

**Specification (Measurement)**

**Transport and Main Roads Specifications  
MRS89 Post-tensioned Concrete**

**July 2017**

## Copyright



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

© State of Queensland (Department of Transport and Main Roads) 2017

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

**Contents**

- 1 Introduction .....1**
- 2 Measurement of work .....1**
- 2.1 Standard Work Items ..... 1
- 2.2 Work Operations ..... 1
- 2.3 Calculation of quantities ..... 2
  - 2.3.1 *Concrete* .....2
  - 2.3.2 *Anchorage* .....2
  - 2.3.3 *Ducts* .....3
  - 2.3.4 *Strand tendons* .....3
  - 2.3.5 *Stressing bar units*.....3
  - 2.3.6 *Stressing operations*.....3
  - 2.3.7 *Grouting*.....3
  - 2.3.8 *Capping anchorage recesses*.....3

## 1 Introduction

This Specification sets out the requirements for the supply, installation, stressing, grouting and corrosion protection of post-tensioned, internal prestressing tendons and their anchorages and other components for construction of post-tensioned concrete.

This Specification does not fully specify post-tensioning systems comprising ungrouted internal tendons or stay cables.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications* and other Specifications as appropriate.

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

## 2 Measurement of work

### 2.1 Standard Work Items

In accordance with the provisions of Clause 2.1.3 of MRS01 *Introduction to Specifications*, the Standard Work Items incorporated in this Specification are listed in Table 2.1.

**Table 2.1 - Standard Work Items**

Standard Item No	Description	Unit of Measurement
<b>Post-tensioned Concrete</b>		
73901	Concrete Class [ <i>compressive strength</i> ] MPa/20 in slab deck / superstructure	m <sup>3</sup>
73902	Anchorage Type [ <i>type</i> ]	each
73903	Ducts, [ <i>diameter</i> ] mm diameter	m
73904	Strand tendons, [ <i>number</i> ], [ <i>size</i> ] mm diameter	tonne
73905	Post-tensioned stressing bar units, [ <i>size</i> ] mm diameter	each
73906	Stressing bars / tendons Type [ <i>type</i> ]	each
73907	Grouting duct, [ <i>diameter</i> ] mm diameter	m
73908	Capping anchorage recesses and anchorage	each

### 2.2 Work Operations

#### Item 73901 Concrete Class [*compressive strength*] MPa/20 in slab deck / superstructure

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of concrete
- c) transport of concrete
- d) construction of formwork and falsework, including formwork for voids, block outs, junction boxes and recesses
- e) placing and compacting concrete
- f) finishing and curing concrete
- g) removal of formwork and falsework

- h) dressing of concrete
- i) fillers and sealants, unless measured separately, and
- j) embedded and attached items, unless measured separately.

**Item 73902     Anchorages Type [type]**

**Item 73903     Ducts, [diameter] mm diameter**

**Item 73904     Strand tendons, [number], [size] mm diameter**

**Item 73908     Capping anchorage recesses and anchorage**

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of materials
- c) transport to site, and
- d) installation of all materials.

**Item 73905     Post-tensioned stressing bar units, [size] mm diameter**

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) manufacture of stressing units
- c) transport to site
- d) installation of stressing bar units
- e) provision of stressing jack, and
- f) stressing operations.

**Items 73906     Stressing bars / tendons Type [type]**

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and installation of all materials
- c) provision of stressing jacks, and
- d) carrying out all stressing operations.

**Items 73907     Grouting duct, [diameter] mm diameter**

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and installation of all materials
- c) provision of grouting equipment, and
- d) carrying out all grouting operations.

**2.3     Calculation of quantities**

**2.3.1     Concrete**

The quantity of concrete shall be calculated in accordance with Clause 2.3 of MRS70 *Concrete*.

**2.3.2     Anchorages**

Anchorage shall be measured as the number of each type shown in the Standard Drawings.

### **2.3.3 Ducts**

Ducts shall be measured as the length of duct required as measured from the Standard Drawings.

### **2.3.4 Strand tendons**

Strand tendons shall be measured in tonnes of strand used to make up the tendons as shown in the Standard Drawings. The length of tendon considered in determining the mass shall be the length from face to face of anchorage plates plus 200 mm.

### **2.3.5 Stressing bar units**

Stressing bar units shall be measured as the number of each size shown in the Standard Drawings.

### **2.3.6 Stressing operations**

Stressing bars and tendons shall be measured as the number stressed as specified.

### **2.3.7 Grouting**

Grouting shall be measured in metres of ducts grouted.

### **2.3.8 Capping anchorage recesses**

Capping anchorage recesses and anchorages shall be measured as the number shown in the Standard Drawings.

