

**Technical Note TN63**

# **Assessment of Electrical Pit Products to MRTS91 and MRTS78**

**April 2021**

## Copyright

© The State of Queensland (Department of Transport and Main Roads) 2021.

## Licence



This work is licensed by the State of Queensland (Department of Transport and Main Roads) under a Creative Commons Attribution (CC BY) 4.0 International licence.

## CC BY licence summary statement

In essence, you are free to copy, communicate and adapt this work, as long as you attribute the work to the State of Queensland (Department of Transport and Main Roads). To view a copy of this licence, visit: <https://creativecommons.org/licenses/by/4.0/>

## Translating and interpreting assistance



The Queensland Government is committed to providing accessible services to Queenslanders from all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 13 14 50 and ask them to telephone the Queensland Department of Transport and Main Roads on 13 74 68.

## Disclaimer

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing.

## Feedback

Please send your feedback regarding this document to: [tmr.techdocs@tmr.qld.gov.au](mailto:tmr.techdocs@tmr.qld.gov.au)

## 1 Purpose of assessment

The purpose of this Technical Note is to define the assessment requirements for pits, and associated collars, risers and covers / lids to MRTS91 *Conduits and Pits* (MRTS91). Batches of product (typically 100 units) are assessed by Engineering and Technology Branch for compliance, so Administrators do not need to confirm all details of individual units.

Assessment is conducted in two stages. The first stage is a general assessment of the product type and design. This occurs on initial application only. The second stage is an assessment of individual batches of product.

Applications for assessment shall be made to the Director (ITS Asset Services):

Road Operations – Engineering and Technology Branch  
Department of Transport and Main Roads  
GPO Box 1412 – Brisbane Qld 4001  
Email: [Elec\\_Infrastructure\\_Approvals@tmr.qld.gov.au](mailto:Elec_Infrastructure_Approvals@tmr.qld.gov.au)

Where the following clauses require NATA-endorsed test reports, reports from an alternate laboratory may be accepted, provided:

- the laboratory is independent of the supplier or their supply chain
- the report complies with AS ISO / IEC 17025 *General requirements for the competence of testing and calibration laboratories*, and
- the laboratory can provide evidence of consistent and accurate performance.

## 2 Reference documents

Pit products shall comply with the requirements of the relevant Technical Specifications, Standard Drawings and Australian Standards, including:

- AS 3996 *Access covers and grates* (AS 3996)
- AS 4586 *Slip resistance classification of new pedestrian surface materials* (AS 4586)
- AS ISO / IEC 17025 *General requirements for the competence of testing and calibration laboratories*
- AS/NZS 1580.408.5 *Paints and related materials – Methods of test, Method 408.5: Adhesion – Pull-off test* (AS/NZS 1580.408.5)
- AS/NZS 3000 *Electrical installations* (AS/NZS 3000) (known as the *Australian / New Zealand Wiring Rules*)
- MRTS78 *Fabrication of Structural Steelwork* (MRTS78), and
- MRTS91 *Conduits and Pits*.

## 3 Stage 1 – application requirements (initial)

Applications for supplier / product evaluation shall include:

- signed checklist in accordance with Appendix A

- product drawings, including:
  - dimensions
  - materials
  - mass, and
  - labelling of unit (manufacturer's name, unit mass, batch number)
- NATA-endorsed load type test report (AS 3996 Clause C5.2), and
- sample batch test results (tests other than load).

For steel pit covers, applications shall additionally include:

- RPEQ-certified product drawings, with materials schedule (list of parts, and their size and grade)
- Transport and Main Roads registration certificate as a supplier of fabricated steelwork (as per MRTS78), and
- Welding Procedure Specifications (as per MRTS78).

For plastic pit covers, applications shall additionally include:

- test reports (AS 3996 Clauses 4.2.9–4.2.12).

Product labels shall be permanently fixed to or embedded in the pit product.

A new initial application shall be required for any change in design, process or supplier.

#### **4 Stage 2 – application requirements (batch)**

For each batch to be assessed the following shall be submitted:

- signed statement of conformance issued by the manufacturer, with clear batch identification and batch size (refer to Appendix B)
- batch test results as a NATA-endorsed test report
- material schedule (for steel components) listing sections and grades (for example 40 x 5 flat bar, grade 350), and
- material test certificates (for steel components, in accordance with MRTS78).

#### **5 Testing requirements**

Pit products shall be tested according to Table 5 and all results submitted with the application as NATA-endorsed reports.

Tests for load capacity shall be conducted in accordance with AS 3996 Clause 4.2.1.2.

Load shall be transferred to pit walls by 12 x M16 bolts, as described by MRTS91.

**Table 5 – Testing requirements**

Product	Test	Test Method	Test Frequency	MRTS91 reference
Pits <sup>1</sup>	Load	AS 3996 Appendix C	Initial batch	Clause 7.7.5
Collars	Load	AS 3996 Appendix C	Initial batch	Clause 7.7.5
Covers	Load	AS 3996 Appendix C	Initial batch	Clause 7.7.5
	Electrical insulation	AS 3000 Clause 6.3.3.3 Wiring Rules	Initial	Clause 7.7.6.2
	Adhesion	AS/NZS 1580.408.5	Initial	Clause 7.7.6.2
	Slip resistance	AS 4586 Appendix A or D	Initial	Clause 7.7.6.2
	UV resistance <sup>2</sup>	AS 3996 Clause 4.2.9	Initial	Clause 7.7.2
	Temperature / creep / impact resistance <sup>2</sup>	AS 3996 Clauses 4.2.10, 4.2.11 and 4.2.12	Initial	Clause 7.7.2
Riser	Load	AS 3996 Appendix C	Initial batch	Clause 7.7.5

<sup>1</sup>Pits to be tested with cut-outs in accordance with MRTS91.

