



Muswellbrook Shire Council

# CONSTRUCTION SPECIFICATION

AUS-SPEC (Cot 09)

1174 Drainage Mats

Version 01

### **Amendment Record for this Specification Part**

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
0	No amendment has been made	all	Nil		13 June 2012

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## 1174 DRAINAGE MATS

### 1 GENERAL

#### 1.1 RESPONSIBILITIES

##### Objectives

General: Provide drainage mats, filter materials and pipes as shown on the drawings.

#### 1.2 CROSS REFERENCES

##### General

Requirement: Conform to the following:

- 0152 Schedule of rates – supply projects.
- 0161 Quality (Construction) or 0167 Integrated management.
- 0179 General requirements (Construction).
- 1101 Control of traffic.
- 1171 Subsurface drainage.
- 1173 Pavement drains.

#### 1.3 REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

##### Standards

AS 1289	Methods of testing soils for engineering purposes.
AS 1289.5.5.1-1998	Soil compaction and density tests—Determination of the minimum and maximum dry density of a cohesionless material—Standard method.

##### Other publications

AGPT10/09-2009	Guide to pavement technology Part 10 - Subsurface drainage
AGRD05/08-2008	Guide to road design Part 5 - Drainage design

#### 1.4 INTERPRETATIONS

##### Definitions

General: For the purposes of this worksection the definitions given below apply:

- Type A mats: Mats intended to ensure continuity of a sheet flow of water under fills, to collect surface seepage from a wet seepage area or for protection of vegetation or habitat downstream of the road reserve where a fill would otherwise cut the flow of water.
- Type B mats: Mats constructed to intercept water which would otherwise enter pavements by capillary action or by other means on fills and to intercept and control seepage water and springs in the floors of cuttings.

#### 1.5 SUBMISSIONS

##### Acceptance criteria

General: All submissions will be subject to the approval of the Superintendent.

##### Components

General: Geotextiles and pipes to 1171 Subsurface drainage.

##### Materials

General: Refer materials clauses for items to 1171 Subsurface drainage.

#### 1.6 INSPECTION

##### Notice

General: Give notice so that the inspection may be made of the following:

##### Summary of HOLD POINTS

Item/Clause title	Requirement	Notice for inspection	Release by
Type A mats / Type B			

Item/Clause title	Requirement	Notice for inspection	Release by
<b>mats</b>			
<b>Geotextile, Damaged geotextile</b>	Approval of condition or repair of geotextile	1 working day before next activity	Superintendent
<b>Filter material, Thickness</b>	Approval of thickness and layers of filter material	3 working days before placing filters	Superintendent

**Summary of WITNESS POINTS**

Item	Requirement	Notice for inspection
<b>Type A mats /Type B mats</b>		
<b>Filter material, Protective layer</b>	Inspection of placement of protective layer over mat extension.	3 working days before placing materials
<b>Discharge, Outlets</b>	Inspection of outlet proposals	7 days before set-out of layers

**2 PRE-CONSTRUCTION PLANNING****2.1 SCHEDULING****Programming the works**

Program: To conform with embankment and pavement construction as follows:

- Type A mats: After the site has been cleared and grubbed and before commencement of embankment construction.
- Type B mats: After completion of the subgrade construction and before construction of the pavement.

**3 MATERIALS****3.1 FILTER MATERIAL****Mat components**

General: Conform to the following:

- Type A mats: Type B, C or D filter material to *1171 Subsurface drainage*.
- Type B mats: Type A or D filter material to *1171 Subsurface drainage*.

**3.2 GEOTEXTILE****General**

Geotextile: To *1171 Subsurface drainage*.

**3.3 PVC PRESSURE PIPE****General**

Thick walled unplasticised PVC pressure pipe: To *1171 Subsurface drainage*.

**4 EXECUTION****4.1 PROVISION FOR TRAFFIC****General**

Control of traffic: Conform to the following:

- Conform with worksection *1101 Control of traffic*.
- Conform with **Traffic Guidance Scheme** in *1101 Control of traffic*.

## 4.2 TYPE A MATS

### Placement

Location: Conform to the following:

- Under embankments as shown on the drawings or as directed by the Superintendent.
- Extending 2 m beyond the toes of embankments.

### Geotextile

General: Provide geotextile as follows:

- On the embankment foundation after the embankment foundation has been trimmed and any necessary trench drains installed.
- On top of and around the sides of the filter material after placement and compaction of the filter material to cover and enclose the sides of the drainage mat and filter material.

Geotextile under rock facing: Place an additional layer of geotextile on the drainage mat under the base of rock facing forming part of the embankment construction. Extend the additional layer of geotextile beyond the outside and inside faces of the bottom layer of rock.

Lap width: 500 mm minimum at each join in the geotextile.

Protection of geotextile: Secure the geotextile to prevent movement by wind or by construction plant placing subsequent layers of filter material or earth filling over the drainage mat. Protect from damage during construction of the drainage mat and during placement of subsequent layers of filter material, earth filling or rock facing.

