEA outlined in the Landscape Design Guidelines and the “Aesthetic Concept” presented in the Landscape Master Plan.

The Landscape Standards will accomplish these goals by:

1. Screening undesirable views from the right-of-way and surrounding properties;
2. Providing a visual and physical buffer between different land uses;
3. Providing increased areas of permeable surfaces which allow infiltration of surface water, reduction in the quantity of storm water discharge, and improvement in the quality of storm water discharge;
4. Creating more sustainable landscapes through the use of drought- tolerant plants, “water-wise” irrigation techniques, and other innovative water management strategies;
5. Prioritizing species native to the Pacific Northwest to improve habitat function
6. Reducing wildlife hazards; and
7. Utilizing landscaping adjacent to paved parking areas.

C. Application

These Landscape Design Standards apply:

1. To all new development on vacant land or vacant property by the Port or its Tenants that requires a permit through either the Port’s Airport Building Department or City of SeaTac’s Department of Community and Economic Development.
2. When the cost of a building’s redevelopment totals one-half (1/2) or more of the appraised value of the existing building, then the current Landscape Design Standards shall be integrated into the redevelopment project.
3. When a renovation/rehabilitation project exceeds \$1 million in value.

These Landscape Standards shall not apply when a change of use occurs for a building or a site, unless the new use qualifies as a Temporary Use as defined by these Landscape Standards.

All references to the City of SeaTac shall apply only to Port properties within the City of SeaTac boundary.

Where conflicts occur between these Landscape Standards and other Port documents, the STIA Rules and Regulations and the Wildlife Hazard Management Plan supersedes any requirement outlined in these Landscape Standards as it relates to safety and security at SEA. The Landscape Standards shall supersede all other Port documents related to landscape requirements at SEA, unless a variance request is approved by the Landscape Standards Committee.

Remaining vegetated area not devoted to required landscaping by these Landscape Standards should undergo invasive species removal and be planted with shrubs and trees to realize a full canopy at maturity. No more than 20% of the remaining vegetated

area shall be tree canopy, as calculated using the “Maximum Spread” value for trees in the Approved Plant List (see Appendix B). Existing trees shall not be removed to meet this requirement. Existing native vegetation in these areas shall be retained to the extent feasible.

Wildlife hazards or attractants, as determined by the Airport Wildlife Manager, will be managed using appropriate wildlife mitigation techniques, such as, selective tree harvesting (see Section XI).

No landscaping will be allowed, other than grass type(s) specified in the Port Master Specifications, inside the Landscaping Exclusion Zone (See Appendix A).

D. Coordination with Other Standards

All new development shall comply with all applicable Port and other city, county, state and federal guidelines, codes, plans and standards in addition to these Landscape Standards. Port guidelines, standards, and Landscape Master Plan are available on the Port’s website at www.portseattle.org.

II. PROJECT REVIEW AND APPROVAL PROCESS

A. Landscape Plan Review and Approval

As identified in the ILA (refer to Section 5.2), the Airport Building Department shall administer and enforce the requirements of these Landscape Standards where the Port has building authority, and the City of SeaTac Building Department shall administer and enforce the requirements of these Landscape Standards where the City has building authority.

Each project on Port property is required to complete the pre-application checklist (refer to Section 5.6 of the ILA). The Port's Airport Building Department reviews all pre-application checklists before they are sent to the City of SeaTac. As part of that review the Airport Building Department will advise the Project Manager if additional requirements from the Landscape Design Guidelines may apply. The Project Manager is then responsible to schedule a meeting with the Landscape Standards Committee to get additional clarification regarding the potential scope.

Landscape areas located outside the FAA Critical Area, but within five (5) statute miles of SEA aircraft movement areas, loading ramps, or aircraft parking areas, may be reviewed by the FAA as needed to determine if they present potential wildlife hazards to aircraft operations. Any conflicts resulting from requirements or design changes made by the FAA relating to the safety and security of SEA shall supersede the requirements of these Landscape Standards.

B. Variance Process

A variance from any portion of these Landscape Standards may be approved by the Landscape Standards Committee where:

1. A literal application or enforcement of these Landscape Standards would result in practical difficulty or unnecessary hardship;
2. There are extraordinary circumstances, such as irregular lot shape, size or natural features of a property, or the physical character or configuration of a property is such that the strict implementation of these Landscape Standards will impose unnecessary hardships of the applicant or significantly interfere with reasonable use of the property;
3. The difficult or hardship circumstances described above is not the result of deed restrictions or the applicant's own actions;
4. The design of the project is compatible with other authorized uses within the area and will not cause adverse impacts, such as a lack of visual screening;
5. The variance will not constitute a grant of special privilege not enjoyed by the other properties in the area;
6. The variance requested is the minimum necessary to afford relief;

7. The public interest will not suffer any substantial detrimental effect; and
8. The relief granted will be in accordance with the spirit, or intent, of these Landscape Standards.

The applicant for the Variance Request must clearly state why the variance is requested based on the items above and how the requested variance will still meet the overall intent of these Landscape Standards. Refer to the Variance Request Form on the Port of Seattle SharePoint site (see Appendix B). Items to be considered in reviewing a Variance Request include, but are not limited to, the following:

- **Visual Character:** Supports the goals and visual design character and/or level of screening expressed in these Landscape Standards and in the Landscape Design Guidelines. This includes consideration of density, heights, appearance, and types of planting and screening.
- **Safety/Security:** The design must ensure the safety and security of the traveling public. The design shall not create a condition that would constitute a current or future wildlife hazard attractant.
- **Maintainability:** The design can be maintained per these Landscape Standards and/or other industry-standard, best management practices. Both short-term and long-term maintenance must be considered.
- **Environmental:** The design shall meet or exceed all relevant federal, state, and local environmental regulations.
- **Interlocal Agreement (ILA):** The design must be consistent with ILA commitments.

The Landscape Standards Committee shall either approve or disapprove a Variance Request within ten business days of receipt. If approved, a variance shall be issued in writing within ten business days. Appeals shall follow the process in Resolution #3745, Building Code Adoption, Section 13. If disapproved, the Landscape Standards Committee shall provide a written statement explaining the reasons for disapproval within ten business days. Additional conditions may be imposed by the Landscape Standards Committee upon granting a Variance Request.

An appeal to a decision regarding a Variance Request may be made, in writing, within two weeks of the date the Variance Request was approved or disapproved.

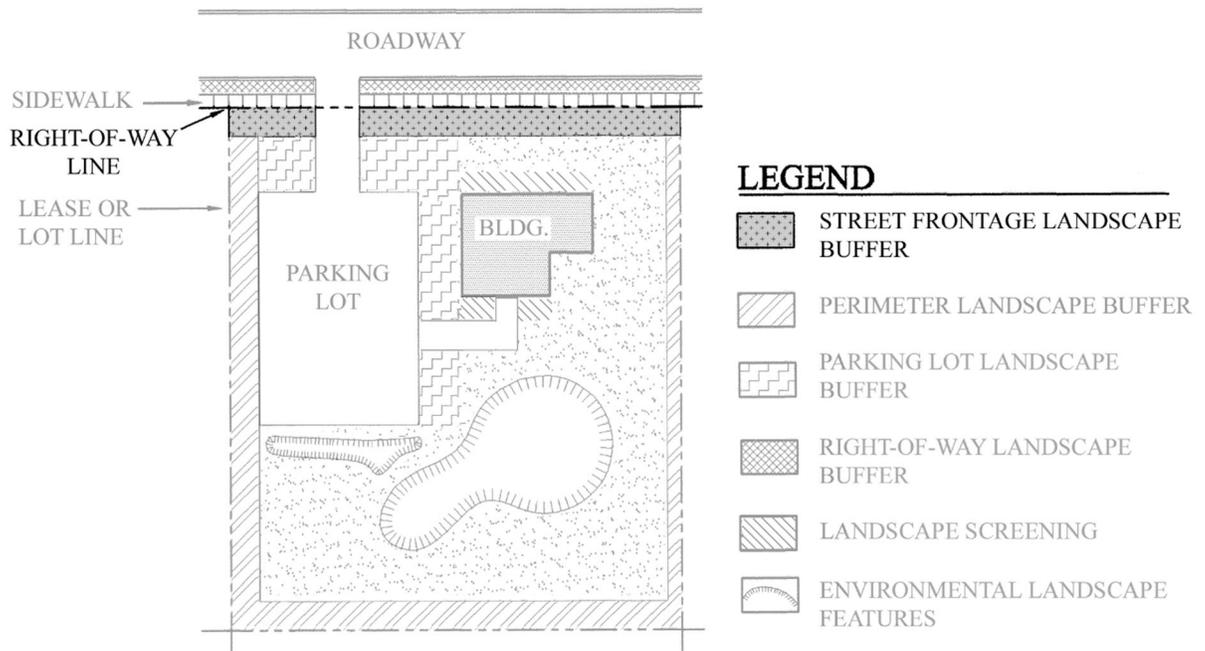
III. LANDSCAPE BUFFER AND SCREENING REQUIREMENTS

A. Purpose

The intent of the following types of landscape treatment is to serve as minimum requirements for quality landscaping at SEA and to meet the goals outlined in Section I.

All Landscape Buffer and Screening Types shall meet the requirements outlined in the General Landscaping Provisions (see Section VII).

B. Street Frontage Landscape Buffer



STREET FRONTAGE LANDSCAPE BUFFER

Conceptual Plan Diagram – Not to Scale

Location

Street Frontage Landscape Buffer shall be located adjacent to a right-of-way line, behind a sidewalk. Where a lease or lot line is set back and not directly adjacent to a right-of-way line, and no other developable Port lot is located between the lease or lot line and the right-of-way line, the Street Frontage Landscape Buffer along that lease or lot line shall be moved so that it is located directly adjacent to the right-of-way, but still within Port property.

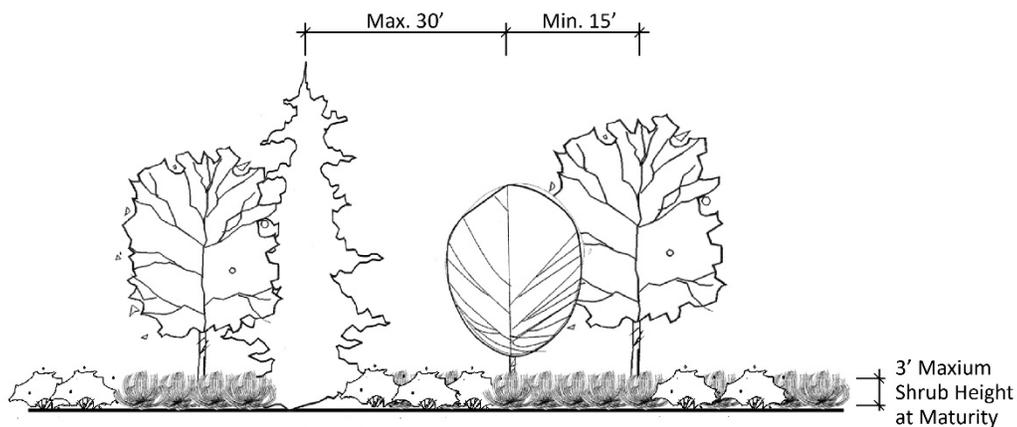
Requirements

For on-site Street Frontage Landscape Buffer in all uses, provide Type 1 Partial Buffer.

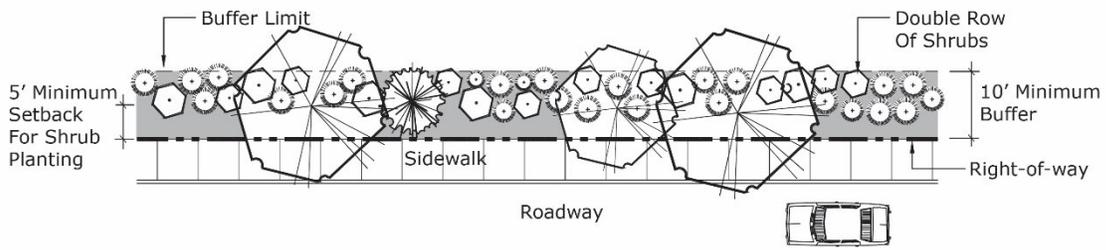
Type 1 Partial Buffer.

Type 1 Partial Buffer functions as a partial visual separator and shall be as follows:

1. Landscape areas shall provide shade and visual relief wherever possible and maintain clear sight lines.
2. Landscape buffer areas shall have a narrow dimension of no less than ten (10) feet.
3. Trees:
 - a. Canopy-type deciduous and evergreen trees chosen to result in a variety of canopy types and tree heights throughout the buffer.
 - b. Trees shall be provided at a rate of one (1) tree for every twenty-five (25) linear feet of landscape buffer.
 - c. At least 70% of the trees shall be deciduous.
 - d. Tree spacing may be evenly spaced or may vary between fifteen (15) and thirty (30) feet.
4. Shrubs:
 - a. Shrubs that do not exceed a height at maturity of three (3) feet.
 - b. A variety of shrub species shall be chosen.
 - c. Provide a double row of shrubs at on-center, triangular spacing; spaced so that they will have grown together within three (3) years
 - d. At least 50% of the shrubs shall be evergreen.
5. Living groundcovers:
 - a. Groundcovers shall be a height between one (1) and two (2) feet at maturity.
 - b. Groundcovers shall be 100% evergreen.

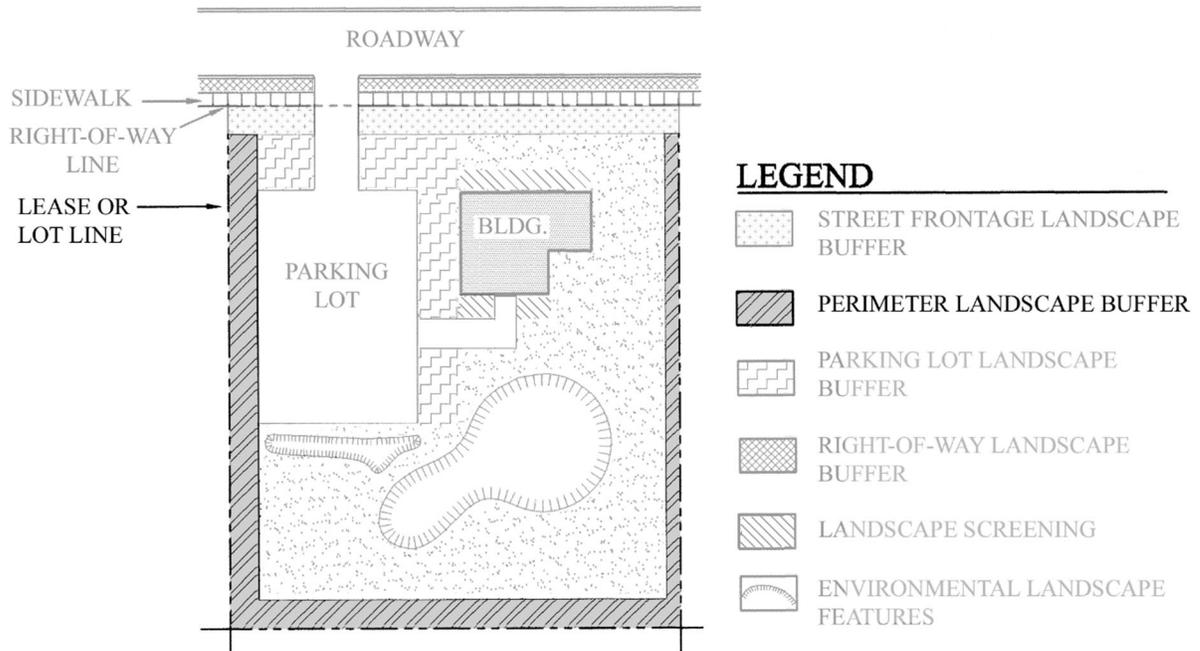


TYPE 1 PARTIAL BUFFER
Conceptual Elevation – Not to Scale



TYPE 1 PARTIAL BUFFER
Conceptual Plan – Not to Scale

C. Perimeter Landscape Buffer



PERIMETER LANDSCAPE BUFFER
Conceptual Plan Diagram – Not to Scale

Location

Perimeter Landscape Buffer shall be located adjacent to a Port lease or lot line.

Requirements

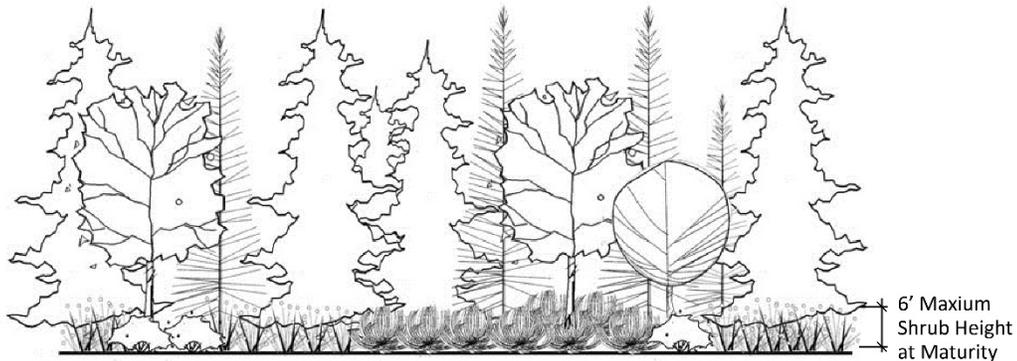
Perimeter Landscape Buffers shall be provided in accordance with the table below. Refer to the following descriptions for requirements specific to each buffer type listed in the table.

