



DENVER

THE MILE HIGH CITY

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS | ENGINEERING DIVISION

Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications

20.0 Grass Sodding

20.0.1 General

This item shall consist of placing grass sodding and fertilizing in conformity with the lines, grades and cross sections shown on the plans, stakes established by the Project Construction Engineer, and in accordance with these Detail and Technical Specifications.

The equipment and methods described in these Detail and Technical Specifications may be modified where it is established to the satisfaction of the Project Construction Engineer that the resultant product is equivalent to that specified herein.

20.0.2 Materials

20.0.2.1 Sod

Sod shall be Kentucky bluegrass and shall be approved by the Parks and Recreation Department before placement. At least 99% of the plants in the sod shall be of the variety specified. The sod shall be materially free from weeds or undesirable plants and stones larger than 1 inch in diameter. Sod shall be nursery grown and shall be mowed to a height not to exceed 2 inches before lifting and shall be of a uniform thickness with not over 1-1/2 inches soil or less than 1 inch of soil.

Delivered sod shall not contain more than 5% broken rolls. Sod shall be laid within 24 hours from the time it is lifted from the field.

Sod that has become moldy, withered, or yellow from storage or white from drying will be rejected at the time of planting. Rejected sod will not be counted for payment.

20.0.2.2 Fertilizers

The area to be sodded shall be fertilized as follows:

- a. Well rotted cow manure shall be roto-tilled into the topsoil prior to sod placement.
- b. In general commercial fertilizer consisting of 20% nitrogen, 20% available phosphoric acid and 10% water soluble potash is acceptable. Commercial fertilizers shall be applied after the sod is laid and shall be a complete formulation or organic base, granular and free flowing.

20.0.2.3 Topsoil

Topsoil may be selected from the material excavated at the job site by the Project Construction Engineer and placed where needed to provide a 4inch minimum friable, fertile loam root-moisture zone. During the excavation operation, the acceptable on-site topsoil shall be removed and stockpiled in the area. Upon completion of the construction, the topsoil shall be placed to the correct line and grade in all areas requiring sodding and seeding. Topsoil will not be required in areas of special slope protection noted on the plans, in paving areas or other structures.

In the event the topsoil available from project excavation is insufficient, in the judgement of the Project Construction Engineer, the Contractor shall import suitable topsoil in conformance with the select material requirements in section 5.0 of these Detail and Technical Specifications. Payment for on-site or imported topsoil shall be as noted in the Measurement and Payment Section of these Detail and Technical Specifications.

20.0.3 Construction

20.0.3.1 Time

The Contractor shall place the sod between March 1 and November 1 of the Calendar year of construction. No sod shall be laid on frozen soil.

20.0.3.2 Site Preparation

The area to be sodded shall be cleared of all stones, roots, wood, weeds, and any other materials that may hinder proper grading, tilling, sodding, or subsequent maintenance, operations and shall be smooth before any sod is laid.

After the cow manure has been roto-tilled into the topsoil as specified in Subsection 20.3.4 below, fine grading shall be performed to insure reasonable grades and alignments per the grade stakes. Where no grade stakes are shown, areas shall be smooth and of continual grade between control points, such as walks and curbs. Areas of settlement shall be filled with topsoil and properly rolled to insure a firm bed true to the proposed grades. Areas of compacted soil, which are, in the judgement of the Project Construction Engineer, too hard to serve as suitable subgrade, shall be scarified to a depth of six inches, and leveled and rolled.

After the fine grading operations have been completed, the entire area to be sodded shall be rolled with a 100 pound roller prior to sod placement.

20.0.3.3 Sod Placement

Sod shall be laid on a smooth, firm earth bed with staggered, tight joints. Care should be exercised to avoid air voids along the joints and at end sections. Sections of sod that leave more than 1/2 inch joints opening shall be filled with a screened topsoil. Exposed edges shall be mounded with topsoil.

The sod shall be laid with staggered joints and shall run parallel to a 90-degree angle to the slope of the ground. If the slope is steeper than 2:1, the prepared sod bed shall be lightly and sufficiently watered prior to placement of the sod.

All sod laid slopes within 4 vertical feet of the flow line of open channels, gulches, etc. shall be held in place with 12 gauge u-shaped metal pins, minimum one inch in width, eight inches long driven flush with the top of the root zone. Prior to pinning, a 12" wide strip of 20 gauge 2" galvanized wire netting shall be placed at each corner and one in the center of each perpendicular edge (3 pins/1e" wide roll). Care shall be taken to insure that each pin will secure the wire netting to the sod. Pins shall be driven at intervals not greater than one foot from beginning to end of the roll and at each grade change in the slope. All sod shall be laid parallel to the center line of the channel.

20.0.3.4 Fertilizer Placement

Fertilizing accomplished in a two step operation as follows:

- a. Cow manure shall be spread over the surface of the ground of the areas to be covered at the minimum rate of one (1) cubic yard per thousand (1,000) square feet. The areas shall then be thoroughly roto-tilled to a depth of from a minimum of 4 inches to a maximum of 6 inches until no manure appears on the surface.
- b. Commercial Fertilizer shall be uniformly applied after the sod has been laid at the rate of 10-pounds per 1,000 square feet of coverage or as recommended by the fertilizer manufacturer. The method of application shall be subject to approval by the Project Construction Engineer.

20.0.3.5 Maintenance

The Contractor shall be responsible for watering and mowing the sodded areas. Watering shall be performed periodically to insure a uniform root extension into the bed root--moisture zone. Mowing shall be performed to limit maximum grass height to three (3) inches and cut length of one and one-half (1-1/2) inches.

The maintenance period for sod shall continue for 90 days after notification in writing to the Project Construction Engineer of the completion of sodding and the owner's initial approval. During this 90-day period the sod shall be kept growing and in place, and any movement or dead grass shall be replaced to the satisfaction of the Project Construction Engineer. During this period, the sod's condition shall show normal to good progress so as to constitute an acceptable planting by the owner's representative. Watering shall be as required. If the planting within the reasonable care of the contractor does not show acceptable progress during this period, the areas affected shall be resodded, fertilized as required and growth progress repeated until results are obtained. This reworking shall be at the contractor's

expense. If the planting is damaged or otherwise hindered due to causes beyond the contractor's control such as inclement weather or vandalism, the contractor shall rework the planting according to the item in the Measurement and Payment Section of these Detail and Technical Specifications.