Regional District of Nanaimo
Lions Community Park Playground
Qualicum Bay, BC

LANDSCAPE SPECIFICATIONS

Landscape installation to be in accordance with the MMCD (Master Municipal Contract Documents) Platinum Edition and attached Supplemental Specifications.

Landscape Specification List

SPEC #	MMCD SPECIFICATION (As applicable)	SUPPLEMENTAL SPECIFICATION
32 91 21	TOPSOIL & FINISH GRADING	TOPSOIL & FINISH GRADING
32 93 01.1	PLANTING OF TREES, SHRUBS AND GROUND COVERS	MULCHING

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1 GENERAL

1.1 SUMMARY

.1 Section Includes: Growing medium for all landscape areas.

1.2 SUBMITTALS

.1 The Contractor shall source and supply all topsoil and growing medium components for the project. The Contractor shall ensure that the soil tested and the soil applied on site are from the same stockpile.

.2 All growing medium supplied by the Contractor shall be tested prior to placement. Testing shall be at the Contractor's expense, performed by Pacific Soil Analysis Ltd., Vancouver, or an alternate laboratory agreed to by both the Contractor and Consultant. The Contractor shall arrange for such testing and recognize that a minimum period of one (1) week is required for such testing beginning from the time that the laboratory receives the soil sample(s). In the event that the contractor initiates application of soil on site prior to completion of the soil analysis, it is possible that the soil will be rejected and require removal at the Contractor's expense.

.3 The recommendations of the soil testing laboratory shall be the basis of requirements for soil amendments.

.4 The Contractor shall submit the soil analysis report to the Consultant for review a minimum of 48 hours prior to commencement of work.

.5 Each submission to the testing laboratory shall include the following:

.1 Minimum 4 Litre sample of soil intended for use.

.2 Indication of landscape application type:

a) High Traffic Lawn
b) Low Traffic Lawn
c) Trees and Large Shrubs
d) Planting Bed
e) Raised Planter
f) Natural Area

.3 The planned watering/irrigation method:

a) Permanent automatic irrigation
b) Temporary irrigation for establishment
c) Manual watering
d) No irrigation

.6 The soil analytical requirements shall include:

.1 pH.

.2 Lime requirement to achieve a pH of 6.5.

.3 Soluble salts or electrical conductivity (E.C.).

.4 % Sands + % Fines (Silt and Clay) + % Organic Matter = 100%.

.5 % Total Nitrogen.

.6 Available levels of phosphorous, potassium, calcium and magnesium.

.7 The laboratory analysis shall include recommendations for:

.1 Soil amendments to bring soil attributes to acceptable levels as outlined in this specification.

.2 Fertilizer applications, by category of plant type, to bring growing medium fertility to levels outlined in this specification.

1.3 **DELIVERY, STORAGE, AND HANDLING**

.1 Storage: Store in clean area; protect from contamination with weeds, weed seeds, fill or other debris

1.4 **POST-INSTALLATION TESTING**

.1 The Consultant will obtain and submit a sample of installed soils for testing to confirm that installed soil(s) satisfies the properties and requirements of this and that required amendments have been completed.

.2 All testing, initial and subsequent, will be at the Contractor's expense.

.3 Non-conforming soils may require amendment in-place or removal and replacement at the Contractor's expense.

2 PRODUCTS

2.1 **TOPSOIL**

.1 All supplied topsoil shall be fertile, friable natural loam, neither heavy clay nor of very light sandy nature, containing 4% organic matter for clay loams and 2% organic matter for sandy loams with acidity range (pH) between 5.5 and 7.5. Topsoil shall be capable of sustaining vigorous plant growth. It shall be free from any admixture of sub-soil, lumps of clay, stones and roots over 30mm (~1") diameter, toxic materials, crabgrass, couchgrass, equisetum, bindweed/morning glory, noxious weeds and weed seeds.

.2 The population of any single species of plant pathogenic nematode shall not exceed 1,000 per litre of growing medium.

.3 Identify the source of supply for approval and repeat approval process for any proposed change in the source of supply. The Consultant may take samples for sieve analysis prior to approval.

2.2 **PEAT MOSS**

.1 Peat moss shall be horticultural grade, partially decomposed fibrous or cellular stems and leaves of Sphagnum Mosses with a texture varying from porous to spongy fibrous, fairly elastic and substantially homogeneous with a pH value of not less than 3.5 and not greater than 6.0, free wood, sulphur and iron. It shall be brown in colour and medium to coarse shredded, particles 10mm (0.4") size or less.