<i>Adjacent Use</i>	<i>Requirements along Side and Rear Perimeters</i>
Residential	Type 2 Full Buffer
Non-Residential – Port Owned	None
Non-Residential – Not Port Owned	Type 3 Filtered Buffer
Demolished Property	See Demolished Properties Section V.
Temporary Use	See Temporary Use Section VI.

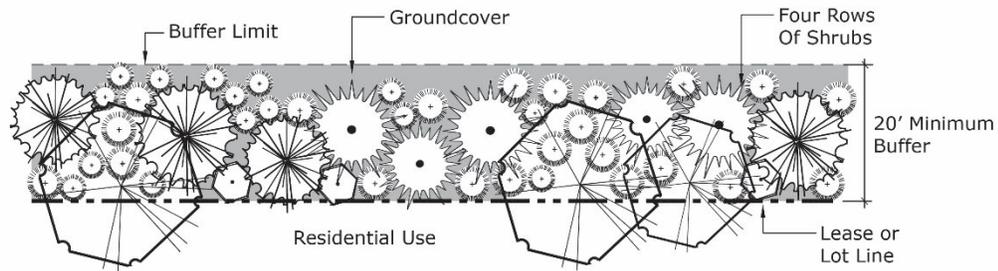
Type 2 Full Buffer.

Type 2 Full Buffer planting shall meet all of the following criteria:

1. Minimum 20' wide side and rear perimeter buffers as measured from the edge of the lease or lot line.
2. Trees, shrubs, and groundcovers shall prioritize native and/or xeric plant species, when feasible.
3. Trees:
 - a. Deciduous and evergreen trees provided at a rate of one (1) tree for every ten (10) linear feet of landscape buffer.
 - b. Trees shall be spaced with triangular spacing (staggered) in a manner sufficient to obscure sight through the buffer.
 - c. At least 70% of the trees shall be evergreen.
4. Shrubs:
 - a. Shrubs shall be a species that does not exceed a height at maturity of six (6) feet.
 - b. A variety of shrub species shall be chosen.
 - c. Provide four rows of shrubs at on-center, triangular spacing; spaced so that they will have grown together within three (3) years.
 - d. At least 90% of the shrubs shall be evergreen.
5. Living Groundcovers:
 - a. Groundcovers shall be a height between one (1) and two (2) feet at maturity.
 - b. Groundcovers shall be 100% evergreen.



TYPE 2 FULL BUFFER
Conceptual Elevation – Not to Scale

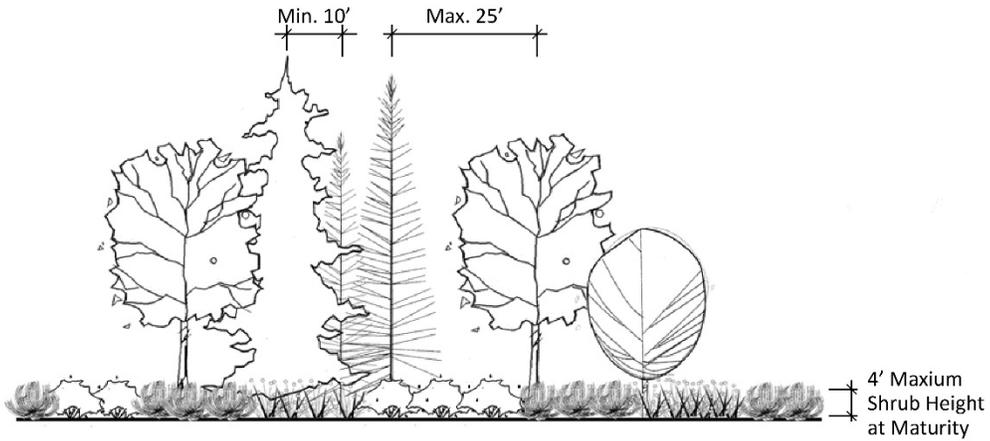


TYPE 2 FULL BUFFER
 Conceptual Plan – Not to Scale

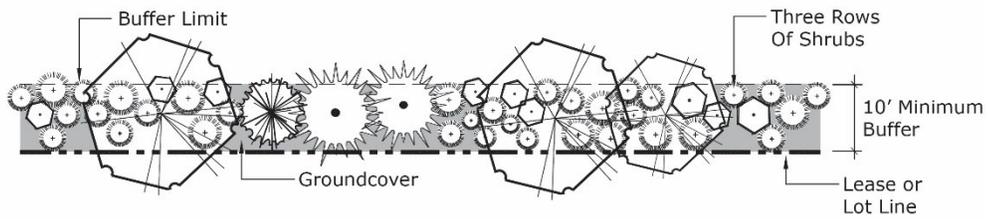
Type 3 Filtered Buffer.

Type 3 Filtered Buffer planting shall meet all of the following criteria:

1. Minimum 10' wide buffer as measured from the edge of the lease or lot line.
2. Trees, shrubs, and groundcovers shall prioritize native and/or xeric plant species, when feasible.
3. Trees and shrubs chosen and spaced so as to grow together within three (3) years in a manner sufficient to provide a filtered view through the buffer.
4. Trees:
 - a. Deciduous and evergreen trees provided at a rate of one (1) tree for every twenty (20) linear feet of landscape buffer.
 - b. Tree spacing may be evenly spaced or may vary between ten (10) and twenty-five (25) feet so as to create a filtered buffer.
 - c. At least 30% of the trees shall be evergreen and 50% deciduous.
5. Shrubs:
 - a. Shrubs shall be a species that does not exceed a height at maturity of four (4) feet.
 - b. A variety of shrub species shall be chosen.
 - c. Provide three rows of shrubs at on-center, triangular spacing; spaced so that they will have grown together within three (3) years.
 - d. At least 70% of the shrubs shall be evergreen.
6. Living Groundcovers:
 - a. Groundcovers shall be a height between one (1) and two (2) feet at maturity.
 - b. Groundcovers shall be 100% evergreen.

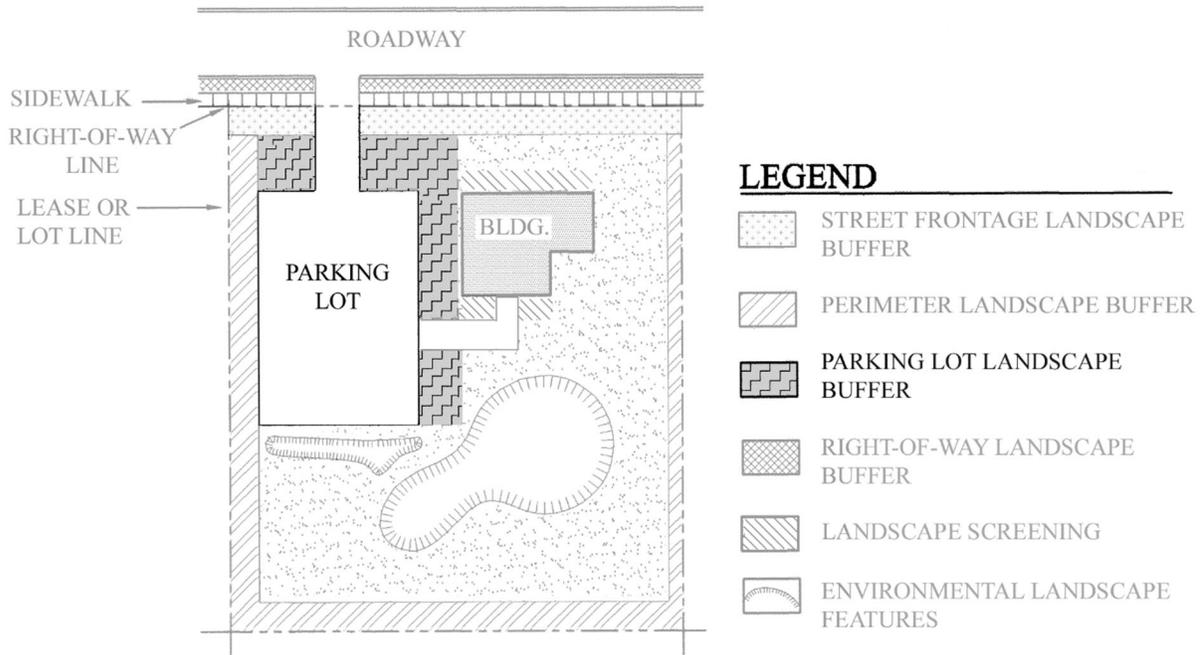


TYPE 3 FILTERED BUFFER
 Conceptual Elevation – Not to Scale



TYPE 3 FILTERED BUFFER
 Conceptual Plan – Not to Scale

D. Parking Lot Landscape Buffer



PARKING LOT LANDSCAPE BUFFER

Conceptual Plan Diagram – Not to Scale

Location

Adjacent to and/or within surface parking areas outside the AOA. Landscaping will not be required in parking areas inside the AOA.

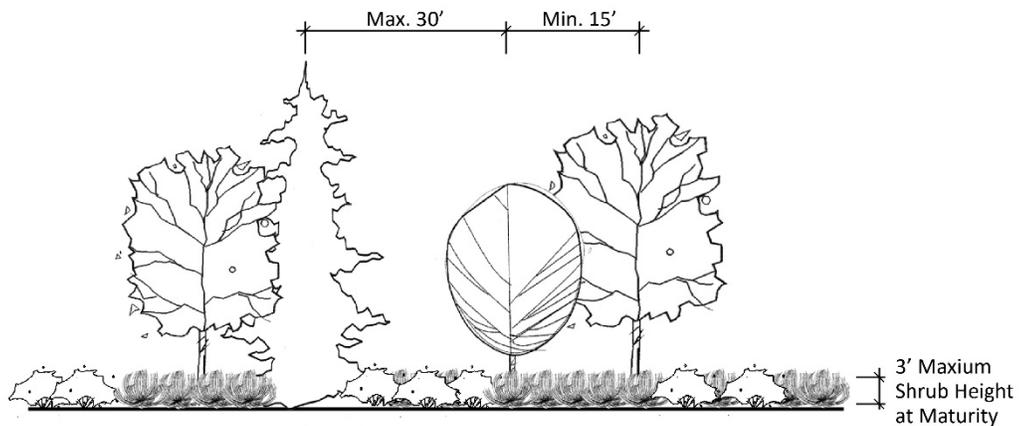
Requirements

Type 4 Parking Buffer.

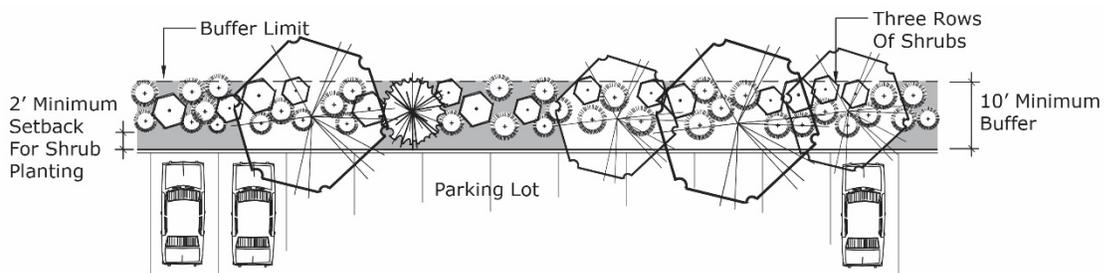
Type 4 Parking Buffer functions as a partial visual screen. Planting shall be provided per Type 1 Partial Buffer requirements above and as follows:

1. Add one (1) row of shrubs so that there are three (3) total rows of shrubs.
2. Interior planting areas shall be located at the perimeter of the parking lot and/or clustered at the lot entry drives to allow for the greatest flexibility and use of the interior of the parking lot area.
3. The combined, interior planting area and planting buffer area shall be a minimum of 10% of the interior parking lot area, including parking spaces and driving aisles, but

- not less than the required ten (10) foot wide planting buffer.
4. Planting areas meeting the requirements of a Type 4 Parking Buffer cannot be substituted and shall take precedence to any other required buffer or screening requirements.
 5. Permanent curbs or structural barriers shall be provided to protect the plantings from vehicle overhang.
 6. Plants within two (2) feet of a permanent curb or structural barrier shall not exceed a height of one (1) foot to allow for car overhangs, unless additional wheel stops are used.

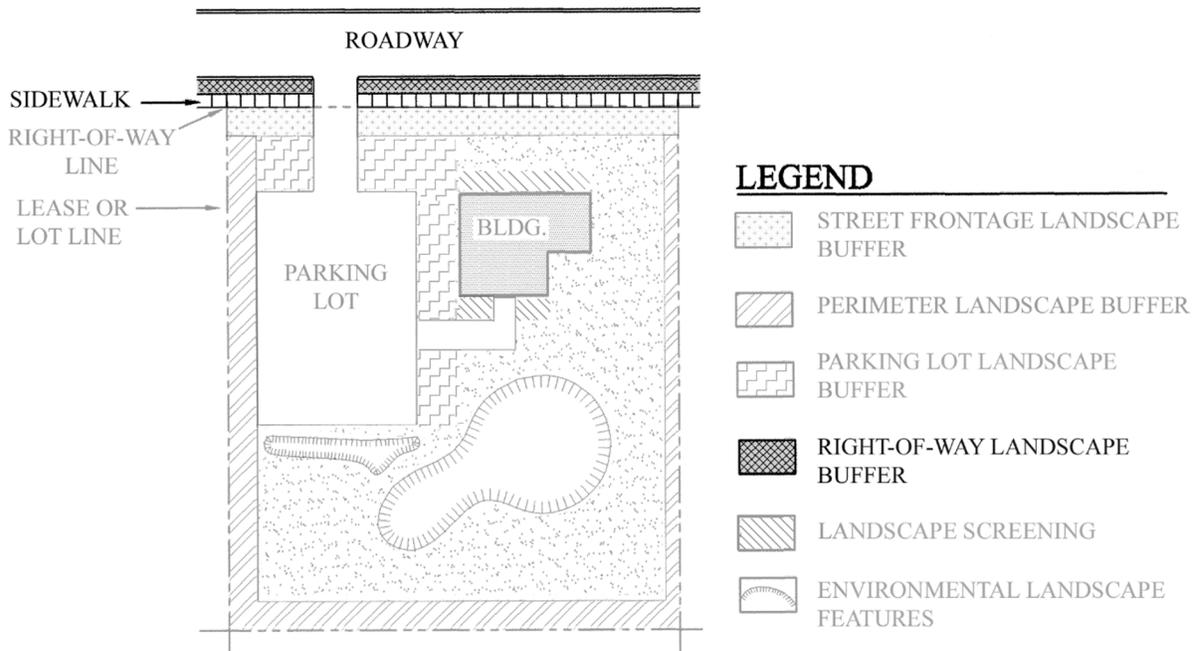


TYPE 4 PARKING BUFFER
 Conceptual Elevation – Not to Scale



TYPE 4 PARKING BUFFER
 Conceptual Plan – Not to Scale

E. Right-Of-Way Landscape Buffer



RIGHT-OF-WAY LANDSCAPE BUFFER

Conceptual Plan Diagram – Not to Scale

Location

Right-of-way landscape buffer shall be provided along the property frontage, within the street right-of-way by the Port or Tenant, as applicable and as follows:

<i>Roadway Classification*</i>	<i>Approximate Tree Quantity**</i>
Principal Arterial – Airport Expressway	40' on center
Principal Arterial – Terminal Roadway System (adjacent to buildings)	Optional – trees not required
Minor Arterial – Air Cargo Rd and portions of S. 160 th St and S 170 th St	40' on center
Service Road (open to the public)	40' on center

* Refer to Appendix E for a map of roadway classifications.

** Spacing identified is intended to be used to calculate the general quantity of trees to be provided and does not include access curb cuts, such as driveway entrances. Actual tree spacing will vary per the requirements outlined below.

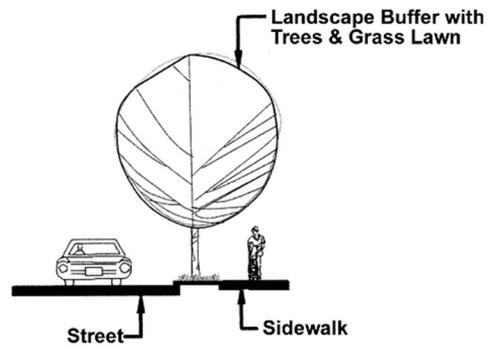
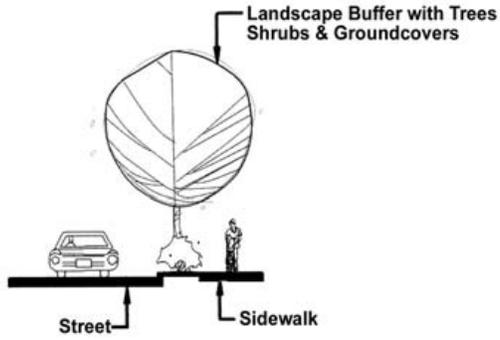
Landscaping will not be required on Port roadways not open to the public or within the Landscaping Exclusion Zone (see Appendix A).

Requirements

Type 5 Right-of-way Buffer.

