

Horizontal Strip Drains

Installation Specifications

ALTERNATE 1

SUGGESTED SPECIFICATION FOR INSTALLATION OF HORIZONTAL STRIP DRAINS

A. Description

The Contractor shall furnish all necessary labor, equipment, and materials and perform all operations necessary for the installation of horizontal prefabricated strip drains in accordance with the details shown on the plans and with the requirements of these specifications.

B. Material

The strip drain shall be a prefabricated type made up of a polymeric drainage core wrapped in a filter made of non-woven fabric of continuous filaments of 100% polypropylene similar to the product known as Nilex Nudrain™ or approved equal. The core shall be fabricated with suitable drainage channels.

The drain shall have the following minimum properties:

Drain			
Weight	4.0 oz/ft	0.35 kg/m	
Width	11 inches	280 mm	
Thickness	¾ inch	20 mm	
Compressive strength	9000 lb/ft ²	690 kN/m ²	ASTM D1621
Shear strength	9000 lb/ft ²	690 kN/m ²	ASTM D1621(mod)
Fungus resistance	No growth	No growth	ASTM G21
Discharge capacity	20 gpm	75 lpm	ASTM D4716

Fabric			
Weight	3.0 oz/ft ²	130 gm/m ²	ASTM D3776
Grab tensile strength	100 lbs	440 N	ASTM D4632
Elongation at break	>40%	>40%	ASTM D4632
Trapezoidal tear	45 lbs	200 N	ASTM D4533
Puncture strength	60 lbs	260 N	ASTM D4833
Mullen burst	200 psi	1300 kPa	ASTM D3786
AOS	70 sieve	215 micron	ASTM D4751
Flow rate	70 gpm/ft ²	3000 lpm/m ²	ASTM D4491
Permeability	0.30 cm/sec	0.30 cm/sec	ASTM D4491
UV Resistance, 500 hr	80% retained	80% retained	ASTM D4355

The Contractor shall submit drain samples and indicate the source of the proposed materials prior to delivery to the site and shall allow sufficient time for the Engineer to evaluate the material.

At least two weeks prior to the installation of drains, the Contractor shall submit to the Engineer for his review and approval, details of the sequence and method of installation. Approval by the Engineer will not relieve the Contractor of his responsibility to install drains in accordance with these specifications.

C. Construction Requirements

Prior to the installation of drains within the designated area the Contractor shall demonstrate that his equipment, method and materials produce a satisfactory installation in accordance with these specifications. For this purpose, the Contractor will be required to install trial drains at locations designated by the Engineer. Payment will be at the bid price per lineal foot (meter) for the drains. Payment will not be made for installing unsatisfactory trial drains.

The horizontal drains shall be placed on the ground in their proper location with respect to the vertical drains, as indicated on the plans. The horizontal drains shall be secured in this location by suitable means (staked, nailed, or held by mounded earth). The wick drain extensions shall be routed to the horizontal drains as indicated on the plans. The wick drains shall be securely attached to the horizontal drains (staked, nailed or held by mounded earth).

Approval by the Engineer of the method and equipment used to install the trial drains shall not constitute, necessarily, acceptance of the method for the remainder of the project. If at any time the Engineer considers that the method of installation does not produce a satisfactory horizontal drain, the Contractor shall alter his method and/or equipment as necessary to comply with these specifications.

Splices or connections in the drainage material shall be done in a workmanlike manner so as to insure continuity of the drain.

The Contractor shall observe precautions necessary for protection of instrumentation devices. After instrumentation devices have been installed, the Contractor shall replace at his cost any equipment that is damaged or becomes unreliable as a result of his negligence.

D. Method of Measurement

Strip drains shall be measured by the linear foot (meter) for the full length of the drain complete and in place.

E. Basis of Payment

Payment for drains will be made at the contract unit price per linear foot (meter), which price shall be full compensation for the cost of furnishing the full length of drain material, installing the drain, altering of the equipment and methods of installation in order to produce the required end result in accordance with the plans and specifications, and shall also include the cost of furnishing all tools, materials, labor, equipment and all other costs necessary to complete the required work. No direct payment will be made for unacceptable drains or for any delays or expenses incurred through changes necessitated by improper or unacceptable material or equipment, but the costs of such shall be included in the unit price bid for the work.

