NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. This Specification must be edited for each project's special conditions. Do not include these instructions in the Contract Documents).

NOTE: At the beginning of the design process the Consultant is required to download from the SPR Design Standard web site at www.cityofseattle.gov/parks/projects/standards, the Design Standard for Landscape Planting Design, read that document and then incorporates the principals therein as part of the design process.

The attached Standard Specification represents the minimum acceptable standards for the preparation of planting areas using on-site salvaged soils, soil amendments or purchased topsoil which is pre-mixed off site, then imported and placed. The exact proportions of the components in both the **Playfield Soil** and the Planting Soil mixes can vary for each project and shall be called out in this specification (see section 2.01.C.1&2).

The Consultant shall then supplement this specification section by adding other related sections that may apply to the scope of work being done as listed in Section 1.03 - Reference Sections, listed below. Add the sections needed (in their entirety) either independently or incorporate the information contained in them into more comprehensive specifications for the desired work items, such as "Seeded Lawns" or "Planting Shrub Beds". Make sure all necessary information or components are included to completely perform the desired function.

Additional **Soil Testing** may be required if substantial disturbance of the native soils has occurred (as determined by the Engineer). Conditions constituting substantial disturbance include extensive grading due to building and road construction or cuts and fills over 25 cubic yards.
Soil tests are required during site investigations early in the design process and after preparation of sub-grade is completed, to determine the best methods for soil preparation and the planting of trees, shrubs, and ground covers. **Every effort shall be made to salvage and reuse existing site soils if they are determined to be acceptable though the testing process.** Specify on the drawings and in the specifications which approach you intend to take related to soil types and preparation methods and edit this specification section accordingly.

The attached Standard Specifications represent the minimum acceptable standards for design. They are intended to be consistent with and used in conjunction with the SPR Standard Details for Planting/Staking.

The Engineer and the Consultant shall decide which Soil Preparation method shall be included in this Specification and used during construction. It is anticipated that site conditions may change during construction and that the Consultant will take this into account, thus requiring the Contractor to not use unacceptable backfill materials in the proposed planting areas. Silt, clay, crushed rock, builder's sand, and construction debris are considered unacceptable backfill materials in planting areas.

The Consultant shall not make any changes (add, delete or alter) to these Standard Specifications unless approved by the Park Engineer prior to its inclusion in the Contract Documents. However, the Consultant has the added responsibility to not only comply with these specifications, but to also expand them as required, or as dictated and/or warranted by the following:

The consultant also has the added responsibility to not only comply with these specifications but to also expand on them as required, or as may be required and/or warranted by the following:

A. Special conditions for each project and site.
B. Environmental considerations and constraints.
C. The integrity of the proposed design.
D. Potential adverse impacts to maintenance resources.
E. The health, safety, and welfare of the general public, etc.

All Standard Details that are part of the Contract Documents shall be used as shown (without any alterations) and shall be included on the Contract Drawings.

The Consultant shall show to the Engineer that relevant (to the particular project) SPR Standard Specifications have been included in the contract documents.

PART 1 - GENERAL

1.01 Description: The work includes the furnishing and installation of soil and/or amendments for lawn areas, athletic fields, or landscape planting areas.

1.02 Reference Sections:

Section 31 00 00 - Earthwork
Section 32 91 19.13 - Mechanical Seeding
Section 32 92 19.16 - Hydroseeding
Section 32 92 19.19 -Hand Seeding
Section 32 92 23 - Sodding
Section 32 93 00 - Landscape Planting

1.03 Quality Assurance: All products supplied shall comply with applicable state and local codes.

1.04 Submittals: Submit the following **samples and test reports** to the Engineer for approval:

A. Playfield Soil Mix (5lb bag) with current soil analysis test results and report.

B. Planting Soil Mix (5lb bag) with current soil analysis test results and report.

<u>Note</u>: Soil analysis tests shall be <u>current</u> (no more than 30 days old), shall be performed by a local (Puget Sound Region) testing lab and shall be done for the <u>final soil mix</u>, not individual components. Soil mix samples shall meet or exceed the Specifications prior to delivery to the job site and shall not require on-site mixing or substantial chemical alteration after delivery unless otherwise approved by the Engineer. Soil Mix test reports follow at the end of this section.

1.05 Project Conditions:

A. The existing site soils shall be amended with either Playfield Soil Mix (for Lawn Areas) or Planting Soil Mix (or Landscape Planting Areas) as shown on the plans.

B. Keep streets, sidewalks and site clean, free from debris and affected drains open and free flowing at all times. Protect drains with filter fabric covers during construction. Appropriate erosion control measures shall be employed.

