PART1 SOIL PLACEMENT AND GRADING

PREPARATION FOR EXECUTION

1.1 Fine grade sub-grade, eliminating uneven areas and low spots, ensuring positive drainage. Remove soil contaminated with toxic materials. Dispose of removed materials as directed by Owner.

1.2 Cultivate entire area which is to receive topsoil. Repeat cultivation in those areas where equipment use for hauling and spreading has compacted soil. Scarify compacted sub- grade with ripper to a depth of 300 mm; rip in criss-cross pattern with a ripper spacing of 500 mm.

1.3 Remove surface debris, construction debris, roots, vegetation branches and stones in excess of ,50mm (2") diameter.

MATERIAL

Topsoil:

1.4.1 Use local topsoil and amend it to establish a suitable growing medium for planting and sodding, free from subsoil, roots, noxious weeds, debris, toxic materials, and free of stone. (Note: Topsoil is material the source of which previously supported plant life and which was stockpiled in a way suitable to continue to support plant life.) Topsoil to have a pH value of 6-7 sand organic matter of 20 to 30% Amend soil with the following items as directed by soils report and test resulted and specific plant material.

1.4.2 Loam: Sandy loam topsoil with minimum 25% organic matter in the following range:

- 30-50% sand
- 10-25% clay
- 30-50% silt

SPREADING OF TOPSOIL/PLANTING SOIL

1.5 Spread topsoil after Owner has inspected subgrade.

1.6 Spread topsoil with adequate moisture in uniform layers over approved, unfrozen subgrade, where seeding or sodding indicated.

1.7 Topsoil to overlaid subgrade to a minimum depth of 100mm.

1.8 For sodded areas keep topsoil 15 mm (1/2") below finished grade.

1.9 Apply topsoil as indicated in the work description.

FINE GRADING

1.9 Fine grade topsoil eliminating rough and low areas to ensure positive drainage and meet the lines and levels indicated. Do all fine grading with approved equipment being careful not to excessively compact topsoil and by hand around plant material.

1.10.1 Collect and dispose of stones, debris, weeds and roots.

END OF SECTION

PART2 HYDROSEEDING/PRODUCTS

DELIVERY AND STORAGE

2.1 Deliver seed in original containers showing:

1. Analysis of seed mixture
2. Percentage of pure seed
3. Year of production
4. Net mass·
5. Date when tagged and location
6. Percentage germination
7. Name and address of distributor

2.2 Deliver fertilizer packaged in waterproof bags with a label clearly showing:

1. Net mass
2. Analysis
3. Manufacturer
4. Net Mass

Store on pallets and protect from the elements.

2.3 **MATERIALS**

2.3.1 Seed: "Canada pedigreed grade", in accordance with Government of Canada Seeds Act and Regulations.

1. Grass mixture: "Certified", "Canada No. 1 Lawn Grass Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
2. Mixture composition: 20% - 30%Turf Type Perennial Rye, 20% - 30% Creeping Red Fescue, 40% - 60% Kentucky Bluegrass.
3. Rate of application: 1.5 kg seed mixture per 1OOm^2 or as specified by seed supplier.

2.3.2 Mulch: specifically manufactured for use in hydraulic seeding equipment, non-toxic, water activated, green colouring, free of germination and growth inhibiting factors with following properties:

1. Type II mulch:
2. Made from newsprint, raw cotton fibre and straw, processed to produce fibre length of 15 mm minimum and 25 mm maximum. Greater proportions of ingredients to be straw.

2.3.3 Hydraulic Mulch Type A - raw wood fibre produced from clear whole, hard-wood approved chips and shall be dyed green or another

approved colour.

2.3.4 Water: Potable, free from impurities that would inhibit germination and growth.

2.3.5 Fertilizer:

1. To Canada "Fertilizers Act" and "Fertilizers Regulations".
2. Complete synthetic, slow release with 35% of nitrogen content in water insoluble form.

2.3.6 Inoculants: inoculants containers to be tagged with expiry date.

2.4 EQUIPMENT

2.4.1 Hydraulic Seeder as per OPSS 572-06 shall be capable of applying seed and fertilizer uniformly in a liquid state, in the combination described.