ALTERNATE 2

SUGGESTED SPECIFICATION FOR INSTALLATION OF HORIZONTAL COLLECTOR PIPES FOR PREFABRICATED VERTICAL DRAINS

A. Description

The Contractor shall furnish all necessary labor, equipment, and materials and perform all operations necessary for the installation of Horizontal Collector Pipes in accordance with the details shown on the plans and with the requirements of these specifications.

B. Material

The Collector Pipes and fittings shall be solid (not slotted) corrugated high-density polyethylene pipe, meeting the requirements of ASTM F-405 (Standard Specification for Corrugated Polyethylene Tubing and Fittings, 3" to 8"), and of the size indicated on the Project Drawings. The pipe shall be Type C (corrugated inside/outside).

The Contractor shall submit pipe samples and indicate the source of the proposed materials prior to delivery to the site and shall allow sufficient time for the Engineer to evaluate the material.

At least two weeks prior to the installation of Horizontal Collector Pipes, the Contractor shall submit to the Engineer for his review and approval, details of the sequence and method of installation. Approval by the Engineer will not relieve the Contractor of his responsibility to install drains in accordance with these specifications.

C. Construction Requirements

Prior to the installation of Horizontal Collector Pipes within the designated area the Contractor shall demonstrate that his equipment, method and materials produce a satisfactory installation in accordance with these specifications. For this purpose, the Contractor will be required to install trial Collector Pipes at locations designated by the Engineer. Payment will be at the bid price per lineal foot (meter) for the pipes. Payment will not be made for installing unsatisfactory trial pipes.

The Collector Pipe shall be installed in a trench of a depth at least equal to the pipe outside diameter. The Contractor shall cut the pipe longitudinally at the predetermined vertical drain spacing and insert the vertical drain extension. The length of the horizontal cut shall be of a minimum required to insert the vertical drain, but not longer than 12 inches. Corrugated split couplings shall be placed on both sides of the opening for reinforcement, and secured with wire, plastic wire ties, or other suitable fasteners.

Approval by the Engineer of the method and equipment used to install the trial pipes shall not constitute, necessarily, acceptance of the method for the remainder of the project. If at any time the Engineer considers that the method of installation does not produce a

satisfactory Horizontal Collector Pipe, the Contractor shall alter his method and/or equipment as necessary to comply with these specifications.

Splices or connections in the drainage material shall be done in a workmanlike manner so as to insure continuity of the drain.

The Contractor shall observe precautions necessary for protection of instrumentation devices. After instrumentation devices have been installed, the Contractor shall replace at his cost any equipment that is damaged or becomes unreliable as a result of his negligence.

D. Method of Measurement

Horizontal Collector Pipes shall be measured by the linear foot (meter) for the full length of the pipe complete and in place.

E. Basis of Payment

Payment for Horizontal Collector Pipes will be made at the contract unit price per linear foot (meter), which price shall be full compensation for the cost of furnishing the full length of pipe material, installing the pipe, altering of the equipment and methods of installation in order to produce the required end result in accordance with the plans and specifications, and shall also include the cost of furnishing all tools, materials, labor, equipment and all other costs necessary to complete the required work. No direct payment will be made for unacceptable pipes or for any delays or expenses incurred through changes necessitated by improper or unacceptable material or equipment, but the costs of such shall be included in the unit price bid for the work.

For additional information for installing strip drain, horizontal collector pipes, or other Nilex Corporation services, or for assistance with your next ground improvement project, please contact us at one of the following locations:



In USA
15171 E. Fremont Drive
Englewood, CO 80112
U.S.A.
Phone: (303) 766-2000
Fax: (303) 766-1110
denver@nilex.com

In Canada
9304 – 39 Avenue N.W.
Edmonton, AB, Canada
T6E 5T9
Phone: (780) 463-9535
Fax: (780) 463-1773
edmonton@nilex.com