PART 2 - PRODUCTS

2.01 Materials:

A. <u>Playfield Soil Mix</u> (Imported - for Lawn Areas): The Playfield Soil Mix shall consist of ***60%*** Sand and ***40%*** Organic Amendment by volume, and shall meet or exceed the following specifications:

1. The Sand Component shall meet the following specifications within reasonable variations:

Screen Size	Percent Passing
3/8”	100
1/4”	95-100
#10	85-95
#30	60-75
#60	50-60
#100	20-30
#200	<5

2. The Compost (Organic Amendment) Component shall consist of 100% recycled yard waste materials or other organic waste materials that have been sorted, ground up, aerated and aged and shall be fully composted, stable and mature (non-aerobic). The composting process shall be for at least six months time and the organic amendment shall have a uniform dark, soil-like appearance. In addition, the compost shall have the following physical characteristics:
   a. Shall have Carbon to Nitrogen ration of between 20:1 and 40:1. If C/N ratio is greater than 40:1, a lab recommended rate of Nitroform (38-0-0), be followed at the time of soil preparation.
   b. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by the United States Environmental Protection Agency.
   c. Shall be fully mature and stable before usage.
   d. Shall be screened using a sieve no finer than ¼-inch and no greater than ½-inch.
      Based on dry weight of total organic amendment sample: Must comply with the following percent by weight passing:

Sieve Size	Percent (%) Passing
1/2” (12.7mm)	100
1/4” (6.35mm)	95-100
4.76mm	90-95
2.38mm	75-90
1.00mm	45-70
500micron	0-30

   e. Shall have heavy metal concentrations below the WSDA limits as follows:

Metal Type	WA State (Max. lb./ac.)
ARSENIC	0.297
CADMIUM	0.079
COBALT	0.594
LEAD	1.981
MERCURY	0.019
MOLYBDENUM	0.079
NICKEL	0.713
SELENIUM	0.055
ZINC	7.329

B. Planting Soil Mix (Imported - for Landscape Planting Areas): The Planting Soil Mix shall consist of ***67%*** sandy loam and ***33%*** composted organic material.

1. The Sandy Loam or Loamy Sand component shall consist largely of sand, but with enough silt and clay present to give it a small amount of stability and shall meet the following sieve analysis:

Screen Size	Percent Passing
3/8”	100
1/4”	95-100
#10	85-95
#30	60-75
#60	50-60
#100	10-20
#200	0-10

2. Individual sand grains can be seen and felt readily. On squeezing in the hand when dry, it shall form a cast that will not only hold its shape when the pressure is released, but shall withstand careful handling without breaking. The mixed loam shall meet the following:
3. Shall have pH range of 5.5 - 7.5 with dolomite lime, sulfur or other amendments, added prior to delivery, as necessary to attain this range. The decomposed organic amendment component shall consist of composted organic material as described above.

C. Recommended Sources for Soils and Compost:

1. Red-E Topsoils
   18816 - NE 80th Street
   Redmond, WA 98052
   Ph. (425) 868-6500
   www.red-e-topsoil.com
2. Lloyd Enterprises, Inc.
   P.O. Box 3889
   Federal Way, WA 98063-3889
   Ph. (253) 874-6692, (253) 927-0416, (253) 838-0103 (fax)
   www.LloydEnterprises.com
3. Sawdust Supply Company, Inc.
   6314 - 7th Ave South
   Seattle, WA 98108
   Ph. (206) 622-4321, (206) 878-8455, 1-888-622-4321 (toll free)
   www.sawdustsupply.com
4. Cedar Grove Compost Company
   17825 Cedar Grove Road S.E.
   Maple Valley, WA 98038
   Ph. (206) 832-3068, (206) 832-3168 (fax), 1-877-SOILS-4U (toll free)
   www.cedar-grove.com
5. Or, approved equal: For other available sources, refer to the current edition of the "Directory of Recycled Content Building and Construction Products" as published by the Clean Washington Center, Department of Trade and

Economic Development, 2001 Sixth Avenue, Suite 2700, Seattle, Washington 98121 - Phone Number (206) 464-7040).

D. Additional Fertilizers and Soil Amendments: Materials shall be as follows:

1. Fine ground Dolomite Lime.
   a. Shall be retained by Taylor Standard Sieves as follows:
      No. 20 sieve - retains 0%
      No. 100 sieve - retains 25%
2. Lawn Starter Fertilizer: Use (10-20-20) (or, approved equal) with the following characteristics:

Total Nitrogen* (N)	10.0%
(10.0% Ammoniacal Nitrogen)	
Available Phosphate (P205)	20.0%
Soluble Potash (K20)	20.0%
Sulfur (S)	7.0%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, and Monoammonium Phosphate and Urea.