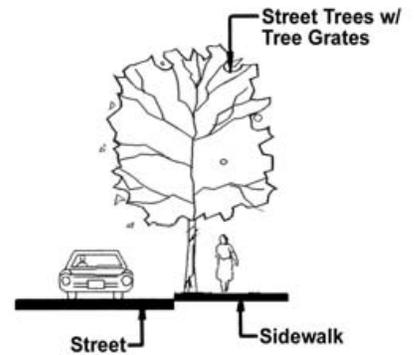
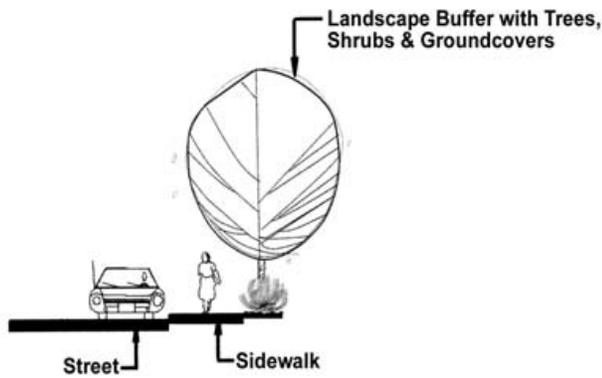
Landscaping in this area should generally unify the overall roadway and/or street corridor. Right-of-way buffer functions as a partial visual separator. Type 5 Right-of-way Buffer shall be as follows:

1. Minimum width of five (5) feet shall be provided within the roadway right-of-way adjacent and behind the back of curb or pavement edge.
2. Landscaping may consist of trees that are planted in tree grates adjacent to the roadway edge within the sidewalk area where space is limited and with the approval of the Landscape Standards Committee. Review of this alternative must take into account the provision for adequate soil volumes to ensure health of the street tree species chosen.
3. Street Trees:
 - a. Canopy-type deciduous or broadleaf evergreen trees shall be provided.
 - b. Tree spacing shall allow for a minimum of 15' between adjacent tree canopies at maturity, as defined by the Approved Plant List (see Appendix B), and the spacing shall depend on tree type selected, location of underground utilities, location of adjacent light fixtures, required setbacks, and sight-distance requirements.
 - c. Where tree canopies extend over the roadway edge, trees shall have a minimum six (6) foot branching height at time of planting.
 - d. Trees may be planted in formal row(s) or with a more informal spacing to create a park-like setting when space is available.
 - e. Conifer trees may be allowed in limited quantity provided adequate space is available.
4. Shrubs:
 - a. Shrubs are not required.
 - b. Shrubs may be provided and shall be maintained at a height not to exceed twenty-four (24) inches at maturity where planted adjacent to the roadway edge.
5. Living Groundcover:
 - a. Living groundcover shall be provided, except along Service Roads and Principal Arterial – Terminal Roadway System, unless trees are planted in tree grates and the tree grates completely cover planting area.
 - b. All groundcover that is used shall be between a height of one (1) foot to two (2) feet at maturity.
 - c. Mowed grass lawn may be used to cover 100% of the required groundcover area, except along Minor Arterial roadways where mowed grass lawn is not allowed.
6. Landscaping may be provided outside the roadway right-of-way with approval of the Landscape Standards Committee.



TYPE 5 RIGHT-OF-WAY BUFFER: PREFERRED

Conceptual Section – Not to Scale

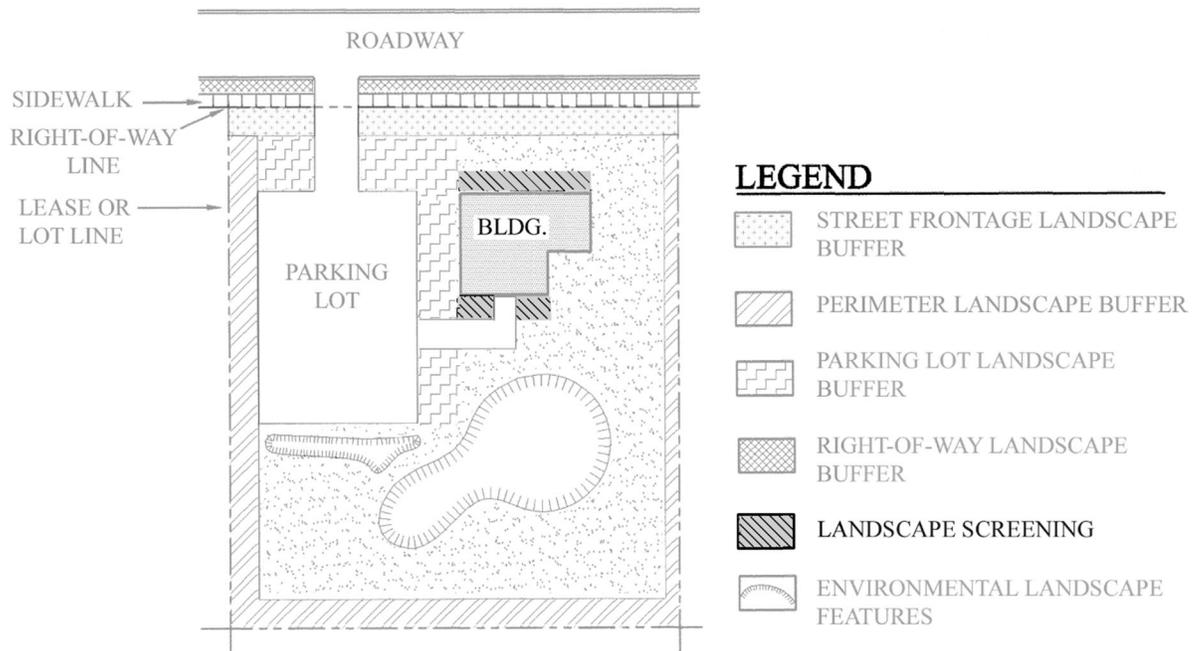


TYPE 5 RIGHT-OF-WAY BUFFER: ALTERNATIVE OPTIONS

(As approved by the Landscape Standards Committee)

Conceptual Section – Not to Scale

F. Landscape Screening



LANDSCAPE SCREENING
Conceptual Plan Diagram – Not to Scale

1. Entry and Gateway Areas

Location

Adjacent to major building and/or SEA doorway entrances, pedestrian walkways, and entry/exit driveways.

Requirements

Refer to the Port Landscape Design Guidelines and Landscape Master Plan for specific recommendations regarding gateways to STIA. Entry and gateway areas shall be landscaped whenever possible. The landscaping used should provide color, texture and visual interest; and larger plant sizes may be considered to provide immediate interest and effect.

2. Dumpsters, Service Areas, Loading Docks, and Storage Yards

Location

Adjacent to dumpsters, service areas, loading docks, and storage yards.

Requirements

Type 6a Visual Screen

Type 6a planting shall meet all of the following criteria:

1. A five (5) foot wide landscape area shall be provided to screen incompatible uses.
2. Fences, walls and/or berms may be used in conjunction with or in place of other landscaping to screen incompatible uses when limited space is available as approved by the Landscape Standards Committee.
3. Landscape areas shall include a combination of trees, shrubs, and/or living groundcovers to result in total coverage of the landscape area within three (3) years and such that a minimum of 75% of the incompatible use is screened.

3. Uninterrupted, Blank Wall Surfaces

Location

Any uninterrupted, blank wall surface 30' long or greater.

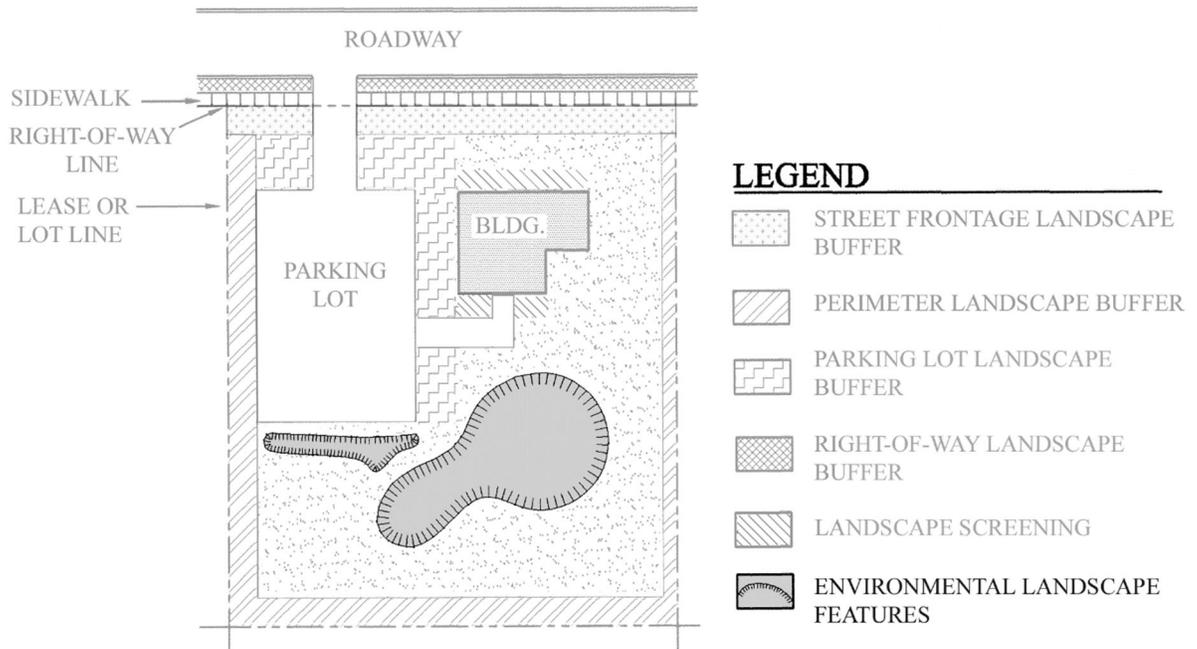
Requirements

Type 6b Filtered Screen

Type 6b planting shall meet all of the following criteria:

1. A five (5) foot wide landscape area shall be provided to partially screen uninterrupted wall surfaces.
2. Landscape area shall include a combination of trees, shrubs, and/or groundcover to result in total coverage of the landscape area within three (3) years and such that a minimum of 50% of the wall surface is screened.
3. Architectural features, such as building reveals and other detailing, trellis structures and public art may be used in conjunction with other landscaping as approved by the Landscape Standards Committee.
4. Landscape planters or large planting containers may be used to meet this requirement where concrete/asphalt surfaces exist adjacent to building façades that are visible to the public.

IV. ENVIRONMENTAL LANDSCAPE FEATURES



ENVIRONMENTAL LANDSCAPE FEATURES

Conceptual Plan Diagram – Not to Scale

All landscaping associated with environmental features (e.g. detention ponds, bioswales, slope stabilization, geotechnical explorations, and other related elements), shall be provided and maintained in accordance with any permit requirements made through the regulatory agency and/or all relevant Port documents (standards, guidelines, plans and/or specification), in addition to the requirements outlined below.

All landscape associated with environmental features shall meet the requirements outlined in the General Landscaping Provisions (see Section VII).

Landscaping must comply with the Port of Seattle Stormwater Management Manual for Port Aviation Division Property (SWMM), current version. This document was developed in compliance with the City of SeaTac and POS Interlocal Agreement, see ILA Section 6.3 Storm Water Management.

A. Detention Ponds

For projects located within the FAA Critical Area, the following shall apply unless superseded by revisions to the SWMM:

- Eliminate the potential for wetland vegetation growth on the pond bottom and side slopes by lining the pond with heavy-duty liners, riprap or quarry spalls. Alternately, use vegetation that provides no food or habitat for wildlife. For example, closely mowed grass, which is preferred by waterfowl, should be avoided.

- Break up possible bird flight lines by planting trees, setting up poles and/or fences which do not allow most waterfowl clear landing or takeoff room on the pond surface.

Landscape must comply with the SWMM and Stormwater Pollution Prevention Plan (SWPPP), including controlling growth of unwanted vegetation.

B. Bioswales

Landscape must comply with the SWMM (current version).

C. Slope Stabilization & Construction Site Management

Stabilization of cut or fill slopes shall be accomplished in accordance with permits issued by a regulatory agency and/or shall comply with the Port Master Specification.

D. Geotechnical Exploration

Geotechnical explorations shall comply with the SWPPP, including requiring disturbed soil areas to match original condition: in grass areas soil is to be raked and reseeded, and in planted areas soil is to be covered with Arborist Wood Chip mulch and planted with in-kind vegetation that was disturbed by exploration activities. Restoration to occur after site exploration, hydrogeologic testing, and soil cutting collection have been completed.

E. Critical Areas

Critical Areas are regulated by the jurisdiction in which they are located.

Regulation of Critical Areas within the City of SeaTac is authorized in paragraph 6.2 of the Interlocal Agreement. SEA will administer SeaTac Critical Areas regulations within its jurisdiction flexibly and on a case-by-case basis to harmonize state and federal regulations, advisory circulars or similar provisions affecting airports and/or the special circumstances presented by SEA operations.

V. DEMOLISHED PROPERTIES

A Demolition Permit is required for any structure that would require a building permit if being built and may be conditioned as necessary to reasonably mitigate adverse impacts associated with demolition activities.

All debris and other material resulting from demolition activities shall be removed from the site.

All disturbed areas resulting from demolition activities shall be graded smooth and hydroseeded, or other approved erosion control method applied, within the disturbed area.

If a fence is required then the fence shall be at a minimum a temporary galvanized chain link fence (i.e., posts at-grade on concrete blocks) used during site construction activities. A permanent vinyl-coated chain link fence shall be provided when the fence is located within paved surfaces that drain directly to catch basins, inlets, or other storm-drainage structure. No permanent galvanized fencing shall be allowed in areas that drain directly to any storm-drainage structure. Fence posts and rails do not need to be vinyl-coated. Vinyl-coating is not required within landscape areas.

For Port projects within the City of SeaTac, refer to City of SeaTac Municipal Code.

VI. TEMPORARY USE

For the purposes of these Landscape Standards, a temporary use includes the following activities:

1. Carnivals, street fairs, and outdoor holiday celebrations;
2. Seasonal sales of Christmas trees, fireworks, flowers, fruits and vegetables;
3. Temporary construction sheds or trailers, staging area, lay down or other construction related activities only for the duration of the construction activity; provided, that no residential or other use shall be made of such temporary construction sheds or trailers that is unrelated to the construction activity;
4. Temporary parking facilities; and
5. Recreational uses.

No landscape improvements will be required for the duration of a temporary use.

Landscaping as required by these Landscape Standards shall be provided once the property is redeveloped with a permanent use.

A temporary use shall be provided with sanitary facilities if the Building Code or Health Department Code specifically requires it.

A temporary use shall meet all other applicable codes, ordinances and standards as determined by the Port or City of SeaTac based upon building authority.

For Port projects within the City of SeaTac, refer to City of SeaTac Municipal Code.

VII. GENERAL LANDSCAPING PROVISIONS

All landscaping proposed in the project under permit review, including areas not devoted to specific landscape buffers or screening, shall meet the requirements outlined in this section.

A. General Requirements

- Linear dimensions used for calculating plant quantities shall be taken along the longest length of the landscape buffer area.
- Where two adjacent or overlapping Landscape Buffer or Screen Types are within the same lease or lot area, they may be combined to provide the more stringent of the two landscape requirements. The exception is where Parking Lot Landscape Buffer applies in which case Type 4 Parking Buffer shall take precedence.
- Plants shall conform to the current edition of the American Nursery & Landscape Association (ANLA) standards.
- Existing vegetation and architectural features (including walls, trellis structures, public art, planters and fences) may be used in conjunction with landscape requirements outlined in these Landscape Standards provided they achieve the intent of the landscape buffer or screen type and as approved by the Landscape Standards Committee.
- Landscaping shall be installed prior to occupancy for the project.
- Landscaping shall clear sight lines for all vehicle sight distance requirements.
- Landscaping around electrical utilities shall comply with the current edition of the National Electric Code (NEC).
- Landscaping shall be located on the exterior side (that side closest to the lease/lot line) of any wall or fence used within landscape buffer areas.
- Landscaping shall be arranged in the best configuration to maximize the buffer or screening function, with minimal use of tree cover, and incorporating any tree or plant clearance requirements for underground and/or above-ground utilities.
- Access for maintenance personnel, equipment, and vehicles shall be provided and integrated into the design of landscape areas.
- Slopes should be terraced whenever possible. Use of plants with fibrous roots on slopes should be considered.

B. Berms

Berms are encouraged as a screening device provided:

- There is a variation in height and width to provide interest;
- The combined height of the berm and shrub/groundcover planting shall not exceed

- the height requirements defined for each landscape buffer or screen type; and
- Berms shall not exceed a slope of three (3) horizontal feet to one (1) vertical foot.

C. Minimum Requirements for Planting Soil, Mulch, & Soil Amendments

Water-wise planting soil mixes, mulches and soil amendments shall be provided in all landscape areas. Planting areas shall be prepared, amended, and mulch applied as follows:

- Existing subgrade soils shall be scarified to a minimum six (6) inches depth.
- After existing subgrade soils have been scarified, a minimum twenty-four (24) inch layer of planting soil shall be placed.
- Planting soil must be either:
 - A 3-way mix consisting of 25% compost, 25% sand, and 50% sandy loam by volume thoroughly mixed together with the soil amendments as required by the Soil Test Report; or
 - A 2-way mix of soil consisting of 1/3 compost and 2/3 sandy loam by volume thoroughly mixed together with the soil amendments as required by the Soil Test Report.
- Planting Soil Mixes must have pH range of 5.5 to 7.5 and an organic content between 10% and 15% by weight as tested by the Loss on Ignitions method.
- After installing the trees, shrubs and groundcovers, landscape areas (except grass lawn) shall be covered with four (4) inches of arborist wood chip mulch.
- For lawn sod or seeded areas, incorporate 50 pounds of Dolomite Lime per 1,000 square feet in direct broadcast application and rake into top surface of planting soil. Apply seed or sod.
- Beauty bark mulches, and fertilizers will not be allowed.

