

Superseded

**Technical Specification**

**Transport and Main Roads Specification  
MRTS301 Fabrication and Construction of Floating  
Walkways**

**October 2015**

Superseded

## Copyright



<http://creativecommons.org/licenses/by/3.0/au/>

© State of Queensland (Department of Transport and Main Roads) 2015

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

**Amendment Register**

| Issue / Rev no. | Reference section | Description of revision | Authorised by | Date |
|-----------------|-------------------|-------------------------|---------------|------|
|                 |                   |                         |               |      |
|                 |                   |                         |               |      |

Superseded

**Contents**

**1 Introduction .....1**

**2 Definition of terms .....1**

**3 Referenced documents .....1**

**4 Quality System requirements .....2**

4.1 Hold Points, Witness Points and Milestones ..... 2

4.2 Manufacture by quality certified supplier ..... 2

**5 Design of floating walkways .....2**

**6 Site Establishment.....2**

**7 Supply of steel piles .....3**

7.1 Materials ..... 3

7.2 Dimensional tolerances ..... 3

7.3 Extension to piles (Splicing)..... 3

7.4 Application of protective coating ..... 3

7.5 Handling, transport and site storage..... 3

**8 Driving of steel piles.....4**

8.1 Tolerances of pitching and driving ..... 4

8.2 Pile records ..... 4

8.3 Trimming of pile head ..... 4

8.4 Temporary lights for freestanding piles ..... 5

8.5 Failure to achieve minimum penetration..... 5

8.6 Permanent marking of piles ..... 5

**9 Fabrication of aluminium components.....5**

**10 Fabrication of flotation modules.....5**

**11 Concrete for insitu works .....5**

11.1 General ..... 5

11.2 Concrete design mix ..... 6

11.3 Placement of concrete ..... 6

11.4 Concrete testing..... 6

**12 Warranty .....6**

**13 Handover Document.....7**

**14 Supplementary requirements .....7**

**Tables**

Table 2 – Definition of terms applicable to design and construction of floating walkways..... 1

Table 3 – Referenced documents ..... 1

Table 4.1 – Hold Points and Milestones ..... 2

|   |   |
|---|---|
| Table 7.2 – Dimensional tolerances of piles.....                                | 3 |
| Table 8.1 – Pile pitching tolerances .....                                      | 4 |
| Table 11.2 – Design mix for boat ramp slabs and precast elements (planks) ..... | 6 |
| Table 11.4 – Sampling frequencies for 28-day strength .....                     | 6 |

Superseded

## 1 Introduction

This Technical Specification applies to the fabrication and construction of modular floating walkways constructed on boat ramps that are used for launching and retrieval of recreational trailer boats.

This Technical Specification shall be read in conjunction with MRTS01 *Introduction to Technical Specifications*, MRTS50 *Specific Quality System Requirements* and other technical specifications as appropriate.

This Technical Specification shall be read in conjunction with:

- MRTS300 *Boat Ramps*
- Design Manual for Floating Walkways and pontoons.

This Technical Specification forms part of the Transport and Main Roads Specifications Manual.

## 2 Definition of terms

**Table 2 – Definition of terms applicable to design and construction of floating walkways**

|                  |  |
|------------------|--|
| Design Manual    | Design Criteria for Floating Walkways and Pontoons   |
| Floating walkway | A linear pontoon system constructed from multiple hinged flotation modules supported on a boat ramp lane. It is directly connected to a cast insitu concrete abutment and does not require a gangway or access span. |
| RHM              | Regional Harbour Master (for the watercourse).   |

## 3 Referenced documents

**Table 3 – Referenced documents**

| Reference            | Title   |
|----------------------|---|
| Design Manual        | Design Criteria for Floating Walkways and Pontoons                                |
| SD4000               | Precast planks for boat ramps – Types RG4000 and RG3500                           |
| SD4020               | Boat ramp construction – Precast plank installation and anchor beam types 1 and 2 |
| SD4021               | Boat ramp construction – Earthworks and crushed rock core details                 |
| SD4022               | Boat ramp construction – Fully grouted shoulders and ungrouted shoulders          |
| SD4023               | Boat Ramp Construction – Slabs and Joint Details                                  |
| MRTS70               | Concrete  |
| MRTS78               | Fabrication of Structural Steelwork   |
| MRTS79               | Fabrication of Aluminium Components   |
| MRTS300              | Boat Ramps  |
| AS/NZS ISO 9001:2008 | Quality management systems – Requirements   |
| AS/NZS 1554.1:2011   | Structural steel welding Part 1: Welding of steel structures                      |

