



8105 Alterations to Existing Drainage Structures

REVISION 10/01/2024

8105.1 Introduction

This supplementary specification relates to works relating to the alteration of existing stormwater infrastructure including backfilling as a result of works required through operational activities or detailed on the project drawings.

8105.1.1 Definition of Terms

Term	Definition
Existing Drainage Structure	For the purposes of the specification to mean any culverts, manholes, headwalls, and concrete lined open drains.
Works Site	For the purpose of this specification to mean all areas which requires labour, plant, and materials to carry out the lining works including access to and area around the infrastructure to be insitu lined

8105.2 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”*;
- MRS04 and MRTS04 *“General Earthworks”*
- MRS05 and MRTS05 *“Unbound Pavement”*
- MRS11,12,20,21,22 & MRTS11,12,20,21,22 as applicable for seal treatment
- MRS30 & MRTS30 *“Asphalt Pavements”*
- MRS70 and MRTS70 *“Concrete”*
- MRS71 and MRTS71 *“Reinforcing Steel”*
- Mackay Regional Council’s Standard Drawing A4-00043 *“Property Drainage Connection to MRC Pipes”*;
- The Project Drawings

8105.3 Description and Measurement of Work Items

Work items incorporated by this supplementary specification are identified in Section 8105.6 and 8105.7 with individual activities/tasks for measurement and payment sourced from the Bill of Quantities and listed in MRC Supplementary Specification Annexure 8105_1 Alterations to Existing Drainage Section 1

8105.4 Quality Systems Requirements



8105.4.1 Std Test Methods (Testing Regime)

The following minimum testing regime applies to this specification:

Concrete works shall be tested as required by MRTS70, civil works activities (including embedment and backfilling to structures) associated with the alterations to existing drainage structures shall be tested as per MRTS03 and MRTS04 unless otherwise approved by the Superintendent. Where works scope requires rectification of pavement and seal these shall be rested as required by the relevant MRTS Specification for that activity.

8105.4.2 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 8105.5	Milestone	4 Weeks prior to works commencing
Inspection of delivered items	Hold Point	At delivery time for each item.
Works procedure discussions	Hold Point	Formal meeting prior to works commencing
Site layout, dilapidation report, and WH&S inspection	Hold Point	Site inspection prior to commencing
Salvage and storage of drainage components	Hold Point	Prior to any demolition works commencing
Excavation to level and grade	Hold Point	Prior to modification of drainage structure
Base excavation floor (unsuitable material)	Hold Point	At completion of excavation and compacting
Reconstruction of infrastructure, RPEQ design and approval (as required)	Hold Point	Prior to structure being reconstructed
Approval to proceed with reconstruction of structure (as required)	Hold Point	After RPEQ design approved
Foundation testing and inspection – approval to proceed (as required)	Hold Point	After base floor has been trimmed, compacted, tested, and prepared for inspection
Laying and compacting of bedding material (as required)	Witness Point	Prior to laying pipes
Prepour inspections of reinforcing and formwork for floor/walls/soffits/lids (as required) and approval to proceed with concrete pour	Hold Point	Immediately prior to concrete pours for each component.
Concrete pour process and commencement of curing operations (as required)	Witness Point	During concrete pour works with curing commencing immediately after pouring
Approval to strip formwork (as	Hold Point	No earlier than 72 hours after



required)		concrete pour finish, approval by Superintendent
Approval to load structure (as required)	Hold Point	No earlier than 7 days after concrete pour
Inspection of modified drainage structure prior to approval to backfill	Hold Point	After reinstatement and sealing of structure and associated components
Backfilling procedure carried out as per specification and submitted works procedure	Witness Point	During backfilling process
Reinstatement of all salvaged components identified for reuse.	Witness Point	During structure reinstatement works
Subgrade approval and proof roll as applicable to site (as required)	Hold Point	Prior to pavement works and after submission of any QA documentation
Kerb reinstatement prepour inspection (as required)	Hold Point	Prior to kerb pouring works and after submission of any QA documentation
Pavement reinstatement and proof roll as applicable to site (as required)	Hold Point	Prior to surface seal works and after submission of any QA documentation
Surface seal works pavement inspection and approval to proceed (as required)	Hold Point	After approval to proceed based on seal design, time lapse requirements of primer seal, and pavement inspection
Road furniture reinstallation (as required)	Hold Point	At completion of all rectification works
Clean Work Site	Hold Point	At completion of works
Works as Executed documentation	Hold Point	4 weeks prior to practical completion being requested.
ESC Measures approved to be removed	Hold Point	As required by Environmental Plan and approved by Superintendent

8105.4.3 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.