Alternative soil amendments and water-wise mulches that exceed minimum requirements may be used as approved by the Landscape Standards Committee.

D. Plant Size & Spacing

Trees:

- Deciduous trees shall have a minimum caliper of two (2) inches as measured per the American Nursery & Landscape Association (ANLA) standards.
- Coniferous and broadleaf evergreen trees shall be at least four (4) feet in height.
- Deciduous trees shall have a canopy-tree form and a minimum branching height of four (4) feet unless otherwise stated.
- Multi-trunk trees shall have a minimum three (3) main trunks and minimum height of six (6) feet.

- Trees should not be less than the minimum tree spacing requirements specified in the Landscape Buffer and Screening Requirements (see Section III).

Shrubs shall be:

- a minimum two (2) gallon container, and
- a minimum eighteen (18) inches high or wide at time of planting.

Groundcovers, except grass lawn, shall be:

- a minimum one (1) gallon container size at time of planting and
- planted at a maximum of twenty-four inches (24") on center, triangular spacing.

E. Plant Selection

Plant selection shall comply with FAA rules and advisory circulars, including, but not limited to restrictions on vegetation (obstruction) height and wildlife hazard attractants. Only plants on the Approved Plant List (see Appendix B) shall be allowed for use on STIA property. The list also includes previously rejected species. Requests to add species to the Approved Plant List can be made using the Plant List Update Requests form on the Port of Seattle SharePoint site (see Appendix B). Plants producing forage (nuts, berries, seeds, etc.) that may attract hazardous wildlife will not be approved.

All plants shall be adapted to the microclimate conditions of their sites (sun exposure, cold hardiness, hydrozones, soil type, soil pH). Plants with differing environmental requirements shall not be used together if desirable circumstances (sun exposure, soil types, water requirements) cannot be provided for both plant types.

Tree Selection:

- Trees adjacent to paved surfaces shall not have invasive and aggressive root systems.
- Trees shall not sucker from their root system.
- Trees shall be selected to avoid damage to vehicles from sap, berries, or other undesirable plant characteristics.
- Trees in landscaped areas should not produce a dense canopy that may attract hazardous wildlife.
- Trees with vertical branching and/or vase shaped canopies should be used in narrow planting areas to avoid conflicts with vehicles or pedestrians.

Additional Limited Landscaping Zone (LLZ) Plant Selection:

- Landscape within the Limited Landscaping Zone (LLZ) shall not include any trees or other vegetation that would exceed a height of 15' at maturity or grow higher than the elevation of the runway surface,

- Landscape within LLZ shall be planted such that a minimum clear area of 15' is maintained between adjacent tree crowns.
- The use of conifer trees within the LLZ shall be kept to a minimum and shall not exceed a total of 30% of the total required trees.

Other Plant Material Selection:

- Grass lawn may be provided as a groundcover not to exceed a maximum of 50% of the total required groundcover area, except as noted for the Type 5 Right-of-Way Buffer: Alternate Option.
- Plant materials should consist of at least 50% native species, whenever possible.
- Plant materials should consist of 100% drought-tolerant species that are adapted to the climatic conditions of the Puget Sound region, or species that are on the approved plant list or as otherwise approved by the Landscape Standards Committee
- No artificial plants will be allowed.
- Recommended additions to the Approved Plant List (see Appendix B) must minimize wildlife hazards by meeting the criteria in Section X.

VIII. LANDSCAPE MAINTENANCE

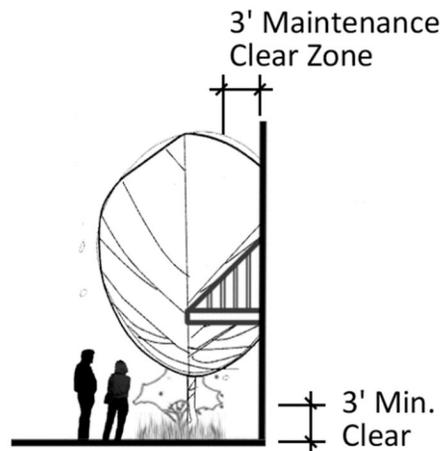
All landscape areas shall be maintained by the Port of Seattle or Port's Tenant (as applicable) as follows:

1. All maintenance practices shall comply with the SWPPP. Landscaping planted in association with detention facilities shall be maintained per the SWMM.
2. All maintenance must meet minimum requirements per the Port's Landscape Maintenance Specification 32 01 90 and 32 92 19.16.
3. Maintain all areas to achieve effective, positive drainage, either through natural means (i.e. infiltration) or through an installed drainage system, to improve plant health and to reduce wildlife hazard associated with the creation of lagoons, wetlands, pooling or standing water, and open watercourses.
4. Hazards to public safety and/or the safety and security of SEA operations, as determined by the Landscape Standards Committee, will be managed or maintained through pruning, transplanting and/or removal as needed to protect the continued safety/security of the SEA environment.
5. Maintenance of natural resource mitigation areas shall be according to associated permits issued for those areas.

IX. SECURITY REQUIREMENTS

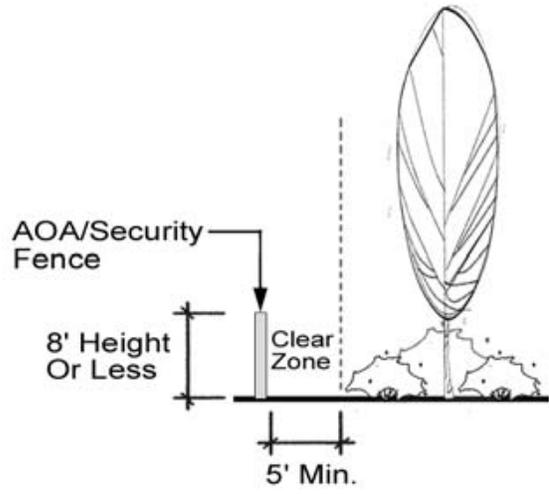
All landscape areas shall comply with the following safety and security requirements:

1. Landscape areas adjacent to building facades, where pedestrians have public access shall provide clear visibility from grade to a minimum three (3) foot height. Distance of clear zone will be determined on a case-by-case basis by the Port (Airport Security) or City (Police Department).



TYPICAL CLEAR ZONE ADJACENT TO BUILDING FACADE
Conceptual Section – Not to Scale

2. Planting near doors, stairs, exits, etc. shall not provide concealment for a person in those areas.
3. Maintain an area clear of landscaping within three (3) feet of building façades to minimize pest harborage, building entry, and provide for maintenance access. This clear, maintenance strip may be surfaced in gravel, paved or similar.
4. Plants shall not provide a means to access to second story windows.
5. Planting under and around roadway and bridge overpasses shall provide an unobstructed view of that area from the roadway and shall not provide any place for concealment of a person under or around overpasses or similar structures.
6. All landscape areas located adjacent to an AOA security fence shall:
 - a. Not include deciduous or evergreen trees located such that the branches intersect or extend over the fence; and
 - b. Maintain an area clear of trees and shrub growth at maturity within five (5) feet of either side of the AOA security fence. If present in clear zone, groundcovers shall be maintained at a maximum six (6) inch height.



AOA SECURITY FENCE
Conceptual Section – Not to Scale

X. WILDLIFE HAZARD MITIGATION REQUIREMENTS

Wildlife hazards or attractants, as determined by the Airport Wildlife Manager, will be managed using appropriate wildlife mitigation techniques, such as, selective tree harvesting (see Section XI).

If hazardous wildlife is detected, corrective action will be implemented to preserve the safety and security of SEA operations. This includes modifications to the AOA security fence to integrate a wildlife deterrent fence or fence components.

Plant species in landscaped areas must be selected per selection criteria in Section VI, E.

Recommended additions to the Approved Plant List must minimize wildlife hazards by meeting the following criteria:

- Must be consistent with recommendations of the STIA Wildlife Hazard Management Plan
- Select predominantly deciduous tree varieties and that do not propagate with rhizomes;
- Select plant varieties without seeds or berries that attract wildlife;
- Select tree varieties whose branching habits/canopies are open, offering less protection for birds;
- Select sterile varieties of trees, when possible;
- Avoid broadleaf evergreens that provide enhanced protection for wildlife;
- Select tree species or varieties that do not require the use of Plant Growth Regulators to manage their growth, flowering, fruiting, or pruning cycles; and
- Select tree species or varieties that do not require treatment with a sterilant chemical to stop or minimize fruiting.

XI. TREE MANAGEMENT

Tree management shall be provided, maintained, and/or implemented for all landscape areas accordingly:

1. Tree topping is not an allowable management method because it can damage or kill the tree, potentially creating a hazard and/or attracting hazardous wildlife.
2. No more than twenty (20) percent of the living crown of a tree shall be pruned in one year, or as directed by an Arborist certified by the International Society of Arboriculture;
3. All pruning shall be done in accordance with current International Society of Arboriculture standards, and shall result in a balanced and open form for the height and width of the tree. Pruning cuts shall be made back to living lateral branches, leaving no stubs or torn bark.
4. Trees shall be removed when one of the following applies:
 - a. The maximum allowed pruning does not meet the requirements to discourage wildlife hazards.
 - b. Trees are too large to transplant.
 - c. Trees exceed the maximum allowable height requirements imposed by the FAA (e.g. FAA Critical Area conflicts).
 - d. Trees constitute a wildlife hazard or wildlife attractant as determined by the Airport Wildlife Manager.
 - e. For police, fire, safety, and/or security purposes.
5. All trees removed that were required by these Landscape Standards shall be replaced at time of removal, except when aviation safety is the reason for the removal.
 - a. Replacement trees shall meet all applicable requirements of these Landscape Standards (size, spacing, type, etc.).
 - b. Replacement trees will be provided within the project area of removal; if this is not possible, alternate replacement tree locations may be determined by the Landscape Standards Committee
6. Trees shall be selected for harvesting on the basis of their position relative to adjacent trees. Weak, unhealthy trees, and trees being crowded by the greatest number of adjacent trees shall be removed first.
7. Tree harvesting shall generally be performed during dry periods and outside the migratory bird nesting window which is March 1 – July 15, except under emergency conditions.
8. Trees shall be cut and felled such that remaining trees, shrubs and groundcovers are not damaged or cause excessive compaction to surrounding soils (see also Section XII).

Harvested trees shall be removed from the area immediately if the downed trees are adjacent to a public roadway or present a safety or security conflict. Trees in other areas may be left in place if they do not attract hazardous wildlife and with the approval of the Airport Wildlife Manager.

XII. PRESERVATION OF SIGNIFICANT TREES

Preservation of significant trees should be considered by the Landscape Standards Committee, as follows:

1. Significant trees which are in good health and do not constitute a safety hazard, as designated by an Arborist certified by the International Society of Arboriculture, should be retained, whenever possible, in all landscape areas.
2. In general, required preservation of trees under the following conditions might not apply:
 - a. Within areas devoted to access points and to sight distance requirements at street or driveway intersections.
 - b. Within areas cleared for, or trees having an adverse impact on, required roads, utilities, sidewalks, trails or storm drainage systems.
 - c. When trees constitute a wildlife hazard attractant, as determined by the Airport Wildlife Manager.
 - d. When trees have branches that extend within five (5) feet of the AOA security fence, or branches that pose a security hazard for SEA operations
 - e. When tree canopies conflict with overhead utility lines.
 - f. When other natural vegetation is retained and is consolidated in locations that promote the natural character of the site, and this is incorporated into the site design.
3. Special interest, historic, and/or specimen trees or clusters of trees (groves) with outstanding qualities, form, health and/or cultural/historical significance should be retained whenever possible.
4. The soil around retained trees should remain undisturbed with a disturbance-free zone extending out from the trunk of the tree one (1) foot radius per one (1) inch diameter of the tree trunk, when measured four (4) feet above grade. No impervious surfaces, fill, excavation, vehicle operations, compaction, removal of native soil or storage of construction materials should be permitted within the disturbance-free zone, unless otherwise approved by an Arborist certified by the International Society of Arboriculture
5. Additional tree protection methods may be recommended by the Landscape Standards Committee, and may include, but are not limited to:
 - a. Temporary five (5) foot high, chain-link fencing that corresponds to the disturbance-free zone of the trees to be retained.

- b. Root tunneling or air spading, instead of trenching.
- c. Stump grinding instead of stump pulling;
- d. Routing of construction traffic to prevent excessive soil compaction.
- e. Retaining an Arborist, certified by the International Society of Arboriculture, to determine additional measures that may need to be taken to preserve significant, special interest, historic, or specimen trees.

XIII. IRRIGATION REQUIREMENTS

Landscaping should be designed to meet the LEED Outdoor Water Use Reduction Credit which requires irrigation systems to be temporary and not used beyond a two-year plant establishment period, unless a waiver or variance has been received or during periods of prolonged and/or extreme drought to ensure survival of plant material and to decrease the potential for a wild fire hazard in close proximity to SEA.

Temporary systems may be in-ground, like a permanent system, with easy access to shut down, or above-ground to facilitate easy removal as applicable to the situation of the project. All irrigation systems, temporary or otherwise must include a meter per Port Mechanical Systems Standards (current version).

On a case-by-case basis, some projects may require a waiver or variance of the irrigation requirement. In these cases, the Landscape Standards Committee must approve an alternative irrigation or watering plan.

Any installed irrigation system must meet the standards outlined below.

As a result of the increasing cost of water and periodic water shortages, a water-conservation irrigation system suitable to maintain all new landscape areas shall be provided, installed and maintained as follows:

1. Coordinate with the Mechanical Utilities Systems Team (MUST), the Proactive Electrical Systems Team (PEST), and the Water, IWS, Storm & Sanitary Sewer Committee (WISE) for existing water and electrical points of connection and system design review prior to construction. An Application for Connection Form must be submitted and approved prior to construction.
2. Use of water recapture/reuse systems for irrigation water supply may be considered, especially if a variance for a longer irrigation period is necessary for the landscaped area.
3. Systems shall be designed to ensure that overspray, runoff or low-head drainage does not occur.
4. Systems shall be designed for separate irrigation zones based upon plant hydrozone requirements, soil conditions and maturity of planting.
5. Sprinkler heads with consistent application rates shall be selected for proper area coverage, operating pressure, and adjustment capability.
6. Sprinkler head spacing shall be based upon manufacturer's recommendation to provide the most efficient water application and head-to-head coverage.
7. All irrigation systems (temporary and permanent) shall use state-of-the-art water conserving features, such as:
 - a. Weather-based irrigation controller that automatically adjusts watering schedules based upon current weather conditions. This would include: Moisture or

- precipitation sensors (Rain Sensors) and control devices;
- b. Pressure regulator valve(s); and
 - c. Master control and flow sensing valve(s).
8. Special problems posed by irrigation on slopes, in median strips and in narrow hydrozones shall be addressed.
 9. Systems shall include a backflow prevention device per Port Standard Details.
 10. Irrigation meters shall be installed per Port Standard Details.
 11. Irrigation systems shall be designed with provisions for winterization by providing a means to blow out irrigation system pipes with pressurized air.
 12. Consider the natural drainage patterns of the landscape, the microclimate, and other natural features that may affect water availability and needs of a particular planting area.
 13. Irrigation systems shall be regularly monitored and maintained for efficient water-wise irrigation of the landscape. Automatic controllers shall be set for operation at night to optimize water efficiency, minimize evaporation, and assure adequate moisture levels. Maintenance adjustment needs or repairs may be indicated by the following common irrigation performance problems:
 - a. Dry areas between sprinkler heads;
 - b. Wet areas due to excessive water coverage;
 - c. Water applied to areas not requiring water (over-spray);
 - d. Ponding water at sprinkler heads;
 - e. Loss of water pressure; and/or
 - f. Damaged or broken sprinkler heads and/or pipe.

XIV. SPECIAL LANDSCAPE FEATURES

A. Water Features

All proposed water features (not including environmental landscape features such as rain gardens, stormwater control areas, and/or mitigation sites (see Section IV) will not be allowed. Any exception to this, must be reviewed by the Airport Wildlife Manager and may only be allowed on SEA property provided:

1. They are located in urban, high traffic (vehicular and pedestrian) areas or in specific locations where the potential for wildlife hazards to aircraft are reduced.
2. They are unvegetated and are not located in a natural environment, such as, wetlands, streams, etc.
3. They do not include standing bodies of water unless covered in a fashion that prevents attracting wildlife.
4. They use a recirculating system to reclaim, treat, and recirculate the water reducing water consumption and loss through evaporation and runoff. Treatment must include UV and Chemical methods in addition to particulate filtering.
5. They are treated to meet local public health department requirements if the public have access to the water and/or can touch it, in order to protect public health and safety.
6. They consider the use of chemicals or other means of deterring wildlife from the water feature(s) but must meet all other regulatory requirements.
7. They meet all FAA regulations and other requirements to avoid any conflicts with SEA operations.
8. They minimize the ability to enhance breeding of mosquitoes capable of spreading vector-borne diseases.

B. Public Art

Refer to the Aviation Art Program procedures for applicability of public art on STIA projects. Where used in the landscape, public art shall be integrated into the overall design approach to maintain a consistent, coherent overall landscape design as determined on a case-by-case basis through the Aviation Art Program and the Landscape Standards Committee, and shall consider:

1. Recommendations outlined in the Port's Landscape Design Guidelines;
2. Sight distance requirements, per Washington State Department of Transportation Design Manual;
3. Safety of the traveling public (i.e. distractions to vehicular drivers, etc.);
4. Access and feasibility for maintenance; and
5. FAA regulations and other limitations as may be required to avoid any conflicts with SEA operations.

