DEPARTMENT *of* INFRASTRUCTURE, ENERGY *and* RESOURCES, TASMANIA
ROADWORKS SPECIFICATION

R81 – MINOR CONCRETE STRUCTURES August 2003

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R81.1 SCOPE

This specification sets out the requirements for supply of materials and construction of minor concrete structures.

R81.2 OBJECTIVES

To provide durable concrete and appropriate construction standards for minor concrete structures.

R81.3 REFERENCES ♦

The following Australian Standards shall apply:

- A.S. 1379 The Specification and Manufacture of Concrete
- A.S. 2758.1 Aggregates and Rock for Engineering Purposes – Concrete Aggregates
- A.S. 2876 Concrete kerbs and channels
- A.S. 3600 Concrete Structures
- A.S. 3610 Formwork for Concrete
- A.S. 3799 Liquid Membrane – Forming Curing Compounds for Concrete
- A.S. 4671 Steel Reinforcing Materials

R81.4 APPLICATION

Minor concrete structures are items such as drainage or service pits, pipe culvert endwalls, sign footings, footpaths, median slabs, etc., including precast components. The term excludes bridges, box culverts, and safety barriers.

R81.5 MATERIALS

R81.5.1 Concrete Aggregates ♦

Coarse and fine aggregates shall comply with the requirements of AS 2758.1.

No submitted sample shall be necessary.

Lightweight aggregates shall not be used.

The maximum nominal aggregate size shall not be greater than half the nominated cover, and in no case greater than 20 mm.

R81.5.2 Concrete ♦

Concrete shall be Normal-class

(i) N20 for unreinforced minor structures,

or (ii) N25 for reinforced minor structures

in accordance with AS 1379.

Concrete used in kerb extrusion machines shall not be subject to the compressive strength requirements, but shall have a minimum cement content as specified in AS 2876.

The consistency of concrete shall be determined by slump test. Concrete with slumps exceeding 80 mm shall not be used.

R81.5.3 Mortar

Mortar shall consist of cement, fine sand and water, and be workable but not fluid, and capable of being free of voids, honeycombing or segregation when placed in position. Cement sand ratio shall be between 1:1 and 1:3 and water cement ratio 0.40 maximum. A suitable mortar plasticiser shall be incorporated.

R81.5.4 Reinforcement

All reinforcement shall be in accordance with AS 4671.

R81.6 CONSTRUCTION

R81.6.1 General

The concrete work shall be carried out in accordance with the requirements and procedures defined in AS 3600.

R81.6.2 Formwork

The materials, designs, construction and stripping of concrete formwork shall comply with the relevant requirements of AS 3610.

Unless otherwise specified, formwork shall allow for 20 mm chamfers on exposed external angles and fillets on internal angles, as shown on the Drawings.

R81.6.3 Placing of Reinforcement

Reinforcement shall be formed and placed to the dimensions, shapes and positions shown on the Drawings, and in accordance with AS 3600.

Bars shall be tied at all intersections, except where the bar spacing is less than 300 mm, when alternate intersections shall be tied.

R81.6.4 Placing, Compacting and Finishing of Concrete

This work shall be carried out in accordance with the requirements of AS 3600. Additionally

i) Concrete shall not be placed when the air temperature is below $1^{o}C$ or shade temperature is above $40^{o}C$.

ii) Concrete shall be placed within 90 minutes of the commencement of mixing.

iii) Vibrators shall be used to thoroughly compact the concrete, supplemented by hand tamping where necessary. Vibrating screeds shall be used in addition to compact concrete slabs where practicable.

iv) At construction joints, the existing concrete surface shall be roughened and cleaned of any loose or foreign matter, and the surface wetted immediately prior to placing further concrete.

v) Finished exposed surfaces shall be free from depressions or projections. Rough or porous areas and holes shall be filled with mortar. Bolts, wires and other items passing through the concrete surface shall be cut off or set back 25 mm below the surface and the resultant holes filled with mortar.

vi) Concrete shall be cured continuously for a minimum period of three (3) days using one of the following methods:

- Retention of the formwork in place;
- Moist curing;
- Where neither above method is feasible, and subject to the approval of the Superintendent, application of a curing compound complying with AS 3799.

R81.7 TESTING OF CONCRETE ♦

Production batch testing shall be utilised to certify compliance of Normal Grade concrete.

R81.8 PAYMENT

Payment for minor concrete structures shall be based on the rate quoted in the Schedule of Rates for the particular type of structure. The unit of measurement shall be linear metre, square metre, cubic metre or number as applicable.

The rate shall include the costs for provision of formwork, supply, placing, finishing and curing of concrete. For reinforced concrete the rate shall also include supply, bending and fixing of steel reinforcement.

R81.9 HOLDPOINTS

The following holdpoints have been identified in this Specification:

Prior to use of curing compound rather than moist curing. (R81.6.4)