

Main Roads Technical Standard

MRTS62

Bridge Substructure

June 09

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Bridge Substructure

1 INTRODUCTION

This Standard applies to the construction of the substructure of bridges including abutments and piers from foundations to bearing pedestals.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards*, MRTS50 *Specific Quality System Requirements* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads Specifications and Technical Standards Manual.

2 DEFINITION OF TERMS

The terms used in this Standard shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Standards*.

3 REFERENCES

3.1 Standards

There are no Australian Standards referenced in this document.

4 QUALITY SYSTEM REQUIREMENTS

4.1 Hold Points, Witness Points and Milestones

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01 *Introduction to Technical Standards*.

The Hold Points, Witness Points and Milestones applicable to this Standard are summarised in Table 4.1

Table 4.1 – Hold Points, Witness Points and Milestones

| Clause | Hold Point | Witness Point | Milestone |
|--------|-----------------------------|---------------|---|
| 5 | | Setting out. | |
| 10 | 1. Embankment construction. | | Submission of procedure for construction of embankment (14 days). |

4.2 Construction Procedures

The Contractor shall prepare documented procedures for all construction processes in accordance with the quality system requirements of the Contract.

Construction procedures for those activities listed in Clause 1 of Annexure MRTS62.1 shall be submitted to the Administrator in accordance with the quality system requirements of the Contract.

4.3 Conformance Requirements

The conformance requirements which apply to lots of work covered by this Standard are summarised in Table 4.3.

Table 4.3 – Conformance Requirements

| Clause | Conformance Requirement |
|--------|-------------------------|
| MRTS70 | Concrete conformance. |

4.4 Testing Frequency

The minimum testing frequency for work covered by this Standard shall be as stated in the relevant Technical Standards referenced herein.

5 CONSTRUCTION

Bridge abutments and piers shall be located as shown in the Drawings.

Abutments and piers shall be set out on the Site by a surveyor experienced in bridge construction. **Witness Point** During the setting out process, the Contractor shall be deemed to have checked the location and details of abutments and piers in relation to the dimensions of any precast superstructure members. If an error in the details shown in the Drawings is detected, the Administrator shall be notified immediately.

No extension of time for Practical Completion will be granted by the Administrator for delays caused by the discovery of incorrect dimensions shown in the Drawings.

The construction of piles, footings, pile caps, headstocks, abutment and pier structures and bearing pedestals shall be carried out to the details shown in the Drawings and in accordance with the requirements specified in Clauses 6 to 12 inclusive.

Care shall be taken when constructing piers in waterways to ensure that the specified environmental constraints described in MRTS51 *Environmental Management* or elsewhere in the Contract, are not compromised. Construction of permanent and/or temporary earth bunds to assist in the construction of piers shall be permitted only where specifically stated in the Contract Documentation.

6 PILING

Piling shall be carried out in accordance with the following Technical Standards, as appropriate –

- a) MRTS63 *Cast-In-Place Piles*;
- b) MRTS65 *Precast Prestressed Concrete Piles*;
- c) MRTS66 *Driven Steel Piles*; and
- d) MRTS68 *Dynamic Testing of Piles*.

7 EXCAVATION

Excavation for footings and pile caps shall be in accordance with the requirements of Clause 14 of MRTS04 *General Earthworks*.

8 CONCRETE

The requirements of MRTS70 *Concrete* shall apply to the supply and construction of concrete components.

Steel reinforcing shall be supplied and installed in accordance with the requirements of MRTS71 *Reinforcing Steel*.

The tops of headstocks and piers shall be steel trowel finished.

Bearing pedestals shall be constructed separately and care shall be taken to achieve the tolerances described in this clause. The top surface of bearing pedestals shall be finished with a wood float to a coarse sandpaper-like finish and shall be accurate to the tolerances set out in Table 8.

Table 8 – Tolerances for Bearing Pedestal Surfaces

| Dimension | Tolerance |
|--|------------|
| Height of pedestal (from position shown in the Drawings) | ± 3 mm |
| Slope of bearing surface. | ± 1 in 300 |
| Surface planarity (straight-edge). | 1 mm |

Embedded items and/or cored holes shall be supplied and installed in the locations and to the details shown in the Drawings. Such items shall include –

- a) cored holes for deck unit holding down bolts and dowels;
- b) cored holes for holding down bolts for girder restraints;

- c) cored holes for bearing holding down bolts or locating dowels; and
- d) support brackets and or anchorages for future services.

9 BACKFILLING

Following construction, remaining excavations for abutment and pier footings and/or pile caps shall be backfilled in accordance with the requirements of MRTS04 *General Earthworks*.

10 EMBANKMENT CONSTRUCTION

The construction or completion of road embankments at abutments shall be undertaken in a manner which –

- a) does not place external loads on any piles or the abutment structure; and
- b) complies with any notes shown in the Drawings.

Where an embankment is placed after the abutment has been constructed, the Contractor shall submit to the Administrator, at least 14 days before commencement of construction of the embankment, a procedure to be used to place and compact the embankment material. **Milestone** The procedure will be subject to the approval of the Administrator. **Hold Point 1** Where appropriate, embankments shall be constructed against abutments in accordance with the requirements of MRTS04 *General Earthworks*. Embankments shall not place loads on abutment structures for a period of 28 days from the date on which concrete was placed.

11 ABUTMENT PROTECTION

Abutment protection shall be constructed as shown in the Drawings and in accordance with the requirements specified in MRTS03 *Drainage, Retaining Structures and Protective Treatments*.

12 ANTI-GRAFFITI PROTECTION

Anti-graffiti protection coatings shall be applied in accordance with the requirements of and in the locations specified in MRTS83 *Anti-Graffiti Protection*.

13 SUPPLEMENTARY REQUIREMENTS

The requirements of MRTS62 *Bridge Substructure* are varied by the Supplementary requirements given in Clause 2 of Annexure MRTS62.1.