Landscape planting in and of itself is not considered an art feature by the Port and cannot be counted towards the art program funding requirements.

C. Lighting

Lighting may be provided to accent or highlight landscape areas or special features in the landscape, or to increase the pedestrian usability of a particular space at night, such as, walkways, streetscapes and/or plazas. Where used in the landscape, lighting shall be integrated into the overall design approach to maintain a consistent, coherent landscape design as determined on a case-by-case basis through the Landscape Standards Committee.

1. All lighting provided shall meet the requirements outlined in the Architectural Standards, Electrical Standards and other relevant SEA guidelines or standards, and shall consider recommendations outlined in the Port's Landscape Design Guidelines.
2. All lighting design shall be reviewed and approved by the Proactive Electrical Systems Team (PEST) prior to installation.
3. All lighting shall consider Recommended Practices for Outdoor Lighting by the Illuminating Engineering Society of North America (IESNA).
4. Lighting that is near and clearly visible from City residential areas and street right-of-way shall be screened in a manner to prevent off-site glare.
5. Exterior lighting should minimize impacts to Critical Areas according to SeaTac Critical Areas Regulations (see SeaTac Municipal Code) as authorized in the ILA.

D. Site Furnishings

Site furnishings may be provided in landscape areas, along roadways, roadway frontages, public transportation areas, walkways and/or in exterior plaza/gathering spaces. Where used, site furniture shall be integrated into the overall design approach to maintain a consistent landscape design, and reflect the overall character of SEA. All site furniture shall meet the requirements outlined in the Architectural Standards. Selection of site furniture shall consider:

- Recommendations outlined in the Port's Landscape Design Guidelines.
- Universal Access, Human-Centered Design, and ADA Accessibility.
- Security and public safety in locating street furniture elements.
- Access and feasibility of maintenance.

All site furnishings shall be reviewed by the Architectural Design Review Committee.

E. Signage

In general, sign design (way-finding/directional, informational, etc.) is governed by the sign standards and/or guidelines for SEA. Interpretive signs and other landscape-related signage may be considered provided it meets the overall intent of the sign standards and/or guidelines for SEA.

· **APPENDIX A**

· **Abbreviations and Definitions**

• **ABBREVIATIONS AND DEFINITIONS**

Seattle-Tacoma International Airport

1. Adjacent. Directly abutting, contiguous to, touching or adjoining.
2. Airport. Seattle-Tacoma International Airport.
3. Approved Plant List. (see Appendix B).
4. Architectural Standards. An airport-wide set of design guidelines and standards, including architecture, engineering, electrical, etc. developed by the POS.
5. AOA. Air Operations Area. Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An AOA includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron. The AOA is also defined as the Landscape Exclusion Zone.
6. Bioswale. A grassy, flat-bottomed swale that receives runoff after it is collected and concentrated, and that removes pollutants from stormwater prior to its release to the natural system.
7. Critical Area(s). Areas authorized by the state Growth Management Act to be regulated by local municipalities because they are subject to natural hazards and/or support unique, fragile or valuable natural resources including fish, wildlife and other organisms and their habitat, and such resources which carry, hold or purify water in their natural state.
8. Deciduous. A plant species with foliage (needle or broadleaf) that is shed annually.
9. Demolished Property. Any property where an existing structure has been removed, including property newly created vacant as a result of demolition activities.
10. Detention Pond. A constructed facility intended to hold storm water and release or infiltrate it at rates that do not damage downstream areas. Design and maintenance of these areas is defined in the SWMM.
11. Driving Aisle. That portion of the off-street parking area used exclusively for the maneuvering and circulation of motor vehicles.
12. Drought Tolerant. Plants that, once established, can survive without rainfall or irrigation for short periods of time. Most plants are drought-tolerant after establishment, when planted in the right conditions; i.e., succulents survive droughts in xeric soils, while wetland plants survive droughts in hydric soils. Although plants can be drought-tolerant, their health and aesthetics during drought may decline due to stress, high maintenance [incorrect maintenance practices], and dormancy (a plant may lose its leaves, stop blooming, and stems may desiccate, but the roots of the plant survive).
13. "Edges" Properties. Defined in the ILA as the locations where new development on Port-owned property located within the Airport Activity Area is adjacent to or abuts public right-of-way, or property owned by public agencies other than the Port, or privately-owned Property.

14. Evergreen. A plant species with foliage (needle or broadleaf) that persists and remains green year-round.
15. FAA. Federal Aviation Administration.
16. FAA Critical Area. The zone within 10,000 feet of all runway surfaces for airports that are rated to receive aircraft using turboprop or turbofans as a means of propulsion.
17. Fence. A barrier for the purpose of enclosing space or separating lots (excluding retaining walls). Fences may consist of masonry walls, posts connected by boards, rails, etc. and shall comply with all applicable guidelines and standards at the POS.
18. Fence, AOA Security. Built to FAA/TSA standards and a type of fence line that is at a minimum 12 feet high topped with 3 strand barbed wire outrigger, designed to keep intruders outside of the air operating area. A minimum of 5 feet clearance must be maintained along the inside and outside of this fence. All changes to the AOA security fence must be approved by the TSA.
19. Fence, Wildlife Deterrent. A fence designed to deter wildlife, especially coyotes, from digging under the AOA security fence. This includes modifying other areas of potential access such as ensuring the separations between the AOA security fence gates and other access points (culverts) are no wider than 3 inches.
20. Grass Lawn. An ornamental, mowed lawn area. Refer to Port Master Specifications for approved lawn seed type(s) (See Appendix G).
21. Groundcover. Living, low evergreen planting installed in masses or drifts.
22. Hazardous wildlife. Wildlife species with the potential to strike aircraft during flight, are capable of causing structural damage to aircraft or airport facilities, or act as attractants to other wildlife that pose a wildlife-aircraft strike hazard.
23. Herbicide. A chemical weed or plant killer, applied to leaves, foliage, roots or soil. STIA's SWPPP has reference to documents providing restrictions and guidelines for herbicide use.
24. Hydrozone. A grouping of plant species that have similar irrigation watering needs.
25. ILA. Interlocal Agreement. The most recently revised Interlocal Agreement entered into by the Port of Seattle and City of SeaTac on February 17, 2018.
26. Invasive Plant Species. A typically non-native plant adapted to disturbance that when established is highly destructive, competitive, or difficult to control by mechanical or chemical means and requiring control under Washington State's weed control law, RCW Chapter 17.10, and as listed on King County's Noxious Weed List.
27. Landscape Design Guidelines. "Tools for Design Professionals" report, 1998. Outlines the overall concept of the Northwest Evergreen Forest for all landscape areas at the POS.
28. Landscaping. Live vegetation and associated materials required for a development.
29. LEZ. Landscaping Exclusion Zone. Area where landscaping is not required. The AOA is also defined as the Landscape Exclusion Zone; see AOA definition.
30. Landscape Plan. A plan, drawn to scale and per the Port CAD Standards which clearly

- delineates existing and proposed landscape features and structures, including irrigation.
31. Landscape Standards. The Landscape Design Standards set forth in this document to guide landscape development at SEA.
 32. Landscape Standards Committee. A Port/ City of SeaTac committee whose basic purpose is to review and approve Plant List Update Requests, Variance Requests, and Landscape Standards Update Requests (see Appendix C).
 33. LLZ. Limited Landscaping Zone. Area where landscaping is limited due to wildlife hazard management and related safety/security requirements.
 34. Lot. A distinct parcel of property.
 35. Lot Line. The geographic boundaries of a lot.
 36. Mulch. An organic material, such as yard waste or decomposed sawdust manure that is fully composted, used on the soil surface for moisture retention, weed suppression and soil insulation, or rototilled into subgrade as a soil amendment. Mulch must be a weed free material. Refer to the Port Master Specifications for acceptable mulch products.
 37. Native Species. Vegetation comprised of plant species, other than noxious weeds, which are indigenous to the Pacific Northwest and which reasonably could be expected to naturally occur on the site.
 38. Parking Lot. An area not within a building where motor vehicles may be stored for the purposes of temporary, daily, or overnight off-street parking. Typically paved with asphalt or concrete and landscaped.
 39. Parking Space. An area accessible to vehicles, improved, maintained and used for the sole purpose of parking a motor vehicle.
 40. Pesticide. Any substance used for the control of insects, mites, mollusks, nematodes, or rodents.
 41. POS. Port of Seattle.
 42. Plant Approval Committee. A Port committee whose basic purpose is to review and approve Approved Plant List Update Requests.
 43. Planting Soil. Free draining sandy loam soil, containing a minimum five (5) percent organic content by weight and suitable chemistry/fertility elements to support normal plant growth. Refer to Port Master Specifications.
 44. Redevelopment. Additions or alterations to a building or site, excluding interior-only improvements, which total fifty percent (50%) or more of the gross square footage (GSF) of the existing building(s) or site. This does not include maintenance activities to maintain a building or site for its original design and expected useful life.
 45. SEA. Seattle-Tacoma International Airport
 46. Shrubs. Woody plants often multi-stemmed, generally less than fifteen (15) feet at maximum growth height at maturity.
 47. Sidewalk. Paved walkway for pedestrians at the side of a street.
 48. Significant Tree. An existing healthy tree (excluding cottonwood varieties) which, when

measured four feet (4) above finish grade, has a minimum trunk diameter of eight (8) inches for evergreen trees, or twelve (12) inches for deciduous trees.

49. STIA. Seattle-Tacoma International Airport.
50. STIA Roadway Classifications (See Appendix E).
51. SWMM. Stormwater Management Manual for the Port Aviation Division Property. The POS has adopted and follows the most recent version of the Department of Ecology's Storm Water Management Manual for Western Washington.
52. SWPPP. Stormwater Pollution Prevention Plan.
53. Temporary Use. Use of a property for a limited period of time. Time limit allowed may vary depending on use as determined by the permitting agency.
54. Tenant. Any person, firm, corporation, Governmental Agency or other entity which has entered into a contractual relationship with the Port for lease, rental, or occupancy of a building, land or other facility on Port property
55. Tree. Woody perennial plants with a height generally greater than fifteen (15) feet.
56. TSA. Transportation Security Administration.
57. Vacant Property. Any property where an existing structure has been removed as a result of Port activities.
58. Variance. An adjustment in the application of these standards to a particular property.
59. Water Feature. A man-made waterfall, fountain, stream, etc. This does not include environmental mitigation sites.
60. Water-wise. Planting and irrigation practices that conserve water usage.
61. Wildlife. Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof. As used in these Landscape Standards "wildlife" includes feral animals and domestic animals while out of the control of their owners.
62. Wildlife Attractant. Any human-made structure, land use practice, or human-made or natural geographic feature, that can attract or sustain hazardous wildlife on or adjacent to airport property, such as, landing or departure airspace, aircraft movement area, loading ramps, or aircraft parking areas of an airport. These attractants can include but are not limited to architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquacultural activities, surface mining, or wetlands.
63. Wildlife Hazard. A potential for an aircraft collision or disease transmission problem as a result of direct or potential contact with wildlife within the FAA Critical Area.

APPENDIX B

Forms located on Port of Seattle SharePoint Portal:

1. Landscape Standards Update Request
2. Variance Request
3. Plant List Update Requests
4. Approved & Rejected Plant List

SharePoint Portal:

<https://portseattle.sharepoint.com/sites/LandStandComm/SitePages/Landscape-Standards--Variance--Plant-Requests.aspx>

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• **APPENDIX C**

• **Landscape Standards Committee**

LANDSCAPE STANDARDS COMMITTEE

Seattle-Tacoma International Airport

rev. 12/08/19

The purpose of the Landscape Standards Committee is:

1. To ensure that the Landscape Standards are current with latest technology available in the industry.
2. To ensure that the Landscape Standards are consistent with generally accepted industry standards and local/regional standards.
3. To review and implement any requested changes to the Landscape Standards.
4. To clarify and interpret language in the Landscape Standards.
5. To provide the opportunity or City of SeaTac staff to review proposed changes, interpretations and variances to the Landscape Standards.

The current Landscape Standards Committee is comprised of:

NAME:	DEPARTMENT:	TELEPHONE:
1. KC Ellis (Chair Person)	AV/ABO	206-835-5847
Jeff Weir (Alternate)	AV/ABO	206-835-5702
2. Mikki Viehoever	AV/AIRFLD	206-431-4453
(Alternate)	AV/AIRFLD	206-248-6864
3. Valarie Johnson	AV/MT	206-433-5361
(Alternate)	AV/MT	206-431-4045
4. Tom Hooper	AV/PL	206-988-5588
(Alternate)	AV/PL	206-433-5216
5. Shelie Bumgarner	AV/AIRPORT SECURITY	206-439-6634
(Alternate)	AV/AIRPORT SECURITY	
6. Josh Feigin	AV/ENV	206-988-5527
(Alternate)	AV/ENV	206-433-7203
7. Dennis Hartwick	CITY OF SEATAC	206-973-4830
Jennifer Kester (Alternate)		206-973-4830
(REVIEW ONLY)		

1. Membership will be comprised of a minimum of 3 Port of Seattle Aviation Division employees, to a maximum of 6. Outside consultants with specific expertise may also be members of the committee, maximum 2 of the 6 total.
2. Membership will include a minimum of 1 City of SeaTac employee, to a maximum of 3.
3. New members will be approved by current committee members.
4. Memberships do not have a definitive end date.
5. If committee members request termination from the committee, they will be replaced by a new member upon joint approval from the remaining membership.
6. Members should represent a variety of Aviation Division departments and/or working groups, and the City of SeaTac. Current committee members should have a general knowledge of other departments and /or working groups concerns as it relates to landscaping. If this knowledge is not available, then committee members will seek out their input.
7. Chair Person position shall be rotated between all members every 12 months.
8. The City of SeaTac member's role is to attend meetings related to landscaping on projects that meet PDRC criteria relevant to the City and confirm that the POS is meeting the requirements of the Landscape Standards

LANDSCAPE STANDARDS COMMITTEE

Seattle-Tacoma International Airport

rev. 12/08/19

DECISION MAKING

1. Members will strive for mutually acceptable decisions.
2. Safety and security of the traveling public and employees of SEA will be the primary basis for most decisions.
3. Decisions will be based on sound business principles.
4. If the Landscape Standards Committee is not able to come to a mutually acceptable decision on an issue, the issue will be forwarded to Senior Aviation Management (SAM) for resolution.
5. City of SeaTac member does not have "approval", or voting, authority within the committee.
6. If the City of SeaTac member has any concern that the POS is not meeting the requirements of the Landscape Standards, or that a variance was granted that does not meet the criteria spelled out in the Landscape Standards, then landscape work on the project in question shall be put on hold until the issue is resolved. If an agreement between the POS and the City of SeaTac cannot be reached within two weeks, the issue will be resolved via the process identified in the ILA.
7. An appeal to a decision made by the Landscape Standards Committee may be made, in writing, within two weeks of the date the variance was approved or disapproved to the POS Senior Aviation Management (SAM). For POS projects within the City of SeaTac, appeals will be resolved via the process identified in the ILA.

MEETINGS

1. In-person meetings, teleconferences, or videoconferences will be held on an 'as needed' basis.
2. If a committee member cannot attend a meeting or is not able to respond to a request, the alternate Committee Member will respond.
3. If a critical decision is required and a committee member is absent, that person's written input will be solicited before a final decision is made.

