



8107 Subsoil Drains

REVISION 10/01/2024

8107.1 Introduction

This supplementary specification relates to the supply and installation of subsoil drain to Mackay Regional Council standards.

8107.1.1 Definition of Terms

The following terms apply specifically to this specification;

Term	Definition
Subsoil drain Type "C"	Round 100mm perforated sub soil drainage pipe encased in geofabric wrapping
Subsoil drain Type "D"	Strip filter subsoil drain
Backfill	Material compliant with " <i>Specification for backfill Material</i> " table as listed in MRC Std Drawing A3-00867. Within other referenced specifications also referred to as " <i>Filter Material</i> ".

8107.2 Referenced Documents

This supplementary specification shall be read in conjunction with the following:

- MRS01 "*Introduction to Specifications*";
- MRTS01 "*Introduction to Technical Specifications*";
- MRS03 and MRTS03 "*Drainage, Retaining Structures and Embankment Slope Protections*";
- MRS27 and MRTS27 "*Geotextiles (Separation and Filtration)*";
- AS/NZS 1254. "*PVC-U pipes and fittings for stormwater and surface water applications*"
- AS 2439.1 "*Perforated plastics drainage and effluent pipe and fittings Part 1: Perforated drainage pipe and associated fittings*".
- Mackay Regional Council's Standard Drawing A3-00867; and
- the project Drawings

8107.3 Description of Work Items

Work items incorporated by this supplementary specification are identified in Section 8107.6 and 8107.7 with individual activities/tasks for measurement and payment sourced from the Bill of Quantities and listed in MRC Supplementary Specification Annexure 8107_1 Subsoil Drains Section 1

8107.4 Quality Systems Requirements

8107.4.1 Std Test Methods (Testing Regime)

The following minimum testing regime applies to this specification:



Unless otherwise stated the manufacturer certification of the subsoil drain and components shall form the basis of the requirements.

Civil works activities associated with the subsoil drains shall be tested as per the relevant MRTS specification MRTS03, & MRTS04, unless otherwise approved by the Superintendent.

8107.4.2 Hold Points, Witness Points and Milestones

The following table represents the minimum inspection requirements for this specification;

Activity	Inspection Type	When
Construction Procedure and other submissions as required by Clause 8107.5	Milestone	4 Weeks prior to works commencing
Inspection of delivered items	Hold Point	At delivery time for each item.
Final location of subsoil drains works extents	Witness Point	During site survey layout.
Excavation of material	Witness Point	During excavation
Base excavation floor	Hold Point	At completion of excavation and compacting
Geofabric installation	Witness Point	After base floor inspection approval to proceed
Bedding for subsoil drains	Witness Point	After geofabric installation to trench prior to laying subsoil drains
Subsoil drains laid	Hold Point	Prior to commencing backfilling operations
Backfilling of subsoil drains	Witness Point	After approval to proceed with backfilling
Outlets	Witness Point	After stormwater pits or swales have been completed
Clean outs	Witness point	After all works are complete (kerbing asphalt etc)
Flushing sub soil drains	Witness Point	After completion of backfilling
Works as Executed documentation	Hold Point	4 weeks prior to practical completion being requested.

8107.4.3 Construction Tolerances

Unless otherwise approved by the Superintendent the following construction tolerances shall apply as to this Specification;

The construction activity outcome shall not depart from the widths, lengths, heights, and shapes specified by the relevant specifications as applies to this specification;

- Concrete tolerances in accordance with MRTS70 Concrete.
- Earthworks tolerances in accordance with MRTS04 General Earthworks.
- Bedding, laying, and backfill to culvert tolerances in accordance with MRTS03
- Pavement tolerances in accordance with MRTS05 Unbound Pavement

Tolerances specific to the project are detailed on the design drawings and are included in Clause 2 of MRC Supplementary Specification Annexure 8107_1 Subsoil Drains

8107.5 Preliminary

The Contractor is to submit the following documentation 4 weeks prior to commencing work or a prestart is conducted. (MILESTONE):

- Works procedure
- Erosion and Sediment Plan (as required for site/s)



- Traffic Management Plan and TGS's

Other preliminary requirements unique to the project will be listed in the MRC Supplementary Specification Annexure 8107_1 Subsoil Drains (MILESTONE)

8107.5.1 Materials

Supply of materials to site is the responsibility of the Contractor at their cost, where items are Principal supplied the nominated storage site shall be obtained from MRC Supplementary Specification Annexure 8107_1 Subsoil Drains Section 3 and shall be the point of supply.

Unless instructed otherwise by the Superintendent existing subsoil drains and fittings are to be salvaged, MRC Supplementary Specification Annexure 8107.1 Section 4 will detail the items to be salvaged and the nominated storage site. This will also include any reuse of existing items.

The filter/backfill material shall consist of course sand complying with the grading requirements outlined on Mackay Regional Council's Standard Drawing A3-00867.

All items and materials shall be supplied in accordance with Specifications MRTS03 and MRTS27.

Unperforated cleanout and outlet pipes and associated fittings and jointing procedures shall comply with AS/NZS 1254. "*PVC-U pipes and fittings for stormwater and surface water applications*"

Perforated drainage pipes used in Type C subsoil drains and associated fittings and jointing procedures shall comply with AS 2439.1 "*Perforated plastics drainage and effluent pipe and fittings Part 1: Perforated drainage pipe and associated fittings*".