## 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 Specifications*.

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

**Table 4.1 – Hold Points and Milestones**

| Clause | Hold Point  | Milestone                            | Witness Point   |
|--------|---|--------------------------------------|---|
| 5      | 1. Approval of design.                            |                                      |   |
| 6.2    |   | Construction Plan                    |   |
| 7.3    | 2. Splicing of piles.                             |                                      |   |
| 8.6    |   | Permanent pile marking band          |   |
| 10     | 3. Placement of concrete (for flotation modules). |                                      | Concrete to be placed in the presence of the inspector. |
| 11.2   | 4. Concrete design mix.                           | Time for approval of the mix design. |   |
| 11.3   | 5. Placement of concrete.                         |                                      | Concrete to be placed in the presence of the inspector. |
| 13     |   | Supply of Handover Document.         |   |

### 4.2 Manufacture by quality certified supplier

The major components of the floating walkway or pontoon shall be manufactured by a single supplier operating an AS/NZS ISO 9001:2008 quality management system certified by a JAS-ANZ accredited certifier. The major components include:

- steel piling
- flotation modules
- fabricated aluminium and stainless steel components.

## 5 Design of floating walkways

The floating walkways shall be designed in accordance with the Design Manual. Fabrication of floating walkway components shall not commence until the Design Drawings and Design Report have been reviewed and approved. **Hold Point**

## 6 Site Establishment

Site establishment shall be in accordance with Clause 6 of MRTS300 *Boat Ramps*.

## 7 Supply of steel piles

### 7.1 Materials

Steel used in piles shall comply with the requirements defined in Clause 5.2 of the Design Manual.

### 7.2 Dimensional tolerances

Steel piles shall be supplied with the following tolerances defined in Table 7.2.

**Table 7.2 – Dimensional tolerances of piles**

| Parameter                                | Requirement  |
|--|--|
| Minimum length                           | Single (un-spliced) gross length as shown on the design Drawings.* |
| Squareness at the driven end of the pile | Less than 2 mm from the true cross section.                        |
| Lateral bow                              | Less than 0.0007 x gross pile length.                              |

\* Spliced lengths shall be accepted only if the specified gross length exceeds the maximum single length for the section size as supplied by the mill.

### 7.3 Extension to piles (Splicing)

Extensions to piles shall be made as follows:

- a) The extension section shall have a section size and mass per unit length equal to that of the previously driven section.
- b) The extension section shall be aligned accurately with the previously driven section of the pile.
- c) The joint edges shall be prepared and the sections welded together using full penetration double vee butt welds, all in accordance with AS/NZS 1554.1:2011.
- d) The welded joint shall be protected with a paint which is compatible with the original coating and applied in accordance with the manufacturer's recommendations.

Driving shall not recommence until the welded splice (including the protection coating) has been inspected and approved by the Administrator. **Hold Point**

### 7.4 Application of protective coating

The protective coating shall be applied in accordance with the manufacturer's specification.

Quality control testing shall be undertaken to demonstrate that the required paint thickness has been achieved. The quality control records shall be supplied with the pile driving records.

### 7.5 Handling, transport and site storage

The piles and the painted coatings shall be protected from damage during handling, transport and storage.

Piles shall be stored on flat, even, cleared ground on timber bearers of adequate bearing capacity that ensures they remain straight.

Damage to coatings during handling, transport or storage shall be rectified by the Contractor and approved by the Administrator. **Nonconformance**

Holes for lifting are permitted only in sections of the pile that will be trimmed after driving.



## 8 Driving of steel piles

### 8.1 Tolerances of pitching and driving

Piles shall be located in the positions shown in the Drawings, within the following tolerances:

**Table 8.1 – Pile pitching tolerances**

| Parameter  | Requirement   |
|--|---|
| Maximum lateral displacement of the pile head        | 50 mm radial (in plan) or as designated by the designer (whichever is lesser) |
| Maximum deviation from the specified rake (vertical) | 1 in 200 or as designated by the designer (whichever is lesser)               |

If these tolerances are exceeded **Nonconformance**, the remedial actions shall include:

- modifying the flotation modules to match the as-driven pile positions
- extracting and re-driving the piles to the allowable tolerance.

Piles for floating walkways should ideally be driven early in the Works prior to fabrication of the flotation modules so that pile cutout positions can be modified to match the surveyed as driven pile positions.