APPENDIX D

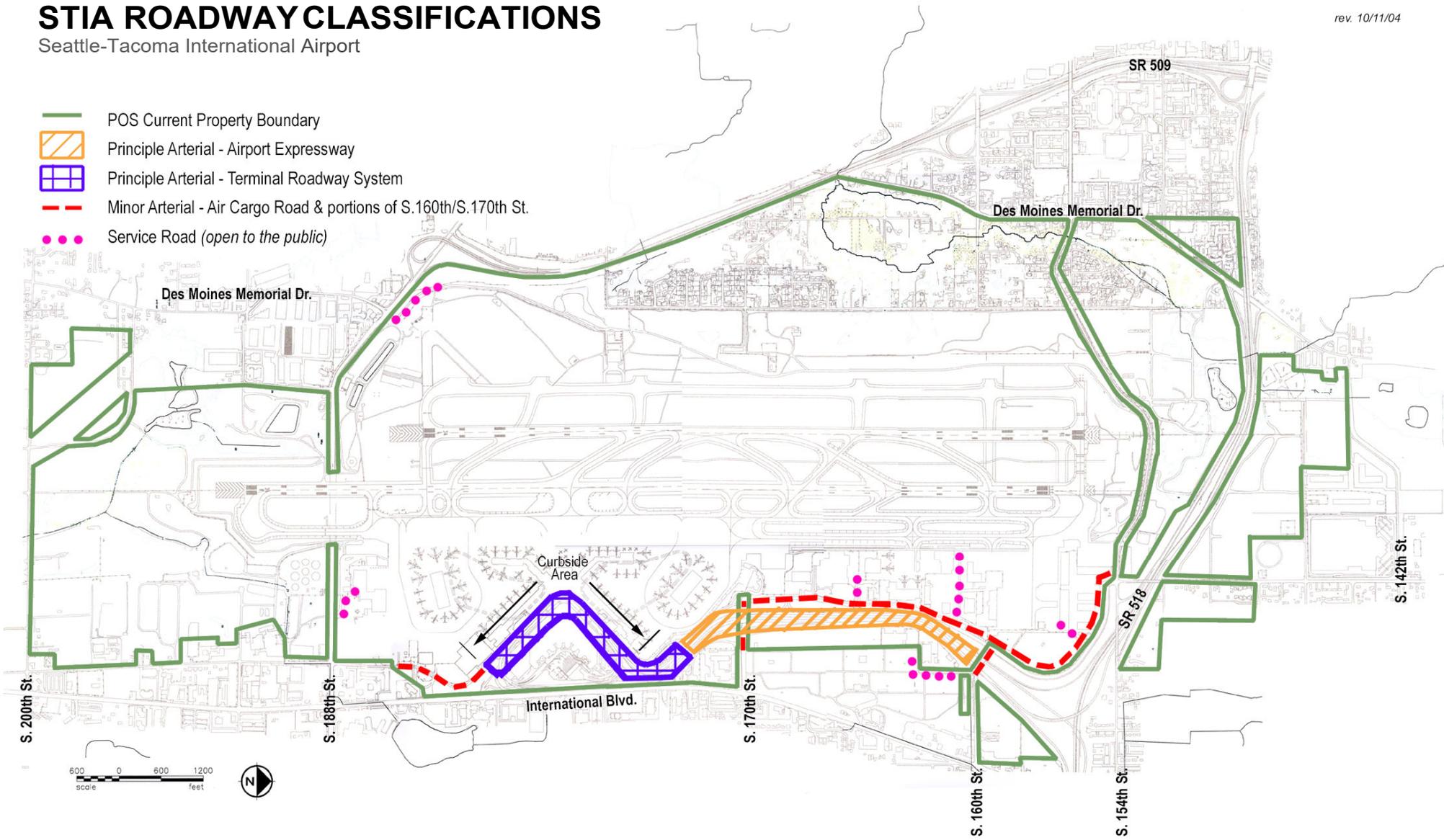
• STIA Roadway Classifications

STIA ROADWAY CLASSIFICATIONS

Seattle-Tacoma International Airport

rev. 10/11/04

-  POS Current Property Boundary
-  Principle Arterial - Airport Expressway
-  Principle Arterial - Terminal Roadway System
-  Minor Arterial - Air Cargo Road & portions of S.160th/S.170th St.
-  Service Road *(open to the public)*



. APPENDIX E

STIA Landscape Maintenance Specification

DIVISION 32 – EXTERIOR IMPROVEMENTS
Section 32 01 90 – Landscape Maintenance

PART 1 GENERAL

1.01 SUMMARY OF WORK

- A. The extent and location of this “Landscape Maintenance” Work is indicated in the Contract Document and occurs outside of the Airport Operations Area fence.
- B. The Landscape Maintenance Work includes the requirements for furnishing all labor, tools, specialized equipment, materials, supervision, storage, and transportation necessary to
 - 1. provide proper care and maintenance for all planters, landscaped areas, and plant material within the project limits.
 - 2. assure continued healthy growth of plant material.
 - 3. present clean and visually-attractive landscape.
- C. The visual appearance of the landscape areas, will be the measure of performance rather than the quantity of products used and amount of labor applied.
- D. Any facilities, property, or landscape damaged during routine maintenance work must be repaired or replaced in-kind.
- E. The work includes regular maintenance services including the completion of all maintenance checklists that are submitted to the Port of Seattle.

1.02 LANDSCAPE MAINTENANCE: MATRIX & INSPECTIONS.

- A. The Landscape Maintenance Matrix describing tasks and frequency of tasks is a guide to the minimum frequency of maintenance work as described herein. The Landscape Maintenance Matrix shall be used as basis for the Contractor’s checklist of maintenance activities.
- B. Quarterly Inspection
 - 1. Once each quarter, the Small Works Project Manager and/or their designated representative (hence-forth “Small Works Project Manager”), will conduct an on-site inspection (walk-through), accompanied by the Contractor’s Superintendent or Foreman.
 - 2. All planting areas including trees and lawn areas will be inspected. An assessment will be made regarding compliance with the Performance Requirements, listing all actions and/or areas in need of correction or improvement. The Contractor will thereupon be provided a written notice listing these discrepancies in need of correction and any actions needed to be taken.
 - 3. The Contractor shall reply with their proposed corrections to the Small Works Project Manager within 5 working days of the date of receiving the written notice.

4. Conditions found unacceptable by Small Works Project Manager shall be corrected or improved within 14 working days immediately following receipt of written notice; unless the Small Works Project Manager agrees otherwise.
5. After correction, the Contractor shall notify the Small Works Project Manager to schedule a reinspection.
6. Should the Small Works Project Manager determine that the Contractor is not providing regular, adequate, and proper care of plant material and lawns or is performing unacceptable work, the Small Works Project Manager will provide written notice to the Contractor to correct and remedy unacceptable work or practice(s).

C. Monthly Status Report

1. The Contractor shall submit a Monthly Status Report, at the end of each calendar month, to the Small Works Project Manager.
2. The report shall summarize the current condition of all landscape areas and include a listing of any additional Work Authorization work that may have been required during the previous month.
3. Any items needing special attention must be noted, and any suggestion for improvement to the landscaping and landscape maintenance program should also be included.

D. Annual Submittal of Qualifications

1. Licensing, Certification, and/or Registration information must be submitted on an annual basis to the Small Works Project Manager showing licensing, certification, and registration information, that has not expired and is current. See Section 1.03.

1.03 QUALITY ASSURANCE

A. All landscape maintenance work must be performed and managed by a licensed and bonded Contractor registered in the State of Washington.

1. Contractor must be familiar and comply with “American Standard for Nursery Stock” (ANSI Z60.1) published by the American Nursery & Landscape Association.
2. Contractor must be familiar and comply with:
 - i. Best Management Practice series published by the International Society of Arboriculture.
 - ii. Tree Care Industry Association (TCIA): Standards for Tree Care Operations ANSI A300.

B. Maintain a competent superintendent or foreman during the progress of the work, with the authority to act for the Contractor in all matters pertaining to the landscape maintenance work.

1. The superintendent or foreman must direct and guide the maintenance work and must be thoroughly familiar with the types of materials being maintained, have equipment and personnel adequate to perform the maintenance work, must apply the best horticultural practices for their maintenance.

2. The superintendent or foreman must either be part of the maintenance crew performing the work and/or visit the site when maintenance occurs.
 3. The superintendent or foreman must be at least one of the following: certified Landscape Designer, licensed Landscape Architect, certified Arborist, or Certified Professional Horticulturalist and must be qualified for landscape maintenance work through at least one of the following:
 - i. Certification by the Washington Association of Landscape Professionals (WALP).
 - ii. Certification by the Washington State Nursery and Landscape Association (WSNLA).
 - iii. Licensed and Registered Landscape Architect in the State of Washington.
 - iv. Certification by the International Society of Arboriculture (ISA).
 - v. Degree in Horticulture from an accredited technical college, community college, or university.
- C. Perform all necessary pruning of trees (existing or new) by an International Society of Arboriculture (ISA) certified arborist who has a current license as an arborist in the State of Washington.
- D. Application of all chemicals and fertilizers requires review and approval through the Small Works Project Manager from 1) a Port of Seattle Environmental Management Specialist and 2) the Airport Wildlife Manager.
1. Review and approval is needed for the chemical proposed to be used, the method of application, and the qualifications of chemical operator
 2. For purposes of this section, chemicals include: Fertilizers, Pesticides, and Herbicides.
 3. Each pesticide and/or herbicide applicator must be licensed for the specific class of chemical being applied and must be a commercial operator with a current Washington State Department of Agriculture (WSDA) Commercial Applicator pesticide license.

PART 2 PRODUCTS

2.01 GENERAL

- A. Except as otherwise indicated herein, products utilized or applied shall be selected by the Contractor to accomplish the required results.

2.02 ARBORIST WOOD CHIP MULCH

- A. Arborist Wood Chip Mulch must be coarse ground wood chips derived from the mechanical grinding of whole trees or portions of trees. It may contain wood, wood fiber, roots, bark, branches, and leaves, but must not contain visible amounts of soil.
- B. It must be free of weeds and weed seeds, including plants on the King County Noxious Weed list. It must be free of invasive plant portions capable of sprouting, including but not limited to Horsetail, English ivy, English Laurel, Evergreen & Himalayan Blackberry, Old Man's Beard, and Japanese Knotweed.

C. It must not contain more than 0.50% by weight of any manufactured inert material (plastic, concrete, ceramics, metal, etc.). Visible traces of manufactured inert materials shall render Arborist Wood Chip Mulch unacceptable for use on Port of Seattle properties. It must not contain any amounts of other compounds in quantities that could be detrimental to plant growth.

1. Arborist Wood Chip Mulch, when tested, must meet the following loose volume gradation:

Sieve Size	Percent Passing	
	Minimum	Maximum
2"	95	100
1"	0	50
5/8"	0	40
1/4"	0	20

2. Particles must not be longer than four inches.

D. Acceptable substitutes include chipped or shredded woody material left from tree trimmings, meeting the above size and inert material requirements, derived from composting operation screening (“overs”), or derived from recycling of clean dimensional lumber (e.g. pallets or framing lumber. Pressure treated timber is not allowed) that has passed through a metal removal process to meet the 0.50% manufactured inert standard above.

E. Prior to use, provide the following to the Small Works Project Manager and Port of Seattle Environmental Management Specialist for review and approval:

1. The source of the mulch and contents i.e. species of trees or shrubs included in it.
2. A sieve analysis verifying the product meets the above sieve gradation requirement.
3. A 5-gallon sample of the product.

2.03 HERBICIDES AND PESTICIDES

A. Do not store herbicides and pesticides on Port of Seattle property.

B. Furnish evidence that any chemical used as herbicide or pesticide is registered for the proposed use by the Washington Department of Agriculture according to the Washington Control Act (RCW 15.58.050 through 130) and the General Pesticide Rules (WAC 16-228-1400 through 1460).

C. All chemical herbicide and pesticides must be carefully selected in accordance with U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology, Washington State Department of Agriculture, King County Noxious Weed Control Board, and local sensitive area ordinances and regulations.

D. Use extreme care to ensure confinement of chemicals within the areas designated. Sprayed chemicals require the use of anti-drift and activating agents, and a spray pattern indicator, unless otherwise allowed by the Small Works Project Manager.

E. Do not apply herbicides and pesticides within 100-foot radius of on-site and off-site wells or open water bodies. Weed and pest control inside this 100-foot radius must be by hand or mechanical methods, unless otherwise approved by the Small Works Project Manager.

- F. The Contractor assumes all responsibility for rendering any area unsatisfactory for planting by reasons of herbicide or pesticide application. Replace, repair and pay for all damages caused by negligence to the satisfaction of the Small Works Project Manager.

2.04 PLANTING SOIL

- A. Planting soil mix used for backfilling of replacement plant material or restoration of planting areas shall be a three-way mix soil consisting of 10% compost, 30% sand, and 60% sandy loam by volume thoroughly mixed together. Add the soil amendments as recommended by a Soil Testing Laboratory through a Soil Test Report. Planting Soil must have:

1. a pH range of 5.5 to 7.5
2. an organic content between 5% and 8% by weight as tested by the Loss on Ignitions method.

- B. Compost

1. Compost must be ‘Medium Compost’ and comply with the requirements of Washington State Department of Transportation Standard Specification 9-14.4(8).
2. Submit compost sources to the Small Works Project Manager for review and approval prior to use on the project site. Approved source: Cedar Grove Compost; Maple Valley, WA; (425) 432-2395.
3. Prior to installation, compost delivered to project site must have a Solvita Compost Maturity Test performed with a test result of 6 or above. A Solvita Compost Maturity Test is available from Woods End research Laboratory, phone (800) 451-0337. Cost for test shall be Contractors responsibility. Test must be dated within one month of delivery or use of compost. Submit test results to Small Works Project Manager for review and approval.

- C. Sand

1. Sand used in the Planting Soil Mix must be “Washed Building Sand” and meet the following analysis:

<u>Size</u>	<u>Sieve</u>	<u>Percent Passing</u>
1/4” & 3/8”	ASTM E-11	100
#46	ASTM E-11	95 - 100
#10	ASTM E-11	60 - 70
#18	ASTM E-11	30 - 40
#20	ASTM E-11	< 30
#40	ASTM E-11	< 15
#100	ASTM E-11	2 - 10
#200	ASTM E-11	1 - 5

2. Permissible Chemical Ranges:
 - i. Salinity (milliohms per centimeter of saturation extract @ 25°C) Nil – 3.0
 - ii. Boron (saturation extract concentration) Nil – 1.0ppm
 - iii. Sodium (sodium absorption ratio – SAR) Nil – 6.0

D. Sandy Loam

1. Sandy Loam shall be topsoil as defined by the United States Department of Agriculture Classification system and have a texture analysis of 60-75% sand, 15-30% silt and 0-15% clay.
2. Sandy Loam particle size must meet the following sieve requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
1”	100
½”	> 90
#10	60 - 70
#100	20 - 30
#200	<30
#270	<25

3. Sandy Loam must be free of pests, toxic substances and other undesirable material harmful or detrimental to ornamental plant growth.
4. Sandy Loam must consist of loose, moderately well-drained, and friable soil. And be free of stones, debris, and/or similar objects.
5. Sandy Loam must not contain any viable seeds, roots, or rhizomes capable of sprouting any State-listed noxious weeds or invasive root propagating plants including but not limited to Horsetail, English ivy, Evergreen Blackberry, Old Man’s Beard, Japanese Knotweed, etc. Remove, dispose of, and replace the soil found to contain these prohibited viable plant materials at the Contractor’s expense.

2.05 REPLACEMENT PLANT MATERIAL

- A. Small Works Project Manager reserves the right to reject any or all plant material at time of inspection. Remove rejected plant material immediately from the site and replace with approved plant material.
- B. All plant material must conform to the requirements of the current issue of “American Standard for Nursery Stock” (ASNS) ANSI Z60.1 as published by the American Nursery & Landscape Association. In addition, plant material must comply with the following provisions:
 1. Plant Labels and Tags
 - i. All plants delivered to the project shall be clearly and accurately labeled with a securely attached, waterproof tag bearing a legible designation of the common name and full scientific name and the size of the plant. This must include the nomenclature for hybrid, variety, or cultivar.
 - ii. Any plants, which are not accurately labeled and which do not conform to a Plant Schedule and/or Contract Drawings, must be replaced immediately with plant material that conforms.
 - iii. The Small Works Project Manager will inspect plant material.
 - iv. Once approved, all tags and label materials shall be removed from the plant material.

2. All plant material must meet State and Federal requirements with respect to plant health and absence of diseases and pest infestation.
3. All plant material must be nursery grown stock that has been held in a nursery for less than one year.
4. All plant material specified must be first-class representatives of their normal species or varieties in healthy growing condition with normal well-developed branch system and vigorous root systems.
 - i. Plant material must be free from, disfiguring knots, sun-scalds, abrasions of the bark, broken tops, broken branches, and torn roots.
 - ii. Plant material, which have suffered damage as the result of girdling of the roots, stem, or a major branch; have deformities of the stem or major branches; have a lack of symmetry; have dead or defoliated tops or branches; or have any defect, injury, or condition which renders the plant unsuitable for its intended use, will be rejected.
5. Large plant material that has been cut back to meet specified sizes will be rejected. Plant materials must not have cuts or pruning wounds over 3/4-inch diameter that are not satisfactorily callusing over.
6. Plant material with weeds at the tops of rootballs, or show stressed condition like wilting leaves, yellowing leaves, or sudden leaf drop, or have dry rootballs, are unacceptable and must be replaced with acceptable plant material.
7. Collected plant material may be used only when accepted by the Small Works Project Manager.
8. Container-grown Stock
 - i. Plant material grown in a pot or container shall have a fibrous root system developed to hold its soil together and keep the root mass firm and whole when removed from the container. Root systems shall be sufficiently established to hold all the soil within the container they are planted in.
 - ii. Plants must not be loose in the container.
 - iii. Container stock must not be pot or root bound.
 - iv. Plants furnished in pots or other containers must be acclimated to outside conditions and equal to field grown stock. To assure acclimatized plants are used, all plant materials used on the project must be grown continuously outdoors and supplied from nurseries north of the 42nd Latitude (Oregon-California border).
9. Trees
 - i. Trees must have been grown with sufficient spacing to allow for symmetrical branch development and full canopy which reflects the natural characteristics of the species.
 - ii. Tree trunks must display a consistent vertical alignment, have a straight central leader for species where this is typical, and there must be no “included bark” in the crotches between the trunk and side branches.
 - iii. Trees with multiple leaders, unless specified, are unacceptable.
 - iv. Trees with a damaged or crooked leader, “Y” crotches, missing leaders, bark abrasions, sunscald, disfiguring knots, insect damage, or cuts of limbs over 3/4 inch in diameter that are not completely closed are unacceptable.

- v. Pruning wounds with a diameter of more than one (1) inch must show vigorous callous on all edges. Trees shall not be pruned within 6 months prior to delivery.
- vi. Evergreen and deciduous trees must be furnished balled and burlapped (B&B) or in fabric bags. Broken or “made” root balls are unacceptable.
- vii. Trees grown in fabric bags must have a well-established root system reaching the sides of the fabric bag to maintain a firm ball when the fabric is removed, but without excessive root growth encircling the fabric bag.
- viii. Cracked, dried out, or mushroomed tree root balls are not acceptable.
- ix. Root flare must be visible on top of root ball. If root flare is not visible, soil shall be removed from top of root ball to expose root flare.

