

**HYDRO MULCHING**

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**1.0 GENERAL**

- 1.1 The work consists of supplying all labour, and the installation of grass seed.
- 2.2 Grass seed only to be supplied by Developer/Contractor unless City of supply as per prior negotiation.
- 3.3 All other material to be supplied by the Contractor.

**2.0 PRODUCT HANDLING: DELIVERY - STORAGE**

- 1.1 Use all means necessary to protect material before and during installation to prevent it becoming moldy, wet, or otherwise damaged in transit or storage.
- 2.2 In the event of damage make immediate replacements at no extra cost to the City of Lethbridge.

**3.0 SITE PREPARATION**

- 1.1 Areas to be brought to finish grade and acceptable tilth for success of seeding HYDRO MULCHING to be done by the Developer/Contractor.
- 2.2 The preparation shall be approved by the Engineer/Consultant prior to commencing work.
- 2.3 Scarify and/or aerate soil surface to allow for proper subsurface drainage.

**4.0 GRASS SEED**

- 1.1 Engineer/Consultant to determine specific requirements for seed mixture.
- 2.2 Seed which has become moldy, wet, or otherwise damaged (after Contractor has taken delivery) shall not be accepted, and shall be replaced at the Contractor's expense.

**5.0 FERTILIZER**

- 5.1 Use 16-20-0 (Nitrogen - Phosphorus - Potassium) fertilizer.

**6.0 WATER**

- 6.1 Water used for hydraulic seeding and wood cellulose fibre mulching shall be free of any impurities which would inhibit germination of otherwise adversely affect growth. Water to be supplied from City hydrant as designated by City Engineering. Permits required to obtain water will be at 100% Developer/Contractor expense.

**7.0 ASPHALT EMULSION BINDER**

- 7.1 Asphalt emulsion to be used as an adhesive with the mulching material shall be specially refined petroleum asphalt emulsified in water containing no petroleum solvents or other components known

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to be a toxin to plant and animal life.

- 7.2 Asphalt emulsion shall conform to the following specific requirements.

Viscosity, 60 ml at 25° C, SSF 17-40 Residue by Distillation, % 55-58 Settlement 7 days, % 5.0 Max Demulsibility, 50 m. of 0.10 N CaCl<sub>2</sub> 2.0 Max Sieve Test 0.10 Max Tests of Residue from Distillation Penetration, 25°C, 100 g., 5 sec. 100-200 Solubility, CCL<sub>4</sub>, % 97.5 Min. Ductibility, 25°C, cm. 50 Min. Fireproofness Pass A sticking agent, Terratack or approved alternative may be used in place of asphalt emulsion binder.

- 7.3 Methods of testing shall be in accordance with ASTM Designation D244, except that for the settlement test, the settlement period shall be 7 days; for the solubility test, the solvent shall be trichloroethylene, and fireproofness requirement shall be met, if there is no flash or flame when the flame of a Bunsen burner is held in contact for 10 seconds with the surface of the material, as received.

**8.0 MULCHING MATERIAL**

- 8.1 The material used for mulching shall be specially prepared wood cellulose fibre, of a type approved by the Engineer. It shall contain no growth or germination inhibiting factors, and shall form, after application, a blotter-like ground cover which will allow absorption and percolation of water.
- 8.2 The material shall be supplied to the contract site in stacks, each containing 454 kg. (air dry) of fibre, and each stack shall be further subdivided by means of conspicuous markers into bundles of fibre. Alternatively the material may be supplied to the contract site in moisture-proof bags. Each bag shall contain the same air-dry weight of material, and this weight shall be clearly shown. It shall be the responsibility of the Contractor to provide to the Engineer/Consultant before and as a condition of its use, a shipping bill issued by the supplier of the material, designating the supplier or the manufacturer and the type of material, and certifying the net weight of material in each truck or car load.
- 8.3 Throughout this specification, references to the weight of this material shall refer only to air dry weight of the fibre material. Air dry weight shall be determined in accordance with Canadian Pulp and Paper Association, Technical Section, Standard A2.

**9.0 EQUIPMENT**

- 9.1 Approved hydraulic seeding equipment is required for the application of seed, fertilizer, and a slurry of prepared Hydro Mulch. This equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry of the specified amounts of materials. The pump pressure shall be such as to maintain a continuous non-fluctuating stream of solution.
- 9.2 Distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with nozzle to give alternative means of distribution.

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**10.0 OPERATIONS**

**10.1 Time of Seeding**

Seed shall not be applied until the seed bed has been properly prepared. All seeding shall be done in calm weather.

**10.2 Soil Bed Preparation**

Before seeding the soil surface shall be brought to a firm and acceptable tilth condition. The soil shall be graded in a workmanlike fashion to meet existing grades and existing growth, etc., using acceptable tillage practices to ensure a good catch of grass and to ensure control of erosion (ridges to run against grain to prevent runoff). Remove debris, rock and /or stones in excess of 75mm. Seed bed to be inspected and approved by the Engineer/Consultant.

**10.3 Seeding**

The Contractor shall measure the quantities of each of these materials to be charged into the seeder, either by weight or by a system of weight-calibrated volume measurement approved by the Engineer/Consultant and shall provide all equipment required for this purpose.

Materials shall be installed at the following rates of application:

SEED	56 kg/ha (50 lbs/acre)(Mechanical seeder only)
FERTILIZER	280 kg/ha (250 lbs/acre) (16-20-0)
MULCH	1120 kg/ha (1000 lbs/acre)

Organic Tackifier shall be applied at the rate directed by the manufacturer for high erosion conditions and slopes greater than 1:3.

The work shall be done only in good weather and on ground free of frost, snow, ice or standing water.

No area shall be seeded in excess of that which can be mulched on the same day as it is sown.

After charging, no water or other material shall be added to the mixture in the hydro mulcher.

Areas inaccessible to the above method of application, or designated by the Engineer/Consultant, shall be seeded and fertilized by approved, accepted methods. Distribution of the material shall be uniform and at the rates specified.

The Contractor shall notify the Engineer/Consultant as to the slurry tank capacity and coverage area in square meters/tank to meet application rates specified. Prior to seeding, the Contractor shall place marker stakes to delineate the area to be covered by two (2) tankfuls of slurry mix which shall be used as a test area. This application rate shall be used for the remainder of the project.

Areas inaccessible to the above method of application or as designated by the engineer shall be seeded and fertilized by other approved methods. Distribution of material shall be uniform and at rates specified.

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**11.0 PROTECTION AND MAINTENANCE**

Landscaping shall be maintained by the Contractor for a period up to July 30, of the year following the issuing of the Completion Certificate. The certificate shall be issued when a thick, uniform growth of grass has been established. Bare grass areas shall be reseeded during the Period of Maintenance. The Period of Maintenance will be extended until the reseeded bare area have a thick, uniform growth of grass acceptable to the Engineer/Consultant. Damage resulting from erosion, gullies and washouts, etc., shall be repaired by filling with topsoil ramping, cultivating, and reseeded, at the Contractor's expense.