- Backfilling and earthworks operations tolerances in accordance with MRTS04 General Earthworks.
- Bedding, laying, and backfill to culvert tolerances in accordance with MRTS03.
- Concrete, reinforcing, and formwork in accordance with MRTS70 Concrete
- Pavement supply, laying and compacting in accordance with MRTS05 (as required by works)



- Seal treatment in accordance with relevant MRT Specification for the proposed seal type (as required by works)

Tolerances which are specific to the project are detailed on the design drawings and are included in Clause 2 of MRC Supplementary Specification Annexure 8105_1 Alterations to Existing Drainage

8105.5 Preliminary

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

- Construction procedure covering all facets of drainage works required to alter and reinstate existing drainage structures and associated pavement and seal.
- WH&S works procedures and confined space permit as required.
- Erosion and Sediment Plan (as required for site/s)
- Traffic Management Plan and TGS's (as required)
- Pit reconstruction requiring design and RPEQ signatory.

Other preliminary requirements unique to the project will be listed in the MRC Supplementary Specification Annexure 8105_1 Alterations to Existing Drainage (MILESTONE)

8105.5.1 Materials

Supply of all 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 8105_1 Alterations to Existing Drainage Section 3 and shall be the point of supply.

Embedment and backfill material shall conform to the requirements of MRTS03 and MRTS04 for the activity being carried out.

Concrete and reinforcing shall conform to the requirements of MRTS70, MRTS71, and MRTS03. Where glues and sealants are required, these shall comply with their recommended use and the manufacturers requirements and be used as set out in the approved construction procedure submitted to Council.

The contractor shall ensure grout used is of an approved high strength grout fit for purpose and recommended use as per the manufacturers requirements and be used as set out in the approved construction procedure submitted to Council. Use of any other product shall be approved by the Superintendent.

Where required due to the extent of works, pavement, kerbing, and seal materials shall conform to the relevant MRTS Specification.

8105.6 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.

Alterations to existing drainage shall be carried out in the locations and in accordance with the details shown on the design drawings and respective specifications for that activity. Where design drawings show a lack of detail or the works are carried out without design drawings the contractor



shall supply as part of their works procedure alterations intended for each drainage infrastructure proposed to be altered.

The following list of work activities are examples covered by this specification, they do not cover all work activities and should only be used to give a broad picture of the activity scope;

- Break into culvert and connect - branch line (generally house stormwater drainage) to be no greater than 1/3 diameter of main line, greater than this a new pit is to be installed.
- Break into pit and connect – Repairing existing pit.
- Break into pit and connect – constructing new pit.
- Break into culvert/s – Build a new pit.
- Break into a concrete lined drain with new stormwater line outlet – Culvert installed and concrete cut to suit batter slope, with or without a floodgate to be installed.
- Break into existing headwall with new outlet – Construct new headwall.

8105.6.1 Work Operations

Work operations incorporated in this item include:

a) Work operations listed in Clause 2.1.5 of MRS01 “Introduction to Specifications”.

b) Supply of all materials

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

Where new culverts, headwalls, and floodgates are required as indicated on the design drawings or as directed by the Superintendent 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)

Grout, glues, and sealants are to be stored as required by the manufacturers specification or guidelines.

c) Works procedure and discussions

While the Council requires submission of a works procedure 4 weeks prior to site works commencing the following items should be addressed these need to be discussed at a formal meeting prior to works commencing; (HOLD POINT)

- Live culvert and pit treatment, stormwater flows
- Clarification of extent of alterations to existing infrastructure,
- Peripheral infrastructure (including earthworks and site access) which will be affected needing reinstatement,
- Suitability of proposed plant and gear to carry out works.

d) Site layout with Superintendent

The final location of the proposed alteration to the existing drainage structure is to be marked out on site and shall be inspected and approved by an MRC representative prior to excavation or demolition commencing. (HOLD POINT)

Prior to and as part of this inspection the contractor shall supply a dilapidation report with photos to the Superintendent which will detail the condition of the infrastructure prior to commencing site works. (HOLD POINT)

The Superintendent will carry out a site review with the Contractor of the proposed WH&S requirements of the work procedure to verify all requirements and permits are in place to ensure the safety of workers and the public. (HOLD POINT)



e) Removal and storage of existing components/covers

Prior to commencing excavation, breaking in or demolition of existing infrastructure the contractor shall carry out required works to salvage all components which can be removed including the covers and store for reuse as required by the design drawings, where there is a lack of detail the Superintendents instructions shall apply. (HOLD POINT)

f) Demolition of existing components, as required

After removal of salvageable components, the contractor shall carry out all works required to excavate, take up, and dispose of existing components to carry out the required works. The disposal site shall be the nearest Council transfer station or civil waste storage site.