3. Lawn Maintenance Fertilizer: Use (16-16-16) (or, approved equal) with the following characteristics:

Total Nitrogen* (N)	16.0%
(8.5% Ammoniacal Nitrogen)	
(7.5% Urea Nitrogen)	
Available Phosphate (P205)	16.0%
Soluble Potash (K20)	16.0%
Sulfur (S)	7.6%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

4. Landscape Planting Fertilizer: Use (20-10-5+ minors) TURFGRO, "GROPACS" Fertilizer Packets (or, approved equal) with the following characteristics:

Total Nitrogen* (N)	20.0%
(18% Urea Nitrogen)	
(2.0% Ammoniacal Nitrogen)	
Available Phosphate (P205)	10.0%
Soluble Potash (K20)	5.0%
Calcium (Ca)	3.0%
Magnesium (Mg)	2.0%
Sulfur (S)	3.0%
Boron (B)	0.04%
Copper (Cu)	0.20%
Iron (Fe)	1.0%
Manganese (Mn)	0.10%
Zinc (Zn)	0.10%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

E. Recommended Sources for Fertilizers and Amendments:

1. PROSOURCE ONE, 2920 - 142nd Avenue East, Suite 105, Sumner, WA 98390, Ph. (253) 826-9100, Fax. (253) 826-9110, Contact: Shane Riley (425) 327-0489 or sriley@prosourceone.com.
2. HORIZON DISTRIBUTION, 11135 NE 33rd Place, Bellevue, WA, 98004, Ph. (425) 828-4554, Fax (425) 822-0419 or www.horizononline.com .
3. WILCO AGRILANCE, LLC, Sumner, WA, Ph. (253) 826-9100, Fax (253) 826-9110.
4. Or, approved equal. (Provide manufacturer's written analysis by way of substitution request, for approval by the Engineer, prior to delivery).

PART 3 - EXECUTION

3.01 Preparation of Sub-grade:

A. Rip, disc, or scarify sub-grade soils to a minimum depth of ***12 inches***. Sub-grade elevations shall be as follows:

1. For Lawn Areas - Sub-grade elevation ***4 inches*** below finished grade.
2. For Landscape Planting Areas - Sub-grade elevation ***6 inches*** below finished grade.

3.02 Placing Amendments:

A. For Seeding of Lawns Areas: Place ***4 inches*** of Playfield Soil and rototill soil thoroughly into top ***6 inches*** of prepared sub-grade.

B. Incorporate specified Lime and Fertilizers by broadcasting over entire the seeded area at an even distribution and rate, then broom rake the fertilizer into the top inch of specified or amended soil at rates as follows.

1. Dolomite Lime: Recommended application Rate: Incorporate fifty (50) pounds of Dolomite Lime per 1,000 square feet in direct broadcast application.
2. Starter Fertilizer: Recommended Application Rates: For (10-20-20): (Bag size = 50lbs.)
   a. For Hand or Mechanical seeding apply at 1lb. of (N)/1000s.f. (10lbs. blended material/1000 s.f.) in direct broadcast applications.
   b. For Hydroseeding apply at 2lbs. of (N)/1000s.f. (20lbs./1000 s.f. of blended material).
3 Maintenance Fertilizer: Recommended Application Rates: For (16-16-16): (Bag size = 50lbs.)
   a. For all seeded areas apply at 1lb. (N)/1000s.f. (5.3lbs./1000s.f. of blended material) in seeded areas.

C. For Landscape Planting Areas: Place ***6 inches*** of Planting Soil and thoroughly rototill soil into top ***8 inches*** of prepared sub-grade.

1. Broadcast Planting Fertilizer at a rate of one-half pound (1/2#) of nitrogen per 1,000 square feet after placement, but before rototilling in of planting soils.
2. Place Planting Fertilizer Packets at the rate of one packet per plant or as directed by the Engineer.

3.03 Fine Grading:

A. Perform fine grading to attain finish grades as shown on the Plans.

B. Rake out all rocks, roots, sticks and other debris larger than 1-inch diameter or sticks longer than 3 inches long. Leave surface even and readily able to accommodate lawn or planting installation. Compaction level shall be between 85 to 95 percent density.

3.04 Inspections: The Contractor shall notify the Engineer least 48 hours in advance of the time of inspection required for completion of soil preparation before seeding of lawn and landscape planting can occur by calling the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspections.

TESTING REPORT FOR PLAYFIELD SOIL MIX

(The Soil Testing Lab shall fill out with indicated information in indicated units.)

