



# DRAINAGE MATS 03K

MUNICIPAL  
INFRASTRUCTURE  
TECHNICAL  
SPECIFICATION  
**03 - UNDERGROUND SERVICES**

Transport Canberra and  
City Services

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# 1 DRAINAGE MATS

## 1.1 General

### 1.1.1 Responsibilities

#### 1.1.1.1 General

Requirement: Provide drainage mats, as documented.

### 1.1.2 Cross references

General: The following documents are related to this Specification.

#### 1.1.2.1 ACT Legislation

Road Transport (General) Act

Public Roads Act

Scaffolding and Lifts Act

Scaffolding and Lifts Regulation

Work Health and Safety Act

#### 1.1.2.2 Specifications

Requirement: Conform to the following:

MITS 00	Preliminaries
MITS 01	Traffic Management
MITS 02	Earthworks
MITS 04	Flexible pavement construction
MITS 06	Concrete kerbs, footpaths and minor works
MITS 08	Incidental works
MITS 09	Landscape
MITS 10	Concrete works
MITS 16	WSUD Features

### 1.1.3 Referenced documents

#### 1.1.3.1 Standards

General: The following documents are incorporated into this Specification by reference:

##### Australian standards

AS 1289	Methods of testing soils for engineering purposes.
AS 1289.5.6.1	Soil compaction and density tests - Compaction control test - Density index method for a cohesionless material

#### 1.1.3.2 Other publications

Proprietary products: To *TCCS Products previously considered for use list*

### 1.1.4 Interpretation

General: For the purposes of this Specification the following abbreviations apply:

**TCCS:** Territory and Municipal Services, ACT Government, and its successors.

**Type A mats:** Mats to maintain 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.

### 1.1.5 Hold points and witness points

#### 1.1.5.1 Notice

General: Give written notice to the Authorised Person so that the documented inspection and submissions may be made to the **Hold point table** and the **Witness point table**.

**Table 3K-1 Hold point table**

Item	Clause title	Requirement	Notice for inspection	Release by
<b>Execution</b>				
<b>3K.1</b>	Type A Mats - Geotextile	Approval of condition or repair of geotextile	1 working day before next activity	Authorised Person
<b>3K.2</b>	Type A Mats – Filter Material	Approval of thickness and layers of filter material	3 working days before placing filters	Authorised Person
<b>3K.3</b>	Type B Mats - Geotextile	Approval of condition or repair of geotextile	1 working day before next activity	Authorised Person
<b>3K.4</b>	Type B Mats – Filter Material	Approval of thickness and layers of filter material	3 working days before placing filters	Authorised Person

**Table 3K-2 Witness point table**

Item	Clause title	Requirement	Notice for inspection
<b>Materials</b>			
<b>3K.1</b>	Type A Mats – Filter Material	Inspection of placement of protective layer over mat extension.	3 working days before placing materials
<b>3K.2</b>	Type A Mats Discharge	Inspection of outlet proposals	7 days before set-out of layers
<b>3K.3</b>	Type B Mats – Filter Material	Inspection of placement of protective layer over mat extension.	3 working days before placing materials
<b>3K.4</b>	Type B Mats Discharge	Inspection of outlet proposals	7 days before set-out of layers

## 1.2 Pre-construction planning

### 1.2.1 Scheduling

#### 1.2.1.1 Programming the works

Program: To conform to 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.

## 1.3 Materials

### 1.3.1 Filter material

#### 1.3.1.1 Mat components

General: Conform to the following:

- > Type A mats: Type B, C or D filter material to *MITIS 03I Subsurface drainage*.
- > Type B mats: Type A or D filter material to *MITIS 03I Subsurface drainage*.

### 1.3.2 Geotextile

#### 1.3.2.1 General

Geotextile: To *MITIS 03I Subsurface drainage*.

### 1.3.3 Pvc-u pressure pipe

#### 1.3.3.1 General

Thick walled unplasticised PVC-U pressure pipe: To *MITIS 03I Subsurface drainage*.

## 1.4 Execution

### 1.4.1 Provision for traffic

#### 1.4.1.1 General

Requirement: Conform to *MIT S 01 Traffic Management*.

### 1.4.2 Site establishment

#### 1.4.2.1 Survey

Requirement: Confirm site surface and benchmarks. Conform to *MIT S 00 Preliminaries*.

