10.0 CONCRETE & CONCRETE WORKS – DESIGN & CONSTRUCTION

10.1 READYMIX REQUIREMENT

Readymixed concrete shall be from an approved supplier, and shall in all ways conform to Australian Standard No. 1379-1991 for readymixed concrete. Minimum strength requirements will be based on the type of work to be undertaken.

10.2 ON-SITE MIXING REQUIREMENT

Concrete mixed on the site shall consist of 1 part cement, 2 parts clean sharp sand free from impurities and silt, and 3 parts crushed aggregate of maximum size of 18mm and mixed with sufficient water to give a slump not exceeding 100mm

10.3 FORMWORK

All formwork shall conform to AS3610-1990 and consist of timber or steel forms which are straight and true and to required dimensions, with no surface irregularities and securely supported to prevent movement during pouring and curing. Formwork surfaces are to be coated with form oil for clean stripping of concrete.

10.4 PLACING

Concrete shall be placed on compacted material (minimum density ratio of 95% standard) having a smooth uniform surface, continually poured and either spade tamped or properly compacted by means of immersion vibrator, depending on requirement of structure.

10.5 JOINTING & FINISHING

Expansion and construction joints are to be provided where necessary and constructed in accordance with standard specified practice. Concrete finishes to conform to AS1510, Exposed concrete surfaces are to be approved non-slip finish and trimmed with steel edging tools unless otherwise specified by Council's Engineer. Minor imperfections in stripped concrete are to be plastered with a 3:1 cement mortar to give uniform appearance.

10.6 CURING

Provision is to be made for curing of concrete. Refer to Clause 9.10.8 for details.

10.7 REINFORCEMENT

10.7.1 Placing

Reinforcement shall be placed in accordance with AS3600 and as specified on the plan, or as may be directed by Council's Engineer subject to construction circumstances.

10.7.2 Reinforcement Standard

All reinforcement shall conform to AS1302 and be free of excessive rust, oil, grease or other deleterious matter.

10.7.3 Support & Tying w2q

All steel is to be overlapped as specified and securely tied at joints to provide a rigid matrix and correct load transfer.

Steel is to be supported by "bar chairs" (and "supporting plates" if necessary - dependent on ground conditions) of the necessary height to provide the specified clearances at maximum 1.0 metre spacing.

10.8 TESTING

All tests to be in accordance with AS.1012. Council's Engineer may require the taking of core samples and testing by a registered testing laboratory at the developer's cost prior to approval of work.

10.9 FOOTPATH CROSSING SLABS (KERB TO BOUNDARY)

10.9.1 Residential Standard (refer Standard Diagram No. SD2)

Footpath crossing slabs shall be provided where there is existing kerb and gutter or where kerb and gutter is proposed.

(a) Thickness - Minimum 125mm thick with one layer of F-62 mesh with minimum 30mm cover from the top - 20mpa concrete. A minimum depth of 75mm of compacted gravel shall be placed under as a base.

(b) Dimensions - Minimum 3.0m at kerb to 2.9m at boundary.

(c) In streets where there is no existing kerb and gutter, the access crossing shall be constructed in a minimum thickness of 150mm compacted gravel and bitumen sealed with two coat emulsion seal, or alternatively, a 10mm aggregate. Council will construct the access crossing upon payment of the applicable fee.

10.9.2 Industrial/Commercial Standard (Refer Standard Diagram SD2)

(a) Thickness - Minimum 150mm thick with one layer F-72 mesh with minimum 50mm cover from the bottom - 20MPa concrete. A minimum depth of 100mm of compacted gravel shall be placed under as a base.

(b) Dimensions - Minimum width of 4.5m but dimensions to suit the widths and turning movements of vehicles using the development is required.

10.10 CONCRETE GUTTER CROSSINGS

To be similar thickness and dimension as per footpath crossing. Industrial/commercial gutter crossing will require one layer of F-72 mesh with minimum 50mm to bottom.

