

Main Roads Specification

MRS65

Precast Prestressed Concrete Piles

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Precast Prestressed Concrete Piles

1 INTRODUCTION

This Specification applies to the supply and/or installation of precast, prestressed concrete piles.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications*, other Specifications and standards as appropriate and the quality system requirements of the Contract.

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

2 MEASUREMENT OF WORK

2.1 Standard Work Items

In accordance with the provisions of Clause 2 of MRS01 *Introduction to Specifications*, the Standard Work Items covered by this Specification are listed in Table 2.1.

Table 2.1 – Standard Work Items

Standard Work Item No.	Description	Unit of Measurement
Precast Prestressed Concrete Piles		
7501	Prestressed concrete piles, supply on Site, [<i>cross section size</i>] mm [<i>cross section shape</i>].	m
7502	Transport to Site and storage of prestressed concrete piles, ex works [<i>location</i>].	lump sum
7503	Handling and pitching of prestressed concrete piles, [<i>cross section size</i>] mm [<i>cross section shape</i>].	each
7504P	Driving prestressed concrete piles, [<i>cross section size</i>] mm [<i>cross section shape</i>] (Provisional Quantity).	m
7505	Setting up for pre-boring for prestressed concrete piles.	lump sum
7506	Pre-boring for prestressed concrete piles.	m
7507	Setting up for jetting for prestressed concrete piles.	lump sum
7508	Jetting for prestressed concrete piles.	m
7509	Setting up for drilling and firing for prestressed concrete piles.	lump sum
7511	Drilling and firing for prestressed concrete piles.	m
7512	Stripping of prestressed concrete pile head, [<i>cross section size</i>] mm [<i>cross section shape</i>].	each
7513P	Extension of prestressed concrete piles, [<i>cross section size</i>] mm [<i>cross section shape</i>] (Provisional Quantity).	m
7514P	Setting up for re-driving of prestressed concrete piles (Provisional Quantity).	each

2.2 Work Operations

Item 7501 Prestressed concrete piles, supply on Site, [*cross section size*] mm [*cross section shape*].

This item is used only where prestressed concrete piles are supplied by the Contractor. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Manufacture of prestressed concrete piles;

- c) Transport to Site;
- d) Unloading at Site; and
- e) Storage at Site.

Item 7502 Transport to Site and storage of prestressed concrete piles, ex works [*location*].

This item is used only where prestressed concrete piles are supplied by the Principal for collection by the Contractor at the place of manufacture. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Taking delivery of piles at the location and by the mode nominated in the schedules;
- c) Securing piles on transporter;
- d) Transport to Site;
- e) Permits and police escort;
- f) Preparation of Site storage area; and
- g) Unloading and storage of piles.

Item 7503 Handling and pitching of prestressed concrete piles, [*cross section size*] mm [*cross section shape*].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Transferring pile from on Site storage to its aligned position in the driving rig;
- c) Provision and use of the driving rig; and
- d) Retention of pile on line for driving.

Item 7504P Driving prestressed concrete piles, [*cross section size*] mm [*cross section shape*] (Provisional Quantity).

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Driving the pile;
- c) Provision and use of the pile-driving hammer;
- d) Provision and installation of a follower in cases other than those specified in Clause 6.9 of MRTS65;
- e) Interruptions to the usual driving sequence caused by (d) above; and
- f) Setting up for and re-driving piles which have lifted as a result of other driving operations.

Item 7505 Setting up for pre-boring for prestressed concrete piles.

This item is used only where pre-boring is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Provision and establishment on Site of plant and equipment required for pre-boring.

Item 7506 Pre-boring for prestressed concrete piles.

This item is used only where pre-boring is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Boring the hole (for piles of all sizes); and
- c) Disposal of the excavated material.

Item 7507 Setting up for jetting for prestressed concrete piles.

This item is used only where jetting is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Provision and establishment on Site of plant and equipment required for jetting.

Item 7508 Jetting for prestressed concrete piles.

This item is used only where jetting is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Operation of the jetting equipment (for piles of all sizes); and
- c) Disposal of waste material.

Item 7509 Setting up for drilling and firing for prestressed concrete piles.

This item is used only where drilling and firing is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*; and
- b) Provision and establishment on Site of plant and equipment required for drilling and firing.

Item 7511 Drilling and firing for prestressed concrete piles.

