

SPECIFICATION SECTION 12200 - SODDING, GRASSING AND PLANTING

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SPECIFICATION SECTION 12200 - SODDING, GRASSING AND PLANTING

1. DESCRIPTION

This Specification Section prescribes the provision and planting of sod, grass, trees and seeds at the locations shown on the Drawings or as indicated by the Engineer.

2. MATERIAL REQUIREMENTS

2.1 Reference Standards

The most recent editions of the following Standards shall be applied to the Works.

Vietnamese Standard TCVN 4447-87: Earthworks: Code of Execution and Acceptance.

TCXDVN 104-07: Urban Road Specification for Design

ASTM C602-07 Agricultural Liming Materials

2.2 Sods, Grasses and Shrubs for Planting

2.2.1 Sod

Sod for planting shall be healthy living stems (stolons or rhizomes) with attached roots or perennial turf forming grass, from approved sources in the locality of the work and in optimal condition. The presence of objectionable weeds or other detrimental material will be cause for rejection.

2.2.2 Seed Mud Spraying

Material for seed mud spraying shall comply with Table 1.

Table 1. Requirements for Seed Spraying and Seed Mud Spraying (per 1 m²)

	Items	Materials	Quantity	Unit	Remarks
Seed Mud Spraying	Seed	Grass.	1	l.s.	
	Fertilizer	Chemical fertilizer	90	g	Containing wastage rate
	Soil		0.015	m3	Containing wastage rate, Borrow material or Surplus material
	Water		-	liter	30% to 40% of the planting base material
	Agglutinant	Emulsified Asphalt	1	l.s.	Need control of moisture balance

2.2.3 Grass

Grass seeds shall be healthy and from approved sources in the locality of the work in optimal condition. The presence of objectionable or other detrimental material will be cause for rejection.

2.2.4 Trees for Planting

Trees for planting shall comply with the requirements of Vietnamese Standard TCXDVN 104:2007 as follows:

- a) Trees for planting in the verge shall be of species suitable for the particular environment as detailed on the Drawing or as approved by the Engineer. They shall be healthy living plants of a minimum height of 3m and in an optimal condition with a healthy attached root system and from approved sources.

- b) The requirements for plantings are as follows:

Trees for planting in the verge of the highway: height \geq 3m, diameter of root tip \geq 8cm, seedlings/ trees shall be uprooted without breaking off root bulb and bound up in jute bags and tied up tightly, with soil root bulb size of 60 x 60 x 60 cm.

Planting holes: minimum size of 100 x 100 x 100 cm for trees.

Newly planted trees must be stably supported to protect the trees from the wind to avoid moving the roots and make the trees die.

2.3 Fertilizers

- a) Fertilizer shall be standard commercial fertilizer supplied separately or in mixtures containing percentages of total nitrogen, available phosphoric acid, and water soluble potash based on the soil composition and shall meet Vietnamese and applicable local laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon.
- b) No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.
- c) Fertilizers may be supplied in one of the following forms:
 - (i) A dry, free flowing fertilizer suitable for application by a common fertilizer spreader;
 - (ii) A finely ground fertilizer soluble in water and suitable for application by power sprayers or
 - (iii) A granular or pellet form suitable for application by blower equipment.

2.4 Lime

If the use of lime is required it shall be ground limestone containing not less than 85% of total carbonates and shall be ground to such fineness that 90% shall pass through a 250 µm mesh sieve and 50% shall pass through a 150 µm mesh sieve. Dolomitic lime or a high magnesium lime shall contain at least 10% of magnesium oxide. All liming materials shall conform to the requirements of ASTM C602-07.

2.5 Topsoil

Materials for topsoiling shall conform with the provisions of Specification Section 12300 Topsoiling.

2.6 Support stakes

Support stakes shall be wood or bamboo.

2.7 Submittals

Prior to the commencement of Sodding, Grassing and Planting the Contractor shall submit the following to the Engineer for approval:

- a) Details of his proposed sources for sod; evidencing that the sod is heavy and thickly matted and does not contain any objectionable grass, weeds, or other detrimental material;
- b) Details of his proposed sources for trees evidencing that all trees are in optimum condition for the locations indicated on the Drawings;
- c) Detailed description of the sod and trees including the name, type, size and major characteristics regarding the environment and their maintenance;
- c) Details of the fertilizer suppliers proposed by the Contractor for the Works; The Contractor shall provide a method statements, which describes in detail the work prescribed by this Specification Section.
- d) Test results and laboratory's proposed fertilizer mixes, application rates and
- e) Test results of lime, if its use is allowed by the Engineer, confirming that the quality of the proposed lime sources comply with this Specification Section and the provision of enough information to the Engineer regarding the lime properties.

3. LANDSCAPING REQUIREMENTS

The Contractor shall provide a method statement, which describes, in detail, the work prescribed by this Specification Section, for the approval of the Engineer, prior to the commencement of this work.

3.1 Harvesting

- a) The Contractor shall notify the Engineer at least 5 days before sods are to be harvested and the source shall be approved by the Engineer before harvesting begins.
- b) At the locations for harvesting sods the grass shall be mowed to a height of 50 to 75 mm. The cuttings shall be removed. Sods shall then be loosened by cross disking, shallow plowing or other acceptable methods. After being loosened from the soil, sods shall be gathered in small piles or rows, watered and kept moist until planted.
- c) Not more than 24 hours shall elapse between harvesting and planting, except when weather or other uncontrollable conditions interrupt the work. In this situation additional time may be permitted, providing the sods kept moist. Sod, shrubs and trees that have heated in stockpiles, permitted to dry out or otherwise seriously damaged during harvesting or delivery shall be immediately rejected and disposed of as directed by the Engineer.