10.11 ACCESS TO BATTLE AXE BLOCKS (Refer to Clause 10.5 also)

10.11.1 Residential Areas

(a) A full width concrete driveway slab or alternative pavement surface treatment is required where the access is serving a battle-axe lot where kerb and gutter is proposed or existing in the street. Alternative treatments suitable to the future use and amenity of the lots will be considered on their merits and may include stencilled concrete, coloured concrete, driveway strips, paving blocks etc. The driveway shall extend for the full length of the battle axe handle. All driveway widths shall be a minimum of 2.9 metres wide and shall conform to AS2890.11993 and shall include a driveway crossing. See Clause 10.9.1.

(b) Thickness of all concrete accesses to be minimum of 125mm thick. Full width access will require one layer of F-72 mesh placed 50mm from the bottom and shall be bedded on a minimum of 50mm sand or compacted gravel sub-base.

Note:- In all cases the access slab across the footpath is to be of full width construction.

10.11.2 Industrial Commercial Areas

(a) A full width concrete access is required for all industrial/commercial accesses. Minimum width at the boundary is 6m, but should be designed to suit vehicular movements. Design levels of the driveway to suit future kerb and gutter are to be obtained from Council's Works Department.

(b) The minimum thickness is 150mm with one layer F-72 mesh placed 50mm from the bottom. See diagrams SD1, SD2 and SD3.

10.12 CONCRETE JOINTING

Grooved "dummy" joints shall be placed in footpaths, cycleways and driveway strips at an interval which will result in square slabs or in accordance with Council's Access Crossings, see Diagram SD2. Every third joint shall be an expansion joint. Concrete slabs across footpaths are to be expansion jointed at the kerb and at the boundary where the slab is placed separately to the access crossing.

Where access crossings are placed into existing kerb and gutter, the kerb is to be mechanically cut at right angles to the face of kerb and along the gutter line. The kerb section is to be completely removed vertically from the gutter line and the slab and access layback poured integrally. A joint is to be placed at the boundary only. A "dummy" joint is to be placed where the normal access expansion joint would be provided.

All expansion jointing material is to be placed to the full depth of the concrete section,

10.13 SERVICE CONDUITS

If the footpath slab is laid before service cables, conduits shall be installed in accordance with requirements of the relevant authorities.

10.14 CONCRETE FOOTPATHS

Concrete footpaths are to be constructed as detailed on the plan with due regard to general concrete requirements and finish. Minimum width is 1.2 metres. Minimum thickness is 75mm. Bedding in accordance with Clause 10.17.

10.15 CYCLEWAYS

Minimum width of concrete cycleway is to be 2.5 metres with a minimum thickness of 100mm and F72 mesh centrally placed. Bedding in accordance with Clause 10.17.

10.16 OVERLAND FLOW PATHWAYS

Where the concrete pathway is required to accommodate overland flow, a kerbed pathway is to be provided, details of which shall be submitted to Council for approval and shall include flow capacities. Thickening of pathway to be used as flow paths may be necessary and at the direction of Council's Engineer. Bedding is to be in accordance with Clause 10.17.

10.17 BEDDING

Bedding is to be minimum 50mm sand overlying a firm, well compacted natural material.

10.18 CONCRETE STEPS

Shall conform to the dimension and particulars of the approved plan, be designed in accordance with the provisions of Part D2.13 of the Building Code of Australia, and be finished in accordance with the specifications for concrete.

10.18.1 Gradient

Where natural surface gradient exceeds 10%, concrete steps shall be provided to negotiate such excess grades, and any intermediate ramp section of pathway shall not exceed a longitudinal grade of 10% and shall be level in cross section. The number of steps required will be determined generally to fit ground profile. Where possible, continuous banks of steps will be broken by a short flat landing. Such landing shall be in accordance with the Building Code of Australia. Handrails will be required in excess of 10%.

10.18.2 Reinforcement

All banks of steps shall be reinforced over full width by a single layer of F-72 mesh.

10.18.3 Handrails

Handrails will generally be required where any bank of steps exceeds four in number or where any grade adjacent to the pathway poses a potential danger to pedestrians. Supporting posts shall be securely attached to concrete and evenly spaced at not more than 2.4m intervals.