

SPECIFICATION FOR CORRUGATED PLASTIC PIPE SUBSOIL DRAIN CONSTRUCTION

1. SCOPE

This specification refers to the use of perforated corrugated plastic pipe of up to 110 mm nominal outside diameter in subsoil drains under light duty conditions, e.g. for use in agricultural land, playing fields and lightly loaded or load protected sections of the highway environment.

Corrugated plastic pipe subsoil drains shall be constructed in accordance with this specification and in conformity with the lines, grades and cross-sections shown on the drawings. The work shall include: the construction of trenches; the supplying and laying of pipes of the specified type and size; the jointing of the pipes; the supplying and compacting of approved backfilling materials; the construction of connecting and outlet drains; the supply of all materials, labour, plant, tools and transport required for the proper completion of the contract.

2. MATERIALS

2.1 Pipe

The pipes shall conform to the requirements for the type, diameter and length shown on the drawings and as defined in the job specification and shall be of the following type:

Perforated corrugated plastic pipe complying to class 200 as defined in AS 2439 .1 1981 *Perforated drainage pipe and associated fittings*.

2.1.1 The pipe shall be corrugated in conformation with the bore either smooth or corrugated as specified by the Engineer in the Contract Documents.

2.1.2 The nominal outside diameter of the pipe shall not be greater than 110 mm.

2.1.3 The pipe shall have a perforated area of not less than 5,000 mm²/m.

2.1.4 The pipe shall be manufactured from material such that the pipe has adequate resistance to ultra-violet light degradation and to the effects of soil water when buried in the soil.

2.1.5 *deleted*

2.2 Filter Sand

Unless otherwise specified the filter sand shall be as follows:

The filter sand shall be clean hard sand which, when tested in accordance with NZS 4402:Part 1:1980, test 9B, shall comply with the following grading:

Test Sieve Aperture	Percentage Passing
9.5 mm	100
4.75 mm	90 - 100
2.36 mm	80 - 100
1.18 mm	50 - 95
600 µm	30 - 75
300 µm	10 - 30
150 µm	10 max
75 µm	0

3. EXCAVATION

Trenches shall be cut in such a manner as will ensure that the pipes will be laid true to the depths, grades and lines shown on the drawings. The width of the trench shall not exceed the specified dimensions.

Unless otherwise specified trenches shall have: a minimum gradient of not less than 1 in 100; vertical sides from the trench bottom to a minimum of 300 mm above the top of the pipe; and a minimum depth that will ensure that, when the pipes are laid, the invert level shall be not less than one metre below finished subgrade level.

Surplus excavated material shall be disposed of as directed by the Engineer.

4. BEDDING

Unless otherwise specified the bedding shall be constructed as follows:

4.1 Pipe Laid in Trenches Excavated by Machine or by Hand

The pipe shall obtain lateral support by being bedded on a 100 mm minimum depth layer of filter material of up to 10 mm particle size on the base of the trench, filling all voids up to the mid height of the pipe.

4.2 Pipe Laid by Mole Plough or Other Trenchless Laying Technique

In order that the Engineer may check the finished work the Contractor shall open up lengths of drain at intervals as requested by the Engineer.

5. JOINING PIPES

Unless otherwise specified joining the pipe shall be done using a purpose made pullout resistant coupling in accordance with manufacturers recommendations.

6. BACKFILLING

The trench shall be backfilled in accordance with the cross-sections shown on the drawings.

Unless otherwise specified the trench shall be backfilled as follows:

The backfill shall be filter sand as detailed in clause 2.2 of this specification. The backfill material shall be placed in layers not exceeding 150 mm loose depth and shall be positively compacted around the sides of the pipe to provide support of not less than that of the adjacent material.

Heavy construction equipment and rollers shall not be operated over or near the subsoil drain.

7. OUTLETS

Outlets from subsoil drains shall be constructed to discharge clear of embankments, and there shall be sufficient slope to prevent silting.

8. MAINTENANCE

The Contractor shall ensure at all times that subsoil drainage installations are protected from inadvertent, or deliberate, use for temporary surface drainage.

The Contractor shall maintain the subsoil drains and outlets until the end of the maintenance period. He shall make good any subsidence which occurs in the earthworks above the subsoil drains.

9. BASIS OF PAYMENT

All miscellaneous items, board, supervision, contingencies, conveyance of plant, and incidental work, plus general overhead, and administration are incorporated in the unit rates listed in the schedule.

Payment will be made on the total number of metres of subsoil drains installed in accordance with the plans and specification, at the various depths as detailed in the schedule. The unit rate in each case shall be in full compensation for the supply of all materials, labour and plant necessary to construct the drains as specified.