3.2 Advanced Preparation and Cleanup

After preparing the ground and before applying fertilizer and ground limestone the areas to be planted with sods shall be raked or otherwise cleared of stones larger than 50 mm in diameter, sticks, stumps and other debris which might interfere with sodding, growth of grass, or subsequent maintenance of grass covered areas. If erosion occurs after preparing the ground for sodding and the Contractor shall repair such damage before the application of fertilizer and ground limestone. This work may include filling gullies, recontouring the ground and repairing other incidental damage.

3.3 Topsoil Placement

Placing of topsoil shall conform with the requirements of Specification Section 12300 Topsoiling.

3.4 Applying Fertilizer and Ground Limestone

- a) Following preparation and cleanup of the ground fertilizer shall be uniformly spread at a rate approved by the Engineer.
- b) If the use of ground limestone is required it shall be spread at a rate approved by the Engineer.
- c) The nutrients shall be incorporated into the soil to a depth of not less than 50 mm by disking, raking, or other methods acceptable to the Engineer. Stones larger than 50 mm in diameter, large clods, roots, and other litter brought to the surface by this operation shall be removed.

- d) On steep slopes where fertilizer and ground limestone cannot be incorporated effectively by mechanical equipment they may be applied with power sprayers, blower equipment or other approved method and need not be incorporated into the soil.

3.5 Planting

- a) Planting of trees shall be in accordance with Vietnamese Standard TCDXVN 104: 2007.
- b) Sodding shall not be done during windy weather or when the ground is dry, excessively wet or otherwise untillable.
- c) Sods shall be planted on topsoil. If the soil is not moist, when the sods are being set, water shall be applied until the soil is moist and in a workable condition.

The following methods shall be used:

3.5.1 Broadcasting

- a) Seed shall be broadcast by hand or by suitable equipment in a uniform layer over the prepared surface.
- b) Sprigs shall be planted into the soil to a depth of 50 mm to 100 mm with a straight spade or similar too, or with a disk harrow or other equipment.

3.6 Maintenance of Planted Areas

The Contractor shall protect areas of sod against traffic by warning signs or barricades approved by the Engineer. Surfaces gullied or otherwise damaged following sodding shall be repaired by re-grading and re-sodding, as directed by the Engineer. The Contractor shall water and otherwise maintain sodden areas of sod and all other planting in the median or in pots in a satisfactory condition until the issue of the Taking-Over Certificate.

3.7 Trial Section for Seed Mud Spraying on Cut Slope

- a) Trial sections shall not commence until the Contractor has submitted his proposed materials and method statement for approval and both have been approved by the Engineer.
- b) The Contractor shall carry out trial sections for each type of landscaping and for each of his proposed planting methods. The planting methods used for the trials shall be those detailed in the Contractor's method statement. In particular work on trial sections must use the same equipment and procedures intended for use on the Permanent Works.
- c) Trial sections shall be approximately 200 m². Trial sections may be carried out in the area of the Permanent Works. However should the trial section be unsatisfactory it shall be removed entirely and the layer beneath the trial section shall be made good all to the satisfaction of the

Engineer.

- d) The trial section shall be tested to ensure that it complies with the requirements shown in Table 2.

Table 2. Requirements of the Trial Section

Type	Location	Number of Sound Grasses (60 days after spraying)	Anti Erosion of Soil Base (60 days after spraying)
Seed Mud Spraying	Cut slope on soil	1,000 nos./m ²	No erosion will be accepted, which has any disadvantageous effect on growth of the grasses

4. MEASUREMENT AND PAYMENT

4.1 Method of Measurement

- a) Grass areas shall be established and maintained by the Contractor up to the issue of the Taking-Over Certificate to the satisfaction of the Engineer and shall be measured for payment in units of “100 square meters”, over the surface of the ground, according the locations indicated on the Drawings or approved shop drawings or as directed by the Engineer.
- b) Seed mud spraying areas shall be established and maintained by the Contractor up to the issue of the Taking-Over Certificate to the satisfaction of the Engineer and shall be measured for payment in square meters, over the surface of the ground, according the locations indicated on the Drawings or approved shop drawings or as directed by the Engineer.
- c) The planting of trees and the provision of support stakes shall be measured for payment according to the number of trees planted and accepted by the Engineer.
- d) The trees shall be maintained up to the issue of the Taking Over certificate.
- e) The Sodding, Grassing and Planting provisions, material requirements and landscaping requirements identified in this Specification Section shall be measured for payment in pay items 12200-01, 12200-03 and 12200-09.
- f) Any Sodding, Grassing and Planting Works not specifically indentified in this Specification Section but which are necessary for the performance of the Works shall be deemed to be included in pay items 12200-01, 12200-03 and 12200-09.

4.2 Basis of Payment

The work under this Specification Section shall be paid for in accordance with the applicable unit prices as indicated in the Bill of Quantities and given below.

Payment shall constitute full compensation for performing the requirements of the Contract for the item of work as specified including furnishing all necessary labor, materials, tools, equipment, incidentals, tests and mulching of sodden areas.

<u>Pay Item</u>	<u>Description</u>	<u>Unit</u>
12200	Sodding, Grassing and Planting	
12200-01	Grassing	100m ²
12200-03	Seed Mud Spraying	m ²
12200-09	Trees (5m intervals, one row each side of expressway)	no.