This item is used only where drilling and firing is shown on the Drawings or directed by the Superintendent. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Drilling of holes;
- c) Lining of holes, where necessary;
- d) Charging holes with explosives; and
- e) Firing.

Item 7512 Stripping of prestressed concrete pile head, [cross section size] mm [cross section shape].

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Breaking back of concrete in pile head;
- c) Protection of pile against spalling below cut-off level;
- d) Cutting off excess pile and/or excess reinforcement above bond length; and
- e) Disposal of waste material.

Item 7513P Extension of prestressed concrete piles, [cross section size] mm [cross section shape] (Provisional Quantity).

Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Excavation, dewatering and backfill;
- c) Disposal of excavated material;
- d) Supply and placement of formwork;
- e) Supply and placement of reinforcement (including that required for bonding into cap); and
- f) Supply and placement of concrete.

Item 7514P Setting up for re-driving of prestressed concrete piles (Provisional Quantity).

This item is used only where the Superintendent directs that a pile requires re-driving after the original driving operation has been completed. This item shall not be used for re-driving piles which have lifted as a result of other driving operations. Work Operations incorporated in the above item include –

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*;
- b) Re-positioning of driving equipment over pile; and
- c) Removal of driving equipment on completion of re-driving.

3 CALCULATION OF QUANTITIES

3.1 Natural Ground Surface Level

The natural ground surface level shall be taken as the level determined from the contours shown on the Drawings unless agreed otherwise, in writing, by the Contractor and the Superintendent, prior to commencing driving.

3.2 Pile Driving

Pile driving shall be measured on the basis of the driven length of pile, which length shall be taken to be the axial length from the toe of the pile to the underside of the headstock or pile cap or to the natural ground surface level, whichever is the lower.

3.3 Pre-Boring

Pre-boring shall be measured as the length along the hole axis from the level at the bottom of the hole, as shown on the Drawings unless otherwise directed by the Superintendent, to the level of the underside of the pile cap or to natural ground surface level, whichever is the lower.

3.4 Jetting

Jetting shall be measured as the length along the pile axis over which jetting is required, as shown on the Drawings or as otherwise directed by the Superintendent.

3.5 Drilling and Firing

Drilling and firing shall be measured as the length along the hole axis from the level at the bottom of the hole, as shown on the Drawings or as otherwise directed by the Superintendent, to the level of the underside of the pile cap or to natural ground surface level, whichever is the lower.

3.6 Extension of Pile

Extension of pile resulting from authorised driving below the level shown on the Drawings shall be measured as the distance along the axis of the pile between the top of the precast pile at completion of driving and the lowest level of the top of the pile which would provide the reinforcement bond length shown on the Drawings without the need for extension.

4 ADMINISTRATION REQUIREMENTS

4.1 Prestressed Concrete Piles

4.1.1 Supply of Prestressed Concrete Piles

Where listed in the Principal Supplied Materials List (Form C6827), prestressed concrete piles will be supplied by the Principal. Where not so listed, prestressed concrete piles shall be supplied by the Contractor.

4.1.2 Prestressed Concrete Piles Supplied by the Principal

4.1.2.1 Supply Location

Prestressed concrete piles supplied by the Principal will be made available at the point of delivery and by the transport mode shown in the Principal Supplied Material List (Form C6827).

4.1.2.2 Acceptance of Piles by Contractor

The Contractor shall check the prestressed concrete piles for quantity and condition upon taking delivery and shall immediately report to the Superintendent any defect or deficiency.

4.1.2.3 Damage to Piles

In the event of any prestressed concrete pile sustaining damage after having been accepted by the Contractor, such as cracking or spalling, the pile shall be set aside until it has been inspected by the Superintendent, who will decide whether it will be rejected, or repaired by the Contractor. The cost of repairs to damaged piles and the cost of replacing rejected piles shall be borne by the Contractor.

4.2 *No additional Payment for Compliance with MRTS65*

No additional payment shall be made for compliance with the requirements of MRTS65, including but not limited to the following -

- a) Removal of ground material forced up between the piles during the driving operation (Clause 6.1 of MRTS65);
- b) Remedial measures required to accommodate out-of tolerance piles (Clause 6.4 of MRTS65);
- c) Dynamic testing of piles driven using an alternative hammer (Clause 6.5.3); and
- d) Rectification of the damage or replacement of the pile where damage to piles is attributable to the Contractor's method for handling or driving (Clause 6.7 of MRTS65).