#### 1.4.2.2 General

Clearing and grubbing: Clear, grub and dispose of debris along the alignment of underground services to *MIT S 02A Clearing and grubbing* for the area of works shown on the drawings.

#### 1.4.2.3 Temporary drainage during construction

Control of erosion and sedimentation: Conform to *MIT S 00C Control of erosion and sedimentation*. Make adequate provision for runoff flows at works under construction.

Stabilisation of topsoil areas: Immediately following earthworks where required, stabilise the topsoil with hydroseed to *MIT S 09 Landscape*.

### 1.4.3 Type A mats

#### 1.4.3.1 Placement

Location: Conform to the following:

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

#### 1.4.3.2 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: 500mm 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**.

#### **1.4.3.3 Filter material**

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

Location: Compacted on the geotextile.

Thickness: Conform to the following:

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

This is a **HOLD POINT**.

Protective layer: Cover the extension of the mat beyond the toe of the embankment with 300mm filter material immediately after completion of construction of each drainage mat.

This is a **WITNESS POINT**.

#### **1.4.3.4 Discharge**

Outlets: May be either of the following:

Surface outlets at the toes of embankments.

Piped outlets connected to other drainage systems conforming to *MITS 03I Subsurface drainage*.

This is a **WITNESS POINT**.



## **1.4.4 Type B mats**

### **1.4.4.1 Placement**

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

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

### **1.4.4.2 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: 500mm 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**.

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

### **1.4.4.3 Filter material**

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

Compaction: Compact cohesionless material to a Density Index of 70% determined by AS 1289.5.6.1.

Thickness: Conform to the following:

- > As shown on the drawings or as directed by the Authorised Person.

This is a **HOLD POINT**.

Layers: Provide filter material in layers so that the thickness of a compacted layer is 250mm maximum.

This is a **WITNESS POINT**.

### **1.4.4.4 Discharge**

Outlets: To *MITS 03I Subsurface drainage*.

This is a **WITNESS POINT**.

### **1.4.4.5 Tolerance**

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

## 1.5 Completion

### 1.5.1 Submissions

Work as Executed Records: To *MITS 00B Quality Requirements*.

## 2 MEASUREMENT AND PAYMENT

### 2.1 Measurement

#### 2.1.1.1 General

Payments made to the Bill of Quantities: To *MITS 00A General requirements*, this Specification, the drawings and **Pay items**.

#### 2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Erosion and sedimentation control measures: To *MITS 02A Clearing and grubbing*.
- > Filter material and liners for Ponds, Wetlands and Bioretention systems: To *MITS 16 WSUD Features*.
- > Filter material and outlet structures are measured and paid to conform to *MITS 03I Subsurface drainage*.
- > Thick walled unplasticised PVC-U pressure pipe is measured and paid to conform to this work section and not *MITS 03J Subsoil and foundation drains*.
- > Removal of unsuitable material: To conform to *MITS 02C Stabilisation*.
- > Miscellaneous minor concrete work not included in the pay items in this Specification: To conform to *MITS 10 Concrete works*.

## 2.1.2 Pay items

**Table 3K-2 Pay items table**

Item No	Pay items	Unit of measurement	Schedule of rates scope
<b>3K.1</b>	Drainage mats	m <sup>2</sup> of drainage mat constructed	All activities associated with the construction of drainage mats including detailed excavation in all types of material encountered including rock, shoring, additional excavation at structures, compaction of foundation and trimming in accordance with this specification.
<b>3K.2</b>	Geotextile liner for subsurface drainage	m <sup>2</sup> of liner material installed, not including overlaps required at joints	<p>All activities associated with the construction of a Geotextile liner including the supply and installation of the nominated liner material to manufacturer specification except where amended by this specification.</p> <p>For Type A drainage mats, this pay item shall also include the additional layer of geotextile placed under rock facing.</p>
<b>3K.3</b>	Drainage mat outlet pipe	Linear metre of pipe installed measured along the centreline	<p>All activities associated with construction of underdrainage pipes including excavation of trenches in all types of material encountered including rock, over excavation for bedding, shoring, supply and laying of pipes, additional excavation at structures, bedding, jointing, markers, fittings, capping of the trench, backfilling, compaction and flushing.</p> <p>This pay item shall also include pipe cutting and connection to existing or new pipes.</p> <p>Separate pay items shall be included in the Contract for each pipe material, class of pipe and pipe diameter.</p>



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