The contractor shall carry out demolition works which avoids damage to adjacent infrastructure. Prior to reinstatement works commencing the Superintendent shall inspect the infrastructure for damage arising from the demolition works. Any damage identified as a result of this inspection shall be rectified at no cost to the principal. (HOLD POINT)

g) Carrying out excavation to design depth and alignment

Excavations for the stormwater infrastructure are to be carried out level and grade are as per design drawings, vertical tolerances shall not exceed +/-10mm, horizontal tolerances +/-100mm where reconstruction of the outlet infrastructure is required, +/-25mm where outlet structure is only pierced and to be retained. (HOLD POINT)

Bed/Subgrade is to be inspected for areas of unsuitable material (HOLD POINT)

If unsuitable material is identified this is to be removed and replaced with approved material as per the instructions of the Superintendent.

h) 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.

i) Modifying drainage structures as detailed in the drawings, as required

Alterations to existing drainage shall be carried out as per the design drawings, where there is a lack of detail the Contractor shall allow for and carry out the extent of works required as detailed in their works procedure.

Where unapproved works are carried out to alter or modify the drainage structure/s beyond the details of the design drawings or as proposed by the contractors work procedure this shall be at no cost to the Principal.

All works carried out to breaking in, modifying the structure, and sealing shall form part of the scope of works. Sealing works are to use appropriate high strength grouts and sealants. The Superintendent will be presented with the reinstated works both internally and externally to the drainage structure prior to backfilling commencing, no backfilling shall commence until the Superintendent has given approval to proceed. (HOLD POINT)

Where works require reconstruction of pits or headwalls the works shall be in accordance with the design plans and carried out as required by MRTS70, MRTS71, and MRTS03 with all testing and inspection as required by these specifications. The contractor shall list these in their quality plan. Approval to proceed shall only be granted by the Superintendent when the various inspections occur, and test results are submitted. (HOLD POINT)

Where during work activities any existing culverts, pits, headwalls, or components are damaged which were not identified prior to the commencement of the works, they shall be reinstated by the contractor at no cost to the principal, this also includes where RPEQ endorsement is required (submitted drawing and completed works), no works acceptance will be granted unless this requirement is complied with. (HOLD POINT)



j) Backfilling and finishing to the design surface level, and replacement of stored covers, as required.

Where alterations to the existing drainage requires reinstatement of the embedment and backfilling to the structures to design surface level or existing levels this shall be carried out in accordance with MRTS03 and MRTS04, with inspections, geotechnical testing and geometric requirements applying unless otherwise stated in MRC 8105_1 Alterations to Existing Drainage Annexure. (WITNESS POINT)

All components identified for reuse shall be reinstated as per the design drawings or to the satisfaction of the Superintendent. (WITNESS POINT)

k) Earthworks and pavement reinstatement works (where required)

Earthworks to structure shall be carried out as per MRTS04 as required by the site reinstatement works. The subgrade is to be presented for inspection by the Superintendent, the Superintendent shall decide if a proof roll is required. (HOLD POINT)

Where kerbing needs to be reinstated this shall be carried out as per MRTS70 and MRTS03, the bed of the kerb is to be presented for inspection by the Superintendent. The kerbing shall be restated to the line and grade as existed prior to works commencing, any change to the geometrics shall be at the approval of the Superintendent. (HOLD POINT)

The supply, lay, compact, and trim pavement shall be carried out as per MRTS05 as required by the site reinstatement works. The pavement is to be presented for inspection by the Superintendent, the Superintendent shall decide if a proof roll is required. (HOLD POINT)

Finished pavement surface shall be trimmed and finished to +/- 5mm's against kerbing.

Seal design is to be submitted to MRC 14 days prior to pavement inspection being requested. (HOLD POINT)

Seal works are to be carried out as per the relevant TMR Specification and design drawings unless otherwise directed by the Superintendent, inspection of surface shall be carried out by the Superintendent prior to seal works commencing. (HOLD POINT)

The Superintendent shall give the approval to proceed where Asphalt works are proposed and after the required time has lapsed after primer seal (HOLD POINT), with the asphalt to be laid and compacted to the requirements of MRTS30 (WITNESS POINT)

Line marking and signage shall be carried out in accordance with MRTS14 and the design drawings unless otherwise directed by Superintendent. (HOLD POINT)

l) Clean work site

The site is to be cleaned of all debris, excavated material, and construction materials and returned to its natural state prior to works occurring.

Disturbed areas are to be rehabilitated as required by the design drawings and erosion and sediment control measures installed as per the Contractors approved Erosion and sediment control Plan and as directed by the Superintendent. (HOLD POINT)

8105.7 Post construction

a) RPEQ Signatory of Works (as required)

Works which have required RPEQ endorsed designs must also have RPEQ endorsement of the reconstruction of the structure/s, this is to be submitted to Council as part of the



“Works as Executed documentation.

b) 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.

c) Erosion and sediment control plan

ESC measures are to be kept in place and maintained until the Superintendent approves of the removal of such measures. (HOLD POINT)

8105.8 Measurement and Payment

Provision for these works shall be included in the scheduled unit rate for the items show in Clause 8105.3 of this Supplementary Specification and Annexure. No separate payment will be made for the works operations specified within this Supplementary specification or it’s annexure.

Version Control:

Version	Description	Reviewed / Endorsed	Date
1.0			23.11.2012
2.0	Specification review	C. Sultana	10.01.2024