2.06 FERTILIZERS

- A. Trees, Shrubs, Lawn and Ground Cover: Standard commercial grade fertilizer of organic or inorganic components, selected by the Contractor to best match the needs of each particular application and time of year and as required to achieve the performance indicated. Subject to the approval of the Small Works Project Manager.
- B. Fertilizers may be liquid or granular; and shall consist of the following
 - 1. 12 parts per 100 total nitrogen.
 - 2. 12 parts per 100 water-soluble potassium compounds.
 - 3. 12 parts per 100 available phosphoric acid.
- C. The Contractor shall submit the following to the Small Works Project Manager for approval:
 - 1. a list of the proposed fertilizer(s).
 - 2. The laboratory analysis of the fertilizer listing materials and components.
 - 3. the application rate of each fertilizer.
 - 4. the proposed schedule for application in each lawn, tree, shrub and ground cover area.
- D. No fertilizer shall be applied until such approval is received and no change in fertilizer can be made without prior approval, once the schedule is approved and established.

PART 3 EXECUTION STANDARDS

3.01 CONTRACTOR’S PERFORMANCE

- A. The Contractor shall provide proper care of all plant material and landscape areas within the scope of this Contract and per best management practices according to nursery industry standards. The use and application of water, fertilizers, mulches, and other supplies and equipment shall be in the best judgement of the contractor, unless otherwise noted and as required to achieve the execution standards per 32 01 90, Part 3 herein.

- B. Adequate and proper care shall include, but is not limited to, keeping all plant material in a healthy growing condition by watering, cultivating, and pruning; keeping all plant material trunks and stems free from mulch at all times; keeping planted areas free from insect infestation, weeds and grass infiltration, litter and other debris; retaining finished grades and mulch levels in a neat, tidy, uniform condition; and applying all other means to present a well-groomed and cared-for landscape per the Visual Appearance Standards.
- C. Visual Appearance Standards. Following are visual appearance requirements for the performance of the detailed functions of Landscape Maintenance under this contract.
1. Lawn: Lawn shall be uniform, free of bare or burnt spots larger than 2 inches square, free from debris, grass clippings, leaves, weeds, moles/rodents, fungus, and insect infestations and any other condition that detracts from the visual appearance of the lawn. Debris remaining in a maintained area over 24 hours maximum is unacceptable. Grass clippings will be removed within 24 hours. Lawn shall be neatly edged along all borders.
 2. Groundcover: Groundcover shall be healthy, of uniform color, uniformly covering the planting area, of uniform height, with no bare soil or burned spots and free of weeds. Ground cover areas shall be free of debris, grass clippings, leaves, moles/rodents, fungus, and insect infestations and any other condition that detracts from the visual appearance of the area.
 3. Shrubs and Planted Beds: Planted beds shall be free of weeds, debris, grass clippings, leaves, moles/rodents, fungus, dead plants, and insect infestations and any other condition that detracts from the visual appearance of the area. All Planted Beds shall be neatly edged along all borders and mulch layers replenished. Eroded areas shall be repaired.
 4. Walks and Paved Areas: Sidewalks and pavements shall be free of debris, grass clippings, leaves and any other condition that detracts from the appearance of the area.
 5. Roadway - Gutters and Drains: Roadway - gutters and drains shall at all times be clear of landscaping debris and leaves. Curbs shall all be neatly edged.
 6. Planter Boxes: Planter Boxes shall be free of weeds, debris, clippings, leaves, fungus and insect infestations and any other condition that detracts from the appearance of the area. Dead or damaged Shrubs and Plants shall be inventoried, reported to the Small Works Project Manager and then removed and replaced.
 7. Trees: Trees shall present a clean and structured appearance with no dead branches, canopies, scarred or scraped trunks, or damaged root crowns. Canopies shall be full, well branched, and lush in the summer providing a healthy visual appearance.

3.02 PROVISION FOR MANUAL WATERING

- A. Manually water any newly installed planting areas to maintain a moist soil condition for healthy plant establishment and for plant survival during periods of prolonged and/or severe drought.
1. Submit watering schedule to Small Works Project Manager listing proposed watering days and times, water volume, and method and means of application.

2. Adjust watering schedule based upon weather and seasonal factors such as drought conditions to maintain plants in a healthy growing condition.
3. For manually watered trees, apply minimum 15 gallons per tree, per each watering, on a 3-day schedule. Provide water bags installed on top of root balls. Fill water bags with water for manual watering of trees. Water bags must not be in contact with, or interfere with tree foliage.
4. Observe water infiltration into soils while manual watering for consistent infiltration. Alert the Small Works Project Manager of pooling water due to non-draining soils.
5. Manual watering shall be done in a manner that does not create run-off onto adjacent impervious surfaces, erodes soil or cuts trenches, or otherwise disrupts the finish grade of planting bed soils.

3.03 MAINTENANCE AND OPERATION OF IRRIGATION SYSTEM

- A. Irrigation systems and watering facilities including sprinkler heads, pipes, fittings, pumps and valves, as available, shall be maintained in good operating condition at all times by the Contractor if the system is in active use. All systems, with the exception of those irrigation systems that have been abandoned in place, must be in working order for the Port of Seattle to use in times of severe drought or extreme fire hazard warning conditions exist.
- B. Standard maintenance of the irrigation system shall include repair of broken, missing or faulty sprinkler heads, pipes, fittings, dripper tubing, irrigation bubblers, pumps, or valves; the replacement of the above is as required whether because of improper equipment operation, vandalism, or misuse.
- C. The Small Works Project Manager shall be notified immediately of any sprinkler system malfunctions, breaks, and repairs, prior to proceeding with repairs.
 1. Minor repairs to and adjustment of the sprinkler heads, dripper tubing, irrigation bubblers, irrigation controller sensors and automatic valves is to be included in the landscaping maintenance services, including damage due to Contractor's negligence.
 2. Major repairs involving line breaks, automatic valve replacement and automatic control system components shall be brought to the attention of the Port and shall be repaired by Port of Seattle operating personnel or by the Contractor as a Work Authorization after notification to the Port, except where damage was the result of Contractor's negligence.
 3. In the event the Contractor discovers a broken main line, lateral, or feeder line, they shall immediately shut off water to the broken line; check with the Small Works Project Manager for location; check location of other underground utilities; and then uncover the line and locate the break or source of trouble.
 - i. When the break or source of trouble is in a pipe, valve, fitting, or within the connecting threads and the nominal diameter is one (1) inch or less, the Contractor shall make repairs immediately without regard to fault.
 - ii. When the break is in pipe, valve or fitting whose nominal diameter is greater than one (1) inch, the Contractor shall notify the Small Works Project Manager immediately. The Small Works Project Manager will then affect repairs immediately (Emergency

repair), close the excavation, if any, and return the system to the care of the Contractor.

4. When irrigation systems have been disabled for repair or maintenance for 5 or more days between the dates of June 1st and October 1st; areas that are not receiving water from automatic irrigation during this time and that were being irrigated, must be hand watered a minimum of two times weekly, beginning the 6th day after disablement of the irrigation system.
 5. All systems repaired or replaced by the Contractor must be accomplished with materials of same type and quality to match existing.
- D. There shall be no plugged, broken or missing sprinkler heads. All sprinkler heads shall be properly set to water their design areas with head to head coverage and shall not spray water on roadways or parking lots, nor leave dry spots.
- E. All dripper tubing shall provide consistent application with no plugged or broken emitters and no leaks or breaks within tubing or fittings. Dripper tubing shall remain staked in place, and shall not be visible by either covering with mulch or with layer of planting soil to hide it. Dripper tubing must remain in direct contact with the planting soil at all times.
- F. Contractor is to notify the Small Works Project Manager if the existing irrigation system is in need of equipment updates outside of repair and/or maintenance work. Equipment updates include items to address uneven water distribution through improper replacement parts made in the past, improper grouping of equipment within a zone (such as components with non-matched precipitation rates), and updates to the irrigation controller or sensors which could improve water usage efficiency and conservation.
- G. The Contractor will be responsible for the watering patterns and timing, including setting any automatic sprinkler controls. Automatic irrigation systems shall be operated fully automatic during plant establishment periods. Plants shall be watered by the Contractor as to insure adequate but not excessive soil moisture for healthy growth, establishment, and survival.
1. Operate automatic irrigation during the time period of 2:00AM to 5:00AM. Alert the Small Works Project Manager if the watering window does not allow for all irrigated areas to receive water during this time period.
 2. When present, rain sensors, weather satellite technology, flow sensors, soil moisture sensors, and wind sensors, shall be enabled to override the irrigation controller schedule.
 3. Irrigation scheduling shall be determined in conjunction with a WaterSense® Water Budget Approach as established by the Environmental Protection Agency (EPA). Contractor must establish a Landscape Baseline for water usage as determined through the WaterSense® Budget Approach formula, available at <https://www.epa.gov/watersense/water-budget-tool>. Total water use scheduled into the irrigation controller cannot exceed the Landscape Baseline for water usage. The Landscape Baseline for water usage must be updated as new irrigation zones are added, deleted, or have their planting type changed.

4. The Contractor shall furnish in writing a watering schedule to the Small Works Project Manager which includes the Landscape Baseline for water usage, and the water use percentage or reduction in gallons achieved through efficient irrigation programming.
 - i. Landscape Baseline water usage updates will be due to the Small Works Project Manager within 14 days of programming new scheduling information into the irrigation controller.
 - ii. If water restrictions are established, the Contractor shall develop and update watering schedules in consultation with the Small Works Project Manager.

- H. For trees on their own irrigation zones, apply 10 gallons of water per caliper inch of tree per week, per each when trees are still in their plant establishment period or in times of severe drought. Deep root watering increases long-term drought resistance of trees especially during establishment.

- I. Irrigation systems will be drained and flushed by the Port at the end of each season and shall be turned on at the beginning of each season. Notification of the accomplishment of this Work shall be given to the Contractor when completed.

- J. A complete and thorough inspection by the Contractor of irrigation valves, spray bodies, spray nozzles, and controller sensors shall be performed at the beginning of each season. Inspection shall include observing the system operate in its entirety. This inspection shall be done within 14 days of the Contractor receiving notification the irrigation system has been activated. During this inspection, all adjustments and replacements shall be made, with any replaced equipment logged. Written verification of this inspection shall be provided to the Small Works Project Manager within 28 calendar days of the irrigation start up notification provided to the Contractor by the Port.

- K. Landscape planting areas shall be observed in relation to irrigation coverage throughout the irrigation season during regular maintenance.
 1. Observations shall include, but are not limited to:
 - i. dry spots that are not receiving irrigation water,
 - ii. soil and mulch erosion,
 - iii. special problems posed by irrigation on slopes, in median strips, and in narrow planting areas,
 - iv. overspray onto paved or impermeable surfaces,
 - v. pooling in depressions and areas of poor drainage, and
 - vi. areas of excessive drainage leaving low soil moisture.
 2. Adjustments to the irrigation system shall be made as they are observed when they fall within the Contractors scope as described above. When adjustments are not within the Contractors scope the Small Works Project Manager shall be notified in writing within 48 hours

- L. The Contractor will not be permitted to use fire hydrants as a source for watering.

3.04 MAINTAINING LAWNS

- A. Mowing: Lawns are to be mowed weekly or as needed to maintain a neat appearance. All grass clippings shall be removed from the site within 24 hours, unless a mulching lawnmower is used.

- B. Avoid damage to tree trunks and shrub branches by mowing machines or trimming tools.
- C. Fertilizing:
 1. Fertilizer shall be uniformly applied to lawn areas using an organic fertilizer at a minimum of 1 application every three years occurring between Sept. 15th to Oct. 31st.
 2. Fertilizer shall be thoroughly watered in.
- D. Reseeding: Reseed all bare spots and areas in existing lawns.
- E. Edging: Lawns to be edged along borders during active growing season or as needed to maintain a neat appearance. Grass along fence lines shall be trimmed to the same height as the adjacent lawn. All clippings will be removed from the area.
- F. Weed Control: Fine lawns to be sprayed with general or spot applications of trans-located chemicals to control broadleaf weeds as weather and turf conditions dictate.
- G. Mowing Schedule:
 1. Fine Lawns: Mow whenever lawn exceeds an average height of 3 inches. Mow to a 2-inch height with all cuttings retained and disposed off-site, unless a mulching lawnmower is used.
 2. Rough-cut Areas: Mow when rough-cut areas exceed an average height of 6 inches. Mow down to a 3-inch height with all cuttings and plant debris retained and disposed off-site.
- H. Watering: Lawns shall be watered manually or using the irrigation systems as available, to establish deep root systems during establishment.
- I. Thatching and Aerification: Thatching and aerification shall be accomplished as needed on lawn areas to promote deep rooting and a continuously healthy turf condition. Thatching and aerification shall be accomplished at least once a year or as needed. Where bare spots result from thatching, lawn shall be over-seeded with grass lawn seed at the rate of 2 pounds per 1,000 square feet. Excess thatch must be collected and disposed of off-site.

3.05 MAINTAINING PLANTING BEDS & TREE PLANTING AREAS

- A. Compost Topdressing: All planted bed areas and areas landscaped with trees shall receive a topdressing of compost in March and shall be lightly raked into the bed surface.
- B. Mulching: The Small Works Project Manager shall be notified prior to application of mulch to any Port facilities.
 1. All planted bed areas and tree pits shall be covered with mulch to maintain a minimum thickness of 3" of mulch. Replenishment of mulch to maintain a 3" depth shall be accomplished once a year, in March.
 2. Mulch Rings. Maintain a 2-foot wide band of mulch around trees that are in lawn. The width is as measured from the trunk. The transition to lawn shall be kept neatly trimmed.

C. Soil Amending.

1. Should established plants show signs of ill or degrading health, have a soil test performed by a soil testing laboratory for fertility analysis on two samples of planting soil from the target planting bed or soil area. Present the recommendations to the Small Works Project Manager. The Contractor is responsible for the cost for soil testing.
2. Apply soil amendments as recommended by the soil test laboratory for horticultural health.
3. Plants within the target planting bed or soil area may need to be replaced concurrent with soil amending activities.
4. Costs for soil amendments and plant material replacement shall be determined on a unit price basis and agreed upon by a Change Order prior to commencement of soil amendment work.

3.06 PRUNING OF TREES AND SHRUBS

- A. Pruning: All shrubs, trees and plants shall be minimally pruned in accordance with standards of good horticulture practice and in accordance with the intended function of the shrub in its location. Natural plant form and shape shall be allowed to develop in all cases, unless otherwise stated in planting plans.
- B. Pruning shall produce a clean cut, without bruising or tearing at the bark, and shall be in living wood where the wound can heal. All pruning cuts in excess of 1/2-inch shall be treated with pruning paint. Trees and Shrubs damaged or killed due to Contractor's over-zealous pruning and/or hedging shall be reported to the Small Works Project Manager and repaired at Contractor's cost.
- C. All pruning debris shall be removed from the site.
- D. Prune during the dormant season to maintain the natural appearance of plant materials. Do not shear or hedge shrubs or trees unless otherwise noted in the original planting plans.
- E. Prune trees and large, woody shrubs per best arboriculture practices as published by the International Society of Arboriculture and the Tree Care Industry Association ANSI A300.
- F. Dead heading. Spent flower heads and seed pods shall be removed from all rhododendrons and azaleas following blooming each year.
- G. Remove all suckering or sucker growth from the trunk and base of trees to maintain a clean appearance.

3.07 TREE FASTENINGS

- A. Where existing, tree fastenings, ties, and stakes shall be kept intact and effective in maintaining firm support for plant material. Fastenings shall be adjusted as needed by the Contractor to prevent strangulation, bark scaring, non-plumb growth of the tree trunk, and irregular growth.

- B. Tree fastenings are not needed for deciduous trees that are 1.5” caliper or less; or under 6ft in height. If they are provided, tree stakes and fastenings should be removed after a 2-year growing period.
- C. Remove fastenings, ties, and stakes at the completion of the any Guarantee Period and dispose off-site.
- D. Under no circumstances should tree fastenings, ties, and stakes remain longer than 3 years

3.08 TREE GRATES

- A. Where existing, trees in tree grates shall be monitored to observe the growth of the tree. If the tree trunk width is within 1” of the inside ring or segment of the tree grate, remove the break-out rings or segments to ensure the grate does not girdle the tree trunk.

3.09 MAINTAINING DETENTION PONDS

- A. Generally, maintenance of Detention Ponds will be by the Airport’s Airfield Crew.
- B. Should the landscape maintenance contractor be scoped to perform maintenance or assist in maintaining vegetation in Detention Ponds, performance of work will be directed by Airfield Crew. All landscape work within Detention Ponds must control the growth of unwanted vegetation and must comply with:
 1. The Port of Seattle Stormwater Management Manual for Port Aviation Division Property (SWMM), current version; and
 2. The Port of Seattle’s Stormwater Pollution Prevention Plan (SWPPP).

3.10 PLANT REPLACEMENT

- A. Contractor shall maintain a list of all plant material losses,removals, and replacements. Trees and shrubs and ground cover plants shall be listed by species name, location, and quantity. Review the list of losses, removals, and replacementsshall at least twice per year with the Small Works Project Manager.
- B. Where plant material losses occur due to Contractor’s negligence and/or failure to perform, plants shall be replaced at Contractor’s expense.
- C. Any plant material that is 25% or more dead or disfigured shall be considered dead and must be replaced. A tree shall be considered dead when the main leader has died back or when 25% of the canopy is dead.