<sup>2</sup>Polymeric covers only. Stabiliser additions for polyolefin and PVC are acceptable without testing as per AS 3996. Certification of material to be submitted.

### 5.1 Load test method

AS 3996 Appendix C is written to apply to covers and grates. Testing of covers / lids shall be in accordance with that method. The following modifications to the procedure shall be made to test pits, collars and risers:

- a cover shall be chosen from a previously tested, and compliant, batch of covers – this cover shall not have been tested itself
- the subject pit shall be cored to simulate installation conditions as per MRTS91 Clause 7.7.5
- the subject pit shall be assembled with a representative collar, representative riser (optional) and the chosen cover in accordance with the relevant Standard Drawing, and
- load shall be applied to the cover in accordance with AS 3996 Appendix C.

The batches of pit, riser and collar shall be deemed to have passed or failed the test as a set.

Retesting using different batch combinations is permitted to discover the cause of the failures, but all tests shall be reported.

## 6 Assessment outcomes

Batches that are assessed as conforming will be issued with a certificate confirming conformance to MRTS91. This certificate shall be supplied to the Administrator upon delivery of the pit products to the project.

Batch approval certificates are valid for five years from the issuing date.

**Appendix A – Initial product application**

<b>Manufacturer:</b>						
<b>Pit product type:</b>	Cover <input type="checkbox"/>	Collar <input type="checkbox"/>	Riser <input type="checkbox"/>			
	Pit <input type="checkbox"/>	Support Bar <input type="checkbox"/>				
<b>Pit type:</b>	Type 1(J) <input type="checkbox"/>	Type 3 <input type="checkbox"/>	Type 4 <input type="checkbox"/>			
	Type 7 <input type="checkbox"/>	Type 8 <input type="checkbox"/>	Type 60 <input type="checkbox"/>			
	Type 100 <input type="checkbox"/>					
<b>Drawing number(s):</b>						
<b>Material:</b>	Steel <input type="checkbox"/>	Plastic <input type="checkbox"/>	Combination <input type="checkbox"/>			

*Steel products*

	<b>Requirement</b>	<b>Manufacturer check</b>	<b>Transport and Main Roads check</b>
<b>Registration certificate</b>	'Active'		
<b>Welding procedure specifications</b>	MRTS78		
<b>Drawings</b>	RPEQ-certified		
	Material Schedule		

*Steel and plastic covers*

	<b>Requirement</b>	<b>Manufacturer check</b>	<b>Transport and Main Roads check</b>
<b>Electrical insulation test</b>	$\geq 1 \text{ M}\Omega$		
<b>Adhesion test</b>	$\geq 1 \text{ MPa}$		
<b>Slip resistance test</b>	External pedestrian crossings		
<b>UV resistance test</b>	$E_0 \pm 50\%$ or material certification		
<b>Temperature / creep / impact resistance tests</b>	No cracking, collapse or failure		

*All products*

	<b>Requirement</b>	<b>Manufacturer check</b>	<b>Transport and Main Roads check</b>
<b>Load test</b>	Serviceability design load (deflection and set)		
	Ultimate design load		
	Suitable laboratory		
	Cores removed (pits)		
	Matched with compliant cover		
<b>Label</b>	Permanent, clear		

<b>Applicant name</b>	
<b>Signature and date</b>	

**Appendix B – Batch certification application**

<b>Manufacturer:</b>						
<b>Pit product type:</b>	Cover	<input type="checkbox"/>	Collar	<input type="checkbox"/>	Riser	<input type="checkbox"/>
	Pit	<input type="checkbox"/>	Support Bar	<input type="checkbox"/>		
<b>Pit type:</b>	Type 1(J)	<input type="checkbox"/>	Type 3	<input type="checkbox"/>	Type 4	<input type="checkbox"/>
	Type 7	<input type="checkbox"/>	Type 8	<input type="checkbox"/>	Type 60	<input type="checkbox"/>
	Type 100	<input type="checkbox"/>				
<b>Drawing number(s):</b>						
<b>Batch number:</b>						
<b>Batch size:</b>						
<b>Date(s) of manufacture:</b>						

*Steel products*

	<b>Requirement</b>	<b>Manufacturer check</b>	<b>Transport and Main Roads check</b>
<b>Material schedule</b>	TN63		
<b>Material test certificates</b>	MRTS78		

*All products*

	<b>Requirement</b>	<b>Manufacturer check</b>	<b>Transport and Main Roads check</b>
<b>Load test</b>	Serviceability design load (deflection and set)		
	Suitable laboratory		
	Cores removed (pits)		
	Cover batch ID: Collar batch ID: Riser batch ID: Pit batch ID:		
<b>Label</b>	Permanent, clear		

*The applicant certifies that the batch represented by this checklist complies with the requirements of MRTS91.*

<b>Applicant name</b>	
<b>Signature and date</b>	