.1 Salinity: The saturation extract conductivity shall not exceed 2.0 millimhos/cm at 25° Celsius.

.2 Nitrogen content shall be no less than 0.8% based on dry weight.

.3 Particle size shall be such that:

a) 95-100% pass a 9.5mm standard sieve.
b) 0-15% pass a 500 micron standard sieve.

.2 Identify the source of supply for approval and repeat approval process for any proposed change in the source of supply. The Consultant may take samples for sieve analysis prior to approval.

2.3 **SAND**

.1 Sand shall be hard, granular sharp sand, less than 2.00mm and greater than 53 microns (0.053mm) in size to CSA A82.50-M1976, well washed and free of impurities, chemicals or organic matter.

.2 Identify the source of supply for approval and repeat approval process for any proposed change in the source of supply. The Consultant may take samples for sieve analysis prior to approval.

2.4 **MANURE**

.1 Manure, where used, shall be well-rotted farm animal manure, such that liquids have been eliminated, and the material is crumbly, free from weed seeds, rocks, sticks and other deleterious material and contain not more than 40% by volume of sawdust, straw, or shavings.

.2 Manure shall be free of harmful chemicals, and shall have salt content that gives an electrical conductivity reading of between 0.5 and 0.6mmho/cm.

.3 Manure shall contain not less than 1.0% nitrogen based on dry weight.

.4 All particles in manure shall pass a 6.35mm standard sieve.

.5 Manure shall be free of viable seed, maximum two (2) plants per litre of manure.

2.5 **WOOD RESIDUALS**

.1 Where wood residuals from decomposed sawdust are present in the growing medium, the total carbon to total nitrogen ratio shall not exceed 40:1.

.2 Sawdust shall not be present in the growing medium.

2.6 **FERTILIZERS**

.1 Fertilizers shall be standard commercial brands, meeting the requirements of the Canada Fertilizer Act.

.2 Dry fertilizers shall be in granular, pelleted or prill form, in accordance with recommendations of the soil testing laboratory, and shall be dry, free-flowing and free from lumps, and be in manufacturer's original packaging, stored in waterproof containers clearly marked with the name of the product and manufacturer.

.3 Liquid fertilizers shall be in the manufacturer's original containers.

2.7 **BONEMEAL**

.1 Bonemeal shall be a commercial raw Bonemeal, finely ground with minimum analysis of 4% nitrogen and 20% phosphoric acid.

2.8 **GROWING MEDIUM**

.1 The composite planting soil mixture (growing medium) shall be free from any admixture of plants, weed seeds, roots, sticks, building materials, wood chips, chemical pollutants or other extraneous materials.

.2 The dry weight of the growing medium must not exceed 85 lbs/cu.ft.

.3 The saturated weight of the growing medium must not exceed 100 lbs/cu.ft.

.4 The growing medium shall not require more than 0.5 kg per m² (100 lbs per 1000 sq.ft) of dolomite lime to reach required pH level.

.5 Excessive weed, noxious weed, or invasive plant growth (as determined by the maintenance specification) in a growing medium during the first year may be an indication that unacceptable levels of weed/noxious weed/invasive plant seeds or parts were present in the growing medium at the time of installation. Such a determination may result in a requirement that the contractor remove all weeds and invasive plant roots and reduce the growth to acceptable levels as determined by the contract administrator.

.6 The growing medium shall have chemical and physical properties which fall within the ranges outlined below:

.1 **Salinity:** The saturation extract conductivity shall not exceed 3.0 millimhos/cm at 25° Celsius. If higher it shall be leached with fresh water through irrigation or precipitation prior to planting.

.2 **Boron:** The concentration in the saturation extract shall not exceed 1.0 ppm.

.3 **Sodium:** sodium absorption ratio (SAR) as calculated from analysis of saturation extract to not exceed 8.0.

.4 **Total Nitrogen** shall be 0.2% to 0.6% by weight.

.5 **Available Phosphorus** shall be 50 to 250 ppm.

.6 **Available Potassium** shall be 50 - 1000 ppm.

.7 **Carbon to Nitrogen Ratio** shall be not more than 40:1, with added Organic Matter and chemical sources of Nitrogen.

.8 **Acidity** shall be within the pH range shown in the table below for the intended application.

.9 **Texture:** Particle sizes and proportions of each size particle shall be within the ranges shown in the table below for the intended application.

.10 **Particle size** classes referenced to Canadian System of Soil Classification.