- D. All plants are subject to one (1) replacement per each item per year. This includes dead plants or plants that, in the opinion of the Small Works Project Manager are in an unhealthy or unsightly condition, or that have lost their natural shape and symmetry. Replace unacceptable plants with the same species, caliper, and/or equal size as the plants they replace, unless the Small Works Project Manager determines a substitute species plant of equal value or a different size may be provided. Repair all lawn areas that have been damaged by the acts of others before the end of the year. Provide plant replacements and lawn repairs in accordance with these Landscape Maintenance Specifications.
- E. If plants are stolen or damaged by acts of others, the Port of Seattle will pay invoice cost for the replacement plants and the Contractor will be responsible for the labor and materials to install the replacement plants.
- F. Complete plant material replacements during the spring (March 15 to May 15) and/or autumn planting periods (Sept 25 to Nov 15) unless otherwise approved by the Small Works Project Manager. Plant material replacement and lawn repair is subject to the same conditions and same manner as specified for the original planting.
- G. Installation of plant material:
 - 1. Trees
 - i. Tree pit excavation near a curb or sidewalk must allow a horizontal clearance of at least 12 inches from the curb or sidewalk without undermining foundation support of adjacent improvements.
 - ii. Before planting, completely remove all twine, burlap, wrapping material, fabric grow bags, and wire baskets and completely remove this material from the planting hole.
 - iii. All containers must be removed from rootballs before planting. Containers may require vertical cuts down the full depth of the container to accommodate removal.
 - iv. For ball and burlap and container trees, roots showing at the edge of the root ball must be loosened without tearing.
 - v. Set trees in the planting pit to proper grade and alignment.
 - 1) The rootball must be placed in the planting pit in a manner that ensures the roots are properly spread for lateral directional growth.
 - 2) Set trees upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure.
 - 3) Set crown of rootball up to one (1) inch above the finish grade elevation.
 - vi. Backfill must be carefully placed and compacted by water settling. When planting hole is 3/4 backfilled, apply water, to water-settle the backfill and remove voids. After settling occurs, the Contractor must add enough soil to cover the roots but must not rework the soil. Do not use frozen or muddy mixtures for backfilling. No soil filling will be permitted against trunks, root flare, stems or above grafts on grafted trees.
 - vii. Form a watering ring of soil around the edge of each planting pit to retain water.
 - 2. Shrubs, Groundcover, and Vines
 - i. Plants supplied in containers must be kept moist at all times and must be removed from the container in a manner that prevents damage to the root system. The plants must not be removed from the container by pulling on the stem.
 - ii. All plastic, burlap, ties, and other container material must be removed from the plant prior to planting. Containers may require vertical cuts down the full depth of the container to accommodate removal.

- 1) Space groundcover plants using triangular spacing in accordance with indicated dimensions and offsets in original planting plans. Adjust spacing as necessary to evenly and uniformly fill voids in the planting bed. Always plant groundcovers to within twelve inches (12") of the rootballs of trees and shrubs within planting bed.
- 2) Set shrub, groundcover, and vines in the planting pit to proper grade and alignment.
 - a) Set upright. Install plants so that top of rootball is flush with the finished grade after settlement.
 - b) Check top of root ball for root flare. If root flare is not found, carefully scrape away excess soil until root flare is exposed. This level must be the top of the rootball and installed flush to the finished grade.
- 3) Backfill must be firmly tamped or compacted without voids around the roots, then covered with mulch, and watered immediately after planting.

3.11 APPLICATION OF CHEMICALS

A. Chemical Use and Water Quality:

1. The Contractor is cautioned that water or stormwater run-off from landscaped areas may enter into waterways within a relatively short distance and may impact the water quality.
2. The Contractor shall be responsible to assure that the chemicals used and methods of application will not be detrimental to water quality.

B. All chemical applications of herbicides, pesticides, fungicides, and fertilizers shall be made in a manner that will avoid their entry into waterways and storm drain systems, and shall comply with the Port's Stormwater Pollution Prevention Plan (SWPPP).

C. All chemical applications shall be tracked in a spray log. The spray log must include recording sheets or forms and be readily available for review by the Small Works Project Manager.

1. Spray log will document the following:
 - i. The start time of the application of chemical(s).
 - ii. The site or location where the chemical(s) is applied.
 - iii. The brand name of the chemical(s).
 - iv. Active ingredients of the chemical(s)
 - v. The name of the plant and/or plants that the chemical(s) was used on.
 - vi. Application rate.
 - vii. Size of the area that has been treated.
 - viii. Quantity of the chemical(s) which have been used in undiluted form.
 - ix. The date and time of treatment.
 - x. The name of the person applying the treatment and their applicator's license number.

3.12 WEED CONTROL

A. Weed control shall be continuous in all shrub beds and tree island and shall be accomplished by a combination of hand weeding and application of mulches.

B. Ground cover shall be kept free of weeds.

- C. Contractor shall be responsible for control and removal of weeds and grasses coming up through cracks in sidewalk and parking lot areas adjacent to landscaping.
- D. Preferred methods of weed control include mechanically or hand-pulled weeds. Reapply bark mulch after weed removal, and adjust watering schedule to avoid overwatering.
- E. Consider herbicide applications only as a last resort and only after other methods of control have proven ineffective.
 - 1. Schedule all chemical treatment for weed control in late summer or early fall a minimum of 3 weeks prior to mechanical removal of noxious and/or invasive weeds.
 - 2. Apply post-emergent herbicides while green and growing tissue is present. Should unwanted vegetation reach the seed stage in violation of these Specifications, physically remove and bag the seed heads. Dispose physically removed vegetation and seed heads off-site.
- F. Noxious weeds (Class A, B & C as defined by the County Weed Control Board) and invasive weeds, including but not limited to Horsetail (*Equisetum* sp.), reed canary grass, English Ivy, Himalayan blackberry, evergreen blackberry, policeman's helmet, bamboo, yellow flag iris, and Japanese knotweed, must be completely removed from the project site.
 - 1. If an inspection discovers noxious or invasive weed species infestation: Submit a Weed Control Plan for review and approval to the Small Works Project Manager.
 - i. The Weed Control Plan includes:
 - 1) methods of and scheduling of removal of invasive species and/or noxious weeds that occur within the project limit of work and in newly planted areas.
 - 2) methods of removal and scheduling of removal of weeds located inside the drip lines of existing trees.
 - ii. The plan shall be prepared and signed by a licensed commercial operator with a Washington State Department of Agriculture (WSDA) Commercial Applicator license.
 - iii. Include methods of weed control, timing and scheduling of control operations, and the name, application rate, and Material Safety Data Sheets (MSDS) of all proposed herbicides.
 - 1) Furnish the Small Works Project Manager with a copy of the current product label and MSDS for each herbicide and spray adjuvant to be used.
 - 2) Identify and list the target weeds and unwanted vegetation to be removed specific to the project site.
 - 2. All spray applications shall be made by persons possessing a valid applicator's license.
 - 3. Contractor is responsible for all costs to remove invasive weed infestations, remove and replace existing soil, and replant vegetation per original planting plans

3.13 PEST CONTROL

- A. If an inspection discovers pest or insect infestation: Submit a Pest Control Plan for review and approval to the Small Works Project Manager.
 - 1. The Pest Control Plan includes:
 - i. methods of and scheduling of removal pests that occur within the project limit of work and newly planted areas.
 - ii. methods of and scheduling of removal of pests located inside the drip lines of existing trees.
 - 2. The plan shall be prepared and signed by a licensed commercial operator with a Washington State Department of Agriculture (WSDA) Commercial Applicator pesticide license.
 - 3. Include methods of pest control, timing and scheduling of control operations, and the name, application rate, and Material Safety Data Sheets (MSDS) of all proposed pesticides.
 - i. Furnish the Small Works Project Manager with a copy of the current product label and MSDS for each pesticide and spray adjuvant to be used.
 - ii. Identify and list the target to be removed specific to the project site.
- B. All plant material including lawns, shrubs and trees shall be regularly inspected throughout the year to determine the presence of pests, and the appropriate organic pesticide, fungicide, or insecticide shall be applied as necessary in accordance with City, State and Federal regulations.
- C. All spray applications shall be made by persons possessing a valid pesticide applicator's license.
- D. Mole, rabbit, rat, and other rodent control to be undertaken in turf and planting areas as needed. Safe procedures and practices as recommended by State Rodent Control Authorities shall be followed.
- E. Consider pesticide applications only as a last resort and only after other methods of control have proven ineffective. Preferred methods of pest control include mechanical means such as trap and release or use of organic insecticidal soap for insect infestations.

3.14 DEBRIS AND LITTER CONTROL

- A. General: Debris and litter control shall be accomplished in all landscaped lawn, planting bed and tree areas at least weekly or more often where necessary.
- B. Debris and litter control will include leaf fall control in Autumn period. Leaves, wind blown into gutters and catch basins, are considered as litter and shall be removed as debris
- C. Policing for paper and litter in all areas shall be conducted daily except Saturdays, Sundays and Holidays.

3.15 CONSULTATION

- A. Consultation and professional advice will be provided to the Port as requested at no extra cost.

PART 4 MEASUREMENT AND PAYMENT

4.01 GENERAL

- A. No separate measurement or payment will be made for the Work required by this section. The cost for this portion of the Work will be considered incidental to, and included in the payments made for the applicable bid items in the Schedule of Unit Prices for the Project.

END OF SECTION

DIVISION 32 - EXTERIOR IMPROVEMENTS

Section 32 92 19.16 - Hydroseeding for Erosion Control and Landscaping - Small Works

PART 1 GENERAL

1.01 SUMMARY OF WORK

- A. The extent and location of “Hydroseeding for Erosion Control and Landscaping” Work is shown in the Contract Documents. This item shall consist of the application of seed, fertilizer and mulch with tackifier in areas shown on the plans or as directed by the Small Works Project Manager in accordance with these specifications.

1.02 SUBMITTALS

- A. Furnish manufacturers’ technical literature, standard details, product specifications, test results and installation instructions for all products.
- B. Submit the following:
 - 1. Seed mixture and application rates;
 - 2. Signed vendor certification statement for seed testing;
 - 3. Product information on fertilizer with proportioning of elements;
 - 4. Product information on Bonded Fiber Matrix;
 - 5. Signed vendor certification statement for high endophytes;

PART 2 PRODUCTS

2.01 SEED

- A. Contract shall be based on the bidder having verified, prior to the time of bidding, sources of supply to ensure that all the seed listed in the table below can be supplied no later than the beginning of Work.
- B. Seed shall be furnished separately or in mixtures in standard unopened containers with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked on the outside of the container for each kind of seed. The Contractor shall furnish the Small Works Project Manager duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed.

- C. For commercially grown seed, the Contractor shall submit for the Small Works Project Manager’s approval the seed vendor’s analysis, including percent of pure seed, germination and germination test date, other crop and weed seed and inert material. For seed that is not commercially grown, the Contractor shall provide the name of the seed collector, dates and locations of collection.
- D. Contractor shall protect seed from dehydration, contamination and heating during delivery, storage and handling. Seed shall be stored in a cool, dry location away from contaminants.
- E. Seed shall be a high endophyte mix of the following:
 - 1. Rate of Application

Seed Type	% By Weight	% Purity	% Germination	Lbs./Acre
Creeping Fescue	15	98	90	15
Perennial Rye	60	98	90	60
Chewings Fescue	25	98	90	25

2.02 BONDED FIBER MATRIX (BFM)

- A. BFM shall be labeled by the manufacturer as such, on the bags, and shall contain all ingredients including tackifier, crosslinkers, and other proprietary ingredients.

2.03 FERTILIZER

- A. Fertilizer shall be standard commercial fertilizer consisting of total nitrogen. It shall be furnished in standard containers with name, weight and guaranteed analysis of contents clearly marked thereon.
- B. No Cyanamid compounds or hydrated lime shall be permitted in mixed fertilizers. Nitrogen shall be a 50% mix of coated, slow release form, and 50% standard uncoated form.
- C. Fertilizers shall be of commercial fertilizer grade and shall be spread at the rate of 120 lbs. of 100% total nitrogen per acre.
- D. Fertilizer shall not be agitated for more than 20 minutes before application.

2.04 WATER

- A. Water shall be clean, fresh and free of substances or matter which could inhibit vigorous grass growth.

PART 3 EXECUTION

3.01 ADVANCED PREPARATION AND CLEANUP

A. Landscaping

1. Areas to be seeded shall be raked smooth and cleared of stones, clods, rocks, roots, or other undesirable matter larger than 2 inches (50 mm) in any diameter that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas.
2. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of hydroseed, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities and repairing other incidental damage.

B. Temporary/Permanent Erosion Control

1. An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to hydroseeding, the top 3 inches (75 mm) of soil is loose, friable, and if shaped to the required grade.
2. Areas to be seeded shall be cleared of stones, clods, rocks, roots, or other undesirable matter larger than 6 inches (50 mm) in any diameter, that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas.
3. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of hydroseed, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities and repairing other incidental damage.
4. All areas to be hydroseeded for temporary erosion control shall be roughened with equipment tracks, disc, ripper tooth, or other means approved by the Small Works Project Manager before application of hydroseed.

3.02 HYDROSEED APPLICATION METHOD

A. General

1. The rates of application shall be as follows:

Seed	100 lbs./acre
Fertilizer	120 lbs./acre Total Nitrogen
Bonded Fiber Matrix	3,000 lbs./acre

B. Hydroseeder

1. An approved-type hydroseeder which utilizes water as the carrying agent and maintains a continuous agitator action that will keep seed and fertilizer mixed in uniform distribution until pumped from the tank.

2. Pump pressure shall be such as to maintain a continuous, non-fluctuating stream of solution.
3. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.
4. In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

C. Mixtures

1. All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify to the Small Works Project Manager all sources of water at least 2 weeks prior to use. The Small Works Project Manager may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source, which is disapproved by the Small Works Project Manager following such tests.
2. All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 2 hours from the time they were mixed or they shall be wasted and disposed of at locations acceptable to the Small Works Project Manager. Fertilizer shall not be agitated for more than 20 minutes.

D. Spraying

1. Mixtures of seed, fertilizer, and mulch shall only be sprayed upon previously prepared seedbeds. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.
2. Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.
3. Checks on the rate and uniformity of application may be made by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon, or using the U.S. Department of Agriculture/Natural Resource Conservation Service (USDA/NRCS) Line Intercept Method, or other method approved by the Small Works Project Manager.
4. Contractor shall install BFM in areas shown on the plans and as directed by the Small Works Project Manager. BFM shall cover a minimum of 95% of the soil surface and shall be applied in two directions or directed upwards to ensure proper soil coverage. BFM shall

cure a minimum of 24 hours before any rain event or irrigation occurs and shall be installed per manufacturer's instructions.

3.03 MAINTENANCE OF SEEDED AREAS

- A. The Contractor shall establish an acceptable stand of grass of uniform color and density to the satisfaction of the Small Works Project Manager. If at the time when the contract has been otherwise completed it is not possible to make an adequate determination of the color, density and uniformity of such stand of grass, payment for the unaccepted portions of the areas seeded out of season will be withheld until such time as these requirements have been met.
- B. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Small Works Project Manager. Surfaces gullied or otherwise damaged, following seeding, shall be repaired by re-grading and reseeding as directed. The Contractor shall mow, water as directed and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the Work.
- C. When seed, fertilizer, mulch, and tackifier is applied between June 1 and August 31, the Contractor shall protect the application from dehydration and when applied between October 15 and March 31, the Contractor shall protect the application from freezing and excess moisture.
- D. An acceptable stand of grass shall be defined as a minimum of 85% grass coverage of bare soil using the U.S. Department of Agriculture/Natural Resource Conservation Service (USDA/NRCS) Line Intercept Method or other method approved by the Small Works Project Manager.

END OF SECTION

PORT OF SEATTLE STIA: Landscape Maintenance Matrix of Tasks and Frequency

(See Specification Division 32, Section 32 01 90)

June 2020

TASKS INVOLVED	FREQUENCY BY MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
Inspections												
Quarterly Inspections with the Small Works Project Manager	1			1			1			1		
Maintenance Reports to the Small Works Project Manager	1	1	1	1	1	1	1	1	1	1	1	1
Trees, Shrubs, Perennials, Groundcovers, Vines												
Pruning of Large, Woody Shrubs and/or Trees (if needed)	AS	AS									AS	AS
Tree Fasteners Adjustments/Removal				AS								
Weed Control**		1	2	2	2	2	2	2	2	2	1	
Mulch Topdressing			AS									
Autumn Leaves Control	4	2								2	4	4
Debris Control	1	1	2	2	2	2	2	2	2	2	2	1
Pest/Disease Control				AS				AS				
Plant Material Inventory & Replacement									AS	AS		
Soil Test & Application of Amendments (every third year)			1	1								
Fertilizing (every third year)				1								
Arborist review of trees in public areas***				AS								
Lawn Areas												
Mowing, Trimming and Edging of Non-irrigated Lawn	Inactive	Inactive	2	4	4	2	1	Dormant	Dormant	1	2	Inactive
Mowing, Trimming and Edging of Irrigated Lawn	1	1	2	2	4	4	4	4	4	2	1	1
Fertilizing (every third year)				1								
Check for and Reseed Bare Spots in Lawns			1									
Weed Control**			1		1		AS			1		
Irrigation System (for active, in-use systems only)												
Activate System & Check for Operability				1								
Adjust Irrigation System				AS			AS					
Winterization (If system is active throughout growing season)										1		
Cross-Connection Assembly Test				1								

Key:

- AS: Accomplish task as needed during indicated month
- 1: Accomplish task at least once a month
- 2: Accomplish task at least twice a month
- 4: Accomplish task weekly during indicated month

* Hours to complete activity do not include traffic control, hours may be higher during first year maintenance.

** Accomplish these tasks weekly during first year in areas of newly, installed plants.

*** Review after major storm events.