Damaged geotextile: Replace or repair damaged geotextile. This is a **HOLD POINT**.

### Filter material

Type: Type B, C or D as shown on the drawings or as determined by the Superintendent.

Location: Compacted on the geotextile.

Thickness: Conform to the following: This is a **HOLD POINT**.

- Known expected consolidation of embankment: 300 mm minimum plus allowance for the expected total consolidation of the embankment.
- Unknown expected total consolidation of the embankment foundation: 500 mm minimum.
- Layers: Provide filter material in two or more layers so that the thickness of a compacted layer is 250 mm maximum.

Protective layer: Cover the extension of the mat beyond the toe of the embankment with 300 mm filter material immediately after completion of construction of each drainage mat. This is a **WITNESS POINT**.

### Discharge

Outlets: May be either of the following: This is a **WITNESS POINT**.

- Surface outlets at the toes of embankments.
- Piped outlets connected to other drainage systems conforming to 1171 *Subsurface drainage*.

## 4.3 TYPE B MATS

### Placement

Location: In cuttings as shown on the drawings or as directed by the Superintendent.

Width: The full width of cuttings and for the pavement width in other locations.

### Geotextile

General: Provide geotextile as follows:

- On the subgrade after the subgrade material has been compacted and trimmed.
- On top of and around the sides of the filter material so that the filter material is completely enclosed after completion of placement and compaction of the filter material.

Lap width: 500 mm minimum at each join in the geotextile.

Protection of geotextile: Conform to the following:

- General: Secure the geotextile to prevent movement by wind or by construction plant placing subsequent layers of filter material or earth filling over the drainage mat. Protect from damage during construction of the drainage mat and during placement of subsequent layers of filter material, earth filling or rock facing.
- Damaged geotextile: Replace or repair damaged geotextile. This is a **HOLD POINT**.

UPVC pressure pipe: Lay thick walled unplasticised PVC pressure pipe on the geotextile at a distance of 200 mm from and parallel to the longitudinal edges of the drainage blanket as shown in the drawings.

#### Filter material

Type: Type A or D as shown on the drawings and as determined by the Superintendent.

Compaction: At least 100% (Standard compaction) to AS 1289.5.5.1.

Thickness: Conform to the following:

- As shown on the drawings or as directed by the Superintendent. This is a **HOLD POINT**.
- Layers: Provide filter material in layers so that the thickness of a compacted layer is 250 mm maximum. This is a **WITNESS POINT**.

#### Discharge

Outlets: To 1171 *Subsurface drainage*. This is a **WITNESS POINT**.

#### Tolerance

Surface level: At the design level for the top of the drainage mat with a tolerance of + 0 and - 40 mm.

### 4.4 LIMITS AND TOLERANCES

#### Application

Summary: The limits and tolerances applicable to this worksection are summarised in **Summary of limits and tolerances table**.

**Summary of limits and tolerances table**

Activity	Limits/Tolerances	Clause/ subclause
<b>Filter material</b>		
Layer thickness	250 mm max	<b>Type A mats &amp; Type B mats</b>
Compaction (Relative) Type A filter material	100% (Standard compaction)	<b>Type B mats</b>
<b>Type B mats</b>		
Design level at top of mat	+ 0, - 40 mm	<b>Type B mats</b>

## 5 MEASUREMENT AND PAYMENT

### 5.1 MEASUREMENT

#### General

Payments made to the Schedule of Rates: To 0152 *Schedule of rates – projects*, this worksection, the drawings and Pay items **1174.1** and **1174.2**.

Lump Sum prices: Not acceptable.

Unpriced items: If any item, for which a quantity of work is listed in the Schedule of Rates, has not been priced by the Contractor, due allowance is made in the prices of other items for the cost of the activity which has not been priced.

#### Methodology

The following methodology will be applied for measurement and payment:

- Filter material and outlet structures are measured and paid to conform with 1171 *Subsurface drainage*.
- Thick walled unplasticised PVC pressure pipe is measured and paid to conform with this worksection and not 1173 *Pavement drains* or 1171 *Subsurface drainage*.

### 5.2 PAY ITEMS

Pay items	Unit of measurement	Schedule rate scope
<b>1174.1 Supply and placement of geotextile</b>	m <sup>2</sup> of area covered	All costs associated with: - Area covered by geotextile measured on site, excluding additional geotextile used in lap

Pay items	Unit of measurement	Schedule rate scope
		joints. - For Type A drainage mats, the additional layer of geotextile placed under rock facing. - All costs associated with supply, placing and securing of the geotextile material. - The schedule quantity is a provisional quantity.
<b>1174.2 Drainage mat outlet pipe</b>	- The linear metre of pipe laid Actual length laid will be measured along the centreline of the pipe including pipe leading to outlet structures.	All costs associated with: - All costs associated with the supply and laying of the pipe. - The schedule quantity is a provisional quantity.