2.4.2. All hydraulic seeding equipment shall have its tank volume certified by a plate affixed in plain view on hydraulic seeder and shall not be removed or altered.

2.4.3 The seeder shall be equipped with sufficient agitation to mix the materials into homogeneous slurry and maintain the slurry in a homogeneous state till it is applied.

2.5 SEED AND FERTILIZER APPLICATION

2.5.1 Seed and fertilizer shall be applied after surface preparation and, if specified, topsoil application has been completed to conform to OPSS 802.

2.5.2 Seed and fertilizer shall be applied prior to, and on the same day as, erosion control blanket placement and stapling.

2.5.3 Seed and fertilizer shall be distributed uniformly over the specified area.

2.5.4 Where a hydraulic seeder is utilized, the quantity of each material to be charged into the tank shall be measured either by mass or by a system of mass calibrated volume measurements acceptable to Niagara Parks. The materials shall be added to the tank while it is being filled with water and shall be thoroughly mixed into a homogeneous water slurry. Seed and fertilizer shall be applied within one hour of being charged into the hydraulic seeder tank.

2.5.5 Where conditions are such that the use of the hydraulic seeder is either impractical or undesirable, seed and fertilizer shall be applied by cyclone slider.

2.5.6 Unless otherwise noted seeding to occur in early spring or between August 15th and September 30th

2.6 WATERING

2.6.1 Plan to spread seeds on moist soil. If soil is dry where seeds are to be spread, water to a moist but not saturated consistency.

2.6.2 Keep soil continually moist until germination occurs; approximately two weeks.

2.6.3 Ensure seeds do not run-down slope. Reseed areas, if necessary.

2.7 WORKMANSHIP

2.7.1 .1 Keep site well drained

.2 Clean-up immediately, soil, mulch, or other debris spilled onto pavement.

.3 Dispose of deleterious materials

.4 Take reasonable care to prevent contamination by seeding slurry of structures, signs, guide rails, fences, and utilities.

.5 Where contamination occurs, remove seeding slurry to satisfaction of the OWNER.

2.7 MAINTENANCE DURING ESTABLISHMENT PERIOD

2.7.1 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.

2.8 ACCEPTANCE

2.8.1 Seeded areas will be accepted by Niagara Parks provided that:

1) Seeded areas are free of ruts and erosion, and plants are uniformly established (i.e. no bare or dead spots).

2.8.2. Areas seeded in fall will achieve final acceptance in following spring, one month after start of growing season, provided acceptance conditions are fulfilled.

END OF SECTION

PART3 SODDING

1.2 SOURCE QUALITY CONTROL

1.2.1 Obtain approval from Niagara Parks, Park department of sod at source.

1.2.2 When proposed source of sod is approved, use no other source without written authorization.

1.3 DELIVERY AND STORAGE

1.3.1 Schedule deliveries in order to keep storage at job site to minimum without causing delays.

1.3.2. Deliver, unload and store sod on pallets

1.3.3. Deliver sod to site within 2 hours of being lifted and lay sod within 8 hours of being lifted.

1.3.4 Do not deliver small, irregular or broken pieces of sod.

1.3.5. During wet weather allow sod to dry sufficiently to prevent tearing during lifting and handling.

1.3.6 During dry weather protect sod from drying and water sod as necessary to ensure its vitality. Dry sod will be rejected.

1.4 SCHEDULING

1.4.1 Schedule sod lying to coincide with completion of topsoil placement operations.

PRODUCTS

2.1 MATERIALS

2.1.1 Nursery sod: Quality and source to comply with standards outlined in the latest issue of the Nursery Sod Growers Association of Ontario

2.1.2 Number one 100 % Kentucky Bluegrass.

2.13 Broken, dry, discoloured pieces will be rejected by Parks department.

2.2 Wood pegs, (17 x 17 x 200 mm) or approved 200 mm long steel staples.

2.3 Water: potable

2.4 Fertilizer: complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen.

EXECUTION

3.1 LAYING OF SOD

3.1.1 Prior to sodding, obtain approval from Parks department that finished grade and depth of topsoil are satisfactory.

3.1.2 Lay sod within 8 hours of being lifted

3.1.3 Sodding during excessively wet conditions, at freezing temperature or over frozen soil is not acceptable.

3.1.4 Lay sod in rows, perpendicular to slope, and with joins staggered. Butt sections with sharp implements.

3.1.5 Where slope conditions exceed 3:1 secure sod with wooden pegs. Place pegs (3) per M^2, 100 mm below top edge to prevent shifting of sod and drive pegs flush with top of sod soil. In sodded drainage swale use 6 pegs around entire edge of each square meter of sod.