### 8.2 Pile records

The following pile records shall be supplied as part of the quality records with the handover document at Practical Completion:

- a) the date and time of driving
- b) the pile identification number
- c) height of existing surface (reduced to Australian Height Datum (AHD) vertical datum)
- d) type and energy of the hammer
- e) number of blows per 0.5 m during the entire driving and the number of blows per 25 mm over the last 300 mm of penetration
- f) total penetration in metres
- g) horizontal surveyed position of the pile centreline
- h) pile cut-off height (reduced to AHD vertical datum).

### 8.3 Trimming of pile head

Following completion of driving, the pile head shall be trimmed by cutting off the top of the pile to the correct level as shown in the Drawings.

#### **8.4 Temporary lights for freestanding piles**

All freestanding floating walkway restraint piles shall be illuminated and marked so that they are clearly visible after dark from a minimum distance of 100 metres in all of the directions that they could be approached by vessel traffic.

The illumination and marking shall include:

- a flashing yellow navigation light
- 100 mm (minimum) full circumference band of yellow retroreflective tape
- any other requirement issued by the Regional Harbour Master (RHM).

#### **8.5 Failure to achieve minimum penetration**

The Designer shall be consulted where difficulty is encountered in achieving the required minimum penetration.

#### **8.6 Permanent marking of piles**

All piles shall have a 300 mm wide retroreflective band (3M Scotchlite Diamond Grade Yellow or equivalent) 300 mm below the pilecap.

The band shall be a single piece of sufficient length to allow 100 mm overlap for adhesion to itself.

The permanent band shall replace the temporary band and be fitted the same day that the pile sleeve is driven. **Milestone**

### **9 Fabrication of aluminium components**

Fabrication of aluminium components shall comply with MRTS79 *Fabrication of Aluminium Components*. The requirements of Clause 5 (registered fabricator) do not apply.

### **10 Fabrication of flotation modules**

Placement of concrete shall comply with Clause 19.1 of MRTS70 *Concrete*. **Hold Point**

Concreting shall be undertaken in the presence of the Inspector. **Witness Point**

### **11 Concrete for insitu works**

#### **11.1 General**

All concrete supply, placement and curing for insitu works shall be in accordance with MRTS70 with the exception of the clauses defined following.

## 11.2 Concrete design mix

### Hold Point

The concrete design mix shall comply with the requirements of MRTS70 and are summarised in Table 11.2.

**Table 11.2 – Design mix for boat ramp slabs and precast elements (planks)**

| Parameter  | Requirement                                  |
|--|--|
| Items requiring use of registered suppliers and products | Table 1 of MRTS70                            |
| Strength grade   | 50 MPa                                       |
| Minimum cementitious content                             | 450 kg/m <sup>3</sup>                        |
| Maximum water cement ratio                               | 0.4  |
| Nominal maximum aggregate size                           | 20 mm  |
| Target slump range                                       | 50 – 150 (cast insitu)<br>100 – 150 (pumped) |
| Natural sand content of fine aggregates                  | Minimum of 40 %                              |

The Contractor shall allow a minimum of 10 business days for approval of the mix design. **Milestone**

## 11.3 Placement of concrete

Placement of concrete shall comply with Clause 19.1 of MRTS70. **Hold Point**

Concreting shall be undertaken in the presence of the Inspector. **Witness Point**

## 11.4 Concrete testing

This clause replaces Clauses 13.3.2 and 13.3.3 of MRTS70.

The sampling frequency per batch is defined in Table 11.4.

**Table 11.4 – Sampling frequencies for 28-day strength**

| Use         | Sampling Frequency                            |
|-------------|---|
| Cast insitu | 1 sample per batch to a maximum of 4 samples. |

## 12 Warranty

The pontoon manufacturer shall provide a written three-year warranty for repair or replacement of components caused by defects in materials, workmanship, design and installation originating from events within the defined project specific design loads and intended use and purpose.

### 13 Handover Document

The *Handover Document* shall be submitted within four weeks from the Date of Practical Completion.

#### **Milestone**

The *Handover Document* shall include:

- the final design report and certified As Constructed drawings
- piling records
- paint system quality control records
- Maintenance Service Manual
- Warranty Certificate
- Certified Declaration that the works have been constructed in accordance with the design and the statutory approval conditions.

#### **Maintenance Service Manual**

The Maintenance Service Manual shall include:

- a list of the supplied products and the supplier's contact information
- routine maintenance requirements and schedule.

### 14 Supplementary requirements

The requirements of MRTS301 *Fabrication and Construction of Floating Walkways* are varied by the Supplementary requirements given in Clause 1 of Annexure MRTS301.1

Superseded