PROJECT NAME: _____

TESTING LAB:

Name, Address & Phone Numbers:
_____
_____
_____

Contact Person: _____

Testing Date: _____

Component #1: Sand

1. Information from the Contractor:
   a. Material origin: Imported: _____ Salvaged on-site: _____
2. USDA textural classification: _____
3. Particle size distribution (ASTM D6913-04E2):

Screen size	% passing
3/8	_____
1/4”	_____
#10	_____
#30	_____
#60	_____
#100	_____
#200	_____

("#" refers to U.S. standard sieve sizes)

Component #2: Organic Amendment (Compost)

1. Information from the Supplier:
   a. US EPA Process to Further Reduce Pathogens (PFRP) certification:
      Yes: _____ No: _____
   b. Heavy Metal concentrations below WSDA limits: Yes: _____ No: _____
   c. Recycled content (%): _____
2. Carbon to Nitrogen ratio (C:N): _____
3. Particle size distribution:

Screen size	% passing
1/2” (12.7mm)	_____
1/4” (6.35 mm)	_____
4.76 mm	_____
2.38 mm	_____
1.00 mm	_____

500 micron _____

Final Product: <u>Playfield Soil Mix</u>

Mix Components (% by volume): Sand (%): _____ Compost (%): _____
Date Mixed: _____
pH: _____
Organic Matter (% by dry weight): _____
Saturation Extract Conductivity (dS/m @ 25°C): _____
Sodium Absorption Ratio: _____
Boron (ppm): _____
Infiltration Rate (inches per hour): _____/_____
Soil Nutrients (ppm): Nitrogen (N): _____ Phosphorus (P): _____ Potassium (K):_____
Soil Micronutrients (ppm): Magnesium (Mg): _____ Sulfate (SO4): _____ Copper (Cu): _____ Zinc (Zn): _____ Manganese (Mn): _____ Iron (Fe): _____

Recommended Actions to correct the product physical, textural and chemical deficiencies to meet specifications:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

END OF REPORT

TESTING REPORT FOR PLANTING SOIL MIX

(The Soil Testing Lab shall fill out with indicated information in indicated units.)

PROJECT NAME _____

TESTING LAB
Name, Address & Phone Numbers:

_____
_____
_____

Contact Person: _____

Testing Date: _____

A. Component #1: **Sandy Loam Soil**

1. Information from the Contractor:
   a. Material origin: Imported: _____ Salvaged on-site: _____
2. USDA textural classification: _____
3. The Sandy Loam Component meets the requirements of ASTM D 5268 and ASTM D 2974: Yes: _____ No: _____
4. The Sandy Loam Component consists largely of sand, but with enough silt and clay present to give it a small amount of stability: Yes: _____ No: _____
5. Individual sand grains can be seen and felt readily: Yes: _____ No: _____
6. On squeezing in the hand when dry, forms a cast that will not only hold its shape when the pressure is released, but withstand careful handling without breaking: Yes: _____ No: _____
7. The Sandy Loam Component meets the following sieve analysis for particle size distribution (ASTM D6913-04E2): Yes: _____ No: _____

Screen size	% passing
¼" (6.35 mm)	_____
#10	_____
#30	_____
#60	_____
#100	_____
#200	_____

("#" refers to U.S. standard sieve sizes)

B. Component #2: **Organic Amendment (Compost)**

1. Information from the Supplier:
   a. US EPA Process to Further Reduce Pathogens (PFRP) certification: Yes: _____ No: _____

b. Heavy Metal Concentrations below WSDA limits: Yes: _____ No: _____

c. Recycled Content (%): _____

2. Carbon to Nitrogen ratio (C:N): _____:_____

3. Particle size distribution:

Screen size	% passing
3/8	_____
1/4”	_____
#10	_____
#30	_____
#60	_____
#100	_____
#200	_____

C. Final Product: **Planting Soil Mix**

1. Mix Components (% by volume): Sandy Loam (%): _____ Compost (%): _____
2. Date Mixed: _____
3. pH: _____
4. Organic Matter (% by dry weight): _____
5. Saturation Extract Conductivity (dS/m @ 25°C): _____
6. Sodium Absorption Ratio: _____
7. Boron (ppm): _____
8. Infiltration Rate (inches per hour): _____/_____
9. Soil Nutrients (ppm): Nitrogen (N): _____ Phosphorus (P): _____ Potassium (K):_____
10. Soil Micronutrients (ppm): Magnesium (Mg): _____ Sulfate (SO4): _____ Copper (Cu): _____ Zinc (Zn): _____ Manganese (Mn): _____ Iron (Fe): _____

D. **Recommended Actions** to correct the product physical, textural and chemical deficiencies to meet specifications:

_____
_____
_____
_____
_____
_____
_____
_____
_____
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_____

END OF REPORT

END OF SECTION