3.1.6. Provide close contact between sod and soil with a light power roller providing a maximum weight of 680 kg/sq. metre. Use of heavy roller to correct irregularities in grade is not permitted.

3.2 MAINTENANCE

3.2.1 The Contractor is responsible for maintenance of sod for duration of construction period to the date of substantial completion.

3.2.2 Water sodded areas in sufficient quantities and at frequency required to maintain soil under sod continuously moist to depth of (75 to 100) mm.

3.2.3. Cut grass to (60) mm when it reaches height of (80) mm. Remove clippings which will smother grassed areas.

3.2.4 Maintain sodded area weed free.

3.3 ACCEPTANCE

3.3.1 Sodded areas will be accepted at final inspection provided that:

1) Sodded areas are properly established.
2) Sod is free of bare and dead spots and without weeds.
3) No surface soil is visible when grass has been cut to height of 40 mm.
4) Sodded areas have been cut minimum 2 times.

3.3.2 Lawns sodded in fall will be accepted in the following spring one month after start of growing season, provided acceptance conditions are fulfilled.

3.4 MAINTENANCE DURING WARRANTY PERIOD

3.4.1 Perform the following operations from time of acceptance until end of warranty period.

1) Repair and re-sod dead or bare spots to satisfaction of NIAGARA PARKS PARK DEPARTMENT.

END OF SECTION

PART 4 WARRANTY & ACCEPTANCE

4.1.1 The CONTRACTOR hereby warrants that the WORK shall be completed in a timely fashion, and in a good workmanlike and tidy manner, and guarantee the work against all defect in workmanship, materials, and against death of plant materials for a period of two years following issuance of Preliminary Acceptance certificate. Any defects arising during the said period shall be remedied forthwith by the CONTRACTOR to the satisfaction of the NIAGARA PARKS PARK DEPARTMENT. At the request of the OWNER the CONTRACTOR will assign to the OWNER or enforce on behalf of the OWNER all guarantees obtained by the CONTRCTOR with respect to the work.

4.1.2 Upon notification by the CONTRACTOR the work is complete, the NIAGARA PARKS PARK DEPARTMENT will inspect the work and issue the appropriate acceptance certificate and notices as required.

4.1.3 The final date for Preliminary Acceptance in each calendar year is March 31. If the CONTRACTOR is unable to complete the work by that date, Preliminary Acceptance will not be scheduled until the spring of the following year and the two (2) year warranty will not commence until Preliminary Acceptance has been received. The CONTRACTOR will maintain the work until that time at no extra cost to the NIAGARA PARKS.

4.1.4. Total Performance of the CONTRACTOR'S WORK shall occur when the entire work of the contract is complete except those items arising out of the provisions of the guarantee, and the CONTRACTOR'S WORK has been granted a Substantial Completion Certificate by the NIAGRA PARKS or its agents, and where required the Substantial Completion Certificate has been signed.

4.2 REPLACEMENTS

4.2.1 All plant material determined by the NIAGARA PARKS PARK DEPARTMENT to require replacement under the terms of the guarantee shall be replaced during the next planting season.

4.2.2 All replacements are subject to the Warranty as for the original planting.

4.2.3 Replacements must be the same as original specified unless written permission has been issued by the NIAGARA PARKS PARK DEPARTMENT.

4.3.4 Continue such replacement and warranty until plant material is acceptable.

4.3 FINAL ACCEPTANCE OF WORK

4.3.1 Final acceptance shall occur when the entire work of the contact is complete and a Final Acceptance Certificate has been issued by the Niagara Parks and signed by the Approving Agency, where required.

END OF SECTION