PART W20

PILING

CONTENTS

1. GENERAL

.1 This Part covers the installation of, or repair of, piles in various materials including timber, concrete and steel.

.2 If geotechnical information is available, it will be shown on the Drawings.

.3 Documents referenced in this Part are listed below:

(a) AS 2159: Piling – Design and Installation
(b) AS 1554: Welding of Steel Structures
(c) DPTI Underwater Piling Noise Guidelines 2010.
(d) Part S35 Protective Treatment of Structural Steelwork

.4 The definitions in AS 2159 shall apply unless stated otherwise with the Contract Documents.

.5 **"Set"** means the permanent penetration of a driven pile or liner per blow of the hammer.

.6 The work shall be undertaken in accordance with the following Drawings:

(a) Drawing No. S-6997: Jetty Construction – Sheet 2, Steel Pile Connection Details, Amendment 1.

These drawings are available from the following web site http://www.dpti.sa.gov.au/documents/marine_facilities2

2. MATERIAL

.1 If piles are supplied by the Principal, it will be as indicated in the Scope of Contract.

3. TRANSPORT AND HANDLING

.1 Suitable bridles or slings that will prevent excessive bending or damage to the piles shall be used in handling. Holes for lifting and construction aids will be permitted provided the section in which the hole or aid is attached does not form part of the finished installed pile.

.2 The piles shall be stored on 150 mm x 100 mm timber bearers, with a maximum distance between bearers of 3.0 m. The piles shall not be stacked or placed in contact with each other.

.3 If in the opinion of the Principal the pile or associated materials are damaged to an extent as to render them unfit for the purpose intended, then they shall be rejected and replaced by the Contractor.

.4 Protective coatings which have been damaged during handling and pitching shall be made good in accordance with Part S35 “Protective Treatment of Structural Steelwork” after pile driving and cut-off.

4. PILE DRIVING

Installation

.1 The installation of all piling shall be in accordance with this Specification and AS 2159.

.2 In the event of conflicting provisions those of this Specification shall take precedence.

.3 The pile driving procedure, details of the piling rig, hammer type to be used for driving, and hammer drop shall be submitted to the Principal prior to the commencement of driving operations.

Performance

.4 The Contractor shall drive freestanding piles to a set not more than 7 mm (averaged over the last 100 mm by driving) using a 1 t hammer travelling 1 m to:

(a) the minimum pile embedment length specified on the drawings; or

(b) a minimum pile embedment level of 3 metres below the sea bed level.

.5 In the event of the pile set being more than 40 mm after reaching the minimum embedment depth, the Contractor shall seek the Principal's direction before continuing.

Splicing of Steel Piles

.6 It may be necessary to splice an extra pile length on to the existing pile using a full strength butt weld and splice plates to achieve the required set and lateral stability of the pile. For splice detail refer Drawing No. S – 6997 Sheet 2.

.7 Splicing of pile lengths shall be with full penetration butt welds and shall comply with AS 1554, Part 1.

.8 All pile sections shall be joined to match as near as practicable. The complete pile after welding shall not have a deviation from straightness in any direction by more than 1/400 of its length, as measured from a straight line joining the centres of the head and toe of the pile.

.9 Protective coatings shall be made good on completion of splicing in accordance with Part S35 "Protective Treatment of Structural Steelwork".

Pitching and Driving

.10 The piles shall be set out to the alignment and centres as set out in the Specification and Drawings and shall be plumb in both directions unless stated otherwise. Tubular steel piles are to be driven open ended. Each pile shall be driven without stopping until the required penetration is reached, except where a pile splice needs to be made. Coatings shall be repaired in accordance with Part S35 "Protective Treatment of Structural Steelwork".

Driving Tolerances

.11 Unless specified otherwise tolerences shall be as follows in accordance with Table 4.11.1.

Table 4.11.1 – Driving Tolerances	
Level of pile heads	25 mm from design level.
Horizontal position	75 mm from centreline of the pile bent.

Proximity to Existing Timber Piles

.12 Where steel piles are to replace existing deteriorated piles, the new piles shall be driven immediately adjacent to, or as close as practicable to the inside face of existing piles.

.13 Where timber piles are to replace existing deteriorated piles, new piles shall be driven immediately adjacent to or as close as practicable to the outside face of the existing piles.

Underwater Noise

.14 The Principal has undertaken an assessment of the Works against the DPTI Underwater Piling Noise Guidelines 2010. Any additional requirements relating to managing underwater noise from piling shall be stated by the Principal.

Sealing of Piles

.15 After completion of pile driving, a 12 mm thick steel capping plate shall be attached to the top of the pile by means of a fillet weld around the circumference, so as to form an air-tight seal. A protective coating shall be applied to the plate, weld and pile in accordance with Part S35 "Protective Treatment of Structural Steelwork".

Driving Records

.16 The Contractor shall keep a record of the driving of the pile and shall submit the records to the Principal not later than 48 hours after driving.

.17 The records shall show the following information:

(a) The date of driving the pile;
(b) The location and dimensions of the pile;
(c) The depth driven;
(d) The type of hammer used, and if a drop hammer its weight in tonnes and drop in metres;
(e) Blow count for every 500 mm of penetration; and
(f) Any deviation from specified location, alignment and any other relevant information.

5. HOLD POINTS

.1 There are no Hold Points referenced in this Part.