8107.6 Construction

This section lays out the works operations with more detail based on specific requirements of this supplementary specification. Some activities may appear to include items which are stated within other specifications, the purpose is to reinforce that requirement specific to this supplementary specification.

MRC Std Drawing A3-00867 is the reference drawing for the installation of the sub soil drainage, filter/backfill material, and grade, other details including use of geofabric surround of backfill is to be carried out as required by MRTS03.

No construction equipment or vehicles shall stand or travel directly along the completed subsoil drain trench.

8107.6.1 Work Operations

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 "Introduction to Standard Specifications";**
- b) Supplying all materials inclusive of pipe and fittings;**

All materials, plant, and labour required to carry out the works under this Specification is to be supplied by the Contractor, where the subsoil drainage pipe and fittings are Principal supplied the designated storage site will be the point of supply for the purposes of this Specification.

All items shall be inspected at delivery to site prior to use. Any items which are damaged are not to be used and are to be returned to the supplier. (HOLD POINT)



c) Carrying out excavation to design depth and alignment;

Prior to excavation commencing the location of the subsoil drainage, outlets and clean outs are to be marked out on site. (WITNESS POINT)

Excavations for subsoil drainage are to be carried out in accordance with design drawings, where no details are provided refer to MRC Std Drawing A3-00867. (WITNESS POINT)

If during excavation the walls of the trench are not perpendicular or width stated the trench is to be refilled, compacted, and re-excavated to the right dimensions.

All loose material is to be removed from the bottom of the excavation, the floor of the excavation is to be prepared and presented for inspection for the Superintendent (HOLD POINT)

d) Compliance of trench inclusive of testing;

If over excavation occurs the trench is to be filled back to design level, trimmed, and compacted and tested prior to proceeding with inspection of the floor by the Superintendent.

Unless the above applies or otherwise specified in MRC Supplementary Specification Annexure 8107_1 Subsoil Drains testing of the floor is not required.

e) Utilising or disposing of excavated material;

Excess excavated materials shall be disposed of by the contractor or utilised as per Superintendents instructions. Material stockpiled shall ensure that all Environmental ESC measures are in place and maintained.

f) Placing, jointing and fixing textile sleeves;

Geofabric jointing, overlapping, and fixing shall be carried out as manufacturers recommendation and as required by MRTS27 Section 9 and be written into the contractors Work Procedure.

g) Installing drainage pipes;

A 50mm thick layer of bedding material installed in the geofabric wrap on the same grade as per the design drawings. The bedding material is to be compacted via mechanical means on the same constant grade as the design drawings with no rises or falls of the material.

The subsoil drainage pipe shall be laid on this bed with constant grade in a straight line in the centre of the trench. Any variation will require taking up and relaying. (HOLD POINT)

Clean outs and outlets are to be installed as per the design drawings with the correct fittings and fabric wrapping as required to ensure no penetration of backfill material into the subsoil pipe. Where design drawings do not show detail installation shall be carried out as per MRC Std Drawing A3-00867.

h) Placing and compacting filter/backfilling material;

The filter/backfill material shall consist of course sand complying with the grading requirements outlined on Mackay Regional Council's Standard Drawing A3-00867.

Backfill layers are to be maximum 200mm uncompacted, each layer is to be compacted in accordance with MRTS04 to achieve mechanical interlock between particles. (WITNESS POINT)



At the completion of backfilling the geofabric wrap is to be overlapped and jointed as required by MRTS27 and be such that any trimming of the top of the trench will not damage the material and tear or rip it. Any damage to the overlapped fabric will require rectification.

i) Finishing outlets and Flush Points;

Cleanouts to be installed and finished as per MRC Std Drawing A3-00867, distance between clean out and outlet is to be maximum 60m. Outlets are to be installed as required by the design drawings, in the absence of detail MRTS Std Drawing SD-1116. (WITNESS PONT)

Where kerbing does not exist marker posts are to be installed at the clean out and also the outlet.

j) Flushing of Pipes;

After the drains are completed all installed subsoil drains shall be flushed with the flushing continued until the outlet water is clean and flows consistently. (WITNESS POINT).

8107.7 Post construction

a) Collection and submission of all As Constructed data including QA data requirements.

Contractor is to supply and submit Works as Executed documentation as required by *MRC D20 - Drawings and Documentation* for approval by the Superintendent 4 weeks prior to requesting a practical completion inspection.

Format of submitted “As Constructed” documentation shall be compliant with MRC Supplementary Specification 8919.

8107.8 Measurement and Payment

The length of subsoil drain, under this item, shall be measured as the distance along the centreline of the pipe where it is being installed.

Provision for these works shall be included in the scheduled unit rate for the items show in Clause 8107.3 of this Supplementary Specification and Annexure. No separate payment will be made for the works specified within this Supplementary specification or it’s annexure.

Version Control:

Version	Description	Reviewed / Endorsed	Date
1.0	Original issue		09.02.2022
2.0	Review of specification	C. Sultana	10.01.2024