.11 **Organic Content** shall be within the ranges shown in the table below for the intended application.

.12 Mixing and handling of growing medium shall be done in a manner that the minimum saturated hydraulic conductivity shown in the table below is achieved.

.13 Properties of growing medium for different landscape applications shall be as follows:

Property	**% of Dryweight Mineral Fraction**		
	Low-traffic lawn, trees & large shrubs, natural areas	High-traffic lawn	Planting areas, shrubs & groundcover
Texture			
Gravel (>2mm to <40mm)	0 - 10	0 - 5	0 - 15
Sand (>0.051mm to <2mm)	50 - 70	70 - 90	50 - 70
Silt (>0.002mm to <0.05mm)	10 - 25	0 - 15	10 - 25
Clay	0 - 25	0 - 15	0 - 25
Acidity (pH)	6.0-7.0	6.0-7.0	5.0-6.5
Drainage			
Minimum saturated hydraulic conduc. (cm/hr)	2.0	7.0	2.0
Organic Content			
% of Dry Weight	5 - 10	3 - 5	10 - 20

3 EXECUTION

3.1 SCARIFICATION AND FINE GRADING

.1 Sub-grade shall be scarified to a minimum depth of 150mm (6") immediately before placement of growing medium.

.2 Fine grade sub-grade eliminating any uneven areas and low spots that become apparent during scarification.

3.2 GROWING MEDIUM

.1 Commercial processing and mixing of growing medium components shall be done thoroughly by a mechanized screening process. No hand mixing shall occur unless specifically approved by the Consultant.

.2 Topsoil or growing medium shall not be handled in a wet or frozen condition or in any manner in which the soil structure is adversely affected.

.3 Moisture content of peat at the time of mixing shall not be less than 60% to 75%.

3.3 PLACING GROWING MEDIUM

.1 Bulk excavation and fill and subgrade by others shall be prepared to within 50mm (2") tolerance of the following depths below required finished grade elevations:

Planting Type	Depth
Grass Sod	150mm (6")
Seeding	150mm (6”)
Shrub Beds	450mm (18")
Rain Garden	450mm (18”)

.2 The Contractor shall examine the sub-grade before placing growing medium, and shall report any conditions or defects on the site that may adversely affect the performance of this section of the work to the Consultant prior to placing growing medium.

.3 Spread growing medium during dry weather over approved dry sub-grade. Apply growing medium over the site up to finished elevations and contours required.

.4 Roughen surface of growing medium after installation to remove glazing.

.5 Place growing medium over prepared subgrade and allow to settle or compact by light rolling such that it is firm against deep footprints. Do not compact growing medium more than necessary to meet this requirement.

3.4 FERTILIZERS

.1 Fertilizers shall be added according to soil lab analysis recommendation(s) to bring growing medium fertility within the ranges set out in Growing Medium - Clause 2.8.

.2 Lime may be added to the growing medium at the time of screening. All other required fertilizers shall be added to the growing medium after it is in place. There should be at least one week between the time of application of lime and other types of fertilizer.

.3 Fertilizers shall be spread according to the soil analysis report with a suitable mechanical spreader and be fully incorporated into the growing medium to a minimum depth of 150mm (6").

END OF SECTION

1 GENERAL

1.1 RELATED WORK

.1 Section 32 93 01 – Trees, Shrubs and Groundcover Planting

1.2 INSPECTION

.1 Obtain approval of installed planting from Consultant before mulching material is applied.

.2 Samples: Material sample (minimum 2 liters) provided to Consultant for approval.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Storage: Store in clean area; protect from contamination with weeds, weed seeds, topsoil, fill or debris.

1.4 PROTECTION

.1 Prevent damage to landscaping, curbs, trees and adjacent property during installation. Any damage will be made good at no expense to the Owner.

2 PRODUCTS

2.1 BARK MULCH

.1 Bark mulch shall be 25mm and minus Douglas Fir/ Hemlock bark chips, naturally dark brown/black in colour.

.2 To be free of wood and sticks, stones, roots, weed seeds and reproductive parts, soil, salts or other harmful chemicals, or other extraneous material.

3 EXECUTION

3.1 BARK MULCH

.1 After finish grading is complete and all debris and weeds have been removed and inspected, place bark mulch on all upland planting zones in an even layer.

.2 Depth of mulch to be 75mm (3") after settling, unless otherwise noted on plans.

.3 Ensure installed mulch does not bury or cover any components of plant material that require exposure including, but not limited to, leaves, branches, trunks, and trunk flares.

END OF SECTION